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ACF-13-0072
44N-13-0005

Enclosure 5

Appendices A Through G to the FSS Report

1 notebook to follow

FINAL STATUS SURVEY REPORT APPENDICES

SUBSURFACE SOIL CHARACTERIZATION AND FSS PROJECT

**NUCLEAR FUEL SERVICES NORTH SITE
Erwin, Tennessee**

SURVEY UNITS 2, 8, 9, 19, 20

PREPARED FOR:

NUCLEAR FUEL SERVICES, INC.



PREPARED BY:

**AMEC ENVIRONMENT AND INFRASTRUCTURE INC.
AMEC PROJECT No. 9120071235**

**REVISION 1
FEBRUARY 2013**

WORK PERFORMED UNDER DOE CONTRACT NO. DE-AC12-04SN39427



Appendix A

Historical Dataset

Appendix A.1

Historical Dataset, Survey Unit 2

Historical Dataset, Survey Unit 2

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
105-B1-1	3022483.58	674438.2897	0.5	Am-241	0.3	pCi/g	Pre
105-B1-1	3022483.58	674438.2897	0.5	Pu-238	0	pCi/g	Pre
105-B1-1	3022483.58	674438.2897	0.5	Pu-239/240	0	pCi/g	Pre
105-B1-1	3022483.58	674438.2897	0.5	Pu-241	0	pCi/g	Pre
105-B1-1	3022483.58	674438.2897	0.5	Pu-242	0	pCi/g	Pre
105-B1-1	3022483.58	674438.2897	0.5	Tc-99	0	pCi/g	Pre
105-B1-1	3022483.58	674438.2897	0.5	Th-230	0.7	pCi/g	Pre
105-B1-1	3022483.58	674438.2897	0.5	Th-232	1	pCi/g	Pre
105-B1-1	3022483.58	674438.2897	0.5	U-233/234	1.4	pCi/g	Pre
105-B1-1	3022483.58	674438.2897	0.5	U-235	0.1	pCi/g	Pre
105-B1-1	3022483.58	674438.2897	0.5	U-238	0.6	pCi/g	Pre
107-B1-1	3022535.8	674398.4836	0.5	Am-241	-0.04	pCi/g	Pre
107-B1-1	3022535.8	674398.4836	0.5	Pu-238	-0.04	pCi/g	Pre
107-B1-1	3022535.8	674398.4836	0.5	Pu-239/240	0.1	pCi/g	Pre
107-B1-1	3022535.8	674398.4836	0.5	Pu-241	0	pCi/g	Pre
107-B1-1	3022535.8	674398.4836	0.5	Pu-242	0	pCi/g	Pre
107-B1-1	3022535.8	674398.4836	0.5	Tc-99	0	pCi/g	Pre
107-B1-1	3022535.8	674398.4836	0.5	Th-230	1	pCi/g	Pre
107-B1-1	3022535.8	674398.4836	0.5	Th-232	0.6	pCi/g	Pre
107-B1-1	3022535.8	674398.4836	0.5	U-233/234	3.1	pCi/g	Pre
107-B1-1	3022535.8	674398.4836	0.5	U-235	0.3	pCi/g	Pre
107-B1-1	3022535.8	674398.4836	0.5	U-238	0.9	pCi/g	Pre
108-I1-1	3022575.827	674396.852	0.5	Am-241	0.13	pCi/g	Pre
108-I1-1	3022575.827	674396.852	0.5	Pu-238	0.03	pCi/g	Pre
108-I1-1	3022575.827	674396.852	0.5	Pu-239/240	0.02	pCi/g	Pre
108-I1-1	3022575.827	674396.852	0.5	Pu-241	0	pCi/g	Pre
108-I1-1	3022575.827	674396.852	0.5	Pu-242	0	pCi/g	Pre
108-I1-1	3022575.827	674396.852	0.5	Tc-99	-0.4	pCi/g	Pre
108-I1-1	3022575.827	674396.852	0.5	Th-230	1.2	pCi/g	Pre
108-I1-1	3022575.827	674396.852	0.5	Th-232	0.8	pCi/g	Pre
108-I1-1	3022575.827	674396.852	0.5	U-233/234	1.6	pCi/g	Pre
108-I1-1	3022575.827	674396.852	0.5	U-235	0.1	pCi/g	Pre
108-I1-1	3022575.827	674396.852	0.5	U-238	0.8	pCi/g	Pre
123-G2-1	3022966.105	674091.0957	0.5	Am-241	0.03	pCi/g	Pre
123-G2-1	3022966.105	674091.0957	0.5	Pu-238	0.02	pCi/g	Pre
123-G2-1	3022966.105	674091.0957	0.5	Pu-239/240	0	pCi/g	Pre
123-G2-1	3022966.105	674091.0957	0.5	Pu-241	0	pCi/g	Pre
123-G2-1	3022966.105	674091.0957	0.5	Pu-242	0	pCi/g	Pre
123-G2-1	3022966.105	674091.0957	0.5	Tc-99	0	pCi/g	Pre
123-G2-1	3022966.105	674091.0957	0.5	Th-230	1.4	pCi/g	Pre
123-G2-1	3022966.105	674091.0957	0.5	Th-232	1.5	pCi/g	Pre
123-G2-1	3022966.105	674091.0957	0.5	U-233/234	1.4	pCi/g	Pre
123-G2-1	3022966.105	674091.0957	0.5	U-235	0.1	pCi/g	Pre
123-G2-1	3022966.105	674091.0957	0.5	U-238	0.9	pCi/g	Pre
131-C2-1	3022337.749	674512.3228	0.5	Am-241	-0.01	pCi/g	Pre
131-C2-1	3022337.749	674512.3228	0.5	Pu-238	0.06	pCi/g	Pre
131-C2-1	3022337.749	674512.3228	0.5	Pu-239/240	0	pCi/g	Pre
131-C2-1	3022337.749	674512.3228	0.5	Pu-241	-0.05	pCi/g	Pre
131-C2-1	3022337.749	674512.3228	0.5	Pu-242	0	pCi/g	Pre
131-C2-1	3022337.749	674512.3228	0.5	Tc-99	1.6	pCi/g	Pre
131-C2-1	3022337.749	674512.3228	0.5	Th-230	0.1	pCi/g	Pre
131-C2-1	3022337.749	674512.3228	0.5	Th-232	0.1	pCi/g	Pre
131-C2-1	3022337.749	674512.3228	0.5	U-233/234	3.9	pCi/g	Pre
131-C2-1	3022337.749	674512.3228	0.5	U-235	0.2	pCi/g	Pre
131-C2-1	3022337.749	674512.3228	0.5	U-238	1.1	pCi/g	Pre

AMEC

Historical Dataset, Survey Unit 2

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
131-C2-2	3022337.749	674512.3228	1.5	Am-241	-0.02	pCi/g	Pre
131-C2-2	3022337.749	674512.3228	1.5	Pu-238	0.04	pCi/g	Pre
131-C2-2	3022337.749	674512.3228	1.5	Pu-239/240	-0.02	pCi/g	Pre
131-C2-2	3022337.749	674512.3228	1.5	Pu-241	-0.08	pCi/g	Pre
131-C2-2	3022337.749	674512.3228	1.5	Pu-242	0	pCi/g	Pre
131-C2-2	3022337.749	674512.3228	1.5	Tc-99	0	pCi/g	Pre
131-C2-2	3022337.749	674512.3228	1.5	Th-230	0.5	pCi/g	Pre
131-C2-2	3022337.749	674512.3228	1.5	Th-232	0.8	pCi/g	Pre
131-C2-2	3022337.749	674512.3228	1.5	U-233/234	0	pCi/g	Pre
131-C2-2	3022337.749	674512.3228	1.5	U-235	0	pCi/g	Pre
131-C2-2	3022337.749	674512.3228	1.5	U-238	0	pCi/g	Pre
134-B1-1	3022411.479	674451.9937	0.5	Am-241	0.41	pCi/g	Pre
134-B1-1	3022411.479	674451.9937	0.5	Pu-238	0	pCi/g	Pre
134-B1-1	3022411.479	674451.9937	0.5	Pu-239/240	0	pCi/g	Pre
134-B1-1	3022411.479	674451.9937	0.5	Pu-241	0	pCi/g	Pre
134-B1-1	3022411.479	674451.9937	0.5	Pu-242	0	pCi/g	Pre
134-B1-1	3022411.479	674451.9937	0.5	Tc-99	0	pCi/g	Pre
134-B1-1	3022411.479	674451.9937	0.5	Th-230	0.6	pCi/g	Pre
134-B1-1	3022411.479	674451.9937	0.5	Th-232	0.9	pCi/g	Pre
134-B1-1	3022411.479	674451.9937	0.5	U-233/234	3.3	pCi/g	Pre
134-B1-1	3022411.479	674451.9937	0.5	U-235	0.1	pCi/g	Pre
134-B1-1	3022411.479	674451.9937	0.5	U-238	1	pCi/g	Pre
15-C8-1	3023093.112	674225.325	0.5	Am-241	0.09	pCi/g	Pre
15-C8-1	3023093.112	674225.325	0.5	Pu-238	-0.07	pCi/g	Pre
15-C8-1	3023093.112	674225.325	0.5	Pu-239/240	0.71	pCi/g	Pre
15-C8-1	3023093.112	674225.325	0.5	Pu-241	0.38	pCi/g	Pre
15-C8-1	3023093.112	674225.325	0.5	Pu-242	0	pCi/g	Pre
15-C8-1	3023093.112	674225.325	0.5	Tc-99	1.9	pCi/g	Pre
15-C8-1	3023093.112	674225.325	0.5	Th-230	0.5	pCi/g	Pre
15-C8-1	3023093.112	674225.325	0.5	Th-232	0.7	pCi/g	Pre
15-C8-1	3023093.112	674225.325	0.5	U-233/234	5.6	pCi/g	Pre
15-C8-1	3023093.112	674225.325	0.5	U-235	0.2	pCi/g	Pre
15-C8-1	3023093.112	674225.325	0.5	U-238	1.4	pCi/g	Pre
15-C8-2	3023093.112	674225.325	1.5	Am-241	0.01	pCi/g	Pre
15-C8-2	3023093.112	674225.325	1.5	Pu-238	-0.01	pCi/g	Pre
15-C8-2	3023093.112	674225.325	1.5	Pu-239/240	0.12	pCi/g	Pre
15-C8-2	3023093.112	674225.325	1.5	Pu-241	0.03	pCi/g	Pre
15-C8-2	3023093.112	674225.325	1.5	Pu-242	0	pCi/g	Pre
15-C8-2	3023093.112	674225.325	1.5	Tc-99	2.2	pCi/g	Pre
15-C8-2	3023093.112	674225.325	1.5	Th-230	1.1	pCi/g	Pre
15-C8-2	3023093.112	674225.325	1.5	Th-232	1.6	pCi/g	Pre
15-C8-2	3023093.112	674225.325	1.5	U-233/234	4.7	pCi/g	Pre
15-C8-2	3023093.112	674225.325	1.5	U-235	0.4	pCi/g	Pre
15-C8-2	3023093.112	674225.325	1.5	U-238	1.9	pCi/g	Pre
163-C3-1	3022294.368	674504.1335	0.5	Am-241	0.61	pCi/g	Pre
163-C3-1	3022294.368	674504.1335	0.5	Pu-238	0.11	pCi/g	Pre
163-C3-1	3022294.368	674504.1335	0.5	Pu-239/240	1.68	pCi/g	Pre
163-C3-1	3022294.368	674504.1335	0.5	Pu-241	2.75	pCi/g	Pre
163-C3-1	3022294.368	674504.1335	0.5	Pu-242	0	pCi/g	Pre
163-C3-1	3022294.368	674504.1335	0.5	Tc-99	3	pCi/g	Pre
163-C3-1	3022294.368	674504.1335	0.5	Th-230	1.3	pCi/g	Pre
163-C3-1	3022294.368	674504.1335	0.5	Th-232	2.1	pCi/g	Pre
163-C3-1	3022294.368	674504.1335	0.5	U-233/234	21.9	pCi/g	Pre
163-C3-1	3022294.368	674504.1335	0.5	U-235	0.9	pCi/g	Pre
163-C3-1	3022294.368	674504.1335	0.5	U-238	3.6	pCi/g	Pre

Historical Dataset, Survey Unit 2

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
163-D8-1	3022309.411	674496.7922	0.5	Am-241	0.54	pCi/g	Pre
163-D8-1	3022309.411	674496.7922	0.5	Pu-238	0.1	pCi/g	Pre
163-D8-1	3022309.411	674496.7922	0.5	Pu-239/240	1.49	pCi/g	Pre
163-D8-1	3022309.411	674496.7922	0.5	Pu-241	2.44	pCi/g	Pre
163-D8-1	3022309.411	674496.7922	0.5	Pu-242	0	pCi/g	Pre
163-D8-1	3022309.411	674496.7922	0.5	Tc-99	2.2	pCi/g	Pre
163-D8-1	3022309.411	674496.7922	0.5	Th-230	1	pCi/g	Pre
163-D8-1	3022309.411	674496.7922	0.5	Th-232	1.7	pCi/g	Pre
163-D8-1	3022309.411	674496.7922	0.5	U-233/234	9.3	pCi/g	Pre
163-D8-1	3022309.411	674496.7922	0.5	U-235	0.4	pCi/g	Pre
163-D8-1	3022309.411	674496.7922	0.5	U-238	2	pCi/g	Pre
164-J9-1	3022350.061	674490.56	0.5	Am-241	-0.15	pCi/g	Pre
164-J9-1	3022350.061	674490.56	0.5	Pu-238	0	pCi/g	Pre
164-J9-1	3022350.061	674490.56	0.5	Pu-239/240	0	pCi/g	Pre
164-J9-1	3022350.061	674490.56	0.5	Pu-241	0	pCi/g	Pre
164-J9-1	3022350.061	674490.56	0.5	Pu-242	0	pCi/g	Pre
164-J9-1	3022350.061	674490.56	0.5	Tc-99	0	pCi/g	Pre
164-J9-1	3022350.061	674490.56	0.5	Th-230	0.2	pCi/g	Pre
164-J9-1	3022350.061	674490.56	0.5	Th-232	0.3	pCi/g	Pre
164-J9-1	3022350.061	674490.56	0.5	U-233/234	2.9	pCi/g	Pre
164-J9-1	3022350.061	674490.56	0.5	U-235	0.1	pCi/g	Pre
164-J9-1	3022350.061	674490.56	0.5	U-238	0.9	pCi/g	Pre
24-D4-1	3023012.555	674249.6005	0.5	Am-241	0.06	pCi/g	Pre
24-D4-1	3023012.555	674249.6005	0.5	Pu-238	-0.03	pCi/g	Pre
24-D4-1	3023012.555	674249.6005	0.5	Pu-239/240	0	pCi/g	Pre
24-D4-1	3023012.555	674249.6005	0.5	Pu-241	0	pCi/g	Pre
24-D4-1	3023012.555	674249.6005	0.5	Pu-242	0	pCi/g	Pre
24-D4-1	3023012.555	674249.6005	0.5	Tc-99	0	pCi/g	Pre
24-D4-1	3023012.555	674249.6005	0.5	Th-230	0.4	pCi/g	Pre
24-D4-1	3023012.555	674249.6005	0.5	Th-232	0.7	pCi/g	Pre
24-D4-1	3023012.555	674249.6005	0.5	U-233/234	0.8	pCi/g	Pre
24-D4-1	3023012.555	674249.6005	0.5	U-235	0.3	pCi/g	Pre
24-D4-1	3023012.555	674249.6005	0.5	U-238	0.6	pCi/g	Pre
32-C6-1	3022865.358	674316.4229	0.5	Am-241	0.12	pCi/g	Pre
32-C6-1	3022865.358	674316.4229	0.5	Pu-238	0.02	pCi/g	Pre
32-C6-1	3022865.358	674316.4229	0.5	Pu-239/240	0.02	pCi/g	Pre
32-C6-1	3022865.358	674316.4229	0.5	Pu-241	0	pCi/g	Pre
32-C6-1	3022865.358	674316.4229	0.5	Pu-242	0	pCi/g	Pre
32-C6-1	3022865.358	674316.4229	0.5	Tc-99	0	pCi/g	Pre
32-C6-1	3022865.358	674316.4229	0.5	Th-230	0.8	pCi/g	Pre
32-C6-1	3022865.358	674316.4229	0.5	Th-232	0.7	pCi/g	Pre
32-C6-1	3022865.358	674316.4229	0.5	U-233/234	1.5	pCi/g	Pre
32-C6-1	3022865.358	674316.4229	0.5	U-235	0.1	pCi/g	Pre
32-C6-1	3022865.358	674316.4229	0.5	U-238	0.8	pCi/g	Pre
33-C5-1	3022888.857	674298.5102	0.5	Am-241	0.05	pCi/g	Pre
33-C5-1	3022888.857	674298.5102	0.5	Pu-238	0	pCi/g	Pre
33-C5-1	3022888.857	674298.5102	0.5	Pu-239/240	0.2	pCi/g	Pre
33-C5-1	3022888.857	674298.5102	0.5	Pu-241	0	pCi/g	Pre
33-C5-1	3022888.857	674298.5102	0.5	Pu-242	0	pCi/g	Pre
33-C5-1	3022888.857	674298.5102	0.5	Tc-99	0	pCi/g	Pre
33-C5-1	3022888.857	674298.5102	0.5	Th-230	0.3	pCi/g	Pre
33-C5-1	3022888.857	674298.5102	0.5	Th-232	0.6	pCi/g	Pre
33-C5-1	3022888.857	674298.5102	0.5	U-233/234	1.1	pCi/g	Pre
33-C5-1	3022888.857	674298.5102	0.5	U-235	0.1	pCi/g	Pre
33-C5-1	3022888.857	674298.5102	0.5	U-238	0.7	pCi/g	Pre

Historical Dataset, Survey Unit 2

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
34-D4-1	3022914.344	674283.2076	0.5	Am-241	0.14	pCi/g	Pre
34-D4-1	3022914.344	674283.2076	0.5	Pu-238	0.02	pCi/g	Pre
34-D4-1	3022914.344	674283.2076	0.5	Pu-239/240	0.06	pCi/g	Pre
34-D4-1	3022914.344	674283.2076	0.5	Pu-241	0	pCi/g	Pre
34-D4-1	3022914.344	674283.2076	0.5	Pu-242	0	pCi/g	Pre
34-D4-1	3022914.344	674283.2076	0.5	Tc-99	0	pCi/g	Pre
34-D4-1	3022914.344	674283.2076	0.5	Th-230	0.5	pCi/g	Pre
34-D4-1	3022914.344	674283.2076	0.5	Th-232	0.7	pCi/g	Pre
34-D4-1	3022914.344	674283.2076	0.5	U-233/234	1.4	pCi/g	Pre
34-D4-1	3022914.344	674283.2076	0.5	U-235	0	pCi/g	Pre
34-D4-1	3022914.344	674283.2076	0.5	U-238	1.3	pCi/g	Pre
39-B1-1	3023033.083	674184.443	0.5	Am-241	-0.34	pCi/g	Pre
39-B1-1	3023033.083	674184.443	0.5	Pu-238	0.01	pCi/g	Pre
39-B1-1	3023033.083	674184.443	0.5	Pu-239/240	0	pCi/g	Pre
39-B1-1	3023033.083	674184.443	0.5	Pu-241	0	pCi/g	Pre
39-B1-1	3023033.083	674184.443	0.5	Pu-242	0	pCi/g	Pre
39-B1-1	3023033.083	674184.443	0.5	Tc-99	0	pCi/g	Pre
39-B1-1	3023033.083	674184.443	0.5	Th-230	1.2	pCi/g	Pre
39-B1-1	3023033.083	674184.443	0.5	Th-232	1.2	pCi/g	Pre
39-B1-1	3023033.083	674184.443	0.5	U-233/234	1.1	pCi/g	Pre
39-B1-1	3023033.083	674184.443	0.5	U-235	0.1	pCi/g	Pre
39-B1-1	3023033.083	674184.443	0.5	U-238	1.1	pCi/g	Pre
39-E6-1	3023052.102	674182.3221	0.5	Am-241	-0.19	pCi/g	Pre
39-E6-1	3023052.102	674182.3221	0.5	Pu-238	-0.1	pCi/g	Pre
39-E6-1	3023052.102	674182.3221	0.5	Pu-239/240	0.1	pCi/g	Pre
39-E6-1	3023052.102	674182.3221	0.5	Pu-241	0	pCi/g	Pre
39-E6-1	3023052.102	674182.3221	0.5	Pu-242	0	pCi/g	Pre
39-E6-1	3023052.102	674182.3221	0.5	Tc-99	0	pCi/g	Pre
39-E6-1	3023052.102	674182.3221	0.5	Th-230	1.6	pCi/g	Pre
39-E6-1	3023052.102	674182.3221	0.5	Th-232	1.3	pCi/g	Pre
39-E6-1	3023052.102	674182.3221	0.5	U-233/234	1	pCi/g	Pre
39-E6-1	3023052.102	674182.3221	0.5	U-235	0.2	pCi/g	Pre
39-E6-1	3023052.102	674182.3221	0.5	U-238	0.9	pCi/g	Pre
39-F5-1	3023051.479	674186.9226	0.5	Am-241	-0.43	pCi/g	Pre
39-F5-1	3023051.479	674186.9226	0.5	Pu-238	0	pCi/g	Pre
39-F5-1	3023051.479	674186.9226	0.5	Pu-239/240	0	pCi/g	Pre
39-F5-1	3023051.479	674186.9226	0.5	Pu-241	0	pCi/g	Pre
39-F5-1	3023051.479	674186.9226	0.5	Pu-242	0	pCi/g	Pre
39-F5-1	3023051.479	674186.9226	0.5	Tc-99	0	pCi/g	Pre
39-F5-1	3023051.479	674186.9226	0.5	Th-230	1.3	pCi/g	Pre
39-F5-1	3023051.479	674186.9226	0.5	Th-232	2.2	pCi/g	Pre
39-F5-1	3023051.479	674186.9226	0.5	U-233/234	22.5	pCi/g	Pre
39-F5-1	3023051.479	674186.9226	0.5	U-235	0.9	pCi/g	Pre
39-F5-1	3023051.479	674186.9226	0.5	U-238	3.7	pCi/g	Pre
39-F5-2	3023051.479	674186.9226	1.5	Am-241	0.19	pCi/g	Pre
39-F5-2	3023051.479	674186.9226	1.5	Pu-238	0	pCi/g	Pre
39-F5-2	3023051.479	674186.9226	1.5	Pu-239/240	0	pCi/g	Pre
39-F5-2	3023051.479	674186.9226	1.5	Pu-241	0	pCi/g	Pre
39-F5-2	3023051.479	674186.9226	1.5	Pu-242	0	pCi/g	Pre
39-F5-2	3023051.479	674186.9226	1.5	Tc-99	0	pCi/g	Pre
39-F5-2	3023051.479	674186.9226	1.5	Th-230	0.6	pCi/g	Pre
39-F5-2	3023051.479	674186.9226	1.5	Th-232	0.9	pCi/g	Pre
39-F5-2	3023051.479	674186.9226	1.5	U-233/234	6.2	pCi/g	Pre
39-F5-2	3023051.479	674186.9226	1.5	U-235	0.3	pCi/g	Pre
39-F5-2	3023051.479	674186.9226	1.5	U-238	1.6	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
49-A7-1	3022896.33	674243.3041	0.5	Am-241	-0.11	pCi/g	Pre
49-A7-1	3022896.33	674243.3041	0.5	Pu-238	-0.03	pCi/g	Pre
49-A7-1	3022896.33	674243.3041	0.5	Pu-239/240	0.12	pCi/g	Pre
49-A7-1	3022896.33	674243.3041	0.5	Pu-241	-0.48	pCi/g	Pre
49-A7-1	3022896.33	674243.3041	0.5	Pu-242	0	pCi/g	Pre
49-A7-1	3022896.33	674243.3041	0.5	Tc-99	1.1	pCi/g	Pre
49-A7-1	3022896.33	674243.3041	0.5	Th-230	0.9	pCi/g	Pre
49-A7-1	3022896.33	674243.3041	0.5	Th-232	0.8	pCi/g	Pre
49-A7-1	3022896.33	674243.3041	0.5	U-233/234	2.2	pCi/g	Pre
49-A7-1	3022896.33	674243.3041	0.5	U-235	0.1	pCi/g	Pre
49-A7-1	3022896.33	674243.3041	0.5	U-238	0.8	pCi/g	Pre
49-A7-2	3022896.33	674243.3041	1.5	Am-241	0.01	pCi/g	Pre
49-A7-2	3022896.33	674243.3041	1.5	Pu-238	0.03	pCi/g	Pre
49-A7-2	3022896.33	674243.3041	1.5	Pu-239/240	0.03	pCi/g	Pre
49-A7-2	3022896.33	674243.3041	1.5	Pu-241	0.03	pCi/g	Pre
49-A7-2	3022896.33	674243.3041	1.5	Pu-242	0	pCi/g	Pre
49-A7-2	3022896.33	674243.3041	1.5	Tc-99	1.6	pCi/g	Pre
49-A7-2	3022896.33	674243.3041	1.5	Th-230	0.9	pCi/g	Pre
49-A7-2	3022896.33	674243.3041	1.5	Th-232	1.5	pCi/g	Pre
49-A7-2	3022896.33	674243.3041	1.5	U-233/234	3.9	pCi/g	Pre
49-A7-2	3022896.33	674243.3041	1.5	U-235	0.2	pCi/g	Pre
49-A7-2	3022896.33	674243.3041	1.5	U-238	1.1	pCi/g	Pre
50-A6-1	3022919.828	674225.3914	0.5	Am-241	0.09	pCi/g	Pre
50-A6-1	3022919.828	674225.3914	0.5	Pu-238	0.05	pCi/g	Pre
50-A6-1	3022919.828	674225.3914	0.5	Pu-239/240	1.73	pCi/g	Pre
50-A6-1	3022919.828	674225.3914	0.5	Pu-241	0.4	pCi/g	Pre
50-A6-1	3022919.828	674225.3914	0.5	Pu-242	0	pCi/g	Pre
50-A6-1	3022919.828	674225.3914	0.5	Tc-99	2.4	pCi/g	Pre
50-A6-1	3022919.828	674225.3914	0.5	Th-230	0.6	pCi/g	Pre
50-A6-1	3022919.828	674225.3914	0.5	Th-232	1	pCi/g	Pre
50-A6-1	3022919.828	674225.3914	0.5	U-233/234	11.4	pCi/g	Pre
50-A6-1	3022919.828	674225.3914	0.5	U-235	0.5	pCi/g	Pre
50-A6-1	3022919.828	674225.3914	0.5	U-238	2.3	pCi/g	Pre
50-A6-2	3022919.828	674225.3914	1.5	Am-241	0.02	pCi/g	Pre
50-A6-2	3022919.828	674225.3914	1.5	Pu-238	-0.04	pCi/g	Pre
50-A6-2	3022919.828	674225.3914	1.5	Pu-239/240	0.61	pCi/g	Pre
50-A6-2	3022919.828	674225.3914	1.5	Pu-241	0.07	pCi/g	Pre
50-A6-2	3022919.828	674225.3914	1.5	Pu-242	0	pCi/g	Pre
50-A6-2	3022919.828	674225.3914	1.5	Tc-99	1.8	pCi/g	Pre
50-A6-2	3022919.828	674225.3914	1.5	Th-230	1.3	pCi/g	Pre
50-A6-2	3022919.828	674225.3914	1.5	Th-232	2.1	pCi/g	Pre
50-A6-2	3022919.828	674225.3914	1.5	U-233/234	5	pCi/g	Pre
50-A6-2	3022919.828	674225.3914	1.5	U-235	0.2	pCi/g	Pre
50-A6-2	3022919.828	674225.3914	1.5	U-238	1.3	pCi/g	Pre
51-G10-1	3022968.311	674213.1884	0.5	Am-241	-0.02	pCi/g	Pre
51-G10-1	3022968.311	674213.1884	0.5	Pu-238	0	pCi/g	Pre
51-G10-1	3022968.311	674213.1884	0.5	Pu-239/240	0	pCi/g	Pre
51-G10-1	3022968.311	674213.1884	0.5	Pu-241	0	pCi/g	Pre
51-G10-1	3022968.311	674213.1884	0.5	Pu-242	0	pCi/g	Pre
51-G10-1	3022968.311	674213.1884	0.5	Tc-99	0	pCi/g	Pre
51-G10-1	3022968.311	674213.1884	0.5	Th-230	0.8	pCi/g	Pre
51-G10-1	3022968.311	674213.1884	0.5	Th-232	1.2	pCi/g	Pre
51-G10-1	3022968.311	674213.1884	0.5	U-233/234	3.7	pCi/g	Pre
51-G10-1	3022968.311	674213.1884	0.5	U-235	0.1	pCi/g	Pre
51-G10-1	3022968.311	674213.1884	0.5	U-238	1.9	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
51-H9-1	3022967.688	674217.7889	0.5	Am-241	-0.06	pCi/g	Pre
51-H9-1	3022967.688	674217.7889	0.5	Pu-238	-0.02	pCi/g	Pre
51-H9-1	3022967.688	674217.7889	0.5	Pu-239/240	0.07	pCi/g	Pre
51-H9-1	3022967.688	674217.7889	0.5	Pu-241	0	pCi/g	Pre
51-H9-1	3022967.688	674217.7889	0.5	Pu-242	0	pCi/g	Pre
51-H9-1	3022967.688	674217.7889	0.5	Tc-99	2.5	pCi/g	Pre
51-H9-1	3022967.688	674217.7889	0.5	Th-230	1.1	pCi/g	Pre
51-H9-1	3022967.688	674217.7889	0.5	Th-232	0.8	pCi/g	Pre
51-H9-1	3022967.688	674217.7889	0.5	U-233/234	2.1	pCi/g	Pre
51-H9-1	3022967.688	674217.7889	0.5	U-235	0.2	pCi/g	Pre
51-H9-1	3022967.688	674217.7889	0.5	U-238	1.3	pCi/g	Pre
52-B1-1	3023000.746	674250.351	0.5	Am-241	-0.12	pCi/g	Pre
52-B1-1	3023000.746	674250.351	0.5	Pu-238	-0.03	pCi/g	Pre
52-B1-1	3023000.746	674250.351	0.5	Pu-239/240	-0.04	pCi/g	Pre
52-B1-1	3023000.746	674250.351	0.5	Pu-241	0	pCi/g	Pre
52-B1-1	3023000.746	674250.351	0.5	Pu-242	0	pCi/g	Pre
52-B1-1	3023000.746	674250.351	0.5	Tc-99	0	pCi/g	Pre
52-B1-1	3023000.746	674250.351	0.5	Th-230	0.9	pCi/g	Pre
52-B1-1	3023000.746	674250.351	0.5	Th-232	1	pCi/g	Pre
52-B1-1	3023000.746	674250.351	0.5	U-233/234	1.2	pCi/g	Pre
52-B1-1	3023000.746	674250.351	0.5	U-235	0.2	pCi/g	Pre
52-B1-1	3023000.746	674250.351	0.5	U-238	1.3	pCi/g	Pre
54-C2-1	3023017.799	674158.9609	0.5	Am-241	-0.25	pCi/g	Pre
54-C2-1	3023017.799	674158.9609	0.5	Pu-238	-0.09	pCi/g	Pre
54-C2-1	3023017.799	674158.9609	0.5	Pu-239/240	0.13	pCi/g	Pre
54-C2-1	3023017.799	674158.9609	0.5	Pu-241	0	pCi/g	Pre
54-C2-1	3023017.799	674158.9609	0.5	Pu-242	0	pCi/g	Pre
54-C2-1	3023017.799	674158.9609	0.5	Tc-99	0	pCi/g	Pre
54-C2-1	3023017.799	674158.9609	0.5	Th-230	1.2	pCi/g	Pre
54-C2-1	3023017.799	674158.9609	0.5	Th-232	1.3	pCi/g	Pre
54-C2-1	3023017.799	674158.9609	0.5	U-233/234	1.2	pCi/g	Pre
54-C2-1	3023017.799	674158.9609	0.5	U-235	0.3	pCi/g	Pre
54-C2-1	3023017.799	674158.9609	0.5	U-238	0.9	pCi/g	Pre
54-I8-1	3023045.394	674162.6803	0.5	Am-241	0.01	pCi/g	Pre
54-I8-1	3023045.394	674162.6803	0.5	Pu-238	0.09	pCi/g	Pre
54-I8-1	3023045.394	674162.6803	0.5	Pu-239/240	0.03	pCi/g	Pre
54-I8-1	3023045.394	674162.6803	0.5	Pu-241	0	pCi/g	Pre
54-I8-1	3023045.394	674162.6803	0.5	Pu-242	0	pCi/g	Pre
54-I8-1	3023045.394	674162.6803	0.5	Tc-99	0	pCi/g	Pre
54-I8-1	3023045.394	674162.6803	0.5	Th-230	1.3	pCi/g	Pre
54-I8-1	3023045.394	674162.6803	0.5	Th-232	1	pCi/g	Pre
54-I8-1	3023045.394	674162.6803	0.5	U-233/234	0.9	pCi/g	Pre
54-I8-1	3023045.394	674162.6803	0.5	U-235	0.2	pCi/g	Pre
54-I8-1	3023045.394	674162.6803	0.5	U-238	1.2	pCi/g	Pre
55-C2-1	3023043.909	674139.0578	0.5	Am-241	-0.12	pCi/g	Pre
55-C2-1	3023043.909	674139.0578	0.5	Pu-238	0.01	pCi/g	Pre
55-C2-1	3023043.909	674139.0578	0.5	Pu-239/240	0.02	pCi/g	Pre
55-C2-1	3023043.909	674139.0578	0.5	Pu-241	0	pCi/g	Pre
55-C2-1	3023043.909	674139.0578	0.5	Pu-242	0	pCi/g	Pre
55-C2-1	3023043.909	674139.0578	0.5	Tc-99	0	pCi/g	Pre
55-C2-1	3023043.909	674139.0578	0.5	Th-230	1.3	pCi/g	Pre
55-C2-1	3023043.909	674139.0578	0.5	Th-232	1	pCi/g	Pre
55-C2-1	3023043.909	674139.0578	0.5	U-233/234	1.2	pCi/g	Pre
55-C2-1	3023043.909	674139.0578	0.5	U-235	0.1	pCi/g	Pre
55-C2-1	3023043.909	674139.0578	0.5	U-238	1.2	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
61-H4-1	3022699.765	674380.7657	0.5	Am-241	-0.04	pCi/g	Pre
61-H4-1	3022699.765	674380.7657	0.5	Pu-238	-0.06	pCi/g	Pre
61-H4-1	3022699.765	674380.7657	0.5	Pu-239/240	0.06	pCi/g	Pre
61-H4-1	3022699.765	674380.7657	0.5	Pu-241	-0.17	pCi/g	Pre
61-H4-1	3022699.765	674380.7657	0.5	Pu-242	0	pCi/g	Pre
61-H4-1	3022699.765	674380.7657	0.5	Tc-99	1.8	pCi/g	Pre
61-H4-1	3022699.765	674380.7657	0.5	Th-230	0.3	pCi/g	Pre
61-H4-1	3022699.765	674380.7657	0.5	Th-232	0.5	pCi/g	Pre
61-H4-1	3022699.765	674380.7657	0.5	U-233/234	5	pCi/g	Pre
61-H4-1	3022699.765	674380.7657	0.5	U-235	0.2	pCi/g	Pre
61-H4-1	3022699.765	674380.7657	0.5	U-238	1.3	pCi/g	Pre
61-H4-2	3022699.765	674380.7657	1.5	Am-241	-0.11	pCi/g	Pre
61-H4-2	3022699.765	674380.7657	1.5	Pu-238	0	pCi/g	Pre
61-H4-2	3022699.765	674380.7657	1.5	Pu-239/240	0.02	pCi/g	Pre
61-H4-2	3022699.765	674380.7657	1.5	Pu-241	-0.5	pCi/g	Pre
61-H4-2	3022699.765	674380.7657	1.5	Pu-242	0	pCi/g	Pre
61-H4-2	3022699.765	674380.7657	1.5	Tc-99	1.3	pCi/g	Pre
61-H4-2	3022699.765	674380.7657	1.5	Th-230	0.9	pCi/g	Pre
61-H4-2	3022699.765	674380.7657	1.5	Th-232	0.7	pCi/g	Pre
61-H4-2	3022699.765	674380.7657	1.5	U-233/234	2.9	pCi/g	Pre
61-H4-2	3022699.765	674380.7657	1.5	U-235	0.1	pCi/g	Pre
61-H4-2	3022699.765	674380.7657	1.5	U-238	1	pCi/g	Pre
63-J1-1	3022748.128	674352.1509	0.5	Am-241	-0.17	pCi/g	Pre
63-J1-1	3022748.128	674352.1509	0.5	Pu-238	-0.16	pCi/g	Pre
63-J1-1	3022748.128	674352.1509	0.5	Pu-239/240	0.04	pCi/g	Pre
63-J1-1	3022748.128	674352.1509	0.5	Pu-241	-0.75	pCi/g	Pre
63-J1-1	3022748.128	674352.1509	0.5	Pu-242	0	pCi/g	Pre
63-J1-1	3022748.128	674352.1509	0.5	Tc-99	1.5	pCi/g	Pre
63-J1-1	3022748.128	674352.1509	0.5	Th-230	0.6	pCi/g	Pre
63-J1-1	3022748.128	674352.1509	0.5	Th-232	0.9	pCi/g	Pre
63-J1-1	3022748.128	674352.1509	0.5	U-233/234	3.2	pCi/g	Pre
63-J1-1	3022748.128	674352.1509	0.5	U-235	0.1	pCi/g	Pre
63-J1-1	3022748.128	674352.1509	0.5	U-238	1	pCi/g	Pre
63-J1-2	3022748.128	674352.1509	1.5	Am-241	0.02	pCi/g	Pre
63-J1-2	3022748.128	674352.1509	1.5	Pu-238	0.06	pCi/g	Pre
63-J1-2	3022748.128	674352.1509	1.5	Pu-239/240	0	pCi/g	Pre
63-J1-2	3022748.128	674352.1509	1.5	Pu-241	0.08	pCi/g	Pre
63-J1-2	3022748.128	674352.1509	1.5	Pu-242	0	pCi/g	Pre
63-J1-2	3022748.128	674352.1509	1.5	Tc-99	1.5	pCi/g	Pre
63-J1-2	3022748.128	674352.1509	1.5	Th-230	0.1	pCi/g	Pre
63-J1-2	3022748.128	674352.1509	1.5	Th-232	0.1	pCi/g	Pre
63-J1-2	3022748.128	674352.1509	1.5	U-233/234	3.1	pCi/g	Pre
63-J1-2	3022748.128	674352.1509	1.5	U-235	0.1	pCi/g	Pre
63-J1-2	3022748.128	674352.1509	1.5	U-238	1	pCi/g	Pre
65-C4-1	3022794.262	674288.1026	0.5	Am-241	-0.02	pCi/g	Pre
65-C4-1	3022794.262	674288.1026	0.5	Pu-238	0	pCi/g	Pre
65-C4-1	3022794.262	674288.1026	0.5	Pu-239/240	0.07	pCi/g	Pre
65-C4-1	3022794.262	674288.1026	0.5	Pu-241	0	pCi/g	Pre
65-C4-1	3022794.262	674288.1026	0.5	Pu-242	0	pCi/g	Pre
65-C4-1	3022794.262	674288.1026	0.5	Tc-99	-1.9	pCi/g	Pre
65-C4-1	3022794.262	674288.1026	0.5	Th-230	0.7	pCi/g	Pre
65-C4-1	3022794.262	674288.1026	0.5	Th-232	0.5	pCi/g	Pre
65-C4-1	3022794.262	674288.1026	0.5	U-233/234	0.5	pCi/g	Pre
65-C4-1	3022794.262	674288.1026	0.5	U-235	0.1	pCi/g	Pre
65-C4-1	3022794.262	674288.1026	0.5	U-238	0.9	pCi/g	Pre

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Historical Dataset, Survey Unit 2

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
67-A6-1	3022847.727	674239.0955	0.5	Am-241	-0.01	pCi/g	Pre
67-A6-1	3022847.727	674239.0955	0.5	Pu-238	0.05	pCi/g	Pre
67-A6-1	3022847.727	674239.0955	0.5	Pu-239/240	0.18	pCi/g	Pre
67-A6-1	3022847.727	674239.0955	0.5	Pu-241	-0.05	pCi/g	Pre
67-A6-1	3022847.727	674239.0955	0.5	Pu-242	0	pCi/g	Pre
67-A6-1	3022847.727	674239.0955	0.5	Tc-99	1.6	pCi/g	Pre
67-A6-1	3022847.727	674239.0955	0.5	Th-230	0.6	pCi/g	Pre
67-A6-1	3022847.727	674239.0955	0.5	Th-232	0.9	pCi/g	Pre
67-A6-1	3022847.727	674239.0955	0.5	U-233/234	3.3	pCi/g	Pre
67-A6-1	3022847.727	674239.0955	0.5	U-235	0.1	pCi/g	Pre
67-A6-1	3022847.727	674239.0955	0.5	U-238	1	pCi/g	Pre
67-A6-2	3022847.727	674239.0955	1.5	Am-241	-0.08	pCi/g	Pre
67-A6-2	3022847.727	674239.0955	1.5	Pu-238	0	pCi/g	Pre
67-A6-2	3022847.727	674239.0955	1.5	Pu-239/240	0.08	pCi/g	Pre
67-A6-2	3022847.727	674239.0955	1.5	Pu-241	-0.38	pCi/g	Pre
67-A6-2	3022847.727	674239.0955	1.5	Pu-242	0	pCi/g	Pre
67-A6-2	3022847.727	674239.0955	1.5	Tc-99	1.5	pCi/g	Pre
67-A6-2	3022847.727	674239.0955	1.5	Th-230	0.6	pCi/g	Pre
67-A6-2	3022847.727	674239.0955	1.5	Th-232	1	pCi/g	Pre
67-A6-2	3022847.727	674239.0955	1.5	U-233/234	3.1	pCi/g	Pre
67-A6-2	3022847.727	674239.0955	1.5	U-235	0.1	pCi/g	Pre
67-A6-2	3022847.727	674239.0955	1.5	U-238	1	pCi/g	Pre
68-D5-1	3022877.19	674229.0134	0.5	Am-241	0.16	pCi/g	Pre
68-D5-1	3022877.19	674229.0134	0.5	Pu-238	0.03	pCi/g	Pre
68-D5-1	3022877.19	674229.0134	0.5	Pu-239/240	0.14	pCi/g	Pre
68-D5-1	3022877.19	674229.0134	0.5	Pu-241	0	pCi/g	Pre
68-D5-1	3022877.19	674229.0134	0.5	Pu-242	0	pCi/g	Pre
68-D5-1	3022877.19	674229.0134	0.5	Tc-99	0	pCi/g	Pre
68-D5-1	3022877.19	674229.0134	0.5	Th-230	1.3	pCi/g	Pre
68-D5-1	3022877.19	674229.0134	0.5	Th-232	1.5	pCi/g	Pre
68-D5-1	3022877.19	674229.0134	0.5	U-233/234	13	pCi/g	Pre
68-D5-1	3022877.19	674229.0134	0.5	U-235	0.4	pCi/g	Pre
68-D5-1	3022877.19	674229.0134	0.5	U-238	2	pCi/g	Pre
68-F5-1	3022881.167	674234.2338	0.5	Am-241	-0.06	pCi/g	Pre
68-F5-1	3022881.167	674234.2338	0.5	Pu-238	0	pCi/g	Pre
68-F5-1	3022881.167	674234.2338	0.5	Pu-239/240	0	pCi/g	Pre
68-F5-1	3022881.167	674234.2338	0.5	Pu-241	0	pCi/g	Pre
68-F5-1	3022881.167	674234.2338	0.5	Pu-242	0	pCi/g	Pre
68-F5-1	3022881.167	674234.2338	0.5	Tc-99	0	pCi/g	Pre
68-F5-1	3022881.167	674234.2338	0.5	Th-230	4.7	pCi/g	Pre
68-F5-1	3022881.167	674234.2338	0.5	Th-232	8.9	pCi/g	Pre
68-F5-1	3022881.167	674234.2338	0.5	U-233/234	54.9	pCi/g	Pre
68-F5-1	3022881.167	674234.2338	0.5	U-235	2.1	pCi/g	Pre
68-F5-1	3022881.167	674234.2338	0.5	U-238	6.8	pCi/g	Pre
68-F5-2	3022881.167	674234.2338	1.5	Am-241	0.03	pCi/g	Pre
68-F5-2	3022881.167	674234.2338	1.5	Pu-238	0	pCi/g	Pre
68-F5-2	3022881.167	674234.2338	1.5	Pu-239/240	0	pCi/g	Pre
68-F5-2	3022881.167	674234.2338	1.5	Pu-241	0	pCi/g	Pre
68-F5-2	3022881.167	674234.2338	1.5	Pu-242	0	pCi/g	Pre
68-F5-2	3022881.167	674234.2338	1.5	Tc-99	0	pCi/g	Pre
68-F5-2	3022881.167	674234.2338	1.5	Th-230	1.2	pCi/g	Pre
68-F5-2	3022881.167	674234.2338	1.5	Th-232	2	pCi/g	Pre
68-F5-2	3022881.167	674234.2338	1.5	U-233/234	9.8	pCi/g	Pre
68-F5-2	3022881.167	674234.2338	1.5	U-235	0.4	pCi/g	Pre
68-F5-2	3022881.167	674234.2338	1.5	U-238	2.1	pCi/g	Pre

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Historical Dataset, Survey Unit 2

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
694-E8-1	3022913.121	674205.7496	0.5	Am-241	0.08	pCi/g	Pre
694-E8-1	3022913.121	674205.7496	0.5	Pu-238	0.01	pCi/g	Pre
694-E8-1	3022913.121	674205.7496	0.5	Pu-239/240	0.21	pCi/g	Pre
694-E8-1	3022913.121	674205.7496	0.5	Pu-241	0.34	pCi/g	Pre
694-E8-1	3022913.121	674205.7496	0.5	Pu-242	0	pCi/g	Pre
694-E8-1	3022913.121	674205.7496	0.5	Tc-99	1.4	pCi/g	Pre
694-E8-1	3022913.121	674205.7496	0.5	Th-230	0.6	pCi/g	Pre
694-E8-1	3022913.121	674205.7496	0.5	Th-232	0.9	pCi/g	Pre
694-E8-1	3022913.121	674205.7496	0.5	U-233/234	2.8	pCi/g	Pre
694-E8-1	3022913.121	674205.7496	0.5	U-235	0.1	pCi/g	Pre
694-E8-1	3022913.121	674205.7496	0.5	U-238	1.1	pCi/g	Pre
69-F9-1	3022917.72	674206.3695	0.5	Am-241	0.12	pCi/g	Pre
69-F9-1	3022917.72	674206.3695	0.5	Pu-238	-0.1	pCi/g	Pre
69-F9-1	3022917.72	674206.3695	0.5	Pu-239/240	0	pCi/g	Pre
69-F9-1	3022917.72	674206.3695	0.5	Pu-241	0	pCi/g	Pre
69-F9-1	3022917.72	674206.3695	0.5	Pu-242	0	pCi/g	Pre
69-F9-1	3022917.72	674206.3695	0.5	Tc-99	1.6	pCi/g	Pre
69-F9-1	3022917.72	674206.3695	0.5	Th-230	1.6	pCi/g	Pre
69-F9-1	3022917.72	674206.3695	0.5	Th-232	1	pCi/g	Pre
69-F9-1	3022917.72	674206.3695	0.5	U-233/234	1.3	pCi/g	Pre
69-F9-1	3022917.72	674206.3695	0.5	U-235	0.2	pCi/g	Pre
69-F9-1	3022917.72	674206.3695	0.5	U-238	0.9	pCi/g	Pre
69-J3-1	3022910.007	674228.7521	0.5	Am-241	0.55	pCi/g	Pre
69-J3-1	3022910.007	674228.7521	0.5	Pu-238	0.06	pCi/g	Pre
69-J3-1	3022910.007	674228.7521	0.5	Pu-239/240	1.5	pCi/g	Pre
69-J3-1	3022910.007	674228.7521	0.5	Pu-241	2.46	pCi/g	Pre
69-J3-1	3022910.007	674228.7521	0.5	Pu-242	0	pCi/g	Pre
69-J3-1	3022910.007	674228.7521	0.5	Tc-99	2	pCi/g	Pre
69-J3-1	3022910.007	674228.7521	0.5	Th-230	3.1	pCi/g	Pre
69-J3-1	3022910.007	674228.7521	0.5	Th-232	3.2	pCi/g	Pre
69-J3-1	3022910.007	674228.7521	0.5	U-233/234	8	pCi/g	Pre
69-J3-1	3022910.007	674228.7521	0.5	U-235	0.3	pCi/g	Pre
69-J3-1	3022910.007	674228.7521	0.5	U-238	2	pCi/g	Pre
71-F2-1	3022951.662	674180.4956	0.5	Am-241	0.11	pCi/g	Pre
71-F2-1	3022951.662	674180.4956	0.5	Pu-238	0.08	pCi/g	Pre
71-F2-1	3022951.662	674180.4956	0.5	Pu-239/240	0.08	pCi/g	Pre
71-F2-1	3022951.662	674180.4956	0.5	Pu-241	0	pCi/g	Pre
71-F2-1	3022951.662	674180.4956	0.5	Pu-242	0	pCi/g	Pre
71-F2-1	3022951.662	674180.4956	0.5	Tc-99	0	pCi/g	Pre
71-F2-1	3022951.662	674180.4956	0.5	Th-230	1.4	pCi/g	Pre
71-F2-1	3022951.662	674180.4956	0.5	Th-232	0.6	pCi/g	Pre
71-F2-1	3022951.662	674180.4956	0.5	U-233/234	1.4	pCi/g	Pre
71-F2-1	3022951.662	674180.4956	0.5	U-235	0.1	pCi/g	Pre
71-F2-1	3022951.662	674180.4956	0.5	U-238	1.5	pCi/g	Pre
73-I9-1	3023028.123	674134.588	0.5	Am-241	0.25	pCi/g	Pre
73-I9-1	3023028.123	674134.588	0.5	Pu-238	0	pCi/g	Pre
73-I9-1	3023028.123	674134.588	0.5	Pu-239/240	0.02	pCi/g	Pre
73-I9-1	3023028.123	674134.588	0.5	Pu-241	0	pCi/g	Pre
73-I9-1	3023028.123	674134.588	0.5	Pu-242	0	pCi/g	Pre
73-I9-1	3023028.123	674134.588	0.5	Tc-99	0	pCi/g	Pre
73-I9-1	3023028.123	674134.588	0.5	Th-230	1.1	pCi/g	Pre
73-I9-1	3023028.123	674134.588	0.5	Th-232	1	pCi/g	Pre
73-I9-1	3023028.123	674134.588	0.5	U-233/234	1	pCi/g	Pre
73-I9-1	3023028.123	674134.588	0.5	U-235	0.2	pCi/g	Pre
73-I9-1	3023028.123	674134.588	0.5	U-238	0.9	pCi/g	Pre

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Historical Dataset, Survey Unit 2

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
74-C2-1	3023024.026	674112.9559	0.5	Am-241	0.02	pCi/g	Pre
74-C2-1	3023024.026	674112.9559	0.5	Pu-238	0.08	pCi/g	Pre
74-C2-1	3023024.026	674112.9559	0.5	Pu-239/240	0.07	pCi/g	Pre
74-C2-1	3023024.026	674112.9559	0.5	Pu-241	0	pCi/g	Pre
74-C2-1	3023024.026	674112.9559	0.5	Pu-242	0	pCi/g	Pre
74-C2-1	3023024.026	674112.9559	0.5	Tc-99	1.4	pCi/g	Pre
74-C2-1	3023024.026	674112.9559	0.5	Th-230	1.2	pCi/g	Pre
74-C2-1	3023024.026	674112.9559	0.5	Th-232	1.1	pCi/g	Pre
74-C2-1	3023024.026	674112.9559	0.5	U-233/234	1.9	pCi/g	Pre
74-C2-1	3023024.026	674112.9559	0.5	U-235	0.2	pCi/g	Pre
74-C2-1	3023024.026	674112.9559	0.5	U-238	1.3	pCi/g	Pre
83-B1-1	3022634.011	674364.8765	0.5	Am-241	0	pCi/g	Pre
83-B1-1	3022634.011	674364.8765	0.5	Pu-238	0.11	pCi/g	Pre
83-B1-1	3022634.011	674364.8765	0.5	Pu-239/240	0.65	pCi/g	Pre
83-B1-1	3022634.011	674364.8765	0.5	Pu-241	0	pCi/g	Pre
83-B1-1	3022634.011	674364.8765	0.5	Pu-242	0	pCi/g	Pre
83-B1-1	3022634.011	674364.8765	0.5	Tc-99	-0.5	pCi/g	Pre
83-B1-1	3022634.011	674364.8765	0.5	Th-230	0.5	pCi/g	Pre
83-B1-1	3022634.011	674364.8765	0.5	Th-232	0.6	pCi/g	Pre
83-B1-1	3022634.011	674364.8765	0.5	U-233/234	2.6	pCi/g	Pre
83-B1-1	3022634.011	674364.8765	0.5	U-235	0.2	pCi/g	Pre
83-B1-1	3022634.011	674364.8765	0.5	U-238	1.3	pCi/g	Pre
85-J1-1	3022702.136	674345.952	0.5	Am-241	-0.1	pCi/g	Pre
85-J1-1	3022702.136	674345.952	0.5	Pu-238	-0.07	pCi/g	Pre
85-J1-1	3022702.136	674345.952	0.5	Pu-239/240	0.07	pCi/g	Pre
85-J1-1	3022702.136	674345.952	0.5	Pu-241	0	pCi/g	Pre
85-J1-1	3022702.136	674345.952	0.5	Pu-242	0	pCi/g	Pre
85-J1-1	3022702.136	674345.952	0.5	Tc-99	3.3	pCi/g	Pre
85-J1-1	3022702.136	674345.952	0.5	Th-230	0.9	pCi/g	Pre
85-J1-1	3022702.136	674345.952	0.5	Th-232	1	pCi/g	Pre
85-J1-1	3022702.136	674345.952	0.5	U-233/234	6.7	pCi/g	Pre
85-J1-1	3022702.136	674345.952	0.5	U-235	0.1	pCi/g	Pre
85-J1-1	3022702.136	674345.952	0.5	U-238	1	pCi/g	Pre
94-I8-1	3022953.411	674150.2823	0.5	Am-241	0.06	pCi/g	Pre
94-I8-1	3022953.411	674150.2823	0.5	Pu-238	0	pCi/g	Pre
94-I8-1	3022953.411	674150.2823	0.5	Pu-239/240	0	pCi/g	Pre
94-I8-1	3022953.411	674150.2823	0.5	Pu-241	0	pCi/g	Pre
94-I8-1	3022953.411	674150.2823	0.5	Pu-242	0	pCi/g	Pre
94-I8-1	3022953.411	674150.2823	0.5	Tc-99	0	pCi/g	Pre
94-I8-1	3022953.411	674150.2823	0.5	Th-230	0.9	pCi/g	Pre
94-I8-1	3022953.411	674150.2823	0.5	Th-232	1.5	pCi/g	Pre
94-I8-1	3022953.411	674150.2823	0.5	U-233/234	0	pCi/g	Pre
94-I8-1	3022953.411	674150.2823	0.5	U-235	0	pCi/g	Pre
94-I8-1	3022953.411	674150.2823	0.5	U-238	0	pCi/g	Pre
94-I8-2	3022953.411	674150.2823	1.5	Am-241	0.28	pCi/g	Pre
94-I8-2	3022953.411	674150.2823	1.5	Pu-238	0	pCi/g	Pre
94-I8-2	3022953.411	674150.2823	1.5	Pu-239/240	0	pCi/g	Pre
94-I8-2	3022953.411	674150.2823	1.5	Pu-241	0	pCi/g	Pre
94-I8-2	3022953.411	674150.2823	1.5	Pu-242	0	pCi/g	Pre
94-I8-2	3022953.411	674150.2823	1.5	Tc-99	0	pCi/g	Pre
94-I8-2	3022953.411	674150.2823	1.5	Th-230	0.8	pCi/g	Pre
94-I8-2	3022953.411	674150.2823	1.5	Th-232	1.2	pCi/g	Pre
94-I8-2	3022953.411	674150.2823	1.5	U-233/234	4.3	pCi/g	Pre
94-I8-2	3022953.411	674150.2823	1.5	U-235	0.2	pCi/g	Pre
94-I8-2	3022953.411	674150.2823	1.5	U-238	1.2	pCi/g	Pre

Historical Dataset, Survey Unit 2

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
95-J4-1	3022971.065	674140.9507	0.5	Am-241	0.08	pCi/g	Pre
95-J4-1	3022971.065	674140.9507	0.5	Pu-238	-0.03	pCi/g	Pre
95-J4-1	3022971.065	674140.9507	0.5	Pu-239/240	-0.01	pCi/g	Pre
95-J4-1	3022971.065	674140.9507	0.5	Pu-241	0	pCi/g	Pre
95-J4-1	3022971.065	674140.9507	0.5	Pu-242	0	pCi/g	Pre
95-J4-1	3022971.065	674140.9507	0.5	Tc-99	0	pCi/g	Pre
95-J4-1	3022971.065	674140.9507	0.5	Th-230	1.3	pCi/g	Pre
95-J4-1	3022971.065	674140.9507	0.5	Th-232	1.2	pCi/g	Pre
95-J4-1	3022971.065	674140.9507	0.5	U-233/234	1.2	pCi/g	Pre
95-J4-1	3022971.065	674140.9507	0.5	U-235	0.2	pCi/g	Pre
95-J4-1	3022971.065	674140.9507	0.5	U-238	1	pCi/g	Pre
AOC5-SD-012	3023083.531	674261.5091	0.5	Am-241	0.02	pCi/g	Pre
AOC5-SD-012	3023083.531	674261.5091	0.5	Pu-238	0.05	pCi/g	Pre
AOC5-SD-012	3023083.531	674261.5091	0.5	Pu-239/240	0.05	pCi/g	Pre
AOC5-SD-012	3023083.531	674261.5091	0.5	Pu-241	4.7	pCi/g	Pre
AOC5-SD-012	3023083.531	674261.5091	0.5	Pu-242	0	pCi/g	Pre
AOC5-SD-012	3023083.531	674261.5091	0.5	Tc-99	0.5	pCi/g	Pre
AOC5-SD-012	3023083.531	674261.5091	0.5	Th-230	0.6	pCi/g	Pre
AOC5-SD-012	3023083.531	674261.5091	0.5	Th-232	0.7	pCi/g	Pre
AOC5-SD-012	3023083.531	674261.5091	0.5	U-233/234	1.2	pCi/g	Pre
AOC5-SD-012	3023083.531	674261.5091	0.5	U-235	0	pCi/g	Pre
AOC5-SD-012	3023083.531	674261.5091	0.5	U-238	0.7	pCi/g	Pre
AOC5-SD-005	3022276.091	674518.0656	0.5	Am-241	1.97	pCi/g	Pre
AOC5-SD-005	3022276.091	674518.0656	0.5	Pu-238	0.22	pCi/g	Pre
AOC5-SD-005	3022276.091	674518.0656	0.5	Pu-239/240	5.43	pCi/g	Pre
AOC5-SD-005	3022276.091	674518.0656	0.5	Pu-241	70.4	pCi/g	Pre
AOC5-SD-005	3022276.091	674518.0656	0.5	Pu-242	0	pCi/g	Pre
AOC5-SD-005	3022276.091	674518.0656	0.5	Tc-99	3.7	pCi/g	Pre
AOC5-SD-005	3022276.091	674518.0656	0.5	Th-230	1	pCi/g	Pre
AOC5-SD-005	3022276.091	674518.0656	0.5	Th-232	2.1	pCi/g	Pre
AOC5-SD-005	3022276.091	674518.0656	0.5	U-233/234	29.9	pCi/g	Pre
AOC5-SD-005	3022276.091	674518.0656	0.5	U-235	0.7	pCi/g	Pre
AOC5-SD-005	3022276.091	674518.0656	0.5	U-238	4.4	pCi/g	Pre
NSC-MCSD-001	3022276.714	674513.4651	0.5	Am-241	0	pCi/g	Pre
NSC-MCSD-001	3022276.714	674513.4651	0.5	Pu-238	0	pCi/g	Pre
NSC-MCSD-001	3022276.714	674513.4651	0.5	Pu-239/240	0	pCi/g	Pre
NSC-MCSD-001	3022276.714	674513.4651	0.5	Pu-241	0	pCi/g	Pre
NSC-MCSD-001	3022276.714	674513.4651	0.5	Pu-242	0	pCi/g	Pre
NSC-MCSD-001	3022276.714	674513.4651	0.5	Tc-99	0	pCi/g	Pre
NSC-MCSD-001	3022276.714	674513.4651	0.5	Th-230	1.3	pCi/g	Pre
NSC-MCSD-001	3022276.714	674513.4651	0.5	Th-232	2.1	pCi/g	Pre
NSC-MCSD-001	3022276.714	674513.4651	0.5	U-233/234	5.9	pCi/g	Pre
NSC-MCSD-001	3022276.714	674513.4651	0.5	U-235	0.2	pCi/g	Pre
NSC-MCSD-001	3022276.714	674513.4651	0.5	U-238	1.5	pCi/g	Pre

Appendix A.2

Historical Dataset, Survey Unit 8

Historical Dataset, Survey Unit 8

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
1705	3022217.558	674308.6949	5	Am-241	84	pCi/g	Post
1705	3022217.558	674308.6949	5	Th-232	7.1	pCi/g	Post
1705	3022217.558	674308.6949	5	U-235	5.3	pCi/g	Post
1706	3022232.292	674322.5128	5	Am-241	55	pCi/g	Post
1706	3022232.292	674322.5128	5	Th-232	5.2	pCi/g	Post
1706	3022232.292	674322.5128	5	U-235	1.2	pCi/g	Post
1708	3022217.558	674337.5869	5	Am-241	24	pCi/g	Post
1708	3022217.558	674337.5869	5	Th-232	6.2	pCi/g	Post
1708	3022217.558	674337.5869	5	U-235	4.7	pCi/g	Post
1710	3022232.292	674350.1486	5	Am-241	13	pCi/g	Post
1710	3022232.292	674350.1486	5	Th-232	6.1	pCi/g	Post
1710	3022232.292	674350.1486	5	U-235	0.79	pCi/g	Post
1712	3022217.558	674366.4788	5	Am-241	84	pCi/g	Post
1712	3022217.558	674366.4788	5	Th-232	8.9	pCi/g	Post
1712	3022217.558	674366.4788	5	U-235	5.6	pCi/g	Post
1713	3022232.292	674380.2967	5	Am-241	21	pCi/g	Post
1713	3022232.292	674380.2967	5	Th-232	5.1	pCi/g	Post
1713	3022232.292	674380.2967	5	U-235	1.9	pCi/g	Post
1714	3022245.973	674395.3708	5	Am-241	82	pCi/g	Post
1714	3022245.973	674395.3708	5	Th-232	4.8	pCi/g	Post
1714	3022245.973	674395.3708	5	U-235	1.7	pCi/g	Post
1715	3022217.558	674395.3708	5	Am-241	4.8	pCi/g	Post
1715	3022217.558	674395.3708	5	Th-232	2.3	pCi/g	Post
1715	3022217.558	674395.3708	5	U-235	1.6	pCi/g	Post
1716	3022232.292	674407.9325	5	Am-241	5.9	pCi/g	Post
1716	3022232.292	674407.9325	5	Th-232	3.3	pCi/g	Post
1716	3022232.292	674407.9325	5	U-235	1.5	pCi/g	Post
1718	3022245.973	674423.0065	5	Th-232	1.8	pCi/g	Post
1718	3022245.973	674423.0065	5	U-235	0.14	pCi/g	Post
1719	3022217.558	674423.0065	5	Am-241	31	pCi/g	Post
1719	3022217.558	674423.0065	5	Th-232	11	pCi/g	Post
1719	3022217.558	674423.0065	5	U-235	2.2	pCi/g	Post
1720	3022232.292	674436.8244	5	Am-241	2.3	pCi/g	Post
1720	3022232.292	674436.8244	5	Th-232	13	pCi/g	Post
1720	3022232.292	674436.8244	5	U-235	-0.17	pCi/g	Post
1721	3022245.973	674453.1547	5	Am-241	1.1	pCi/g	Post
1721	3022245.973	674453.1547	5	U-235	2.8	pCi/g	Post
1722	3022217.558	674453.1547	5	Am-241	2.7	pCi/g	Post
1722	3022217.558	674453.1547	5	Th-232	2.3	pCi/g	Post
1722	3022217.558	674453.1547	5	U-235	1.1	pCi/g	Post
1723	3022232.292	674465.7164	5	Am-241	2.5	pCi/g	Post
1723	3022232.292	674465.7164	5	Th-232	4	pCi/g	Post
1723	3022232.292	674465.7164	5	U-235	2	pCi/g	Post
1724	3022245.973	674480.7904	5	Am-241	7.2	pCi/g	Post
1724	3022245.973	674480.7904	5	Th-232	23	pCi/g	Post
1724	3022245.973	674480.7904	5	U-235	11	pCi/g	Post
1728	3022217.558	674509.6824	5	Am-241	1.7	pCi/g	Post
1728	3022217.558	674509.6824	5	Th-232	6.6	pCi/g	Post
1728	3022217.558	674509.6824	5	U-235	1.4	pCi/g	Post
195-B9-1	3022235.944	674503.2856	5.5	Am-241	0.07	pCi/g	Pre
195-B9-1	3022235.944	674503.2856	5.5	Th-232	1.6	pCi/g	Pre
195-B9-1	3022235.944	674503.2856	5.5	U-235	0.1	pCi/g	Pre
195-B9-1	3022235.944	674503.2856	5.5	Pu-238	0.01	pCi/g	Pre
195-B9-1	3022235.944	674503.2856	5.5	Pu-239/240	0.19	pCi/g	Pre
195-B9-1	3022235.944	674503.2856	5.5	Pu-241	0.31	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
195-B9-1	3022235.944	674503.2856	5.5	Pu-242	0	pCi/g	Pre
195-B9-1	3022235.944	674503.2856	5.5	Tc-99	1.4	pCi/g	Pre
195-B9-1	3022235.944	674503.2856	5.5	Th-230	1	pCi/g	Pre
195-B9-1	3022235.944	674503.2856	5.5	U-233/234	2.3	pCi/g	Pre
195-B9-1	3022235.944	674503.2856	5.5	U-238	0.8	pCi/g	Pre
197-B8-1	3022285.552	674465.4698	5.5	Am-241	0.75	pCi/g	Pre
197-B8-1	3022285.552	674465.4698	5.5	Th-232	1.6	pCi/g	Pre
197-B8-1	3022285.552	674465.4698	5.5	U-235	1.3	pCi/g	Pre
197-B8-1	3022285.552	674465.4698	5.5	Pu-238	0.14	pCi/g	Pre
197-B8-1	3022285.552	674465.4698	5.5	Pu-239/240	4.5	pCi/g	Pre
197-B8-1	3022285.552	674465.4698	5.5	Pu-241	7.38	pCi/g	Pre
197-B8-1	3022285.552	674465.4698	5.5	Pu-242	0	pCi/g	Pre
197-B8-1	3022285.552	674465.4698	5.5	Tc-99	4.1	pCi/g	Pre
197-B8-1	3022285.552	674465.4698	5.5	Th-230	1.4	pCi/g	Pre
197-B8-1	3022285.552	674465.4698	5.5	U-233/234	40	pCi/g	Pre
197-B8-1	3022285.552	674465.4698	5.5	U-238	3.8	pCi/g	Pre
198-B2-1	3022295.996	674457.5086	5.5	Am-241	5.86	pCi/g	Pre
198-B2-1	3022295.996	674457.5086	5.5	Th-232	3.6	pCi/g	Pre
198-B2-1	3022295.996	674457.5086	5.5	U-235	3.6	pCi/g	Pre
198-B2-1	3022295.996	674457.5086	5.5	Pu-238	2.4	pCi/g	Pre
198-B2-1	3022295.996	674457.5086	5.5	Pu-239/240	60	pCi/g	Pre
198-B2-1	3022295.996	674457.5086	5.5	Pu-241	98.4	pCi/g	Pre
198-B2-1	3022295.996	674457.5086	5.5	Pu-242	0	pCi/g	Pre
198-B2-1	3022295.996	674457.5086	5.5	Tc-99	10.1	pCi/g	Pre
198-B2-1	3022295.996	674457.5086	5.5	Th-230	2	pCi/g	Pre
198-B2-1	3022295.996	674457.5086	5.5	U-233/234	110	pCi/g	Pre
198-B2-1	3022295.996	674457.5086	5.5	U-238	3.1	pCi/g	Pre
198-H9-1	3022326.202	674459.2376	5.5	Am-241	-0.15	pCi/g	Pre
198-H9-1	3022326.202	674459.2376	5.5	Th-232	0.5	pCi/g	Pre
198-H9-1	3022326.202	674459.2376	5.5	U-235	0.1	pCi/g	Pre
198-H9-1	3022326.202	674459.2376	5.5	Pu-238	-0.06	pCi/g	Pre
198-H9-1	3022326.202	674459.2376	5.5	Pu-239/240	0.08	pCi/g	Pre
198-H9-1	3022326.202	674459.2376	5.5	Pu-241	0.13	pCi/g	Pre
198-H9-1	3022326.202	674459.2376	5.5	Pu-242	0	pCi/g	Pre
198-H9-1	3022326.202	674459.2376	5.5	Tc-99	0.2	pCi/g	Pre
198-H9-1	3022326.202	674459.2376	5.5	Th-230	0.7	pCi/g	Pre
198-H9-1	3022326.202	674459.2376	5.5	U-233/234	2	pCi/g	Pre
198-H9-1	3022326.202	674459.2376	5.5	U-238	0.9	pCi/g	Pre
199-B1-1	3022319.495	674439.5958	5.5	Am-241	-0.15	pCi/g	Pre
199-B1-1	3022319.495	674439.5958	5.5	Th-232	1.2	pCi/g	Pre
199-B1-1	3022319.495	674439.5958	5.5	U-235	0.2	pCi/g	Pre
199-B1-1	3022319.495	674439.5958	5.5	Pu-238	0	pCi/g	Pre
199-B1-1	3022319.495	674439.5958	5.5	Pu-239/240	0	pCi/g	Pre
199-B1-1	3022319.495	674439.5958	5.5	Pu-241	0	pCi/g	Pre
199-B1-1	3022319.495	674439.5958	5.5	Pu-242	0	pCi/g	Pre
199-B1-1	3022319.495	674439.5958	5.5	Tc-99	0	pCi/g	Pre
199-B1-1	3022319.495	674439.5958	5.5	Th-230	0.8	pCi/g	Pre
199-B1-1	3022319.495	674439.5958	5.5	U-233/234	4.7	pCi/g	Pre
199-B1-1	3022319.495	674439.5958	5.5	U-238	1.3	pCi/g	Pre
199-B1-2	3022319.495	674439.5958	6.5	Am-241	-0.01	pCi/g	Pre
199-B1-2	3022319.495	674439.5958	6.5	Th-232	0.1	pCi/g	Pre
199-B1-2	3022319.495	674439.5958	6.5	U-235	0	pCi/g	Pre
199-B1-2	3022319.495	674439.5958	6.5	Pu-238	0	pCi/g	Pre
199-B1-2	3022319.495	674439.5958	6.5	Pu-239/240	0	pCi/g	Pre
199-B1-2	3022319.495	674439.5958	6.5	Pu-241	0	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
199-B1-2	3022319.495	674439.5958	6.5	Pu-242	0	pCi/g	Pre
199-B1-2	3022319.495	674439.5958	6.5	Tc-99	0	pCi/g	Pre
199-B1-2	3022319.495	674439.5958	6.5	Th-230	0.1	pCi/g	Pre
199-B1-2	3022319.495	674439.5958	6.5	U-233/234	0.4	pCi/g	Pre
199-B1-2	3022319.495	674439.5958	6.5	U-238	0.2	pCi/g	Pre
199-C1-1	3022321.483	674442.206	5.5	Am-241	0.2	pCi/g	Pre
199-C1-1	3022321.483	674442.206	5.5	Th-232	0.6	pCi/g	Pre
199-C1-1	3022321.483	674442.206	5.5	U-235	0.2	pCi/g	Pre
199-C1-1	3022321.483	674442.206	5.5	Pu-238	-0.03	pCi/g	Pre
199-C1-1	3022321.483	674442.206	5.5	Pu-239/240	0.25	pCi/g	Pre
199-C1-1	3022321.483	674442.206	5.5	Pu-241	0	pCi/g	Pre
199-C1-1	3022321.483	674442.206	5.5	Pu-242	0	pCi/g	Pre
199-C1-1	3022321.483	674442.206	5.5	Tc-99	0.1	pCi/g	Pre
199-C1-1	3022321.483	674442.206	5.5	Th-230	0.8	pCi/g	Pre
199-C1-1	3022321.483	674442.206	5.5	U-233/234	3.6	pCi/g	Pre
199-C1-1	3022321.483	674442.206	5.5	U-238	1.1	pCi/g	Pre
200-I1-1	3022359.522	674437.9642	5.5	Am-241	0.12	pCi/g	Pre
200-I1-1	3022359.522	674437.9642	5.5	Th-232	0.9	pCi/g	Pre
200-I1-1	3022359.522	674437.9642	5.5	U-235	0.3	pCi/g	Pre
200-I1-1	3022359.522	674437.9642	5.5	Pu-238	-0.03	pCi/g	Pre
200-I1-1	3022359.522	674437.9642	5.5	Pu-239/240	0.05	pCi/g	Pre
200-I1-1	3022359.522	674437.9642	5.5	Pu-241	0	pCi/g	Pre
200-I1-1	3022359.522	674437.9642	5.5	Pu-242	0	pCi/g	Pre
200-I1-1	3022359.522	674437.9642	5.5	Tc-99	0	pCi/g	Pre
200-I1-1	3022359.522	674437.9642	5.5	Th-230	0.8	pCi/g	Pre
200-I1-1	3022359.522	674437.9642	5.5	U-233/234	3.2	pCi/g	Pre
200-I1-1	3022359.522	674437.9642	5.5	U-238	0.6	pCi/g	Pre
230-I2-1	3022211.703	674509.3871	5.5	Am-241	0.08	pCi/g	Pre
230-I2-1	3022211.703	674509.3871	5.5	Th-232	1.1	pCi/g	Pre
230-I2-1	3022211.703	674509.3871	5.5	U-235	0.1	pCi/g	Pre
230-I2-1	3022211.703	674509.3871	5.5	Pu-238	0	pCi/g	Pre
230-I2-1	3022211.703	674509.3871	5.5	Pu-239/240	0	pCi/g	Pre
230-I2-1	3022211.703	674509.3871	5.5	Pu-241	0	pCi/g	Pre
230-I2-1	3022211.703	674509.3871	5.5	Pu-242	0	pCi/g	Pre
230-I2-1	3022211.703	674509.3871	5.5	Tc-99	0	pCi/g	Pre
230-I2-1	3022211.703	674509.3871	5.5	Th-230	0.7	pCi/g	Pre
230-I2-1	3022211.703	674509.3871	5.5	U-233/234	3.5	pCi/g	Pre
230-I2-1	3022211.703	674509.3871	5.5	U-238	1.1	pCi/g	Pre
232-C0-1	3022246.77	674457.9004	5.5	Am-241	-0.12	pCi/g	Pre
232-C0-1	3022246.77	674457.9004	5.5	Th-232	1.2	pCi/g	Pre
232-C0-1	3022246.77	674457.9004	5.5	U-235	0.5	pCi/g	Pre
232-C0-1	3022246.77	674457.9004	5.5	Pu-238	0.01	pCi/g	Pre
232-C0-1	3022246.77	674457.9004	5.5	Pu-239/240	0.41	pCi/g	Pre
232-C0-1	3022246.77	674457.9004	5.5	Pu-241	0.67	pCi/g	Pre
232-C0-1	3022246.77	674457.9004	5.5	Pu-242	0	pCi/g	Pre
232-C0-1	3022246.77	674457.9004	5.5	Tc-99	1.3	pCi/g	Pre
232-C0-1	3022246.77	674457.9004	5.5	Th-230	1.2	pCi/g	Pre
232-C0-1	3022246.77	674457.9004	5.5	U-233/234	10	pCi/g	Pre
232-C0-1	3022246.77	674457.9004	5.5	U-238	1.5	pCi/g	Pre
232-I2-1	3022263.922	674469.581	5.5	Am-241	0.1	pCi/g	Pre
232-I2-1	3022263.922	674469.581	5.5	Th-232	1.6	pCi/g	Pre
232-I2-1	3022263.922	674469.581	5.5	U-235	0.2	pCi/g	Pre
232-I2-1	3022263.922	674469.581	5.5	Pu-238	-0.01	pCi/g	Pre
232-I2-1	3022263.922	674469.581	5.5	Pu-239/240	0.64	pCi/g	Pre
232-I2-1	3022263.922	674469.581	5.5	Pu-241	1.05	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
232-I2-1	3022263.922	674469.581	5.5	Pu-242	0	pCi/g	Pre
232-I2-1	3022263.922	674469.581	5.5	Tc-99	1.8	pCi/g	Pre
232-I2-1	3022263.922	674469.581	5.5	Th-230	2.6	pCi/g	Pre
232-I2-1	3022263.922	674469.581	5.5	U-233/234	7.3	pCi/g	Pre
232-I2-1	3022263.922	674469.581	5.5	U-238	1.8	pCi/g	Pre
233-B5-1	3022283.947	674425.4357	5.5	Am-241	13.87	pCi/g	Pre
233-B5-1	3022283.947	674425.4357	5.5	Th-232	26.5	pCi/g	Pre
233-B5-1	3022283.947	674425.4357	5.5	U-235	29	pCi/g	Pre
233-B5-1	3022283.947	674425.4357	5.5	Pu-238	2.5	pCi/g	Pre
233-B5-1	3022283.947	674425.4357	5.5	Pu-239/240	38.15	pCi/g	Pre
233-B5-1	3022283.947	674425.4357	5.5	Pu-241	62.56	pCi/g	Pre
233-B5-1	3022283.947	674425.4357	5.5	Pu-242	0	pCi/g	Pre
233-B5-1	3022283.947	674425.4357	5.5	Tc-99	10.2	pCi/g	Pre
233-B5-1	3022283.947	674425.4357	5.5	Th-230	12.5	pCi/g	Pre
233-B5-1	3022283.947	674425.4357	5.5	U-233/234	784.8	pCi/g	Pre
233-B5-1	3022283.947	674425.4357	5.5	U-238	41.2	pCi/g	Pre
233-B5-2	3022283.947	674425.4357	6.5	Am-241	5.88	pCi/g	Pre
233-B5-2	3022283.947	674425.4357	6.5	Th-232	15.2	pCi/g	Pre
233-B5-2	3022283.947	674425.4357	6.5	U-235	21	pCi/g	Pre
233-B5-2	3022283.947	674425.4357	6.5	Pu-238	1.06	pCi/g	Pre
233-B5-2	3022283.947	674425.4357	6.5	Pu-239/240	16.18	pCi/g	Pre
233-B5-2	3022283.947	674425.4357	6.5	Pu-241	26.53	pCi/g	Pre
233-B5-2	3022283.947	674425.4357	6.5	Pu-242	0	pCi/g	Pre
233-B5-2	3022283.947	674425.4357	6.5	Tc-99	9.1	pCi/g	Pre
233-B5-2	3022283.947	674425.4357	6.5	Th-230	7.6	pCi/g	Pre
233-B5-2	3022283.947	674425.4357	6.5	U-233/234	564.6	pCi/g	Pre
233-B5-2	3022283.947	674425.4357	6.5	U-238	33	pCi/g	Pre
233-C8-1	3022293.768	674422.075	5.5	Am-241	12.27	pCi/g	Pre
233-C8-1	3022293.768	674422.075	5.5	Th-232	23.9	pCi/g	Pre
233-C8-1	3022293.768	674422.075	5.5	U-235	28.7	pCi/g	Pre
233-C8-1	3022293.768	674422.075	5.5	Pu-238	2.21	pCi/g	Pre
233-C8-1	3022293.768	674422.075	5.5	Pu-239/240	33.75	pCi/g	Pre
233-C8-1	3022293.768	674422.075	5.5	Pu-241	55.35	pCi/g	Pre
233-C8-1	3022293.768	674422.075	5.5	Pu-242	0	pCi/g	Pre
233-C8-1	3022293.768	674422.075	5.5	Tc-99	42.2	pCi/g	Pre
233-C8-1	3022293.768	674422.075	5.5	Th-230	11.4	pCi/g	Pre
233-C8-1	3022293.768	674422.075	5.5	U-233/234	776.9	pCi/g	Pre
233-C8-1	3022293.768	674422.075	5.5	U-238	40.9	pCi/g	Pre
233-C8-2	3022293.768	674422.075	6.5	Am-241	10.46	pCi/g	Pre
233-C8-2	3022293.768	674422.075	6.5	Th-232	24.5	pCi/g	Pre
233-C8-2	3022293.768	674422.075	6.5	U-235	31.2	pCi/g	Pre
233-C8-2	3022293.768	674422.075	6.5	Pu-238	1.88	pCi/g	Pre
233-C8-2	3022293.768	674422.075	6.5	Pu-239/240	28.76	pCi/g	Pre
233-C8-2	3022293.768	674422.075	6.5	Pu-241	47.17	pCi/g	Pre
233-C8-2	3022293.768	674422.075	6.5	Pu-242	0	pCi/g	Pre
233-C8-2	3022293.768	674422.075	6.5	Tc-99	76.7	pCi/g	Pre
233-C8-2	3022293.768	674422.075	6.5	Th-230	11.7	pCi/g	Pre
233-C8-2	3022293.768	674422.075	6.5	U-233/234	846.7	pCi/g	Pre
233-C8-2	3022293.768	674422.075	6.5	U-238	43.4	pCi/g	Pre
233-I8-1	3022305.697	674437.7362	5.5	Am-241	1.01	pCi/g	Pre
233-I8-1	3022305.697	674437.7362	5.5	Th-232	1.8	pCi/g	Pre
233-I8-1	3022305.697	674437.7362	5.5	U-235	1.1	pCi/g	Pre
233-I8-1	3022305.697	674437.7362	5.5	Pu-238	0.18	pCi/g	Pre
233-I8-1	3022305.697	674437.7362	5.5	Pu-239/240	2.79	pCi/g	Pre
233-I8-1	3022305.697	674437.7362	5.5	Pu-241	4.57	pCi/g	Pre

Historical Dataset, Survey Unit 8

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
233-I8-1	3022305.697	674437.7362	5.5	Pu-242	0	pCi/g	Pre
233-I8-1	3022305.697	674437.7362	5.5	Tc-99	2.1	pCi/g	Pre
233-I8-1	3022305.697	674437.7362	5.5	Th-230	1.1	pCi/g	Pre
233-I8-1	3022305.697	674437.7362	5.5	U-233/234	27.5	pCi/g	Pre
233-I8-1	3022305.697	674437.7362	5.5	U-238	4.3	pCi/g	Pre
233-I8-2	3022305.697	674437.7362	6.5	Am-241	-0.09	pCi/g	Pre
233-I8-2	3022305.697	674437.7362	6.5	Th-232	0.9	pCi/g	Pre
233-I8-2	3022305.697	674437.7362	6.5	U-235	0.3	pCi/g	Pre
233-I8-2	3022305.697	674437.7362	6.5	Pu-238	0	pCi/g	Pre
233-I8-2	3022305.697	674437.7362	6.5	Pu-239/240	0	pCi/g	Pre
233-I8-2	3022305.697	674437.7362	6.5	Pu-241	0	pCi/g	Pre
233-I8-2	3022305.697	674437.7362	6.5	Pu-242	0	pCi/g	Pre
233-I8-2	3022305.697	674437.7362	6.5	Tc-99	0	pCi/g	Pre
233-I8-2	3022305.697	674437.7362	6.5	Th-230	0.6	pCi/g	Pre
233-I8-2	3022305.697	674437.7362	6.5	U-233/234	6.3	pCi/g	Pre
233-I8-2	3022305.697	674437.7362	6.5	U-238	1.6	pCi/g	Pre
234-B1-1	3022299.612	674413.4939	5.5	Am-241	0.1	pCi/g	Pre
234-B1-1	3022299.612	674413.4939	5.5	Th-232	0.9	pCi/g	Pre
234-B1-1	3022299.612	674413.4939	5.5	U-235	0.2	pCi/g	Pre
234-B1-1	3022299.612	674413.4939	5.5	Pu-238	0.02	pCi/g	Pre
234-B1-1	3022299.612	674413.4939	5.5	Pu-239/240	0.27	pCi/g	Pre
234-B1-1	3022299.612	674413.4939	5.5	Pu-241	0.44	pCi/g	Pre
234-B1-1	3022299.612	674413.4939	5.5	Pu-242	0	pCi/g	Pre
234-B1-1	3022299.612	674413.4939	5.5	Tc-99	1.7	pCi/g	Pre
234-B1-1	3022299.612	674413.4939	5.5	Th-230	0.6	pCi/g	Pre
234-B1-1	3022299.612	674413.4939	5.5	U-233/234	4.2	pCi/g	Pre
234-B1-1	3022299.612	674413.4939	5.5	U-238	1.2	pCi/g	Pre
234-B1-2	3022299.612	674413.4939	6.5	Am-241	0.35	pCi/g	Pre
234-B1-2	3022299.612	674413.4939	6.5	Th-232	1	pCi/g	Pre
234-B1-2	3022299.612	674413.4939	6.5	U-235	0.2	pCi/g	Pre
234-B1-2	3022299.612	674413.4939	6.5	Pu-238	0.06	pCi/g	Pre
234-B1-2	3022299.612	674413.4939	6.5	Pu-239/240	0.97	pCi/g	Pre
234-B1-2	3022299.612	674413.4939	6.5	Pu-241	1.58	pCi/g	Pre
234-B1-2	3022299.612	674413.4939	6.5	Pu-242	0	pCi/g	Pre
234-B1-2	3022299.612	674413.4939	6.5	Tc-99	1.7	pCi/g	Pre
234-B1-2	3022299.612	674413.4939	6.5	Th-230	0.7	pCi/g	Pre
234-B1-2	3022299.612	674413.4939	6.5	U-233/234	4.6	pCi/g	Pre
234-B1-2	3022299.612	674413.4939	6.5	U-238	1.3	pCi/g	Pre
234-I7-1	3022329.196	674419.8234	5.5	Am-241	-0.08	pCi/g	Pre
234-I7-1	3022329.196	674419.8234	5.5	Th-232	0.9	pCi/g	Pre
234-I7-1	3022329.196	674419.8234	5.5	U-235	0.1	pCi/g	Pre
234-I7-1	3022329.196	674419.8234	5.5	Pu-238	0	pCi/g	Pre
234-I7-1	3022329.196	674419.8234	5.5	Pu-239/240	0	pCi/g	Pre
234-I7-1	3022329.196	674419.8234	5.5	Pu-241	0	pCi/g	Pre
234-I7-1	3022329.196	674419.8234	5.5	Pu-242	0	pCi/g	Pre
234-I7-1	3022329.196	674419.8234	5.5	Tc-99	1.6	pCi/g	Pre
234-I7-1	3022329.196	674419.8234	5.5	Th-230	0.6	pCi/g	Pre
234-I7-1	3022329.196	674419.8234	5.5	U-233/234	3.6	pCi/g	Pre
234-I7-1	3022329.196	674419.8234	5.5	U-238	1.1	pCi/g	Pre
234-I7-2	3022329.196	674419.8234	6.5	Am-241	0.23	pCi/g	Pre
234-I7-2	3022329.196	674419.8234	6.5	Th-232	0.7	pCi/g	Pre
234-I7-2	3022329.196	674419.8234	6.5	U-235	0.1	pCi/g	Pre
234-I7-2	3022329.196	674419.8234	6.5	Pu-238	0.04	pCi/g	Pre
234-I7-2	3022329.196	674419.8234	6.5	Pu-239/240	0.64	pCi/g	Pre
234-I7-2	3022329.196	674419.8234	6.5	Pu-241	1.05	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
234-I7-2	3022329.196	674419.8234	6.5	Pu-242	0	pCi/g	Pre
234-I7-2	3022329.196	674419.8234	6.5	Tc-99	1.1	pCi/g	Pre
234-I7-2	3022329.196	674419.8234	6.5	Th-230	0.5	pCi/g	Pre
234-I7-2	3022329.196	674419.8234	6.5	U-233/234	1.4	pCi/g	Pre
234-I7-2	3022329.196	674419.8234	6.5	U-238	0.6	pCi/g	Pre
234-I7-3	3022329.196	674419.8234	7.5	Am-241	0.25	pCi/g	Pre
234-I7-3	3022329.196	674419.8234	7.5	Th-232	0.4	pCi/g	Pre
234-I7-3	3022329.196	674419.8234	7.5	U-235	0.1	pCi/g	Pre
234-I7-3	3022329.196	674419.8234	7.5	Pu-238	0.04	pCi/g	Pre
234-I7-3	3022329.196	674419.8234	7.5	Pu-239/240	0.68	pCi/g	Pre
234-I7-3	3022329.196	674419.8234	7.5	Pu-241	1.12	pCi/g	Pre
234-I7-3	3022329.196	674419.8234	7.5	Pu-242	0	pCi/g	Pre
234-I7-3	3022329.196	674419.8234	7.5	Tc-99	1.5	pCi/g	Pre
234-I7-3	3022329.196	674419.8234	7.5	Th-230	0.3	pCi/g	Pre
234-I7-3	3022329.196	674419.8234	7.5	U-233/234	2.8	pCi/g	Pre
234-I7-3	3022329.196	674419.8234	7.5	U-238	0.9	pCi/g	Pre
234-I7-4	3022329.196	674419.8234	8.5	Am-241	0.1	pCi/g	Pre
234-I7-4	3022329.196	674419.8234	8.5	Th-232	1.5	pCi/g	Pre
234-I7-4	3022329.196	674419.8234	8.5	U-235	0	pCi/g	Pre
234-I7-4	3022329.196	674419.8234	8.5	Pu-238	0.02	pCi/g	Pre
234-I7-4	3022329.196	674419.8234	8.5	Pu-239/240	0.26	pCi/g	Pre
234-I7-4	3022329.196	674419.8234	8.5	Pu-241	0.43	pCi/g	Pre
234-I7-4	3022329.196	674419.8234	8.5	Pu-242	0	pCi/g	Pre
234-I7-4	3022329.196	674419.8234	8.5	Tc-99	0.9	pCi/g	Pre
234-I7-4	3022329.196	674419.8234	8.5	Th-230	0.9	pCi/g	Pre
234-I7-4	3022329.196	674419.8234	8.5	U-233/234	0.7	pCi/g	Pre
234-I7-4	3022329.196	674419.8234	8.5	U-238	0.4	pCi/g	Pre
267-E4-1	3022215.199	674448.9607	5.5	Am-241	0.12	pCi/g	Pre
267-E4-1	3022215.199	674448.9607	5.5	Th-232	1.2	pCi/g	Pre
267-E4-1	3022215.199	674448.9607	5.5	U-235	0.5	pCi/g	Pre
267-E4-1	3022215.199	674448.9607	5.5	Pu-238	0.01	pCi/g	Pre
267-E4-1	3022215.199	674448.9607	5.5	Pu-239/240	0.78	pCi/g	Pre
267-E4-1	3022215.199	674448.9607	5.5	Pu-241	0	pCi/g	Pre
267-E4-1	3022215.199	674448.9607	5.5	Pu-242	0	pCi/g	Pre
267-E4-1	3022215.199	674448.9607	5.5	Tc-99	1.2	pCi/g	Pre
267-E4-1	3022215.199	674448.9607	5.5	Th-230	1.5	pCi/g	Pre
267-E4-1	3022215.199	674448.9607	5.5	U-233/234	14	pCi/g	Pre
267-E4-1	3022215.199	674448.9607	5.5	U-238	1.4	pCi/g	Pre
269-F5-1	3022272.017	674409.7745	5.5	Am-241	1.6	pCi/g	Pre
269-F5-1	3022272.017	674409.7745	5.5	Th-232	2.2	pCi/g	Pre
269-F5-1	3022272.017	674409.7745	5.5	U-235	1.6	pCi/g	Pre
269-F5-1	3022272.017	674409.7745	5.5	Pu-238	0.29	pCi/g	Pre
269-F5-1	3022272.017	674409.7745	5.5	Pu-239/240	4.4	pCi/g	Pre
269-F5-1	3022272.017	674409.7745	5.5	Pu-241	7.22	pCi/g	Pre
269-F5-1	3022272.017	674409.7745	5.5	Pu-242	0	pCi/g	Pre
269-F5-1	3022272.017	674409.7745	5.5	Tc-99	2.4	pCi/g	Pre
269-F5-1	3022272.017	674409.7745	5.5	Th-230	1.4	pCi/g	Pre
269-F5-1	3022272.017	674409.7745	5.5	U-233/234	39.8	pCi/g	Pre
269-F5-1	3022272.017	674409.7745	5.5	U-238	5.5	pCi/g	Pre
269-F5-2	3022272.017	674409.7745	6.5	Am-241	-0.12	pCi/g	Pre
269-F5-2	3022272.017	674409.7745	6.5	Th-232	1.4	pCi/g	Pre
269-F5-2	3022272.017	674409.7745	6.5	U-235	0	pCi/g	Pre
269-F5-2	3022272.017	674409.7745	6.5	Pu-238	0	pCi/g	Pre
269-F5-2	3022272.017	674409.7745	6.5	Pu-239/240	0	pCi/g	Pre
269-F5-2	3022272.017	674409.7745	6.5	Pu-241	0	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
269-F5-2	3022272.017	674409.7745	6.5	Pu-242	0	pCi/g	Pre
269-F5-2	3022272.017	674409.7745	6.5	Tc-99	0	pCi/g	Pre
269-F5-2	3022272.017	674409.7745	6.5	Th-230	0.9	pCi/g	Pre
269-F5-2	3022272.017	674409.7745	6.5	U-233/234	0.6	pCi/g	Pre
269-F5-2	3022272.017	674409.7745	6.5	U-238	0.3	pCi/g	Pre
270-C2-1	3022284.329	674388.0118	5.5	Am-241	0.96	pCi/g	Pre
270-C2-1	3022284.329	674388.0118	5.5	Th-232	1.9	pCi/g	Pre
270-C2-1	3022284.329	674388.0118	5.5	U-235	1.3	pCi/g	Pre
270-C2-1	3022284.329	674388.0118	5.5	Pu-238	0.17	pCi/g	Pre
270-C2-1	3022284.329	674388.0118	5.5	Pu-239/240	2.63	pCi/g	Pre
270-C2-1	3022284.329	674388.0118	5.5	Pu-241	4.31	pCi/g	Pre
270-C2-1	3022284.329	674388.0118	5.5	Pu-242	0	pCi/g	Pre
270-C2-1	3022284.329	674388.0118	5.5	Tc-99	2.6	pCi/g	Pre
270-C2-1	3022284.329	674388.0118	5.5	Th-230	1.2	pCi/g	Pre
270-C2-1	3022284.329	674388.0118	5.5	U-233/234	32.9	pCi/g	Pre
270-C2-1	3022284.329	674388.0118	5.5	U-238	4.8	pCi/g	Pre
270-C2-2	3022284.329	674388.0118	6.5	Am-241	1.24	pCi/g	Pre
270-C2-2	3022284.329	674388.0118	6.5	Th-232	2.5	pCi/g	Pre
270-C2-2	3022284.329	674388.0118	6.5	U-235	2.4	pCi/g	Pre
270-C2-2	3022284.329	674388.0118	6.5	Pu-238	0.22	pCi/g	Pre
270-C2-2	3022284.329	674388.0118	6.5	Pu-239/240	3.42	pCi/g	Pre
270-C2-2	3022284.329	674388.0118	6.5	Pu-241	5.61	pCi/g	Pre
270-C2-2	3022284.329	674388.0118	6.5	Pu-242	0	pCi/g	Pre
270-C2-2	3022284.329	674388.0118	6.5	Tc-99	4.1	pCi/g	Pre
270-C2-2	3022284.329	674388.0118	6.5	Th-230	1.5	pCi/g	Pre
270-C2-2	3022284.329	674388.0118	6.5	U-233/234	61.7	pCi/g	Pre
270-C2-2	3022284.329	674388.0118	6.5	U-238	7.4	pCi/g	Pre
270-F6-1	3022300.738	674387.8811	5.5	Am-241	-0.02	pCi/g	Pre
270-F6-1	3022300.738	674387.8811	5.5	Th-232	0.7	pCi/g	Pre
270-F6-1	3022300.738	674387.8811	5.5	U-235	0	pCi/g	Pre
270-F6-1	3022300.738	674387.8811	5.5	Pu-238	0	pCi/g	Pre
270-F6-1	3022300.738	674387.8811	5.5	Pu-239/240	0	pCi/g	Pre
270-F6-1	3022300.738	674387.8811	5.5	Pu-241	0	pCi/g	Pre
270-F6-1	3022300.738	674387.8811	5.5	Pu-242	0	pCi/g	Pre
270-F6-1	3022300.738	674387.8811	5.5	Tc-99	-0.8	pCi/g	Pre
270-F6-1	3022300.738	674387.8811	5.5	Th-230	0.5	pCi/g	Pre
270-F6-1	3022300.738	674387.8811	5.5	U-233/234	0.9	pCi/g	Pre
270-F6-1	3022300.738	674387.8811	5.5	U-238	0.4	pCi/g	Pre
270-F6-2	3022300.738	674387.8811	6.5	Am-241	0.04	pCi/g	Pre
270-F6-2	3022300.738	674387.8811	6.5	Th-232	0.4	pCi/g	Pre
270-F6-2	3022300.738	674387.8811	6.5	U-235	0.1	pCi/g	Pre
270-F6-2	3022300.738	674387.8811	6.5	Pu-238	0.01	pCi/g	Pre
270-F6-2	3022300.738	674387.8811	6.5	Pu-239/240	0.11	pCi/g	Pre
270-F6-2	3022300.738	674387.8811	6.5	Pu-241	0.17	pCi/g	Pre
270-F6-2	3022300.738	674387.8811	6.5	Pu-242	0	pCi/g	Pre
270-F6-2	3022300.738	674387.8811	6.5	Tc-99	0.3	pCi/g	Pre
270-F6-2	3022300.738	674387.8811	6.5	Th-230	0.3	pCi/g	Pre
270-F6-2	3022300.738	674387.8811	6.5	U-233/234	2.8	pCi/g	Pre
270-F6-2	3022300.738	674387.8811	6.5	U-238	0.9	pCi/g	Pre
270-I8-1	3022311.924	674391.7311	5.5	Am-241	0.08	pCi/g	Pre
270-I8-1	3022311.924	674391.7311	5.5	Th-232	0.4	pCi/g	Pre
270-I8-1	3022311.924	674391.7311	5.5	U-235	0	pCi/g	Pre
270-I8-1	3022311.924	674391.7311	5.5	Pu-238	0.01	pCi/g	Pre
270-I8-1	3022311.924	674391.7311	5.5	Pu-239/240	0.22	pCi/g	Pre
270-I8-1	3022311.924	674391.7311	5.5	Pu-241	0.36	pCi/g	Pre

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Historical Dataset, Survey Unit 8

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
270-I8-1	3022311.924	674391.7311	5.5	Pu-242	0	pCi/g	Pre
270-I8-1	3022311.924	674391.7311	5.5	Tc-99	0	pCi/g	Pre
270-I8-1	3022311.924	674391.7311	5.5	Th-230	0.3	pCi/g	Pre
270-I8-1	3022311.924	674391.7311	5.5	U-233/234	0	pCi/g	Pre
270-I8-1	3022311.924	674391.7311	5.5	U-238	0	pCi/g	Pre
304-C3-1	3022188.729	674419.6286	5.5	Am-241	-0.1	pCi/g	Pre
304-C3-1	3022188.729	674419.6286	5.5	Th-232	1.7	pCi/g	Pre
304-C3-1	3022188.729	674419.6286	5.5	U-235	0.2	pCi/g	Pre
304-C3-1	3022188.729	674419.6286	5.5	Pu-238	0	pCi/g	Pre
304-C3-1	3022188.729	674419.6286	5.5	Pu-239/240	0	pCi/g	Pre
304-C3-1	3022188.729	674419.6286	5.5	Pu-241	0	pCi/g	Pre
304-C3-1	3022188.729	674419.6286	5.5	Pu-242	0	pCi/g	Pre
304-C3-1	3022188.729	674419.6286	5.5	Tc-99	0	pCi/g	Pre
304-C3-1	3022188.729	674419.6286	5.5	Th-230	1.1	pCi/g	Pre
304-C3-1	3022188.729	674419.6286	5.5	U-233/234	4.1	pCi/g	Pre
304-C3-1	3022188.729	674419.6286	5.5	U-238	1.2	pCi/g	Pre
304-C3-2	3022188.729	674419.6286	6.5	Am-241	-0.32	pCi/g	Pre
304-C3-2	3022188.729	674419.6286	6.5	Th-232	1.3	pCi/g	Pre
304-C3-2	3022188.729	674419.6286	6.5	U-235	0.2	pCi/g	Pre
304-C3-2	3022188.729	674419.6286	6.5	Pu-238	0	pCi/g	Pre
304-C3-2	3022188.729	674419.6286	6.5	Pu-239/240	0	pCi/g	Pre
304-C3-2	3022188.729	674419.6286	6.5	Pu-241	0	pCi/g	Pre
304-C3-2	3022188.729	674419.6286	6.5	Pu-242	0	pCi/g	Pre
304-C3-2	3022188.729	674419.6286	6.5	Tc-99	0	pCi/g	Pre
304-C3-2	3022188.729	674419.6286	6.5	Th-230	0.9	pCi/g	Pre
304-C3-2	3022188.729	674419.6286	6.5	U-233/234	4.2	pCi/g	Pre
304-C3-2	3022188.729	674419.6286	6.5	U-238	1.2	pCi/g	Pre
304-D0-1	3022182.884	674428.2097	5.5	Am-241	0.01	pCi/g	Pre
304-D0-1	3022182.884	674428.2097	5.5	Th-232	0.8	pCi/g	Pre
304-D0-1	3022182.884	674428.2097	5.5	U-235	0	pCi/g	Pre
304-D0-1	3022182.884	674428.2097	5.5	Pu-238	0	pCi/g	Pre
304-D0-1	3022182.884	674428.2097	5.5	Pu-239/240	0	pCi/g	Pre
304-D0-1	3022182.884	674428.2097	5.5	Pu-241	0	pCi/g	Pre
304-D0-1	3022182.884	674428.2097	5.5	Pu-242	0	pCi/g	Pre
304-D0-1	3022182.884	674428.2097	5.5	Tc-99	0	pCi/g	Pre
304-D0-1	3022182.884	674428.2097	5.5	Th-230	0.5	pCi/g	Pre
304-D0-1	3022182.884	674428.2097	5.5	U-233/234	1	pCi/g	Pre
304-D0-1	3022182.884	674428.2097	5.5	U-238	0.5	pCi/g	Pre
304-F8-1	3022207.748	674417.5077	5.5	Am-241	0.04	pCi/g	Pre
304-F8-1	3022207.748	674417.5077	5.5	Th-232	1	pCi/g	Pre
304-F8-1	3022207.748	674417.5077	5.5	U-235	0.2	pCi/g	Pre
304-F8-1	3022207.748	674417.5077	5.5	Pu-238	0	pCi/g	Pre
304-F8-1	3022207.748	674417.5077	5.5	Pu-239/240	0	pCi/g	Pre
304-F8-1	3022207.748	674417.5077	5.5	Pu-241	0	pCi/g	Pre
304-F8-1	3022207.748	674417.5077	5.5	Pu-242	0	pCi/g	Pre
304-F8-1	3022207.748	674417.5077	5.5	Tc-99	0	pCi/g	Pre
304-F8-1	3022207.748	674417.5077	5.5	Th-230	0.6	pCi/g	Pre
304-F8-1	3022207.748	674417.5077	5.5	U-233/234	6	pCi/g	Pre
304-F8-1	3022207.748	674417.5077	5.5	U-238	1.5	pCi/g	Pre
304-F8-2	3022207.748	674417.5077	6.5	Am-241	0.16	pCi/g	Pre
304-F8-2	3022207.748	674417.5077	6.5	Th-232	0.4	pCi/g	Pre
304-F8-2	3022207.748	674417.5077	6.5	U-235	0.2	pCi/g	Pre
304-F8-2	3022207.748	674417.5077	6.5	Pu-238	0	pCi/g	Pre
304-F8-2	3022207.748	674417.5077	6.5	Pu-239/240	0	pCi/g	Pre
304-F8-2	3022207.748	674417.5077	6.5	Pu-241	0	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Eastings	Northing					
304-F8-2	3022207.748	674417.5077	6.5	Pu-242	0	pCi/g	Pre
304-F8-2	3022207.748	674417.5077	6.5	Tc-99	0	pCi/g	Pre
304-F8-2	3022207.748	674417.5077	6.5	Th-230	0.3	pCi/g	Pre
304-F8-2	3022207.748	674417.5077	6.5	U-233/234	4.4	pCi/g	Pre
304-F8-2	3022207.748	674417.5077	6.5	U-238	1.2	pCi/g	Pre
305-E2-1	3022216.204	674406.9362	5.5	Am-241	0.38	pCi/g	Pre
305-E2-1	3022216.204	674406.9362	5.5	Th-232	1.2	pCi/g	Pre
305-E2-1	3022216.204	674406.9362	5.5	U-235	0.3	pCi/g	Pre
305-E2-1	3022216.204	674406.9362	5.5	Pu-238	0.07	pCi/g	Pre
305-E2-1	3022216.204	674406.9362	5.5	Pu-239/240	1.04	pCi/g	Pre
305-E2-1	3022216.204	674406.9362	5.5	Pu-241	1.71	pCi/g	Pre
305-E2-1	3022216.204	674406.9362	5.5	Pu-242	0	pCi/g	Pre
305-E2-1	3022216.204	674406.9362	5.5	Tc-99	2.1	pCi/g	Pre
305-E2-1	3022216.204	674406.9362	5.5	Th-230	0.8	pCi/g	Pre
305-E2-1	3022216.204	674406.9362	5.5	U-233/234	7.8	pCi/g	Pre
305-E2-1	3022216.204	674406.9362	5.5	U-238	1.8	pCi/g	Pre
305-E2-2	3022216.204	674406.9362	6.5	Am-241	-0.15	pCi/g	Pre
305-E2-2	3022216.204	674406.9362	6.5	Th-232	3.8	pCi/g	Pre
305-E2-2	3022216.204	674406.9362	6.5	U-235	0.2	pCi/g	Pre
305-E2-2	3022216.204	674406.9362	6.5	Pu-238	-0.02	pCi/g	Pre
305-E2-2	3022216.204	674406.9362	6.5	Pu-239/240	0.1	pCi/g	Pre
305-E2-2	3022216.204	674406.9362	6.5	Pu-241	1.72	pCi/g	Pre
305-E2-2	3022216.204	674406.9362	6.5	Pu-242	0	pCi/g	Pre
305-E2-2	3022216.204	674406.9362	6.5	Tc-99	0.2	pCi/g	Pre
305-E2-2	3022216.204	674406.9362	6.5	Th-230	5.6	pCi/g	Pre
305-E2-2	3022216.204	674406.9362	6.5	U-233/234	4.1	pCi/g	Pre
305-E2-2	3022216.204	674406.9362	6.5	U-238	0.8	pCi/g	Pre
307-C2-1	3022264.447	674361.9098	5.5	Am-241	1.4	pCi/g	Pre
307-C2-1	3022264.447	674361.9098	5.5	Th-232	2.5	pCi/g	Pre
307-C2-1	3022264.447	674361.9098	5.5	U-235	1.6	pCi/g	Pre
307-C2-1	3022264.447	674361.9098	5.5	Pu-238	0.25	pCi/g	Pre
307-C2-1	3022264.447	674361.9098	5.5	Pu-239/240	3.84	pCi/g	Pre
307-C2-1	3022264.447	674361.9098	5.5	Pu-241	6.3	pCi/g	Pre
307-C2-1	3022264.447	674361.9098	5.5	Pu-242	0	pCi/g	Pre
307-C2-1	3022264.447	674361.9098	5.5	Tc-99	3.7	pCi/g	Pre
307-C2-1	3022264.447	674361.9098	5.5	Th-230	1.5	pCi/g	Pre
307-C2-1	3022264.447	674361.9098	5.5	U-233/234	41.8	pCi/g	Pre
307-C2-1	3022264.447	674361.9098	5.5	U-238	5.7	pCi/g	Pre
307-C2-2	3022264.447	674361.9098	6.5	Am-241	0.14	pCi/g	Pre
307-C2-2	3022264.447	674361.9098	6.5	Th-232	1.6	pCi/g	Pre
307-C2-2	3022264.447	674361.9098	6.5	U-235	0.3	pCi/g	Pre
307-C2-2	3022264.447	674361.9098	6.5	Pu-238	0.03	pCi/g	Pre
307-C2-2	3022264.447	674361.9098	6.5	Pu-239/240	0.38	pCi/g	Pre
307-C2-2	3022264.447	674361.9098	6.5	Pu-241	0.63	pCi/g	Pre
307-C2-2	3022264.447	674361.9098	6.5	Pu-242	0	pCi/g	Pre
307-C2-2	3022264.447	674361.9098	6.5	Tc-99	1.9	pCi/g	Pre
307-C2-2	3022264.447	674361.9098	6.5	Th-230	1	pCi/g	Pre
307-C2-2	3022264.447	674361.9098	6.5	U-233/234	6.4	pCi/g	Pre
307-C2-2	3022264.447	674361.9098	6.5	U-238	1.6	pCi/g	Pre
307-I6-1	3022286.82	674369.6098	5.5	Am-241	0.54	pCi/g	Pre
307-I6-1	3022286.82	674369.6098	5.5	Th-232	0.9	pCi/g	Pre
307-I6-1	3022286.82	674369.6098	5.5	U-235	0.3	pCi/g	Pre
307-I6-1	3022286.82	674369.6098	5.5	Pu-238	0.1	pCi/g	Pre
307-I6-1	3022286.82	674369.6098	5.5	Pu-239/240	1.47	pCi/g	Pre
307-I6-1	3022286.82	674369.6098	5.5	Pu-241	2.42	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
307-I6-1	3022286.82	674369.6098	5.5	Pu-242	0	pCi/g	Pre
307-I6-1	3022286.82	674369.6098	5.5	Tc-99	2.1	pCi/g	Pre
307-I6-1	3022286.82	674369.6098	5.5	Th-230	0.6	pCi/g	Pre
307-I6-1	3022286.82	674369.6098	5.5	U-233/234	8.3	pCi/g	Pre
307-I6-1	3022286.82	674369.6098	5.5	U-238	1.9	pCi/g	Pre
307-I6-2	3022286.82	674369.6098	6.5	Am-241	0.03	pCi/g	Pre
307-I6-2	3022286.82	674369.6098	6.5	Th-232	0.8	pCi/g	Pre
307-I6-2	3022286.82	674369.6098	6.5	U-235	0.2	pCi/g	Pre
307-I6-2	3022286.82	674369.6098	6.5	Pu-238	0.01	pCi/g	Pre
307-I6-2	3022286.82	674369.6098	6.5	Pu-239/240	0.09	pCi/g	Pre
307-I6-2	3022286.82	674369.6098	6.5	Pu-241	0.15	pCi/g	Pre
307-I6-2	3022286.82	674369.6098	6.5	Pu-242	0	pCi/g	Pre
307-I6-2	3022286.82	674369.6098	6.5	Tc-99	1.8	pCi/g	Pre
307-I6-2	3022286.82	674369.6098	6.5	Th-230	0.5	pCi/g	Pre
307-I6-2	3022286.82	674369.6098	6.5	U-233/234	5.1	pCi/g	Pre
307-I6-2	3022286.82	674369.6098	6.5	U-238	1.4	pCi/g	Pre
345-I8-1	3022272.16	674339.5272	5.5	Am-241	2.26	pCi/g	Pre
345-I8-1	3022272.16	674339.5272	5.5	Th-232	3.1	pCi/g	Pre
345-I8-1	3022272.16	674339.5272	5.5	U-235	2.5	pCi/g	Pre
345-I8-1	3022272.16	674339.5272	5.5	Pu-238	1.11	pCi/g	Pre
345-I8-1	3022272.16	674339.5272	5.5	Pu-239/240	14.69	pCi/g	Pre
345-I8-1	3022272.16	674339.5272	5.5	Pu-241	24.1	pCi/g	Pre
345-I8-1	3022272.16	674339.5272	5.5	Pu-242	0	pCi/g	Pre
345-I8-1	3022272.16	674339.5272	5.5	Tc-99	0	pCi/g	Pre
345-I8-1	3022272.16	674339.5272	5.5	Th-230	2.1	pCi/g	Pre
345-I8-1	3022272.16	674339.5272	5.5	U-233/234	44.9	pCi/g	Pre
345-I8-1	3022272.16	674339.5272	5.5	U-238	2	pCi/g	Pre
345-I8-2	3022272.16	674339.5272	6.5	Am-241	-0.14	pCi/g	Pre
345-I8-2	3022272.16	674339.5272	6.5	Th-232	1	pCi/g	Pre
345-I8-2	3022272.16	674339.5272	6.5	U-235	0.1	pCi/g	Pre
345-I8-2	3022272.16	674339.5272	6.5	Pu-238	0	pCi/g	Pre
345-I8-2	3022272.16	674339.5272	6.5	Pu-239/240	0	pCi/g	Pre
345-I8-2	3022272.16	674339.5272	6.5	Pu-241	0	pCi/g	Pre
345-I8-2	3022272.16	674339.5272	6.5	Pu-242	0	pCi/g	Pre
345-I8-2	3022272.16	674339.5272	6.5	Tc-99	-0.5	pCi/g	Pre
345-I8-2	3022272.16	674339.5272	6.5	Th-230	0.6	pCi/g	Pre
345-I8-2	3022272.16	674339.5272	6.5	U-233/234	1.7	pCi/g	Pre
345-I8-2	3022272.16	674339.5272	6.5	U-238	0.7	pCi/g	Pre
385-E2-1	3022228.658	674314.9262	5.5	Am-241	6.93	pCi/g	Pre
385-E2-1	3022228.658	674314.9262	5.5	Th-232	11.4	pCi/g	Pre
385-E2-1	3022228.658	674314.9262	5.5	U-235	7.9	pCi/g	Pre
385-E2-1	3022228.658	674314.9262	5.5	Pu-238	3.39	pCi/g	Pre
385-E2-1	3022228.658	674314.9262	5.5	Pu-239/240	47.94	pCi/g	Pre
385-E2-1	3022228.658	674314.9262	5.5	Pu-241	78.61	pCi/g	Pre
385-E2-1	3022228.658	674314.9262	5.5	Pu-242	0	pCi/g	Pre
385-E2-1	3022228.658	674314.9262	5.5	Tc-99	9.2	pCi/g	Pre
385-E2-1	3022228.658	674314.9262	5.5	Th-230	5.4	pCi/g	Pre
385-E2-1	3022228.658	674314.9262	5.5	U-233/234	243.9	pCi/g	Pre
385-E2-1	3022228.658	674314.9262	5.5	U-238	10.6	pCi/g	Pre
385-E2-2	3022228.658	674314.9262	6.5	Am-241	0.14	pCi/g	Pre
385-E2-2	3022228.658	674314.9262	6.5	Th-232	1.4	pCi/g	Pre
385-E2-2	3022228.658	674314.9262	6.5	U-235	0.6	pCi/g	Pre
385-E2-2	3022228.658	674314.9262	6.5	Pu-238	0.02	pCi/g	Pre
385-E2-2	3022228.658	674314.9262	6.5	Pu-239/240	0.38	pCi/g	Pre
385-E2-2	3022228.658	674314.9262	6.5	Pu-241	0.62	pCi/g	Pre

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Historical Dataset, Survey Unit 8

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
385-E2-2	3022228.658	674314.9262	6.5	Pu-242	0	pCi/g	Pre
385-E2-2	3022228.658	674314.9262	6.5	Tc-99	2.7	pCi/g	Pre
385-E2-2	3022228.658	674314.9262	6.5	Th-230	0.9	pCi/g	Pre
385-E2-2	3022228.658	674314.9262	6.5	U-233/234	16.3	pCi/g	Pre
385-E2-2	3022228.658	674314.9262	6.5	U-238	3	pCi/g	Pre
385-I8-1	3022252.277	674313.4252	5.5	Am-241	2.09	pCi/g	Pre
385-I8-1	3022252.277	674313.4252	5.5	Th-232	2.7	pCi/g	Pre
385-I8-1	3022252.277	674313.4252	5.5	U-235	1.1	pCi/g	Pre
385-I8-1	3022252.277	674313.4252	5.5	Pu-238	1.2	pCi/g	Pre
385-I8-1	3022252.277	674313.4252	5.5	Pu-239/240	13	pCi/g	Pre
385-I8-1	3022252.277	674313.4252	5.5	Pu-241	21.32	pCi/g	Pre
385-I8-1	3022252.277	674313.4252	5.5	Pu-242	0	pCi/g	Pre
385-I8-1	3022252.277	674313.4252	5.5	Tc-99	0.8	pCi/g	Pre
385-I8-1	3022252.277	674313.4252	5.5	Th-230	1.6	pCi/g	Pre
385-I8-1	3022252.277	674313.4252	5.5	U-233/234	49	pCi/g	Pre
385-I8-1	3022252.277	674313.4252	5.5	U-238	1.9	pCi/g	Pre
385-I8-2	3022252.277	674313.4252	6.5	Am-241	0.07	pCi/g	Pre
385-I8-2	3022252.277	674313.4252	6.5	Th-232	0.6	pCi/g	Pre
385-I8-2	3022252.277	674313.4252	6.5	U-235	0	pCi/g	Pre
385-I8-2	3022252.277	674313.4252	6.5	Pu-238	0.01	pCi/g	Pre
385-I8-2	3022252.277	674313.4252	6.5	Pu-239/240	0.2	pCi/g	Pre
385-I8-2	3022252.277	674313.4252	6.5	Pu-241	0.34	pCi/g	Pre
385-I8-2	3022252.277	674313.4252	6.5	Pu-242	0	pCi/g	Pre
385-I8-2	3022252.277	674313.4252	6.5	Tc-99	-1.4	pCi/g	Pre
385-I8-2	3022252.277	674313.4252	6.5	Th-230	0.4	pCi/g	Pre
385-I8-2	3022252.277	674313.4252	6.5	U-233/234	0.2	pCi/g	Pre
385-I8-2	3022252.277	674313.4252	6.5	U-238	0.1	pCi/g	Pre
425-I8-1	3022232.395	674287.3232	5.5	Am-241	2.43	pCi/g	Pre
425-I8-1	3022232.395	674287.3232	5.5	Th-232	3.2	pCi/g	Pre
425-I8-1	3022232.395	674287.3232	5.5	U-235	1.6	pCi/g	Pre
425-I8-1	3022232.395	674287.3232	5.5	Pu-238	0.44	pCi/g	Pre
425-I8-1	3022232.395	674287.3232	5.5	Pu-239/240	6.68	pCi/g	Pre
425-I8-1	3022232.395	674287.3232	5.5	Pu-241	10.95	pCi/g	Pre
425-I8-1	3022232.395	674287.3232	5.5	Pu-242	0	pCi/g	Pre
425-I8-1	3022232.395	674287.3232	5.5	Tc-99	2.1	pCi/g	Pre
425-I8-1	3022232.395	674287.3232	5.5	Th-230	1.8	pCi/g	Pre
425-I8-1	3022232.395	674287.3232	5.5	U-233/234	42.1	pCi/g	Pre
425-I8-1	3022232.395	674287.3232	5.5	U-238	5.7	pCi/g	Pre
425-I8-2	3022232.395	674287.3232	6.5	Am-241	0.32	pCi/g	Pre
425-I8-2	3022232.395	674287.3232	6.5	Th-232	0.4	pCi/g	Pre
425-I8-2	3022232.395	674287.3232	6.5	U-235	0.2	pCi/g	Pre
425-I8-2	3022232.395	674287.3232	6.5	Pu-238	0.06	pCi/g	Pre
425-I8-2	3022232.395	674287.3232	6.5	Pu-239/240	0.87	pCi/g	Pre
425-I8-2	3022232.395	674287.3232	6.5	Pu-241	1.42	pCi/g	Pre
425-I8-2	3022232.395	674287.3232	6.5	Pu-242	0		Pre
425-I8-2	3022232.395	674287.3232	6.5	Tc-99	0		Pre
425-I8-2	3022232.395	674287.3232	6.5	Th-230	0.3		Pre
425-I8-2	3022232.395	674287.3232	6.5	U-233/234	4.3		Pre
425-I8-2	3022232.395	674287.3232	6.5	U-238	1.2		Pre
AOC5-SD-006	3022254.746	674381.6822	5.5	Am-241	8.15		Pre
AOC5-SD-006	3022254.746	674381.6822	5.5	Th-232	6.2		Pre
AOC5-SD-006	3022254.746	674381.6822	5.5	U-235	1.3		Pre
AOC5-SD-006	3022254.746	674381.6822	5.5	Pu-238	1.26		Pre
AOC5-SD-006	3022254.746	674381.6822	5.5	Pu-239/240	22.4		Pre
AOC5-SD-006	3022254.746	674381.6822	5.5	Pu-241	63.1		Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
AOC5-SD-006	3022254.746	674381.6822	5.5	Pu-242	0		Pre
AOC5-SD-006	3022254.746	674381.6822	5.5	Tc-99	5.7		Pre
AOC5-SD-006	3022254.746	674381.6822	5.5	Th-230	2.8		Pre
AOC5-SD-006	3022254.746	674381.6822	5.5	U-233/234	47.4		Pre
AOC5-SD-006	3022254.746	674381.6822	5.5	U-238	12.1		Pre

Appendix A.3

Historical Dataset, Survey Unit 9

Historical Dataset, Survey Unit 9

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
07-S-002	3022184.775	674327.7491	7.0	Am-241	2.21	pCi/g	Pre
07-S-002	3022184.775	674327.7491	7.0	Pu-238	0.49	pCi/g	Pre
07-S-002	3022184.775	674327.7491	7.0	Pu-239/240	12.25	pCi/g	Pre
07-S-002	3022184.775	674327.7491	7.0	Pu-241	20.08	pCi/g	Pre
07-S-002	3022184.775	674327.7491	7.0	Pu-242	0.03	pCi/g	Pre
07-S-002	3022184.775	674327.7491	7.0	Tc-99	4.1	pCi/g	Pre
07-S-002	3022184.775	674327.7491	7.0	Th-230	1.7	pCi/g	Pre
07-S-002	3022184.775	674327.7491	7.0	Th-232	3.2	pCi/g	Pre
07-S-002	3022184.775	674327.7491	7.0	U-233/234	66	pCi/g	Pre
07-S-002	3022184.775	674327.7491	7.0	U-235	2.2	pCi/g	Pre
07-S-002	3022184.775	674327.7491	7.0	U-238	9.3	pCi/g	Pre
07-S-003	3022184.775	674327.7491	8.0	Am-241	19.2	pCi/g	Pre
07-S-003	3022184.775	674327.7491	10.0	Pu-238	2.31	pCi/g	Pre
07-S-003	3022184.775	674327.7491	10.0	Pu-239/240	69.6	pCi/g	Pre
07-S-003	3022184.775	674327.7491	10.0	Pu-241	114.14	pCi/g	Pre
07-S-003	3022184.775	674327.7491	10.0	Pu-242	0.07	pCi/g	Pre
07-S-003	3022184.775	674327.7491	10.0	Tc-99	7.1	pCi/g	Pre
07-S-003	3022184.775	674327.7491	10.0	Th-230	5.3	pCi/g	Pre
07-S-003	3022184.775	674327.7491	10.0	Th-232	9.4	pCi/g	Pre
07-S-003	3022184.775	674327.7491	10.0	U-233/234	405	pCi/g	Pre
07-S-003	3022184.775	674327.7491	10.0	U-235	10.1	pCi/g	Pre
07-S-003	3022184.775	674327.7491	10.0	U-238	85.8	pCi/g	Pre
07-S-004	3022184.775	674327.7491	11.0	Am-241	9.58	pCi/g	Pre
07-S-004	3022184.775	674327.7491	11.0	Pu-238	1.56	pCi/g	Pre
07-S-004	3022184.775	674327.7491	11.0	Pu-239/240	37.9	pCi/g	Pre
07-S-004	3022184.775	674327.7491	11.0	Pu-241	62.16	pCi/g	Pre
07-S-004	3022184.775	674327.7491	11.0	Pu-242	0.02	pCi/g	Pre
07-S-004	3022184.775	674327.7491	11.0	Tc-99	10.2	pCi/g	Pre
07-S-004	3022184.775	674327.7491	11.0	Th-230	15.6	pCi/g	Pre
07-S-004	3022184.775	674327.7491	11.0	Th-232	28.4	pCi/g	Pre
07-S-004	3022184.775	674327.7491	11.0	U-233/234	828	pCi/g	Pre
07-S-004	3022184.775	674327.7491	11.0	U-235	28.8	pCi/g	Pre
07-S-004	3022184.775	674327.7491	11.0	U-238	111	pCi/g	Pre
07-S-006	3022167.001	674320.6691	7.0	Am-241	1.1	pCi/g	Pre
07-S-006	3022167.001	674320.6691	7.0	Pu-238	0.29	pCi/g	Pre
07-S-006	3022167.001	674320.6691	7.0	Pu-239/240	3.44	pCi/g	Pre
07-S-006	3022167.001	674320.6691	7.0	Pu-241	5.64	pCi/g	Pre
07-S-006	3022167.001	674320.6691	7.0	Pu-242	0.09	pCi/g	Pre
07-S-006	3022167.001	674320.6691	7.0	Tc-99	5.2	pCi/g	Pre
07-S-006	3022167.001	674320.6691	7.0	Th-230	3.1	pCi/g	Pre
07-S-006	3022167.001	674320.6691	7.0	Th-232	5.8	pCi/g	Pre
07-S-006	3022167.001	674320.6691	7.0	U-233/234	131	pCi/g	Pre
07-S-006	3022167.001	674320.6691	7.0	U-235	4.2	pCi/g	Pre
07-S-006	3022167.001	674320.6691	7.0	U-238	15	pCi/g	Pre
07-S-007	3022167.001	674320.6691	10.0	Am-241	0.3	pCi/g	Pre
07-S-007	3022167.001	674320.6691	10.0	Pu-238	0.06	pCi/g	Pre
07-S-007	3022167.001	674320.6691	10.0	Pu-239/240	0.54	pCi/g	Pre
07-S-007	3022167.001	674320.6691	10.0	Pu-241	0.89	pCi/g	Pre
07-S-007	3022167.001	674320.6691	10.0	Pu-242	0.01	pCi/g	Pre
07-S-007	3022167.001	674320.6691	10.0	Tc-99	4	pCi/g	Pre
07-S-007	3022167.001	674320.6691	10.0	Th-230	1	pCi/g	Pre
07-S-007	3022167.001	674320.6691	10.0	Th-232	2	pCi/g	Pre
07-S-007	3022167.001	674320.6691	10.0	U-233/234	60.3	pCi/g	Pre
07-S-007	3022167.001	674320.6691	10.0	U-235	2	pCi/g	Pre
07-S-007	3022167.001	674320.6691	10.0	U-238	7.5	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
07-S-008	3022167.001	674320.6691	11.0	Am-241	52.3	pCi/g	Pre
07-S-008	3022167.001	674320.6691	11.0	Pu-238	7.97	pCi/g	Pre
07-S-008	3022167.001	674320.6691	11.0	Pu-239/240	226	pCi/g	Pre
07-S-008	3022167.001	674320.6691	11.0	Pu-241	370.64	pCi/g	Pre
07-S-008	3022167.001	674320.6691	11.0	Pu-242	0.08	pCi/g	Pre
07-S-008	3022167.001	674320.6691	11.0	Tc-99	9.5	pCi/g	Pre
07-S-008	3022167.001	674320.6691	11.0	Th-230	14.6	pCi/g	Pre
07-S-008	3022167.001	674320.6691	11.0	Th-232	25.8	pCi/g	Pre
07-S-008	3022167.001	674320.6691	11.0	U-233/234	661	pCi/g	Pre
07-S-008	3022167.001	674320.6691	11.0	U-235	23.5	pCi/g	Pre
07-S-008	3022167.001	674320.6691	9.0	U-238	101	pCi/g	Pre
07-S-010	3022168.869	674306.8676	7.0	Am-241	8.89	pCi/g	Pre
07-S-010	3022168.869	674306.8676	7.0	Pu-238	3.21	pCi/g	Pre
07-S-010	3022168.869	674306.8676	7.0	Pu-239/240	90.3	pCi/g	Pre
07-S-010	3022168.869	674306.8676	7.0	Pu-241	148.09	pCi/g	Pre
07-S-010	3022168.869	674306.8676	7.0	Pu-242	0.04	pCi/g	Pre
07-S-010	3022168.869	674306.8676	7.0	Tc-99	4.2	pCi/g	Pre
07-S-010	3022168.869	674306.8676	7.0	Th-230	1.4	pCi/g	Pre
07-S-010	3022168.869	674306.8676	7.0	Th-232	2.2	pCi/g	Pre
07-S-010	3022168.869	674306.8676	7.0	U-233/234	64.7	pCi/g	Pre
07-S-010	3022168.869	674306.8676	7.0	U-235	2.3	pCi/g	Pre
07-S-010	3022168.869	674306.8676	7.0	U-238	10.2	pCi/g	Pre
07-S-011	3022168.869	674306.8676	10.0	Am-241	1.86	pCi/g	Pre
07-S-011	3022168.869	674306.8676	10.0	Pu-238	0.27	pCi/g	Pre
07-S-011	3022168.869	674306.8676	10.0	Pu-239/240	2.94	pCi/g	Pre
07-S-011	3022168.869	674306.8676	10.0	Pu-241	4.82	pCi/g	Pre
07-S-011	3022168.869	674306.8676	10.0	Pu-242	0.06	pCi/g	Pre
07-S-011	3022168.869	674306.8676	10.0	Tc-99	9.9	pCi/g	Pre
07-S-011	3022168.869	674306.8676	10.0	Th-230	3.9	pCi/g	Pre
07-S-011	3022168.869	674306.8676	10.0	Th-232	11.8	pCi/g	Pre
07-S-011	3022168.869	674306.8676	10.0	U-233/234	904	pCi/g	Pre
07-S-011	3022168.869	674306.8676	10.0	U-235	26.1	pCi/g	Pre
07-S-011	3022168.869	674306.8676	10.0	U-238	97.2	pCi/g	Pre
07-S-013	3022154.951	674288.5962	7.0	Am-241	1.16	pCi/g	Pre
07-S-013	3022154.951	674288.5962	7.0	Pu-238	0.2	pCi/g	Pre
07-S-013	3022154.951	674288.5962	7.0	Pu-239/240	4.27	pCi/g	Pre
07-S-013	3022154.951	674288.5962	7.0	Pu-241	7	pCi/g	Pre
07-S-013	3022154.951	674288.5962	7.0	Pu-242	0.01	pCi/g	Pre
07-S-013	3022154.951	674288.5962	7.0	Tc-99	5.7	pCi/g	Pre
07-S-013	3022154.951	674288.5962	7.0	Th-230	5.4	pCi/g	Pre
07-S-013	3022154.951	674288.5962	7.0	Th-232	7.1	pCi/g	Pre
07-S-013	3022154.951	674288.5962	7.0	U-233/234	199	pCi/g	Pre
07-S-013	3022154.951	674288.5962	7.0	U-235	5.6	pCi/g	Pre
07-S-013	3022154.951	674288.5962	7.0	U-238	27.2	pCi/g	Pre
07-S-014	3022154.951	674288.5962	10.0	Am-241	1.47	pCi/g	Pre
07-S-014	3022154.951	674288.5962	10.0	Pu-238	0.36	pCi/g	Pre
07-S-014	3022154.951	674288.5962	10.0	Pu-239/240	4.2	pCi/g	Pre
07-S-014	3022154.951	674288.5962	10.0	Pu-241	6.89	pCi/g	Pre
07-S-014	3022154.951	674288.5962	10.0	Pu-242	0.05	pCi/g	Pre
07-S-014	3022154.951	674288.5962	10.0	Tc-99	6.6	pCi/g	Pre
07-S-014	3022154.951	674288.5962	10.0	Th-230	4.6	pCi/g	Pre
07-S-014	3022154.951	674288.5962	10.0	Th-232	7	pCi/g	Pre
07-S-014	3022154.951	674288.5962	10.0	U-233/234	179	pCi/g	Pre
07-S-014	3022154.951	674288.5962	10.0	U-235	8.2	pCi/g	Pre
07-S-014	3022154.951	674288.5962	10.0	U-238	21.1	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
07-S-016	3022152.843	674269.5743	7.0	Am-241	0.16	pCi/g	Pre
07-S-016	3022152.843	674269.5743	7.0	Pu-238	0.05	pCi/g	Pre
07-S-016	3022152.843	674269.5743	7.0	Pu-239/240	0.63	pCi/g	Pre
07-S-016	3022152.843	674269.5743	7.0	Pu-241	1.03	pCi/g	Pre
07-S-016	3022152.843	674269.5743	7.0	Pu-242	0.04	pCi/g	Pre
07-S-016	3022152.843	674269.5743	7.0	Tc-99	4.6	pCi/g	Pre
07-S-016	3022152.843	674269.5743	7.0	Th-230	1	pCi/g	Pre
07-S-016	3022152.843	674269.5743	7.0	Th-232	1.2	pCi/g	Pre
07-S-016	3022152.843	674269.5743	7.0	U-233/234	62	pCi/g	Pre
07-S-016	3022152.843	674269.5743	7.0	U-235	2.9	pCi/g	Pre
07-S-016	3022152.843	674269.5743	7.0	U-238	9.5	pCi/g	Pre
07-S-017	3022152.843	674269.5743	10.0	Am-241	0.36	pCi/g	Pre
07-S-017	3022152.843	674269.5743	10.0	Pu-238	0.07	pCi/g	Pre
07-S-017	3022152.843	674269.5743	10.0	Pu-239/240	1.07	pCi/g	Pre
07-S-017	3022152.843	674269.5743	10.0	Pu-241	1.75	pCi/g	Pre
07-S-017	3022152.843	674269.5743	10.0	Pu-242	0.05	pCi/g	Pre
07-S-017	3022152.843	674269.5743	10.0	Tc-99	6.2	pCi/g	Pre
07-S-017	3022152.843	674269.5743	10.0	Th-230	1.3	pCi/g	Pre
07-S-017	3022152.843	674269.5743	10.0	Th-232	2.3	pCi/g	Pre
07-S-017	3022152.843	674269.5743	10.0	U-233/234	229	pCi/g	Pre
07-S-017	3022152.843	674269.5743	10.0	U-235	6.8	pCi/g	Pre
07-S-017	3022152.843	674269.5743	10.0	U-238	29.3	pCi/g	Pre
07-S-018	3022152.843	674269.5743	11.0	Am-241	0.37	pCi/g	Pre
07-S-018	3022152.843	674269.5743	11.0	Pu-238	0.19	pCi/g	Pre
07-S-018	3022152.843	674269.5743	11.0	Pu-239/240	1.9	pCi/g	Pre
07-S-018	3022152.843	674269.5743	11.0	Pu-241	3.12	pCi/g	Pre
07-S-018	3022152.843	674269.5743	11.0	Pu-242	0.04	pCi/g	Pre
07-S-018	3022152.843	674269.5743	11.0	Tc-99	2.9	pCi/g	Pre
07-S-018	3022152.843	674269.5743	11.0	Th-230	0.8	pCi/g	Pre
07-S-018	3022152.843	674269.5743	11.0	Th-232	1.5	pCi/g	Pre
07-S-018	3022152.843	674269.5743	11.0	U-233/234	86.4	pCi/g	Pre
07-S-018	3022152.843	674269.5743	11.0	U-235	0.8	pCi/g	Pre
07-S-018	3022152.843	674269.5743	11.0	U-238	16.3	pCi/g	Pre
07-S-020	3022134.326	674250.683	7.0	Am-241	1.91	pCi/g	Pre
07-S-020	3022134.326	674250.683	7.0	Pu-238	0.25	pCi/g	Pre
07-S-020	3022134.326	674250.683	7.0	Pu-239/240	4.76	pCi/g	Pre
07-S-020	3022134.326	674250.683	7.0	Pu-241	7.81	pCi/g	Pre
07-S-020	3022134.326	674250.683	7.0	Pu-242	0.04	pCi/g	Pre
07-S-020	3022134.326	674250.683	7.0	Tc-99	7.5	pCi/g	Pre
07-S-020	3022134.326	674250.683	7.0	Th-230	2.9	pCi/g	Pre
07-S-020	3022134.326	674250.683	7.0	Th-232	4.4	pCi/g	Pre
07-S-020	3022134.326	674250.683	7.0	U-233/234	346	pCi/g	Pre
07-S-020	3022134.326	674250.683	7.0	U-235	11.9	pCi/g	Pre
07-S-020	3022134.326	674250.683	7.0	U-238	55.6	pCi/g	Pre
07-S-021	3022134.326	674250.683	10.0	Am-241	12.3	pCi/g	Pre
07-S-021	3022134.326	674250.683	10.0	Pu-238	1.65	pCi/g	Pre
07-S-021	3022134.326	674250.683	10.0	Pu-239/240	45.2	pCi/g	Pre
07-S-021	3022134.326	674250.683	10.0	Pu-241	74.13	pCi/g	Pre
07-S-021	3022134.326	674250.683	10.0	Pu-242	0.03	pCi/g	Pre
07-S-021	3022134.326	674250.683	10.0	Tc-99	11.4	pCi/g	Pre
07-S-021	3022134.326	674250.683	10.0	Th-230	7.7	pCi/g	Pre
07-S-021	3022134.326	674250.683	10.0	Th-232	17.6	pCi/g	Pre
07-S-021	3022134.326	674250.683	10.0	U-233/234	695	pCi/g	Pre
07-S-021	3022134.326	674250.683	10.0	U-235	39.7	pCi/g	Pre
07-S-021	3022134.326	674250.683	10.0	U-238	75.3	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
07-S-021A	3022134.326	674250.683	11.0	Am-241	0.6	pCi/g	Pre
07-S-021A	3022134.326	674250.683	11.0	Pu-238	0.25	pCi/g	Pre
07-S-021A	3022134.326	674250.683	11.0	Pu-239/240	3.74	pCi/g	Pre
07-S-021A	3022134.326	674250.683	11.0	Pu-241	6.13	pCi/g	Pre
07-S-021A	3022134.326	674250.683	11.0	Pu-242	0.02	pCi/g	Pre
07-S-021A	3022134.326	674250.683	11.0	Tc-99	7.8	pCi/g	Pre
07-S-021A	3022134.326	674250.683	11.0	Th-230	1.4	pCi/g	Pre
07-S-021A	3022134.326	674250.683	11.0	Th-232	2.8	pCi/g	Pre
07-S-021A	3022134.326	674250.683	11.0	U-233/234	259	pCi/g	Pre
07-S-021A	3022134.326	674250.683	11.0	U-235	13.3	pCi/g	Pre
07-S-021A	3022134.326	674250.683	11.0	U-238	24.3	pCi/g	Pre
07-S-023	3022132.218	674231.6611	7.0	Am-241	2.92	pCi/g	Pre
07-S-023	3022132.218	674231.6611	7.0	Pu-238	1.11	pCi/g	Pre
07-S-023	3022132.218	674231.6611	7.0	Pu-239/240	26.2	pCi/g	Pre
07-S-023	3022132.218	674231.6611	7.0	Pu-241	42.97	pCi/g	Pre
07-S-023	3022132.218	674231.6611	7.0	Pu-242	0.03	pCi/g	Pre
07-S-023	3022132.218	674231.6611	7.0	Tc-99	4.8	pCi/g	Pre
07-S-023	3022132.218	674231.6611	7.0	Th-230	21.4	pCi/g	Pre
07-S-023	3022132.218	674231.6611	7.0	Th-232	11	pCi/g	Pre
07-S-023	3022132.218	674231.6611	7.0	U-233/234	88	pCi/g	Pre
07-S-023	3022132.218	674231.6611	7.0	U-235	3.4	pCi/g	Pre
07-S-023	3022132.218	674231.6611	7.0	U-238	16.2	pCi/g	Pre
462-I8-2	3022134.184	674320.9303	7.0	Am-241	-0.04	pCi/g	Pre
462-I8-2	3022134.184	674320.9303	7.0	Pu-238	0	pCi/g	Pre
462-I8-2	3022134.184	674320.9303	7.0	Pu-239/240	0	pCi/g	Pre
462-I8-2	3022134.184	674320.9303	7.0	Pu-241	0	pCi/g	Pre
462-I8-2	3022134.184	674320.9303	7.0	Pu-242	0	pCi/g	Pre
462-I8-2	3022134.184	674320.9303	7.0	Tc-99	0.1	pCi/g	Pre
462-I8-2	3022134.184	674320.9303	7.0	Th-230	0.7	pCi/g	Pre
462-I8-2	3022134.184	674320.9303	7.0	Th-232	1.1	pCi/g	Pre
462-I8-2	3022134.184	674320.9303	7.0	U-233/234	5	pCi/g	Pre
462-I8-2	3022134.184	674320.9303	7.0	U-235	0.2	pCi/g	Pre
462-I8-2	3022134.184	674320.9303	7.0	U-238	1.3	pCi/g	Pre
501-I8-2	3022114.301	674294.8283	7.0	Am-241	0.15	pCi/g	Pre
501-I8-2	3022114.301	674294.8283	7.0	Pu-238	0.03	pCi/g	Pre
501-I8-2	3022114.301	674294.8283	7.0	Pu-239/240	0.41	pCi/g	Pre
501-I8-2	3022114.301	674294.8283	7.0	Pu-241	0.67	pCi/g	Pre
501-I8-2	3022114.301	674294.8283	7.0	Pu-242	0	pCi/g	Pre
501-I8-2	3022114.301	674294.8283	7.0	Tc-99	0.8	pCi/g	Pre
501-I8-2	3022114.301	674294.8283	7.0	Th-230	0.8	pCi/g	Pre
501-I8-2	3022114.301	674294.8283	7.0	Th-232	1.3	pCi/g	Pre
501-I8-2	3022114.301	674294.8283	7.0	U-233/234	0.5	pCi/g	Pre
501-I8-2	3022114.301	674294.8283	7.0	U-235	0	pCi/g	Pre
501-I8-2	3022114.301	674294.8283	7.0	U-238	0.3	pCi/g	Pre
502-C2-2	3022112.816	674271.2059	7.0	Am-241	-0.06	pCi/g	Pre
502-C2-2	3022112.816	674271.2059	7.0	Pu-238	0	pCi/g	Pre
502-C2-2	3022112.816	674271.2059	7.0	Pu-239/240	0	pCi/g	Pre
502-C2-2	3022112.816	674271.2059	7.0	Pu-241	0	pCi/g	Pre
502-C2-2	3022112.816	674271.2059	7.0	Pu-242	0	pCi/g	Pre
502-C2-2	3022112.816	674271.2059	7.0	Tc-99	1.7	pCi/g	Pre
502-C2-2	3022112.816	674271.2059	7.0	Th-230	0.7	pCi/g	Pre
502-C2-2	3022112.816	674271.2059	7.0	Th-232	1	pCi/g	Pre
502-C2-2	3022112.816	674271.2059	7.0	U-233/234	4.3	pCi/g	Pre
502-C2-2	3022112.816	674271.2059	7.0	U-235	0.2	pCi/g	Pre
502-C2-2	3022112.816	674271.2059	7.0	U-238	1.2	pCi/g	Pre

Historical Dataset, Survey Unit 9

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
541-C2-2	3022092.933	674245.1039	7.0	Am-241	0.01	pCi/g	Pre
541-C2-2	3022092.933	674245.1039	7.0	Pu-238	0	pCi/g	Pre
541-C2-2	3022092.933	674245.1039	7.0	Pu-239/240	0.03	pCi/g	Pre
541-C2-2	3022092.933	674245.1039	7.0	Pu-241	0.05	pCi/g	Pre
541-C2-2	3022092.933	674245.1039	7.0	Pu-242	0	pCi/g	Pre
541-C2-2	3022092.933	674245.1039	7.0	Tc-99	1.5	pCi/g	Pre
541-C2-2	3022092.933	674245.1039	7.0	Th-230	0.4	pCi/g	Pre
541-C2-2	3022092.933	674245.1039	7.0	Th-232	0.6	pCi/g	Pre
541-C2-2	3022092.933	674245.1039	7.0	U-233/234	3.3	pCi/g	Pre
541-C2-2	3022092.933	674245.1039	7.0	U-235	0.1	pCi/g	Pre
541-C2-2	3022092.933	674245.1039	7.0	U-238	1	pCi/g	Pre
541-H3-2	3022105.485	674256.1646	7.0	Am-241	-0.05	pCi/g	Pre
541-H3-2	3022105.485	674256.1646	7.0	Pu-238	0	pCi/g	Pre
541-H3-2	3022105.485	674256.1646	7.0	Pu-239/240	0	pCi/g	Pre
541-H3-2	3022105.485	674256.1646	7.0	Pu-241	0	pCi/g	Pre
541-H3-2	3022105.485	674256.1646	7.0	Pu-242	0	pCi/g	Pre
541-H3-2	3022105.485	674256.1646	7.0	Tc-99	1.5	pCi/g	Pre
541-H3-2	3022105.485	674256.1646	7.0	Th-230	0.3	pCi/g	Pre
541-H3-2	3022105.485	674256.1646	7.0	Th-232	0.4	pCi/g	Pre
541-H3-2	3022105.485	674256.1646	7.0	U-233/234	3.1	pCi/g	Pre
541-H3-2	3022105.485	674256.1646	7.0	U-235	0.1	pCi/g	Pre
541-H3-2	3022105.485	674256.1646	7.0	U-238	1	pCi/g	Pre
581-I4-2	3022090.202	674230.6825	7.0	Am-241	0.12	pCi/g	Pre
581-I4-2	3022090.202	674230.6825	7.0	Pu-238	0.02	pCi/g	Pre
581-I4-2	3022090.202	674230.6825	7.0	Pu-239/240	0.32	pCi/g	Pre
581-I4-2	3022090.202	674230.6825	7.0	Pu-241	0.52	pCi/g	Pre
581-I4-2	3022090.202	674230.6825	7.0	Pu-242	0	pCi/g	Pre
581-I4-2	3022090.202	674230.6825	7.0	Tc-99	1.4	pCi/g	Pre
581-I4-2	3022090.202	674230.6825	7.0	Th-230	1	pCi/g	Pre
581-I4-2	3022090.202	674230.6825	7.0	Th-232	1.7	pCi/g	Pre
581-I4-2	3022090.202	674230.6825	7.0	U-233/234	2.5	pCi/g	Pre
581-I4-2	3022090.202	674230.6825	7.0	U-235	0.1	pCi/g	Pre
581-I4-2	3022090.202	674230.6825	7.0	U-238	0.8	pCi/g	Pre

Appendix A.4

Historical Dataset, Survey Unit 19

Historical Dataset, Survey Unit 19

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
09-S4-017	3022341.859	673858.2655	0.5	Am-241	0.47	pCi/g	Pre
09-S4-017	3022341.859	673858.2655	0.5	Pu-238	0.28	pCi/g	Pre
09-S4-017	3022341.859	673858.2655	0.5	Pu-239/240	1.29	pCi/g	Pre
09-S4-017	3022341.859	673858.2655	0.5	Pu-241	4.2	pCi/g	Pre
09-S4-017	3022341.859	673858.2655	0.5	Pu-242	0	pCi/g	Pre
09-S4-017	3022341.859	673858.2655	0.5	Tc-99	2.7	pCi/g	Pre
09-S4-017	3022341.859	673858.2655	0.5	Th-230	0.9	pCi/g	Pre
09-S4-017	3022341.859	673858.2655	0.5	Th-232	1.3	pCi/g	Pre
09-S4-017	3022341.859	673858.2655	0.5	U-233/234	3	pCi/g	Pre
09-S4-017	3022341.859	673858.2655	0.5	U-235	0.1	pCi/g	Pre
09-S4-017	3022341.859	673858.2655	0.5	U-238	1.2	pCi/g	Pre
09-S5-018	3022341.859	673858.2655	2	Am-241	0.59	pCi/g	Pre
09-S5-018	3022341.859	673858.2655	2	Pu-238	0.75	pCi/g	Pre
09-S5-018	3022341.859	673858.2655	2	Pu-239/240	1.63	pCi/g	Pre
09-S5-018	3022341.859	673858.2655	2	Pu-241	3.07	pCi/g	Pre
09-S5-018	3022341.859	673858.2655	2	Pu-242	0	pCi/g	Pre
09-S5-018	3022341.859	673858.2655	2	Tc-99	1.7	pCi/g	Pre
09-S5-018	3022341.859	673858.2655	2	Th-230	1	pCi/g	Pre
09-S5-018	3022341.859	673858.2655	2	Th-232	1.6	pCi/g	Pre
09-S5-018	3022341.859	673858.2655	2	U-233/234	85.8	pCi/g	Pre
09-S5-018	3022341.859	673858.2655	2	U-235	2	pCi/g	Pre
09-S5-018	3022341.859	673858.2655	2	U-238	1	pCi/g	Pre
09-S5-019	3022341.859	673858.2655	3.5	Am-241	0.04	pCi/g	Pre
09-S5-019	3022341.859	673858.2655	3.5	Pu-238	0.59	pCi/g	Pre
09-S5-019	3022341.859	673858.2655	3.5	Pu-239/240	0.12	pCi/g	Pre
09-S5-019	3022341.859	673858.2655	3.5	Pu-241	4.54	pCi/g	Pre
09-S5-019	3022341.859	673858.2655	3.5	Pu-242	0	pCi/g	Pre
09-S5-019	3022341.859	673858.2655	3.5	Tc-99	1.6	pCi/g	Pre
09-S5-019	3022341.859	673858.2655	3.5	Th-230	0.9	pCi/g	Pre
09-S5-019	3022341.859	673858.2655	3.5	Th-232	1.2	pCi/g	Pre
09-S5-019	3022341.859	673858.2655	3.5	U-233/234	76.1	pCi/g	Pre
09-S5-019	3022341.859	673858.2655	3.5	U-235	2.5	pCi/g	Pre
09-S5-019	3022341.859	673858.2655	3.5	U-238	31	pCi/g	Pre
1015-G4-2	3022415.821	673520.3765	1.5	Am-241	0.02	pCi/g	Pre
1015-G4-2	3022415.821	673520.3765	1.5	Pu-238	0	pCi/g	Pre
1015-G4-2	3022415.821	673520.3765	1.5	Pu-239/240	0	pCi/g	Pre
1015-G4-2	3022415.821	673520.3765	1.5	Pu-241	0	pCi/g	Pre
1015-G4-2	3022415.821	673520.3765	1.5	Pu-242	0	pCi/g	Pre
1015-G4-2	3022415.821	673520.3765	1.5	Tc-99	0	pCi/g	Pre
1015-G4-2	3022415.821	673520.3765	1.5	Th-230	0.6	pCi/g	Pre
1015-G4-2	3022415.821	673520.3765	1.5	Th-232	0.9	pCi/g	Pre
1015-G4-2	3022415.821	673520.3765	1.5	U-233/234	12.6	pCi/g	Pre
1015-G4-2	3022415.821	673520.3765	1.5	U-235	0.5	pCi/g	Pre
1015-G4-2	3022415.821	673520.3765	1.5	U-238	2.5	pCi/g	Pre
1016-D2-2	3022430.743	673496.6235	1.5	Am-241	-0.03	pCi/g	Pre
1016-D2-2	3022430.743	673496.6235	1.5	Pu-238	0	pCi/g	Pre
1016-D2-2	3022430.743	673496.6235	1.5	Pu-239/240	0	pCi/g	Pre
1016-D2-2	3022430.743	673496.6235	1.5	Pu-241	0	pCi/g	Pre
1016-D2-2	3022430.743	673496.6235	1.5	Pu-242	0	pCi/g	Pre
1016-D2-2	3022430.743	673496.6235	1.5	Tc-99	0	pCi/g	Pre
1016-D2-2	3022430.743	673496.6235	1.5	Th-230	1.9	pCi/g	Pre
1016-D2-2	3022430.743	673496.6235	1.5	Th-232	3.2	pCi/g	Pre
1016-D2-2	3022430.743	673496.6235	1.5	U-233/234	56.6	pCi/g	Pre
1016-D2-2	3022430.743	673496.6235	1.5	U-235	2.2	pCi/g	Pre
1016-D2-2	3022430.743	673496.6235	1.5	U-238	6.9	pCi/g	Pre

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Historical Dataset, Survey Unit 19

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
748-E8-1	3022274.259	673908.8422	0.5	Am-241	0.12	pCi/g	Pre
748-E8-1	3022274.259	673908.8422	0.5	Pu-238	0.12	pCi/g	Pre
748-E8-1	3022274.259	673908.8422	0.5	Pu-239/240	2.3	pCi/g	Pre
748-E8-1	3022274.259	673908.8422	0.5	Pu-241	3.47	pCi/g	Pre
748-E8-1	3022274.259	673908.8422	0.5	Pu-242	0	pCi/g	Pre
748-E8-1	3022274.259	673908.8422	0.5	Tc-99	8.6	pCi/g	Pre
748-E8-1	3022274.259	673908.8422	0.5	Th-230	2.6	pCi/g	Pre
748-E8-1	3022274.259	673908.8422	0.5	Th-232	6.6	pCi/g	Pre
748-E8-1	3022274.259	673908.8422	0.5	U-233/234	390	pCi/g	Pre
748-E8-1	3022274.259	673908.8422	0.5	U-235	11	pCi/g	Pre
748-E8-1	3022274.259	673908.8422	0.5	U-238	6.5	pCi/g	Pre
749-B8-1	3022294.404	673881.1086	0.5	Am-241	0.67	pCi/g	Pre
749-B8-1	3022294.404	673881.1086	0.5	Pu-238	0.12	pCi/g	Pre
749-B8-1	3022294.404	673881.1086	0.5	Pu-239/240	1.84	pCi/g	Pre
749-B8-1	3022294.404	673881.1086	0.5	Pu-241	3.01	pCi/g	Pre
749-B8-1	3022294.404	673881.1086	0.5	Pu-242	0	pCi/g	Pre
749-B8-1	3022294.404	673881.1086	0.5	Tc-99	7.9	pCi/g	Pre
749-B8-1	3022294.404	673881.1086	0.5	Th-230	4.5	pCi/g	Pre
749-B8-1	3022294.404	673881.1086	0.5	Th-232	8.5	pCi/g	Pre
749-B8-1	3022294.404	673881.1086	0.5	U-233/234	372.5	pCi/g	Pre
749-B8-1	3022294.404	673881.1086	0.5	U-235	14	pCi/g	Pre
749-B8-1	3022294.404	673881.1086	0.5	U-238	24.9	pCi/g	Pre
749-E8-1	3022300.369	673888.9392	0.5	Am-241	-0.03	pCi/g	Pre
749-E8-1	3022300.369	673888.9392	0.5	Pu-238	0	pCi/g	Pre
749-E8-1	3022300.369	673888.9392	0.5	Pu-239/240	0	pCi/g	Pre
749-E8-1	3022300.369	673888.9392	0.5	Pu-241	0	pCi/g	Pre
749-E8-1	3022300.369	673888.9392	0.5	Pu-242	0	pCi/g	Pre
749-E8-1	3022300.369	673888.9392	0.5	Tc-99	6.3	pCi/g	Pre
749-E8-1	3022300.369	673888.9392	0.5	Th-230	1.9	pCi/g	Pre
749-E8-1	3022300.369	673888.9392	0.5	Th-232	3.4	pCi/g	Pre
749-E8-1	3022300.369	673888.9392	0.5	U-233/234	195.8	pCi/g	Pre
749-E8-1	3022300.369	673888.9392	0.5	U-235	7.4	pCi/g	Pre
749-E8-1	3022300.369	673888.9392	0.5	U-238	16.1	pCi/g	Pre
750-B9-1	3022323.125	673859.2152	0.5	Am-241	-0.02	pCi/g	Pre
750-B9-1	3022323.125	673859.2152	0.5	Pu-238	0	pCi/g	Pre
750-B9-1	3022323.125	673859.2152	0.5	Pu-239/240	0	pCi/g	Pre
750-B9-1	3022323.125	673859.2152	0.5	Pu-241	0	pCi/g	Pre
750-B9-1	3022323.125	673859.2152	0.5	Pu-242	0	pCi/g	Pre
750-B9-1	3022323.125	673859.2152	0.5	Tc-99	0	pCi/g	Pre
750-B9-1	3022323.125	673859.2152	0.5	Th-230	1.8	pCi/g	Pre
750-B9-1	3022323.125	673859.2152	0.5	Th-232	3	pCi/g	Pre
750-B9-1	3022323.125	673859.2152	0.5	U-233/234	117.4	pCi/g	Pre
750-B9-1	3022323.125	673859.2152	0.5	U-235	4.5	pCi/g	Pre
750-B9-1	3022323.125	673859.2152	0.5	U-238	11.4	pCi/g	Pre
750-I2-1	3022318.766	673891.4187	0.5	Am-241	-0.04	pCi/g	Pre
750-I2-1	3022318.766	673891.4187	0.5	Pu-238	0	pCi/g	Pre
750-I2-1	3022318.766	673891.4187	0.5	Pu-239/240	0	pCi/g	Pre
750-I2-1	3022318.766	673891.4187	0.5	Pu-241	0	pCi/g	Pre
750-I2-1	3022318.766	673891.4187	0.5	Pu-242	0	pCi/g	Pre
750-I2-1	3022318.766	673891.4187	0.5	Tc-99	0	pCi/g	Pre
750-I2-1	3022318.766	673891.4187	0.5	Th-230	0.8	pCi/g	Pre
750-I2-1	3022318.766	673891.4187	0.5	Th-232	1.2	pCi/g	Pre
750-I2-1	3022318.766	673891.4187	0.5	U-233/234	1.4	pCi/g	Pre
750-I2-1	3022318.766	673891.4187	0.5	U-235	0.1	pCi/g	Pre
750-I2-1	3022318.766	673891.4187	0.5	U-238	0.6	pCi/g	Pre

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Historical Dataset, Survey Unit 19

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
751-B2-1	3022330.958	673853.2443	0.5	Am-241	0.11	pCi/g	Pre
751-B2-1	3022330.958	673853.2443	0.5	Pu-238	0	pCi/g	Pre
751-B2-1	3022330.958	673853.2443	0.5	Pu-239/240	0	pCi/g	Pre
751-B2-1	3022330.958	673853.2443	0.5	Pu-241	0	pCi/g	Pre
751-B2-1	3022330.958	673853.2443	0.5	Pu-242	0	pCi/g	Pre
751-B2-1	3022330.958	673853.2443	0.5	Tc-99	0	pCi/g	Pre
751-B2-1	3022330.958	673853.2443	0.5	Th-230	0.9	pCi/g	Pre
751-B2-1	3022330.958	673853.2443	0.5	Th-232	1.4	pCi/g	Pre
751-B2-1	3022330.958	673853.2443	0.5	U-233/234	21.5	pCi/g	Pre
751-B2-1	3022330.958	673853.2443	0.5	U-235	0.9	pCi/g	Pre
751-B2-1	3022330.958	673853.2443	0.5	U-238	3.6	pCi/g	Pre
751-B2-2	3022330.958	673853.2443	1.5	Am-241	0.04	pCi/g	Pre
751-B2-2	3022330.958	673853.2443	1.5	Pu-238	0	pCi/g	Pre
751-B2-2	3022330.958	673853.2443	1.5	Pu-239/240	0	pCi/g	Pre
751-B2-2	3022330.958	673853.2443	1.5	Pu-241	0	pCi/g	Pre
751-B2-2	3022330.958	673853.2443	1.5	Pu-242	0	pCi/g	Pre
751-B2-2	3022330.958	673853.2443	1.5	Tc-99	0	pCi/g	Pre
751-B2-2	3022330.958	673853.2443	1.5	Th-230	0.8	pCi/g	Pre
751-B2-2	3022330.958	673853.2443	1.5	Th-232	1.3	pCi/g	Pre
751-B2-2	3022330.958	673853.2443	1.5	U-233/234	33	pCi/g	Pre
751-B2-2	3022330.958	673853.2443	1.5	U-235	1.3	pCi/g	Pre
751-B2-2	3022330.958	673853.2443	1.5	U-238	4.8	pCi/g	Pre
752-B1-1	3022354.456	673835.3316	0.5	Am-241	0.21	pCi/g	Pre
752-B1-1	3022354.456	673835.3316	0.5	Pu-238	0	pCi/g	Pre
752-B1-1	3022354.456	673835.3316	0.5	Pu-239/240	0	pCi/g	Pre
752-B1-1	3022354.456	673835.3316	0.5	Pu-241	0	pCi/g	Pre
752-B1-1	3022354.456	673835.3316	0.5	Pu-242	0	pCi/g	Pre
752-B1-1	3022354.456	673835.3316	0.5	Tc-99	0	pCi/g	Pre
752-B1-1	3022354.456	673835.3316	0.5	Th-230	1	pCi/g	Pre
752-B1-1	3022354.456	673835.3316	0.5	Th-232	1.6	pCi/g	Pre
752-B1-1	3022354.456	673835.3316	0.5	U-233/234	4.9	pCi/g	Pre
752-B1-1	3022354.456	673835.3316	0.5	U-235	0.2	pCi/g	Pre
752-B1-1	3022354.456	673835.3316	0.5	U-238	1.3	pCi/g	Pre
752-B1-2	3022354.456	673835.3316	1.5	Am-241	0.01	pCi/g	Pre
752-B1-2	3022354.456	673835.3316	1.5	Pu-238	0	pCi/g	Pre
752-B1-2	3022354.456	673835.3316	1.5	Pu-239/240	0	pCi/g	Pre
752-B1-2	3022354.456	673835.3316	1.5	Pu-241	0	pCi/g	Pre
752-B1-2	3022354.456	673835.3316	1.5	Pu-242	0	pCi/g	Pre
752-B1-2	3022354.456	673835.3316	1.5	Tc-99	0.1	pCi/g	Pre
752-B1-2	3022354.456	673835.3316	1.5	Th-230	0.7	pCi/g	Pre
752-B1-2	3022354.456	673835.3316	1.5	Th-232	1	pCi/g	Pre
752-B1-2	3022354.456	673835.3316	1.5	U-233/234	1.1	pCi/g	Pre
752-B1-2	3022354.456	673835.3316	1.5	U-235	0	pCi/g	Pre
752-B1-2	3022354.456	673835.3316	1.5	U-238	0.5	pCi/g	Pre
790-D2-3	3022315.052	673832.3627	2.5	Am-241	-2.2	pCi/g	Pre
790-D2-3	3022315.052	673832.3627	2.5	Pu-238	0	pCi/g	Pre
790-D2-3	3022315.052	673832.3627	2.5	Pu-239/240	0	pCi/g	Pre
790-D2-3	3022315.052	673832.3627	2.5	Pu-241	0	pCi/g	Pre
790-D2-3	3022315.052	673832.3627	2.5	Pu-242	0	pCi/g	Pre
790-D2-3	3022315.052	673832.3627	2.5	Tc-99	0	pCi/g	Pre
790-D2-3	3022315.052	673832.3627	2.5	Th-230	1.5	pCi/g	Pre
790-D2-3	3022315.052	673832.3627	2.5	Th-232	2.5	pCi/g	Pre
790-D2-3	3022315.052	673832.3627	2.5	U-233/234	798	pCi/g	Pre
790-D2-3	3022315.052	673832.3627	2.5	U-235	29.5	pCi/g	Pre
790-D2-3	3022315.052	673832.3627	2.5	U-238	41.7	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
790-I8-3	3022340.659	673833.4719	2.5	Am-241	0.19	pCi/g	Pre
790-I8-3	3022340.659	673833.4719	2.5	Pu-238	0	pCi/g	Pre
790-I8-3	3022340.659	673833.4719	2.5	Pu-239/240	0.06	pCi/g	Pre
790-I8-3	3022340.659	673833.4719	2.5	Pu-241	-0.26	pCi/g	Pre
790-I8-3	3022340.659	673833.4719	2.5	Pu-242	0	pCi/g	Pre
790-I8-3	3022340.659	673833.4719	2.5	Tc-99	1.4	pCi/g	Pre
790-I8-3	3022340.659	673833.4719	2.5	Th-230	1.5	pCi/g	Pre
790-I8-3	3022340.659	673833.4719	2.5	Th-232	1	pCi/g	Pre
790-I8-3	3022340.659	673833.4719	2.5	U-233/234	42	pCi/g	Pre
790-I8-3	3022340.659	673833.4719	2.5	U-235	1.1	pCi/g	Pre
790-I8-3	3022340.659	673833.4719	2.5	U-238	8.7	pCi/g	Pre
791-D2-3	3022341.161	673812.4597	2.5	Am-241	0.07	pCi/g	Pre
791-D2-3	3022341.161	673812.4597	2.5	Pu-238	0	pCi/g	Pre
791-D2-3	3022341.161	673812.4597	2.5	Pu-239/240	0	pCi/g	Pre
791-D2-3	3022341.161	673812.4597	2.5	Pu-241	0	pCi/g	Pre
791-D2-3	3022341.161	673812.4597	2.5	Pu-242	0	pCi/g	Pre
791-D2-3	3022341.161	673812.4597	2.5	Tc-99	0	pCi/g	Pre
791-D2-3	3022341.161	673812.4597	2.5	Th-230	1.4	pCi/g	Pre
791-D2-3	3022341.161	673812.4597	2.5	Th-232	2.4	pCi/g	Pre
791-D2-3	3022341.161	673812.4597	2.5	U-233/234	20.8	pCi/g	Pre
791-D2-3	3022341.161	673812.4597	2.5	U-235	0.8	pCi/g	Pre
791-D2-3	3022341.161	673812.4597	2.5	U-238	3.5	pCi/g	Pre
791-D2-4	3022341.161	673812.4597	3.5	Am-241	0.39	pCi/g	Pre
791-D2-4	3022341.161	673812.4597	3.5	Pu-238	0	pCi/g	Pre
791-D2-4	3022341.161	673812.4597	3.5	Pu-239/240	0	pCi/g	Pre
791-D2-4	3022341.161	673812.4597	3.5	Pu-241	0	pCi/g	Pre
791-D2-4	3022341.161	673812.4597	3.5	Pu-242	0	pCi/g	Pre
791-D2-4	3022341.161	673812.4597	3.5	Tc-99	0	pCi/g	Pre
791-D2-4	3022341.161	673812.4597	3.5	Th-230	1	pCi/g	Pre
791-D2-4	3022341.161	673812.4597	3.5	Th-232	1.6	pCi/g	Pre
791-D2-4	3022341.161	673812.4597	3.5	U-233/234	14.4	pCi/g	Pre
791-D2-4	3022341.161	673812.4597	3.5	U-235	0.6	pCi/g	Pre
791-D2-4	3022341.161	673812.4597	3.5	U-238	2.8	pCi/g	Pre
791-I8-3	3022366.768	673813.5689	2.5	Am-241	-0.23	pCi/g	Pre
791-I8-3	3022366.768	673813.5689	2.5	Pu-238	0	pCi/g	Pre
791-I8-3	3022366.768	673813.5689	2.5	Pu-239/240	0	pCi/g	Pre
791-I8-3	3022366.768	673813.5689	2.5	Pu-241	0	pCi/g	Pre
791-I8-3	3022366.768	673813.5689	2.5	Pu-242	0	pCi/g	Pre
791-I8-3	3022366.768	673813.5689	2.5	Tc-99	0	pCi/g	Pre
791-I8-3	3022366.768	673813.5689	2.5	Th-230	0.7	pCi/g	Pre
791-I8-3	3022366.768	673813.5689	2.5	Th-232	1.1	pCi/g	Pre
791-I8-3	3022366.768	673813.5689	2.5	U-233/234	1.5	pCi/g	Pre
791-I8-3	3022366.768	673813.5689	2.5	U-235	0.1	pCi/g	Pre
791-I8-3	3022366.768	673813.5689	2.5	U-238	0.6	pCi/g	Pre
792-C2-3	3022365.283	673789.9464	2.5	Am-241	0.18	pCi/g	Pre
792-C2-3	3022365.283	673789.9464	2.5	Pu-238	0	pCi/g	Pre
792-C2-3	3022365.283	673789.9464	2.5	Pu-239/240	0	pCi/g	Pre
792-C2-3	3022365.283	673789.9464	2.5	Pu-241	0	pCi/g	Pre
792-C2-3	3022365.283	673789.9464	2.5	Pu-242	0	pCi/g	Pre
792-C2-3	3022365.283	673789.9464	2.5	Tc-99	0	pCi/g	Pre
792-C2-3	3022365.283	673789.9464	2.5	Th-230	0.6	pCi/g	Pre
792-C2-3	3022365.283	673789.9464	2.5	Th-232	1	pCi/g	Pre
792-C2-3	3022365.283	673789.9464	2.5	U-233/234	8.6	pCi/g	Pre
792-C2-3	3022365.283	673789.9464	2.5	U-235	0.3	pCi/g	Pre
792-C2-3	3022365.283	673789.9464	2.5	U-238	1.9	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
792-G8-3	3022388.901	673788.4454	2.5	Am-241	0	pCi/g	Pre
792-G8-3	3022388.901	673788.4454	2.5	Pu-238	0	pCi/g	Pre
792-G8-3	3022388.901	673788.4454	2.5	Pu-239/240	0	pCi/g	Pre
792-G8-3	3022388.901	673788.4454	2.5	Pu-241	0	pCi/g	Pre
792-G8-3	3022388.901	673788.4454	2.5	Pu-242	0	pCi/g	Pre
792-G8-3	3022388.901	673788.4454	2.5	Tc-99	0	pCi/g	Pre
792-G8-3	3022388.901	673788.4454	2.5	Th-230	0.8	pCi/g	Pre
792-G8-3	3022388.901	673788.4454	2.5	Th-232	1.3	pCi/g	Pre
792-G8-3	3022388.901	673788.4454	2.5	U-233/234	19.4	pCi/g	Pre
792-G8-3	3022388.901	673788.4454	2.5	U-235	0.8	pCi/g	Pre
792-G8-3	3022388.901	673788.4454	2.5	U-238	3.4	pCi/g	Pre
793-F8-3	3022413.023	673765.9322	2.5	Am-241	-0.26	pCi/g	Pre
793-F8-3	3022413.023	673765.9322	2.5	Pu-238	0	pCi/g	Pre
793-F8-3	3022413.023	673765.9322	2.5	Pu-239/240	0	pCi/g	Pre
793-F8-3	3022413.023	673765.9322	2.5	Pu-241	0	pCi/g	Pre
793-F8-3	3022413.023	673765.9322	2.5	Pu-242	0	pCi/g	Pre
793-F8-3	3022413.023	673765.9322	2.5	Tc-99	0	pCi/g	Pre
793-F8-3	3022413.023	673765.9322	2.5	Th-230	0.7	pCi/g	Pre
793-F8-3	3022413.023	673765.9322	2.5	Th-232	1.1	pCi/g	Pre
793-F8-3	3022413.023	673765.9322	2.5	U-233/234	21.3	pCi/g	Pre
793-F8-3	3022413.023	673765.9322	2.5	U-235	0.8	pCi/g	Pre
793-F8-3	3022413.023	673765.9322	2.5	U-238	3.6	pCi/g	Pre
794-C1-3	3022414.891	673752.1307	2.5	Am-241	-0.56	pCi/g	Pre
794-C1-3	3022414.891	673752.1307	2.5	Pu-238	0	pCi/g	Pre
794-C1-3	3022414.891	673752.1307	2.5	Pu-239/240	0	pCi/g	Pre
794-C1-3	3022414.891	673752.1307	2.5	Pu-241	0	pCi/g	Pre
794-C1-3	3022414.891	673752.1307	2.5	Pu-242	0	pCi/g	Pre
794-C1-3	3022414.891	673752.1307	2.5	Tc-99	0	pCi/g	Pre
794-C1-3	3022414.891	673752.1307	2.5	Th-230	2	pCi/g	Pre
794-C1-3	3022414.891	673752.1307	2.5	Th-232	3.4	pCi/g	Pre
794-C1-3	3022414.891	673752.1307	2.5	U-233/234	108.8	pCi/g	Pre
794-C1-3	3022414.891	673752.1307	2.5	U-235	4.2	pCi/g	Pre
794-C1-3	3022414.891	673752.1307	2.5	U-238	10.8	pCi/g	Pre
794-D2-3	3022419.49	673752.7506	2.5	Am-241	0.29	pCi/g	Pre
794-D2-3	3022419.49	673752.7506	2.5	Pu-238	0	pCi/g	Pre
794-D2-3	3022419.49	673752.7506	2.5	Pu-239/240	0.07	pCi/g	Pre
794-D2-3	3022419.49	673752.7506	2.5	Pu-241	-0.09	pCi/g	Pre
794-D2-3	3022419.49	673752.7506	2.5	Pu-242	0	pCi/g	Pre
794-D2-3	3022419.49	673752.7506	2.5	Tc-99	1	pCi/g	Pre
794-D2-3	3022419.49	673752.7506	2.5	Th-230	1.3	pCi/g	Pre
794-D2-3	3022419.49	673752.7506	2.5	Th-232	1.4	pCi/g	Pre
794-D2-3	3022419.49	673752.7506	2.5	U-233/234	52	pCi/g	Pre
794-D2-3	3022419.49	673752.7506	2.5	U-235	2	pCi/g	Pre
794-D2-3	3022419.49	673752.7506	2.5	U-238	15	pCi/g	Pre
795-F1-1	3022446.965	673740.0582	0.5	Am-241	0	pCi/g	Pre
795-F1-1	3022446.965	673740.0582	0.5	Pu-238	-0.3	pCi/g	Pre
795-F1-1	3022446.965	673740.0582	0.5	Pu-239/240	0.3	pCi/g	Pre
795-F1-1	3022446.965	673740.0582	0.5	Pu-241	0.37	pCi/g	Pre
795-F1-1	3022446.965	673740.0582	0.5	Pu-242	0	pCi/g	Pre
795-F1-1	3022446.965	673740.0582	0.5	Tc-99	1.3	pCi/g	Pre
795-F1-1	3022446.965	673740.0582	0.5	Th-230	1	pCi/g	Pre
795-F1-1	3022446.965	673740.0582	0.5	Th-232	1.5	pCi/g	Pre
795-F1-1	3022446.965	673740.0582	0.5	U-233/234	8	pCi/g	Pre
795-F1-1	3022446.965	673740.0582	0.5	U-235	0.2	pCi/g	Pre
795-F1-1	3022446.965	673740.0582	0.5	U-238	1.5	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
795-F1-2	3022446.965	673740.0582	1.5	Am-241	-0.01	pCi/g	Pre
795-F1-2	3022446.965	673740.0582	1.5	Pu-238	0	pCi/g	Pre
795-F1-2	3022446.965	673740.0582	1.5	Pu-239/240	0	pCi/g	Pre
795-F1-2	3022446.965	673740.0582	1.5	Pu-241	0	pCi/g	Pre
795-F1-2	3022446.965	673740.0582	1.5	Pu-242	0	pCi/g	Pre
795-F1-2	3022446.965	673740.0582	1.5	Tc-99	0	pCi/g	Pre
795-F1-2	3022446.965	673740.0582	1.5	Th-230	0.7	pCi/g	Pre
795-F1-2	3022446.965	673740.0582	1.5	Th-232	1.1	pCi/g	Pre
795-F1-2	3022446.965	673740.0582	1.5	U-233/234	6.6	pCi/g	Pre
795-F1-2	3022446.965	673740.0582	1.5	U-235	0.3	pCi/g	Pre
795-F1-2	3022446.965	673740.0582	1.5	U-238	1.6	pCi/g	Pre
795-F1-3	3022446.965	673740.0582	2.5	Am-241	-0.1	pCi/g	Pre
795-F1-3	3022446.965	673740.0582	2.5	Pu-238	0	pCi/g	Pre
795-F1-3	3022446.965	673740.0582	2.5	Pu-239/240	0	pCi/g	Pre
795-F1-3	3022446.965	673740.0582	2.5	Pu-241	0	pCi/g	Pre
795-F1-3	3022446.965	673740.0582	2.5	Pu-242	0	pCi/g	Pre
795-F1-3	3022446.965	673740.0582	2.5	Tc-99	0	pCi/g	Pre
795-F1-3	3022446.965	673740.0582	2.5	Th-230	0.5	pCi/g	Pre
795-F1-3	3022446.965	673740.0582	2.5	Th-232	0.8	pCi/g	Pre
795-F1-3	3022446.965	673740.0582	2.5	U-233/234	4.6	pCi/g	Pre
795-F1-3	3022446.965	673740.0582	2.5	U-235	0.2	pCi/g	Pre
795-F1-3	3022446.965	673740.0582	2.5	U-238	1.3	pCi/g	Pre
796-D2-2	3022471.709	673712.9445	1.5	Am-241	0.08	pCi/g	Pre
796-D2-2	3022471.709	673712.9445	1.5	Pu-238	0	pCi/g	Pre
796-D2-2	3022471.709	673712.9445	1.5	Pu-239/240	0	pCi/g	Pre
796-D2-2	3022471.709	673712.9445	1.5	Pu-241	0	pCi/g	Pre
796-D2-2	3022471.709	673712.9445	1.5	Pu-242	0	pCi/g	Pre
796-D2-2	3022471.709	673712.9445	1.5	Tc-99	0	pCi/g	Pre
796-D2-2	3022471.709	673712.9445	1.5	Th-230	0.9	pCi/g	Pre
796-D2-2	3022471.709	673712.9445	1.5	Th-232	1.4	pCi/g	Pre
796-D2-2	3022471.709	673712.9445	1.5	U-233/234	2.3	pCi/g	Pre
796-D2-2	3022471.709	673712.9445	1.5	U-235	0.1	pCi/g	Pre
796-D2-2	3022471.709	673712.9445	1.5	U-238	0.8	pCi/g	Pre
796-D3-3	3022471.709	673712.9445	2.5	Am-241	0	pCi/g	Pre
796-D3-3	3022471.709	673712.9445	2.5	Pu-238	0	pCi/g	Pre
796-D3-3	3022471.709	673712.9445	2.5	Pu-239/240	0	pCi/g	Pre
796-D3-3	3022471.709	673712.9445	2.5	Pu-241	0	pCi/g	Pre
796-D3-3	3022471.709	673712.9445	2.5	Pu-242	0	pCi/g	Pre
796-D3-3	3022471.709	673712.9445	2.5	Tc-99	0	pCi/g	Pre
796-D3-3	3022471.709	673712.9445	2.5	Th-230	0.5	pCi/g	Pre
796-D3-3	3022471.709	673712.9445	2.5	Th-232	0.8	pCi/g	Pre
796-D3-3	3022471.709	673712.9445	2.5	U-233/234	5.3	pCi/g	Pre
796-D3-3	3022471.709	673712.9445	2.5	U-235	0.2	pCi/g	Pre
796-D3-3	3022471.709	673712.9445	2.5	U-238	1.4	pCi/g	Pre
797-B1-2	3022491.231	673689.8114	1.5	Am-241	0.05	pCi/g	Pre
797-B1-2	3022491.231	673689.8114	1.5	Pu-238	0	pCi/g	Pre
797-B1-2	3022491.231	673689.8114	1.5	Pu-239/240	0	pCi/g	Pre
797-B1-2	3022491.231	673689.8114	1.5	Pu-241	0	pCi/g	Pre
797-B1-2	3022491.231	673689.8114	1.5	Pu-242	0	pCi/g	Pre
797-B1-2	3022491.231	673689.8114	1.5	Tc-99	0	pCi/g	Pre
797-B1-2	3022491.231	673689.8114	1.5	Th-230	0.7	pCi/g	Pre
797-B1-2	3022491.231	673689.8114	1.5	Th-232	1.2	pCi/g	Pre
797-B1-2	3022491.231	673689.8114	1.5	U-233/234	3.3	pCi/g	Pre
797-B1-2	3022491.231	673689.8114	1.5	U-235	0.1	pCi/g	Pre
797-B1-2	3022491.231	673689.8114	1.5	U-238	1	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
798-B1-2	3022517.341	673669.9083	1.5	Am-241	-0.07	pCi/g	Pre
798-B1-2	3022517.341	673669.9083	1.5	Pu-238	0	pCi/g	Pre
798-B1-2	3022517.341	673669.9083	1.5	Pu-239/240	0	pCi/g	Pre
798-B1-2	3022517.341	673669.9083	1.5	Pu-241	0	pCi/g	Pre
798-B1-2	3022517.341	673669.9083	1.5	Pu-242	0	pCi/g	Pre
798-B1-2	3022517.341	673669.9083	1.5	Tc-99	0	pCi/g	Pre
798-B1-2	3022517.341	673669.9083	1.5	Th-230	0.8	pCi/g	Pre
798-B1-2	3022517.341	673669.9083	1.5	Th-232	1.2	pCi/g	Pre
798-B1-2	3022517.341	673669.9083	1.5	U-233/234	4.2	pCi/g	Pre
798-B1-2	3022517.341	673669.9083	1.5	U-235	0.2	pCi/g	Pre
798-B1-2	3022517.341	673669.9083	1.5	U-238	1.2	pCi/g	Pre
828-F3-3	3022275.647	673829.3939	2.5	Am-241	-0.29	pCi/g	Pre
828-F3-3	3022275.647	673829.3939	2.5	Pu-238	0	pCi/g	Pre
828-F3-3	3022275.647	673829.3939	2.5	Pu-239/240	0	pCi/g	Pre
828-F3-3	3022275.647	673829.3939	2.5	Pu-241	0	pCi/g	Pre
828-F3-3	3022275.647	673829.3939	2.5	Pu-242	0	pCi/g	Pre
828-F3-3	3022275.647	673829.3939	2.5	Tc-99	4.6	pCi/g	Pre
828-F3-3	3022275.647	673829.3939	2.5	Th-230	1.2	pCi/g	Pre
828-F3-3	3022275.647	673829.3939	2.5	Th-232	2	pCi/g	Pre
828-F3-3	3022275.647	673829.3939	2.5	U-233/234	78.6	pCi/g	Pre
828-F3-3	3022275.647	673829.3939	2.5	U-235	3	pCi/g	Pre
828-F3-3	3022275.647	673829.3939	2.5	U-238	8.7	pCi/g	Pre
837-D3-2	3022506.657	673645.0461	1.5	Am-241	-0.34	pCi/g	Pre
837-D3-2	3022506.657	673645.0461	1.5	Pu-238	0	pCi/g	Pre
837-D3-2	3022506.657	673645.0461	1.5	Pu-239/240	0	pCi/g	Pre
837-D3-2	3022506.657	673645.0461	1.5	Pu-241	0	pCi/g	Pre
837-D3-2	3022506.657	673645.0461	1.5	Pu-242	0	pCi/g	Pre
837-D3-2	3022506.657	673645.0461	1.5	Tc-99	0	pCi/g	Pre
837-D3-2	3022506.657	673645.0461	1.5	Th-230	0.7	pCi/g	Pre
837-D3-2	3022506.657	673645.0461	1.5	Th-232	1	pCi/g	Pre
837-D3-2	3022506.657	673645.0461	1.5	U-233/234	2.5	pCi/g	Pre
837-D3-2	3022506.657	673645.0461	1.5	U-235	0.1	pCi/g	Pre
837-D3-2	3022506.657	673645.0461	1.5	U-238	0.8	pCi/g	Pre
837-D3-3	3022506.657	673645.0461	2.5	Am-241	-0.07	pCi/g	Pre
837-D3-3	3022506.657	673645.0461	2.5	Pu-238	0	pCi/g	Pre
837-D3-3	3022506.657	673645.0461	2.5	Pu-239/240	0	pCi/g	Pre
837-D3-3	3022506.657	673645.0461	2.5	Pu-241	0	pCi/g	Pre
837-D3-3	3022506.657	673645.0461	2.5	Pu-242	0	pCi/g	Pre
837-D3-3	3022506.657	673645.0461	2.5	Tc-99	0	pCi/g	Pre
837-D3-3	3022506.657	673645.0461	2.5	Th-230	0.2	pCi/g	Pre
837-D3-3	3022506.657	673645.0461	2.5	Th-232	0.3	pCi/g	Pre
837-D3-3	3022506.657	673645.0461	2.5	U-233/234	0	pCi/g	Pre
837-D3-3	3022506.657	673645.0461	2.5	U-235	0	pCi/g	Pre
837-D3-3	3022506.657	673645.0461	2.5	U-238	0	pCi/g	Pre
837-D3-4	3022506.657	673645.0461	3.5	Am-241	0	pCi/g	Pre
837-D3-4	3022506.657	673645.0461	3.5	Pu-238	0	pCi/g	Pre
837-D3-4	3022506.657	673645.0461	3.5	Pu-239/240	0	pCi/g	Pre
837-D3-4	3022506.657	673645.0461	3.5	Pu-241	0	pCi/g	Pre
837-D3-4	3022506.657	673645.0461	3.5	Pu-242	0	pCi/g	Pre
837-D3-4	3022506.657	673645.0461	3.5	Tc-99	0	pCi/g	Pre
837-D3-4	3022506.657	673645.0461	3.5	Th-230	0.8	pCi/g	Pre
837-D3-4	3022506.657	673645.0461	3.5	Th-232	1.3	pCi/g	Pre
837-D3-4	3022506.657	673645.0461	3.5	U-233/234	3.1	pCi/g	Pre
837-D3-4	3022506.657	673645.0461	3.5	U-235	0.1	pCi/g	Pre
837-D3-4	3022506.657	673645.0461	3.5	U-238	1	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
837-H7-2	3022525.054	673647.5257	1.5	Am-241	-0.01	pCi/g	Pre
837-H7-2	3022525.054	673647.5257	1.5	Pu-238	0	pCi/g	Pre
837-H7-2	3022525.054	673647.5257	1.5	Pu-239/240	0	pCi/g	Pre
837-H7-2	3022525.054	673647.5257	1.5	Pu-241	0	pCi/g	Pre
837-H7-2	3022525.054	673647.5257	1.5	Pu-242	0	pCi/g	Pre
837-H7-2	3022525.054	673647.5257	1.5	Tc-99	0	pCi/g	Pre
837-H7-2	3022525.054	673647.5257	1.5	Th-230	0.4	pCi/g	Pre
837-H7-2	3022525.054	673647.5257	1.5	Th-232	0.6	pCi/g	Pre
837-H7-2	3022525.054	673647.5257	1.5	U-233/234	4.5	pCi/g	Pre
837-H7-2	3022525.054	673647.5257	1.5	U-235	0.2	pCi/g	Pre
837-H7-2	3022525.054	673647.5257	1.5	U-238	1.3	pCi/g	Pre
837-H7-3	3022525.054	673647.5257	2.5	Am-241	-0.22	pCi/g	Pre
837-H7-3	3022525.054	673647.5257	2.5	Pu-238	0	pCi/g	Pre
837-H7-3	3022525.054	673647.5257	2.5	Pu-239/240	0	pCi/g	Pre
837-H7-3	3022525.054	673647.5257	2.5	Pu-241	0	pCi/g	Pre
837-H7-3	3022525.054	673647.5257	2.5	Pu-242	0	pCi/g	Pre
837-H7-3	3022525.054	673647.5257	2.5	Tc-99	0	pCi/g	Pre
837-H7-3	3022525.054	673647.5257	2.5	Th-230	0.7	pCi/g	Pre
837-H7-3	3022525.054	673647.5257	2.5	Th-232	1.1	pCi/g	Pre
837-H7-3	3022525.054	673647.5257	2.5	U-233/234	1.7	pCi/g	Pre
837-H7-3	3022525.054	673647.5257	2.5	U-235	0.1	pCi/g	Pre
837-H7-3	3022525.054	673647.5257	2.5	U-238	0.6	pCi/g	Pre
838-C2-2	3022528.167	673624.5232	1.5	Am-241	-0.2	pCi/g	Pre
838-C2-2	3022528.167	673624.5232	1.5	Pu-238	0	pCi/g	Pre
838-C2-2	3022528.167	673624.5232	1.5	Pu-239/240	0	pCi/g	Pre
838-C2-2	3022528.167	673624.5232	1.5	Pu-241	0	pCi/g	Pre
838-C2-2	3022528.167	673624.5232	1.5	Pu-242	0	pCi/g	Pre
838-C2-2	3022528.167	673624.5232	1.5	Tc-99	0	pCi/g	Pre
838-C2-2	3022528.167	673624.5232	1.5	Th-230	0.9	pCi/g	Pre
838-C2-2	3022528.167	673624.5232	1.5	Th-232	1.5	pCi/g	Pre
838-C2-2	3022528.167	673624.5232	1.5	U-233/234	7	pCi/g	Pre
838-C2-2	3022528.167	673624.5232	1.5	U-235	0.3	pCi/g	Pre
838-C2-2	3022528.167	673624.5232	1.5	U-238	1.7	pCi/g	Pre
838-C2-3	3022528.167	673624.5232	2.5	Am-241	0	pCi/g	Pre
838-C2-3	3022528.167	673624.5232	2.5	Pu-238	0	pCi/g	Pre
838-C2-3	3022528.167	673624.5232	2.5	Pu-239/240	0	pCi/g	Pre
838-C2-3	3022528.167	673624.5232	2.5	Pu-241	0	pCi/g	Pre
838-C2-3	3022528.167	673624.5232	2.5	Pu-242	0	pCi/g	Pre
838-C2-3	3022528.167	673624.5232	2.5	Tc-99	0	pCi/g	Pre
838-C2-3	3022528.167	673624.5232	2.5	Th-230	0.5	pCi/g	Pre
838-C2-3	3022528.167	673624.5232	2.5	Th-232	0.7	pCi/g	Pre
838-C2-3	3022528.167	673624.5232	2.5	U-233/234	0.6	pCi/g	Pre
838-C2-3	3022528.167	673624.5232	2.5	U-235	0	pCi/g	Pre
838-C2-3	3022528.167	673624.5232	2.5	U-238	0.3	pCi/g	Pre
838-G6-2	3022546.564	673627.0028	1.5	Am-241	0.66	pCi/g	Pre
838-G6-2	3022546.564	673627.0028	1.5	Pu-238	0.1	pCi/g	Pre
838-G6-2	3022546.564	673627.0028	1.5	Pu-239/240	0.8	pCi/g	Pre
838-G6-2	3022546.564	673627.0028	1.5	Pu-241	2.21	pCi/g	Pre
838-G6-2	3022546.564	673627.0028	1.5	Pu-242	0	pCi/g	Pre
838-G6-2	3022546.564	673627.0028	1.5	Tc-99	0.4	pCi/g	Pre
838-G6-2	3022546.564	673627.0028	1.5	Th-230	1.4	pCi/g	Pre
838-G6-2	3022546.564	673627.0028	1.5	Th-232	1.3	pCi/g	Pre
838-G6-2	3022546.564	673627.0028	1.5	U-233/234	5.2	pCi/g	Pre
838-G6-2	3022546.564	673627.0028	1.5	U-235	0.2	pCi/g	Pre
838-G6-2	3022546.564	673627.0028	1.5	U-238	1.6	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
838-G6-3	3022546.564	673627.0028	2.5	Am-241	-0.2	pCi/g	Pre
838-G6-3	3022546.564	673627.0028	2.5	Pu-238	0	pCi/g	Pre
838-G6-3	3022546.564	673627.0028	2.5	Pu-239/240	0	pCi/g	Pre
838-G6-3	3022546.564	673627.0028	2.5	Pu-241	0	pCi/g	Pre
838-G6-3	3022546.564	673627.0028	2.5	Pu-242	0	pCi/g	Pre
838-G6-3	3022546.564	673627.0028	2.5	Tc-99	0	pCi/g	Pre
838-G6-3	3022546.564	673627.0028	2.5	Th-230	0.7	pCi/g	Pre
838-G6-3	3022546.564	673627.0028	2.5	Th-232	1.1	pCi/g	Pre
838-G6-3	3022546.564	673627.0028	2.5	U-233/234	2	pCi/g	Pre
838-G6-3	3022546.564	673627.0028	2.5	U-235	0.1	pCi/g	Pre
838-G6-3	3022546.564	673627.0028	2.5	U-238	0.7	pCi/g	Pre
839-C2-2	3022554.277	673604.6202	1.5	Am-241	0.17	pCi/g	Pre
839-C2-2	3022554.277	673604.6202	1.5	Pu-238	0	pCi/g	Pre
839-C2-2	3022554.277	673604.6202	1.5	Pu-239/240	0	pCi/g	Pre
839-C2-2	3022554.277	673604.6202	1.5	Pu-241	0	pCi/g	Pre
839-C2-2	3022554.277	673604.6202	1.5	Pu-242	0	pCi/g	Pre
839-C2-2	3022554.277	673604.6202	1.5	Tc-99	0	pCi/g	Pre
839-C2-2	3022554.277	673604.6202	1.5	Th-230	0.6	pCi/g	Pre
839-C2-2	3022554.277	673604.6202	1.5	Th-232	1	pCi/g	Pre
839-C2-2	3022554.277	673604.6202	1.5	U-233/234	4.3	pCi/g	Pre
839-C2-2	3022554.277	673604.6202	1.5	U-235	0.2	pCi/g	Pre
839-C2-2	3022554.277	673604.6202	1.5	U-238	1.2	pCi/g	Pre
839-E4-2	3022563.475	673605.86	1.5	Am-241	-0.3	pCi/g	Pre
839-E4-2	3022563.475	673605.86	1.5	Pu-238	0	pCi/g	Pre
839-E4-2	3022563.475	673605.86	1.5	Pu-239/240	0	pCi/g	Pre
839-E4-2	3022563.475	673605.86	1.5	Pu-241	0	pCi/g	Pre
839-E4-2	3022563.475	673605.86	1.5	Pu-242	0	pCi/g	Pre
839-E4-2	3022563.475	673605.86	1.5	Tc-99	0	pCi/g	Pre
839-E4-2	3022563.475	673605.86	1.5	Th-230	0.6	pCi/g	Pre
839-E4-2	3022563.475	673605.86	1.5	Th-232	0.9	pCi/g	Pre
839-E4-2	3022563.475	673605.86	1.5	U-233/234	3.8	pCi/g	Pre
839-E4-2	3022563.475	673605.86	1.5	U-235	0.2	pCi/g	Pre
839-E4-2	3022563.475	673605.86	1.5	U-238	1.1	pCi/g	Pre
839-E4-3	3022563.475	673605.86	2.5	Am-241	-0.01	pCi/g	Pre
839-E4-3	3022563.475	673605.86	2.5	Pu-238	0	pCi/g	Pre
839-E4-3	3022563.475	673605.86	2.5	Pu-239/240	0	pCi/g	Pre
839-E4-3	3022563.475	673605.86	2.5	Pu-241	0	pCi/g	Pre
839-E4-3	3022563.475	673605.86	2.5	Pu-242	0	pCi/g	Pre
839-E4-3	3022563.475	673605.86	2.5	Tc-99	0	pCi/g	Pre
839-E4-3	3022563.475	673605.86	2.5	Th-230	0.4	pCi/g	Pre
839-E4-3	3022563.475	673605.86	2.5	Th-232	0.6	pCi/g	Pre
839-E4-3	3022563.475	673605.86	2.5	U-233/234	1.7	pCi/g	Pre
839-E4-3	3022563.475	673605.86	2.5	U-235	0.1	pCi/g	Pre
839-E4-3	3022563.475	673605.86	2.5	U-238	0.6	pCi/g	Pre
874-C1-2	3022453.455	673640.2176	1.5	Am-241	0.16	pCi/g	Pre
874-C1-2	3022453.455	673640.2176	1.5	Pu-238	0.03	pCi/g	Pre
874-C1-2	3022453.455	673640.2176	1.5	Pu-239/240	0.44	pCi/g	Pre
874-C1-2	3022453.455	673640.2176	1.5	Pu-241	0.73	pCi/g	Pre
874-C1-2	3022453.455	673640.2176	1.5	Pu-242	0	pCi/g	Pre
874-C1-2	3022453.455	673640.2176	1.5	Tc-99	3.1	pCi/g	Pre
874-C1-2	3022453.455	673640.2176	1.5	Th-230	1.1	pCi/g	Pre
874-C1-2	3022453.455	673640.2176	1.5	Th-232	1.8	pCi/g	Pre
874-C1-2	3022453.455	673640.2176	1.5	U-233/234	25.4	pCi/g	Pre
874-C1-2	3022453.455	673640.2176	1.5	U-235	1	pCi/g	Pre
874-C1-2	3022453.455	673640.2176	1.5	U-238	4	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
874-C1-3	3022453.455	673640.2176	2.5	Am-241	0.14	pCi/g	Pre
874-C1-3	3022453.455	673640.2176	2.5	Pu-238	0.03	pCi/g	Pre
874-C1-3	3022453.455	673640.2176	2.5	Pu-239/240	0.39	pCi/g	Pre
874-C1-3	3022453.455	673640.2176	2.5	Pu-241	0.63	pCi/g	Pre
874-C1-3	3022453.455	673640.2176	2.5	Pu-242	0	pCi/g	Pre
874-C1-3	3022453.455	673640.2176	2.5	Tc-99	1.6	pCi/g	Pre
874-C1-3	3022453.455	673640.2176	2.5	Th-230	0.6	pCi/g	Pre
874-C1-3	3022453.455	673640.2176	2.5	Th-232	1	pCi/g	Pre
874-C1-3	3022453.455	673640.2176	2.5	U-233/234	3.8	pCi/g	Pre
874-C1-3	3022453.455	673640.2176	2.5	U-235	0.2	pCi/g	Pre
874-C1-3	3022453.455	673640.2176	2.5	U-238	1.1	pCi/g	Pre
875-C2-2	3022482.175	673618.3243	1.5	Am-241	0.04	pCi/g	Pre
875-C2-2	3022482.175	673618.3243	1.5	Pu-238	0.01	pCi/g	Pre
875-C2-2	3022482.175	673618.3243	1.5	Pu-239/240	0.1	pCi/g	Pre
875-C2-2	3022482.175	673618.3243	1.5	Pu-241	0.17	pCi/g	Pre
875-C2-2	3022482.175	673618.3243	1.5	Pu-242	0	pCi/g	Pre
875-C2-2	3022482.175	673618.3243	1.5	Tc-99	2	pCi/g	Pre
875-C2-2	3022482.175	673618.3243	1.5	Th-230	0.9	pCi/g	Pre
875-C2-2	3022482.175	673618.3243	1.5	Th-232	1.4	pCi/g	Pre
875-C2-2	3022482.175	673618.3243	1.5	U-233/234	6.9	pCi/g	Pre
875-C2-2	3022482.175	673618.3243	1.5	U-235	0.3	pCi/g	Pre
875-C2-2	3022482.175	673618.3243	1.5	U-238	1.7	pCi/g	Pre
875-C2-3	3022482.175	673618.3243	2.5	Am-241	-0.15	pCi/g	Pre
875-C2-3	3022482.175	673618.3243	2.5	Pu-238	0	pCi/g	Pre
875-C2-3	3022482.175	673618.3243	2.5	Pu-239/240	0	pCi/g	Pre
875-C2-3	3022482.175	673618.3243	2.5	Pu-241	0	pCi/g	Pre
875-C2-3	3022482.175	673618.3243	2.5	Pu-242	0	pCi/g	Pre
875-C2-3	3022482.175	673618.3243	2.5	Tc-99	1.4	pCi/g	Pre
875-C2-3	3022482.175	673618.3243	2.5	Th-230	0.9	pCi/g	Pre
875-C2-3	3022482.175	673618.3243	2.5	Th-232	1.4	pCi/g	Pre
875-C2-3	3022482.175	673618.3243	2.5	U-233/234	2.5	pCi/g	Pre
875-C2-3	3022482.175	673618.3243	2.5	U-235	0.1	pCi/g	Pre
875-C2-3	3022482.175	673618.3243	2.5	U-238	0.8	pCi/g	Pre
875-I8-2	3022509.77	673622.0436	1.5	Am-241	0.34	pCi/g	Pre
875-I8-2	3022509.77	673622.0436	1.5	Pu-238	0.06	pCi/g	Pre
875-I8-2	3022509.77	673622.0436	1.5	Pu-239/240	0.93	pCi/g	Pre
875-I8-2	3022509.77	673622.0436	1.5	Pu-241	1.53	pCi/g	Pre
875-I8-2	3022509.77	673622.0436	1.5	Pu-242	0	pCi/g	Pre
875-I8-2	3022509.77	673622.0436	1.5	Tc-99	1.9	pCi/g	Pre
875-I8-2	3022509.77	673622.0436	1.5	Th-230	0.8	pCi/g	Pre
875-I8-2	3022509.77	673622.0436	1.5	Th-232	1.2	pCi/g	Pre
875-I8-2	3022509.77	673622.0436	1.5	U-233/234	5.7	pCi/g	Pre
875-I8-2	3022509.77	673622.0436	1.5	U-235	0.2	pCi/g	Pre
875-I8-2	3022509.77	673622.0436	1.5	U-238	1.5	pCi/g	Pre
875-I8-3	3022509.77	673622.0436	2.5	Am-241	-0.69	pCi/g	Pre
875-I8-3	3022509.77	673622.0436	2.5	Pu-238	0	pCi/g	Pre
875-I8-3	3022509.77	673622.0436	2.5	Pu-239/240	0	pCi/g	Pre
875-I8-3	3022509.77	673622.0436	2.5	Pu-241	0	pCi/g	Pre
875-I8-3	3022509.77	673622.0436	2.5	Pu-242	0	pCi/g	Pre
875-I8-3	3022509.77	673622.0436	2.5	Tc-99	1.3	pCi/g	Pre
875-I8-3	3022509.77	673622.0436	2.5	Th-230	0.8	pCi/g	Pre
875-I8-3	3022509.77	673622.0436	2.5	Th-232	1.2	pCi/g	Pre
875-I8-3	3022509.77	673622.0436	2.5	U-233/234	2	pCi/g	Pre
875-I8-3	3022509.77	673622.0436	2.5	U-235	0.1	pCi/g	Pre
875-I8-3	3022509.77	673622.0436	2.5	U-238	0.7	pCi/g	Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
876-D3-2	3022512.884	673599.0411	1.5	Am-241	-0.06	pCi/g	Pre
876-D3-2	3022512.884	673599.0411	1.5	Pu-238	0	pCi/g	Pre
876-D3-2	3022512.884	673599.0411	1.5	Pu-239/240	0	pCi/g	Pre
876-D3-2	3022512.884	673599.0411	1.5	Pu-241	0	pCi/g	Pre
876-D3-2	3022512.884	673599.0411	1.5	Pu-242	0	pCi/g	Pre
876-D3-2	3022512.884	673599.0411	1.5	Tc-99	1.1	pCi/g	Pre
876-D3-2	3022512.884	673599.0411	1.5	Th-230	0.8	pCi/g	Pre
876-D3-2	3022512.884	673599.0411	1.5	Th-232	1.2	pCi/g	Pre
876-D3-2	3022512.884	673599.0411	1.5	U-233/234	1.3	pCi/g	Pre
876-D3-2	3022512.884	673599.0411	1.5	U-235	0.1	pCi/g	Pre
876-D3-2	3022512.884	673599.0411	1.5	U-238	0.5	pCi/g	Pre
876-D3-3	3022512.884	673599.0411	2.5	Am-241	-0.18	pCi/g	Pre
876-D3-3	3022512.884	673599.0411	2.5	Pu-238	0	pCi/g	Pre
876-D3-3	3022512.884	673599.0411	2.5	Pu-239/240	0	pCi/g	Pre
876-D3-3	3022512.884	673599.0411	2.5	Pu-241	0	pCi/g	Pre
876-D3-3	3022512.884	673599.0411	2.5	Pu-242	0	pCi/g	Pre
876-D3-3	3022512.884	673599.0411	2.5	Tc-99	1.6	pCi/g	Pre
876-D3-3	3022512.884	673599.0411	2.5	Th-230	0.3	pCi/g	Pre
876-D3-3	3022512.884	673599.0411	2.5	Th-232	0.4	pCi/g	Pre
876-D3-3	3022512.884	673599.0411	2.5	U-233/234	4	pCi/g	Pre
876-D3-3	3022512.884	673599.0411	2.5	U-235	0.2	pCi/g	Pre
876-D3-3	3022512.884	673599.0411	2.5	U-238	1.1	pCi/g	Pre
876-H7-2	3022531.281	673601.5207	1.5	Am-241	0.15	pCi/g	Pre
876-H7-2	3022531.281	673601.5207	1.5	Pu-238	0.1	pCi/g	Pre
876-H7-2	3022531.281	673601.5207	1.5	Pu-239/240	0.3	pCi/g	Pre
876-H7-2	3022531.281	673601.5207	1.5	Pu-241	-0.3	pCi/g	Pre
876-H7-2	3022531.281	673601.5207	1.5	Pu-242	0	pCi/g	Pre
876-H7-2	3022531.281	673601.5207	1.5	Tc-99	0.7	pCi/g	Pre
876-H7-2	3022531.281	673601.5207	1.5	Th-230	1.7	pCi/g	Pre
876-H7-2	3022531.281	673601.5207	1.5	Th-232	1.6	pCi/g	Pre
876-H7-2	3022531.281	673601.5207	1.5	U-233/234	5.7	pCi/g	Pre
876-H7-2	3022531.281	673601.5207	1.5	U-235	0.1	pCi/g	Pre
876-H7-2	3022531.281	673601.5207	1.5	U-238	1.8	pCi/g	Pre
876-H7-3	3022531.281	673601.5207	2.5	Am-241	0.3		Pre
876-H7-3	3022531.281	673601.5207	2.5	Pu-238	-0.06		Pre
876-H7-3	3022531.281	673601.5207	2.5	Pu-239/240	0.06		Pre
876-H7-3	3022531.281	673601.5207	2.5	Pu-241	-0.56		Pre
876-H7-3	3022531.281	673601.5207	2.5	Pu-242	0		Pre
876-H7-3	3022531.281	673601.5207	2.5	Tc-99	0.9		Pre
876-H7-3	3022531.281	673601.5207	2.5	Th-230	1.1		Pre
876-H7-3	3022531.281	673601.5207	2.5	Th-232	1.1		Pre
876-H7-3	3022531.281	673601.5207	2.5	U-233/234	2.7		Pre
876-H7-3	3022531.281	673601.5207	2.5	U-235	0.1		Pre
876-H7-3	3022531.281	673601.5207	2.5	U-238	1.3		Pre
877-C2-2	3022534.394	673578.5182	1.5	Am-241	0.19		Pre
877-C2-2	3022534.394	673578.5182	1.5	Pu-238	0.03		Pre
877-C2-2	3022534.394	673578.5182	1.5	Pu-239/240	0.53		Pre
877-C2-2	3022534.394	673578.5182	1.5	Pu-241	0.87		Pre
877-C2-2	3022534.394	673578.5182	1.5	Pu-242	0		Pre
877-C2-2	3022534.394	673578.5182	1.5	Tc-99	1.7		Pre
877-C2-2	3022534.394	673578.5182	1.5	Th-230	1		Pre
877-C2-2	3022534.394	673578.5182	1.5	Th-232	1.6		Pre
877-C2-2	3022534.394	673578.5182	1.5	U-233/234	4.5		Pre
877-C2-2	3022534.394	673578.5182	1.5	U-235	0.2		Pre
877-C2-2	3022534.394	673578.5182	1.5	U-238	1.2		Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
877-C2-3	3022534.394	673578.5182	2.5	Am-241	-0.23		Pre
877-C2-3	3022534.394	673578.5182	2.5	Pu-238	0		Pre
877-C2-3	3022534.394	673578.5182	2.5	Pu-239/240	0		Pre
877-C2-3	3022534.394	673578.5182	2.5	Pu-241	0		Pre
877-C2-3	3022534.394	673578.5182	2.5	Pu-242	0		Pre
877-C2-3	3022534.394	673578.5182	2.5	Tc-99	1.7		Pre
877-C2-3	3022534.394	673578.5182	2.5	Th-230	1.3		Pre
877-C2-3	3022534.394	673578.5182	2.5	Th-232	2.1		Pre
877-C2-3	3022534.394	673578.5182	2.5	U-233/234	4.4		Pre
877-C2-3	3022534.394	673578.5182	2.5	U-235	0.2		Pre
877-C2-3	3022534.394	673578.5182	2.5	U-238	1.2		Pre
877-I2-2	3022546.324	673594.1794	1.5	Am-241	-0.55		Pre
877-I2-2	3022546.324	673594.1794	1.5	Pu-238	0		Pre
877-I2-2	3022546.324	673594.1794	1.5	Pu-239/240	0		Pre
877-I2-2	3022546.324	673594.1794	1.5	Pu-241	0		Pre
877-I2-2	3022546.324	673594.1794	1.5	Pu-242	0		Pre
877-I2-2	3022546.324	673594.1794	1.5	Tc-99	1.8		Pre
877-I2-2	3022546.324	673594.1794	1.5	Th-230	0.6		Pre
877-I2-2	3022546.324	673594.1794	1.5	Th-232	0.9		Pre
877-I2-2	3022546.324	673594.1794	1.5	U-233/234	5		Pre
877-I2-2	3022546.324	673594.1794	1.5	U-235	0.2		Pre
877-I2-2	3022546.324	673594.1794	1.5	U-238	1.3		Pre
877-I2-3	3022546.324	673594.1794	2.5	Am-241	-0.08		Pre
877-I2-3	3022546.324	673594.1794	2.5	Pu-238	0		Pre
877-I2-3	3022546.324	673594.1794	2.5	Pu-239/240	0		Pre
877-I2-3	3022546.324	673594.1794	2.5	Pu-241	0		Pre
877-I2-3	3022546.324	673594.1794	2.5	Pu-242	0		Pre
877-I2-3	3022546.324	673594.1794	2.5	Tc-99	1.1		Pre
877-I2-3	3022546.324	673594.1794	2.5	Th-230	0.6		Pre
877-I2-3	3022546.324	673594.1794	2.5	Th-232	0.9		Pre
877-I2-3	3022546.324	673594.1794	2.5	U-233/234	1.3		Pre
877-I2-3	3022546.324	673594.1794	2.5	U-235	0.1		Pre
877-I2-3	3022546.324	673594.1794	2.5	U-238	0.5		Pre
911-C2-2	3022410.074	673632.0283	1.5	Am-241	-0.09		Pre
911-C2-2	3022410.074	673632.0283	1.5	Pu-238	0		Pre
911-C2-2	3022410.074	673632.0283	1.5	Pu-239/240	0		Pre
911-C2-2	3022410.074	673632.0283	1.5	Pu-241	0		Pre
911-C2-2	3022410.074	673632.0283	1.5	Pu-242	0		Pre
911-C2-2	3022410.074	673632.0283	1.5	Tc-99	1.3		Pre
911-C2-2	3022410.074	673632.0283	1.5	Th-230	0.8		Pre
911-C2-2	3022410.074	673632.0283	1.5	Th-232	1.2		Pre
911-C2-2	3022410.074	673632.0283	1.5	U-233/234	20		Pre
911-C2-2	3022410.074	673632.0283	1.5	U-235	0.8		Pre
911-C2-2	3022410.074	673632.0283	1.5	U-238	3.4		Pre
911-C2-3	3022410.074	673632.0283	2.5	Am-241	-0.05		Pre
911-C2-3	3022410.074	673632.0283	2.5	Pu-238	0		Pre
911-C2-3	3022410.074	673632.0283	2.5	Pu-239/240	0		Pre
911-C2-3	3022410.074	673632.0283	2.5	Pu-241	0		Pre
911-C2-3	3022410.074	673632.0283	2.5	Pu-242	0		Pre
911-C2-3	3022410.074	673632.0283	2.5	Tc-99	0.3		Pre
911-C2-3	3022410.074	673632.0283	2.5	Th-230	0.7		Pre
911-C2-3	3022410.074	673632.0283	2.5	Th-232	1.1		Pre
911-C2-3	3022410.074	673632.0283	2.5	U-233/234	4.4		Pre
911-C2-3	3022410.074	673632.0283	2.5	U-235	0.2		Pre
911-C2-3	3022410.074	673632.0283	2.5	U-238	1.2		Pre

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Historical Dataset, Survey Unit 19

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
911-H7-2	3022433.07	673635.1278	1.5	Am-241	0.1		Pre
911-H7-2	3022433.07	673635.1278	1.5	Pu-238	0.02		Pre
911-H7-2	3022433.07	673635.1278	1.5	Pu-239/240	0.27		Pre
911-H7-2	3022433.07	673635.1278	1.5	Pu-241	0.44		Pre
911-H7-2	3022433.07	673635.1278	1.5	Pu-242	0		Pre
911-H7-2	3022433.07	673635.1278	1.5	Tc-99	3		Pre
911-H7-2	3022433.07	673635.1278	1.5	Th-230	1.1		Pre
911-H7-2	3022433.07	673635.1278	1.5	Th-232	1.7		Pre
911-H7-2	3022433.07	673635.1278	1.5	U-233/234	22.5		Pre
911-H7-2	3022433.07	673635.1278	1.5	U-235	0.9		Pre
911-H7-2	3022433.07	673635.1278	1.5	U-238	3.7		Pre
911-H7-3	3022433.07	673635.1278	2.5	Am-241	-0.07		Pre
911-H7-3	3022433.07	673635.1278	2.5	Pu-238	0		Pre
911-H7-3	3022433.07	673635.1278	2.5	Pu-239/240	0		Pre
911-H7-3	3022433.07	673635.1278	2.5	Pu-241	0		Pre
911-H7-3	3022433.07	673635.1278	2.5	Pu-242	0		Pre
911-H7-3	3022433.07	673635.1278	2.5	Tc-99	2		Pre
911-H7-3	3022433.07	673635.1278	2.5	Th-230	0.6		Pre
911-H7-3	3022433.07	673635.1278	2.5	Th-232	1		Pre
911-H7-3	3022433.07	673635.1278	2.5	U-233/234	6.6		Pre
911-H7-3	3022433.07	673635.1278	2.5	U-235	0.3		Pre
911-H7-3	3022433.07	673635.1278	2.5	U-238	1.6		Pre
912-D3-2	3022440.782	673612.7452	1.5	Am-241	-0.31		Pre
912-D3-2	3022440.782	673612.7452	1.5	Pu-238	0		Pre
912-D3-2	3022440.782	673612.7452	1.5	Pu-239/240	0		Pre
912-D3-2	3022440.782	673612.7452	1.5	Pu-241	0		Pre
912-D3-2	3022440.782	673612.7452	1.5	Pu-242	0		Pre
912-D3-2	3022440.782	673612.7452	1.5	Tc-99	1.8		Pre
912-D3-2	3022440.782	673612.7452	1.5	Th-230	0.6		Pre
912-D3-2	3022440.782	673612.7452	1.5	Th-232	0.9		Pre
912-D3-2	3022440.782	673612.7452	1.5	U-233/234	5.3		Pre
912-D3-2	3022440.782	673612.7452	1.5	U-235	0.2		Pre
912-D3-2	3022440.782	673612.7452	1.5	U-238	1.4		Pre
912-D3-3	3022440.782	673612.7452	2.5	Am-241	0.05		Pre
912-D3-3	3022440.782	673612.7452	2.5	Pu-238	0.01		Pre
912-D3-3	3022440.782	673612.7452	2.5	Pu-239/240	0.15		Pre
912-D3-3	3022440.782	673612.7452	2.5	Pu-241	0.24		Pre
912-D3-3	3022440.782	673612.7452	2.5	Pu-242	0		Pre
912-D3-3	3022440.782	673612.7452	2.5	Tc-99	1.5		Pre
912-D3-3	3022440.782	673612.7452	2.5	Th-230	0.7		Pre
912-D3-3	3022440.782	673612.7452	2.5	Th-232	1		Pre
912-D3-3	3022440.782	673612.7452	2.5	U-233/234	2.9		Pre
912-D3-3	3022440.782	673612.7452	2.5	U-235	0.1		Pre
912-D3-3	3022440.782	673612.7452	2.5	U-238	0.9		Pre
912-H7-2	3022459.179	673615.2248	1.5	Am-241	3.71		Pre
912-H7-2	3022459.179	673615.2248	1.5	Pu-238	0.67		Pre
912-H7-2	3022459.179	673615.2248	1.5	Pu-239/240	10.21		Pre
912-H7-2	3022459.179	673615.2248	1.5	Pu-241	16.74		Pre
912-H7-2	3022459.179	673615.2248	1.5	Pu-242	0		Pre
912-H7-2	3022459.179	673615.2248	1.5	Tc-99	5.2		Pre
912-H7-2	3022459.179	673615.2248	1.5	Th-230	2.9		Pre
912-H7-2	3022459.179	673615.2248	1.5	Th-232	5.2		Pre
912-H7-2	3022459.179	673615.2248	1.5	U-233/234	109.1		Pre
912-H7-2	3022459.179	673615.2248	1.5	U-235	4.2		Pre
912-H7-2	3022459.179	673615.2248	1.5	U-238	10.8		Pre

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Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
912-H7-3	3022459.179	673615.2248	2.5	Am-241	0.05		Pre
912-H7-3	3022459.179	673615.2248	2.5	Pu-238	0.01		Pre
912-H7-3	3022459.179	673615.2248	2.5	Pu-239/240	0.13		Pre
912-H7-3	3022459.179	673615.2248	2.5	Pu-241	0.22		Pre
912-H7-3	3022459.179	673615.2248	2.5	Pu-242	0		Pre
912-H7-3	3022459.179	673615.2248	2.5	Tc-99	3.2		Pre
912-H7-3	3022459.179	673615.2248	2.5	Th-230	0.6		Pre
912-H7-3	3022459.179	673615.2248	2.5	Th-232	1		Pre
912-H7-3	3022459.179	673615.2248	2.5	U-233/234	26.4		Pre
912-H7-3	3022459.179	673615.2248	2.5	U-235	1		Pre
912-H7-3	3022459.179	673615.2248	2.5	U-238	4.1		Pre
913-C2-2	3022462.293	673592.2223	1.5	Am-241	-0.14		Pre
913-C2-2	3022462.293	673592.2223	1.5	Pu-238	0		Pre
913-C2-2	3022462.293	673592.2223	1.5	Pu-239/240	0		Pre
913-C2-2	3022462.293	673592.2223	1.5	Pu-241	0		Pre
913-C2-2	3022462.293	673592.2223	1.5	Pu-242	0		Pre
913-C2-2	3022462.293	673592.2223	1.5	Tc-99	1.8		Pre
913-C2-2	3022462.293	673592.2223	1.5	Th-230	0.6		Pre
913-C2-2	3022462.293	673592.2223	1.5	Th-232	0.9		Pre
913-C2-2	3022462.293	673592.2223	1.5	U-233/234	4.9		Pre
913-C2-2	3022462.293	673592.2223	1.5	U-235	0.2		Pre
913-C2-2	3022462.293	673592.2223	1.5	U-238	1.3		Pre
913-C2-3	3022462.293	673592.2223	2.5	Am-241	-0.03		Pre
913-C2-3	3022462.293	673592.2223	2.5	Pu-238	0		Pre
913-C2-3	3022462.293	673592.2223	2.5	Pu-239/240	0		Pre
913-C2-3	3022462.293	673592.2223	2.5	Pu-241	0		Pre
913-C2-3	3022462.293	673592.2223	2.5	Pu-242	0		Pre
913-C2-3	3022462.293	673592.2223	2.5	Tc-99	1.3		Pre
913-C2-3	3022462.293	673592.2223	2.5	Th-230	0.8		Pre
913-C2-3	3022462.293	673592.2223	2.5	Th-232	1.3		Pre
913-C2-3	3022462.293	673592.2223	2.5	U-233/234	2.1		Pre
913-C2-3	3022462.293	673592.2223	2.5	U-235	0.1		Pre
913-C2-3	3022462.293	673592.2223	2.5	U-238	0.8		Pre
913-H7-2	3022485.289	673595.3217	1.5	Am-241	0.36		Pre
913-H7-2	3022485.289	673595.3217	1.5	Pu-238	-0.29		Pre
913-H7-2	3022485.289	673595.3217	1.5	Pu-239/240	1.1		Pre
913-H7-2	3022485.289	673595.3217	1.5	Pu-241	4.93		Pre
913-H7-2	3022485.289	673595.3217	1.5	Pu-242	0		Pre
913-H7-2	3022485.289	673595.3217	1.5	Tc-99	0.5		Pre
913-H7-2	3022485.289	673595.3217	1.5	Th-230	1.4		Pre
913-H7-2	3022485.289	673595.3217	1.5	Th-232	1.3		Pre
913-H7-2	3022485.289	673595.3217	1.5	U-233/234	5.2		Pre
913-H7-2	3022485.289	673595.3217	1.5	U-235	0.3		Pre
913-H7-2	3022485.289	673595.3217	1.5	U-238	1.7		Pre
913-H7-3	3022485.289	673595.3217	2.5	Am-241	-0.06		Pre
913-H7-3	3022485.289	673595.3217	2.5	Pu-238	0.09		Pre
913-H7-3	3022485.289	673595.3217	2.5	Pu-239/240	0.22		Pre
913-H7-3	3022485.289	673595.3217	2.5	Pu-241	3.42		Pre
913-H7-3	3022485.289	673595.3217	2.5	Pu-242	0		Pre
913-H7-3	3022485.289	673595.3217	2.5	Tc-99	0.3		Pre
913-H7-3	3022485.289	673595.3217	2.5	Th-230	5.8		Pre
913-H7-3	3022485.289	673595.3217	2.5	Th-232	1.2		Pre
913-H7-3	3022485.289	673595.3217	2.5	U-233/234	5		Pre
913-H7-3	3022485.289	673595.3217	2.5	U-235	0.3		Pre
913-H7-3	3022485.289	673595.3217	2.5	U-238	2.9		Pre

AMEC

Historical Dataset, Survey Unit 19

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Eastings	Northing					
914-C2-2	3022488.402	673572.3192	1.5	Am-241	0.08		Pre
914-C2-2	3022488.402	673572.3192	1.5	Pu-238	0.01		Pre
914-C2-2	3022488.402	673572.3192	1.5	Pu-239/240	0.22		Pre
914-C2-2	3022488.402	673572.3192	1.5	Pu-241	0.36		Pre
914-C2-2	3022488.402	673572.3192	1.5	Pu-242	0		Pre
914-C2-2	3022488.402	673572.3192	1.5	Tc-99	1.6		Pre
914-C2-2	3022488.402	673572.3192	1.5	Th-230	0.4		Pre
914-C2-2	3022488.402	673572.3192	1.5	Th-232	0.7		Pre
914-C2-2	3022488.402	673572.3192	1.5	U-233/234	3.4		Pre
914-C2-2	3022488.402	673572.3192	1.5	U-235	0.1		Pre
914-C2-2	3022488.402	673572.3192	1.5	U-238	1		Pre
914-C2-3	3022488.402	673572.3192	2.5	Am-241	-0.23		Pre
914-C2-3	3022488.402	673572.3192	2.5	Pu-238	0		Pre
914-C2-3	3022488.402	673572.3192	2.5	Pu-239/240	0		Pre
914-C2-3	3022488.402	673572.3192	2.5	Pu-241	0		Pre
914-C2-3	3022488.402	673572.3192	2.5	Pu-242	0		Pre
914-C2-3	3022488.402	673572.3192	2.5	Tc-99	1.1		Pre
914-C2-3	3022488.402	673572.3192	2.5	Th-230	1.1		Pre
914-C2-3	3022488.402	673572.3192	2.5	Th-232	1.7		Pre
914-C2-3	3022488.402	673572.3192	2.5	U-233/234	1.3		Pre
914-C2-3	3022488.402	673572.3192	2.5	U-235	0.1		Pre
914-C2-3	3022488.402	673572.3192	2.5	U-238	0.5		Pre
914-I8-2	3022515.998	673576.0386	1.5	Am-241	0.24		Pre
914-I8-2	3022515.998	673576.0386	1.5	Pu-238	0.04		Pre
914-I8-2	3022515.998	673576.0386	1.5	Pu-239/240	0.66		Pre
914-I8-2	3022515.998	673576.0386	1.5	Pu-241	1.08		Pre
914-I8-2	3022515.998	673576.0386	1.5	Pu-242	0		Pre
914-I8-2	3022515.998	673576.0386	1.5	Tc-99	1.4		Pre
914-I8-2	3022515.998	673576.0386	1.5	Th-230	1		Pre
914-I8-2	3022515.998	673576.0386	1.5	Th-232	1.5		Pre
914-I8-2	3022515.998	673576.0386	1.5	U-233/234	2.6		Pre
914-I8-2	3022515.998	673576.0386	1.5	U-235	0.1		Pre
914-I8-2	3022515.998	673576.0386	1.5	U-238	0.9		Pre
914-I8-3	3022515.998	673576.0386	2.5	Am-241	-0.11		Pre
914-I8-3	3022515.998	673576.0386	2.5	Pu-238	0		Pre
914-I8-3	3022515.998	673576.0386	2.5	Pu-239/240	0		Pre
914-I8-3	3022515.998	673576.0386	2.5	Pu-241	0		Pre
914-I8-3	3022515.998	673576.0386	2.5	Pu-242	0		Pre
914-I8-3	3022515.998	673576.0386	2.5	Tc-99	0.4		Pre
914-I8-3	3022515.998	673576.0386	2.5	Th-230	0.5		Pre
914-I8-3	3022515.998	673576.0386	2.5	Th-232	0.7		Pre
914-I8-3	3022515.998	673576.0386	2.5	U-233/234	0.1		Pre
914-I8-3	3022515.998	673576.0386	2.5	U-235	0		Pre
914-I8-3	3022515.998	673576.0386	2.5	U-238	0.1		Pre
915-I2-2	3022526.441	673568.0774	1.5	Am-241	0.22		Pre
915-I2-2	3022526.441	673568.0774	1.5	Pu-238	0.04		Pre
915-I2-2	3022526.441	673568.0774	1.5	Pu-239/240	0.6		Pre
915-I2-2	3022526.441	673568.0774	1.5	Pu-241	0.98		Pre
915-I2-2	3022526.441	673568.0774	1.5	Pu-242	0		Pre
915-I2-2	3022526.441	673568.0774	1.5	Tc-99	1.7		Pre
915-I2-2	3022526.441	673568.0774	1.5	Th-230	0.9		Pre
915-I2-2	3022526.441	673568.0774	1.5	Th-232	1.4		Pre
915-I2-2	3022526.441	673568.0774	1.5	U-233/234	4.1		Pre
915-I2-2	3022526.441	673568.0774	1.5	U-235	0.2		Pre
915-I2-2	3022526.441	673568.0774	1.5	U-238	1.2		Pre

Historical Dataset, Survey Unit 19

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
915-I2-3	3022526.441	673568.0774	2.5	Am-241	-0.41		Pre
915-I2-3	3022526.441	673568.0774	2.5	Pu-238	0		Pre
915-I2-3	3022526.441	673568.0774	2.5	Pu-239/240	0		Pre
915-I2-3	3022526.441	673568.0774	2.5	Pu-241	0		Pre
915-I2-3	3022526.441	673568.0774	2.5	Pu-242	0		Pre
915-I2-3	3022526.441	673568.0774	2.5	Tc-99	0		Pre
915-I2-3	3022526.441	673568.0774	2.5	Th-230	0.8		Pre
915-I2-3	3022526.441	673568.0774	2.5	Th-232	1.3		Pre
915-I2-3	3022526.441	673568.0774	2.5	U-233/234	0		Pre
915-I2-3	3022526.441	673568.0774	2.5	U-235	-0.1		Pre
915-I2-3	3022526.441	673568.0774	2.5	U-238	0		Pre
946-H7-2	3022387.078	673628.9289	1.5	Am-241	-0.09		Pre
946-H7-2	3022387.078	673628.9289	1.5	Pu-238	0		Pre
946-H7-2	3022387.078	673628.9289	1.5	Pu-239/240	0		Pre
946-H7-2	3022387.078	673628.9289	1.5	Pu-241	0		Pre
946-H7-2	3022387.078	673628.9289	1.5	Pu-242	0		Pre
946-H7-2	3022387.078	673628.9289	1.5	Tc-99	2		Pre
946-H7-2	3022387.078	673628.9289	1.5	Th-230	1.2		Pre
946-H7-2	3022387.078	673628.9289	1.5	Th-232	2		Pre
946-H7-2	3022387.078	673628.9289	1.5	U-233/234	6.7		Pre
946-H7-2	3022387.078	673628.9289	1.5	U-235	0.3		Pre
946-H7-2	3022387.078	673628.9289	1.5	U-238	1.6		Pre
946-H7-3	3022387.078	673628.9289	2.5	Am-241	0.11		Pre
946-H7-3	3022387.078	673628.9289	2.5	Pu-238	0.02		Pre
946-H7-3	3022387.078	673628.9289	2.5	Pu-239/240	0.31		Pre
946-H7-3	3022387.078	673628.9289	2.5	Pu-241	0.51		Pre
946-H7-3	3022387.078	673628.9289	2.5	Pu-242	0		Pre
946-H7-3	3022387.078	673628.9289	2.5	Tc-99	1.9		Pre
946-H7-3	3022387.078	673628.9289	2.5	Th-230	0.7		Pre
946-H7-3	3022387.078	673628.9289	2.5	Th-232	1		Pre
946-H7-3	3022387.078	673628.9289	2.5	U-233/234	6.2		Pre
946-H7-3	3022387.078	673628.9289	2.5	U-235	0.2		Pre
946-H7-3	3022387.078	673628.9289	2.5	U-238	1.5		Pre
947-C2-2	3022390.191	673605.9263	1.5	Am-241	0.5		Pre
947-C2-2	3022390.191	673605.9263	1.5	Pu-238	0.09		Pre
947-C2-2	3022390.191	673605.9263	1.5	Pu-239/240	1.36		Pre
947-C2-2	3022390.191	673605.9263	1.5	Pu-241	2.24		Pre
947-C2-2	3022390.191	673605.9263	1.5	Pu-242	0		Pre
947-C2-2	3022390.191	673605.9263	1.5	Tc-99	0.4		Pre
947-C2-2	3022390.191	673605.9263	1.5	Th-230	2		Pre
947-C2-2	3022390.191	673605.9263	1.5	Th-232	3.4		Pre
947-C2-2	3022390.191	673605.9263	1.5	U-233/234	46.4		Pre
947-C2-2	3022390.191	673605.9263	1.5	U-235	1.8		Pre
947-C2-2	3022390.191	673605.9263	1.5	U-238	6.1		Pre
947-C2-3	3022390.191	673605.9263	2.5	Am-241	0.02		Pre
947-C2-3	3022390.191	673605.9263	2.5	Pu-238	0		Pre
947-C2-3	3022390.191	673605.9263	2.5	Pu-239/240	0.05		Pre
947-C2-3	3022390.191	673605.9263	2.5	Pu-241	0.09		Pre
947-C2-3	3022390.191	673605.9263	2.5	Pu-242	0		Pre
947-C2-3	3022390.191	673605.9263	2.5	Tc-99	2.3		Pre
947-C2-3	3022390.191	673605.9263	2.5	Th-230	1		Pre
947-C2-3	3022390.191	673605.9263	2.5	Th-232	1.5		Pre
947-C2-3	3022390.191	673605.9263	2.5	U-233/234	10.9		Pre
947-C2-3	3022390.191	673605.9263	2.5	U-235	0.4		Pre
947-C2-3	3022390.191	673605.9263	2.5	U-238	2.3		Pre

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Historical Dataset, Survey Unit 19

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
947-H7-2	3022413.187	673609.0258	1.5	Am-241	4.01		Pre
947-H7-2	3022413.187	673609.0258	1.5	Pu-238	0.72		Pre
947-H7-2	3022413.187	673609.0258	1.5	Pu-239/240	11.01		Pre
947-H7-2	3022413.187	673609.0258	1.5	Pu-241	18.06		Pre
947-H7-2	3022413.187	673609.0258	1.5	Pu-242	0		Pre
947-H7-2	3022413.187	673609.0258	1.5	Tc-99	6		Pre
947-H7-2	3022413.187	673609.0258	1.5	Th-230	3.5		Pre
947-H7-2	3022413.187	673609.0258	1.5	Th-232	6.4		Pre
947-H7-2	3022413.187	673609.0258	1.5	U-233/234	163.5		Pre
947-H7-2	3022413.187	673609.0258	1.5	U-235	6.2		Pre
947-H7-2	3022413.187	673609.0258	1.5	U-238	14.2		Pre
947-H7-3	3022413.187	673609.0258	2.5	Am-241	0.97		Pre
947-H7-3	3022413.187	673609.0258	2.5	Pu-238	0.17		Pre
947-H7-3	3022413.187	673609.0258	2.5	Pu-239/240	2.67		Pre
947-H7-3	3022413.187	673609.0258	2.5	Pu-241	4.38		Pre
947-H7-3	3022413.187	673609.0258	2.5	Pu-242	0		Pre
947-H7-3	3022413.187	673609.0258	2.5	Tc-99	4.3		Pre
947-H7-3	3022413.187	673609.0258	2.5	Th-230	1.3		Pre
947-H7-3	3022413.187	673609.0258	2.5	Th-232	2.1		Pre
947-H7-3	3022413.187	673609.0258	2.5	U-233/234	62.2		Pre
947-H7-3	3022413.187	673609.0258	2.5	U-235	2.4		Pre
947-H7-3	3022413.187	673609.0258	2.5	U-238	7.4		Pre
948-C2-2	3022416.301	673586.0233	1.5	Am-241	-0.02		Pre
948-C2-2	3022416.301	673586.0233	1.5	Pu-238	0		Pre
948-C2-2	3022416.301	673586.0233	1.5	Pu-239/240	0		Pre
948-C2-2	3022416.301	673586.0233	1.5	Pu-241	0		Pre
948-C2-2	3022416.301	673586.0233	1.5	Pu-242	0		Pre
948-C2-2	3022416.301	673586.0233	1.5	Tc-99	2.2		Pre
948-C2-2	3022416.301	673586.0233	1.5	Th-230	0.9		Pre
948-C2-2	3022416.301	673586.0233	1.5	Th-232	1.4		Pre
948-C2-2	3022416.301	673586.0233	1.5	U-233/234	8.9		Pre
948-C2-2	3022416.301	673586.0233	1.5	U-235	0.4		Pre
948-C2-2	3022416.301	673586.0233	1.5	U-238	2		Pre
948-C2-3	3022416.301	673586.0233	2.5	Am-241	-0.14		Pre
948-C2-3	3022416.301	673586.0233	2.5	Pu-238	0		Pre
948-C2-3	3022416.301	673586.0233	2.5	Pu-239/240	0		Pre
948-C2-3	3022416.301	673586.0233	2.5	Pu-241	0		Pre
948-C2-3	3022416.301	673586.0233	2.5	Pu-242	0		Pre
948-C2-3	3022416.301	673586.0233	2.5	Tc-99	1.4		Pre
948-C2-3	3022416.301	673586.0233	2.5	Th-230	0.9		Pre
948-C2-3	3022416.301	673586.0233	2.5	Th-232	1.5		Pre
948-C2-3	3022416.301	673586.0233	2.5	U-233/234	2.3		Pre
948-C2-3	3022416.301	673586.0233	2.5	U-235	0.1		Pre
948-C2-3	3022416.301	673586.0233	2.5	U-238	0.8		Pre
948-H7-2	3022439.297	673589.1228	1.5	U-238	6.9		Pre
948-H7-2	3022439.297	673589.1228	1.5	Am-241	0.56		Pre
948-H7-2	3022439.297	673589.1228	1.5	Pu-238	0.1		Pre
948-H7-2	3022439.297	673589.1228	1.5	Pu-239/240	1.55		Pre
948-H7-2	3022439.297	673589.1228	1.5	Pu-241	2.54		Pre
948-H7-2	3022439.297	673589.1228	1.5	Pu-242	0		Pre
948-H7-2	3022439.297	673589.1228	1.5	Tc-99	4.1		Pre
948-H7-2	3022439.297	673589.1228	1.5	Th-230	2.8		Pre
948-H7-2	3022439.297	673589.1228	1.5	Th-232	5.1		Pre
948-H7-2	3022439.297	673589.1228	1.5	U-233/234	56.5		Pre
948-H7-2	3022439.297	673589.1228	1.5	U-235	2.2		Pre

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Historical Dataset, Survey Unit 19

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
948-H7-3	3022439.297	673589.1228	2.5	Am-241	0.08		Pre
948-H7-3	3022439.297	673589.1228	2.5	Pu-238	0.01		Pre
948-H7-3	3022439.297	673589.1228	2.5	Pu-239/240	0.22		Pre
948-H7-3	3022439.297	673589.1228	2.5	Pu-241	0.36		Pre
948-H7-3	3022439.297	673589.1228	2.5	Pu-242	0		Pre
948-H7-3	3022439.297	673589.1228	2.5	Tc-99	2		Pre
948-H7-3	3022439.297	673589.1228	2.5	Th-230	1		Pre
948-H7-3	3022439.297	673589.1228	2.5	Th-232	1.6		Pre
948-H7-3	3022439.297	673589.1228	2.5	U-233/234	6.8		Pre
948-H7-3	3022439.297	673589.1228	2.5	U-235	0.3		Pre
948-H7-3	3022439.297	673589.1228	2.5	U-238	1.7		Pre
949-C2-2	3022442.41	673566.1203	1.5	Am-241	0.11		Pre
949-C2-2	3022442.41	673566.1203	1.5	Pu-238	0.02		Pre
949-C2-2	3022442.41	673566.1203	1.5	Pu-239/240	0.31		Pre
949-C2-2	3022442.41	673566.1203	1.5	Pu-241	0.5		Pre
949-C2-2	3022442.41	673566.1203	1.5	Pu-242	0		Pre
949-C2-2	3022442.41	673566.1203	1.5	Tc-99	1.6		Pre
949-C2-2	3022442.41	673566.1203	1.5	Th-230	0.8		Pre
949-C2-2	3022442.41	673566.1203	1.5	Th-232	1.3		Pre
949-C2-2	3022442.41	673566.1203	1.5	U-233/234	3.5		Pre
949-C2-2	3022442.41	673566.1203	1.5	U-235	0.1		Pre
949-C2-2	3022442.41	673566.1203	1.5	U-238	1.1		Pre
949-I7-2	3022467.395	673571.83	1.5	Am-241	0.31		Pre
949-I7-2	3022467.395	673571.83	1.5	Pu-238	0.06		Pre
949-I7-2	3022467.395	673571.83	1.5	Pu-239/240	0.84		Pre
949-I7-2	3022467.395	673571.83	1.5	Pu-241	1.38		Pre
949-I7-2	3022467.395	673571.83	1.5	Pu-242	0		Pre
949-I7-2	3022467.395	673571.83	1.5	Tc-99	2.5		Pre
949-I7-2	3022467.395	673571.83	1.5	Th-230	1		Pre
949-I7-2	3022467.395	673571.83	1.5	Th-232	1.6		Pre
949-I7-2	3022467.395	673571.83	1.5	U-233/234	12.6		Pre
949-I7-2	3022467.395	673571.83	1.5	U-235	0.5		Pre
949-I7-2	3022467.395	673571.83	1.5	U-238	2.5		Pre
949-I7-3	3022467.395	673571.83	2.5	Am-241	-0.23		Pre
949-I7-3	3022467.395	673571.83	2.5	Pu-238	0		Pre
949-I7-3	3022467.395	673571.83	2.5	Pu-239/240	0		Pre
949-I7-3	3022467.395	673571.83	2.5	Pu-241	0		Pre
949-I7-3	3022467.395	673571.83	2.5	Pu-242	0		Pre
949-I7-3	3022467.395	673571.83	2.5	Tc-99	1.7		Pre
949-I7-3	3022467.395	673571.83	2.5	Th-230	0.8		Pre
949-I7-3	3022467.395	673571.83	2.5	Th-232	1.2		Pre
949-I7-3	3022467.395	673571.83	2.5	U-233/234	4.7		Pre
949-I7-3	3022467.395	673571.83	2.5	U-235	0.2		Pre
949-I7-3	3022467.395	673571.83	2.5	U-238	1.3		Pre
950-C2-2	3022468.52	673546.2172	1.5	Am-241	0.68		Pre
950-C2-2	3022468.52	673546.2172	1.5	Pu-238	0.12		Pre
950-C2-2	3022468.52	673546.2172	1.5	Pu-239/240	1.86		Pre
950-C2-2	3022468.52	673546.2172	1.5	Pu-241	3.05		Pre
950-C2-2	3022468.52	673546.2172	1.5	Pu-242	0		Pre
950-C2-2	3022468.52	673546.2172	1.5	Tc-99	2.1		Pre
950-C2-2	3022468.52	673546.2172	1.5	Th-230	1.2		Pre
950-C2-2	3022468.52	673546.2172	1.5	Th-232	1.9		Pre
950-C2-2	3022468.52	673546.2172	1.5	U-233/234	7.8		Pre
950-C2-2	3022468.52	673546.2172	1.5	U-235	0.3		Pre
950-C2-2	3022468.52	673546.2172	1.5	U-238	1.8		Pre

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Historical Dataset, Survey Unit 19

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
950-C2-3	3022468.52	673546.2172	2.5	Am-241	-0.07		Pre
950-C2-3	3022468.52	673546.2172	2.5	Pu-238	0		Pre
950-C2-3	3022468.52	673546.2172	2.5	Pu-239/240	0		Pre
950-C2-3	3022468.52	673546.2172	2.5	Pu-241	0		Pre
950-C2-3	3022468.52	673546.2172	2.5	Pu-242	0		Pre
950-C2-3	3022468.52	673546.2172	2.5	Tc-99	1.2		Pre
950-C2-3	3022468.52	673546.2172	2.5	Th-230	0.7		Pre
950-C2-3	3022468.52	673546.2172	2.5	Th-232	1		Pre
950-C2-3	3022468.52	673546.2172	2.5	U-233/234	1.5		Pre
950-C2-3	3022468.52	673546.2172	2.5	U-235	0.1		Pre
950-C2-3	3022468.52	673546.2172	2.5	U-238	0.6		Pre
950-H7-2	3022491.516	673549.3167	1.5	Am-241	-0.04		Pre
950-H7-2	3022491.516	673549.3167	1.5	Pu-238	0		Pre
950-H7-2	3022491.516	673549.3167	1.5	Pu-239/240	0		Pre
950-H7-2	3022491.516	673549.3167	1.5	Pu-241	0		Pre
950-H7-2	3022491.516	673549.3167	1.5	Pu-242	0		Pre
950-H7-2	3022491.516	673549.3167	1.5	Tc-99	1.5		Pre
950-H7-2	3022491.516	673549.3167	1.5	Th-230	0.5		Pre
950-H7-2	3022491.516	673549.3167	1.5	Th-232	0.7		Pre
950-H7-2	3022491.516	673549.3167	1.5	U-233/234	3.2		Pre
950-H7-2	3022491.516	673549.3167	1.5	U-235	0.1		Pre
950-H7-2	3022491.516	673549.3167	1.5	U-238	1		Pre
950-H7-3	3022491.516	673549.3167	2.5	Am-241	0.05		Pre
950-H7-3	3022491.516	673549.3167	2.5	Pu-238	0.01		Pre
950-H7-3	3022491.516	673549.3167	2.5	Pu-239/240	0.14		Pre
950-H7-3	3022491.516	673549.3167	2.5	Pu-241	0.23		Pre
950-H7-3	3022491.516	673549.3167	2.5	Pu-242	0		Pre
950-H7-3	3022491.516	673549.3167	2.5	Tc-99	1.6		Pre
950-H7-3	3022491.516	673549.3167	2.5	Th-230	0.4		Pre
950-H7-3	3022491.516	673549.3167	2.5	Th-232	0.7		Pre
950-H7-3	3022491.516	673549.3167	2.5	U-233/234	3.7		Pre
950-H7-3	3022491.516	673549.3167	2.5	U-235	0.1		Pre
950-H7-3	3022491.516	673549.3167	2.5	U-238	1.1		Pre
982-I8-2	3022424.014	673563.6407	1.5	Am-241	-0.28		Pre
982-I8-2	3022424.014	673563.6407	1.5	Pu-238	0		Pre
982-I8-2	3022424.014	673563.6407	1.5	Pu-239/240	0		Pre
982-I8-2	3022424.014	673563.6407	1.5	Pu-241	0		Pre
982-I8-2	3022424.014	673563.6407	1.5	Pu-242	0		Pre
982-I8-2	3022424.014	673563.6407	1.5	Tc-99	1.8		Pre
982-I8-2	3022424.014	673563.6407	1.5	Th-230	0.8		Pre
982-I8-2	3022424.014	673563.6407	1.5	Th-232	1.3		Pre
982-I8-2	3022424.014	673563.6407	1.5	U-233/234	4.8		Pre
982-I8-2	3022424.014	673563.6407	1.5	U-235	0.2		Pre
982-I8-2	3022424.014	673563.6407	1.5	U-238	1.3		Pre
982-I8-3	3022424.014	673563.6407	2.5	Am-241	-0.1		Pre
982-I8-3	3022424.014	673563.6407	2.5	Pu-238	0		Pre
982-I8-3	3022424.014	673563.6407	2.5	Pu-239/240	0		Pre
982-I8-3	3022424.014	673563.6407	2.5	Pu-241	0		Pre
982-I8-3	3022424.014	673563.6407	2.5	Pu-242	0		Pre
982-I8-3	3022424.014	673563.6407	2.5	Tc-99	1.6		Pre
982-I8-3	3022424.014	673563.6407	2.5	Th-230	1		Pre
982-I8-3	3022424.014	673563.6407	2.5	Th-232	1.7		Pre
982-I8-3	3022424.014	673563.6407	2.5	U-233/234	3.7		Pre
982-I8-3	3022424.014	673563.6407	2.5	U-235	0.2		Pre
982-I8-3	3022424.014	673563.6407	2.5	U-238	1.1		Pre

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Historical Dataset, Survey Unit 19

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
983-I8-2	3022450.123	673543.7377	1.5	Am-241	0.01		Pre
983-I8-2	3022450.123	673543.7377	1.5	Pu-238	0		Pre
983-I8-2	3022450.123	673543.7377	1.5	Pu-239/240	0.02		Pre
983-I8-2	3022450.123	673543.7377	1.5	Pu-241	0.04		Pre
983-I8-2	3022450.123	673543.7377	1.5	Pu-242	0		Pre
983-I8-2	3022450.123	673543.7377	1.5	Tc-99	2		Pre
983-I8-2	3022450.123	673543.7377	1.5	Th-230	0.7		Pre
983-I8-2	3022450.123	673543.7377	1.5	Th-232	1.1		Pre
983-I8-2	3022450.123	673543.7377	1.5	U-233/234	6.5		Pre
983-I8-2	3022450.123	673543.7377	1.5	U-235	0.3		Pre
983-I8-2	3022450.123	673543.7377	1.5	U-238	1.6		Pre
983-I8-3	3022450.123	673543.7377	2.5	Am-241	0.11		Pre
983-I8-3	3022450.123	673543.7377	2.5	Pu-238	0.02		Pre
983-I8-3	3022450.123	673543.7377	2.5	Pu-239/240	0.3		Pre
983-I8-3	3022450.123	673543.7377	2.5	Pu-241	0.49		Pre
983-I8-3	3022450.123	673543.7377	2.5	Pu-242	0		Pre
983-I8-3	3022450.123	673543.7377	2.5	Tc-99	1.8		Pre
983-I8-3	3022450.123	673543.7377	2.5	Th-230	0.8		Pre
983-I8-3	3022450.123	673543.7377	2.5	Th-232	1.3		Pre
983-I8-3	3022450.123	673543.7377	2.5	U-233/234	5		Pre
983-I8-3	3022450.123	673543.7377	2.5	U-235	0.2		Pre
983-I8-3	3022450.123	673543.7377	2.5	U-238	1.3		Pre
984-E6-2	3022463.058	673517.3744	1.5	Am-241	-0.18		Pre
984-E6-2	3022463.058	673517.3744	1.5	Pu-238	0		Pre
984-E6-2	3022463.058	673517.3744	1.5	Pu-239/240	0		Pre
984-E6-2	3022463.058	673517.3744	1.5	Pu-241	0		Pre
984-E6-2	3022463.058	673517.3744	1.5	Pu-242	0		Pre
984-E6-2	3022463.058	673517.3744	1.5	Tc-99	1.5		Pre
984-E6-2	3022463.058	673517.3744	1.5	Th-230	0.6		Pre
984-E6-2	3022463.058	673517.3744	1.5	Th-232	1		Pre
984-E6-2	3022463.058	673517.3744	1.5	U-233/234	2.8		Pre
984-E6-2	3022463.058	673517.3744	1.5	U-235	0.1		Pre
984-E6-2	3022463.058	673517.3744	1.5	U-238	0.9		Pre
984-E6-3	3022463.058	673517.3744	2.5	Am-241	-0.38		Pre
984-E6-3	3022463.058	673517.3744	2.5	Pu-238	0		Pre
984-E6-3	3022463.058	673517.3744	2.5	Pu-239/240	0		Pre
984-E6-3	3022463.058	673517.3744	2.5	Pu-241	0		Pre
984-E6-3	3022463.058	673517.3744	2.5	Pu-242	0		Pre
984-E6-3	3022463.058	673517.3744	2.5	Tc-99	1.4		Pre
984-E6-3	3022463.058	673517.3744	2.5	Th-230	0.5		Pre
984-E6-3	3022463.058	673517.3744	2.5	Th-232	0.7		Pre
984-E6-3	3022463.058	673517.3744	2.5	U-233/234	2.4		Pre
984-E6-3	3022463.058	673517.3744	2.5	U-235	0.1		Pre
984-E6-3	3022463.058	673517.3744	2.5	U-238	0.8		Pre
984-J3-2	3022465.166	673536.3963	1.5	Am-241	0.13		Pre
984-J3-2	3022465.166	673536.3963	1.5	Pu-238	0.1		Pre
984-J3-2	3022465.166	673536.3963	1.5	Pu-239/240	1.5		Pre
984-J3-2	3022465.166	673536.3963	1.5	Pu-241	-0.18		Pre
984-J3-2	3022465.166	673536.3963	1.5	Pu-242	0		Pre
984-J3-2	3022465.166	673536.3963	1.5	Tc-99	0.8		Pre
984-J3-2	3022465.166	673536.3963	1.5	Th-230	1.3		Pre
984-J3-2	3022465.166	673536.3963	1.5	Th-232	1.4		Pre
984-J3-2	3022465.166	673536.3963	1.5	U-233/234	17		Pre
984-J3-2	3022465.166	673536.3963	1.5	U-235	0.3		Pre
984-J3-2	3022465.166	673536.3963	1.5	U-238	1.6		Pre

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Appendix A.5

Historical Dataset, Survey Unit 20

Historical Dataset, Survey Unit 20

Sample ID#	Sample Location		Sample Depth (ft)	Contaminant Name	Analytical Result	Units	Period
	Easting	Northing					
228	3022380.436	673660.3888	6.6	Am-241	0.171	pCi/g	Post
228	3022380.436	673660.3888	6.6	Th-232	2.138	pCi/g	Post
228	3022380.436	673660.3888	6.6	U-235	0.087	pCi/g	Post
229	3022386.293	673682.117	6.6	Am-241	0.102	pCi/g	Post
229	3022386.293	673682.117	6.6	Th-232	1.384	pCi/g	Post
229	3022386.293	673682.117	6.6	U-235	0.419	pCi/g	Post
230	3022366.317	673658.1047	6.6	Am-241	-0.647	pCi/g	Post
230	3022366.317	673658.1047	6.6	Th-232	1.863	pCi/g	Post
230	3022366.317	673658.1047	6.6	U-235	1.298	pCi/g	Post
231	3022367.457	673677.8738	6.6	Am-241	0.417	pCi/g	Post
231	3022367.457	673677.8738	6.6	Th-232	1.698	pCi/g	Post
231	3022367.457	673677.8738	6.6	U-235	0.596	pCi/g	Post
232	3022353.844	673670.7846	6.6	Am-241	-0.642	pCi/g	Post
232	3022353.844	673670.7846	6.6	Th-232	1.103	pCi/g	Post
232	3022353.844	673670.7846	6.6	U-235	2.459	pCi/g	Post
234	3022356.158	673696.9548	8.2	Am-241	-1.390	pCi/g	Post
234	3022356.158	673696.9548	8.2	Th-232	1.755	pCi/g	Post
234	3022356.158	673696.9548	8.2	U-235	1.050	pCi/g	Post
235	3022340.155	673687.6574	8.2	Am-241	0.088	pCi/g	Post
235	3022340.155	673687.6574	8.2	Th-232	1.546	pCi/g	Post
235	3022340.155	673687.6574	8.2	U-235	0.903	pCi/g	Post
240	3022356.935	673719.7597	8.2	Am-241	0.149	pCi/g	Post
240	3022356.935	673719.7597	8.2	Th-232	3.278	pCi/g	Post
240	3022356.935	673719.7597	8.2	U-235	0.483	pCi/g	Post
241	3022342.634	673712.8775	6.6	Am-241	0.100	pCi/g	Post
241	3022342.634	673712.8775	6.6	Th-232	2.174	pCi/g	Post
241	3022342.634	673712.8775	6.6	U-235	0.550	pCi/g	Post
242	3022325.086	673734.1373	8.2	Am-241	-0.552	pCi/g	Post
242	3022325.086	673734.1373	8.2	Th-232	4.602	pCi/g	Post
242	3022325.086	673734.1373	8.2	U-235	2.769	pCi/g	Post
243	3022303.417	673722.7161	8.2	Am-241	1.102	pCi/g	Post
243	3022303.417	673722.7161	8.2	Th-232	0.906	pCi/g	Post
243	3022303.417	673722.7161	8.2	U-235	0.075	pCi/g	Post
244	3022292.19	673747.0286	8.2	Am-241	-1.511	pCi/g	Post
244	3022292.19	673747.0286	8.2	Th-232	2.984	pCi/g	Post
244	3022292.19	673747.0286	8.2	U-235	2.485	pCi/g	Post
245	3022272.164	673755.3005	8.2	Am-241	-0.708	pCi/g	Post
245	3022272.164	673755.3005	8.2	Th-232	3.373	pCi/g	Post
245	3022272.164	673755.3005	8.2	U-235	3.282	pCi/g	Post
248	3022281.014	673787.9857	8.2	Am-241	-0.481	pCi/g	Post
248	3022281.014	673787.9857	8.2	Th-232	2.295	pCi/g	Post
248	3022281.014	673787.9857	8.2	U-235	0.691	pCi/g	Post
250	3022255.152	673775.3485	8.2	Am-241	-1.160	pCi/g	Post
250	3022255.152	673775.3485	8.2	Th-232	2.877	pCi/g	Post
250	3022255.152	673775.3485	8.2	U-235	2.716	pCi/g	Post
251	3022254.042	673795.8692	8.2	Am-241	-0.508	pCi/g	Post
251	3022254.042	673795.8692	8.2	Th-232	2.929	pCi/g	Post
251	3022254.042	673795.8692	8.2	U-235	3.282	pCi/g	Post

Appendix B

VSP Summary Reports

APPENDIX B.1

VSP SUMMARY REPORT, SURVEY UNIT 2

Systematic sampling locations for comparing two population means or medians (site and reference) [nonparametric - MARSSIM]**Summary**

This report summarizes the sampling design used, associated statistical assumptions, as well as general guidelines for conducting post-sampling data analysis. Sampling plan components presented here include how many sampling locations to choose and where within the sampling area to collect those samples. The type of medium to sample (i.e., soil, groundwater, etc.) and how to analyze the samples (in-situ, fixed laboratory, etc.) are addressed in other sections of the sampling plan.

Table B-1 summarizes the sampling design developed. Figure B-1 shows sampling locations in the field and Table B-2 lists sampling location coordinates.

Table B-1 Summary of Sampling Design, Survey Unit 2

SUMMARY OF SAMPLING DESIGN	
Primary Objective of Design	Compare a site mean or median to a reference area mean or median
Type of Sampling Design	Nonparametric
Sample Placement (Location) in the Field	Systematic with a random start location
Working (Null) Hypothesis	The difference between the medians(means) exceeds the threshold
Formula for calculating number of sampling locations	Wilcoxon Rank Sum Test - MARSSIM version
Calculated total number of samples for each site and reference area	13
Number of samples on map ^a	18
Number of selected sample areas ^b	1
Specified sampling area ^c	38622.18 ft ²
Size of grid / Area of grid cell ^d	54.5063 feet / 2970.94 ft ²
Grid pattern	Square

^a This number may differ from the calculated number because of 1) grid edge effects, 2) adding judgment samples, or 3) selecting or unselecting sample areas.

^b The number of selected sample areas is the number of colored areas on the map of the site. These sample areas contain the locations where samples are collected.

^c The sampling area is the total surface area of the selected colored sample areas on the map of the site.

^d Size of grid / Area of grid cell gives the linear and square dimensions of the grid used to systematically place samples.



Figure B-1 VSP-Generated Sample Locations, SU 2

Table B-2 Survey Unit 2 Corehole Locations, TN State Plane Coordinates

X Coordinate	Y Coordinate	Type	Reference/Survey Unit
3023003.8764	674056.0947	Systematic	Survey Unit
3022977.2739	674128.4424	Systematic	Survey Unit
3023026.7490	674105.5698	Systematic	Survey Unit
3022307.4959	674498.1340	Systematic	Survey Unit
3022356.9709	674475.2613	Systematic	Survey Unit
3022406.4460	674452.3887	Systematic	Survey Unit
3022455.9210	674429.5161	Systematic	Survey Unit
3022505.3961	674406.6435	Systematic	Survey Unit
3022554.8711	674383.7709	Systematic	Survey Unit
3022604.3462	674360.8983	Systematic	Survey Unit
3022653.8212	674338.0257	Systematic	Survey Unit
3022703.2963	674315.1531	Systematic	Survey Unit
3022752.7713	674292.2805	Systematic	Survey Unit
3022901.1964	674223.6626	Systematic	Survey Unit
3022950.6715	674200.7900	Systematic	Survey Unit
3023000.1465	674177.9174	Systematic	Survey Unit
3023049.6216	674155.0448	Systematic	Survey Unit
3023072.4942	674204.5198	Systematic	Survey Unit

Primary Sampling Objective

The primary purpose of sampling at this site is to compare a site median or mean value with a reference area median or mean value. This is achieved by testing the difference between the site and reference area medians (means). The working hypothesis (or 'null' hypothesis) is that the difference between the site median (mean) and the reference area median (mean) is equal to or exceeds the threshold. The alternative hypothesis is that the difference is less than the threshold. VSP calculates the number of samples required to reject the null hypothesis in favor of the alternative one, given a selected sampling approach and inputs to the associated equation.

Selected Sampling Approach

A nonparametric systematic sampling approach with a random start was used to determine the number of samples and to specify sampling locations. A nonparametric formula was chosen because the conceptual model and historical information (e.g., historical data from this site or a very similar site) indicate that typical parametric assumptions may not be true.

Both parametric and non-parametric equations rely on assumptions about the population. Typically, however, non-parametric equations require fewer assumptions and allow for more uncertainty about the statistical distribution of values at the site. The trade-off is that if the parametric assumptions are valid, the required number of samples is usually less than if a non-parametric equation was used.

Locating the sample points over a systematic grid with a random start ensures spatial coverage of the site. Statistical analyses of systematically collected data are valid if a random start to the grid is used. One disadvantage of systematically collected samples is that spatial variability or patterns may not be discovered if the grid spacing is large relative to the spatial patterns.

Number of Total Samples: Calculation Equation and Inputs

The equation used to calculate the number of samples is based on Wilcoxon Rank Sum test published in MARSSIM (US EPA, et al, 1997). For this site, the null hypothesis is rejected in favor of the alternative one if the difference between the site and reference area median (mean) is sufficiently smaller than the threshold. The number of samples to collect is calculated so that if the inputs to the equation are true, the calculated number of samples will cause the null hypothesis to be rejected.

Equation B-1 and Equation B-2 were used to calculate the number of samples.

$$n + m = \frac{(z_{1-\alpha} + z_{1-\beta})^2}{3(P_r - 0.5)^2}$$

Equation B-1

where

$$P_r = \Phi \left(\frac{\Delta}{\sqrt{2(s_{sample}^2 + s_{analytical}^2 / r)}} \right)$$

Equation B-2

where

- $\Phi(z)$ is the cumulative standard normal distribution on $(-\infty, z)$ (see PNNL-13450 for details),
- P_r is the probability that a measurement collected from a random location at the study site is greater than a measurement collected from a random location in a reference area. See PNNL-13450 for details,
- n is the number of samples for the site and is equal to m ,
- m is the number of samples for the reference area and is equal to n ,
- S_{sample} is the estimated standard deviation of the measured values if measurements were made without analytical error,
- $S_{analytical}$ is the estimated standard deviation of the measured values due to the analytical method,
- r is the number of replicate analyses per sample,
- Δ is the width of the gray region,
- α is the acceptable probability of incorrectly concluding the difference between the medians(means) is less than the threshold,
- β is the acceptable probability of incorrectly concluding the difference between the medians(means) exceeds the threshold,
- $Z_{1-\alpha}$ is the value of the standard normal distribution such that the proportion of the distribution less than $Z_{1-\alpha}$ is $1-\alpha$,
- $Z_{1-\beta}$ is the value of the standard normal distribution such that the proportion of the distribution less than $Z_{1-\beta}$ is $1-\beta$.

Note: MARSSIM suggests that the number of samples should be increased by at least 20% to account for missing or unusable data and uncertainty in the calculated value of n . VSP allows a user-supplied percent overage as discussed in MARSSIM (EPA 2000, p. 5-33).

The values of these inputs that result in the calculated number of sampling locations are presented in Table B-3.

Table B-3 Input Parameters in VSP Sample Design

Parameter	Value
S_{sample}	1.1
$S_{analytical}$	0
r	1
Δ	1.5
α	5%
β	10%
$Z_{1-\alpha}$	1.64485 ^a
$Z_{1-\beta}$	1.28155 ^b
MARSSIM Overage	0%

^a This value is automatically calculated by VSP based upon the user defined value of α .

^b This value is automatically calculated by VSP based upon the user defined value of β .

Figure B-2 is a performance goal diagram, described in EPA's QA/G-4 guidance (EPA, 2000). It shows the probability of concluding the sample area is dirty (the probability that the difference between the site median(mean) and the reference area median(mean) exceeds the threshold) on the vertical axis versus a range of possible true differences between the medians(means) on the horizontal axis. This graph contains all of the inputs to the number of samples equation and pictorially represents the calculation.

The red vertical line is shown at the threshold (action limit) on the horizontal axis. The width of the gray shaded area is equal to Δ ; the upper horizontal dashed blue line is positioned at $1-\alpha$ on the vertical axis; the lower horizontal dashed blue line is positioned at β on the vertical axis. The vertical green line is positioned at one standard deviation below the threshold. The shape of the red curve corresponds to the estimates of variability. The calculated number of samples results in the curve that passes through the lower bound of Δ at β and the upper bound of Δ at $1-\alpha$. If any of the inputs change, the number of samples that result in the correct curve changes.

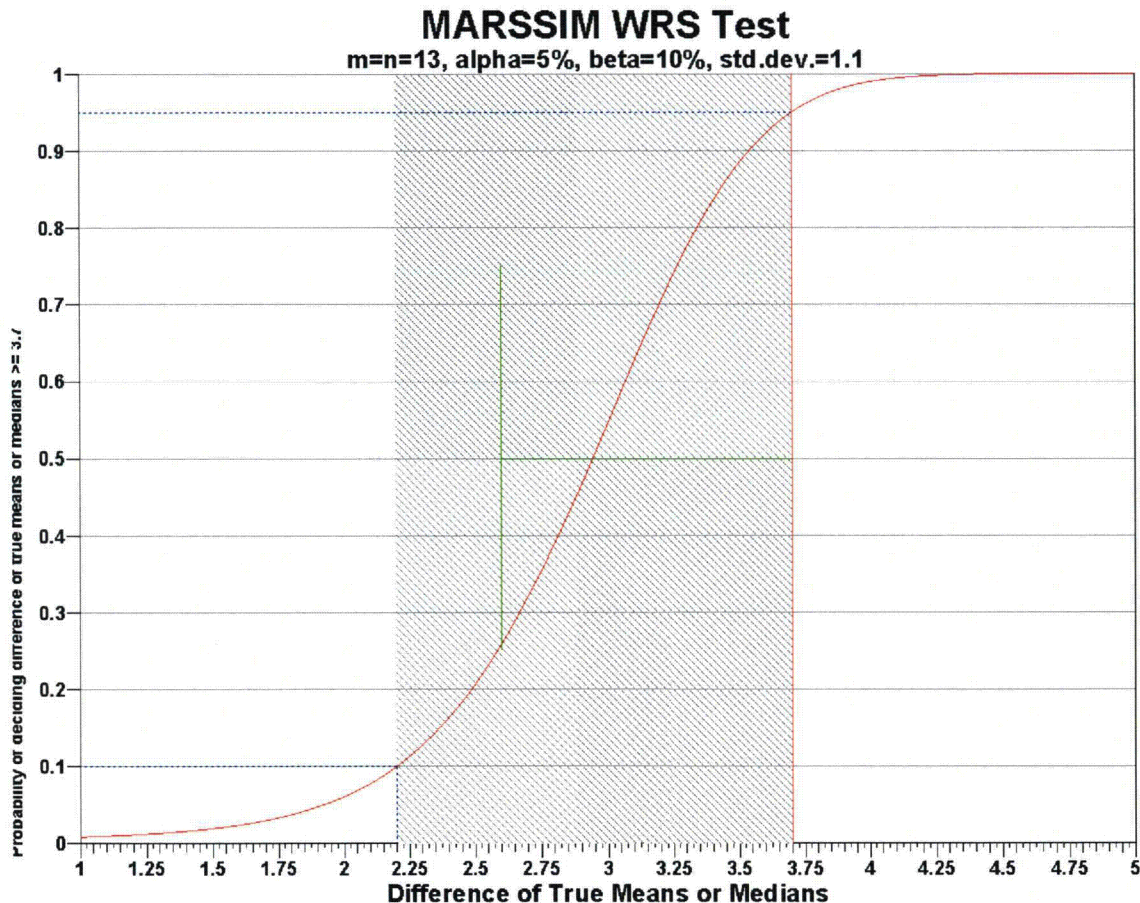


Figure B-2 A-Priori Power Curve for WRS Test

Statistical Assumptions

The assumptions associated with the formulas for computing the number of samples are:

1. although the population does not have to be normally distributed, the test statistic is approximately normally distributed,
2. the variances of the site and reference populations are equal,
3. the variance estimate, S^2 , is reasonable and representative of the populations being sampled,
4. the population values are not spatially or temporally correlated, and
5. the sampling locations will be selected probabilistically.

The first four assumptions will be assessed in a post data collection analysis. The last assumption is valid because the gridded sample locations were selected based on a random start.

Sensitivity Analysis

The sensitivity of the calculation of number of samples was explored by varying s , LBGR, β and α and examining the resulting changes in the number of samples. Table B-4 shows the results of this analysis.

Table B-4 Change in Number of Samples by Varying **LBGR**, α , and β Parameters

		Number of Samples					
AL=3.7		$\alpha=5$		$\alpha=10$		$\alpha=15$	
		$s=2.2$	$s=1.1$	$s=2.2$	$s=1.1$	$s=2.2$	$s=1.1$
LBGR=90	$\beta=5$	53	17	42	13	35	11
	$\beta=10$	42	13	32	10	27	9
	$\beta=15$	35	11	27	9	21	7
LBGR=80	$\beta=5$	53	17	42	13	35	11
	$\beta=10$	42	13	32	10	27	9
	$\beta=15$	35	11	27	9	21	7
LBGR=70	$\beta=5$	53	17	42	13	35	11
	$\beta=10$	42	13	32	10	27	9
	$\beta=15$	35	11	27	9	21	7

s = Sampling Standard Deviation

LBGR = Lower Bound of Gray Region (% of Action Level)

β = Beta (%), Probability of mistakenly concluding that $\mu >$ action level

α = Alpha (%), Probability of mistakenly concluding that $\mu <$ action level

AL = Action Level (Threshold)

This report was automatically produced* by Visual Sample Plan (VSP) software version 4.6b.

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APPENDIX B.2

VSP SUMMARY REPORT, SURVEY UNIT 8

Systematic sampling locations for comparing two population means or medians (site and reference) [nonparametric - MARSSIM]**Summary**

This report summarizes the sampling design used, associated statistical assumptions, as well as general guidelines for conducting post-sampling data analysis. Sampling plan components presented here include how many sampling locations to choose and where within the sampling area to collect those samples. The type of medium to sample (i.e., soil, groundwater, etc.) and how to analyze the samples (in-situ, fixed laboratory, etc.) are addressed in other sections of the sampling plan.

Table B-1 summarizes the sampling design developed. Figure B-1 that shows sampling locations in the field and a table that lists sampling location coordinates are also provided below.

Table B-1 Summary of Sampling Design, Survey Unit 8

SUMMARY OF SAMPLING DESIGN	
Primary Objective of Design	Compare a site mean or median to a reference area mean or median
Type of Sampling Design	Nonparametric
Sample Placement (Location) in the Field	Systematic with a random start location
Working (Null) Hypothesis	The difference between the medians(means) exceeds the threshold
Formula for calculating number of sampling locations	Wilcoxon Rank Sum Test - MARSSIM version
Calculated total number of samples for each site and reference area	64
Number of samples on map ^a	64
Number of selected sample areas ^b	1
Specified sampling area ^c	12461.52 ft ²
Size of grid / Area of grid cell ^d	13.9539 feet / 194.711 ft ²
Grid pattern	Square

^a This number may differ from the calculated number because of 1) grid edge effects, 2) adding judgment samples, or 3) selecting or unselecting sample areas.

^b The number of selected sample areas is the number of colored areas on the map of the site. These sample areas contain the locations where samples are collected.

^c The sampling area is the total surface area of the selected colored sample areas on the map of the site.

^d Size of grid / Area of grid cell gives the linear and square dimensions of the grid used to systematically place samples.

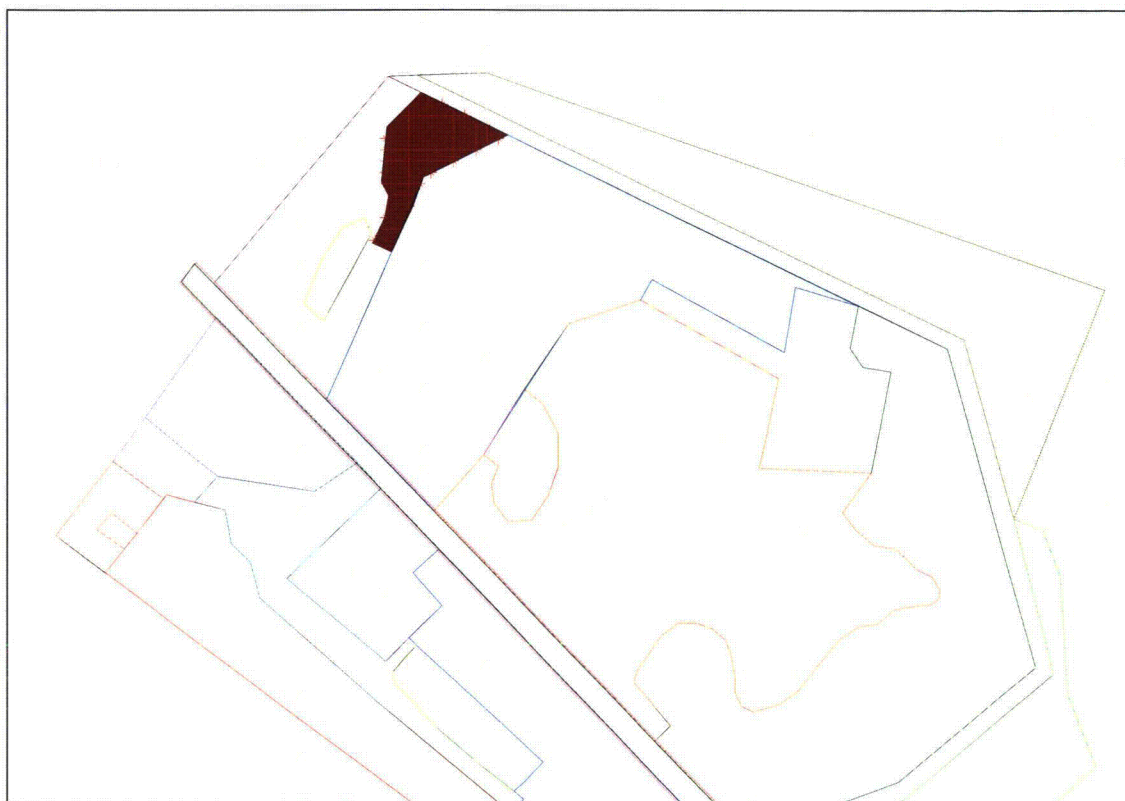


Figure B-1 VSP-Generated Sample Locations, SU 8

Table B-2 Survey Unit 8 Corehole Locations, TN State Plane Coordinates

X Coordinate	Y Coordinate	Type	Reference/Survey Unit
3022200.0623	674316.8039	Systematic	Survey Unit
3022214.0162	674316.8039	Systematic	Survey Unit
3022214.0162	674330.7578	Systematic	Survey Unit
3022227.9701	674330.7578	Systematic	Survey Unit
3022214.0162	674344.7117	Systematic	Survey Unit
3022227.9701	674344.7117	Systematic	Survey Unit
3022227.9701	674358.6656	Systematic	Survey Unit
3022241.9240	674358.6656	Systematic	Survey Unit
3022227.9701	674372.6195	Systematic	Survey Unit
3022241.9240	674372.6195	Systematic	Survey Unit
3022214.0162	674386.5734	Systematic	Survey Unit
3022227.9701	674386.5734	Systematic	Survey Unit
3022241.9240	674386.5734	Systematic	Survey Unit
3022255.8779	674386.5734	Systematic	Survey Unit
3022214.0162	674400.5273	Systematic	Survey Unit
3022227.9701	674400.5273	Systematic	Survey Unit
3022241.9240	674400.5273	Systematic	Survey Unit
3022255.8779	674400.5273	Systematic	Survey Unit
3022269.8318	674400.5273	Systematic	Survey Unit
3022214.0162	674414.4812	Systematic	Survey Unit

3022227.9701	674414.4812	Systematic	Survey Unit
3022241.9240	674414.4812	Systematic	Survey Unit
3022255.8779	674414.4812	Systematic	Survey Unit
3022269.8318	674414.4812	Systematic	Survey Unit
3022283.7857	674414.4812	Systematic	Survey Unit
3022297.7396	674414.4812	Systematic	Survey Unit
3022214.0162	674428.4351	Systematic	Survey Unit
3022227.9701	674428.4351	Systematic	Survey Unit
3022241.9240	674428.4351	Systematic	Survey Unit
3022255.8779	674428.4351	Systematic	Survey Unit
3022269.8318	674428.4351	Systematic	Survey Unit
3022283.7857	674428.4351	Systematic	Survey Unit
3022297.7396	674428.4351	Systematic	Survey Unit
3022311.6935	674428.4351	Systematic	Survey Unit
3022325.6474	674428.4351	Systematic	Survey Unit
3022214.0162	674442.3890	Systematic	Survey Unit
3022227.9701	674442.3890	Systematic	Survey Unit
3022241.9240	674442.3890	Systematic	Survey Unit
3022255.8779	674442.3890	Systematic	Survey Unit
3022269.8318	674442.3890	Systematic	Survey Unit
3022283.7857	674442.3890	Systematic	Survey Unit
3022297.7396	674442.3890	Systematic	Survey Unit
3022311.6935	674442.3890	Systematic	Survey Unit
3022325.6474	674442.3890	Systematic	Survey Unit
3022339.6013	674442.3890	Systematic	Survey Unit
3022353.5552	674442.3890	Systematic	Survey Unit
3022227.9701	674456.3429	Systematic	Survey Unit
3022241.9240	674456.3429	Systematic	Survey Unit
3022255.8779	674456.3429	Systematic	Survey Unit
3022269.8318	674456.3429	Systematic	Survey Unit
3022283.7857	674456.3429	Systematic	Survey Unit
3022297.7396	674456.3429	Systematic	Survey Unit
3022311.6935	674456.3429	Systematic	Survey Unit
3022325.6474	674456.3429	Systematic	Survey Unit
3022339.6013	674456.3429	Systematic	Survey Unit
3022241.9240	674470.2968	Systematic	Survey Unit
3022255.8779	674470.2968	Systematic	Survey Unit
3022269.8318	674470.2968	Systematic	Survey Unit
3022283.7857	674470.2968	Systematic	Survey Unit
3022297.7396	674470.2968	Systematic	Survey Unit
3022311.6935	674470.2968	Systematic	Survey Unit
3022255.8779	674484.2507	Systematic	Survey Unit
3022269.8318	674484.2507	Systematic	Survey Unit
3022283.7857	674484.2507	Systematic	Survey Unit

Primary Sampling Objective

The primary purpose of sampling at this site is to compare a site median or mean value with a reference area median or mean value. This is achieved by testing the difference between the site and reference area medians(means). The working hypothesis (or 'null' hypothesis) is that the difference between the site median(mean) and the reference area median(mean) is equal to or exceeds the threshold. The alternative hypothesis is that the difference is less than the threshold. VSP calculates the number of samples required to reject the null hypothesis in favor of the alternative one, given a selected sampling approach and inputs to the associated equation.

Selected Sampling Approach

A nonparametric systematic sampling approach with a random start was used to determine the number of samples and to specify sampling locations. A nonparametric formula was chosen because the conceptual model and historical information (e.g., historical data from this site or a very similar site) indicate that typical parametric assumptions may not be true.

Both parametric and non-parametric equations rely on assumptions about the population. Typically, however, non-parametric equations require fewer assumptions and allow for more uncertainty about the statistical distribution of values at the site. The trade-off is that if the parametric assumptions are valid, the required number of samples is usually less than if a non-parametric equation was used.

Locating the sample points over a systematic grid with a random start ensures spatial coverage of the site. Statistical analyses of systematically collected data are valid if a random start to the grid is used. One disadvantage of systematically collected samples is that spatial variability or patterns may not be discovered if the grid spacing is large relative to the spatial patterns.

Number of Total Samples: Calculation Equation and Inputs

The equation used to calculate the number of samples is based on Wilcoxon Rank Sum test published in MARSSIM (US EPA, et al, 1997). For this site, the null hypothesis is rejected in favor of the alternative one if the difference between the site and reference area median(mean) is sufficiently smaller than the threshold. The number of samples to collect is calculated so that if the inputs to the equation are true, the calculated number of samples will cause the null hypothesis to be rejected.

Equation B-1 and Equation B-2 were used to calculate the number of samples:

$$n + m = \frac{(Z_{1-\alpha} + Z_{1-\beta})^2}{3(P_r - 0.5)^2}$$

Equation B-1

where

$$P_r = \Phi \left(\frac{\Delta}{\sqrt{2(s_{\text{sample}}^2 + s_{\text{analytical}}^2 / r)}} \right)$$

Equation B-2

where

- $\Phi(z)$ is the cumulative standard normal distribution on $(-\infty, z)$ (see PNNL-13450 for details),
- P_r is the probability that a measurement collected from a random location at the study site is greater than a measurement collected from a random location in a reference area. See PNNL-13450 for details,
- n is the number of samples for the site and is equal to m ,
- m is the number of samples for the reference area and is equal to n ,
- S is the estimated standard deviation of the measured values including analytical error,

- Δ is the width of the gray region,
 α is the acceptable probability of incorrectly concluding the difference between the medians(means) is less than the threshold,
 β is the acceptable probability of incorrectly concluding the difference between the medians(means) exceeds the threshold,
 $Z_{1-\alpha}$ is the value of the standard normal distribution such that the proportion of the distribution less than $Z_{1-\alpha}$ is $1-\alpha$,
 $Z_{1-\beta}$ is the value of the standard normal distribution such that the proportion of the distribution less than $Z_{1-\beta}$ is $1-\beta$.

Note: MARSSIM suggests that the number of samples should be increased by at least 20% to account for missing or unusable data and uncertainty in the calculated value of n . VSP allows a user-supplied percent overage as discussed in MARSSIM (EPA 2000, p. 5-33).

The values of these inputs that result in the calculated number of sampling locations are presented in Table B-3.

Table B-3 Input Parameters in VSP Sample Design

Parameter	Value
S	2.5
Δ	1.5
α	5%
β	10%
$Z_{1-\alpha}$	1.64485 ^a
$Z_{1-\beta}$	1.28155 ^b
MARSSIM Overage	20%

^a This value is automatically calculated by VSP based upon the user defined value of α .

^b This value is automatically calculated by VSP based upon the user defined value of β .

Figure B-2 is a performance goal diagram, described in EPA's QA/G-4 guidance (EPA, 2000). It shows the probability of concluding the sample area is dirty (the probability that the difference between the site median(mean) and the reference area median(mean) exceeds the threshold) on the vertical axis versus a range of possible true differences between the medians(means) on the horizontal axis. This graph contains all of the inputs to the number of samples equation and pictorially represents the calculation.

The red vertical line is shown at the threshold (action limit) on the horizontal axis. The width of the gray shaded area is equal to Δ ; the upper horizontal dashed blue line is positioned at $1-\alpha$ on the vertical axis; the lower horizontal dashed blue line is positioned at β on the vertical axis. The vertical green line is positioned at one standard deviation below the threshold. The shape of the red curve corresponds to the estimates of variability. The calculated number of samples results in the curve that passes through the lower bound of Δ at β and the upper bound of Δ at $1-\alpha$. If any of the inputs change, the number of samples that result in the correct curve changes.

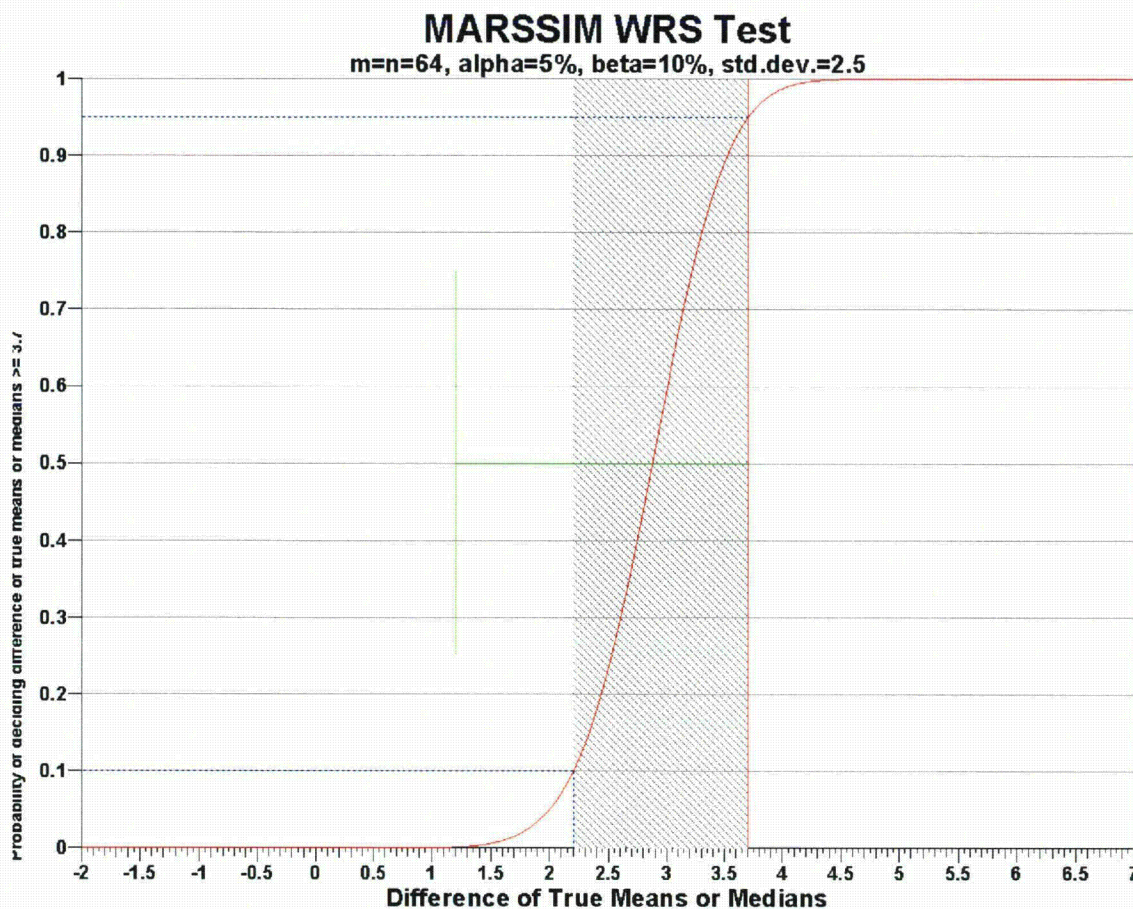


Figure B-2 A-Priori Power Curve for WRS Test

Statistical Assumptions

The assumptions associated with the formulas for computing the number of samples are:

1. although the population does not have to be normally distributed, the test statistic is approximately normally distributed,
2. the variances of the site and reference populations are equal,
3. the variance estimate, S^2 , is reasonable and representative of the populations being sampled,
4. the population values are not spatially or temporally correlated, and
5. the sampling locations will be selected probabilistically.

The first four assumptions will be assessed in a post data collection analysis. The last assumption is valid because the gridded sample locations were selected based on a random start.

Sensitivity Analysis

The sensitivity of the calculation of number of samples was explored by varying s , LBGR, β and α and examining the resulting changes in the number of samples. Table B-4 shows the results of this analysis.

Table B-4 Change in Number of Samples by Varying LBGR, α , and β Parameters

AL=3.7		Number of Samples					
		$\alpha=5$		$\alpha=10$		$\alpha=15$	
		s=5	s=2.5	s=5	s=2.5	s=5	s=2.5
LBGR=90	$\beta=5$	308	81	244	64	204	54
	$\beta=10$	244	64	188	50	153	41
	$\beta=15$	204	54	153	41	123	33
LBGR=80	$\beta=5$	308	81	244	64	204	54
	$\beta=10$	244	64	188	50	153	41
	$\beta=15$	204	54	153	41	123	33
LBGR=70	$\beta=5$	308	81	244	64	204	54
	$\beta=10$	244	64	188	50	153	41
	$\beta=15$	204	54	153	41	123	33

s = Standard Deviation

LBGR = Lower Bound of Gray Region (% of Action Level)

β = Beta (%), Probability of mistakenly concluding that $\mu >$ action level

α = Alpha (%), Probability of mistakenly concluding that $\mu <$ action level

AL = Action Level (Threshold)

This report was automatically produced* by Visual Sample Plan (VSP) software version 4.6b.

Software and documentation available at <http://dgo.pnl.gov/vsp>

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* - The report contents may have been modified or reformatted by end-user of software.

APPENDIX B.3

VSP SUMMARY REPORT, SURVEY UNIT 9

Systematic sampling locations for comparing two population means or medians (site and reference) [nonparametric - MARSSIM]**Summary**

This report summarizes the sampling design used, associated statistical assumptions, as well as general guidelines for conducting post-sampling data analysis. Sampling plan components presented here include how many sampling locations to choose and where within the sampling area to collect those samples. The type of medium to sample (i.e., soil, groundwater, etc.) and how to analyze the samples (in-situ, fixed laboratory, etc.) are addressed in other sections of the sampling plan.

Table B-1 summarizes the sampling design developed. Figure B-1 shows sampling locations in the field and Table B-2 lists sampling location coordinates.

Table B-1 Summary of Sampling Design, Survey Unit 9

SUMMARY OF SAMPLING DESIGN	
Primary Objective of Design	Compare a site mean or median to a reference area mean or median
Type of Sampling Design	Nonparametric
Sample Placement (Location) in the Field	Systematic with a random start location
Working (Null) Hypothesis	The difference between the medians(means) exceeds the threshold
Formula for calculating number of sampling locations	Wilcoxon Rank Sum Test - MARSSIM version
Calculated total number of samples for each site and reference area	42
Number of samples on map ^a	42
Number of selected sample areas ^b	1
Specified sampling area ^c	4316.00 ft ²
Size of grid / Area of grid cell ^d	10.1372 feet / 102.762 ft ²
Grid pattern	Square

^a This number may differ from the calculated number because of 1) grid edge effects, 2) adding judgment samples, or 3) selecting or unselecting sample areas.

^b The number of selected sample areas is the number of colored areas on the map of the site. These sample areas contain the locations where samples are collected.

^c The sampling area is the total surface area of the selected colored sample areas on the map of the site.

^d Size of grid / Area of grid cell gives the linear and square dimensions of the grid used to systematically place samples.

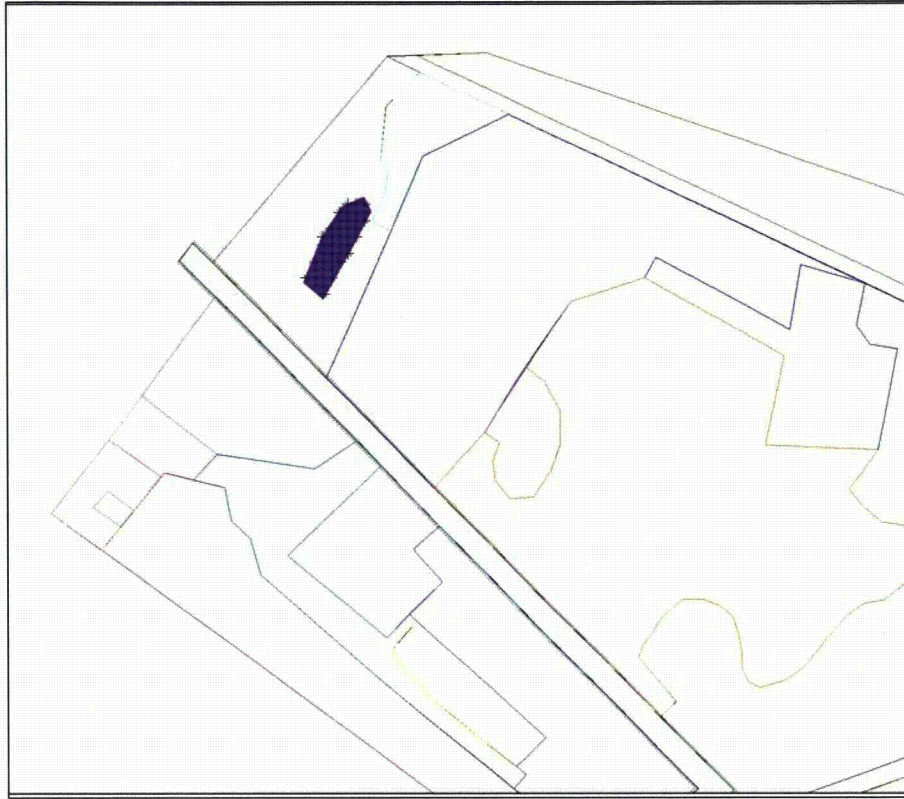


Figure B-1 VSP-Generated Sample Locations, SU 9

Table B-2 Survey Unit 9 Corehole Locations, TN State Plane Coordinates

X Coordinate	Y Coordinate	Type	Reference/Survey Unit
3022137.4871	674223.4430	Systematic	Survey Unit 9
3022127.3499	674233.5802	Systematic	Survey Unit 9
3022137.4871	674233.5802	Systematic	Survey Unit 9
3022117.2128	674243.7173	Systematic	Survey Unit 9
3022127.3499	674243.7173	Systematic	Survey Unit 9
3022137.4871	674243.7173	Systematic	Survey Unit 9
3022147.6243	674243.7173	Systematic	Survey Unit 9
3022127.3499	674253.8545	Systematic	Survey Unit 9
3022137.4871	674253.8545	Systematic	Survey Unit 9
3022147.6243	674253.8545	Systematic	Survey Unit 9
3022127.3499	674263.9916	Systematic	Survey Unit 9
3022137.4871	674263.9916	Systematic	Survey Unit 9
3022147.6243	674263.9916	Systematic	Survey Unit 9
3022157.7614	674263.9916	Systematic	Survey Unit 9
3022137.4871	674274.1288	Systematic	Survey Unit 9
3022147.6243	674274.1288	Systematic	Survey Unit 9
3022157.7614	674274.1288	Systematic	Survey Unit 9
3022167.8986	674274.1288	Systematic	Survey Unit 9
3022137.4871	674284.2659	Systematic	Survey Unit 9
3022147.6243	674284.2659	Systematic	Survey Unit 9

3022157.7614	674284.2659	Systematic	Survey Unit 9
3022167.8986	674284.2659	Systematic	Survey Unit 9
3022137.4871	674294.4031	Systematic	Survey Unit 9
3022147.6243	674294.4031	Systematic	Survey Unit 9
3022157.7614	674294.4031	Systematic	Survey Unit 9
3022167.8986	674294.4031	Systematic	Survey Unit 9
3022178.0357	674294.4031	Systematic	Survey Unit 9
3022147.6243	674304.5402	Systematic	Survey Unit 9
3022157.7614	674304.5402	Systematic	Survey Unit 9
3022167.8986	674304.5402	Systematic	Survey Unit 9
3022178.0357	674304.5402	Systematic	Survey Unit 9
3022157.7614	674314.6774	Systematic	Survey Unit 9
3022167.8986	674314.6774	Systematic	Survey Unit 9
3022178.0357	674314.6774	Systematic	Survey Unit 9
3022188.1729	674314.6774	Systematic	Survey Unit 9
3022157.7614	674324.8146	Systematic	Survey Unit 9
3022167.8986	674324.8146	Systematic	Survey Unit 9
3022178.0357	674324.8146	Systematic	Survey Unit 9
3022188.1729	674324.8146	Systematic	Survey Unit 9
3022167.8986	674334.9517	Systematic	Survey Unit 9
3022178.0357	674334.9517	Systematic	Survey Unit 9
3022188.1729	674334.9517	Systematic	Survey Unit 9

Primary Sampling Objective

The primary purpose of sampling at this site is to compare a site median or mean value with a reference area median or mean value. This is achieved by testing the difference between the site and reference area medians(means). The working hypothesis (or 'null' hypothesis) is that the difference between the site median(mean) and the reference area median(mean) is equal to or exceeds the threshold. The alternative hypothesis is that the difference is less than the threshold. VSP calculates the number of samples required to reject the null hypothesis in favor of the alternative one, given a selected sampling approach and inputs to the associated equation.

Selected Sampling Approach

A nonparametric systematic sampling approach with a random start was used to determine the number of samples and to specify sampling locations. A nonparametric formula was chosen because the conceptual model and historical information (e.g., historical data from this site or a very similar site) indicate that typical parametric assumptions may not be true.

Both parametric and non-parametric equations rely on assumptions about the population. Typically, however, non-parametric equations require fewer assumptions and allow for more uncertainty about the statistical distribution of values at the site. The trade-off is that if the parametric assumptions are valid, the required number of samples is usually less than if a non-parametric equation was used.

Locating the sample points over a systematic grid with a random start ensures spatial coverage of the site. Statistical analyses of systematically collected data are valid if a random start to the grid is used. One disadvantage of systematically collected samples is that spatial variability or patterns may not be discovered if the grid spacing is large relative to the spatial patterns.

Number of Total Samples: Calculation Equation and Inputs

The equation used to calculate the number of samples is based on Wilcoxon Rank Sum test published in MARSSIM (US EPA, et al, 1997). For this site, the null hypothesis is rejected in favor of the alternative one if the difference between the site and reference area median(mean) is sufficiently smaller than the threshold. The number of samples to collect is calculated so that if

the inputs to the equation are true, the calculated number of samples will cause the null hypothesis to be rejected.

Equation B-1 and Equation B-2 were used to calculate the number of samples.

$$n + m = \frac{(Z_{1-\alpha} + Z_{1-\beta})^2}{3(P_r - 0.5)^2}$$

Equation B-1

where

$$P_r = \Phi \left(\frac{\Delta}{\sqrt{2(s_{sample}^2 + s_{analytical}^2 / r)}} \right)$$

Equation B-2

where

- $\Phi(z)$ is the cumulative standard normal distribution on $(-\infty, z)$ (see PNNL-13450 for details),
- P_r is the probability that a measurement collected from a random location at the study site is greater than a measurement collected from a random location in a reference area. See PNNL-13450 for details,
- n is the number of samples for the site and is equal to m ,
- m is the number of samples for the reference area and is equal to n ,
- S is the estimated standard deviation of the measured values including analytical error,
- Δ is the width of the gray region,
- α is the acceptable probability of incorrectly concluding the difference between the medians(means) is less than the threshold,
- β is the acceptable probability of incorrectly concluding the difference between the medians(means) exceeds the threshold,
- $Z_{1-\alpha}$ is the value of the standard normal distribution such that the proportion of the distribution less than $Z_{1-\alpha}$ is $1-\alpha$,
- $Z_{1-\beta}$ is the value of the standard normal distribution such that the proportion of the distribution less than $Z_{1-\beta}$ is $1-\beta$.

Note: MARSSIM suggests that the number of samples should be increased by at least 20% to account for missing or unusable data and uncertainty in the calculated value of n . VSP allows a user-supplied percent overage as discussed in MARSSIM (EPA 2000, p. 5-33).

The values of these inputs that result in the calculated number of sampling locations are presented in Table B-3.

Table B-3 Input Parameters in VSP Sample Design

Parameter	Value
S	2
Δ	1.5
α	5%
β	10%
$Z_{1-\alpha}$	1.64485 ^a
$Z_{1-\beta}$	1.28155 ^b
MARSSIM Overage	20%

^a This value is automatically calculated by VSP based upon the user defined value of α .

^b This value is automatically calculated by VSP based upon the user defined value of β .

Figure B-2 is a performance goal diagram, described in EPA's QA/G-4 guidance (EPA, 2000). It shows the probability of concluding the sample area is dirty (the probability that the difference between the site median(mean) and the reference area median(mean) exceeds the threshold) on the vertical axis versus a range of possible true differences between the medians(means) on the horizontal axis. This graph contains all of the inputs to the number of samples equation and pictorially represents the calculation.

The red vertical line is shown at the threshold (action limit) on the horizontal axis. The width of the gray shaded area is equal to Δ ; the upper horizontal dashed blue line is positioned at $1-\alpha$ on the vertical axis; the lower horizontal dashed blue line is positioned at β on the vertical axis. The vertical green line is positioned at one standard deviation below the threshold. The shape of the red curve corresponds to the estimates of variability. The calculated number of samples results in the curve that passes through the lower bound of Δ at β and the upper bound of Δ at $1-\alpha$. If any of the inputs change, the number of samples that result in the correct curve changes.

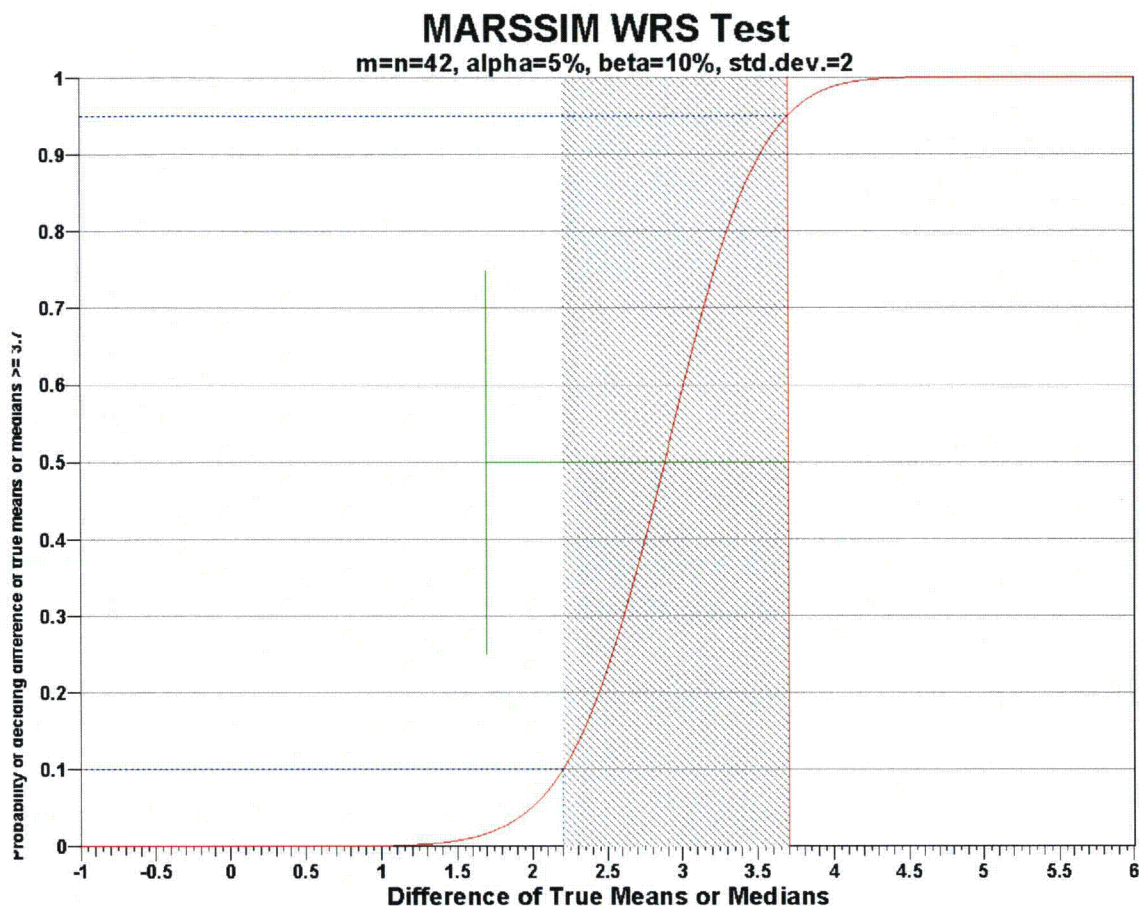


Figure B-2 A-Priori Power Curve for WRS Test

Statistical Assumptions

The assumptions associated with the formulas for computing the number of samples are:

1. although the population does not have to be normally distributed, the test statistic is approximately normally distributed,
2. the variances of the site and reference populations are equal,
3. the variance estimate, S^2 , is reasonable and representative of the populations being sampled,
4. the population values are not spatially or temporally correlated, and
5. the sampling locations will be selected probabilistically.

The first four assumptions will be assessed in a post data collection analysis. The last assumption is valid because the gridded sample locations were selected based on a random start.

Sensitivity Analysis

The sensitivity of the calculation of number of samples was explored by varying s , LBGR, β and α and examining the resulting changes in the number of samples. Table B-4 shows the results of this analysis.

Table B-4 Change in Number of Samples by Varying LBGR, α , and β .

		Number of Samples					
AL=3.7		$\alpha=5$		$\alpha=10$		$\alpha=15$	
		s=4	s=2	s=4	s=2	s=4	s=2
LBGR=90	$\beta=5$	198	54	158	42	132	36
	$\beta=10$	158	42	122	33	99	27
	$\beta=15$	132	36	99	27	80	22
LBGR=80	$\beta=5$	198	54	158	42	132	36
	$\beta=10$	158	42	122	33	99	27
	$\beta=15$	132	36	99	27	80	22
LBGR=70	$\beta=5$	198	54	158	42	132	36
	$\beta=10$	158	42	122	33	99	27
	$\beta=15$	132	36	99	27	80	22

s = Standard Deviation

LBGR = Lower Bound of Gray Region (% of Action Level)

β = Beta (%), Probability of mistakenly concluding that $\mu >$ action level

α = Alpha (%), Probability of mistakenly concluding that $\mu <$ action level

AL = Action Level (Threshold)

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APPENDIX B.4

VSP SUMMARY REPORT, SURVEY UNIT 19

Systematic sampling locations for comparing two population means or medians (site and reference) [nonparametric - MARSSIM]**Summary**

This report summarizes the sampling design used, associated statistical assumptions, as well as general guidelines for conducting post-sampling data analysis. Sampling plan components presented here include how many sampling locations to choose and where within the sampling area to collect those samples. The type of medium to sample (i.e., soil, groundwater, etc.) and how to analyze the samples (in-situ, fixed laboratory, etc.) are addressed in other sections of the sampling plan.

Table B-1 summarizes the sampling design developed. Figure B-1 shows sampling locations in the field and Table B-2 lists sampling location coordinates.

Table B-1 Summary of Sampling Design, Survey Unit 19

SUMMARY OF SAMPLING DESIGN	
Primary Objective of Design	Compare a site mean or median to a reference area mean or median
Type of Sampling Design	Nonparametric
Sample Placement (Location) in the Field	Systematic with a random start location
Working (Null) Hypothesis	The difference between the medians(means) exceeds the threshold
Formula for calculating number of sampling locations	Wilcoxon Rank Sum Test - MARSSIM version
Calculated total number of samples for each site and reference area	18
Number of samples on map ^a	18
Number of selected sample areas ^b	1
Specified sampling area ^c	54270.56 ft ²
Size of grid / Area of grid cell ^d	54.9093 feet / 3015.03 ft ²
Grid pattern	Square

^a This number may differ from the calculated number because of 1) grid edge effects, 2) adding judgment samples, or 3) selecting or unselecting sample areas.

^b The number of selected sample areas is the number of colored areas on the map of the site. These sample areas contain the locations where samples are collected.

^c The sampling area is the total surface area of the selected colored sample areas on the map of the site.

^d Size of grid / Area of grid cell gives the linear and square dimensions of the grid used to systematically place samples.



Figure B-1 VSP-Generated Sample Locations, SU 19

Table B-2 Survey Unit 19 Corehole Locations, TN State Plane Coordinates

X Coordinate	Y Coordinate	Type	Reference/Survey Unit
3022451.9039	673540.6232	Systematic	Survey Unit
3022506.8132	673540.6232	Systematic	Survey Unit
3022396.9946	673595.5325	Systematic	Survey Unit
3022451.9039	673595.5325	Systematic	Survey Unit
3022506.8132	673595.5325	Systematic	Survey Unit
3022561.7225	673595.5325	Systematic	Survey Unit
3022396.9946	673650.4418	Systematic	Survey Unit
3022451.9039	673650.4418	Systematic	Survey Unit
3022506.8132	673650.4418	Systematic	Survey Unit
3022396.9946	673705.3511	Systematic	Survey Unit
3022451.9039	673705.3511	Systematic	Survey Unit
3022342.0853	673760.2604	Systematic	Survey Unit
3022396.9946	673760.2604	Systematic	Survey Unit
3022287.1760	673815.1697	Systematic	Survey Unit
3022342.0853	673815.1697	Systematic	Survey Unit
3022287.1760	673870.0790	Systematic	Survey Unit
3022342.0853	673870.0790	Systematic	Survey Unit
3022287.1760	673924.9883	Systematic	Survey Unit

Primary Sampling Objective

The primary purpose of sampling at this site is to compare a site median or mean value with a reference area median or mean value. This is achieved by testing the difference between the site and reference area medians (means). The working hypothesis (or 'null' hypothesis) is that the difference between the site median (mean) and the reference area median (mean) is equal to or exceeds the threshold. The alternative hypothesis is that the difference is less than the threshold. VSP calculates the number of samples required to reject the null hypothesis in favor of the alternative one, given a selected sampling approach and inputs to the associated equation.

Selected Sampling Approach

A nonparametric systematic sampling approach with a random start was used to determine the number of samples and to specify sampling locations. A nonparametric formula was chosen because the conceptual model and historical information (e.g., historical data from this site or a very similar site) indicate that typical parametric assumptions may not be true.

Both parametric and non-parametric equations rely on assumptions about the population. Typically, however, non-parametric equations require fewer assumptions and allow for more uncertainty about the statistical distribution of values at the site. The trade-off is that if the parametric assumptions are valid, the required number of samples is usually less than if a non-parametric equation was used.

Locating the sample points over a systematic grid with a random start ensures spatial coverage of the site. Statistical analyses of systematically collected data are valid if a random start to the grid is used. One disadvantage of systematically collected samples is that spatial variability or patterns may not be discovered if the grid spacing is large relative to the spatial patterns.

Number of Total Samples: Calculation Equation and Inputs

The equation used to calculate the number of samples is based on Wilcoxon Rank Sum test published in MARSSIM (US EPA, et al, 1997). For this site, the null hypothesis is rejected in favor of the alternative one if the difference between the site and reference area median (mean) is sufficiently smaller than the threshold. The number of samples to collect is calculated so that if the inputs to the equation are true, the calculated number of samples will cause the null hypothesis to be rejected.

Equation B-1 and Equation B-2 were used to calculate the number of samples.

$$n + m = \frac{(z_{1-\alpha} + z_{1-\beta})^2}{3(P_r - 0.5)^2}$$

Equation B-1

where

$$P_r = \Phi \left(\frac{\Delta}{\sqrt{2(s_{sample}^2 + s_{analytical}^2 / r)}} \right)$$

Equation B-2

where

- $\Phi(z)$ is the cumulative standard normal distribution on $(-\infty, z)$ (see PNNL-13450 for details),
- P_r is the probability that a measurement collected from a random location at the study site is greater than a measurement collected from a random location in a reference area. See PNNL-13450 for details,
- n is the number of samples for the site and is equal to m ,
- m is the number of samples for the reference area and is equal to n ,
- S is the estimated standard deviation of the measured values including analytical error,
- Δ is the width of the gray region,
- α is the acceptable probability of incorrectly concluding the difference between the medians(means) is less than the threshold,
- β is the acceptable probability of incorrectly concluding the difference between the medians(means) exceeds the threshold,
- $Z_{1-\alpha}$ is the value of the standard normal distribution such that the proportion of the distribution less than $Z_{1-\alpha}$ is $1-\alpha$,
- $Z_{1-\beta}$ is the value of the standard normal distribution such that the proportion of the distribution less than $Z_{1-\beta}$ is $1-\beta$.

Note: MARSSIM suggests that the number of samples should be increased by at least 20% to account for missing or unusable data and uncertainty in the calculated value of n . VSP allows a user-supplied percent overage as discussed in MARSSIM (EPA 2000, p. 5-33).

The values of these inputs that result in the calculated number of sampling locations are presented in Table B-3:

Table B-3 Input Parameters in VSP Sample Design

Parameter	Value
S	1.2
Δ	1.5
α	5%
β	10%
$Z_{1-\alpha}$	1.64485 ^a
$Z_{1-\beta}$	1.28155 ^b
MARSSIM Overage	20%

^a This value is automatically calculated by VSP based upon the user defined value of α .

^b This value is automatically calculated by VSP based upon the user defined value of β .

Figure B-2 is a performance goal diagram, described in EPA's QA/G-4 guidance (EPA, 2000). It shows the probability of concluding the sample area is dirty (the probability that the difference between the site median(mean) and the reference area median(mean) exceeds the threshold) on the vertical axis versus a range of possible true differences between the medians(means) on the horizontal axis. This graph contains all of the inputs to the number of samples equation and pictorially represents the calculation.

The red vertical line is shown at the threshold (action limit) on the horizontal axis. The width of the gray shaded area is equal to Δ ; the upper horizontal dashed blue line is positioned at $1-\alpha$ on the vertical axis; the lower horizontal dashed blue line is positioned at β on the vertical axis. The vertical green line is positioned at one standard deviation below the threshold. The shape of the red curve corresponds to the estimates of variability. The calculated number of samples results in the curve that passes through the lower bound of Δ at β and the upper bound of Δ at $1-\alpha$. If any of the inputs change, the number of samples that result in the correct curve changes.

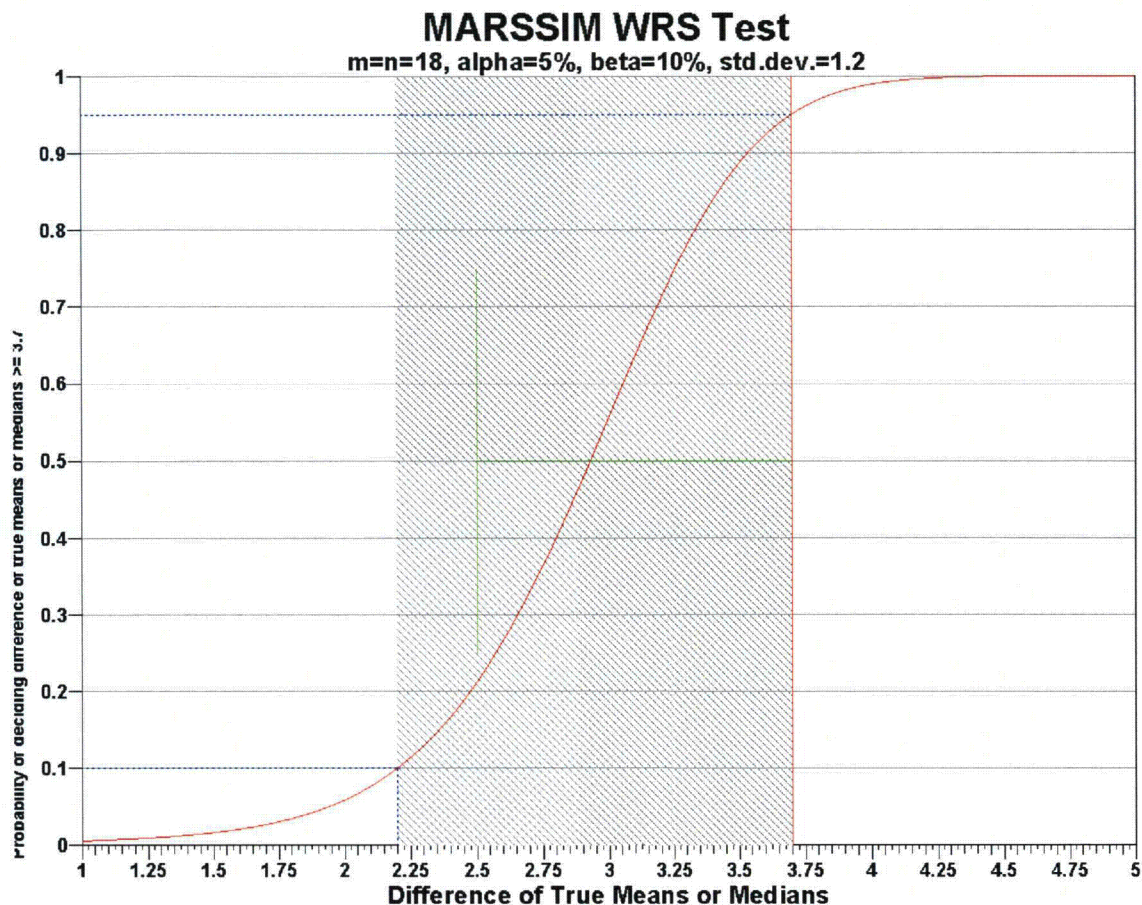


Figure B-2 A-Priori Power Curve for WRS Test

Statistical Assumptions

The assumptions associated with the formulas for computing the number of samples are:

1. although the population does not have to be normally distributed, the test statistic is approximately normally distributed,
2. the variances of the site and reference populations are equal,
3. the variance estimate, S^2 , is reasonable and representative of the populations being sampled,
4. the population values are not spatially or temporally correlated, and
5. the sampling locations will be selected probabilistically.

The first four assumptions will be assessed in a post data collection analysis. The last assumption is valid because the gridded sample locations were selected based on a random start.

Sensitivity Analysis

The sensitivity of the calculation of number of samples was explored by varying LBGR, β and α and examining the resulting changes in the number of samples. Table B-4 shows the results of this analysis.

Table B-4 Change in Number of Samples by Varying **LBGR**, α , and β parameters

Number of Samples				
AL=3.7		$\alpha=5$	$\alpha=10$	$\alpha=15$
LBGR=90	$\beta=5$	23	18	16
	$\beta=10$	18	15	12
	$\beta=15$	16	12	10
LBGR=80	$\beta=5$	23	18	16
	$\beta=10$	18	15	12
	$\beta=15$	16	12	10
LBGR=70	$\beta=5$	23	18	16
	$\beta=10$	18	15	12
	$\beta=15$	16	12	10

LBGR = Lower Bound of Gray Region (% of Action Level)

β = Beta (%), Probability of mistakenly concluding that $\mu >$ action level

α = Alpha (%), Probability of mistakenly concluding that $\mu <$ action level

AL = Action Level (Threshold)

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APPENDIX B.5

VSP SUMMARY REPORT, SURVEY UNIT 20

Systematic sampling locations for detecting an area of elevated values (hot spot)

This report summarizes the sampling design used, associated statistical assumptions, as well as general guidelines for conducting post-sampling data analysis. Sampling plan components presented here include how many sampling locations to choose and where within the sampling area to collect those samples. The type of medium to sample (i.e., soil, groundwater, etc.) and how to analyze the samples (in-situ, fixed laboratory, etc.) are addressed in other sections of the sampling plan.

Table B-1 summarizes the sampling design developed. Figure B-1 shows sampling locations in the field and Table B-2 lists sampling location coordinates.

Table B-1 Summary of Sampling Design, Survey Unit 20

SUMMARY OF SAMPLING DESIGN	
Primary Objective of Design	Detect the presence of a hot spot that has a specified size and shape
Type of Sampling Design	Hot spot
Sample Placement (Location) in the Field	Systematic (Hot Spot) with a random start location
Formula for calculating number of sampling locations	Singer and Wickman algorithm
Calculated total number of samples	22
Type of samples	Point Samples
Number of samples on map ^a	22
Number of selected sample areas ^b	1
Specified sampling area ^c	11786.93 ft ²
Grid pattern	Square
Size of grid / Area of grid ^d	7.07 meters / 538.03 m ²

^a This number may differ from the calculated number because of 1) grid edge effects, 2) adding judgment samples, or 3) selecting or unselecting sample areas.

^b The number of selected sample areas is the number of colored areas on the map of the site. These sample areas contain the locations where samples are collected.

^c The sampling area is the total surface area of the selected colored sample areas on the map of the site.

^d Size of grid / Area of grid gives the linear and square dimensions of the grid spacing used to systematically place samples.



Figure B-1 VSP-Generated Locations, SU 20

Table B-2 Survey Unit 20 Corehole Locations, TN State Plane Coordinates

X Coordinate	Y Coordinate	Type	Reference/Survey Unit
3022362.7291	673657.5192	Hotspot	Reference
3022385.9245	673657.5192	Hotspot	Reference
3022339.5336	673680.7147	Hotspot	Reference
3022362.7291	673680.7147	Hotspot	Reference
3022385.9245	673680.7147	Hotspot	Reference
3022293.1427	673703.9102	Hotspot	Reference
3022316.3381	673703.9102	Hotspot	Reference
3022339.5336	673703.9102	Hotspot	Reference
3022362.7291	673703.9102	Hotspot	Reference
3022269.9472	673727.1056	Hotspot	Reference
3022293.1427	673727.1056	Hotspot	Reference
3022316.3381	673727.1056	Hotspot	Reference
3022339.5336	673727.1056	Hotspot	Reference
3022246.7517	673750.3011	Hotspot	Reference
3022269.9472	673750.3011	Hotspot	Reference
3022293.1427	673750.3011	Hotspot	Reference
3022316.3381	673750.3011	Hotspot	Reference
3022246.7517	673773.4966	Hotspot	Reference
3022269.9472	673773.4966	Hotspot	Reference
3022293.1427	673773.4966	Hotspot	Reference
3022246.7517	673796.6920	Hotspot	Reference
3022269.9472	673796.6920	Hotspot	Reference

Primary Sampling Objective

The primary purpose of sampling at this site is to detect "hot spots" (local areas of elevated concentration) of a given size and shape with a specified probability, $1-\beta$.

Selected Sampling Approach

This sampling approach requires systematic grid sampling with a random start. If a systematic grid is not used, the probability of detecting a hot spot of a given size and shape will be different than desired or calculated.

Number of Total Samples: Calculation Equation and Inputs

The algorithm used to calculate the grid size (and hence, the number of samples) is based on work by Singer for locating geologic deposits [see Singer (1972, 1975) and PNNL-13450 for details]. Inputs to the algorithm include the size, shape, and orientation of a hot spot of interest, an acceptable probability of not finding a hot spot, the desired type of sampling grid, and the sampling budget. For this design, the smallest hot spot that could be detected was calculated based on a given grid size and other parameters.

The inputs to the algorithm that result in the smallest hot spot that could be detected are presented in Table B-3.

Table B-3 Input Parameters in VSP Sample Design

Parameter	Description	Value
Inputs		
$1-\beta$	Probability of detection	90.96%
Grid Type	Grid pattern (Square, Triangular or Rectangular)	Square
Grid Size	Spacing between samples	7.07 meters
Grid Area	Area represented by one grid	538.03 m ²
Sample Type	Point samples or square cells	Points
Hot Spot Shape	Hot spot height to width ratio	1
Angle	Angle of orientation between hot spot and grid	Random
Sampling Area	Total area to sample	11786.93 ft ²
Outputs		
Hot Spot Size	Length of hot spot semi-major axis	13.0892 feet
Hot Spot Area ^a	Area of hot spot (Length ² * Shape * π)	50.0039 m ²

^a Length of semi-major axis is used by algorithm. Hot spot area is provided for informational purposes.

Figure B-2 shows the relationship between number of samples and the probability of finding the hot spot. The dashed blue line shows the actual number of samples for this design (which may differ from the optimum number of samples because of edge effects).

Hotspot Sampling of 11786.9 Feet²

13.0892 foot radius round hotspot

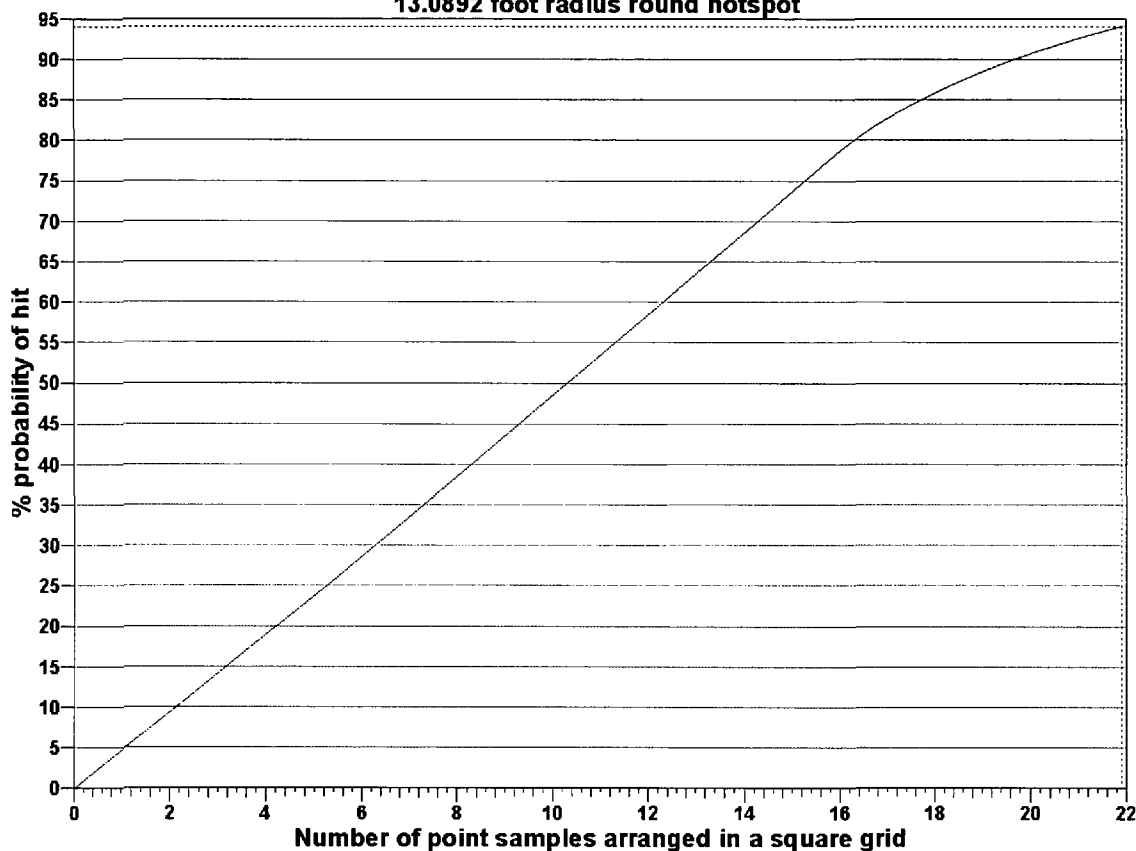


Figure B-2 Probability of Identifying a Hot Spot vs. Number of Samples

Statistical Assumptions

The assumptions associated with the sample spacing algorithm are that:

1. the target hot spot (its projection onto the coordinate plane) is circular or elliptical,
2. samples are taken on a square, rectangular, or triangular grid,
3. a very small proportion of the area being studied will be sampled (the sample is much smaller than the hot spot of interest),
4. the level of contamination that classifies a hot spot is well defined, and
5. there are no misclassification errors (a hot spot is not mistakenly overlooked or an area is not mistakenly identified as a hot spot).

These assumptions cannot be validated through data collection. The size and shape of a hot spot of interest are well defined prior to determining the number of samples and the measured value that defines a hot spot is well above the detection limit for the analytical methods that will be used. Grid sampling will be carried out to the level achievable; topographic, vegetative, and other features that prevent sampling at the specified coordinates will be noted and their influence recognized.

Sensitivity Analysis

The sensitivity of the calculation of number of samples was explored by varying $1-\beta$, Shp and Size and examining the resulting changes in the number of samples. Table B-4 shows the results of this analysis.

Table B-4 Change in Number of Samples by Varying Hot Spot Size and Shape

		Number of Samples		
		Size=6.54458	Size=13.0892	Size=19.6337
1- β =85.96	Shp=0.8	101	26	12
	Shp=0.9	88	22	10
	Shp=1	79	20	9
1- β =90.96	Shp=0.8	111	28	13
	Shp=0.9	98	25	11
	Shp=1	88	22	10
1- β =95.96	Shp=0.8	127	32	15
	Shp=0.9	114	29	13
	Shp=1	103	26	12

1- β = Probability of Hit (%)

Shp = Hot Spot Shape (Height to Width Ratio)

Size = Hot Spot Size (Length of Semi-major Axis)

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APPENDIX C**MACTEC'S FIELD SAMPLE TRACKING PROGRAM**

MACTEC and NFS chose to implement MACTEC's computer-based Field Sample Tracking Program for the *Subsurface Soil Characterization and FSS Project* at NFS' North Site due to the complexity of the required sampling regime and due to the large number of samples (more than 4000) that were scheduled to be collected over the duration of the project. Aside from the large number of soil cores and vertical segments of each core (a sample), each sample had the potential to have several subsamples isolated for various purposes, including a number of non-radiological parameters. Adding to the complexity of the prescribed sampling regime was the need to pre-process the primary soil subsample by drying and grinding to assure that appropriate sample homogeneity was achieved prior to splitting to one of three designated analytical laboratories (Figure C-1).

NFS- Core Samples Flow Chart

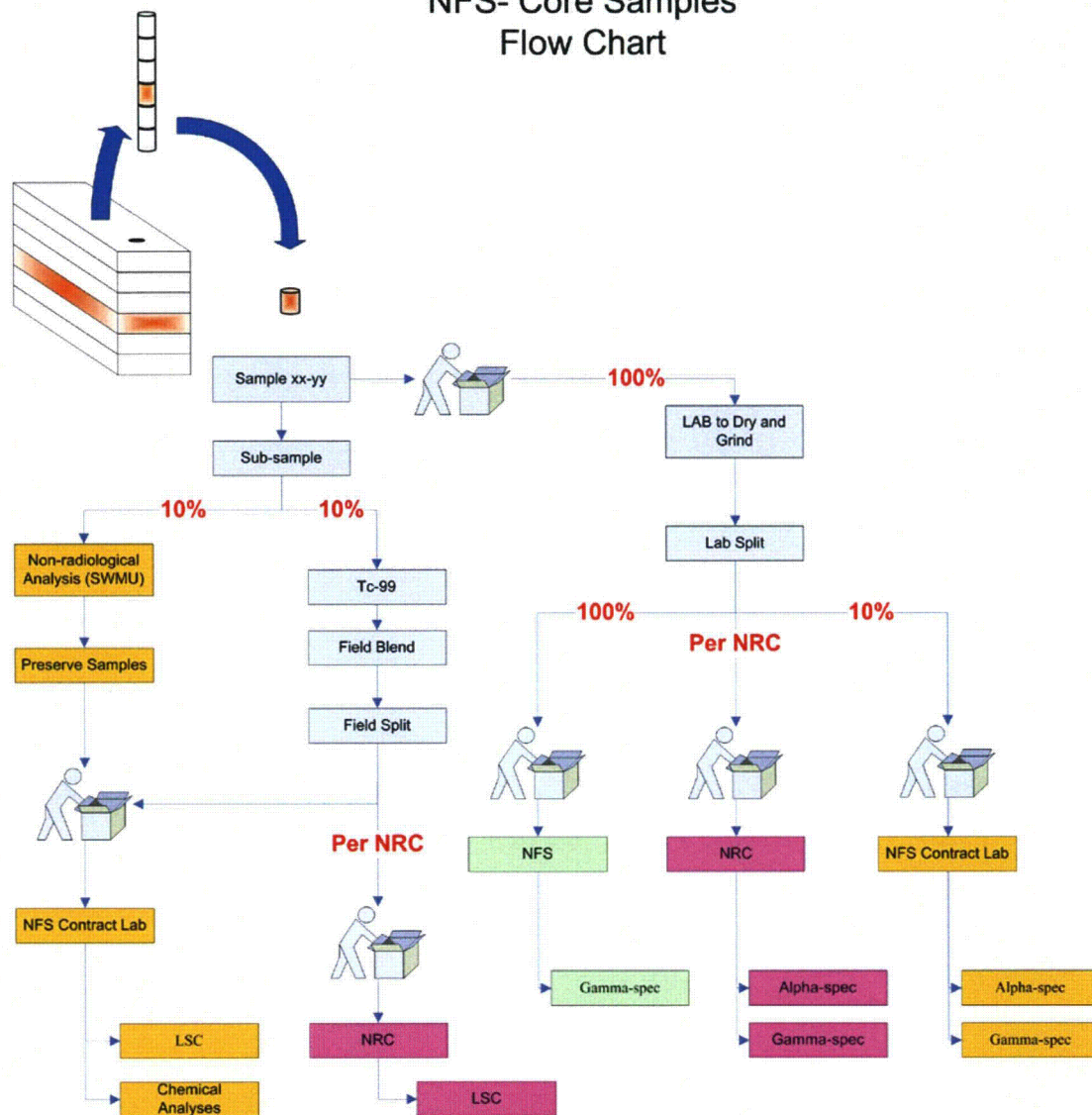


Figure C-1 Project Sample Flow Diagram

The Field Sample Tracking Program is a proprietary, MACTEC-developed database that consists of a “front-end” user interface (Figure C-2) that serves to input sample data, and a main “back-end” database that organizes and catalogues all of the relevant sample and sample program data. The program is built on Microsoft’s Access database software application.

MACTEC

Field Sample Tracking Program

Version June 14, 2007

Initial Preparation of Samples

Update Data Form Make Changes to Default Values

Prepare Sample Bottles for Field Team

Field Sample Tracking Track Field Samples

Close Sample Tracking

Figure C-2 Main Menu Page

C.1 FIELD SAMPLE TRACKING PROGRAM SETUP

The Field Sample Tracking Program has an array of functions that can be enabled depending upon the requirements and demands of the sampling regime it supports. It is designed to implement and be compatible with the sample collection, documentation, and custody standards required by the EPA. The system was enhanced for this project to incorporate the ability to print unique barcodes on the labels for each sample container (Figure C-3).

Subsurface Characterization and FSS

5095 **0101-A** SOIL FS

Date: ___/___/___ Time: ___:___:___

Sample Prep Sampler: ___

Preservative NA 2 L Poly Jar

★ 0 1 0 1 - A X - X A ★

Figure C-3 Preprinted Sample Container Label with Barcode

To reduce the opportunity for transcription errors, a barcode reader was included to allow the user to scan the barcodes attached to samples that had been collected through various steps in the sample management process (Figure C-4).

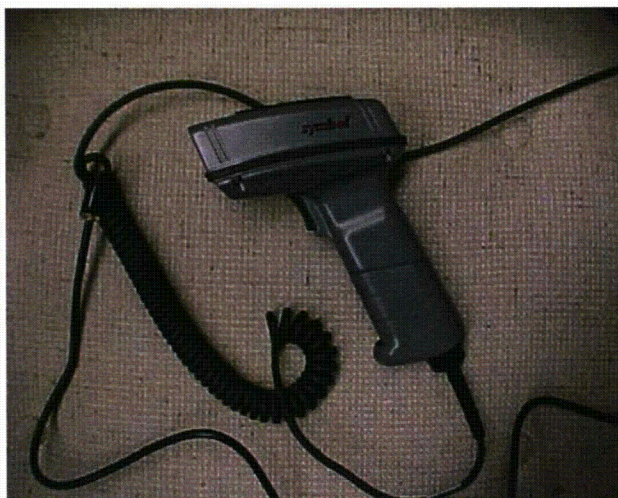


Figure C-4 Barcode Scanning Pistol

The program contains a catalogue of the various analytical methods that were available to the project sampling team (Figure C-5).

Tbl Method						
Method	Matrix	Number of Bottles	Preservative	Bottle Material	Bottle Size	Lab
Sample Prep	S	1	NA	Poly Jar	2	TELEDYNE
Gamma Spec (NFS)	S	0	NA	Poly Jar	250	TELEDYNE
Alpha / Gamma Spec (Paragon)	S	0	NA	Poly Jar	500	TELEDYNE
Alpha / Gamma Spec (ORISE)	S	0	NA	Poly Jar	500	TELEDYNE
Tc-99 (ORISE)	S	1	4 Deg. C	Centrifuge 1	50	ORISE
Tc-99 (Paragon)	S	1	4 Deg. C	Centrifuge 1	50	PARAGON
VOCs (Paragon)	S	1	4 Deg. C	Terracore K	1	PARAGON
SVOCs / PCBs / Metals* (Paragon)	S	1	4 Deg. C	Glass	8	PARAGON
BLANK, VOCs	L	2	HCl, 4 Deg. C	Glass	40	PARAGON
BLANK, SVOCs	L	2	4 Deg. C	Glass	1	PARAGON
BLANK, PCBs	L	1	4 Deg. C	Glass	1	PARAGON
BLANK, Metals (6010 - As, Be, 7470 - H	L	1	HNO ₃ , 4 Deg. C	Poly Bottle	500	PARAGON
BLANK, Metals (7196A - Hex Chromium	L	1	4 Deg. C	Poly Bottle	250	PARAGON
Gamma Spec / DUPLICATE (NFS)	S	0	NA	Poly Jar	250	TELEDYNE
Alpha / Gamma Spec / DUPLICATE (Par	S	0	NA	Poly Jar	500	TELEDYNE
Tc-99 / DUPLICATE (Paragon)	S	1	4 Deg. C	Centrifuge 1	50	PARAGON
BLANK, Tc-99 (Paragon)	L	1	HNO ₃	Poly Bottle	1	PARAGON
BLANK, Alpha/Gamma Spec (Paragon)	L	1	HNO ₃	Poly Bottle	1	PARAGON

Close

Record: 1 of 18

Figure C-5 Catalogue of Available Analytical Methods

The database was preloaded and labeled with records to contain the sample data for 749 cores (the number of coreholes originally planned within the 19 survey units in this project), each with 10 vertically segmented sample intervals. A sequential 4-digit number is assigned to each corehole (e.g., 0001 through 0749). Alphabetic characters (A through J) were assigned to each 1-meter vertical increment from a single soil core. For example, the vertical increment from the ground surface to 1 meter below the ground surface removed from corehole number 0001 is assigned the sample number 0001-A. Every sample was assigned to sample preparation (prep) by Teledyne and gamma spectroscopy by NFS. When opened to *Track Field Samples*, the main data entry screen shows the first sample record in the system. The preloaded information regarding this sample is visible in Figure C-6.

Figure C-6 Main Data Entry Screen

C.2 FIELD SAMPLE TRACKING PROGRAM OPERATIONS

Once the sample records were preloaded into the database, the user would navigate to the appropriate sample record in order to implement the various processes embedded within the program and to add the field-specific data. A particular sample record can be located within the database using any one of several navigation options designed into the program (red circled areas in Figure C-7). Each has its advantage in different situations.

The basic processes available to the user in the Field Sample Tracking Program are

- assigning the appropriate analytical methods for the sample;

- printing labels (with barcodes) for use during sample collection;
- “Checking In” collected samples from the field to the secured sample storage area in the field sample office; and
- preparing samples for shipment to various offsite laboratories, including the automatic generation of sample Chain of Custody (COC) paperwork and electronic COC data files.

Figure C-7 Sample Record Navigation

C.2.1 Adding New Samples

The database has a built-in capability that allows the user in the field to accommodate samples that are collected, however, for a variety of possible reasons, had not been preloaded in the database (Figure C-8). For example, trip blanks, equipment blanks, matrix spikes, and matrix duplicates could not be preselected and are, therefore, added to the database “on-the-fly” by the field sampling team in the field as they are collected.

C.2.2 Specifying Analytical Methods for a Sample

New or additional analytical methods are also added “on-the-fly.” With the appropriate Field Sample ID number displayed in the database, the user simply clicks on the Add New Methods button (Figure C-9). A new window opens up to provide the suite analytical methods available to the user to select from (Figure C-10). From this window, multiple analytical methods can be selected and added to the suite of methods specified for the given sample. When the Add Methods button at the bottom of the window is pushed, the user is returned to the main window of the program where the newly added methods will appear (Figure C-11).

Sample Number: 2052 Step 1 - Enter Sample Collection Data

Field Sample ID: 0001-A Go To Field Sample ID: [v]

Location ID: 0001

Field Sample Date: 10/10/2007 9:48:00 AM Step 2 - Scan Check-in and Ship

Sample Team: AGS Open Form To Scan In Samples

QC code: FS

Matrix: S

Media: SOIL

Depth Units: m SDG: [v]

Top Depth: 0 Bottom Depth: 1

Select an Option:

- ☒ Print
- ☐ Check-in to Office
- ☐ Send to Lab

Then Choose:

Selected All

Method	Status	Need	In	Hold	Preservati	Material	Bottle Size	SDG	Fracti	Lab	Comments
☒ Alpha / Gamma Spec (Paragon)	SHIPPED	0	0	0	NA	Poly Jar	500 mL		T	TELE	
☒ Gamma Spec (NFS)	SHIPPED	0	0	0	NA	Poly Jar	250 mL		T	TELE	
☒ Sample Prep	SHIPPED	1	1	0	NA	Poly Jar	2 L		T	TELE	
☐ Tc-99 (Paragon)	SHIPPED	1	1	0	4 Deg. C	Centrifuge Tu	50 mL		T	PARA	
☐ Tc-99 / DUPLICATE (Paragon)	IN LAB	1	1	0	4 Deg. C	Centrifuge Tu	50 mL		T	PARA	
* [v]		0	0	0							

Add New Methods

Record: 1 of 5

Close Add New Sample Close and Print Labels Select Lab to Print COC for: TELEDYNE Close and Print ARF/COC

Record: 1 of 7573

Figure C-8 Add New Sample

Sample Number: 6399 Step 1 - Enter Sample Collection Data

Field Sample ID: 0274-A Go To Field Sample ID: [v]

Location ID: 0274

Field Sample Date: [v]

Sample Team: [v]

QC code: FS Open Form To Scan In Samples

Matrix: S

Media: SOIL

Depth Units: ft SDG: [v]

Top Depth: 0 Bottom Depth: 0

Select an Option:

- ☒ Print
- ☐ Check-in to Office
- ☐ Send to Lab

Then Choose:

Selected All

Method	Status	Need	In	Hold	Preservati	Material	Bottle Size	SDG	Fracti	Lab	Comments
☐ Gamma Spec (NFS)	NEW	0	0	0		Poly Bottle	500 ML		T	TELE	
☒ Sample Prep	NEW	1	0	0		Poly Bag	2 Liter		T	TELE	
[v]		0	0	0							

Add New Methods

Record: 3 of 3

Close Add New Sample Close and Print Labels Select Lab to Print COC for: TELEDYNE Close and Print ARF/COC

Record: 2731 of 7491

Figure C-9 Adding Required Analytical Methods for a Sample

Select All Deselect All Select Matrix S

	Analyses Method	Matrix	of Bottles	Preservative	Bottle Mater	Bottle Size
☒	Alpha / Gamma Spec (ORISE)	S	0	NA	Poly Jar	500
☒	Alpha / Gamma Spec (Paragon)	S	0	NA	Poly Jar	500
☐	Alpha / Gamma Spec / DUPLICATE (Paragon)	S	0	NA	Poly Jar	500
☐	Gamma Spec (NFS)	S	0	NA	Poly Jar	250
☐	Gamma Spec / DUPLICATE (NFS)	S	0	NA	Poly Jar	250
☐	Sample Prep	S	1	NA	Poly Jar	2
☐	SVOCs / PCBs / Metals* (Paragon)	S	1	4 Deg. C	Glass	8
☒	Tc-99 (ORISE)	S	1	4 Deg. C	Centrifuge Tube	50
☒	Tc-99 (Paragon)	S	1	4 Deg. C	Centrifuge Tube	50
☐	Tc-99 / DUPLICATE (Paragon)	S	1	4 Deg. C	Centrifuge Tube	50
☐	VOCs (Paragon)	S	1	4 Deg. C	Terracore Kit	1

Add Methods Cancel

Record: 9 of 11 (Filtered)

Figure C-10 Selecting Adding Desired Analytical Methods

Sample Number 6399

Field Sample ID 0274-A

Location ID 0274

Field Sample Date 7/12/2007 11:17:00 AM

Sample Team AGS

QC code FS

Matrix S

Media SOIL

Depth Units m

Top Depth 0

Bottom Depth 1

Step 1 - Enter Sample Collection Data

Go To Field Sample ID

Step 2 - Scan Check-in and Ship

Open Form To Scan In Samples

Select an Option

☐ Print

☐ Check-in to Office

☐ Send to Lab

Then Choose:

Selected **All**

Method	Status	Need	In	Hold	Preservati	Material	Bottle Size	SDG	Fracti	Lab	Comments
Alpha / Gamma Spec (ORISE)	NEW	0	0	0	NA	Poly Jar	500 mL		T	TELE	
Alpha / Gamma Spec (Paragon)	NEW	0	0	0	NA	Poly Jar	500 mL		T	TELE	
Gamma Spec (NFS)	NEW	0	0	0	NA	Poly Bottle	250 mL		T	TELE	
Sample Prep	NEW	1	1	0	NA	Poly Jar	2 L		T	TELE	
Tc-99 (ORISE)	NEW	1	0	0	4 Deg. C	Centrifuge Tu	50 mL		T	ORIS	
Tc-99 (Paragon)	NEW	1	1	0	4 Deg. C	Centrifuge Tu	50 mL		T	PARA	
*		0	0	0							

Add New Methods

Record: 1 of 6

Close **Add New Sample** **Close and Print Labels** **Select Lab to Print COC for** TELEDYNE **Close and Print ARF/COC**

Record: 2731 of 7573

Figure C-11 New Analytical Methods Added to Sample

C.2.3 Sample Status

One of the key data management attributes of the Field Sample Tracking Program is its ability to progressively track the status of a sample in the database. The program assigns one of six status codes to each analytical method assigned to every sample.

Sample Number 6399

Field Sample ID 0274-A

Location ID 0274

Field Sample Date

Sample Team

QC code FS

Matrix S

Media SOIL

Depth Units m

Top Depth 0

Bottom Depth 0

Step 1 - Enter Sample Collection Data

Go To Field Sample ID

Step 2 - Scan Check-in and Ship

Open Form To Scan In Samples

Select an Option

☐ Print

☐ Check-in to Office

☐ Send to Lab

Then Choose:

Selected **All**

Method	Status	Need	In	Hold	Preservati	Material	Bottle Size	SDG	Fracti	Lab	Comments
Gamma Spec (NFS)	NEW	0	0	0		Poly Bottle	500 mL		T	TELE	
Sample Prep	NEW	0	0	0		Poly Bag	2 Liter		T	TELE	
		0	0	0							

Add New Methods

Record: 3 of 3

Close **Add New Sample** **Close and Print Labels** **Select Lab to Print COC for** TELEDYNE **Close and Print ARF/COC**

Record: 2731 of 7491

Figure C-12 Sample Status Designation

AMEC

The status codes available are:

- **NEW** – The NEW status is initially assigned (automatically) to each sample/method that is added to the database, indicating that the sample/method has been created in the Field Sample Tracking Program, but no other actions have been recorded.
- **PRINT** – Indicates that the program is ready to print sample container labels for these select samples/methods. The program will generate labels for only those samples/methods which have been given a status of PRINT by the user.
- **PRINTED** – Indicates that sample label(s) have been printed and that the sample is ready to be collected.
- **IN LAB** – After the sample is collected and the user “checks in” the samples to sample control office, the status changes to IN LAB indicating that the sample has been collected and is in storage.
- **SHIP** – When the sample team is ready to ship samples to an offsite laboratory, the Field Sample Tracking Program allows the user to scan the barcodes on each sample that is packaged for shipment. When these samples are scanned (out of the storage locker and into a shipping container), the status changes to SHIP indicating that the sample is ready to be included on the COC documentation in preparation for shipment.
- **SHIPPED** – After all samples to be shipped have been updated to the SHIP status, the user executes a routine within the program that automatically generates both a hard copy and ASCII format electronic deliverable (COC) that is provided to the selected laboratory along with the samples to be assayed. When the COC has been generated, the status changes to SHIPPED indicating that the sample has been shipped to the laboratory and that analytical data for that sample is forthcoming.

C.2.4 Chain of Sample Custody

As a means of assuring the integrity and continuity of a shipment of a group of samples that are to be delivered to an offsite laboratory, the Field Sample Tracking Program generates both hard copy (paper or image) and ASCII-formatted electronic COCs. Once samples have been collected, checked in, and then designated and prepared for shipment (the status has been changed to SHIP), the program will prepare the shipping paperwork automatically. To prepare the shipping paperwork the user executes a subroutine in the program by:

1. Selecting the appropriate laboratory from the pull-down list, and
2. Pressing the *Close and Print ARF/COC* button.

Sample Number: 6399 Step 1 - Enter Sample Collection Data

Field Sample ID: 0274-A Go To Field Sample ID:

Location ID: 0274

Field Sample Date:

Step 2 - Scan Check-in and Ship

Sample Team:

QC code: FS Open Form To Scan In Samples

Matrix: S

Media: SOIL

Depth Units: ft SDG:

Top Depth: 0 Bottom Depth: 0

Select an Option

☐ Print

☐ Check-in to Office

☐ Send to Lab

Then Choose:

Method	Status	Need	In	Hold	Preservati	Material	Bottle Size	SDG	Fracti	Lab	Comments
☐ Alpha / Gamma Spec (ORISE)	SHIP		0	0	0		Poly Bottle	500 mL		T	TELE
☐ Alpha / Gamma Spec (Paragon)	SHIP		0	0	0		Poly Bottle	500 mL		T	TELE
☐ Gamma Spec (NFS)	SHIP		0	0	0		Poly Bottle	500 mL		T	TELE
☒ Sample Prep	SHIP		1	0	0		Poly Bag	2 Liter		T	TELE
* ☐			0	0	0						

Add New Methods

Record: 1 of 4

Close Add New Sample Close and Print Labels Select Lab to Print COC for:

Record: 2731 of 7491

Figure C-13 Generation of Sample Shipping Records

Sample Chain of Custody/Analysis Request Form

Subsurface Characterization and FSS

NFS/MACTEC

Scott Meris

473-743-9141 ext 1439

NFS PON 1234567

Lab: Teledyne Brown Engineering

ATA: Sample Receiving, SLANT CODE: MAM02-25RS G07

2105 Quality Lane

Kennesaw, GA 30143

Phone: (765) 934-0379

Fax: (765) 934-0396

taylorlab@tbe.com

Sample #	Sample Date	Sample Time	Field Sample ID	Method / Barcode ID	Qty Total	Qty Each	Bottle Size and Material	Preservative	Media	Method	Fraction
6399	07/12/07	11:17	027 4-A		1						
				027 4-AX-XA	1	250 mL	Poly Bottle	NA	SOIL	Gamma Spec (NFS)	T
					1	2 L	Poly Jar	NA	SOIL	Sample Prep	T
					0	500 mL	Poly Jar	NA	SOIL	Alpha / Gamma Spec (Paragon)	T

Note: All samples are grab samples

This chain of sample custody record has been verified by the Sampling Team Leader (or designee) to be complete and accurate

Sampling Team Leader: _____ Date: ____/____/____ Time: ____:____/____:____

Initial Signature

Relinquished By: _____ Date: ____/____/____ Time: ____:____/____:____ Received By: _____ Date: ____/____/____ Time: ____:____/____:____

Relinquished By: _____ Date: ____/____/____ Time: ____:____/____:____ Received By: _____ Date: ____/____/____ Time: ____:____/____:____

*Knowingly or willfully falsifying or concealing a material fact on this form, or making false, fictitious, or fraudulent statements or representations herein could constitute a felony punishable under Federal Statute

Friday, December 07, 2007



Page 1 of 1

Figure C-14 Example Sample Chain of Custody Form

```

TELEDYNE1115COC.txt - Notepad
File Edit Format View Help

["Temp_sample_no","coc Lab Id","sampling organization","Client
Name","Project_No","BarcodeText","Field_Sample_ID","Field_Sample_date","Matrix","Media","QC_
code","depth uom","top_depth","bottom_depth","analysis_method","Fraction","Number
Needed","Number returned","Bottle Size","Bottle
Material","bottle_size_units","Preservative","Hold Time","Comment","Note"]
6513,"Teledyne Brown Engineering","NFS/MACTEC","Subsurface Characterization and FSS","NFS
PO# 1234567","0293-AX-XA","0293-A","11/12/2007 14:55:00","S","SOIL","FS","m",0.00,1.00,"Sample
Prep","T",1,1,"2","Poly Jar","L","NA",0,"All samples are grab samples"
6514,"Teledyne Brown Engineering","NFS/MACTEC","Subsurface Characterization and FSS","NFS
PO# 1234567","0293-BX-XA","0293-B","11/12/2007 15:00:00","S","SOIL","FS","m",1.00,2.00,"Sample
Prep","T",1,1,"2","Poly Jar","L","NA",0,"All samples are grab samples"
6515,"Teledyne Brown Engineering","NFS/MACTEC","Subsurface Characterization and FSS","NFS
PO# 1234567","0293-CX-XA","0293-C","11/12/2007 15:02:00","S","SOIL","FS","m",2.00,3.00,"Sample
Prep","T",1,1,"2","Poly Jar","L","NA",0,"All samples are grab samples"
6519,"Teledyne Brown Engineering","NFS/MACTEC","Subsurface Characterization and FSS","NFS
PO# 1234567","0294-AX-XA","0294-A","11/12/2007 15:35:00","S","SOIL","FS","m",0.00,1.00,"Sample
Prep","T",1,1,"2","Poly Jar","L","NA",0,"All samples are grab samples"
6520,"Teledyne Brown Engineering","NFS/MACTEC","Subsurface Characterization and FSS","NFS
PO# 1234567","0294-BX-XA","0294-B","11/12/2007 15:37:00","S","SOIL","FS","m",1.00,2.00,"Sample
Prep","T",1,1,"2","Poly Jar","L","NA",0,"All samples are grab samples"
6521,"Teledyne Brown Engineering","NFS/MACTEC","Subsurface Characterization and FSS","NFS
PO# 1234567","0294-CX-XA","0294-C","11/12/2007 15:41:00","S","SOIL","FS","m",2.00,3.00,"Sample
Prep","T",1,1,"2","Poly Jar","L","NA",0,"All samples are grab samples"
6525,"Teledyne Brown Engineering","NFS/MACTEC","Subsurface Characterization and FSS","NFS
PO# 1234567","0295-AX-XA","0295-A","11/12/2007 16:05:00","S","SOIL","FS","m",0.00,1.00,"Sample
Prep","T",1,1,"2","Poly Jar","L","NA",0,"All samples are grab samples"
6526,"Teledyne Brown Engineering","NFS/MACTEC","Subsurface Characterization and FSS","NFS
PO# 1234567","0295-BX-XA","0295-B","11/12/2007 16:09:00","S","SOIL","FS","m",1.00,2.00,"Sample
Prep","T",1,1,"2","Poly Jar","L","NA",0,"All samples are grab samples"
6527,"Teledyne Brown Engineering","NFS/MACTEC","Subsurface Characterization and FSS","NFS
PO# 1234567","0295-CX-XA","0295-C","11/12/2007 16:15:00","S","SOIL","FS","m",2.00,3.00,"Sample
Prep","T",1,1,"2","Poly Jar","L","NA",0,"All samples are grab samples"
6528,"Teledyne Brown Engineering","NFS/MACTEC","Subsurface Characterization and FSS","NFS
PO# 1234567","0295-DX-XA","0295-D","11/12/2007 16:20:00","S","SOIL","FS","m",3.00,4.00,"Sample
Prep","T",1,1,"2","Poly Jar","L","NA",0,"All samples are grab samples"

```

Figure C-15 Example ASCII-formatted Electronic Chain of Custody File

C.3 MANAGING ANALYTICAL DATA

In addition to its utility for managing sample collection data in the field, the Field Sampling Tracking Program is also used by MACTEC as a component of its data validation process. Data from the Field Sample Tracking Program is merged into a master database designed by MACTEC along with the analytical data results received from the various laboratories. This master database is, like the Field Sample Tracking Program, a MACTEC proprietary database design. The database is called "TEDS" (an acronym for Technical Environmental Database System). Once the data is merged into TEDS, a variety of data queries can be executed to qualify, verify, evaluate and validate the data. The principal contribution of the Field Sample Tracking Program to the TEDS database is the ability to verify that the laboratory provided analytical results for every sample and every analyte that was specified by the field sampling team.

Appendix D

Soil Boring Logs

Appendix D.1

Soil Boring Logs, Survey Unit 2

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0016

Date Started: 10/02/07

Drilling Contractor: Bear Longyear

Page 1 of 2

Date Completed: 10/02/07

Driller: J. Robinson

Survey Unit: 2

Logged By: S. Kelly

Equipment: Mini Sonic #1402

Elevation: TPD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 75%	FILL	SW	0-14 gr. si. SAND, moist, strong brown (7.5 YR 4/6) gravel's f.c.; some "zones" of clayey silty sand (~6-10')
2	0.6				
3	0.9				
4	1.2				
5	1.5	5-10			
6	1.8	100%			
7	2.1				
8	2.4				
9	2.7				
10	3.1	10-15			
11	3.4	100%			
12	3.7				
13	4.0				driller indicates "firm" material encountered @ ~14 feet; assume residual soil is @ ~14'; difficult to determine depth to water, as driller is charging rods w/ water to extrude the soil core
14	4.3		Residual Alluvial	SW ML	14-25: si. gr. SAND, wet, strong brown (7.5 YR 4/6) to yellowish brown (10 YR 5/8); difficult to determine changes in strata; intervals containing organic material (gray, brown in color, very silty/clayey)
15	4.6	15-20			
16	4.9	25-30 100%			
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

MACTEC

Knowingly or willfully falsifying or concealing a material fact on this form, or making false, fictitious or fraudulent statements or representations herein could constitute a felony punishable under Federal Statutes.

NFS File Classification: DCM-23-05-02

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
 MACTEC Project 9120-07-1235

BORING
 NO.

0016

Date Started: 10/02/07 Drilling Contractor: Bour + Longyear Page 2 of 2

Date Completed: 10/02/07 Driller: J. Robinson Survey Unit: 2

Logged By: S. Kelly Equipment: mini Sonic #1902 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
21	6.4	20-25 15%	Alluvial		20-23 - micaceous f-m SAND, wet, strong brown (25YR 4/6), some silt and dk. gray (10YR 4/1)
22	6.7				
23	7.0				
24	7.3				
25	7.6	25-33 100%		SP- Sm	
26	7.9				
27	8.2				
28	8.5				
29	8.8				
30	9.2				
31	9.5				
32	9.8				
33	10.1				boring terminated @ 33'
34	10.4				
35	10.7				
36	11.0				
37	11.3				
38	11.6				
39	11.9				
40	12.2				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0017

Date Started: 10/02/07 Drilling Contractor: Boart Longyear Page 1 of 2
Date Completed: 10/02/07 Driller: J. Robinson Survey Unit: 2
Logged By: S. Kelly Equipment: Mini Sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 25%	FILL	SN	0-13 si. gr. SAND, moist, strong brown (7.5YR 4/6), becoming more silty (clayey?) w/ depth; trace organics (fill from relocation of Panther Springs Branch - excavated material)
2	0.6				
3	0.9				
4	1.2				
5	1.5	5-10 60%			
6	1.8				
7	2.1				
8	2.4				
9	2.7				
10	3.1	10-15 60%			
11	3.4				
12	3.7				(12-13 abundant organics (twigs, roots, etc))
13	4.0			SM	13-17 - si. f-m SAND, v. moist, brownish yellow (10YR 6/8) mottled/laminations of gray (10YR 4/1) becoming organic (strong organic odor & twigs, roots present) 15-17'
14	4.3				
15	4.6	15-20 100%			
16	4.9				
17	5.2		Alluvial	SM	17-20 si. SAND, moist, yellowish brown (10YR 5/8) little f-m angular to SR gravel
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. <u>0017</u>
--	----------------------------------

Date Started: <u>10/02/07</u>	Drilling Contractor: <u>Bart Longyear</u>	Page <u>2</u> of <u>2</u>
Date Completed: <u>10/02/07</u>	Driller: <u>J. Robinson</u>	Survey Unit: <u>2</u>
Logged By: <u>S. Kelly</u>	Equipment: <u>mini sonic #1402</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
21	6.4	<u>20-25</u> <u>100%</u>	<u>Alluvial /</u> <u>FP</u>	<u>ML-</u> <u>SM</u>	<u>20-24.5 : sil. SILT to sil. SAND, wet</u> <u>brown (10YR 4/3) and grayish brown (10YR 5/3)</u> <u>organics (roots) observed</u>
22	6.7				
23	7.0				
24	7.3				
25	7.6	<u>25-33</u> <u>100%</u>	<u>Alluvial</u>	<u>SW-</u> <u>GW</u>	<u>24.5-33 sil. gr. SAND to sil. SAND GRAVEL, wet</u> <u>yellowish brown (10YR 5/0); gravel is f-c</u> <u>angular to SR</u>
26	7.9				
27	8.2				
28	8.5				
29	8.8				
30	9.2				
31	9.5				
32	9.8				
33	10.1				<u>boring terminated @ 33'</u>
34	10.4				
35	10.7				
36	11.0				
37	11.3				
38	11.6				
39	11.9				
40	12.2				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residual, bedrock, etc.)



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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey

MACTEC Project 9120-07-1235

BORING

NO.

0018

Date Started: 10/02/07

Drilling Contractor: Bort Longear

Page 1 of 2

Date Completed: 10/21/07

Driller: J. Robinson

Survey Unit: 2

Logged By: S. Kelly

Equipment: Mini Sonic #1402

Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 75%	FILL	SW	0-5 si. gr. SAND, moist, strong brown (2.5 YR 4/6) gravel is f-m angular to WR (fmr. Banner Springs Branch excavated soil)
2	0.6				
3	0.9				
4	1.2				
5	1.5				
6	1.8	5-10 100%			
7	2.1				
8	2.4				
9	2.7				
10	3.1				
11	3.4	10-15 100%			(11-13 si. f m SAND, wet)
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 100%	old topsoil FP	SM	15-16 organic si. f m SAND, wet, v. dk. brown (10 YR 2/2) w/ organics (f. roots, wood)
16	4.9		Alluvial	SM- ml	grading to dk gray (10 YR 4/1)
17	5.2				16-20 si. f m SAND to SA (10 YR 4/6) sa. SILT, wet, strong brown (7.5 YR 5/6), trace to little c. sand & gravel (f-m angular to SA)
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, bedrock, etc.)

MACTEC

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235		BORING NO. 0018
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Date Started: <u>10/02/07</u>	Drilling Contractor: <u>Boart Longyear</u>	Page <u>2</u> of <u>2</u>
Date Completed: <u>10/02/07</u>	Driller: <u>J. Robinson</u>	Survey Unit: <u>2</u>
Logged By: <u>S. K. [Signature]</u>	Equipment: <u>mini Sonic #1402</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
21	6.4	20-25 100%	Alluvial	SM-ML	
22	6.7			SW	12-25 gr. SAND, moist, yellowish brown (10YR 5/2)
23	7.0				gravel is f-c angular to SA
24	7.3				
25	7.6	25-33 100%	=	SP-SW	25-33 f-c SAND, wet, brownish yellow (10YR 6/3)
26	7.9			SW	little silt & gravel (f-m, SA-SP); mottled w/ H. gray (10YR 7/1) from 25-27
27	8.2				
28	8.5				
29	8.8				
30	9.2				
31	9.5				
32	9.8				
33	10.1				Boring terminated @ 33'
34	10.4				
35	10.7				
36	11.0				
37	11.3				
38	11.6				
39	11.9				
40	12.2				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered
 Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)



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SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 0019
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Date Started: <u>10/4/2007</u>	Drilling Contractor: <u>BOART LONGYEAR</u>	Page <u>1</u> of <u>1</u>
Date Completed: <u>10/4/2007</u>	Driller: <u>JAMES ROBINSON</u>	Survey Unit: <u>2</u> ^{10/4/07}
Logged By: <u>Rodney Clark</u>	Equipment: <u>MINISONIC #1402</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	FILL	CH	0'-2' gr, sa, si, CLAY, moist, yellowish red (5YR 5/4) high plasticity, gr is A-SA
2	0.6				
3	0.9	100%	Alluvial	SW	2'-7' si, gr, SAND, moist-wet, brown (10YR 5/3) gr is A-WR, roots & organics observed
4	1.2		FILL		
5	1.5				
6	1.8	5'-10'			
7	2.1				7'-10' si, gr, f-c SAND, wet, dark yellowish brown (10YR 4/4) gr is f-c & SR-WR
8	2.4	100%	Alluvial		
9	2.7				
10	3.1				10'-13' SAA except yellowish brown
11	3.4	10'-15'			(10YR 5/6)
12	3.7	100%			
13	4.0				13'-15' si, sa, GRAVEL, wet, yellowish brown, gr is f-c & SR-WR
14	4.3			GW	
15	4.6				15'-19' si, gr, f-c SAND, wet, yellowish brown (10YR 5/6) gr is f-c & SR & WR
16	4.9	15'-20'		SW	
17	5.2	100%			
18	5.5				
19	5.8				19'-20' si, sa, GRAVEL, moist, light bluish gray (6.5Y 2 7/1)
20	6.1		Residuum	GW	gr is A. dolostone (Rome Fm) Terminate Boring @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0020

Date Started: 10/4/2007 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 10/4/2007 Driller: JAMES ROBINSON Survey Unit: 2
Logged By: Rodney Clark Equipment: MINISONIC #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	FILL	CH	0'-2.5' gr, sa, si, CLAY, moist, yellowish red (5YR 4/6) gr is A-WR, roots observed, high plasticity
2	0.6		Topsoil		
3	0.9	4'/5'		SN	2.5'-7' si, gr, SAND, moist, brown (10YR 5/3) gr is SR-WR & f-c
4	1.2		Alluvial		
5	1.5				
6	1.8	5'-10'			
7	2.1	3.5'/5'			7'-7.5' gr, si, SAND, wet, very dark gray cl. brown (10YR 3/2) gr is SR-WR & f-c
8	2.4				
9	2.7				7.5' - 17' SAA except yellowish brown (10YR 5/6)
10	3.1	10'-15'			
11	3.4				
12	3.7				12'-16' SAA except brownish yellow (10YR 5/8)
13	4.0	100%			
14	4.3				
15	4.6				
16	4.9	15'-18.5'		GW	16'-17.5' si, sa, GRAVEL, wet, brownish yellow, gr is f-c & SR-WR
17	5.2	100%			
18	5.5		RESIDUUM	ML	17.5'-17.8' gr, SILT, wet, brownish yellow gr is A. slate/dolostone (Residuum)
19	5.8		BEDROCK	GW	17.8'-18.5' si, sa, GRAVEL, moist, light purple gray (6.5/2.7) gr is A. dolostone (Rome, Fm.)
20	6.1				Terminate Boring @ 18.5'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD					BORING NO.
NFS Subsurface Soil Characterization and Final Status Survey					0021
MACTEC Project 9120-07-1235					
Date Started: <u>10/4/2007</u>		Drilling Contractor: <u>BOART LONGYEAR</u>		Page <u>1</u> of <u>1</u>	
Date Completed: <u>10/4/2007</u>		Driller: <u>JAMES ROBINSON</u>		Survey Unit: <u>2</u>	
Logged By: <u>Rodney Clark</u>		Equipment: <u>MINISONIC #M02</u>		Elevation: <u>TBD</u>	

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	Fill	ML	0'-1.5' gr. sa, SILT, moist, yellowish red (SR 5/8), roots observed, gr is A
2	0.6			SW	1.5'-3' gr. si SAND, moist, brown (10YR 4/3) gr is A-SR, roots observed
3	0.9	100%	Topsoil		
4	1.2		Alluvial		3'-6.5' SAA except - strong brown (10YR 5/6) & gr is SR-WR & f-c
5	1.5	5'-10'	Δ		
6	1.8				6.5'-12' si gr f-c SAND, wet, very pale brown (10YR 7/3) gr is SR-WR & f-c
7	2.1	4.5'/5'			
8	2.4				
9	2.7				
10	3.1	10'-15'			
11	3.4				12'-13.5' si f-m SAND, wet, yellowish brown (10YR 5/8), trace of gr & c. sa, micaceous
12	3.7	100%		SM	
13	4.0				13.5'-16.5' si gr f-c SAND, wet, yellowish brown
14	4.3			SW	
15	4.6	15'-18.5'			
16	4.9				16.5'-18.5' sa GRAVEL, moist-dry, light bluish gray (6.5YR 2/1) gr. is A. dolostone (Rome Fm)
17	5.2	100%	Bedrock	GW	
18	5.5				
19	5.8				Terminate Boring @ 18.5'
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0022

Date Started: 10/4/2007 Drilling Contractor: BOART LONGYEAR Page 1 of 1

Date Completed: 10/4/2007 Driller: JAMES ROBINSON Survey Unit: 2

Logged By: Rodney Clark Equipment: MINISONIC #1412 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'		SW	0'-5' gl. silty SAND, moist, strong brown (7.5R 5/6), gr is A-SR & f-c, roots observed
2	0.6				
3	0.9	3'/5'	FILL		
4	1.2		Topsoil		
5	1.5				
6	1.8	5'-10'			5'-6 SAA except gr is SR-WR & no roots observed
7	2.1	4'/5'	Alluvial		6'-10' silty SAND, wet, very pale brown (10YR 7/4) gr is f-c & SR-WR
8	2.4				
9	2.7				
10	3.1	10'-15'			10'-12' SAA except light yellowish brown (10YR 6/4)
11	3.4				
12	3.7	100%			12'-17' SAA except yellowish brown (10YR 5/6)
13	4.0				
14	4.3				
15	4.6	15'-17'			
16	4.9	100%			
17	5.2		Bedrock GSW		17' - sa GRAVEL, moist, light bluish gray (6.5Y 2 7/1) gr is A. dolostone Rome Formation
18	5.5				
19	5.8				
20	6.1				Terminate Boring @ 17'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0023

Date Started: 10/5/07 Drilling Contractor: BOAR LONGEAR Page 1 of 1
Date Completed: 10/5/07 Driller: James Robinson Survey Unit: 2
Logged By: Rodney Clark Equipment: Minic Sonic #1102 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	Topsoil / FILL	CL	0'-1' gr. sa. sil. CLAY, moist, strong brown (7.5 YR 5/6) roots & organics observed. gravel is A-WR
2	0.6		Alluvial	SW	1'-5' si. gr. f-c SAND, moist, yellowish brown (7.5 YR 5/6) gr is SR-WR
3	0.9	3.5' / 5'			
4	1.2				
5	1.5				5'-7' si. gr. f-c SAND, moist, dark yellowish brown (10 YR 4/4) gr is SR-WR & f-c
6	1.8	5'-10'			
7	2.1				7'-10' - SAA except yellow (10 YR 7/6)
8	2.4	4' / 5'			
9	2.7				
10	3.1				
11	3.4	10'-15'		SW- GW	10'-15.5' si. gr. f-c SAND - si. sa. GRAVEL, wet, yellowish brown (10 YR 6/8) gr is SR-WR & f-c
12	3.7	4' / 5'			
13	4.0				
14	4.3				
15	4.6				
16	4.9	15'-18.5'			15.5'-17.5' gr. sa. SILT, moist - wet brownish yellow (10 YR 6/5) gr is A.
17	5.2	100% Residuum	ML		shale/mudstone/dolostone
18	5.5		Bedrock	GW	17.5'-18.5' sa. GRAVEL, moist, light bluish gray (6.5 Y 2 7/1) gr is A, dolostone
19	5.8				(Rome Fm)
20	6.1				Terminate Boring at 18.5'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0024

Date Started: 10/5/07 Drilling Contractor: BOART LONGYEAR Page 1 of 2

Date Completed: 10/5/07 Driller: JAMES ROBINSON Survey Unit: 2

Logged By: Rodney Clark Equipment: MANISONIC #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	Topsoil	SW	0'-5' si, gr, f-c SAND, moist, yellowish brown (10YR 5/4) gr. is A. WR, roots observed (0'-2')
2	0.6				
3	0.9	4'/5'	Alluvial		
4	1.2				
5	1.5				5'-7' SAA
6	1.8	5'-10'			
7	2.1	4'/5'			7'-10' si, f-SAND, wet, brown (10YR 4/3) trace of c-m, SAND, low plasticity
8	2.4				
9	2.7			SM	
10	3.1				
11	3.4	10'-15'		SW	10'-12.5' si, gr, f-c SAND, wet, brown, gr. & f-c & SR-WR
12	3.7	2'/5'			
13	4.0				12.5'-20' SAA except yellowish brown (10YR 5/6) & (10YR 5/4)
14	4.3				
15	4.6	15'-20'			
16	4.9				
17	5.2				
18	5.5	100%			
19	5.8				
20	6.1			JW/GW	

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD					BORING NO. 0024
NFS Subsurface Soil Characterization and Final Status Survey					
MACTEC Project 9120-07-1235					
Date Started: <u>10/5/07</u>		Drilling Contractor: <u>BOART LONGYEAR</u> Page <u>2</u> of <u>2</u>			
Date Completed: <u>10/5/07</u>		Driller: <u>James Robinson</u>		Survey Unit: <u>2</u>	
Logged By: <u>Rodney Clark</u>		Equipment: <u>M. Sonic #1402</u>		Elevation: <u>TBD</u>	

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
21	6.4	20'-25'		SW / GW	20'-25' si, gr, f-c SAND - si, sa, GRAVEL, wet yellowish brown (10YR 5/6) gr is SR-WR & f-c
22	6.7	100%			
23	7.0				
24	7.3				
25	7.6		Residual ML		24.5'-25' gr. SLT, wet, brownish yellow (10YR 6/8), gr is A. shale/mudstone (Rome Formation)
26	7.9				
27	8.2				Terminate Boring @ 25'
28	8.5				
29	8.8				
30	9.2				
31	9.5				
32	9.8				
33	10.1				
34	10.4				
35	10.7				
36	11.0				
37	11.3				
38	11.6				
39	11.9				
40	12.2				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residual, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0025

Date Started: 10/5/07 Drilling Contractor: BART LONGYEAR Page 1 of 1
Date Completed: 10/5/07 Driller: JAMES ROBINSON Survey Unit: 2
Logged By: Rodney Clark Equipment: MINIC SONIC #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'		SW	0'-4' si, gr f-c SAND, moist, brownish yellow (10R 6/6) gr is A-WR, roots observed
2	0.6				
3	0.9	100%	FILL		4'-5' gr, ca, SILT, moist, very dark grayish brown (10R 5/2) gr is A, roots & organic debris observed
4	1.2			ML	5'-10' si, gr f-c SAND, moist, yellowish brown (10R 5/6) gr is A-WR roots observed
5	1.5	5'-10'		SW	
6	1.8				
7	2.1	3 1/5'			
8	2.4				
9	2.7				
10	3.1				10'-15' SPA
11	3.4	10'-15'			
12	3.7		Alluvial		
13	4.0	100%			
14	4.3				
15	4.6				10'-15' R. M. H. 10'
16	4.9	15'-20'			15'-18' si, gr f-c SAND, wet, brownish yellow (10R 6/6) gr is f-c & SR-WR
17	5.2	100%			
18	5.5				18'-20' - gr. SILT, wet, brownish yellow (10R 6/6) gr is A. shale / mudstone Rome Formation
19	5.8		ML		
20	6.1				Terminate Boring @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0026

Date Started: 10/5/07 Drilling Contractor: BOART LONGKAR Page 1 of 2
Date Completed: 10/5/07 Driller: JAMES ROBINSON Survey Unit: 2
Logged By: Rodney Clark Equipment: MINISONIC #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	FILL	SW	0'-2' si, gr, SAND, moist, brownish yellow (10YR 6/6) gr is A-WR, roots observed
2	0.6				2'-3' SAA except very pale brown (10YR 7/4) # no roots observed
3	0.9	100%			
4	1.2				3'-7' SAA except yellowish brown (10YR 5/6) # loose
5	1.5	5'-10'			
6	1.8				
7	2.1				
8	2.4	4.5'/5'	Alluvial		7'-12' si, gr, f-c SAND, moist, brownish yellow (10YR 6/6), gr is f-c & SR-WR
9	2.7				
10	3.1	10'-15'			
11	3.4				
12	3.7	4'/5'			12'-14' si, gr, f-c SAND, wet, yellowish brown (10YR 5/6), gr is f-c & SR-WR
13	4.0				
14	4.3				
15	4.6			SW	14'-
16	4.9	15'-20'		GW	si, gr, f-c SAND - si, sa, GRAVEL, wet, yellowish brown (10YR 5/6) gr is f-c & SR-WR
17	5.2	3'/5'			
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235		BORING NO. 0026
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Date Started: <u>10/5/07</u>	Drilling Contractor: <u>BOART LONGYEAR</u>	Page <u>1</u> of <u>2</u>
Date Completed: <u>10/5/07</u>	Driller: <u>JAMES ROBINSON</u>	Survey Unit: <u>2</u>
Logged By: <u>Rach</u>	Equipment: <u>MINISONIC #1402</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
21	6.4	20'-23'			
22	6.7	100%	Residual	ML	22'-23' - gr. SILT. net, brownish yellow (10R 6/8) grd is A. dolostone / silt / mudstone Residual (Rene Formation)
23	7.0				
24	7.3				
25	7.6				Terminate Boring @ 23'
26	7.9				
27	8.2				
28	8.5				
29	8.8				
30	9.2				
31	9.5				
32	9.8				
33	10.1				
34	10.4				
35	10.7				
36	11.0				
37	11.3				
38	11.6				
39	11.9				
40	12.2				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residual, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 0027
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Date Started: <u>10/08/07</u>	Drilling Contractor: <u>Bart Longyear</u>	Page <u>1</u> of <u>1</u>
Date Completed: <u>10/08/07</u>	Driller: <u>J. Robinson</u>	Survey Unit: <u>2</u>
Logged By: <u>S. Kelly</u>	Equipment: <u>mini Sonic #1402</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 75%	Topsoil	SW	0-3 si. gr. SAND, slightly moist, dk. brown (2.5 YR 5/3) w/ organics (roots) @ surface gravel is f-c angular to SR
2	0.6				
3	0.9		Alluvial	SW	3-10 si. gr. SAND moist to wet, dk. yellowish brown to yellowish brown (10 YR 5/6) (10R 3/4) gravel is f-c angular to WR
4	1.2				
5	1.5	5-10 50%			
6	1.8				
7	2.1				
8	2.4				
9	2.7				
10	3.1	10-15 100%			
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 100%			
16	4.9				
17	5.2				
18	5.5				
19	5.8		residual	mu	
20	6.1				19.8-20 weathered zone: SILT, moist pale brown boring terminated @ 20' (10YR 4/3) lt. gray

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

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terminated (10YR 7/1)

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0028

Date Started: 10/09/07 Drilling Contractor: Port Lagueur Page 1 of 2

Date Completed: 10/09/07 Driller: J. Robinson Survey Unit: 2

Logged By: S. Kelly Equipment: mini Sonic 1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 100%	Topsoil	SW	0-1.5 si. gr. SAND, slightly moist, dk. yellowish brown (10YR 4/4) gravel is f-m (SA-SR) w/ organics @ surface
2	0.6		Alluvial	SW	1.5- si. gr. SAND, slightly moist, yellowish brown (10YR 5/6) gravel is f-c SA-SR, slightly cemented
3	0.9				
4	1.2				
5	1.5				
6	1.8	5-10 100%			
7	2.1				
8	2.4				
9	2.7				
10	3.1				
11	3.4	10-15 100%		SM	f-m 10-15 si. SAND, wet, dk. yellowish brown (10YR 4/4) w/ dk. grayish brown (10YR 4/2) mottles
12	3.7				
13	4.0				
14	4.3				
15	4.6			SP	14.5-16 micaceous f-m SAND, wet, strong brown (7.5YR 4/6)
16	4.9	15-20 100%			
17	5.2			SW- GW	16-25 si. gr. SAND to si. gr. GRAVEL, wet / saturated, strong brown (7.5YR 5/6) gravel is f-c angular to WR
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0028

Date Started: 10/08/07 Drilling Contractor: Boart Longyear Page 2 of 2
Date Completed: 10/08/07 Driller: J. Robinson Survey Unit: 2
Logged By: S. Kelly Equipment: minisonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
21	6.4	20-25	Alluvial	SW- GN	
22	6.7				
23	7.0				
24	7.3				
25	7.6	25-30	Residual	WM- GM	25-30 weathered Perme. & gr. SILT to
26	7.9	75%			SI. GRAVEL wet to dry (pulverized rock), yellowish brown (OYR 5/8) to
27	8.2				
28	8.5				
29	8.8				
30	9.2				boring terminated @ 30'
31	9.5				
32	9.8				
33	10.1				
34	10.4				
35	10.7				
36	11.0				
37	11.3				
38	11.6				
39	11.9				
40	12.2				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered
Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 0029
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Date Started: <u>10/08/07</u>	Drilling Contractor: <u>Boart Longyear</u>	Page <u>1</u> of <u>2</u>
Date Completed: <u>10/08/07</u>	Driller: <u>J. Robinson</u>	Survey Unit: <u>2</u>
Logged By: <u>Sikelley</u>	Equipment: <u>mini Sonic 1102</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 100%	Topsoil / FP	SM	0-5 si f-m SAND, moist dk yellowish brown (10YR 5/2) trace F.roots, trace F-m gravel (SA-SP)
2	0.6				
3	0.9				
4	1.2				
5	1.5				
6	1.8	5-10 100%	Alluvial	SW	5-10 gr. SAND, slightly moist, yellowish brown (10YR 5/2) slightly cemented, gravel is FC angular to
7	2.1				
8	2.4				
9	2.7				
10	3.1				
11	3.4	10-15 50%			
12	3.7				
13	4.0				
14	4.3				
15	4.6			ML-SM	14-17 cl. sh. SILT, wet, yellowish brown (10YR 5/2) micaceous, coarsening to si f-m SAND and gray 10YR 5/1, laminated
16	4.9	15-20 100%			
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered
 Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)



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SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235		BORING NO. 0029
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Date Started: 10/08/07	Drilling Contractor: Beart Longyear	Page 2 of 2
Date Completed: 10/08/07	Driller: J. Robinson	Survey Unit: 2
Logged By: S. Kelly	Equipment: mini Sonic #1402	Elevation: TBD

DEPTH (R)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
21	6.4	20-25 160%	Alluvial	SW	24-25 gr. m-v. coarse sand met, yellowish brown (by R 5/4) micaceous; gravel is f-m SA to WR
22	6.7				
23	7.0				
24	7.3				to gr. SAND
25	7.6	25-33 160%		SW - GW	24-33 si. sa. gravel, wet, dk. yellowish brown (by R 4/4) gravel is f-c, SA - WR
26	7.9				
27	8.2				
28	8.5				
29	8.8				
30	9.2				
31	9.5				
32	9.8				
33	10.1				boring terminated @ 33'
34	10.4				
35	10.7				
36	11.0				
37	11.3				
38	11.6				
39	11.9				
40	12.2				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered
 Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)



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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0030

Date Started: 10/03/07 Drilling Contractor: Doan Longyear Page 1 of 2

Date Completed: 10/03/07 Driller: J. Robinson Survey Unit: 2

Logged By: S. Kelly Equipment: mini Sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 100%	FILL	SW	0-2 gr. si. SAND, dry / moist, strong brown (7.5 YR 4/6) gravel is f-c, angular to SA
2	0.6		ALLUVIAL	SM	2-4 si. f-on SAND, moist, dk. yellowish brown (10 YR 4/6) trace fine roots
3	0.9				
4	1.2			SW	4-13 slightly silty, gr. SAND, moist, reddish yellow (7.5 YR 6/8) gravel is f-c angular to
5	1.5	5-10 100%			
6	1.8				
7	2.1				
8	2.4				
9	2.7				
10	3.1	10-15 100%			
11	3.4				
12	3.7				
13	4.0			SW	13-18 ^{m-c} si. gr. SAND, wet, reddish yellow (7.5 YR 4/6) to strong brown (7.5 YR 5/6) gravel is f-c SA to WR
14	4.3				
15	4.6	15-20 100%			
16	4.9				
17	5.2				
18	5.5		SP ^{SP}	SP	18-19.5 siliceous f-m SAND, wet, strong brown (7.5 YR 4/6)
19	5.8		SM		
20	6.1			SW-GW	19.5-33 si. gr. SAND to si. sa. GRAVEL, wet yellowish brown (10 YR 5/6) gravel is f-c SA-WR

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey

MACTEC Project 9120-07-1235

BORING

NO.

0030

Date Started: 10/03/07

Drilling Contractor: Boart Longyear

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Date Completed: 10/03/07

Driller: J. Robinson

Survey Unit: 2

Logged By: S. Kelly

Equipment: mini Sonic 1402

Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
21	6.4	25-25 100%	Alluvial	SW- GW	
22	6.7				
23	7.0				
24	7.3				
25	7.6	25-33 100%			
26	7.9				
27	8.2				
28	8.5				
29	8.8				
30	9.2				
31	9.5				
32	9.8				
33	10.1				boring terminated @ 33'
34	10.4				
35	10.7				
36	11.0				
37	11.3				
38	11.6				
39	11.9				
40	12.2				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0031

Date Started: 10/03/07 Drilling Contractor: Bart Longyear Page 1 of 2
Date Completed: 10/03/07 Driller: J. Robinson Survey Unit: 2
Logged By: S. Kelly Equipment: mini sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 80%	FILL	SM-SW	0-4.5 ft si. SAND, moist, strong brown (7.5 YR 4/6) little coarse-v.c. sand and gravel (angular to SR); organics (roots, twigs, etc), micaceous
2	0.6				
3	0.9				
4	1.2				
5	1.5	5-10 100%	Alluvial	ML	4.5 - 5 organic SILT, moist, v. dk. brown (10YR 2/2) to wet
6	1.8				5 to 5.5 gr. SAND, moist, strong brown (10YR 5/6) gravel is f-c angular to SR
7	2.1				
8	2.4				
9	2.7				
10	3.1	10-15 75%			
11	3.4				
12	3.7				
13	4.0				
14	4.3				cl. SILT to
15	4.6	15-20 100%		ML	15-B cl. f. sg. SILT, wet, reddish yellow (7.5 YR 4/6) and lt. gray (10YR 7/1)
16	4.9				
17	5.2				
18	5.5				si.
19	5.8			SM-SW	18-20 f-c SAND grading to si. gr. SAND, wet, brownish yellow (10YR 6/6); gravel is f-c angular to SR
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0031

Date Started: 10/03/07

Drilling Contractor: Bortlangear

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Date Completed: 10/03/07

Driller: J. Robinson

Survey Unit: 2

Logged By: S. Kelly

Equipment: mini Sonic #1402

Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
21	6.4	20-25 100%	Alluvial	SW	
22	6.7				
23	7.0				
24	7.3				
25	7.6	25-33 100%			
26	7.9				
27	8.2				
28	8.5				
29	8.8				
30	9.2				
31	9.5				
32	9.8				
33	10.1		Residual	ML	32.8'-33': weathered zone: SILT, moist, strong brown (7.5 yd 5/6) little P-m angular gravel (medium/ coarse)
34	10.4				
35	10.7				
36	11.0				
37	11.3				
38	11.6				
39	11.9				
40	12.2				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0032

Date Started: 10/03/07 Drilling Contractor: Boart Longyear Page 1 of 2
Date Completed: 10/03/07 Driller: J. Robinson Survey Unit: 2
Logged By: S. Kelly Equipment: Mini Sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 80%	FILL	SW	gr. si. SAND, moist, strong brown (2.5 YR 4/6) to brown (10 YR 4/3) w/ organics (roots, limbs, etc.) organic-rich "lenses" are wet & very silty/clayey
2	0.6				
3	0.9				
4	1.2				
5	1.5	5-10 100%			
6	1.8				
7	2.1				
8	2.4				
9	2.7				
10	3.1	10-15 100%	Alluvial	ML	9' to 10' 12' is bottom of fill - hard to determine based on material encountered; assume 10' based on relative elevation
11	3.4				10-13 sa. cl. SILT, moist, dk. grayish brown (10 YR 4/2) w/ organics (odor & f. roots)
12	3.7				
13	4.0			ML	13-23 f. sa. SILT, moist, strong brown (7.5 YR 5/6) grading to si. f. m. SAND (slightly cemented)
14	4.3			SM	
15	4.6	15-20 100%			
16	4.9				
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey

MACTEC Project 9120-07-1235

BORING
NO.

0032

Date Started: 10/03/07

Drilling Contractor: Port Langyear

Page 2 of 2

Date Completed: 10/03/07

Driller: J. Robinson

Survey Unit: 2

Logged By: S. Kelly

Equipment: mini Sonic #1402

Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
21	6.4	20-25 100%	alluvial	ML SM	
22	6.7				
23	7.0				
24	7.3				SM 23-25 si-cl. f-m SAND, wet strong brown (7.5 YR 5/6) & gray (10YR 6/1) possibly organic
25	7.6	25-33 100%		ML	25-28-27 cl. f. sa. SILT, wet, grayish brown (10YR 5/2)
26	7.9				
27	8.2			SM	
28	8.5				27 10/3/07 28-29 si f-m SAND grading to B-C SAND, wet, gray 10YR 5/1
29	8.8			SP	29-31 micaceous si. f-m SAND, dk. gray (10YR 4/1)
30	9.2			SM	
31	9.5				31-33 same as above but strong brown 10YR 4/6
32	9.8				
33	10.1				
34	10.4				
35	10.7				
36	11.0				
37	11.3				
38	11.6				
39	11.9				
40	12.2				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0033

Date Started: 10/03/07 Drilling Contractor: Bart Langear Page 1 of 2
Date Completed: 10/03/07 Driller: J. Robinson Survey Unit: 2
Logged By: S. Kelly Equipment: Mini Sonic 1902 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 100%	FILL	SW	0-4 si. gr. SAND moist, strong brown (7.5YR 4/6) w/ organics (limbs, roots, etc.) gravel is f. angular to SR (from Banner Springs Branch relocation excavation)
2	0.6				
3	0.9				
4	1.2		Alluvial	ML	4-7 sa. SILT to si. f. m SAND, moist strong brown (7.5YR 4/6); trace fine roots
5	1.5	5-10 100%			
6	1.8				
7	2.1			SW	7-15 si. gr. SAND, moist, yellowish brown (10YR 5/8) slightly cemented
8	2.4				
9	2.7				
10	3.1	10-15 100%			
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 100%		ML-SM	15-18 cl. sa. SILT grading to si. f. m SAND, wet reddish yellow (7.5YR 4/6) trace coarse to v. c. sand (angular to SR) to little
16	4.9				
17	5.2				
18	5.5			ML-SM	18-19 cl. sa. SILT to cl. si. f. m SAND, wet dk. gray (10YR 4/1) w/ organics (decomposed roots, like c-v.c. SAND) and f. m gravel (angular to SR) 24 @ 10/03/07
19	5.8			SM	
20	6.1				19-20 micaceous si. f. m SAND, wet strong brown

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

MACTEC 15YR 4/6

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SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 0033
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Date Started: <u>10/03/07</u>	Drilling Contractor: <u>Boart Longyear</u>	Page <u>2</u> of <u>2</u>
Date Completed: <u>10/03/07</u>	Driller: <u>J. Robinson</u>	Survey Unit: <u>2</u>
Logged By: <u>S. Kelly</u>	Equipment: <u>mini Sonic #142</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
21	6.4	20-25 100%	alluvial	SM	
22	6.7				
23	7.0				
24	7.3				
25	7.6				24-26: si. gr. SAND met, yellowish brown (10YR 5/2) gravel is f-c, angular to SR
26	7.9	25-26.5 100%			
27	8.2		Residuum	ML-GM	26-26.5 - weathered zone: gr. SILT to si. boring terminated @ 26.5' GRAVEL, moist to dry (pulverized) yellowish brown (10YR 5/2) gravel is angular (mudstone) dolostone
28	8.5				
29	8.8				
30	9.2				
31	9.5				
32	9.8				
33	10.1				
34	10.4				
35	10.7				
36	11.0				
37	11.3				
38	11.6				
39	11.9				
40	12.2				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered
 Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)



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SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 1019
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Date Started: <u>10/24/08</u>	Drilling Contractor: <u>BOART LONGYEAR</u>	Page <u>1</u> of <u>1</u>
Date Completed: <u>10/24/08</u>	Driller: <u>JAMES ROBINSON</u>	Survey Unit: <u>2</u>
Logged By: <u>Rodney Clark</u>	Equipment: <u>MINISONIC</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION	
1	0.3	0'-5'	FILL	ML	0'-2.5' - gr. sa. SILT (ML) moist, red (2.5' to 5/6), little organics slightly plastic FILL MATERIAL	
2	0.6	4'/5'				
3	0.9			SW	2.5' - 6.5' sing. gr. f. m. SAND, moist, yellowish brown (or 5/4) - gr. is A-SR granite & gneiss / FILL material - some mica	
4	1.2			SM		
5	1.5					
6	1.8	5'-10'	Alluvial	SW	6.5' - 19.5' sing. gr. f. m. SAND, wet, yellowish brown gr. is SR - WR alluvium & up to 2" diameter, mostly f. c. quartz sand.	
7	2.1	4'/5'				
8	2.4					
9	2.7					
10	3.1	10'-15'				
11	3.4					
12	3.7	5'/5'				
13	4.0					
14	4.3					
15	4.6	15'-20'				
16	4.9					
17	5.2	5'/5'				
18	5.5				19.5' - 20' (observed in drill bit) sing. GRAVEL (GW), moist, light gray (Cuer 1 7N/1) gr. is dolostone / Rome Fm.	
19	5.8					
20	6.1		Residual GW		Terminate Boring @ 20.0'	

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey

MACTEC Project 9120-07-1235

BORING
NO.

1020

Date Started: 10/24/08 Drilling Contractor: BART LONGYEAR Page 1 of 1
Date Completed: 10/24/08 Driller: JAMES ROBINSON Survey Unit: 2
Logged By: Rodney Clark Equipment: MINISONIC Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	Fill	ML	0'-5' gr. sa. cl. SILT (ML), moist, red (25% R, 5/6) little some organics (roots sticks) - gr is A-SR slightly plastic some f. sand, some clay
2	0.6	4 1/5'			
3	0.9				
4	1.2				
5	1.5	5'-10'		SW	5'-10.5' cl. gr. silt. SAND (SW) wet yellowish brown (COR 5/6) gr is SR-WR alluvium mostly m.c. grained quartz sand
6	1.8		Alluvial	SW	
7	2.1	1.5'			
8	2.4	1/5'			
9	2.7				
10	3.1	10'-15'			
11	3.4				
12	3.7	4 1/5'			
13	4.0				
14	4.3				
15	4.6	15'-20'			
16	4.9				
17	5.2	5 1/5'			
18	5.5				
19	5.8		Bedrock	GW	18.5'-20' cl. si. GRAVEL (GW) moist dry light gray (GCT 1 7/10), gravel is laminated dolostone / Bone Formation Terminate Boring @ 20.0'
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 1021
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Date Started: <u>10/24/08</u>	Drilling Contractor: <u>BOB LONGER</u>	Page <u>1</u> of <u>1</u>
Date Completed: <u>10/24/08</u>	Driller: <u>JAMES ROBINSON</u>	Survey Unit: <u>2</u>
Logged By: <u>Rodney Clark</u>	Equipment: <u>MINISONIC</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	<u>5' 5'</u>	<u>Fill</u>	<u>ML</u>	<u>0.5' d, gr. sa. SILT (ML), moist, red (25% R/S) some organics, trace of plastic observed</u> <u>FILL material, gr is A. & little</u>
2	0.6	<u>4 1/5'</u>			
3	0.9				
4	1.2				
5	1.5	<u>5'-10'</u>	<u>Alluvial</u>	<u>SW</u>	<u>5'-18.5' cl. gr. si. f. c SAND (SW), wet yellowish brown (10% R/S) some gr is SR-WR alluvium, mostly m-c quartz sand</u>
6	1.8				
7	2.1	<u>4 1/5'</u>			
8	2.4	<u>4 1/5'</u>			
9	2.7				
10	3.1	<u>10'-15'</u>			
11	3.4				
12	3.7	<u>4 1/5'</u>			
13	4.0				
14	4.3				
15	4.6	<u>15'-20'</u>			
16	4.9				
17	5.2	<u>4 1/5'</u>			
18	5.5	<u>4 1/5'</u>			
19	5.8		<u>Residual Bedrock</u>	<u>GW</u>	<u>18.5' si. d. GRAVEL (GW), moist-dry, light gray (Gey 1 7/10) gr is dolostone</u>
20	6.1				<u>Terminate Boring @ 20.0'</u>

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered
 Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD					BORING NO.
NFS Subsurface Soil Characterization and Final Status Survey					2020
MACTEC Project 9120-07-1235					
Date Started: <u>10/23/08</u>		Drilling Contractor: <u>BOART LONGYEAR</u>		Page <u>1</u> of <u>1</u>	
Date Completed: <u>10/23/08</u>		Driller: <u>JAMES ROBINSON</u>		Survey Unit: <u>2</u>	
Logged By: <u>Rodney Clark</u>		Equipment: <u>MINISONIC</u>		Elevation: <u>TBD</u>	

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	Fill Alluvial	SW	0'-15' sing. f-c SAND (SW) w/ yellowish brown (10R 5/6) gr. is SR-WR alluvium, mostly quartz pebbles.
2	0.6	5'/5'			
3	0.9				
4	1.2				
5	1.5			<u>Δ</u>	
6	1.8	5'-10'			
7	2.1	5'/5'			
8	2.4				
9	2.7				
10	3.1				
11	3.4	10'-15'			
12	3.7	5'/5'			
13	4.0				
14	4.3				
15	4.6				15'-16.5'
16	4.9	15'-16.5' 1.5'/1.5'	Bedrock	GW	5. GRAVEL dry (GW), light gray (GLY) 1 7/N/6, gr. is dolostone (Kane Fm.)
17	5.2				Terminate Boring @ 16.5'
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey

MACTEC Project 9120-07-1235

BORING
NO.

2021

Date Started: 10/23/08 Drilling Contractor: BOART LONGWELL Page 1 of 1

Date Completed: 10/23/08 Driller: JAMES ROBINSON Survey Unit: 2

Logged By: Robert Clark Equipment: MINISONIC Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	Alluvial	SW	0'-13.5' si. gr. f. c. SAND wet (SW), yellowish brown (10YR 5/6), gr. is SR- WR alluvium mostly c. quartz sand
2	0.6	5' / 5'			
3	0.9				
4	1.2				
5	1.5	5' / 10'			
6	1.8				
7	2.1	5' / 5'			
8	2.4				
9	2.7				
10	3.1				
11	3.4	10'-15'			
12	3.7	5' / 5'			
13	4.0				B.S'-15'
14	4.3		Residuum	SW	dis. GRAVEL, moist-wet, white (5Y 8/1) gr. sandstone / weathered Rame fm.
15	4.6				terminate Boring @ 15.0'
16	4.9				
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

Appendix D.2

Soil Boring Logs, Survey Unit 8

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0145

Date Started: 9/6/07 Drilling Contractor: BOART LONGYEAR Page 1 of 1

Date Completed: 9/6/07 Driller: JAMES ROBINSON Survey Unit: 8

Logged By: Rodney Clark Equipment: MiniSonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	Alluvial	SW	(0'-4') silty, gr. f-c SAND, moist, pale brown (10YR 6/3) gravel is SR f-c & SR-WR
2	0.6				
3	0.9	100%			
4	1.2				encountered water table @ appx. 4' bgs
5	1.5				(4'-13) - SAA except brown (10YR 5/3) & wet
6	1.8	5'-10'			
7	2.1				
8	2.4	100%			
9	2.7				
10	3.1				
11	3.4	10'-15'			
12	3.7				
13	4.0	100%			(13'-19.5') SAA except yellowish brown 10YR 5/6
14	4.3				
15	4.6				
16	4.9	15'-20'			
17	5.2				
18	5.5	100%			
19	5.8				
20	6.1		Residual ML		19.5'-20' gravelly SILT, wet, brownish yellow (10YR 6/6) gravel is SR angular, shale Terminate Boring @ 20' (Rare Fm.)

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 0146
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Date Started: <u>9/6/07</u>	Drilling Contractor: <u>Boat Longear</u>	Page <u>1</u> of <u>1</u>
Date Completed: <u>9/6/07</u>	Driller: <u>James Robinson</u>	Survey Unit: <u>8</u>
Logged By: <u>Rodney Clark</u>	Equipment: <u>Mini Sonic #1402</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	Alluvial		0'-8' si, gr. SAND, wet, very pale brown (10%R 7/3) gravel is SR-WR & R-C
2	0.6	1.5'/5'		SW	
3	0.9		↑		
4	1.2		↓		
5	1.5		DTD		W. encountered @ 2'-5'
6	1.8	5'-10'			
7	2.1				
8	2.4	100%			8'-10' si, SAND, wet, olive-gray (51 5/8) f-c
9	2.7			SM	Micaceous, trace of gravel / SR-WR f-c mostly quartz SAND
10	3.1				
11	3.4	10'-15'		SW	10'-14.5' si, gr. SAND - si, sa, GRAVEL, wet, yellowish brown (10%R 5/4) - 5/8 gravel is WR-SR & up to 2 diameter
12	3.7				
13	4.0	100%			
14	4.3				
15	4.6				
16	4.9	5'-20'			
17	5.2	3.5'/5'			
18	5.5				
19	5.8				19.5'-20' gravelly, SILT, wet, yellowish brown (10%R 5/8) gravel is angular, laminated, shale (Rona Formation)
20	6.1		Residuum	ML	Terminate boring @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered
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DTD = difficult to determine water table depth
 and 1 water table data

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0147

Date Started: 9/6/07 Drilling Contractor: Bart Langer Page 1 of 1

Date Completed: 9/6/07 Driller: James Robinson Survey Unit: 8

Logged By: Rodney Clark Equipment: Marisonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	Alluvial	SW	(0'-4.8') f.c. SAND, moist-wet, very pale brown (100R 7/3), gravel is f.c. & SA-WR
2	0.6				
3	0.9	100%			
4	1.2				
5	1.5		2	SM	(4.8'-5') fm si, SAND, moist, olive gray (5/5/2)
6	1.8	5'-10'		SH	(5'-6.5') micaceous, mostly quartz sand of si, gr. SAND, wet, very pale brown gravel is f.c. & SA-WR
7	2.1				(6.5'-8.5') si, SAND, wet, very dark grayish brown (100R 3/5) micaceous, trace of gravel, gravel is f.c. & SR-WR
8	2.4	100%		SM	
9	2.7			SW	(8.5'-16.5') f.c. si, gr. SAND, wet, yellowish brown (100R 5/5), gravel is f.c. & SA-WR
10	3.1				
11	3.4	10'-15'			
12	3.7				
13	4.0	100%			
14	4.3				
15	4.6				
16	4.9	15'-20'			(16.5'-20') gravelly, SILT, wet, brownish yellow (100R 6/5), gravel is angular, laminated, shale (Pore Formation)
17	5.2	100%			
18	5.5		Residual	ML	
19	5.8				
20	6.1				terminate boring @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residual, bedrock, etc.)

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SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 0148
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Date Started: <u>9/6/07</u>	Drilling Contractor: <u>East Longview</u>	Page <u>1</u> of <u>1</u>
Date Completed: <u>9/6/07</u>	Driller: <u>James Robinson</u>	Survey Unit: <u>8</u>
Logged By: <u>Robbery Clark</u>	Equipment: <u>Minisonic #1402</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	Al	SW	0'-2' gr, sa, SILT, moist, very dark gray/brown (10YR 3/2) organics observed (roots)
2	0.6				2'-7' gr, SAND, moist, very pale brown, (10YR 7/3) gravel is SR-WR & f.c.
3	0.9	100%			
4	1.2				
5	1.5				
6	1.8	5'-10'			
7	2.1				7'-8' SAA except wet & light brownish gray (2.5Y 6/2)
8	2.4	100%			
9	2.7		SM		8'-10' si, SAND, moist, olive gray (5Y 4/2) micaceous, trace of gravel
10	3.1				gravel f.c., SR-WR
11	3.4	10'-15'		SW	10'-14' si, gr, SAND (f.c) wet, olive gray gravel is SR-WR & f.c.
12	3.7	100%			
13	4.0				
14	4.3				14'-18' SAA except brownish yellow (10YR 6/6)
15	4.6				
16	4.9	15'-20'			
17	5.2				
18	5.5				18'-19' si, sa, GRAVEL, wet, brownish yellow
19	5.8	100%		GW	
20	6.1		Residual	GW	19'-20' - si, GRAVEL, moist, very pale brown (10YR 7/3) gravel is angular shale ROME F.M. terminate boring @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0149

Date Started: 9/6/07 Drilling Contractor: BART LONGYEAR Page 1 of 1
Date Completed: 9/6/07 Driller: James Robinson Survey Unit: 8
Logged By: Rodney Clark Equipment: Mini 50 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	Alluvial	SW	0'-8' si, gr, SAND, brown (10YR 5/3), moist, gravel is f-c # SR-WR
2	0.6	3/5			
3	0.9				
4	1.2				
5	1.5				5'-8' SAA except grayish brown (10YR 5/2)
6	1.8	5'-10'			
7	2.1				
8	2.4	100%			
9	2.7		SW		8'-17' si, gr, f-c SAND to si, sa, GRAVEL
10	3.1		GW		wet, yellowish-brown (10YR 5/6) gravel is f-c # SR to WR
11	3.4	10'-15'			
12	3.7				
13	4.0	100%			
14	4.3				
15	4.6				
16	4.9	15'-18'			
17	5.2				
18	5.5	100%	Residual	ML	17'-18' gravelly, SILT, wet, brownish yellow (10YR 6/8), gravel is laminated shale/dolomite (angular) Rome Fm.
19	5.8				
20	6.1				Terminate boring @ 18'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0150

Date Started: 9/7/07 Drilling Contractor: Bart Longhead Page 1 of 1
Date Completed: 9/7/07 Driller: James Robinson Survey Unit: 8
Logged By: Rocky Clark Equipment: Mpi Sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	SN		0'-5' si. gr. SAND moist very pale brown (10YR 7/3) gravel is f-c SP-WR
2	0.6	100%			
3	0.9				
4	1.2				
5	1.5				5'-10' SAA except brown
6	1.8	5'-10'			B (wet det 7)
7	2.1				
8	2.4	100%			
9	2.7				
10	3.1				
11	3.4	10'-15'			11.5'-12.5' si. ^{fine} SAND wet grayish brown (2.5Y 5/2) trace of gravels micaceous
12	3.7		SM		
13	4.0	100%	SN		12.5-19.8' si. gr. ^{fine} SAND wet brownish yellow (10YR 6/6) gravel is f-c & SR to WR
14	4.3				
15	4.6				
16	4.9	15'-20'			
17	5.2				
18	5.5	4'/5'			
19	5.8				
20	6.1		ML	Bedrock	19.8'-20' gravelly SILT wet brownish yellow (10YR 6/6) gravel is angular, laminated, silty (Rare Fm)

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0151

Date Started: 9/7/07 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/7/07 Driller: James Robinson Survey Unit: 8
Logged By: Rodney Clark Equipment: Minisonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	SW		0'-1.5' si, gr, f-m SAND, moist, brown gravel is f-m & SR-WR, organics observed
2	0.6				
3	0.9	100%	SW		1.5-5' si, gr, f-c SAND, moist, very pale brown, (10% 7/3) gravel is f-c & SR to WR
4	1.2		Alluvial		
5	1.5				
6	1.8	5'-10'			
7	2.1				7-9' SAA except wet, olive gray (5% 4/2) & micaceous
8	2.4	4'/5'			
9	2.7				
10	3.1				9-14.5' si, gr, SAND, wet, yellowish brown (10% 5/4), gravel is f-c & SR-WR
11	3.4	10'-15'			
12	3.7				
13	4.0	100%			
14	4.3				
15	4.6		RESIDUUM ML		14.5'-15' gravelly, SILT, wet, brownish, yellow (10% 6/5), gravel is angular, laminated, Slate (ROCK Fm)
16	4.9				Terminate Boring @ 15'
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0152

Date Started: 9/1/07 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/7/07 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: Rodney Clark Equipment: MINISONIK #402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	Top Soil	ML	0'-2' silty, moist, very pale brown, (10YR 7/4) face of SR-WR gravel, low plasticity organics (roots) observed
2	0.6	4'-5'	Alluvial	SW	2'-6' silty SAND, moist, pale brown (10YR 6/3) gravel is f-c & SR-WR
3	0.9				
4	1.2				
5	1.5				
6	1.8	5'-10'			
7	2.1			SM	5'-8' silty, f-m SAND, moist to wet, brown (10YR 5/3) micaceous, trace of gravel
8	2.4	100%			
9	2.7			SW	8'-10' silty, f-c SAND, wet, pale brown (10YR 6/3) gravel is f-c & SR to WR mostly m-quartz, sand
10	3.1				
11	3.4	10'-15'			
12	3.7				
13	4.0	100%			
14	4.3				
15	4.6	15'-17.5'			
16	4.9			GW	15.5'-17.3' silty, GRAVEL, ^{wet} yellowish brown (10YR 5/6) gravel is SR-WR f-c
17	5.2	100%			17.3'-17.5' - gravelly, SILT, moist, light bluish gray (10YR 7/6) gravel is angular, dolomite
18	5.5		Residuum	ML	Terminate Boring @ 17.5'
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey

MACTEC Project 9120-07-1235

BORING NO.

0153

Date Started: 9/7/07 Drilling Contractor: BOART LONGTEAR Page 1 of 1
 Date Completed: 9/7/07 Driller: J. ROBINSON Survey Unit: 8
 Logged By: Rodney Clark Equipment: Mini Sonic #11102 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	Aluvial	SW	0'-2' si, gr, f-m SAND, moist, brown (10YR 4/3) gravel is f-c, WR, organics observed
2	0.6				
3	0.9	100%			2'-7' si, gr, f-c, SAND, very pale brown (10YR 7/4), gravel is SR-WR & f-c
4	1.2				
5	1.5				color change @ 5' to dark grayish brown (10YR 3/2)
6	1.8	5'-10'			
7	2.1	100%	SR		
8	2.4			SM	7'-8.5' si, f-c SAND, (olive gray 5Y 4/2) wet, micaceous, mostly quartz SAND
9	2.7				
10	3.1			SN	8.5'-10' si, gr, SAND, light yellowish brown (10YR 6/4) wet, gravel is f-c & SR-WR
11	3.4	10'-13'			
12	3.7				10' SAA except color is yellowish brown (10YR 5/6)
13	4.0	100%			
14	4.3				
15	4.6				
16	4.9	15'-16.5'	Residuum	ML	16.0'-16.5' gravelly, SILT, light bluish gray (4.5Y 2 7/1), gravel is limy, mudstone / dolostone (Rome Formation)
17	5.2	100%			
18	5.5				Terminate Boring @ 16.5'
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0154

Date Started: 9/7/2007 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/7/2007 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: Rodney Clark Equipment: MINISONIC #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	FILL	SW	0'-2' g. si. SAND, moist, brown (7.5 YR 4/3) organics observed (loose) gravel is A-SR
2	0.6				
3	0.9	4.5/5'	Alluvial	SW	2'-5' si. g. f-c SAND, moist, very pale brown (10 YR 7/4) gravel is SR-WD B-f-c
4	1.2				
5	1.5				
6	1.8	5'-10'			5'-7' SAA except brown (10 YR 7/3)
7	2.1				
8	2.4	100%			7'-10' SAA except wet & observed localized lenses of si. SAND
9	2.7				
10	3.1				
11	3.4	10'-15'		SW	10'-17' si. g. f-c SAND, wet yellowish brown (10 YR 5/6) gravel is f-c SR to WR
12	3.7			GW	w/ lenses of si. sa. GRAVEL
13	4.0	100%			
14	4.3				
15	4.6				
16	4.9	15'-17'			
17	5.2	100%			17' gravelly SILT, moist, light bluish gray (6.5 YR 7/1), gravel is angular, dolomite Rare Formation
18	5.5		Residuum		Note: observed Rand. Frn. in cuttings in drill bit.
19	5.8				
20	6.1				Terminate Boring @ 17'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0155

Date Started: 9/12/07 Drilling Contractor: Bart Longyear Page 1 of 1
Date Completed: 9/12/07 Driller: J. Robinson Survey Unit: 8
Logged By: S. Kelly Equipment: mini Sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 75%	Alluvial	SW	0-2 gr SAND, dry to moist v. pale brown (10YR 7/3); gravel is angular to SA, F-C
2	0.6				
3	0.9				
4	1.2				
5	1.5	5-10			
6	1.8	100%			
7	2.1				
8	2.4			SW	8-13 gr. SAND, wet, brown (10YR 4/3) gravel is F-C SA-WR
9	2.7				
10	3.1	10-15			
11	3.4	100%			
12	3.7				
13	4.0			SW	13-19 si. gr. SAND to si. sa. GRAVEL, wet, yellowish brown (10YR 5/6)
14	4.3			GW	
15	4.6	15-20			
16	4.9	100%			
17	5.2				
18	5.5				
19	5.8		Residual	ML	19-20 weathered Pave; gr. SILT to si. GRAVEL, moist yellowish brown (10YR 5/6) to "white" (dry rock) gravel
20	6.1			GM	100% terminated 100% is angular dolomite

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0156

Date Started: 9/7/2007 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/7/2007 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: Rocky Clark Equipment: Minisonic #402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	Alluvial	SW	0'-7' silty, gr. f.c. SAND, moist, brownish yellow (10R 6/4) gravel & f.c. & SR to WR
2	0.6	1.5' / 5'			
3	0.9				
4	1.2				
5	1.5				
6	1.8	5'-10'			
7	2.1		≡	7'-15'	SAA except brown (10R 5/3) & wet
8	2.4	3 1/5'			
9	2.7				
10	3.1				
11	3.4	10'-13'			
12	3.7	100%			
13	4.0				
14	4.3				
15	4.6				15'-18' silty, f.c. sa GRAVEL, wet, brownish yellow (10R 6/6) gravel & f.c. & SR to WR
16	4.9	15'-18'		GW	
17	5.2	100%			12'-18' gravelly SILT, moist, light bluish gray (4.5Y 7/1) gravel is angular, debris stone
18	5.5		RESIDUAL		Terminate Boring @ 18'
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
 MACTEC Project 9120-07-1235

BORING
 NO.

0157

Date Started: 9/10/2007 Drilling Contractor: BOART LONGYEAR Page 1 of 1
 Date Completed: 9/10/2007 Driller: JAMES ROBINSON Survey Unit: 8
 Logged By: Rodney Clark Equipment: MINI SONIC #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	FILL / topsoil	ML	0'-2' sandy SILT, moist dark grayish brown (10YR 4/6) organics (roots) observed
2	0.6	100%	FILL	SW	2'-3' si, gr, SAND, moist, very pale brown (10YR 7/3) gravel is f-c + SR-WR
3	0.9				3'-5' si, gr, SAND, moist, grayish brown (10YR 5/2) gravel is f-c + SR-WR
4	1.2				
5	1.5	5'-10'	Alluvial		
6	1.8				
7	2.1	100%			5'-10' SAA except light brownish gray (10YR 6/2)
8	2.4				wet @ 7' (water table)
9	2.7				
10	3.1	10'-15'		SW	10'-16.5' si, gr, SAND to si, sa, GRAVEL
11	3.4			GW	wet, medium brown (10YR 5/6) gravel is f-c + SR to WR
12	3.7	100%			
13	4.0				
14	4.3				
15	4.6	15'-17'			
16	4.9	100%			16.5'-17' sa, GRAVEL, dry, light bluish gray (10YR 7/1) gravel is angular dolostone (Roubidoux Formation)
17	5.2		Residuum	GW	Terminate Boring @ 17'
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD						BORING NO. 0158
NFS Subsurface Soil Characterization and Final Status Survey						
MACTEC Project 9120-07-1235						
Date Started: 9/11/07		Drilling Contractor: BOART LONGYEAR		Page 1 of 1		
Date Completed: 9/11/07		Driller: JAMES ROBINSON		Survey Unit: 8		
Logged By: Rodney Clark		Equipment: MINISONIC #1402		Elevation: TBD		

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	Fill	SM	0-1.5 si. f. m. SAND, moist, brownish yellow (10YR 6/6)
2	0.6	100%	Topsoil/Fill	ML	1.5 - 2.5 f. s. a, SILT, moist, gray (7.5Y 5/1), low plasticity, roots observed
3	0.9		Alluvial	SW	2.5' - 5' si. g. f. c SAND, moist, very pale brown (10YR 7/4)
4	1.2				gravel is f. c & SR-WR
5	1.5	5'-10'			5'-13' SAA except pale brown & wet
6	1.8	3 1/5'			
7	2.1				
8	2.4				
9	2.7				
10	3.1				
11	3.4	0'-15'			
12	3.7				
13	4.0	100%			13'-16' si. g. f. c SAND to si. f. c. s. a, GRAVEL, wet, yellowish brown (10YR 5/6), gravel is f. c & SR-WR
14	4.3				
15	4.6				
16	4.9	15'-17'			16'-17' gravelly SILT, wet, brownish yellow, gravel is angular (light bluish gray) dolostone
17	5.2	100%	Residuum	ML	
18	5.5				Terminate Boring @ 17'
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0159

Date Started: 9/12/07 Drilling Contractor: Bart Longyear Page 1 of 1
Date Completed: 9/12/07 Driller: J. Robinson Survey Unit: B
Logged By: S. Kelly Equipment: mini Sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 90%	Fill / top soil	SW	0-3: gr. SAND, dry, brown (7.5YR 5/3) w/ organics (grass, roots) gravel is angular to SA, f-m
2	0.6				
3	0.9		Alluvial	SW	3-2: gr. SAND, dry, v. pale brown (10YR 7/3) gravel is f-m angular to SR
4	1.2				
5	1.5	5-10			
6	1.8	75%			
7	2.1		FD	SM	7-7.5 si. f-m SAND, wet, gray (7.5YR 5/1) to black w/ some organics (fine roots), trace f-m SA-SWR gravel
8	2.4		Alluvial	SN- GW	7.5-18.5 si. gr. SAND to si. SA. GRAVEL, wet / saturated, gray (10YR 5/1) to grayish brown (10YR 5/2); gravel is f-m SA to WR
9	2.7				
10	3.1	10-15			
11	3.4	100%			
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-19.5			
16	4.9	100%			
17	5.2				
18	5.5				
19	5.8		Residuum	ml- GM	18.5-19.5 weathered weathered bone: gr. SILT to si. GRAVEL, moist, yellowish brown (10YR 5/3) & H gray (6.5Y 1/1N)
20	6.1				Boring terminated @ 19.5' / gravel is angular dolomite

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0160

Date Started: 9/12/07 Drilling Contractor: Bart Longyear Page 1 of 1
Date Completed: 9/12/07 Driller: J. Robinson Survey Unit: B
Logged By: S. Kelly Equipment: mini Sonic #1402 Elevation: TBI

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 10070	FILL/ topsoil	SW	0-2 gr. SAND, dry, brown (10YR 4/3), with organics (fine roots) gravel is angular to SA, f-m
2	0.6		Alluvial	SW	2-3.5 gr. SAND, dry, v. pale brown (10YR 7/3) gravel is f-c, angular to SR
3	0.9				
4	1.2		FD Alluvial	SM SW	3.5-4 si. cl. f-m SAND, v. moist, dk gray 10YR 4/1
5	1.5				4-9 si. gr. SAND, moist to wet, gray (10YR 5/1) gravel is f-c SA to WR
6	1.8	5-10 10070			
7	2.1				
8	2.4				
9	2.7			SW	9-10 micaceous gr. SAND, wet, dk gray (10YR 4/1)
10	3.1	10-15		SW - GW	10-18 si. gr. SAND to si. sa GRAVEL wet / saturated, yellowish brown (10YR 5/8), gravel is f-c, SA to WR
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6				
16	4.9	15-19.5 10070			
17	5.2				
18	5.5		Residuum	GW	18-19.5 weathered Rhyolite: si. GRAVEL, moist to dry yellowish brown (10YR 5/8) to lt. gray (10YR 7/1N) gravel is angular dolomite
19	5.8				
20	6.1				boring terminated @ 19.5'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0161

Date Started: 9/10/2007 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/10/2007 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: Rodney Clark Equipment: MiniSonic #140Z Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	Fill / Topsoil	ML	0'-3.5' gr. sa, SILT, moist, dark grayish brown (10YR 4/2) organic, (roots) observed, gravel is angular - WR
2	0.6				
3	0.9	4.5'/5			
4	1.2		Alluvial	SW	3.5'-7' sig. f-c SAND, moist, light brownish gray (10YR 5/2) gravel is f-c. A-SR
5	1.5				
6	1.8	5'-10'			
7	2.1				Recovered lower part of 5'-10 interval water table estimated @ 7' BGS
8	2.4	2'/5'		SW- GW	7'-14' si, gr. f-c SAND to si, sa GRAVEL wet, light brownish gray, gravel is SA-WR
9	2.7				
10	3.1				
11	3.4	10'-15'			
12	3.7				
13	4.0	100%			
14	4.3				14'-16.5' SAA except yellowish brown (10YR 5/6)
15	4.6	15'-17'			
16	4.9	100%			
17	5.2		RESIDUUM	ML	16.5'-17' gr. SILT, wet, yellowish red (5YR 5/6) gravel is angular, light pinkish gray (6.5Y 2.7/1) laminated, dolostone (Rona Formation)
18	5.5				
19	5.8				Terminate Boring @ 17'
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0162

Date Started: 9/11/07 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/11/07 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: RODNEY CLARK Equipment: MINISONIC #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0.5'	Fill/Topsoil	ML	0'-0.5' fmsd, SILT, moist, brown (10YR 5/3)
2	0.6	4 1/5'	FILL	SN	trace of organics observed
3	0.9				0.5'-4' silty c. gr. f.c. SAND, moist, light brownish gray (10YR 6/2) gravel is SR - WR
4	1.2				4' - 5' SAA except light yellowish brown (10YR 6/4)
5	1.5	5'-10'	Alluvial		
6	1.8		<u>Δ</u>		6'-13' SAA except pale brown (10YR 6/3)
7	2.1	100%			\$ wet
8	2.4				
9	2.7				
10	3.1				
11	3.4	10' 1/5'			13'-15.5'
12	3.7				SAA except brownish yellow (10YR 6/6)
13	4.0	100%			
14	4.3				
15	4.6	15'-16'			15.5'-16' silty GRAVEL, dry, light bluish gray
16	4.9	100%	Residuum	GN	(6.1EY 2 7/5B) Angular, dolostone (Bonne Formation)
17	5.2				Terminate Boring @ 16'
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0163

Date Started: 9/20/2007 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/20/2007 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: Rodney Clark Equipment: MINISONIC #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'5'	FILL	ML	0'-0.5' gr, silty, moist, very dark grayish brown (10YR 3/2)
2	0.6			SW	0.5'-4' silty SAND, moist, olive yellow (2.5Y 6/4) mostly m-f SAND, organics observed
3	0.9	4.5'/5'			
4	1.2		Aluvial		4'-14' gr, silty SAND, moist-wet, very pale brown light yellow brown (10YR 7/4 & 6/4) gravel is SR-WR, B-f-c
5	1.5	5'-10'			
6	1.8				
7	2.1				
8	2.4	4'/5'			
9	2.7				
10	3.1	10'-15'			
11	3.4				
12	3.7	100%			
13	4.0				
14	4.3			SW	14'-18.5' silty, gr, f-c SAND, wet, yellowish brown (10YR 5/8) gr is SR-WR
15	4.6			GW	also silty, sand, GRAVEL
16	4.9	15'-19.5'			
17	5.2				
18	5.5	100%			
19	5.8		Bedrock	GW	18.5'-19.5' sand GRAVEL, dry, light bluish gray (CLAY 2 7/10B) gravel is A dolostone (Rogers Formation)
20	6.1				Terminate Boring @ 19.5'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0164

Date Started: 9/13/07

Drilling Contractor: Boart Longyear

Page 1 of 1

Date Completed: 9/13/07

Driller: J. Robinson

Survey Unit: 8

Logged By: S. Kelly

Equipment: mini sonic #1402

Elevation: TBI

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 100%	Fill/ topsoil	SW	0-2 gr. SAND, dry, brown (10YR 5/3) gravel if f-c angular to SR
2	0.6		Alluvial	SW	2-4 gr. m-c SAND, moist yellowish brown (10YR 5/8) gravel is f-c, SA-SR
3	0.9				
4	1.2			SW	4-7 gr. SAND, moist, pale brown (10YR 6/3) gravel is f-m SA-SR
5	1.5				
6	1.8	5-10 100% 90%			
7	2.1			SW	7-15 slightly si. gr. SAND, wet, gray (10YR 5/1) gravel is f-c SA to VR
8	2.4				
9	2.7				
10	3.1	10-15 100%			
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-19 100%			15-18.7 - same but yellowish brown
16	4.9				
17	5.2				
18	5.5				
19	5.8		Residuum	tan	18.7-19 weathered Raml si. GRAVEL, wet, yellowish brown (10YR 5/8) to lt gray (6.5Y 1/1K) (angular dolomite)
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 0165
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Date Started: <u>9/12/07</u>	Drilling Contractor: <u>Bart Langman</u>	Page <u>1</u> of <u>1</u>
Date Completed: <u>9/12/07</u>	Driller: <u>J. Robinson</u>	Survey Unit: <u>B</u>
Logged By: <u>S. Kelly</u>	Equipment: <u>minisonic #1402</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 10020	Fill / topsoil	SW	0-3 gr. SAND, dry, brown (10YR 4/3), gravel is f-m, angular to SR
2	0.6				
3	0.9		Alluvial	SW	3-8 gr. SAND, dry, to moist, v. pale brown (10YR 7/4) gravel is f-c, angular to SR
4	1.2				
5	1.5	5-10 7020			
6	1.8				
7	2.1				
8	2.4				
9	2.7			SW-GW	8-15 si. gr. SAND to si. sa. GRAVEL, wet (saturated, gray (10YR 5/1) gravel is f-c, angular to
10	3.1	10-15 10020			
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-19.5 10020		SW-GW	15-18.5 - si. gr. SAND to si. sa. GRAVEL, wet (saturated, yellowish brown (10YR 5/8)
16	4.9				
17	5.2				
18	5.5				
19	5.8		Residuum	GW	18.5-19.5 weathered Rome - si. GRAVEL, moist/wet, lt. gray (5Y 7/1) gravel is angular dolomite
20	6.1				boring terminated @ 19.5'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered
 Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)



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SOIL BORING RECORD
NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING NO.

0166

Date Started: 9/10/2007 Drilling Contractor: BOART LONGYEAR Page 1 of 1
 Date Completed: 9/10/2007 Driller: JAMES ROBINSON Survey Unit: 8
 Logged By: Rockney M. Clark Equipment: MINISONIC #1402 Elevation: TED

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	Fill/road	ML	0'-2' gr. sa, SILT, moist, dark grayish brown (10YR 4/2) organics observed, gravel f-c # A-SA
2	0.6	100%	Fill	SM	2'-3' si, f-c SAND, moist, light brownish gray, (10YR 6/2)
3	0.9				3'-5.5' gr. sa, SILT, moist, dark grayish brown, organics observed, fine sand 0'-2' SILT.
4	1.2			ML	
5	1.5				
6	1.8	5'-10'	Alluvial	SW	5.5'-14' si, gr. SAND, wet, light brownish gray, gravel is f-c # BR to WR
7	2.1				
8	2.4	100%			
9	2.7				
10	3.1				
11	3.4	10'-15'			
12	3.7				
13	4.0	100%			
14	4.3				
15	4.6	15'-17'		SW- GW	14'-16.8' si, f-c sa, GRAVEL, wet, yellowish brown (10YR 5/6) gravel is f-c # SR # WR
16	4.9	100%			
17	5.2		Residuum	GW	16.8'-17' sandy, GRAVEL, dry - light bluish gray (4.0/2 7/1) angular, dolostone (Rome Fm)
18	5.5				Terminate Boring @ 17'
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
 MACTEC Project 9120-07-1235

BORING
 NO.
 0167

Date Started: 9/11/07 Drilling Contractor: BOART LONGEAR Page 1 of 1
 Date Completed: 9/11/07 Driller: JAMES ROBINSON Survey Unit: 8
 Logged By: Rodney Clark Equipment: MINISONIC #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	Topsoil/Fill	ML	0'-1' si, f-m SAND, moist, brown (10YR 4/3), roots observed, trace of angular gravel
2	0.6	4.5'/5	FILL	GW	1'-3' si, f-c sandy GRAVEL, moist-wet, brown (10YR 4/6)
3	0.9				3'-12' si, gr, f-c SAND, wet light gray (10YR 7/1)
4	1.2		Alluvial	SW	gravel is f-c & SR - dark
5	1.5				
6	1.8	5'-10'			
7	2.1				
8	2.4	100%			
9	2.7				
10	3.1				
11	3.4	10'-15'			
12	3.7				12'-16' si, gr, f-c SAND to si, f-c sa, GRAVEL, wet yellowish brown (10YR 5/6)
13	4.0	100%		SW GW	gravel is f-c & SR to WR
14	4.3				
15	4.6	15'-17'			
16	4.9	100%	BEDROCK RESIDUUM	GW	16'-17' sa, GRAVEL, dry, light bluish gray (6.5Y 7/1) gravel is angular, deformed (Rome Formation)
17	5.2				
18	5.5				
19	5.8				
20	6.1				Terminate Boring @ 17'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0168

Date Started: 9/11/07 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/11/07 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: RODNEY CLARK Equipment: MINISONIC #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	FILL	SW	0'-1' silty-f-c SAND, moist, brown (10YR 4/3) roots observed trace of angular gravel
2	0.6	3'-5'	ALLUVIAL		1'-5' silty-f-c SAND, moist to wet, very pale brown (10YR 7/1) gravel is SR-WR
3	0.9				
4	1.2				
5	1.5				5'-7' SAA except brown (10YR 5/3) # wet
6	1.8	5'-10'			
7	2.1	100%			7'-9' SAA except gray (5Y 6/1) # micaceous
8	2.4				
9	2.7			SW	9'-14.9 silty-f-c silty-f-c SAND to silty-f-c
10	3.1	10'-15'		GW	GRAVEL, wet, yellowish brown (10YR 5/6) gravel is SR-WR
11	3.4				
12	3.7	100%			
13	4.0				
14	4.3				14.9'-15' gravelly SILT, wet, brownish yellow (10YR 6/8) gravel is angular (light brownish gray GLEYZ T) dolostone
15	4.6		RESIDUAL	AL	Rome Formation
16	4.9				Terminate Boring @ 15'
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0169

Date Started: 9/20/07 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/20/07 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: Rodney Clark Equipment: MINISONIC #440 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'		ML	0'-2.5' gr, sa, SILT, moist, very dark grayish brown (10YR 3/2), gr is 1A-SA, roots observed
2	0.6				
3	0.9	3.5'/5'	FILL	SW	2.5'-6' sig. f-c SAND, moist-wet, brownish yellow (10YR 6/6), gr is 1-SR
4	1.2				
5	1.5				
6	1.8	5'-10'			6'-10' SAA except light brownish gray 10YR 6/2, wet & gr is SR-WR
7	2.1		Alluvial		
8	2.4	4'/5'			
9	2.7				
10	3.1				10' - 13.5 13.5 sl, gr, SAND wet, pale brown (10YR 6/3), gr is SR-WR & f-c
11	3.4	10'-15'			
12	3.7				
13	4.0	100%			13.5'-16.5' SAA except yellowish brown (10YR 5/6)
14	4.3				
15	4.6				
16	4.9	15'-19.5'			
17	5.2				
18	5.5	100%			18.5'-19.0' - gr, SILT, wet, brownish yellow (10YR 6/6), gr is A. dolostone (Rome Formation)
19	5.8		Residuum	ML	
			Bedrock	GW	19.0'-19.5' - sa, GRAVEL, dry, light bluish gray (GLT 2 7/10B), gr is A. dolostone (Rome Formation) - Terminate Boring @ 19.5'
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0170

Date Started: 9/20/2007 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/20/2007 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: Rodney Clark Equipment: MINISONIC #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'		ML	0'-3.5' gr. sa. SILT, moist, very dark grayish brown (10YR 3/2) gr is A, root slab present
2	0.6		FILL		
3	0.9	100%			
4	1.2			SW	3.5'-5' si. gr. SAND, moist, very pale brown (10YR 7/4) gr is SA-WR
5	1.5				5'-14'
6	1.8	5'-10'	Alluvial		SAA except light yellowish brown (10YR 5/6) \$ wet
7	2.1				
8	2.4	100%			
9	2.7				
10	3.1				
11	3.4	10'-15'			
12	3.7				
13	4.0				
14	4.3				14'-17' si. f-c sa. f-c GRAVEL, wet, yellowish brown (10YR 5/6) gr is WR-SR
15	4.6	15'-19'		GW	
16	4.9				
17	5.2	100%			17'-18' gr. SILT, moist, brownish yellow (10YR 6/6) gr is A. dolostone
18	5.5	RE 9/20/07	Residuum	ML	
19	5.8		Bedrock	GW	18'-19' sa. GRAVEL, dry, light bluish gray (6.5Y 7/0.5) gr is A. dolostone Rome Formation
20	6.1				Terminate Boring @ 19'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

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NFS File Classification: DCM-23-05-02

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0171

Date Started: 7/13/02

Drilling Contractor: Beart Longyear

Page 1 of 1

Date Completed: 7/13/02

Driller: Beart Long J. Robinson

Survey Unit: 8

Logged By: Skelly

Equipment: Mini Sonic #1402

Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 100%	Fill topsoil	SW- SM	1-4 organic rich gr. SAND, moist, v. dk. brown (10YR 2/2) gravel is angular to SA, becoming silty w/ depth (organic material appears to be from grubbing / clearing activities - relatively recent)
2	0.6				
3	0.9				
4	1.2		alluvial	SW	4-23 gr. SAND, moist to wet, yellowish brown (10YR 5/6) gravel is f-c SA to WR
5	1.5	5-10 100%			
6	1.8				
7	2.1			SW- GW	7-12B - si. gr. SAND to si. sa. GRAVEL, wet/ saturated yellowish brown (10YR 5/4) gravel is f-c SA to WR
8	2.4				
9	2.7				
10	3.1	10-15 100%			
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-18 100%			
16	4.9				
17	5.2				
18	5.5				
19	5.8		Residuum	GM	19-8-18 weathered Pange gr. SILT, wet, pale brown (10YR 6/4) angular gravel (debris)
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0172

Date Started: 9/13/07 Drilling Contractor: Bartlingear Page 1 of 1
Date Completed: 9/13/07 Driller: J. Robinson Survey Unit: 8
Logged By: S. Kelly Equipment: mini Sonic #1902 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 75%	Fill/ topsoil	SM	0-33 organic rich si. SAND, moist, v. dk. brown (10YR 2/2) trace f-m gravel (angular to SP) organics are roots & wood from recent clearing & grubbing
2	0.6				
3	0.9				
4	1.2		Alluvial D	SW	7-14 gr. m-c SAND, moist to wet, yellowish brown (10YR 5/8) to brown (10YR 4/3) gravel ES f-m angular to WR
5	1.5	5-10 100%			
6	1.8				
7	2.1				
8	2.4			SW - GW	7-14 si. gr. SAND to si. sa. GRAVEL, wet / saturated, brown (10YR 5/3) to yellowish (10YR 6/4), gravel is f-c SA-WR
9	2.7				
10	3.1	10-15 100%			
11	3.4				
12	3.7				
13	4.0				
14	4.3				17.5 14-18.5 (10YR 5/10) - same but yellowish brown (10YR 5/10)
15	4.6	15-18.5 100%			
16	4.9				
17	5.2				
18	5.5		Residuum ML GM		17.5-18.5 weathered zone: gr. SILT to si. GRAVEL, moist / dry, lt. gray (6.5Y 1/1) to yellowish brown (10YR 5/6) gravel is angular dolomite
19	5.8				boring terminated @ 6.5'
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0173

Date Started: 9/10/2007 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/10/2007 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: Rodney Clark Equipment: MiniSonic #407 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0' 5'	FILL	ML	0'-0.5' sa, SILT, moist, dark grayish brown
2	0.6	35/5	Alluvial	SW	(10YR 4/2), organics observed, glass observed
3	0.9				0.5'-5' silty, fine SAND, light yellowish brown
4	1.2				(10YR 6/4) gravel is SR-WR
5	1.5				
6	1.8	5'-10'			5'-10' silty, fine, coarse SAND light gray (10YR 7/1)
7	2.1				wet, gravel is SR-WR
8	2.4	45/5			
9	2.7				
10	3.1				
11	3.4	10'-15'			10'-16' SAA except brown (10YR 5/3)
12	3.7				
13	4.0	100%			
14	4.3				
15	4.6				
16	4.9	15'-17'			
17	5.2	100%	Residuum	GW	16'-17' silty GRAVEL wet, light bluish gray
18	5.5				(6.5Y 7/1) gravel is angular dolomite
19	5.8				(ROME FORMATION)
20	6.1				Terminate Boring @ 17'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 0174
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Date Started: <u>9/16/2007</u>	Drilling Contractor: <u>Boart Longear</u>	Page <u>1</u> of <u>1</u>
Date Completed: <u>9/10/2007</u>	Driller: <u>James Robinson</u>	Survey Unit: <u>8</u>
Logged By: <u>Rodney Clark</u>	Equipment: <u>Minisonic #4402</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	ML fill	ML	0'-2' sandy SILT, wet, very dark grayish brown (10YR 3/2)
2	0.6	4'/5'			
3	0.9		alluvial	SW	2'-3' silty f-c SAND, wet, gravel is f-c # WR-SR (gray SY 5/1) up to 2" in diameter
4	1.2				
5	1.5				
6	1.8	5'-10'			
7	2.1	4'/5'			
8	2.4				
9	2.7				
10	3.1				
11	3.4	10'-19'			
12	3.7	100%			
13	4.0			SN-GW	13'-15.5' silty f-c sand GRAVEL to silty f-c GRAVEL f-c SAND, wet, yellowish brown (10YR 5/6) gravel is SR-WR
14	4.3				
15	4.6	15'-16.5'			
16	4.9	100%	Residual	ML	15.5'-16.5' gr SILT, wet, yellowish brown (10YR 5/8) gravel is angular, dolostone (Rome Formation)
17	5.2				
18	5.5				Terminate Boring @ 16.5'
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered
 Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)



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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0175

Date Started: 9/11/07 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/11/07 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: RODNEY CLARK Equipment: MINISONIC #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	FILL/SPONL	ML	0'-0.5' sa SILT, moist, dark grayish brown (10YR 4/2) trace of gravel, roots observed
2	0.6		FILL	SW	0.5' - 2.5' sig. gr. f.c. SAND, moist, brownish yellow (10YR 6/6) gravel is f-c & SR-WR
3	0.9	3'/5'	SW		2.5' - 5' SAA except grayish brown (10YR 5/4)
4	1.2		Alluvial		5' - 8.5' SAA except brownish yellow (10YR 6/4)
5	1.5				
6	1.8	5'-10'			
7	2.1				
8	2.4	100%			
9	2.7				8.5' - 13' sig. gr. f.c. SAND, greenish gray (6.5Y 5/5GY) wet, gravel is f-c & SR-WR, micaaceous
10	3.1				
11	3.4	0'-15'			
12	3.7				
13	4.0				
14	4.3				13' - 15.5' sig. gr. f.c. SAND, wet, strong brown (7.5YR 5/6) gravel is f-c & SR-WR
15	4.6				
16	4.9	15'-16' 100%	Residuum/GW ↑ Bedrock		15.5' - 16' sa GRAVEL, dry, light bluish gray (6.5Y 7/5B) gravel is angular, dolomite (Rame Formation)
17	5.2				
18	5.5				terminate Boring @ 16'
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0176

Date Started: 9/20/2007 Drilling Contractor: EART LONGYEAR Page 1 of 1
Date Completed: 9/20/2007 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: Rodney Clark Equipment: MINISONIC #1402 Elevation: TBO

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'			0'-4' gr, sa, SILT, moist, very dark grayish brown (10YR 3/2), gr is A-SA, roots and organics observed
2	0.6			ML	
3	0.9	4'-5'	FILL		4'-6' si, gr, SAND, moist, brownish yellow 10YR 6/6, gr is A-WR
4	1.2				
5	1.5			SW	
6	1.8	5'-10'			6'-10' si, f, gr, f, c SAND, wet, light brownish gray (10YR 6/2), gr is SR-WR
7	2.1		Alluvial		
8	2.4	100%			
9	2.7				
10	3.1				
11	3.4	10'-15'			10'-13.5 SPA except pale brown (10YR 6/3)
12	3.7				
13	4.0	100%			
14	4.3			SW	
15	4.6			GW	
16	4.9	15'-19.5'			13.5-18' si, gr, f, c SAND-si, sa, f, c GRAVEL wet, gr is f, c, f, SR-WR yellowish brown (10YR 5/8)
17	5.2				
18	5.5	100%			
19	5.8		Residuum	ML	18'-18.5' gravelly, SILT, wet, brownish yellow (10YR 6/8), gr is A dolostone
20	6.1		GW	GW	18.5'-19.5' sa, GRAVEL, dry, light bluish gray (10YR 7/1), gr is A dolostone (CRIME FORMATION) Terminate Boring @ 19.5'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 0177
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Date Started: <u>9/19/07</u>	Drilling Contractor: <u>BOARTLONGYEAR</u>	Page <u>1</u> of <u>1</u>
Date Completed: <u>9/19/07</u>	Driller: <u>JAMES ROBINSON</u>	Survey Unit: <u>8</u>
Logged By: <u>Rachey Clark</u>	Equipment: <u>MINISONK #1402</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	FILL	ML	0'-2.5' gr. sil. SILT, moist, very dark grayish brown (10YR 3/2) gr. & A-sh, roots & organics observed
2	0.6				
3	0.9	4'/5'	FILL ML 9/19/07	SW	2.5'-5' gr. sil. SAND, moist, strong brown (7.5YR 5/6) gr is SR - WR
4	1.2				
5	1.5				SAA except yellowish brown
6	1.8	5'-10'	Alluvial		(10YR 5/6) & wet
7	2.1	100%			
8	2.4				8'-10' SAA except grayish brown
9	2.7				
10	3.1				10'-17' gr. f-c SAND, wet, brownish yellow (10YR 6/6) gr is f-c & SR - WR
11	3.4	10'-15'			
12	3.7	100%			
13	4.0				
14	4.3				
15	4.6	15'-18'			
16	4.9				
17	5.2	100%			17'-18' sil. GRAVEL dry, light bluish gray (6.5Y 2 7/10B) gravel is A. dolomite (Rome Formation)
18	5.5		BEDROCK	GW	Terminate Boring @ 18'
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered
 Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)



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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0178

Date Started: 9/19/07 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/19/07 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: Rodney Clark Equipment: MINISONIC #1902 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'		ML	0'-3.5' gr, silty, moist, very dark grayish brown (10YR 3/2), organics & roots observed, gr is SR-WR
2	0.6				
3	0.9	100%			
4	1.2		FILL	SW	3.5'-5' silty SAND, moist, brownish yellow (10YR 6/6), gr is A & f-c
5	1.5				
6	1.8	5'-10'	Alluvial		5'-8' SAA except brown (10YR 5/3)
7	2.1				
8	2.4	100%			
9	2.7				8'-10' silty f-c SAND, wet, pale brown (10YR 6/3), gr is f-c & SR-WR
10	3.1				
11	3.4	10'-15'			10'-17.5' SAA except brown (10YR 5/3) & yellowish brown (10YR 5/4)
12	3.7	100%			
13	4.0				
14	4.3				
15	4.6				
16	4.9	15'-18'			
17	5.2	100%			
18	5.5		BEDROCK	SW	17.5'-18' silty GRAVEL, dry, light bluish gray (GLY 7/10B) gravel is A, dolostone (Rome Formation)
19	5.8				
20	6.1				Terminate Boring @ 18'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0179

Date Started: 9/19/07 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/19/07 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: Rodney Clark Equipment: MINISONIC #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'		SW	0'-1' gr. sil. SAND, moist, strong brown (7.5YR 4/6) gr. is A, organics observed
2	0.6			ML	
3	0.9	100%	FILL		1'-5.5' gr. sil. SILT, moist, very dark brown (7.5YR 2.5/2), abundant roots & organics gr. is A-SR
4	1.2				
5	1.5	5'-10'			5.5'-7.5' gr. sil. SAND, moist, light yellowish brown (10YR 6/4) gr. is SR-WR
6	1.8		Alluvial	SW	
7	2.1	100%			7.5'-14.5' SAA except wet
8	2.4				
9	2.7				
10	3.1				
11	3.4	10'-15'			
12	3.7				
13	4.0	100%			
14	4.3				
15	4.6				14.5'-18.5' silty f-c SAND, wet brownish yellow (10YR 6/6) gr. is SR-WR
16	4.9	15'-20'			
17	5.2				
18	5.5				18.5'-19' grad. SILT, moist, brownish yellow (10YR 6/6)
19	5.8		Residuum	ML	gravel is A-SR, gravel is dolostone
20	6.1		Bedrock	GW	19'-20' SA GRAVEL, moist, light bluish gray (6.5Y 2.7/0.8), gr. is A, dolostone (Rome Formation) - terminate boring @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

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NFS File Classification: DCM-23-05-02

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING NO.
0180

Date Started: 9/17/07 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/17/07 Driller: James Robinson Survey Unit: 8
Logged By: Rodney Clark Equipment: MiniSonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'			0'-4.8' gr. f.c. sa, SILT, moist, very dark grayish brown (10YR 3/2) roots observed organics observed gravel is 4
2	0.6	100%	FILL	ML	
3	0.9				
4	1.2				4.8'-5.2' gr. si, f.c. SAND, moist-wet yellowish brown (10YR 5/6) gravel is SR-WR
5	1.5				
6	1.8	5'-10'		SW	5.2' - 9' SAA except gray (10YR 6/1), mostly si, f.c. SAND, micaceous
7	2.1		Alluvial		
8	2.4	100%			
9	2.7				
10	3.1				9'-15.5' si, f.c. gr. f.c. SAND, wet brown (10YR 5/3) gravel is SR-WR
11	3.4	10'-15'			
12	3.7				
13	4.0	100%			
14	4.3				
15	4.6	15'-17'			15.5'-16.5' gravelly, SILT, wet brownish yellow (10YR 6/8) gravel is A-WR
16	4.9	100%	Residuum	ML	some gravel alluvial, some gravel is A-shale
17	5.2		Bedrock	SW	16.5'-17' sa GRAVEL dry light bluish gray (6.5Y 2/1) gravel is A dolostone (Rome Formation)
18	5.5				
19	5.8				
20	6.1				Terminate Boring @ 17'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.
0181

Date Started: 9/13/07 Drilling Contractor: Boart Longyear Page 1 of 1
Date Completed: 9/12/07 Driller: J. Robinson Survey Unit: 8
Logged By: S. Kelly Equipment: mini sonic #1402 Elevation: TSD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 50%	fill / topsoil	SM	0-3.5 organic-rich si. SAND, moist, y. dk. brown (10YR 2/2), organics are roots/wood from recent clearing/grubbing @ 9/13/07, trace f. m. SA-SR gravel
2	0.6				
3	0.9				
4	1.2		alluvial	SW	9.5-8 si. gr. SAND, moist to wet, yellowish brown (10YR 5/8) gravel is f. c. SA to SR
5	1.5	5-10 80%			
6	1.8				
7	2.1				
8	2.4			SP	8-11 micaceous f. m. SAND, moist, dk. gray (6.5Y 1.4N) trace SR-WR, f. c. gravel
9	2.7				
10	3.1	10-15 100%			
11	3.4			SW- GW	11-12 si. gr. SAND to si. sa. GRAVEL, wet/saturated, brown (10YR 5/3) gravel is f. c. SA to WR
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-17 100%			
16	4.9		Residuum	GM- ML	16-17: weathered Poud: gravelly SILT to si. GRAVEL, moist/dry, light gray (6.5Y 1.4N) & brown (7.5YR 5/4) boring terminate @ 17' gravel is angular dolomite
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 0182
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Date Started: <u>9/17/07</u>	Drilling Contractor: <u>BOART LONGYEAR</u>	Page <u>1</u> of <u>1</u>
Date Completed: <u>9/17/07</u>	Driller: <u>JAMES ROBINSON</u>	Survey Unit: <u>8</u>
Logged By: <u>Rodney Clark</u>	Equipment: <u>MINISONIC #1402</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	FILL		0-4.5' gravelly sandy SILT, moist, very dark grayish brown (10YR 3/2), organics & roots observed, gravel is angular #1-1/2
2	0.6			ML	
3	0.9	100%			
4	1.2				
5	1.5				4'-16' silty f-c g. f-c SAND moist wet yellowish brown (10YR 5/3), gravel is SR-WR
6	1.8	5'-10'	Alluvial	SW	
7	2.1	No Recovery			
8	2.4	End of			
9	2.7	10'-5' sample contains			
10	3.1	5'-10' sample			
11	3.4	10'-15'			
12	3.7	7'-5'			
13	4.0				
14	4.3				
15	4.6				
16	4.9	15'-18'			16'-17' silty g. f-c SAND, wet, brown (10YR 5/3) gravel is SR-WR less gravel & micaceous, mostly
17	5.2	100%	Residuum	ML	partly sand
18	5.5		BEDROCK	GW	17.0'-17.5' gravelly, SILT, moist, brownish yellow (10YR 5/6) gravel is SR-WR
19	5.8				17.5'-18' sandy GRAVEL, dry, light bluish gray (4.5Y 2.7/1) gravel is angular dolomite. Bottom of 18'
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered
 Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0193

Date Started: 9/10/2007 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/10/2007 Driller: James Robinson Survey Unit: 8
Logged By: Rodney Clark Equipment: Minisonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	FILL	JW	0'-1.5' silty, f.c SAND, moist, yellowish brown (10YR 5/6) gravel is SR-WR
2	0.6	4'/5	Alluvial	SM	1.5-4' silty, f-m SAND, wet, olive gray (5Y 4/2) micaceous, trace of gravel
3	0.9				
4	1.2			SW	4'-14' silty, SAND, wet, grayish brown (10YR 5/2) gravel is SR-WR & f.c
5	1.5	5'-10'			
6	1.8				
7	2.1				
8	2.4	100%			
9	2.7				
10	3.1				
11	3.4	10'-15'			
12	3.7				
13	4.0	100%			
14	4.3				
15	4.6				14'-15.5' SAA except yellowish brown (10YR 5/6)
16	4.9	15'-16.5'	Residual	ML GW	15.5-16.5' gravelly SILT, wet, brownish yellow (10YR 6/6) gravel is angular sandstone
17	5.2		Bedrock		16'-16.5' GRAVEL, dry, light bluish gray (6.5Y 2/1), gravel is angular dolostone
18	5.5				
19	5.8				
20	6.1				Terminate Boring @ 16.5'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0184

Date Started: 9/12/07 Drilling Contractor: Bort Longyear Page 1 of 1
Date Completed: 9/12/07 Driller: J. Robinson Survey Unit: B
Logged By: S. Kelly Equipment: Mini Sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 70%	Alluvial	SW	0-3 gr. SAND, moist to wet, dk-brown (10YR 5/3) to yellowish brown (10YR 5/8)
2	0.6		<u>D</u>		
3	0.9			SW-	3-9.5 gr. SAND to sa. GRAVEL, wet, gray (6.5Y 1
4	1.2			GW	5/4) gravel is f-c angular to WR, micaceous
5	1.5				
6	1.8	5-10 100%			
7	2.1				
8	2.4				
9	2.7				
10	3.1			SW-	9.5-14.9 same but yellowish brown (10YR 5/8)
11	3.4	10-15 100%		GW	
12	3.7				
13	4.0				
14	4.3				
15	4.6		Residuum		14.9-15 weathered bone gr. SILT, wet, light brown (10YR 6/4) gravel is angular dolomite
16	4.9				
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 0185
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Date Started: <u>9/24/07</u>	Drilling Contractor: <u>Edw. Longyear</u>	Page <u>1</u> of <u>1</u>
Date Completed: <u>9/24/07</u>	Driller: <u>J. Robinson</u>	Survey Unit: <u>8</u>
Logged By: <u>S. Kelly</u>	Equipment: <u>mini sonic #1402</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 50%	Fill / Topsoil	SW	0-4 gr. si. SAND, moist, v. dk. brown (10YR 2/2), gravel is angular (from fill); trace organics
2	0.6				
3	0.9				
4	1.2		alluvial	SW -	to si. sa. GRAVEL to wet
5	1.5			GW	to 5 gr. m-v. c. SAND, moist, yellowish brown (10YR 5/8), grading to grayish brown (10YR 5/2)
6	1.8	5-10 100%			
7	2.1				
8	2.4				
9	2.7				
10	3.1				
11	3.4	10-15 100%			
12	3.7				
13	4.0				
14	4.3				
15	4.6				
16	4.9	15-17 100%			
17	5.2		Residuum		16.5-17: weathered Rome: gr. SILT to si. GRAVEL, moist, yellowish brown (10YR 5/8) to lt. gray (10YR 7/1); gravel is angular (dolomite)
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered
 Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)



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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0186

Date Started: 9/19/2007 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/19/2007 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: Rodney Clark Equipment: MINISONIC #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'			0'-3' gr. silty, most very dark grayish brown (10YR 3/2) gr. is A. fragments & roots observed
2	0.6	3.5/5	FILL	ML	
3	0.9				
4	1.2		Alluvial	SN	3'-5' si, gr. f-c SAND, moist, yellowish brown (10YR 5/6) gr. is SR-WR f-c
5	1.5				
6	1.8	5'-10'			5'-8' SAA except wet!
7	2.1	100%			
8	2.4				8'-10' SAA except light yellowish brown (10YR 6/4) wet
9	2.7				
10	3.1				10'-17' si, gr. f-c SAND brownish yellow (10YR 6/5) gr. is f-c & SR & WR
11	3.4	10'-15'			
12	3.7	100%			
13	4.0				
14	4.3				
15	4.6				
16	4.9	15'-18'			
17	5.2	100%			17'-17.5' gravelly, SILT, wet brownish yellow (10YR 6/6) gravel is A-WR (alluvial & residuum)
18	5.5		Residuum	ML	17.5'-18' si, silty GRAVEL, moist, light bluish gray (GEL 2 7/10B) gravel is A. dolostone (Rome Formation)
19	5.8		Bedrock	GN	
20	6.1				Terminate Boring @ 18'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0187

Date Started: 9/19/2007 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/19/2007 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: Rodney Clark Equipment: MINISONIC #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	FILL	ML	0'-3.5' silty, moist, very dark grayish brown (10YR 3/2) gr is A-SR, roots & dropstones
2	0.6	4'/5'			
3	0.9				
4	1.2		Alluvial	SW	3.5'-5' silty, f-c SAND yellowish brown (10YR 5/8) gr is SR-WR
5	1.5				5'-8' SAA except wet
6	1.8	5'-10'			
7	2.1	100%			
8	2.4				8'-10' silty, f-c SAND wet, light yellowish brown (10YR 6/4) gr is SR-WR & f-c
9	2.7				
10	3.1				10'-13' SAA except yellowish brown (10YR 5/8)
11	3.4	10'-15'			
12	3.7				
13	4.0	100%			
14	4.3			GW	13'-18' silty, SAND GRAVEL wet brownish yellow (10YR 5/8) gravel is SR-WR & f-c
15	4.6				
16	4.9	15'-20'			
17	5.2				
18	5.5	100%			
19	5.8		Bedrock	GW	18'-20' silty, GRAVEL dry, light bluish gray (GLY 7 7/10B) gravel is A. dolostone (Rome Fm.)
20	6.1				Terminate Boring @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 0188
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Date Started: <u>9/19/2007</u>	Drilling Contractor: <u>BOART LONGYEAR</u>	Page <u>1</u> of <u>1</u>
Date Completed: <u>9/19/2007</u>	Driller: <u>JAMES ROBINSON</u>	Survey Unit: <u>8</u>
Logged By: <u>Robney Clark</u>	Equipment: <u>MINISONIC #140Z</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'	FILL	ML	0'-3' gr, sa, SILT, moist, very dark gray to brown (10YR 3/2) gr is SA-SAL, organic observed
2	0.6				
3	0.9	100%	Alluvial	SW	3'-5' si, gr, f-c, SAND, moist, strong brown (7.5YR 5/6) gr is SR-WR & f-c
4	1.2				
5	1.5	5'-10'			5'-15' si, gr, f-c SAND, wet brown (10YR 5/3) gr is SR-WR & f-c
6	1.8				
7	2.1	1.5'/5'	POOR RECOVERY		
8	2.4		N.T. difficult to determine due to poor recovery		
9	2.7				
10	3.1				
11	3.4	10'-15'			
12	3.7				
13	4.0	4'/5'			
14	4.3				
15	4.6	15'-19.5'			15'-19' SAA except yellowish brown (10YR 5/6)
16	4.9				
17	5.2	100%			
18	5.5				
19	5.8		Bedrock	GW	19'-19.5' sa, GRAVEL, moist, light bluish gray (6.5Y 7/4) gravel is A. dolostone from formation
20	6.1				Terminate Boring @ 19.5'

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0189

Date Started: 9/19/2007 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/19/2007 Driller: James Robinson Survey Unit: 8
Logged By: Robbery Clark Equipment: MALISONIC #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'		ML	0'-3' gr, SA, SILT, moist, very dark grayish brown (10YR 3/2) gr is A, abundant organics & roots observed
2	0.6		FILL		
3	0.9	4'/5'		SW	3'-5' si, gr, f-m SAND, moist, brownish yellow (10YR 6/8), gr is SR-WR & f-c
4	1.2				
5	1.5				
6	1.8	5'-10'			5'-8' si, gr, f-c SAND, wet (10YR 5/6), gr is SR-WR & f-c trace of clay
7	2.1		Alluvial		
8	2.4	3.5'/5'			8'-10' SAA except light yellowish brown (10YR 6/4) & no clay
9	2.7				
10	3.1	10'-15'			10'-15' SAA except yellowish brown (10YR 5/4)
11	3.4				
12	3.7	100%			
13	4.0				
14	4.3				
15	4.6	15'-20'			15'-19.9' si, gr, f-c SAND, wet brownish yellow (10YR 6/8), gr is f-c & SR-WR
16	4.9				
17	5.2	100%			
18	5.5				
19	5.8				
20	6.1				19.9'-20' sa, GRAVEL, moist, light bluish gray (10YR 7/1) gr is A dolostone (Rene 1M) Terminate Boring @ 20

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD. NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 0190
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Date Started: <u>9/25/07</u>	Drilling Contractor: <u>Boart Longyear</u>	Page <u>1</u> of <u>1</u>
Date Completed: <u>9/25/07</u>	Driller: <u>J. Robinson</u>	Survey Unit: <u>B</u>
Logged By: <u>S. Kelly</u>	Equipment: <u>mini sonic #402</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 100%	FILL / Topsoil	SW	0-5 - si-gr-SAND, dry/moist, brownish yellow (10YR 6/8) to dk. brown (10YR 3/3) w/ trace organics, gravel is angular (imported gravel)
2	0.6				
3	0.9		Alluvial	SW	3-8 gr. SAND moist to wet, yellowish brown (10YR 5/8) gravel is f-c SA-SR
4	1.2				
5	1.5	5-10			
6	1.8	100%			
7	2.1				
8	2.4				si. SA. GRAVEL
9	2.7			SW - GW	8-15 gr. SAND, wet, gray (10YR 5/1), micaceous, gravel is f-c, increased silt w/ depth; SA-WR
10	3.1				grades to yellowish brown (10YR 5/8)
11	3.4	10-15 100%			
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20			
16	4.9	100%			
17	5.2				
18	5.5				
19	5.8				
20	6.1		Residuum	GM	19.5-20 weathered zone: si. GRAVEL, moist, yellowish brown (10YR 5/8) 9 ft. gray (10YR 7/1) gravel is angular dolomite

SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 0191
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Date Started: <u>9/17/07</u>	Drilling Contractor: <u>BOART LONGYEAR</u>	Page <u>1</u> of <u>1</u>
Date Completed: <u>9/17/07</u>	Driller: <u>JAMES ROBINSON</u>	Survey Unit: <u>8</u>
Logged By: <u>Rodney Clark</u>	Equipment: <u>MINISONIC #1402</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'		ML	0'-2.5' gr. f-c sa, SILT, moist, very dark grayish brown (10YR 3/2), organics & roots observed, gravel is A-SR
2	0.6	2.5'-5'	FILL		
3	0.9	3.5'-5'		SW	2.5'-5' si, gr. f-c SAND, moist, yellowish brown (10YR 5/6) gravel is SR-A
4	1.2				
5	1.5				
6	1.8	5'-10'	Alluvial		5'-10' si, f-c gr. f-c SAND, wet, yellowish brown (10YR 5/6) gravel is SR-WR
7	2.1	3'-5'			
8	2.4				
9	2.7				
10	3.1				10'-12' SAA except gray (10YR 5/1) & micaceous
11	3.4	10'-15'			
12	3.7	100%			12'-16.8' si, f-c gr. f-c SAND, wet, yellow brown (10YR 5/6) gravel is SR-WR
13	4.0				
14	4.3				
15	4.6	15'-17'			
16	4.9	100%			
17	5.2		Residual	ML	16.8'-17' gravelly, SILT, wet, brownish yellow (10YR 6/8), gravel is A. dolostone / slate (Rome formation)
18	5.5				
19	5.8				Terminate Boring @ 17'
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered
 Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD					BORING NO. 0192
NFS Subsurface Soil Characterization and Final Status Survey					
MACTEC Project 9120-07-1235					
Date Started: <u>9/17/07</u>		Drilling Contractor: <u>BEART LONGYEAR</u> Page <u>1</u> of <u>1</u>			
Date Completed: <u>9/17/07</u>		Driller: <u>JAMES ROBINSON</u>		Survey Unit: <u>8</u>	
Logged By: <u>Rodney Clark</u>		Equipment: <u>MINISONIC #1402</u>		Elevation: <u>TBD</u>	

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'		ML	0'-3' gr. f-c Sa, SILT, moist, very dark grayish brown (10YR 3/2) roots observed
2	0.6		FILL		
3	0.9	3.5'/5'		SW	f-c
4	1.2				3'-5' gr. sl. SAND, moist brown (7.5R 5/4) gravel is f-c # SA-WR-A, small brick observed
5	1.5				
6	1.8	5'-10'	ALLUVIAL		5'-7.5' si, gr. f-c SAND, wet, yellow brown (10YR 5/5) gravel is SR-WR. f-c
7	2.1				
8	2.4	100%			
9	2.7				7.5'-11' gr. si, f-c SAND, gray (10YR 5/1) moist, wet, mostly m-f SAND, micaceous, gravel SR-WR
10	3.1				
11	3.4	10'-15'			11'-16.5' si, f-c gr. f-c SAND, wet, yellowish brown (10YR 5/6)
12	3.7				
13	4.0	100%			
14	4.3				
15	4.6	15'-17.5'			16.5'-17' gravelly SILT, wet, brownish yellow (10YR 5/5), gravel is A-SR, some dolomite
16	4.9	100%			
17	5.2		Residuum Bedrock	ML GN	17'-17.5' ss GRAVEL, dry, light bluish gray (10YR 7/1), gravel is A. dolomite (Bonne Formation)
18	5.5				
19	5.8				Terminate Boring @ 17.5'
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered
 Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 0193
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Date Started: <u>9/18/07</u>	Drilling Contractor: <u>BOART LONGYEAR</u>	Page <u>1</u> of <u>1</u>
Date Completed: <u>9/18/07</u>	Driller: <u>JAMES ROBINSON</u>	Survey Unit: <u>8</u>
Logged By: <u>Rodney Clark</u>	Equipment: <u>Misonic #140Z</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'			0'-4' gr, f-c sa, SILT, moist, very dark gray/brown (10YR 3/2) gr. is A, organics & roots observed
2	0.6		FILL	ML	
3	0.9	3'/5'			
4	1.2		SW		4'-15.5' si, f-c gr, f-c SAND, wet, yellowish brown (10YR 5/6), gr. is SR-WR
5	1.5			SW	
6	1.8	5'-10'	Alluvial		
7	2.1	No Recovery			
8	2.4	Recovered some of 5'			
9	2.7	10' sample in 10'-15' interval			
10	3.1				
11	3.4	10'-15'			
12	3.7	7'/5'			
13	4.0				
14	4.3				
15	4.6	15'-17'			15.5'-16.5' gr, SILT, moist, (brownish gray) (10YR 6/5), gravel is A, shale/dolostone
16	4.9	100%	Residuum	ML	
17	5.2		Bedrock	SW	16.5'-17' sa, GRAVEL, dry, gray (10YR 6/1), gravel is A, dolostone Roubidoux Formation
18	5.5				
19	5.8				Terminate Boring @ 17'
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey

MACTEC Project 9120-07-1235

BORING

NO.

0194

Date Started: 9/24/07 Drilling Contractor: Bart Imyear Page 1 of 1
 Date Completed: 9/24/07 Driller: J. Robinson Survey Unit: B
 Logged By: S. Kelly Equipment: miniSonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 90%	FILL	SW	0-4.5 - fill used to "build up" drilling platform over former "ditch"; si. gr. SAND, moist, strong brown (7.5 YR 5/6)
2	0.6				
3	0.9				
4	1.2				
5	1.5	5-10 100%	Alluvial	SW	4.5-10 si. gr. SAND, wet/saturated, gray (10YR 5/1) micaceous; gravel is f-c angular to SR
6	1.8				
7	2.1				
8	2.4				
9	2.7				
10	3.1	10-15 100%		SW- GW	10-17 si. gr. SAND to si. SA. GRAVEL, wet/saturated, yellowish brown (10YR 5/4); gravel is f-c angular to WR
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-18.5 100%			
16	4.9				
17	5.2		Residual	ML- GM	17-18.5 - weathered Rome: gr. SILT to si. GRAVEL (f. gray (10YR 7/1) & yellowish brown (10YR 5/8) gravel is angular (dolomite)
18	5.5				
19	5.8				boring terminated @ 18.5
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
 MACTEC Project 9120-07-1235

BORING
 NO.

095

Date Started: 9/21/07 Drilling Contractor: Bort Longyear Page 1 of 1
 Date Completed: 9/21/07 Driller: J. Robinson Survey Unit: 8
 Logged By: S. Kelly Equipment: mini Service #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 75%	Fill	SM	0-5 SILT, moist, strong brown (7.5 YR 5/6)
2	0.6				
3	0.9			SM	3-4 organic-rich, si-SAND, moist, r. dk brown (10 YR 4/2)
4	1.2		Alluvial	SW	4-8 si. gr. SAND, moist to wet, strong brown (7.5 YR 5/6) gravel is f-c SA-LSR
5	1.5	5-10 50%			
6	1.8				
7	2.1				
8	2.4			SW	8-10 micaceous f-c SAND, wet, dk gray (6.5 Y 4/N) some f-c gravel SA-WR
9	2.7				
10	3.1	10-15 100%		SW-GW	10-15 si. gr. SAND to si. sa. GRAVEL, wet / saturated H. brownish gray (10 YR 4/2)
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 100%			
16	4.9				
17	5.2				
18	5.5				
19	5.8				
20	6.1		Residuum	GM	19.5-20 weathered Rome si. GRAVEL, wet to moist, boring terminated @ 19.5' if gray (6.5 Y 4/N) & yellowish brown (10 YR 7/5) gravel is angular (dolomite)

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

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 gravel is angular (dolomite)

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0196

Date Started: 6th 9/21/07 Drilling Contractor: Boart Longyear Page 1 of 1
Date Completed: 9/21/07 Driller: F. Robinson Survey Unit: 8
Logged By: S. Kelly Equipment: mini Sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 50%	FILL	SW	0-4 gr. SAND, ^{moist} v. dk. brown (10YR 2/2), with some organics & piece of glass
2	0.6				
3	0.9				
4	1.2		Alluvial	SW - 4-9	si. gr. SAND and si. sa. GRAVEL, ^{moist to} wet, dk.
5	1.5	5-10 75%		GW	yellowish brown (10YR 4/4) gravel is P.T. angular to WR
6	1.8				
7	2.1				
8	2.4				
9	2.7			SP	9-10 micaceous f-c SAND, wet, dk. gray (6.5Y 1/1)
10	3.1	10-15		SW	little gravel (P-m SA-WR)
11	3.4	100%		GW	10-17.5? same as 4-9
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-18.5			
16	4.9	100%			
17	5.2				
18	5.5		Residuum	GM	17.5-18.5 weathered Pome, si. GRAVEL, moist, (7.5YR 6/6) reddish yellow
19	5.8				boring terminated @ 18.5'
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0197

Date Started: 9/21/07 Drilling Contractor: Bart Longyear Page 1 of 1
Date Completed: 9/21/07 Driller: J. Robinson Survey Unit: 8
Logged By: S. Kelly Equipment: mini sonic #1402 Elevation: TBI

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 75%	FILL	SW	0-4 organic-rich si. gr. SAND, moist (black 2.5YR 2.5/1) organics include wood roots; glass pieces observed
2	0.6				
3	0.9				
4	1.2		Alluvial	SW	4-7 SAND, moist, strong brown (2.5YR 4/6) like f.c. SA-SR gravel
5	1.5	5-10 100%			
6	1.8				
7	2.1			SW	7-18.5 si. gr. SAND to si. sa. GRAVEL, wet, yellowish
8	2.4			GM	brown (10YR 5/4) to lt. brownish gray (10YR 6/2) gravel is f.c. angular to SR
9	2.7				
10	3.1	10-15			
11	3.4	100%			
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-19.5			
16	4.9	100%			
17	5.2				
18	5.5				
19	5.8		Residuum	GM	18.5-19.5 weathered Rhyolite: si. sa. GRAVEL, moist, lt. gray (6.5Y 7/1) & white & pale brown (10YR 6/3) boring terminated @ 19.5' / gravel is angular (dolomite)
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0198

Date Started: 9/21/07 Drilling Contractor: Deartlongyear Page 1 of 1
Date Completed: 9/21/07 Driller: J. Robinson Survey Unit: 8
Logged By: Skelly Equipment: mini Sonic #1402 Elevation: TBI

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 50%	FILL	GN	0-5 ft. GRAVEL, moist, dk gray (GLEY 1 Y/N), gravel is angular fr
2	0.6				
3	0.9				
4	1.2				
5	1.5	5-10 100%	Possible FILL	ML SW	4-4.5 gr. SILT, dk. brown (7.5 YR 3/4), trace organics (fine roots, gravel is fine angular 4.5-7 gr. SAND, moist, brownish yellow (10YR 6/6) gravel is fine angular to SR
6	1.8				
7	2.1		Alluvial	SW- GW	7-15 ft. gr. SAND to si. sa. GRAVEL, wet, yellowish brown (10YR 6/8) to gray (10YR 6/1) gravel is angular to WR
8	2.4				
9	2.7				
10	3.1	10-15 100%			
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 100%		SW- GW	15- same but yellowish brown
16	4.9				
17	5.2				
18	5.5				
19	5.8				
20	6.1		Residual	GN	19.5-20: weathered Rone: si. GRAVEL, moist, lt. gray boring terminated @ 20' (GLEY 1 Y/N), gravel is angular (Abnmit)

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered
Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 0199
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Date Started: <u>9/21/07</u>	Drilling Contractor: <u>Boart Longyear</u>	Page <u>1</u> of <u>1</u>
Date Completed: <u>9/21/07</u>	Driller: <u>J. Robinson</u>	Survey Unit: <u>8</u>
Logged By: <u>S. Kelly</u>	Equipment: <u>mini Sonic #1402</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 50%	Fill	GN- SW	0-4.5 - si. sa. GRAVEL, moist, dk. brown (10YR 3/3) to gray grey (6/1), trace to little organics (fine roots), gravel is f-c, angular
2	0.6				
3	0.9				
4	1.2				
5	1.5	5-10 100%	Possible Fill	SW	4.5-7 si. gr. SAND, moist, brownish yellow (10YR 6/8) gravel & f m angular to SA
6	1.8				
7	2.1		Alluvial =	SW- GN	7-15 si. gr. SAND to si. sa. GRAVEL, wet, yellowish brown (10YR 5/8) to lt. yellowish brown (2.5Y 6/3) gravel is f-c angular to SR
8	2.4				
9	2.7				
10	3.1	10-15 100%			
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 100%			13.7 15-18 same but yellowish brown (10YR 5/8) and gravel is SA to WR
16	4.9				
17	5.2				
18	5.5				
19	5.8		Residual	GN- ML	18.7-20 weathered Pame: gr. SILT to si. GRAVEL, moist, pale brown (10YR 4/3) } lt. gray (6/1 1/2) gravel is angular (dolomite)
20	6.1				boring terminated @ 15-20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

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NFS File Classification: DCM-23-05-02

8/24/07

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.
0200

Date Started: 9/17/07 Drilling Contractor: BART LONGYEAR Page 1 of 1
Date Completed: 9/17/07 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: Rodney Clark Equipment: Minisonic H402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'			0'-4' gr. f-c. sa. SILT, moist, very dark
2	0.6		FILL	ML	grayish brown (10YR 3/2) gravel is a
3	0.9	100%			organic observed (foreign debris observed)
4	1.2				plastic glass, rubber, light bulb stopped work - Hoel
					RT "Scan" material - No detection of
					instruments
5	1.5		SW		4'-5' si. f-c SAND, moist, yellowish
					brown (10YR 6/6), gravel is A-SR
6	1.8	5'-10'	Alluvial		5'-8' si. gr. f-c SAND, wet
7	2.1				yellowish brown (10YR 5/8)
8	2.4	100%			gr is SR-WR
9	2.7				8'-10' SAA except brown
					(10YR 5/3) & micaceous
10	3.1				
11	3.4	10'-15'			10'-15' si. f-c gr. f-c SAND, wet
					brown (10YR 5/3) gravel is SR-WR
12	3.7				15'-17' SAA except brownish yellow
13	4.0	100%			(10YR 6/8)
14	4.3				
15	4.6				
16	4.9	15'-18'			
17	5.2	100%			17'-18' gravelly SILT, wet, brownish yellow
18	5.5		Residuum	ML	gravel is angular sand/dolomite
19	5.8				Terminate Boring @ 18'
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered
Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0201

Date Started: 9/18/07 Drilling Contractor: BOART LONGWELL Page 1 of 1
Date Completed: 9/18/07 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: Rodney Clark Equipment: MINISONIC #1402 Elevation: TBS2

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'		ML	0'-3.5' silty, sandy SILT, moist, w/ or w/o dark grayish brown (10YR 3/2), gr is A, trace of glass observed
2	0.6		Fill		
3	0.9	100%		SW	3.5'-5' silty, fine SAND, moist brown (10YR 5/3) gravel is A-WR
4	1.2				
5	1.5				
6	1.8	5'-10'			5'-8' SAA except unit #
7	2.1		Alluvial		
8	2.4	100%		SM	8'-9.5' silty, fine SAND, wet gray (10YR 5/1) micaceous, trace of gravel
9	2.7				
10	3.1	10'-15'		SW-GW	9.5'-18' silty, fine SAND - silty, sandy GRAVEL, wet, yellowish brown (10YR 5/3) gr is SR-WR & f-c
11	3.4				
12	3.7				
13	4.0	100%			
14	4.3				
15	4.6				
16	4.9	15'-18'			
17	5.2	100%			
18	5.5		Bedrock	GW	18' - Driller indicated to hit bedrock @ 18'. Cottings in the drill bit confirmed a silty, sandy GRAVEL, light bluish gray (4.5Y 7/1) gravel is dolomite (Rome Formation) terminate boring @ 18'
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 0202
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Date Started: <u>9/18/07</u>	Drilling Contractor: <u>BIART LONGYEAR</u>	Page <u>1</u> of <u>1</u>
Date Completed: <u>9/18/07</u>	Driller: <u>JAMES ROBINSON</u>	Survey Unit: <u>8</u>
Logged By: <u>Radwan Chah</u>	Equipment: <u>JAMES ROBINSON</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'			0'-4' gr, sa, SILT, moist, very dark grayish brown (10YR 3/2) gr is A, organics & roots observed
2	0.6	1'-5'	FILL	ML	4'-15' gr, gr, f.c SAND, wet, yellowish brown (10YR 5/6) brown (10YR 5/3), gr. is SR-WR mostly quartz sand
3	0.9	(Root journal core barrel)			
4	1.2		<u>ALLUVIAL</u>		
5	1.5			SW	
6	1.8	5'-10'			
7	2.1	4'-5'			
8	2.4				
9	2.7				
10	3.1				
11	3.4	10'-15'			
12	3.7				
13	4.0	100%			
14	4.3			SW GW	13'-16' si, gr, f.c, SAND, wet, brownish yellow (10YR 5/6) gr. is SR-WR
15	4.6				
16	4.9	15'-18'			
17	5.2	100%	Residuum	ML	16'-17' gr, SILT, wet, brownish yellow (10YR 5/6) gr. is A, shale / blocky (Residuum)
18	5.5		Bedrock	GW	17'-18' sa, GRAVEL, light brown / gray (Gey 2 7/1) gravel is A, dolomite (same formation)
19	5.8				Terminate Boring @ 18'
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0203

Date Started: 9/18/07 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/18/07 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: Rodney Link Equipment: MINISONIC #402 Elevation: TBR

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'			0'-5' gr, sa, SILT, moist-wet, very dark grayish brown (10R 3/2) gr is A. abundant roots observed
2	0.6		FILL	ML	
3	0.9	1'-5'			
4	1.2	(Roots laminae are bare)	X		
5	1.5	5'-10'	Alluvial	SW	5'-10' silty gr, f-c SAND, wet, brown (10R 5/3), gr is SR-WR gr is f-c
6	1.8				
7	2.1				
8	2.4	2'-5'			
9	2.7				
10	3.1				10'-14' silty, sa, GRAVEL, wet, yellowish brown (10R 5/6), gr is SR-WR
11	3.4	10'-15'		GW	
12	3.7	100%			
13	4.0				
14	4.3				14'-17' silty, f-c SAND, wet, yellowish brown, gr is f-c & SR-WR
15	4.6			SW	
16	4.9	15'-18 1/2'			
17	5.2	100%			17'-18' gr SILT, wet, brownish yellow (10R 6/8) gravel is SR & WR, gravel is
18	5.5		RESIDUUM	ML	Shale / quartz conglomerate (residuum actively weathered by post alluvial process)
19	5.8		BEDROCK	GN	18'-18.5' sa, GRAVEL, dry, light buff gray (GLEY 2 7/1) (Rome Formation)
20	6.1				terminate boring @ 18.5'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0204

Date Started: 9/18/07 Drilling Contractor: BOART LONGCAR Page 1 of 1
Date Completed: 9/18/07 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: Rodney Clark Equipment: MINISONIC #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'		CH	0'-4' gr. si. CLAY, moist, yellowish-red (5YR 5/6) High plasticity
2	0.6	100%	FILL	ML	1'-3' gr. sa, SILT, moist, very dark grayish brown (10YR 3/2) gr is A, organics observed
3	0.9				
4	1.2			SW	3'-5' si. gr. f-c SAND, moist, brownish-yellow (10YR 6/8) gr is A-SR
5	1.5				5'-7' SAA except wet & brown (10YR 5/3)
6	1.8	5'-10'			
7	2.1				
8	2.4	100%	Alluvial	SM	7'-8' si. f-m SAND, wet, brown, micaceous
9	2.7			SW	8'-14' si. gr. f-c SAND, wet, yellowish brown (10YR 5/4) gr is SR-WR
10	3.1				14'-15' SAA except brownish yellow (10YR 6/8)
11	3.4	10'-15'			
12	3.7	100%			15'-18" si. gr. f-c SAND, wet, brownish yellow, gravel is SR-WR
13	4.0				
14	4.3				
15	4.6				
16	4.9	15'-16'			
17	5.2	100%			
18	5.5		Bedrock	GW	18'-sa, GRAVEL, dom. light bluish gray (6.5Y 7/1) gravel is A, dolostone (Rene Formation)
19	5.8				
20	6.1				Terminated @ 18'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0205

Date Started: 9/18/07 Drilling Contractor: BOART LONGYEAR Page 1 of 1
Date Completed: 9/18/07 Driller: JAMES ROBINSON Survey Unit: 8
Logged By: Rodney Clark Equipment: MINI SONIC Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0'-5'			0'-5' gr. si. CLAY, moist, yellowish red (5YR 5/6) laminated, high plasticity
2	0.6	100%	FILL	CH	
3	0.9				
4	1.2				
5	1.5				5'-7' sig. f-c SAND, wet brown (10YR 5/3) gr. is f-c & SR-WR
6	1.8	5'-10'	Alluvial	SW	
7	2.1				
8	2.4	100%		SM	7'-9' ^{f.m.} si. SAND, wet, light olive brown (6.5Y 5/3) micaceous
9	2.7				
10	3.1			SW	9'-15' si. gr. f-c SAND, wet, yellowish brown (10YR 5/8) gr. is SR-WR
11	3.4	10'-15'			
12	3.7				
13	4.0	100%			
14	4.3				
15	4.6				15'-18.5' SAA except brownish yellow (10YR 6/6)
16	4.9	15'-19.6'			
17	5.2				
18	5.5	100%			18.5'-19' gr. SILL, wet, brownish yellow (10YR 6/6) gr. is SR-WR, some conglomerates observed
19	5.8		Bedrock	ML GW	
20	6.1				19'-19.5' sa. si. GRAVEL, moist, light bluish gray (6.5Y 7/1) gravel is angular dolostone

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

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Terminate boring at 19.5'

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0206

Date Started: 9/24/07 Drilling Contractor: Beart Longyear Page 1 of 1
Date Completed: 9/24/07 Driller: J. Robinson Survey Unit: 8
Logged By: S. Kelly Equipment: mini Sonic #1902 Elevation: TBI

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 50%	FILL top soil	SW	0-3.5 SAND, moist v. dk brown (10YR 2/2), little silt & gravel (angular to SA, f-c), glass fragments (1/4" φ)
2	0.6				
3	0.9				
4	1.2		Alluvial		3.5-8' gr. m-c SAND, moist to wet, yellowish brown (10YR 5/3), little silt, gravel is f-c, SA-SP 9/24/07 to WR angular
5	1.5	5-10 100%			
6	1.8				
7	2.1				
8	2.4				
9	2.7			SP	8.5-12 micaceous f-m SAND, wet, brown (10YR 4/3) 9/24/07
10	3.1	10-15 100%			
11	3.4				
12	3.7				
13	4.0				12-15 si. gr. SAND to si. sa. GRAVEL, wet/saturated, yellowish brown (10YR 5/3) gravel is f-c, SA to WR
14	4.3				
15	4.6	15-18.5 100%			
16	4.9				
17	5.2				
18	5.5		Residuum	ML- GM	17.5-18.5 weathered Rome; gr. SILT to si. GRAVEL, wet to moist, lt. gray (10YR 7/1) & lt. yellowish brown (10YR 6/4); gravel is angular dolomite
19	5.8				boring terminated @ 18.5'
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey

MACTEC Project 9120-07-1235

BORING
NO.

0207

Date Started: 9/24/07 Drilling Contractor: Boat Longyear Page 1 of 1
Date Completed: 9/24/07 Driller: J. Robinson Survey Unit: 8
Logged By: S. Kelly Equipment: mini sonic #1902 Elevation: T.B.D.

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 100%	Fill topsoil	SW	0-2.5 organic rich si. gr. SAND, moist, v. dk brown (10YR 2/2)
2	0.6				
3	0.9		Alluvial	SW	2.5-8.9 gr m-v.c. SAND, moist to wet yellowish brown (10YR 5/6) grading to lt. brownish gray (10YR 6/2)
4	1.2				
5	1.5	5-10			
6	1.8	100%			
7	2.1				
8	2.4				
9	2.7				
10	3.1	10-15		SP	9-13 micaceous f-c SAND, wet, dk gray (10YR 5/1), trace f m gravel
11	3.4	100%			
12	3.7				
13	4.0				
14	4.3			SN- GN	13-19.7 si. gr. SAND, to si. sa. GRAVEL, wet/ saturated, yellowish brown (10YR 5/8), gravel is f-c, angular to WR
15	4.6	15-20			
16	4.9	100%			
17	5.2				
18	5.5				
19	5.8				
20	6.1		Residuum	GM	19.7-20 - weathered Pome, si. sa. GRAVEL, moist boring terminated @ 20' lt. gray (10YR 7/1) gravel is angular dolomite.

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey

MACTEC Project 9120-07-1235

BORING

NO.

0208

Date Started: 9/25/07 Drilling Contractor: Boart Longyear Page 1 of 1
 Date Completed: 9/25/07 Driller: J. Robinson Survey Unit: 8
 Logged By: S. Kelly Equipment: mini sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 75%	FILL	SM- GW	0-4.5 si. SAND, moist, strong brown (7.5 YR 5/6) w/ imported gravel & organics in matrix
2	0.6				
3	0.9				
4	1.2				
5	1.5	5-10 100%	Alluvial	SW- GW	4.5-19.8 si. gr. SAND to si. sa. GRAVEL, wet, strong brown (7.5 YR 4/6) w/ organics near top of strata (fine roots, twigs) gravel is f to angular to WR color grades to yellowish brown (10 YR 5/6)
6	1.8				
7	2.1				
8	2.4				
9	2.7				
10	3.1	10-15 100%			
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 100%			
16	4.9				
17	5.2				
18	5.5				
19	5.8				
20	6.1		Residuum	GM	19.8-20 weathered Pome: si. GRAVEL, moist H. gray (10 YR 7/6) to brownish yellow (10 YR 6/4) gravel is angular (dolomite)

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

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Appendix D.3

Soil Boring Logs, Survey Unit 9

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey

MACTEC Project 9120-07-1235

BORING

NO.
 2-0209

Date Started: 8/21/07 Drilling Contractor: Bont Longear Page 1 of 1
 Date Completed: 8/21/07 Driller: J. Robinson Survey Unit: 9
 Logged By: S. Kelly Equipment: mini Smith #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 10070	Alluvial	SW	0-5 gr. SAND, moist, lt brownish gray (10YR 6/2) gravel is SA to SR up to 1" ϕ sand is m-v. coarse
2	0.8				
3	0.9	2.5-5 5%			(2.5-5 driller indicated little/no resistance advancing drill rods)
4	1.2				
5	1.5	5-10		SW	5-8 si. gr. SAND, wet (saturated gray (10YR 6/1) coarsening @ 8/21/07 gravel up to 2" ϕ (SR) (2-7.5" ϕ)
6	1.8	10070			
7	2.1				
8	2.4			SW	8-16.5 si. gr. SAND, wet, yellowish brown (10YR 5/6) gravel is angular to SR up to 3" ϕ
9	2.7				
10	3.1	10-15			
11	3.4	10070			
12	3.7				
13	4.0				
14	4.3				
15	4.6	14-15.19			
16	4.9	8/21/07 1023			
17	5.2		Residuum	ML	16.5-19 weathered Rame, gr. SILT, wet, yellowish brown (10YR 5/6) to yellowish brown (10YR 4/3), gravel is angular (dolomite/limestone fragments) up to 0.5" ϕ
18	5.5				
19	5.8				
20	6.1				boring terminated @ 16.5'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SA = subangular
 CD = carbonaceous

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey

MACTEC Project 9120-07-1235

BORING
NO.

0210

Date Started: 8/22/07

Drilling Contractor: Bart Longyear

Page 1 of 1

Date Completed: 8/22/07

Driller: J. Robinson

Survey Unit: 9

Logged By: S. Kelly

Equipment: mini Sonic #1402

Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 100%	Alluvial	SW	23 gr. SAND (med-coarse), v. moist to wet, gray (7.5 YR) gravel is SA to SR up to 1.5" φ
2	0.6				
3	0.9	2.5-5 100%		SW	3-9 micaceous fine SAND, med, dk. gray (7.5 YR 4/1) q. 8/22/07 8/22/07; generally coarsening downward to gr. SAND; gravel SA to SR up to 1.5" φ
4	1.2				
5	1.5	5-10 85%			
6	1.8				
7	2.1				
8	2.4				
9	2.7			SW	9-11 si. gr. SAND, med/saturated, yellowish brn (10 YR 5/6) gravel is SA to SR up to 2" φ
10	3.1	10-15 80%			
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 100%			
16	4.9				
17	5.2				
18	5.5		Residual	ML	18-20 weathered Pome, gr. SILT to c. GRAVEL
19	5.8			GM	wet, yellowish brn (10 YR 5/6) gravel is angular
20	6.1				boring terminated @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

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NFS File Classification: DCM-23-05-02

SA = subangular

SR = subrounded

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0211

Date Started: 8/21/07 Drilling Contractor: Brent Maynard Page 1 of 1
Date Completed: 8/21/07 Driller: V. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: mini Sonic #1902 Elevation: T BD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 80%	ALLUVIAL	SW	0-3 gr. SAND, moist to wet, brown (10YR 5/3) grading to dark gray (10YR 4/1); gravel is SA to SR up to 2" ϕ ; organics (roots) upper ~3"
2	0.6				
3	0.9	2.5-5 100%		SP-	
4	1.2			SW	39.5 micaceous f-in SAND, wet, dk. gray (4.5Y 1.4/N); little gravel (SA-SR up to 1.0" ϕ)
5	1.5				
6	1.8	5-10 90%			
7	2.1				
8	2.4				
9	2.7				
10	3.1			SW-	9.5-18.5 si. gr. SAND, wet, saturated, yellowish
11	3.4	10-15 50%		GW	brown (10YR 5/6); gravel angular to SR up to 3" ϕ ; coarsening downward to sandy gravel
12	3.7				
13	4.0				
14	4.3				
15	4.6				
16	4.9	15-20 100%			
17	5.2				
18	5.5				
19	5.8		Residuum	ML	17.5 @ 08/21/07
20	6.1			GM	18.5-20 Weathered Pene, gr. SILT to si. GRAVEL, wet, brownish yellow (10YR 6/6) gravel is up to 1.5" ϕ angular (dolomite, mudstone fragments) Boring terminated @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

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SA = subangular
SR = subrounded

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0212

Date Started: 8/22/07

Drilling Contractor: Deart Longyear

Page 1 of 1

Date Completed: 8/22/07

Driller: J. Robinson

Survey Unit: 9

Logged By: S. Kelly

Equipment: mini Sonic #1402

Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 100%	ALLUVIAL	SW	0-5 gr. si. SAND, moist to wet, dk reddish gray (5 YR 4/2) gravel is angular to SR up to 1.5" φ
2	0.6				
3	0.9	2.5-5 NR 0%			No recovery 2.5-5'; driller indicates no resistance when advancing drill rods (assume bottom of upper strata @ 5')
4	1.2				
5	1.5	5-10 100%		SP- SW	5-9.5 micaceous f-m SAND, wet, coarsening downward; gravel is angular to SR up to 2" φ
6	1.8				
7	2.1				
8	2.4				
9	2.7				
10	3.1	10-15 100%		SW	9.5-12 gr. si. SAND, wet/saturated, strong brown (7.5 YR 5/6) gravel is angular to SR up to 2" φ
11	3.4				
12	3.7				
13	4.0		ML- GM		12-15 weathered Rome; SILT to gr. SILT, wet strong brown (7.5 YR 5/6) to v. pale brown (10 YR 7/3) gravel is angular (mudstone/dolomite rock fragments) φ to 1" φ
14	4.3				
15	4.6				boring terminated @ 15'
16	4.9				
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SP = subrounded

SOIL BORING RECORD					BORING NO. 0213
NFS Subsurface Soil Characterization and Final Status Survey					
MACTEC Project 9120-07-1235					
Date Started: 8/22/07		Drilling Contractor: Bart Longyear		Page 1 of 1	
Date Completed: 8/22/07		Driller: J. Robinson		Survey Unit: 9	
Logged By: S. Kelly		Equipment: mini Sonic #1402		Elevation: TBD	

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 75%	Alluvial	SW	0-7 m-c SAND, moist to wet, lt. gray (7.5 YR 7/1); trace f. gravel up to 0.75" φ
2	0.6				
3	0.9	2.5-5 NR			(No recovery 2.5-5'; driller indicates, no resistance advancing drill rods & wet soil)
4	1.2	0%			
5	1.5	5-10			
6	1.8	100%			
7	2.1			SP	7-9 micaceous f-m SAND, wet, gray (6.5 YR 5/1)
8	2.4			SW	5-11 coarsening downward to gr. SAND, gravel angular to SR up to 2" φ
9	2.7			SW	9-14 si. gr SAND, wet (saturated), strong brown (7.5 YR 5/6); coarsening downward to silty GRAVEL
10	3.1	10-15		GW	gravel is angular to SR up to 3" φ
11	3.4	100%			
12	3.7				
13	4.0				
14	4.3		Residual	ML-GM	14-15 weathered Rame; gr. SILT to silty GRAVEL, wet, yellowish brown (10YR 5/6) gravel is angular up to 1.5" φ (dolomite / mudstone fragments)
15	4.6				boring terminated @ 15'
16	4.9				
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SA = Subangular
SP = Subrounded

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0214

Date Started: 8/22/07

Drilling Contractor: Bart Longyear

Page 1 of 1

Date Completed: 8/22/07

Driller: J. Robinson

Survey Unit: 9

Logged By: S. Kelly

Equipment: Minisonic #1402

Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 100%	alluvial	SW	0-6.5 gr. SAND, moist to wet, gray (10YR 5/1) gravel is SA to SR up to 2" φ
2	0.6				
3	0.9	2.5-5 80%			
4	1.2				
5	1.5	5-10			
6	1.8	10-20			
7	2.1			SW	6.5-8 micaceous f. m. SAND, wet, dark gray (6.5Y 1/1), coarse sand (mica)
8	2.4				
9	2.7			SW- SP	8-10 si. gr. SAND, wet, yellowish brown (10YR 5/4) gravel is SA to WR up to 2.5" φ general coarsening downward to si. SA GRAVEL
10	3.1	10-15			
11	3.4	100%			
12	3.7				
13	4.0		Residuum	ML	13-15 weathered Pome " gr. SILT to si. GRAVEL, wet (some is dry), lt. yellowish brown (10YR 6/4)
14	4.3				
15	4.6				
16	4.9				boring terminated @ 15'
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SR = subrounded

WR = well rounded

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0215

Date Started: 8/22/07

Drilling Contractor: Boat Longyear

Page 1 of 1

Date Completed: 8/22/07

Driller: J. Robinson

Survey Unit: 9

Logged By: S. Kelly

Equipment: mini Sonic #1402

Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 75%	Alluvial	SN	0-2.3 gr. si. SAND, moist to wet, lt. brownish gray (10YR 6/2) gravel is SA to SR up to 2" φ
2	0.6				
3	0.9	2.5-5 100%		SP- SW	2.3-8 micaceous fm SAND, wet, dk. gray (6.5Y 1/1) little gravel (SA - SR up to 1" φ) coarse sand
4	1.2				
5	1.5	5-10			
6	1.8	100%			
7	2.1				
8	2.4				to si. SA. GRAVEL
9	2.7			SW- GW	0-3 si. gr. SAND, wet, yellowish brown (10YR 5/6) gravel is SA to WR up to 3" φ
10	3.1	10-15			
11	3.4				
12	3.7				
13	4.0		Residuum	ML- GM	13-15: weathered Pene, gr. SILT to si. GRAVEL, wet, yellowish brown (10YR 5/6) gravel is angular (dolomite / mudstone fragments) up to 1.5" φ
14	4.3				
15	4.6				boring terminated @ 15'
16	4.9				
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0216

Date Started: 8/22/07 Drilling Contractor: Burt Longyear Page 1 of 1
Date Completed: 8/22/07 Driller: J. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: Minisonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 100%	Alluvial	SW	0-7 m-c SAND, moist to wet, pinkish gray (7.5 YR 6/2); little gravel SA-SR up to 1.5" φ
2	0.6				
3	0.9	2.5-5 100%			
4	1.2				
5	1.5	5-10 100%			
6	1.8				
7	2.1			SW	7-9.5 micaceous SAND, wet, dark gray (6.5 Y 1 TN); grading to gr. 4-L SAND; gravel is SA to WR up to 2" φ
8	2.4				
9	2.7				
10	3.1	10-15 100%		SW-GW	9.5-15.5 gr. SAND to si-sa GRAVEL, wet, strong brown (7.5 YR 5/6); gravel is SA to WR up to 2.5" φ
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6		Residuum	mic	4.5-15 weathered Pange-gr. SILT to si-gravel, wet, yellowish brown (10 YR 5/8); gravel is angular (dolomite / mudstone frag-ments) up to 1" φ
16	4.9				
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey

MACTEC Project 9120-07-1235

BORING
NO.

0217

Date Started: 8/23/07

Drilling Contractor: Brown & Langyear

Page 1 of 1

Date Completed: 8/23/07

Driller: J. Robinson

Survey Unit: 9

Logged By: SKelly

Equipment: mini Sonic #1402

Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 100%	Alluvial	SW	0-4.5 gr. SAND, moist to wet, gray (10YR 6/1) to lt. brownish gray (10YR 6/2), gravel is SA to SR up to 1"φ
2	0.6				
3	0.9	2.5-5 100%			-organics (wood) present @ 3.5' "specks"
4	1.2				
5	1.5	5-10 100%		SW-SP	4.5-9 micaceous fm SAND, wet, dk. gray (5GY 1/1), trace organics (wood fragments) coarsening downward to gr f-v coarse SAND
6	1.8				
7	2.1				
8	2.4				
9	2.7				
10	3.1	0-15 100%		SW-GN	9-17 si. gr. SAND to s. GRAVEL, wet/satur-ated, yellowish brown (10YR 5/6), gravel is f-c, angular to subrounded
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 100%			
16	4.9				
17	5.2		Residual	me	17- weathered Rame, gr. SILT to si. GRAVEL, wet, dk. yellowish brown (10YR 4/4) to brownish yellow (10YR 6/8), gravel is angular (dolomite limestone fragments) up to
18	5.5				
19	5.8				
20	6.1				boring terminated @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residual, bedrock, etc.)

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SOIL BORING RECORD					BORING NO.
NFS Subsurface Soil Characterization and Final Status Survey					0218
MACTEC Project 9120-07-1235					
Date Started: <u>8/23/07</u>		Drilling Contractor: <u>Boart Longyear</u>		Page <u>1</u> of <u>1</u>	
Date Completed: <u>8/23/07</u>		Driller: <u>J. Robinson</u>		Survey Unit: <u>9</u>	
Logged By: <u>Skelly</u>		Equipment: <u>miniSonic #1402</u>		Elevation: <u>TBD</u>	

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 75% (rest in run hole)	Alluvial	SW	0-1 organic (si. gr. sand), wet, lt. brownish gray (10YR 6/2) gravel SR up to 1.5" φ
2	0.6				1-3.3 gr. SAND, wet, grayish brown (10YR 5/2) gravel is f-m SA to WR
3	0.9	2.5-5 100%			
4	1.2			SW	3.3-9 micaceous f-c SAND, wet, dk gray (10YR 4/1); coarsening downward to gr. SAND (gravel is f-c angular to SR)
5	1.5	5-10			
6	1.8				
7	2.1				
8	2.4				
9	2.7				
10	3.1	10-15 100%		SW GW	9-12.5 gr. SAND to sd. GRAVEL, wet/saturated, strong brown (7.5YR 5/6) gravel is f-c SA to WR
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 100%			
16	4.9				
17	5.2				
18	5.5		Residuum	ML-GM	17.5-20 weathered Pome. gr. SILT to si. GRAVEL, wet, yellowish brown (10YR 6/8) gravel is angular up to 2" φ (windstone)
19	5.8				
20	6.1				boring terminated @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey

MACTEC Project 9120-07-1235

BORING
NO.

0219

Date Started: 8/23/07 Drilling Contractor: Paul Longyear Page 1 of 11
Date Completed: 8/23/07 Driller: J. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: mini Sonic #102 Elevation: TRD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 100%	Alluvial	SW	0-2.5 - gr. SAND (f-c coarse) moist to wet, lt. brownish gray (10YR 6/2) gravel is f-c SA to SR
2	0.8				
3	0.9	2.5-5 100%		SW	2.5-13 micaceous f-c SAND, wet, dk gray (10YR 4/1) coarsening downward to gr. SAND with gravel layer @ ~7.5-10'
4	1.2				
5	1.5	5-10 100%			
6	1.8				
7	2.1				
8	2.4				
9	2.7				
10	3.1	10-15 100%			
11	3.4				
12	3.7				
13	4.0			SW	13-16.5 gr. si. SAND to si. sa. GRAVEL, wet,
14	4.3			GW	strong brown (10YR 7.5/6) gravel is f-c angular to WR @ 8/23/07
15	4.8	15-20 100%			
16	4.9				
17	5.2		Residual	ML	16.5-20 weathered Rame; gr. SILT to si. GRAVEL, GM wet, yellowish brown (10YR 5/6), gravel is angular (mudstone fragments)
18	5.5				
19	5.8				
20	6.1				Boring terminated @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey

MACTEC Project 9120-07-1235

BORING
NO.

0220

Date Started: 8/23/07

Drilling Contractor: Bart Longyear

Page 1 of 1

Date Completed: 8/23/07

Driller: J. Robinson

Survey Unit: 9

Logged By: S. Kelly

Equipment: mini Sonic #1402

Elevation: TED

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 100%	Alluvial	SN	0-2.5 gr. m-v coarse SAND, moist to wet, grayish brown (10YR 5/2) to lt. grayish brown (10YR 6/2); gravel is f-m SA-SR
2	0.6				
3	0.9	2.5-5 100%			
4	1.2				
5	1.5	5-10 100%			
6	1.8				
7	2.1			SN	6.5-9 micaceous f-c SAND, wet, dark gray (4.5Y 1/1), coarsening down-
8	2.4				ward to gr. SAND; gravel is f-c SA to SR
9	2.7			SW- GW	9-14 si. gr. SAND to si. sh. GRAVEL, wet, yellowish brown (10YR 5/6)
10	3.1	10-15 100%			
11	3.4				
12	3.7				
13	4.0				
14	4.3		Residuum	GM	14-15 weathered zone, si. GRAVEL, wet, yellowish brown (10YR 5/6) gravel is angular mudstone
15	4.6				Boring terminated @ 15'
16	4.9				
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0221

Date Started: 8/23/07 Drilling Contractor: Beartlongear Page 1 of 1
Date Completed: 8/23/07 Driller: J. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: mini Sonic #1402 Elevation: T-BD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 80%	FP Alluvial	SM SW	0-0.5 organic rich si-SAND, H. brownish gray (10YR 6/2)
2	0.6				0.5-2 gr. m-v coarse SAND, net gray (10YR 6/1) gravel is #2 @ 0/23/07 F-C SA to WR
3	0.9	2.5-5 100%			
4	1.2			SW	3.7 pmicaceous F-C SAND, net dk gray (6.5Y 1.4/1) gravel is F-C SA to SR (coarsening downward to gr. SAND)
5	1.5	5-10 5%			5-10 low recovery due to 3" ϕ cobble/gravel in drill rod; bottom of strata assumed to be 10'
6	1.8				
7	2.1				
8	2.4				
9	2.7				
10	3.1	10-15 100%		SW GW	13.3 10-15 si. gr. SAND to si. sa. GRAVEL, net/saturated yellowish brown (10YR 5/6)
11	3.4				
12	3.7				
13	4.0				
14	4.3		Residuum	ML	13.3-15 weathered Rome, SILT to gr. SILT, net brownish yellow (10YR 6/8) to yellowish brown (10YR 5/8) gravel is angular inudstone.
15	4.6				boring terminated @ 15'
16	4.9				
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

FP = floodplain

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey

MACTEC Project 9120-07-1235

BORING
NO.

0222

Date Started: 8/23/07 Drilling Contractor: Beart Longear Page 1 of 1
Date Completed: 8/23/07 Driller: J. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: mini sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 75%	Alluvial	SW	0-5 gr. si. SAND, wet, dk gray (10 YR 8/1)
2	0.6				
3	0.9	2.5-5 NR 0%			2.5-5 no recovery; driller indicates no/little resistance advancing drill rods
4	1.2				
5	1.5	5-10 100%		SW	5-9 micaceous f-c SAND, wet, dk gray (GLEYS 9/1) coarsening downward to gr. SAND; gravel is f-c SA to WR
6	1.8				
7	2.1				
8	2.4				
9	2.7			SW	9-19 si. gr. SAND to si. sa. GRAVEL, wet /
10	3.1	10-15 100%		GW	saturated, yellowish brown (10YR 5/6) gravel is f-c SA to WR
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 100%			
16	4.9				
17	5.2				
18	5.5				
19	5.8		Residual	GM	19-20 weathered Pome; gr SILT to si. GRAVEL, wet
20	6.1				brnish yellow (10YR 6/8) gravel is angular mudstone boring terminated @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0123

Date Started: 8/24/07 Drilling Contractor: Boart Longyear Page 1 of 1
Date Completed: 8/29/07 Driller: J. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: mini Sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 50%	Alluvial	SW	0-3.5 gr. SAND, wet, reddish gray (5 YR 5/2) some very dk. gray (5YR 3/1) si. sand
2	0.6				
3	0.9	2.5-5 100%			
4	1.2			SW	3.5-9 micaceous f-c SAND, wet, dk gray (6.5Y 4/1), some organic "specks" (wood fragments) from 3.5-5', coarsening downward
5	1.5	5-10 100%			to gr. SAND, gravel is f-c SA to SP
6	1.8				
7	2.1				
8	2.4				
9	2.7			SW	9-13.5 si. gr. SAND to si. sa. GRAVEL, wet /
10	3.1	10-15 100%		GW	Saturated
11	3.4				
12	3.7				
13	4.0				
14	4.3		Residuum	ML- GM	13.5-15 weathered Pome; gr. SILT to si. GRAVEL, moist, strong brown (7.5YR 4/6) gravel is angular (quartzite fragments)
15	4.6				boring terminated @ 15'
16	4.9				
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0224

Date Started: 8/24/07 Drilling Contractor: Beart Longyear Page 1 of 1
Date Completed: 8/24/07 Driller: J. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: mini Sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 100%	Alluvial	SW	0-2 F-m gr. sand, wet lt. brown (2.5 yr 4/3) coarsening to F-c gravel (SA to WR)
2	0.6				
3	0.9	2.5-5 100%			
4	1.2				
5	1.5	5-10 100%			
6	1.8				
7	2.1				
8	2.4			SW GW	7-9 micaceous F-c SAND, wet, dk gray (GLY 1 1/4 N) coarsening downward to sa. GRAVEL; gravel is SA to WR
9	2.7				
10	3.1	10-15 100%		SW GW	9-11 si. gr. SAND to si. sa. GRAVEL, wet/subwater yellowish brown (10 yr 5/4); gravel is SA to WR
11	3.4				
12	3.7				
13	4.0				
14	4.3		Residuum	ML	14-15 weathered Pome gr. sa. SILT, wet yellowish brown 10 yr (T8); gravel is angular (mudstone and sandstone? fragments)
15	4.6				
16	4.9				boring terminated @ 15'
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0225

Date Started: 8/24/09 Drilling Contractor: Bart Longyear Page 1 of 2
Date Completed: 8/24/07 Driller: J. Robinson Survey Unit: 9
Logged By: SKelly Equipment: mini Sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 100% 100%	Alluvial	SW	0-7 A-C gr. SAND, wet lt. brownish gray (10YR 6/2) gravel is SA - SR
2	0.6				
3	0.9	2.5-5 75%			
4	1.2				
5	1.5	5-10			
6	1.8	100%			
7	2.1			SW	7-12 micaceous A-C SAND, wet dk. gray (6.5Y 1/4) organic "specks" (wood fragments) coarsening downward to gr (F-C) SAND
8	2.4				
9	2.7			SW	9-15 si. gr. SAND to si. sa. GRAVEL, wet / saturated
10	3.1	10-15 100%		GW	strong brown (7.5YR 5/6) gravel is SA to WR
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 NR 0%	Residual	ML	15-25: weathered Pome. SILT. to gr. SILT, wet / saturated, yellowish brown (10YR 5/8) gravel is angular (mudstone) sand - stone fragments
16	4.9		see note next page		
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0225

Date Started: 8/24/07 Drilling Contractor: Boat Langyear Page 2 of 2
Date Completed: 8/24/07 Driller: T. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: minisonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
21	6.4	20-25 100%	Residuum	ML	(No recovery 15-20 - driller indicates no resistance advancing drill rods 15-25'; therefore assume top of weathered zone @ 15' where weathered zone is wet silt with little gravel, so soft material not captured in rods)
22	6.7				
23	7.0				
24	7.3				
25	7.6				
26	7.9				boring terminated @ 25'
27	8.2				
28	8.5				
29	8.8				
30	9.2				
31	9.5				
32	9.8				
33	10.1				
34	10.4				
35	10.7				
36	11.0				
37	11.3				
38	11.6				
39	11.9				
40	12.2				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey

MACTEC Project 9120-07-1235

BORING
NO.

0224

Date Started: 8/24/07

Drilling Contractor: Beart Longyear

Page 1 of 1

Date Completed: 8/24/07

Driller: J. Robinson

Survey Unit: 9

Logged By: S. K. V. M.

Equipment: mini Sonic #1402

Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 100%	Alluvial	SN	fine f. med. SAND, wet, gray (7.5YR 5/1) gravel is SA to WR 8/24/07
2	0.6				
3	0.9	2.5-5 100%			
4	1.2				
5	1.5	5-10 100%			
6	1.8				
7	2.1			SN- SM	10.5-8.5 micaceous f. med. SAND (increasing silt w/ depth) & gray (d.f. 10/10) to brown (10YR 4/3) organic "specks" (wood fragments) from 6.5-7.5' coarsening to SA to WR, f. med.
8	2.4				
9	2.7			SN- GM	10.5-17.5 si. gr. SAND to si. gr. gravel, wet/saturated, dk. yellowish brown (10YR 4/4) & gravel is f. med., SA to WR
10	3.1	10-15 100%			
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 100%			
16	4.9				
17	5.2				
18	5.5		Residuum	ML- GM	17.5-20 weathered Rhyolite, gr. SILT to si. GRAVEL, wet, yellowish brown (10YR 5/8) gravel is angular (quartzite/dolomite fragments)
19	5.8				
20	6.1				Boring terminated @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.
0227

Date Started: 8/24/07 Drilling Contractor: Bart Langyear Page 1 of 1
Date Completed: 8/24/07 Driller: J. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: mini Sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 100%	alluvial	SW	0-4 ^{MT-2} gr. SAND SAND, moist to wet, pinkish gray (7.5YR 6/2) to gray (7.5YR 5/1), with organics (wood fragments) trace to little; gravel is f-c SA to little
2	0.6				
3	0.9	2.55 100%			
4	1.2			SW	4-9 micaceous f-m SAND, wet, dk. greenish gray (4.5Y 1, 4/1 10Y); coarsening downward to gr. SAND (gravel is f-c SA to SR)
5	1.5	5-10 100%			
6	1.8				
7	2.1				
8	2.4				
9	2.7			SW	9-14.8 si. gr. SAND to si. sa. GRAVEL, wet /
10	3.1	10-15 100%		GW	Saturated, yellowish brown (10YR 5/6) gravel is f-c SA to
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6		Residuum	GM	14.8-15 weathered perme; si. GRAVEL, moist, H. yellowish brown (10YR 6/4) gravel is angular; (quartzite/dolomite)
16	4.9				boring terminated @ 15'
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered
Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0226

Date Started: 8/24/07 Drilling Contractor: Bortlingham Page 1 of 2
Date Completed: 8/24/07 Driller: J. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: mini Sonic #402 Elevation: TSD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 100%	Aluvial	SW	0-3.5 m-c SAND, moist to wet brown (LOYR S13) little f-m gravel (SA to S12) & organics @ surface, trace to little silt
2	0.6				
3	0.9	2.5-5 100%			
4	1.2			SP- SW	3.5-10 micaceous f-m SAND, wet, dk. gray (GLY, VN) coarsening downward to gr. SAND (f-c gravel SA to SP)
5	1.5	5-10%			
6	1.8				
7	2.1				
8	2.4				
9	2.7				
10	3.1	10-15 100%		SW	10-15 si. gr. SAND to si. SAND GRAVEL, wet/ saturated strong brown (2.5 YR 5/6) gravel 15 f-c SA to WR
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-23 40%	Residuum	ML- GM	15-23: weathered Pnml: gr. SILT to si. GRAVEL, wet/saturated, yellowish brown (10YR 5/8) gravel is angular (mudstone)
16	4.9				
17	5.2				
18	5.5				driller indicates no resistance advancing drill rods ~15-22'; therefore top of weathered Pnml is assumed to be 15' where soft silt (residuum) was presumably encountered
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0228

Date Started: 8/24/07 Drilling Contractor: Boart Longyear Page 2 of 2
Date Completed: 8/24/07 Driller: J. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: mini Sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
21	6.4		Residual	ML- GM	
22	6.7				
23	7.0				
24	7.3				Boring terminated @ 23'
25	7.6				
26	7.9				
27	8.2				
28	8.5				
29	8.8				
30	9.2				
31	9.5				
32	9.8				
33	10.1				
34	10.4				
35	10.7				
36	11.0				
37	11.3				
38	11.6				
39	11.9				
40	12.2				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 0229
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Date Started: <u>8/27/07</u>	Drilling Contractor: <u>Bout Longyear</u>	Page <u>1</u> of <u>1</u>
Date Completed: <u>8/27/07</u>	Driller: <u>J. Robinson</u>	Survey Unit: <u>9</u>
Logged By: <u>S. Kelly</u>	Equipment: <u>mini Sonic #1902</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 75%	Alluvial	SW	0-1.5 gr. SAND, wet, grayish brown (10YR 5/2), gravel f-c SA-SR
2	0.6				
3	0.9	2.5-5 100%			
4	1.2				organic ^{st 02210} silty layer @ 3.0-4' organic "specks" (decomposing wood) below
5	1.5	5-10 100%			
6	1.8				
7	2.1			SW	6.5-10.5 silty f-m SAND, wet, dk gray (10YR 4/1) grading to si. f-c gravelly SAND, grayish brown (10YR 5/2) gravel is SA-WR trace organic sl "specks" of decomposing organic material
8	2.4				
9	2.7				
10	3.1	5-10 100%		SW	10-13.8 si. gr. SAND to si. sa. GRAVEL, wet /
11	3.4			GW	saturated, yellowish brown (10YR 5/2) gravel is f-c SA to WR
12	3.7				
13	4.0				
14	4.3		Residuum	ML	13.8-15 weathered pome: gr. SILT to si GRAVEL, moist to dry (porewater rock), brownish yellow (10YR 4/6) gravel is an gravel (dolomite, mudstone) up
15	4.6				boring terminated @ 15' to 15' 11"
16	4.9				
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0230

Date Started: 8/27/07 Drilling Contractor: Boat Longyear Page 1 of 1
Date Completed: 8/27/07 Driller: J. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: mini Sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 100%	Aluvial 9	SW	0-2.5 si. gr. SAND, wet, gray (10YR 5/1), trace organics (f. roots, wood) gravel is FC, SA to SP
2	0.6				
3	0.9	2.5-5 100%			
4	1.2			SW	3.5-9 micaceous f. m SAND, wet, dk. gray (6.5Y 4/1)
5	1.5	5-10 50%			
6	1.8				
7	2.1				
8	2.4				
9	2.7			SW	9-14 si. gr. SAND to si. sand GRAVEL, ⁰¹²⁷¹⁰⁷ moist wet /
10	3.1	10-15 100%		GW	Saturated; gravel is FC, SA to WR, yellowish brown (10YR 5/8)
11	3.4				
12	3.7				
13	4.0				
14	4.3		Residuum	mic-	14-15: weathered Pame' gr SILT to SI GRAVEL
15	4.6		Gm		Moist, brownish yellow (10YR 5/6) gravel is angular boring terminated @ 15' (understone dolomite) up to 1.5' @ 9
16	4.9				
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0231

Date Started: 8/27/07 Drilling Contractor: Bantam year Page 1 of 1
Date Completed: 8/27/07 Driller: J. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: mini Smith #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 50%	Alluvial	SW	0-5 si. gr. SAND, wet, grayish brown (10YR 5/2), organics @ surface (~3") gravel is SA to SR f-c grained
2	0.6				
3	0.9	2.5-5 75%			
4	1.2				
5	1.5	5-10 NR 0%			5-10 - no recovery - soft sediments are not captured by drill rods (fall out of the bottom - assume this is the micaceous sand encountered in adjacent @ 812701 borings; assume that si. gr. SAND encountered at 10'
6	1.8				
7	2.1				
8	2.4				
9	2.7				
10	3.1	10-15 100%		SW- GW	10-15.2 - si. gr. SAND to si. sh. GRAVEL, wet / saturated, yellowish brown (10YR 5/8) gravel is f-c, SA to WR
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-16 100%	Residual	ML- GM	15.2-16 - weathered Pame, gr. SILT to si. GRAVEL, moist, brownish yellow (10YR 4/6) gravel is boring terminated @ 16' angular (dolo- mite / mudstone)
16	4.9				
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0232

Date Started: 8/27/07 Drilling Contractor: Bart Longyear Page 1 of 1
Date Completed: 8/27/07 Driller: J. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: mini-Sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 100%	Alluvial	SW	0-1.5 gr. SAND, moist to wet, brown (7.5YR 5/2) to v. dk. gray (7.5YR 3/1) gravel is f-c, SA to SR with silt rich organic layers
2	0.6				
3	0.9	2.5-5 50%			
4	1.2				
5	1.5	5-10			
6	1.8	100%			
7	2.1			SW	6.5-9 micaceous f-m SAND, wet, dk gray (6.5Y 1/1 N) grading to si. grav. SAND; gravel is f-c SA to WR
8	2.4				
9	2.7			SW	9-16 si. gr. SAND to si. sa. GRAVEL, wet/saturated
10	3.1	10-15 100%		GW	gravel is f-c, SA to WR, yellowish brown (10YR 5/4)
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-17 100%			15-17: weathered Pene; SILT to gr. SILT to si. GRAVEL, saturated to dry (pulverized rock), yellowish brown (10YR 5/4) to lt. gray (6.5Y 1/1 N) gravel is angular (dolomite)
16	4.9		Residuum	ml-GM	boring terminated @ 17'
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 0233
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Date Started: <u>8/27/07</u>	Drilling Contractor: <u>Beart Longyear</u>	Page <u>1</u> of <u>1</u>
Date Completed: <u>8/27/07</u>	Driller: <u>J. Robinson</u>	Survey Unit: <u>9</u>
Logged By: <u>S. Kelly</u>	Equipment: <u>mini-Sonic #1402</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 100%	Alluvial	SW	0-3.3 gr. si. SAND, moist to wet, dk. gray (5YR 3/1), gravel is f-c, SA to SR, trace / little organics 0-0.5'
2	0.6				
3	0.9	2.5-5 100%		SW	3.3-5 micaceous f-c SAND, wet, dk. greenish gray (6.5YR 1 to 10Y), with organic fragments ("specks" of decomposing wood), grading to si-gr. SAND gravel is SA to SR WR f-c
4	1.2				
5	1.5	5-10 100%			
6	1.8				
7	2.1				
8	2.4				
9	2.7				
10	3.1	10-15 100%		SW-GW	9.5-19 si-gr. SAND to si-sa. GRAVEL, wet / Saturated, lt. yellowish brown (10YR 6/4) gravel is f-c SA to WR
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 100%			
16	4.9				
17	5.2				
18	5.5				
19	5.8		Residuum	ML	19-20 weathered zone; gr-silt, wet/saturated yellowish brown (10YR 5/8) gravel is angular, boring terminated @ 20' (mudstone/dolomite)
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey

MACTEC Project 9120-07-1235

BORING
NO.

0234

Date Started: 8/27/07

Drilling Contractor: Boart Longyear

Page 1 of 1

Date Completed: 8/27/07

Driller: J. Robinson

Survey Unit: 9

Logged By: g.kelly

Equipment: mini Sonic #1402

Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5.0 (80%) 8/27/07	Alluvial	SW	0-3.5 si. gr. SAND, wet (gray 10YR 5/1) to black (10YR 2/1) from 2.5-2.7', with organics ("speck" of wood)
2	0.6				
3	0.9				
4	1.2			SW	3.5-8.5 micaceous f.m. SAND, wet, dk gray (GLY 1 g/100) grading to si. gr. SAND, gravel f-c SA to WR
5	1.5	5-10 100%			
6	1.8				
7	2.1			SM	(6.5-7.5 velk. brown si. SAND, organic rich? causing dk. color)
8	2.4				
9	2.7			SW GW	8.5-15 si. gr. SAND to si. SA. GRAVEL, wet/saturated yellowish brown (10YR 5/0); gravel is f-c, SA to WR
10	3.1	10-15 100%			
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 100%			
16	4.9				
17	5.2				
18	5.5		Residuum	GM	7.5-10' weathered Pgne; gr. SILT to si. GRAVEL, wet, yellowish brown (10YR 5/0); gravel is angular (chert/mudstone)
19	5.8				
20	6.1				boring terminated @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0235

Date Started: 8/28/07

Drilling Contractor: Boart Longyear

Page 1 of 1

Date Completed: 8/28/07

Driller: J. Robinson

Survey Unit: 9

Logged By: S. Kelly

Equipment: mini Sonic #1402

Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 90%	Alluvial	SW ML	0-1 organic rich SA-SILT, wet, dark gray (10YR 4/1)
2	0.6			SW	1-8 f-c SAND, wet, gray (10YR 5/1), little gravel (f-m, SA-SR), trace organics, micaceous
3	0.9				
4	1.2				
5	1.5	5-10			
6	1.8	100%			
7	2.1				
8	2.4			SW	8-13 si-gr-SAND to si-sa GRAVEL, wet/saturated,
9	2.7			GW	yellowish brown (10YR 5/8), gravel is f-c (SA-WR)
10	3.1	10-15			
11	3.4	100%			
12	3.7				
13	4.0		Residuum	ML	13-15 1 weathered Rhyolite, gr-SILT to si GRAVEL,
14	4.3			GM	moist, yellow (10YR 7/6) to lt. gray (10YR 7/2)
15	4.6				gravel, angular (dolomite fragments up to 0.5" Ø)
16	4.9				boring terminated @ 15
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02

SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0236

Date Started: 8/20/07 Drilling Contractor: Bart Longyear Page 1 of 1
Date Completed: 8/20/07 Driller: T. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: mini Sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 100%	Alluvial/ FP	SM- SW	0-3 organic-rich si. SAND, moist, v. dk. brown (10YR 2/2) w/ gravel (F-C SA to SP)
2	0.6				
3	0.9	2.5-5 100%		SW	3-9 micaceous f-m SAND, wet, dk. gray (GLY 1 TN), trace organic material; grading into f-c SA-WR gr. si. SAND (f-c)
4	1.2				
5	1.5	5-10 100%			
6	1.8				
7	2.1				
8	2.4				
9	2.7			SW	9-12 gr. si. SAND to si. sa. GRAVEL, wet /
10	3.1	10-15 100%		GW	Saturated, yellowish brown (10YR 5/8), gravel is f-c (SA to WR)
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 80%			
16	4.9				
17	5.2				
18	5.5		Residuum	ML- GM	17.2-20 weathered Remo gr. SILT to si. GRAVEL, wet / saturated, yellowish brown (10YR 5/8) gravel is angular (dolomite/ marble) up to 1" φ
19	5.8				
20	6.1				boring terminated @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0237

Date Started: 8/20/07 Drilling Contractor: Bart Longyear Page 1 of 1
Date Completed: 8/28/07 Driller: J. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: Mini Sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-2.5 80%	Alluvial / FP	SM	0-3 organic-rich si. SAND, moist to wet, grayish brown (10YR 5/2) w/ v. dk. brown (10YR 2/2) organic layers (roots/wood), some f.m. gravel (SA-SR)
2	0.6				
3	0.9	2.5-5 100%		SW	3-9 micaceous f.m. SAND, wet, gray (GLY 1 VN) grading to si. gr. SAND, gravel is f-c SA to WR, trace organics
4	1.2				
5	1.5	5-10 100%			
6	1.8				
7	2.1				
8	2.4				
9	2.7			SW	9-16.5 si. grav. SAND, to si. SA GRAVEL, wet / saturated, yellowish brown (10YR 5/0) gravel is f-c SA to WR
10	3.1	10-15 100%		GW	
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 100%			
16	4.9				
17	5.2		Residuum	ML- GW	16.5-20 weathered Rome: gr. SILT to si. GRAVEL brownish yellow (10YR 6/0) to yellow (10YR 7/6) gravel is angular (mudstone to dolomite) up to 1" φ
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered
Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0238

Date Started: 8/28/07 Drilling Contractor: Beart Longyear Page 1 of 1
Date Completed: 8/28/07 Driller: J. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: mini sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 80%	Alluvial / FP	SW	0-3 gr. si. SAND, wet, grayish brown (10YR 5/2), with organics (decreasing with depth - roots to decomposing wood) gravel is f-c, SA to SR
2	0.6				
3	0.9				
4	1.2			SW	3-7.5 micaceous f-m SAND, wet, dk. gray (GLEY 1/4/N), trace organic "specks" (roots/decomposing wood), grading to si. gr. SAND gravel f-m, SA-SR
5	1.5	5-10 100%			
6	1.8				
7	2.1				
8	2.4				
9	2.7				
10	3.1	15-10 100%		SW- GM	7.5-10.5 si. gr. SAND to si. sa. GRAVEL, wet / saturated, yellowish brown (10YR 5/8), gravel is f-c, SA to WR
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 100%			
16	4.9				
17	5.2		Residuum	ML- GM	4.5-20: weathered Rame: gr. SILT to si. GRAVEL, wet to moist, brownish yellow (10YR 6/8) to yellow (10YR 7/6), gravel is angular (mudstone to dolomite)
18	5.5				
19	5.8				
20	6.1				Boring terminated @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered
Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING

NO.

0239

Date Started: 9/20/07 Drilling Contractor: Beartongyear Page 1 of 1
Date Completed: 9/20/07 Driller: J. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: mini sonic Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA/ UNIT	USCS	DESCRIPTION
1	0.3	0-5 80%	Alluvial / 0 FP	ML	0-1 organic-rich sa-SILT, moist/mud, v. dk. brown (10YR 2/2)
2	0.6			SW- SM	1-6.5 organic-rich si-f-c SAND, wet, v. dk. grayish brown (10YR 3/2), little f-m sa-sr gravel
3	0.9				
4	1.2				
5	1.5	5-10 100%			
6	1.8				
7	2.1			SW	6.5-9 micaceous f-m SAND, wet, dk. gray (10YR 4/1) grading to f-c SA to WR
8	2.4				qr. si. f-c SAND
9	2.7			SW- GW	9-14.5 si. gr. SAND to si. gr. GRAVEL wet / Saturated, yellowish brown (10YR 5/0) gravel is f-c SA to WR
10	3.1	10-15 90%			
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 100%			
16	4.9				
17	5.2		Residuum	ML- GM	16.5-20 weathered Rome: gr. SILT to si. GRAVEL, wet to moist, brownish yellow (10YR 6/8) to yellow (10YR 7/6), gravel is angular (could be to dolomite)
18	5.5				
19	5.8				
20	6.1				boring terminated @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0240

Date Started: 8/28/07 Drilling Contractor: Eastlongyear Page 1 of 1
Date Completed: 8/28/07 Driller: T. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: mini-Sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 90%	Alluvial/ FP	SW- ML	0-3 si. gr. SAND, moist to wet, v. dk. grayish brown (10YR 3/2) with organic-rich silt "layers"
2	0.6				
3	0.9			SW	3-9.5 micaceous f-m SAND, with dk. gray GLEY (1 1/4); grades to sl. gravelly sand (gravel is f-c, SA to WR)
4	1.2				
5	1.5	5-10			
6	1.8	100%			
7	2.1				
8	2.4				
9	2.7				
10	3.1	10-15		SW = 9.5-14.7 si. gr. SAND to GW wet/saturated, yellowish brown (10YR 5/8) gravel is f-c SA to WR	8/20/07
11	3.4	100%			
12	3.7				
13	4.0				
14	4.3				
15	4.6		Residuum	SW	14.7-15: weathered permeable si. GRAVEL, wet, yellowish brown (10YR 5/8) angular (sandstone)
16	4.9				
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0241

Date Started: 8/28/07 Drilling Contractor: Braet Longyear Page 1 of 1
Date Completed: 8/28/07 Driller: J. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: mini Sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 100%	Alluvial EP	SM- SV	0-3 organic-rich si. gr. SAND, moist to @ wet, dk gray (7.5 yr 4/1) gravel is f-c, SA-SR ^{8/10} WR
2	0.6				
3	0.9			SW	3-9 micaceous f-m SAND, wet, dk gray (GLY 1 4/1) grading to si. gr. SAND, gravel is f-c SA to WR
4	1.2				
5	1.5	5-10			
6	1.8	100%			
7	2.1				
8	2.4				
9	2.7			SW	9-17 si. gr. SAND, wet, saturated yellowish brown (10 yr 5/8) gravel is f-c, SA ¹ to WR
10	3.1	10-15		GW	
11	3.4	80%			
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20			
16	4.9	100%			
17	5.2		Residuum	ML- GM	17-20: weathered rock: gr. SILT to si. GRAVEL, wet, yellowish brown (10 yr 5/8) and brown (10 yr 5/8) gravel is angular (marblestone dolomite)
18	5.5				
19	5.8				
20	6.1				Boring terminated @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0242

Date Started: 8/29/07 Drilling Contractor: Bort Longyear Page 1 of 1
Date Completed: 8/29/07 Driller: J. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: mini sonic #1402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 90%	Alluvial FF	SW	0-1 si-gr. SAND, moist to wet, grayish brown (10YR 5/2), with organics
2	0.6			SW	1-23 si-gr. SAND, wet, gray (10YR 5/1) gravel is f-m SA to SR
3	0.9			SW	3-10 micaceous f-m SAND, wet, dk. gray (10YR 5/1) grad to gr. f-c SAND; gravel is f-c SA to SR
4	1.2				
5	1.5	5-10 50%			
6	1.8				
7	2.1				
8	2.4				
9	2.7				
10	3.1	10-15 100%			10-18 si-gr. SAND to si-sa GRAVEL, wet/ saturated, yellowish brown (10YR 5/4), gravel is f-c, SA to WR
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 100%			
16	4.9				
17	5.2				
18	5.5		Residuum	ML- GM	18-20 weathered Rome: gr. SILT to si. GRAVEL, wet to moist, yellowish brown (10YR 5/8) to lt. yellowish brown (10YR 6/4), gravel is angular (quartzite/dolomite)
19	5.8				
20	6.1				boring terminated @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey
MACTEC Project 9120-07-1235

BORING
NO.

0243

Date Started: 8/29/07 Drilling Contractor: Bart Longyear Page 1 of 1
Date Completed: 8/27/07 Driller: J. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: minisonic # V402 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 80%	Alluvial FP	SW	0-2 gr. si. SAND, moist to wet, lt. brownish gray (10YR 6/2) with organics (roots & decomposing organic material) gravel is f-c SA to SP
2	0.6			SW	2-7 gr. med SAND, wet, gray (10YR 5/1) gravel is f-c, SA to WR
3	0.9				
4	1.2				
5	1.5				
6	1.8	5-10 100%			
7	2.1			SW	9.5 7-1 micaceous fm SAND, wet, dk. gray (5Y 1/1) coarsening to si. gr. SAND (gravel is f-c, SA to WR) gravelly c-v.c. Sand from 8-8.5
8	2.4				
9	2.7				
10	3.1	10-15 100%		SW- GW	9.5-18 si. gr. SAND to si. sa. GRAVEL, wet yellowish brown (10YR 5/8) gravel is f-c, angular - WR
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6				
16	4.9	15-20 100%			
17	5.2				
18	5.5				
19	5.8		Residuum	ML- GM	18-20 weathered Rome: gr. SILT to si. GRAVEL, wet, yellowish brown (10YR 5/8), gravel is angular (mudstone / dolomite)
20	6.1				Boring terminated @ 20'

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD NFS Subsurface Soil Characterization and Final Status Survey MACTEC Project 9120-07-1235	BORING NO. 0244
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Date Started: <u>8/29/07</u>	Drilling Contractor: <u>Port Longyear</u>	Page <u>1</u> of <u>1</u>
Date Completed: <u>8/29/07</u>	Driller: <u>J. Robinson</u>	Survey Unit: <u>9</u>
Logged By: <u>S. Kelly</u>	Equipment: <u>mini sonic #1402</u>	Elevation: <u>TBD</u>

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 50%	Aluvial / PP-1	SW	0-4.8 si-gr. SAND, wet, lt. brownish gray (10YR 6/2) to dk. gray (10YR 4/1) micaceous, organic-rich; little gravel (F-u SA-SR)
2	0.6				
3	0.9				(hard to discern discern strata breaks due to poor recovery & slough material in lower interval)
4	1.2				
5	1.5	5-10 50%			
6	1.8				
7	2.1				
8	2.4			SW	10-14.5 si-gr. SAND, wet/saturated, gray (10YR 5/1), gravel is angular - SR
9	2.7				
10	3.1	10-15 100%		SW - GW	10-14.5 si-gr. SAND to si. GRAVEL, wet/saturated, yellowish brown (10YR 5/8)
11	3.4				
12	3.7				
13	4.0				
14	4.3				
15	4.6	15-20 100%	Residuum	ML - GM	14.5-17 weathered Pome; gr. SILT to si. GRAVEL, moist, yellowish brown (10YR 5/8) to lt. gray (10YR 7/1) gravel is angular (dolomite/limestone)
16	4.9	17 100%			
17	5.2				boring terminated @ 17'
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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SOIL BORING RECORD

NFS Subsurface Soil Characterization and Final Status Survey

MACTEC Project 9120-07-1235

BORING
NO.

0245

Date Started: 8/29/07 Drilling Contractor: Don't Loney Page 1 of 1
Date Completed: 8/29/07 Driller: J. Robinson Survey Unit: 9
Logged By: S. Kelly Equipment: mini sonic #1902 Elevation: TBD

DEPTH (ft)	DEPTH (m)	RUN / RECOVERY	STRATA / UNIT	USCS	DESCRIPTION
1	0.3	0-5 9070	Alluvial EP	SW	0-3 si. gr. SAND, moist to wet, dk. gray (10YR 4/1) w/organics, gravel is f-c SA-SR
2	0.6				
3	0.9			SW	3-9 f-m SAND, wet, greenish gray (6.5Y 1 5/10Y to 5/1.5GY), becoming micaceous and grading to si. gr. SAND, gravel is f-c, SA-WR
4	1.2				
5	1.5	5-10 10070			
6	1.8				
7	2.1				
8	2.4				
9	2.7			SW	9-14 si. gr. SAND to si. SA. GRAVEL, wet / GW saturated, yellowish brown (10YR 5/8) gravel is f-c SA-WR
10	3.1	10-15 10070			
11	3.4				
12	3.7				
13	4.0				
14	4.3		Residuum ML	GM	14-15 weathered Rome: gr. SILT to si. GRAVEL, wet to moist, yellowish brown (10YR 5/8) to brnng terminated @ 15' H-gray (10YR 7/1) gravel is angular (dolomite/mudstone)
15	4.6				
16	4.9				
17	5.2				
18	5.5				
19	5.8				
20	6.1				

Run = Drill Run Interval; Recovery (%) = Run Interval / Amount Recovered

Strata/Unit = deposition/formation (e.g., fill, alluvial, floodplain, residuum, bedrock, etc.)

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NFS File Classification: DCM-23-05-02