Appendix E

Summary of Groundwater Monitoring Data

Table E-1

Groundwater Monitoring Network: Super Solid Waste Management Units

SSWMUs and Constituent SWMUs	Well ID Number [1]		Additional Analytes Measured in 1998 [2]	Well ID Number [1]		Additional Analytes Measured in 1998 [2]
SSWMU #1 - Low-Level Waste Treatment Facilities:						
	103*	(S:D)	V	110*	(T:D)	V
• Former Lagoon 1	104	(S:U)	SV, V	111*	(S:D)	S, SV, V, M33
• LLWTF Lagoons	105	(S:D)	V	114	(T:D)	*p*
• LLWTF Building	106	(S:D)	M, V	115	(T:U)	*p*
• Interceptors	107	(T:D)	V	116*	(S:U)	M, M33, S, V
• Neutralization Pit	108	(T:D)	V	8604	(S:U)	V
	109	(T:D)	*p*	8605*	(S:D)	M33, S, SV, V
SSWMU #2 - Miscellaneous Small Units:						
	201	(S:U)	M	206	(TS:D)	
• Sludge Ponds	202	(TS:U)	*p*	207	(S:D)	*p*
• Solvent Dike	203	(S:D)	M	208	(TS:D)	V
• Equalization Mixing Basin	204*	(TS:U)		8606	(S:D)	*p*
• Paper Incinerator	205	(S:D)	M			
SSWMU #3 - Liquid Waste Treatment System:						
• Liquid Waste Treatment System	301*	(S:B)	M, M33	307	(S:D)	*p*
• Cement Solidification System	302	(TS:U)				
• Main Process Bldg. (specific areas)	305	(S:D)	*p*			
SSWMU #4 - HLW Storage and Processing Area:						
• Vitrification Facility	401*	(S:B)	M, M33, R	405	(T:C)	
• Vitrification Test Tanks	402	(TS:U)		406*	(S:D)	R, V
• HLW Tanks	403	(S:U)	M, V	408*	(S:D)	M, M33, R, V
• Supernatant Treatment System	404	(TS:U)	*p*	409	(T:D)	

** Monitoring for certain parameters is required by the RCRA 3008(h) Order on Consent.*

[1] Hydrogeologic unit monitored and well position in SSWMU follow the well ID in parentheses. Hydrogeologic units monitored are: WT (weathered Lavery till); T (unweathered Lavery till); S (sand and gravel); K (Kent recessional sequence); TS (till-sand). Well position in SSWMU: U (upgradient); D (downgradient); B (background); C (crossgradient). Example: 401 (S:B) monitors background conditions in the sand and gravel unit.*

[2] See Table 3-1 (p. 3-6) for a description of codes and analytes. The parameters listed in this table, Table E-1, are in addition to the contamination indicator parameters (I) and radiological indicator parameters (RI) routinely scheduled for 1998. Wells measured for potentiometric (water-level) data only are designated by p.

Table E-1 (*continued*)

Groundwater Monitoring Network: Super Solid Waste Management Units

SSWMUs and Constituent SWMUs	Well ID Number [1]		Additional Analytes Measured in 1998 [2]	Well ID Number [1]		Additional Analytes Measured in 1998 [2]
SSWMU #5 - Maintenance Shop Leach Field:						
• *Maintenance Shop Leach Field*	501*	(S:U)	S, V	502*	(S:D)	M33, S, SM, V
SSWMU #6 - Low-level Waste Storage Area:						
• Hardstands (old & new)	601	(S:D)	M	605	(S:D)	M, S
• Lag Storage	602	(S:D)	S	8607*	(S:U)	V
• Lag Storage Additions	603	(S:U)	*p*	8608	(S:U)	*p*
(LSAs 1, 2, 3, 4)	604	(S:D)		8609*	(S:U)	S, V
SSWMU #7 - CPC Waste Storage Area:						
	701	(TS:U)	*p*	705	(T:C)	*p*
• CPC Waste Storage Area	702	(T:C)	*p*	706*	(S:B)	
	703	(T:D)	*p*	707	(T:D)	
	704	(T:D)	V			
SSWMU #8 - Construction and Demolition Debris Landfill:						
	801*	(S:U)	S, V	804*	(S:D)	V
• Former Construction and Demolition	802	(S:D)	V	8603	(S:U)	S
Debris Landfill	803*	(S:D)	SV, V	8612*	(S:D)	SV, V

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[1] Hydrogeologic unit monitored and well position in SSWMU follow the well ID in parentheses. Hydrogeologic units monitored are: WT (weathered Lavery till); T (unweathered Lavery till); S (sand and gravel); K (Kent recessional sequence); TS (till-sand). Well position in SSWMU: U (upgradient); D (downgradient); B (background); C (crossgradient). Example: 401 (S:B) monitors background conditions in the sand and gravel unit.*

[2] See Table 3-1 (p. 3-6) for a description of codes and analytes. The parameters listed in this table, Table E-1, are in addition to the contamination indicator parameters (I) and radiological indicator parameters (RI) routinely scheduled for 1998. Wells measured for potentiometric (water-level) data only are designated by p.

Table E-1 (*continued*)

Groundwater Monitoring Network: Super Solid Waste Management Units

SSWMUs and Constituent SWMUs	Well ID Number [1]		Additonal Analytes Measured in 1998 [2]	Well ID Number [1]		Additional Analytes Measured in 1998 [2]
SSWMU #9 - NRC-licensed Disposal Area:						
	901*	(K:U)		908*	(WT:U)	
• NRC-licensed Disposal Area	902*	(K:U)		909*	(WT:D)	M33, R, V, SV
• Container Storage Area	903*	(K:D)		910*	(T:D)	
• Trench Interceptor Project	904	(T:D)	*p*	8610*	(K:D)	
	905	(S:D)	*p*	8611*	(K:D)	
	906*	(WT:D)		NDATR*	(Interceptor Trench Manhole Sump:D)	M33, R, V, SV
	907	(WT:D)	*p*			
SSWMU #10 - IRTS Drum Cell:						
	1001	(K:U)	*p*	1006*	(WT:D)	
• IRTS Drum Cell	1002	(K:D)	*p*	1007	(WT:D)	
• Background (south plateau)	1003	(K:D)	*p*	1008B	(K:B)	
	1004	(K:D)	*p*	1008C*	(WT:B)	
	1005*	(WT:U)				
SSMUW #11 - State-licensed Disposal Area:						
	1101A	(WT:U)	See	1105A	(WT:D)	See
• State-licensed Disposal Area	1101B	(T:U)	Appendix L	1105B	(T:D)	Appendix L
(SDA) [NYSERDA]	1101C	(K:U)		1106A	(K:U)	
	1102A	(WT:D)		1106B	(T:U)	
NOTE: The SDA is sampled by	1102B	(T:D)		1107A	(T:D)	
NYSERDA under an independent	1103A	(WT:D)		1108A	(WT:U)	
monitoring program.	1103B	(T:D)		1109A	(T:U)	
	1103C	(K:D)		1109B	(WT:U)	
	1104A	(WT:D)		1110A	(WT:D)	
	1104B	(T:D)		1111A	(WT:D)	
	1104C	(K:D)				

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[1] Hydrogeologic unit monitored and well position in SSWMU follow the well ID in parentheses. Hydrogeologic units monitored are: WT (weathered Lavery till); T (unweathered Lavery till); S (sand and gravel); K (Kent recessional sequence); TS (till-sand). Well position in SSWMU: U (upgradient); D (downgradient); B (background); C (crossgradient). Example: 401 (S:B) monitors background conditions in the sand and gravel unit.*

[2] See Table 3-1 (p. 3-6) for a description of codes and analytes. The parameters listed in this table, Table E-1, are in addition to the contamination indicator parameters (I) and radiological indicator parameters (RI) routinely scheduled for 1998. Wells measured for potentiometric (water-level) data only are designated by p.

Table E-1 (*concluded*)

Groundwater Monitoring Network: Super Solid Waste Management Units

SSWMUs and Constituent SWMUs	ID Number [1]	Analytes Measured in 1998 [2]	ID Number [1]	Analytes Measured in 1998 [2]
Main Plant Area Well Points: (Monitor groundwater at various locations north and east of the main plant. Not in a SSWMU.)	WP-A (S) WP-C (S)	RI RI	WP-H (S)	RI
Sand and Gravel Background: (Well originally used for background; replaced by a combination of wells 301, 401, and 706. [Not in a SSWMU].)	NBIS (S:B)	I, RI		
North Plateau Groundwater Seeps (Monitor groundwater emanating from seeps along the north plateau edge. Not in a SSWMU.)	SP02 (S) SP04 (S) SP05 (S) SP06 (S) SP11 (S)	RI RI RI RI RI	SP12 (S) SP18 (S) SP23 (S) GSEEP* (S)	I, RI, V RI RI I, RI, V

** Monitoring for certain parameters is required by the RCRA 3008(h) Order on Consent.*

[1] Hydrogeologic unit monitored and well position in SSWMU follow the well ID in parentheses. Hydrogeologic units monitored are: WT (weathered Lavery till); T (unweathered Lavery till); S (sand and gravel); K (Kent recessional sequence); TS (till-sand). Well position in SSWMU: U (upgradient); D (downgradient); B (background); C (crossgradient). Example: 401 (S:B) monitors background conditions in the sand and gravel unit.*

[2] See Table 3-1 (p. 3-6) for a description of codes and analytes.

Table E - 2

1998 Contamination Indicator and Radiological Indicator Results for the Sand and Gravel Unit

Location Code	Hydraulic Position	pH	Conductivity µmhos/cm@25°C	Gross Alpha µCi/mL	Gross Beta µCi/mL	Tritium µCi/mL
301	UP(1)	6.89	662	0.05±1.50E-09	4.72±3.16E-09	-8.54±7.83E-08
301	UP(2)	7.24	500	-2.02±7.99E-10	4.93±2.34E-09	1.91±8.01E-08
301	UP(3)	7.10	1010	-0.87±1.67E-09	6.67±2.76E-09	5.32±7.59E-08
301	UP(4)	7.17	1286	0.53±1.90E-09	1.54±2.77E-09	0.30±7.92E-08
401	UP(1)	6.98	2030	-2.47±3.73E-09	1.02±0.59E-08	-2.17±7.93E-08
401	UP(2)	7.07	2270	1.04±2.61E-09	1.20±0.44E-08	-0.96±7.89E-08
401	UP(3)	6.87	2285	1.00±4.77E-09	2.16±4.68E-09	1.73±7.57E-08
401	UP(4)	6.77	1786	1.57±3.78E-09	3.30±4.25E-09	-9.10±8.08E-08
403	UP(1)	7.27	957	-0.67±2.05E-09	5.48±3.83E-09	1.24±0.82E-07
403	UP(2)	7.51	805	1.71±1.47E-09	4.78±2.70E-09	-5.51±7.93E-08
403	UP(3)	6.96	959	0.11±2.26E-09	6.80±3.23E-09	6.34±7.91E-08
403	UP(4)	7.21	1231	1.26±1.79E-09	9.06±2.19E-09	-5.59±5.71E-08
706	UP(1)	6.60	526	-0.30±1.21E-09	1.23±0.28E-08	1.02±8.00E-08
706	UP(2)	6.44	424	7.83±8.18E-10	6.12±1.91E-09	-4.13±7.87E-08
706	UP(3)	6.59	489	1.74±1.21E-09	8.91±2.23E-09	7.89±7.80E-08
706	UP(4)	6.63	581	2.28±1.42E-09	7.06±2.17E-09	-1.39±0.79E-07
NB1S	UP(1)	6.83	511	3.57±1.28E-09	2.16±1.91E-09	-0.05±5.79E-08
NB1S	UP(2)	6.73	560	-4.72±7.46E-10	2.81±1.38E-09	-8.04±7.96E-08
NB1S	UP(3)	6.86	842	1.22±1.89E-09	3.50±1.74E-09	6.12±5.38E-08
NB1S	UP(4)	7.04	651	3.98±1.15E-09	2.94±0.81E-09	-8.62±7.90E-08
201	DOWN - B(1)	6.44	1603	2.69±3.42E-09	3.00±0.65E-08	-1.75±0.57E-07
201	DOWN - B(2)	6.68	1568	2.50±1.82E-09	3.06±0.35E-08	4.67±7.97E-08
201	DOWN - B(3)	6.70	1400	0.24±2.83E-09	2.26±0.46E-08	8.83±7.66E-08
201	DOWN - B(4)	6.93	1959	2.40±4.14E-09	2.73±0.51E-08	-0.16±7.84E-08
103	DOWN - C(1)	10.55	2450	5.74±6.71E-09	2.88±0.69E-08	1.16±0.81E-07
103	DOWN - C(2)	10.94	4490	1.25±1.17E-08	5.62±1.04E-08	1.70±0.81E-07
103	DOWN - C(3)	8.73	3640	1.24±5.90E-09	1.27±0.08E-07	1.10±0.78E-07
103	DOWN - C(4)	8.86	2060	0.20±3.34E-09	5.43±0.59E-08	-1.05±5.70E-08
104	DOWN - C(1)	7.26	1145	5.50±4.40E-09	1.71±0.01E-05	6.18±0.88E-07
104	DOWN - C(2)	7.55	1071	1.56±3.05E-09	1.70±0.02E-05	6.54±0.86E-07
104	DOWN - C(3)	7.26	1035	-3.13±4.34E-09	1.68±0.02E-05	5.57±0.84E-07
104	DOWN - C(4)	6.88	1122	-1.52±2.98E-09	2.09±0.02E-05	4.61±0.86E-07
111	DOWN - C(1)	6.62	580	3.63±4.10E-09	5.57±0.10E-06	3.72±0.84E-07
111	DOWN - C(2)	6.38	458	2.04±2.82E-09	3.62±0.08E-06	3.13±0.83E-07
111	DOWN - C(3)	6.70	566	-1.14±3.86E-09	6.09±0.10E-06	7.97±0.87E-07
111	DOWN - C(4)	6.49	680	6.06±6.28E-09	7.58±0.12E-06	2.88±0.83E-07

Sample collection quarter noted in parenthesis next to hydraulic position.

Table E - 2 (*continued*)

1998 Contamination Indicator and Radiological Indicator Results for the Sand and Gravel Unit

Location Code	Hydraulic Position	pH	Conductivity µmhos/cm@25°C	Gross Alpha µCi/mL	Gross Beta µCi/mL	Tritium µCi/mL
203	DOWN - C(1)	6.65	3365	*NS*	*NS*	*NS*
203	DOWN - C(2)	6.56	1016	*NS*	*NS*	*NS*
203	DOWN - C(3)	6.90	4320	*NS*	*NS*	*NS*
203	DOWN - C(4)	6.84	3230	*NS*	*NS*	*NS*
205	DOWN - C(1)	6.95	1058	1.92±2.68E-09	3.12±5.69E-09	1.30±0.81E-07
205	DOWN - C(2)	7.16	1569	2.65±2.72E-09	1.02±0.43E-08	-5.48±7.93E-08
205	DOWN - C(3)	7.11	1966	-1.21±3.99E-09	1.70±0.52E-08	4.30±7.57E-08
205	DOWN - C(4)	6.72	1882	3.17±3.90E-09	1.74±0.48E-08	3.91±5.57E-08
406	DOWN - C(1)	6.99	556	7.53±9.90E-10	8.63±1.85E-09	4.78±0.86E-07
406	DOWN - C(2)	6.64	662	0.71±1.22E-09	4.92±1.90E-09	3.16±0.87E-07
406	DOWN - C(3)	7.04	595	0.04±1.15E-09	7.05±2.17E-09	1.27±0.86E-07
406	DOWN - C(4)	7.14	571	1.96±1.27E-09	7.41±2.17E-09	2.28±0.61E-07
408	DOWN - C(1)	7.49	1638	2.85±0.44E-08	5.64±0.00E-04	4.37±1.20E-07
408	DOWN - C(2)	6.96	1618	-0.43±1.41E-09	5.32±0.00E-04	1.26±0.87E-07
408	DOWN - C(3)	6.97	1778	-0.28±3.99E-09	5.63±0.01E-04	1.60±1.02E-07
408	DOWN - C(4)	7.03	1841	-3.37±0.99E-08	5.37±0.06E-04	1.94±1.16E-07
501	DOWN - C(1)	7.64	1331	0.00±5.66E-09	1.98±0.01E-04	9.20±8.13E-08
501	DOWN - C(2)	6.96	1223	3.45±4.78E-09	1.56±0.01E-04	1.62±0.81E-07
501	DOWN - C(3)	6.98	1374	-2.04±6.92E-09	1.97±0.01E-04	1.46±0.79E-07
501	DOWN - C(4)	6.93	1516	0.00±5.26E-09	1.89±0.01E-04	1.04±0.81E-07
502	DOWN - C(1)	7.61	1316	2.29±4.49E-09	1.43±0.01E-04	1.93±0.83E-07
502	DOWN - C(2)	7.09	1225	0.96±4.41E-09	1.31±0.00E-04	1.88±0.81E-07
502	DOWN - C(3)	6.94	1313	3.79±9.10E-09	1.47±0.01E-04	2.30±0.80E-07
502	DOWN - C(4)	7.00	1380	0.90±5.55E-09	1.61±0.01E-04	1.45±0.81E-07
602	DOWN - C(1)	6.66	669	0.98±1.91E-09	1.94±0.38E-08	4.77±0.14E-06
602	DOWN - C(2)	6.58	651	0.30±1.16E-09	2.56±0.34E-08	3.04±0.18E-06
602	DOWN - C(3)	6.73	665	0.69±1.29E-09	1.72±0.23E-08	5.74±0.22E-06
602	DOWN - C(4)	7.08	680	1.55±1.41E-09	2.00±2.64E-09	5.77±0.25E-06
604	DOWN - C(1)	6.49	612	-0.78±1.13E-09	5.73±2.49E-09	2.19±8.04E-08
604	DOWN - C(2)	6.49	584	0.49±1.01E-09	5.21±1.91E-09	2.97±7.96E-08
604	DOWN - C(3)	6.51	672	-1.39±1.34E-09	4.48±2.02E-09	1.65±7.73E-08
604	DOWN - C(4)	6.35	794	2.04±1.51E-09	6.99±2.19E-09	0.27±7.84E-08
8605	DOWN - C(1)	7.50	957	1.74±1.03E-08	1.58±0.02E-05	8.04±0.90E-07
8605	DOWN - C(2)	7.34	842	2.72±3.76E-09	1.62±0.02E-05	1.27±0.10E-06
8605	DOWN - C(3)	6.68	1042	1.24±1.05E-08	1.42±0.02E-05	8.58±0.88E-07
8605	DOWN - C(4)	6.68	1188	9.37±8.66E-09	9.72±0.13E-06	2.83±0.83E-07

Sample collection quarter noted in parenthesis next to hydraulic position.
NS - Not sampled.

Table E - 2 *(continued)*

1998 Contamination Indicator and Radiological Indicator Results for the Sand and Gravel Unit

Location Code	Hydraulic Position	pH	Conductivity µmhos/cm@25°C	Gross Alpha µCi/mL	Gross Beta µCi/mL	Tritium µCi/mL
8607	DOWN - C(1)	6.33	704	0.16±1.35E-09	1.08±0.34E-08	4.17±8.01E-08
8607	DOWN - C(2)	6.32	1059	0.78±1.62E-09	1.21±0.29E-08	-5.47±7.95E-08
8607	DOWN - C(3)	6.62	1251	0.96±2.18E-09	9.61±2.95E-09	5.06±7.88E-08
8607	DOWN - C(4)	6.64	1204	0.05±1.54E-09	1.12±0.32E-08	-2.89±8.05E-08
8609	DOWN - C(1)	7.18	897	0.60±1.67E-09	5.25±0.07E-07	7.04±0.76E-07
8609	DOWN - C(2)	7.19	890	0.22±1.57E-09	4.60±0.12E-07	6.28±0.89E-07
8609	DOWN - C(3)	7.12	933	-0.26±1.90E-09	5.02±0.13E-07	7.68±0.88E-07
8609	DOWN - C(4)	7.06	1051	0.61±1.16E-09	5.75±0.09E-07	6.88±0.90E-07
GSEEP	DOWN - D(1)	6.44	825	-1.41±1.43E-09	5.58±3.22E-09	8.43±0.92E-07
GSEEP	DOWN - D(2)	6.75	827	0.23±8.77E-10	5.04±1.72E-09	6.70±0.87E-07
GSEEP	DOWN - D(3)	7.28	920	-0.01±1.70E-09	7.11±2.80E-09	7.08±0.85E-07
GSEEP	DOWN - D(4)	6.30	975	0.57±1.54E-09	2.99±2.75E-09	7.65±0.90E-07
105	DOWN - D(1)	7.11	1434	-0.35±1.86E-09	6.81±0.32E-08	7.25±0.90E-07
105	DOWN - D(2)	7.34	1438	2.29±1.96E-09	1.09±0.05E-07	6.09±0.88E-07
105	DOWN - D(3)	7.14	1385	0.07±1.79E-09	1.74±0.04E-07	6.30±0.84E-07
105	DOWN - D(4)	7.10	1339	0.51±2.12E-09	2.98±0.07E-07	7.09±0.91E-07
106	DOWN - D(1)	7.06	1187	1.32±2.59E-09	5.16±3.00E-09	2.37±0.13E-06
106	DOWN - D(2)	7.31	1215	4.45±2.30E-09	6.73±2.26E-09	1.65±0.11E-06
106	DOWN - D(3)	7.09	1200	1.04±2.26E-09	5.61±2.25E-09	1.46±0.10E-06
106	DOWN - D(4)	7.11	1043	3.08±2.25E-09	1.05±0.25E-08	1.72±0.12E-06
116	DOWN - D(1)	7.03	847	1.68±2.18E-09	6.55±0.44E-08	1.50±0.82E-07
116	DOWN - D(2)	7.50	777	2.94±1.52E-09	5.30±0.35E-08	6.17±8.08E-08
116	DOWN - D(3)	7.22	903	0.69±1.87E-09	5.59±0.36E-08	3.54±0.57E-07
116	DOWN - D(4)	7.16	907	1.73±1.80E-09	5.60±0.37E-08	2.21±0.58E-07
601	DOWN - D(1)	6.78	511	*NS*	*NS*	*NS*
601	DOWN - D(2)	7.54	648	*NS*	*NS*	*NS*
601	DOWN - D(3)	6.71	596	*NS*	*NS*	*NS*
601	DOWN - D(4)	6.60	664	*NS*	*NS*	*NS*
605	DOWN - D(1)	6.73	432	0.32±1.12E-09	5.86±0.50E-08	0.48±5.62E-08
605	DOWN - D(2)	6.96	546	3.50±9.30E-10	8.82±0.53E-08	-1.49±7.98E-08
605	DOWN - D(3)	7.26	684	3.74±1.72E-09	4.14±0.42E-08	2.05±5.42E-08
605	DOWN - D(4)	6.81	797	1.60±1.45E-09	5.31±0.39E-08	6.49±7.92E-08
801	DOWN - D(1)	7.06	904	1.62±3.18E-09	6.22±0.10E-06	2.89±0.84E-07
801	DOWN - D(2)	7.59	1080	3.08±3.02E-09	7.19±0.08E-06	3.18±0.83E-07
801	DOWN - D(3)	7.01	1105	3.43±8.23E-09	6.79±0.11E-06	3.80±0.81E-07
801	DOWN - D(4)	6.59	1089	0.01±2.91E-09	6.94±0.08E-06	3.23±0.85E-07

Sample collection quarter noted in parenthesis next to hydraulic position.
NS - Not sampled.

Table E - 2 (concluded)

1998 Contamination Indicator and Radiological Indicator Results for the Sand and Gravel Unit

Location Code	Hydraulic Position	pH	Conductivity µmhos/cm@25°C	Gross Alpha µCi/mL	Gross Beta µCi/mL	Tritium µCi/mL
802	DOWN - D(1)	6.92	444	-5.94±9.98E-10	2.46±2.31E-09	1.42±0.81E-07
802	DOWN - D(2)	7.08	210	0.72±5.04E-10	0.62±1.56E-09	1.68±0.57E-07
802	DOWN - D(3)	6.55	285	5.49±8.28E-10	7.16±2.08E-09	3.82±7.60E-08
802	DOWN - D(4)	7.10	831	3.97±1.88E-09	2.07±1.93E-09	2.20±0.84E-07
803	DOWN - D(1)	6.94	1403	-0.86±2.63E-09	8.16±3.12E-09	3.61±0.85E-07
803	DOWN - D(2)	7.00	1303	1.36±1.89E-09	8.21±2.30E-09	3.26±0.83E-07
803	DOWN - D(3)	6.85	1398	0.20±3.01E-09	1.18±0.26E-08	3.31±0.80E-07
803	DOWN - D(4)	6.73	1453	0.87±2.62E-09	1.50±0.27E-08	3.19±0.85E-07
804	DOWN - D(1)	6.85	578	0.61±1.40E-09	2.08±0.08E-07	1.60±0.81E-07
804	DOWN - D(2)	6.86	877	1.60±1.54E-09	2.37±0.08E-07	1.18±0.80E-07
804	DOWN - D(3)	6.30	733	0.96±1.45E-09	1.86±0.08E-07	1.82±0.78E-07
804	DOWN - D(4)	6.60	685	1.98±1.40E-09	2.20±0.07E-07	-0.32±8.12E-08
8603	DOWN - D(1)	8.01	1490	2.21±4.33E-09	1.13±0.01E-05	4.76±0.86E-07
8603	DOWN - D(2)	7.62	1490	6.29±7.12E-09	1.24±0.01E-05	4.71±0.84E-07
8603	DOWN - D(3)	7.31	1536	0.86±1.19E-08	1.62±0.02E-05	3.82±0.82E-07
8603	DOWN - D(4)	6.94	1372	5.63±8.23E-09	1.88±0.02E-05	5.23±0.86E-07
8604	DOWN - D(1)	7.54	1432	0.00±5.75E-09	4.00±0.03E-05	4.43±0.85E-07
8604	DOWN - D(2)	6.96	1387	0.00±5.09E-09	3.63±0.02E-05	5.80±0.61E-07
8604	DOWN - D(3)	7.36	1278	9.00±8.02E-09	3.86±0.02E-05	5.81±0.84E-07
8604	DOWN - D(4)	6.96	1273	3.20±6.28E-09	3.43±0.02E-05	3.86±0.85E-07
8612	DOWN - D(1)	7.33	1124	-0.35±2.45E-09	8.03±0.47E-08	7.44±0.88E-07
8612	DOWN - D(2)	7.37	1148	-0.54±1.25E-09	5.23±2.18E-09	6.87±0.88E-07
8612	DOWN - D(3)	7.21	1147	0.41±2.42E-09	1.85±2.14E-09	8.46±0.86E-07
8612	DOWN - D(4)	7.27	1150	0.67±2.03E-09	5.91±2.31E-09	7.01±0.90E-07

Sample collection quarter noted in parenthesis next to hydraulic position.

Table E - 3

1998 Contamination Indicator and Radiological Indicator Results for the Till-sand Unit

Location Code	Hydraulic Position	pH	Conductivity µmhos/cm@25°C	Gross Alpha µCi/mL	Gross Beta µCi/mL	Tritium µCi/mL
302	UP(1)	7.21	2215	0.95±3.72E-09	8.38±4.20E-09	-5.86±7.80E-08
302	UP(2)	7.17	2155	1.50±2.85E-09	6.22±4.18E-09	-1.05±0.78E-07
302	UP(3)	7.22	2205	-0.61±4.93E-09	2.82±4.70E-09	5.15±7.60E-08
302	UP(4)	7.15	2250	3.88±5.26E-09	3.85±4.38E-09	6.52±8.08E-08
402	UP(1)	7.15	2250	0.71±4.06E-09	2.16±5.89E-09	2.88±8.37E-08
402	UP(2)	7.17	2050	7.15±4.13E-09	8.33±4.29E-09	-6.53±8.05E-08
402	UP(3)	7.18	2270	4.35±5.98E-09	-1.62±4.59E-09	2.47±7.80E-08
402	UP(4)	7.20	2275	0.30±2.58E-09	-0.98±5.19E-09	-3.88±8.12E-08
202	DOWN - B(1)	10.35	282	*NS*	*NS*	*NS*
204	DOWN - B(1)	7.95	897	-0.85±2.00E-09	1.71±3.12E-09	3.21±7.95E-08
204	DOWN - B(2)	7.88	913	1.18±1.73E-09	1.75±2.26E-09	2.15±7.96E-08
204	DOWN - B(3)	7.47	940	3.10±1.57E-09	3.34±1.82E-09	9.24±7.69E-08
204	DOWN - B(4)	7.81	997	2.33±1.92E-09	3.28±2.57E-09	1.16±7.86E-08
206	DOWN - C(1)	7.68	952	-0.86±2.03E-09	2.95±3.19E-09	1.56±0.57E-07
206	DOWN - C(2)	7.56	987	-0.79±1.40E-09	1.99±2.30E-09	-5.91±7.92E-08
206	DOWN - C(3)	7.39	1010	0.60±2.47E-09	2.78±2.58E-09	8.18±7.65E-08
206	DOWN - C(4)	7.49	1012	1.04±1.17E-09	-0.65±1.82E-09	7.22±7.94E-08
208	DOWN - C(1)	7.96	298	9.26±7.63E-10	0.48±1.51E-09	-5.82±7.82E-08
208	DOWN - C(2)	8.06	297	-1.09±5.69E-10	1.82±1.10E-09	-9.49±7.87E-08
208	DOWN - C(3)	7.87	293	1.32±0.55E-09	1.44±0.87E-09	1.00±7.79E-08
208	DOWN - C(4)	7.92	265	1.95±0.79E-09	1.81±1.25E-09	-4.80±5.48E-08

Sample collection quarter noted in parenthesis next to hydraulic position.
NS - Not sampled.

Table E - 4

1998 Contamination Indicator and Radiological Indicator Results for the Weathered Lavery Till Unit

Location Code	Hydraulic Position	pH	Conductivity µmhos/cm@25°C	Gross Alpha µCi/mL	Gross Beta µCi/mL	Tritium µCi/mL
908	UP(1)	6.92	2660	9.47±6.64E-09	1.60±0.62E-08	1.68±5.62E-08
908	UP(3)	6.88	3725	9.43±7.58E-09	1.17±0.52E-08	-1.58±5.49E-08
1005	UP(1)	7.29	790	1.17±2.00E-09	4.45±3.22E-09	4.38±8.24E-08
1005	UP(3)	7.08	771	1.72±1.98E-09	3.60±2.62E-09	-2.37±7.76E-08
1008C	UP(1)	7.62	595	1.70±1.40E-09	0.75±1.91E-09	-9.55±8.06E-08
1008C	UP(3)	7.46	576	0.13±1.48E-09	1.77±1.59E-09	-1.47±7.77E-08
906	DOWN - B(1)	7.40	645	1.03±1.79E-09	4.26±2.48E-09	2.64±8.05E-08
906	DOWN - B(3)	7.21	604	4.18±1.92E-09	5.07±2.10E-09	2.57±7.64E-08
1006	DOWN - B(1)	6.92	2360	4.85±4.91E-09	3.62±5.96E-09	-6.70±8.20E-08
1006	DOWN - B(3)	6.86	2375	-0.20±5.25E-09	3.54±4.82E-09	-8.96±7.78E-08
1007	DOWN - B(1)	6.89	1215	3.12±3.38E-09	4.60±3.17E-09	1.18±0.84E-07
1007	DOWN - B(3)	6.88	1273	4.48±3.20E-09	4.88±2.28E-09	-6.02±7.74E-08
NDATR	DOWN - C(1)	8.02	688	1.36±1.77E-09	9.13±0.59E-08	4.12±0.18E-06
NDATR	DOWN - C(2)	7.98	960	2.99±2.09E-09	1.15±0.06E-07	8.19±0.29E-06
NDATR	DOWN - C(3)	6.85	1014	2.36±2.35E-09	1.05±0.06E-07	1.04±0.04E-05
NDATR	DOWN - C(4)	7.50	1015	3.78±2.06E-09	1.06±0.06E-07	1.29±0.04E-05
909	DOWN - C(1)	6.81	1531	0.66±3.28E-09	3.96±0.10E-07	2.97±0.15E-06
909	DOWN - C(2)	6.91	1553	6.00±3.33E-09	3.53±0.09E-07	2.78±0.15E-06
909	DOWN - C(3)	6.61	1564	0.50±2.83E-09	4.39±0.08E-07	3.48±0.16E-06
909	DOWN - C(4)	7.29	1675	5.16±4.69E-09	4.18±0.13E-07	3.55±0.17E-06

Sample collection quarter noted in parenthesis next to hydraulic position.

Table E - 5

1998 Contamination Indicator and Radiological Indicator Results for the Unweathered Lavery Till Unit

Location Code	Hydraulic Position	pH	Conductivity µmhos/cm@25°C	Gross Alpha µCi/mL	Gross Beta µCi/mL	Tritium µCi/mL
405	UP(1)	7.37	861	1.06±2.07E-09	7.41±3.00E-09	1.08±0.82E-07
405	UP(2)	7.04	777	1.23±0.86E-09	4.38±1.47E-09	3.41±8.16E-08
405	UP(3)	7.08	783	0.26±1.53E-09	5.24±2.18E-09	-0.60±7.80E-08
405	UP(4)	7.26	1004	4.43±2.27E-09	5.79±2.28E-09	3.69±8.25E-08
110	DOWN - B(1)	7.43	563	1.14±1.29E-09	2.95±0.30E-08	1.52±0.11E-06
110	DOWN - B(2)	7.63	537	0.50±1.10E-09	2.04±1.36E-09	1.55±0.11E-06
110	DOWN - B(3)	7.55	500	0.96±1.31E-09	3.43±1.64E-09	1.66±0.11E-06
110	DOWN - B(4)	7.43	558	2.85±1.35E-09	1.49±1.52E-09	1.32±0.10E-06
704	DOWN - B(1)	6.59	889	1.46±1.32E-09	2.02±0.24E-08	-3.45±8.06E-08
704	DOWN - B(2)	6.75	635	0.75±1.15E-09	1.28±0.24E-08	-1.40±0.89E-07
704	DOWN - B(3)	6.78	804	2.23±2.00E-09	1.14±0.24E-08	9.08±7.73E-08
704	DOWN - B(4)	6.75	910	1.72±1.94E-09	1.34±0.25E-08	-0.05±8.11E-08
707	DOWN - B(1)	6.52	310	2.50±6.98E-10	4.10±1.96E-09	-2.19±7.88E-08
707	DOWN - B(2)	7.12	316	-1.74±5.88E-10	4.93±1.46E-09	-6.13±8.08E-08
707	DOWN - B(3)	7.11	526	-0.20±1.36E-09	4.04±1.71E-09	4.11±5.52E-08
707	DOWN - B(4)	6.84	551	4.40±1.63E-09	4.42±1.70E-09	-3.14±8.05E-08
107	DOWN - C(1)	7.25	794	2.13±1.55E-09	4.81±2.28E-09	1.21±0.10E-06
107	DOWN - C(2)	7.32	729	2.40±8.42E-10	3.91±1.66E-09	8.87±0.92E-07
107	DOWN - C(3)	7.08	731	0.58±1.87E-09	5.01±2.60E-09	8.54±0.87E-07
107	DOWN - C(4)	7.30	777	5.64±1.53E-09	4.06±1.83E-09	9.85±0.95E-07
108	DOWN - C(1)	7.39	635	1.63±0.95E-09	2.52±1.40E-09	2.62±7.95E-08
108	DOWN - C(2)	7.61	613	1.24±0.83E-09	2.99±1.00E-09	1.22±0.57E-07
108	DOWN - C(3)	7.41	584	1.84±1.02E-09	2.98±1.15E-09	9.04±7.60E-08
108	DOWN - C(4)	7.56	573	3.88±1.49E-09	2.46±1.58E-09	9.19±8.17E-08
409	DOWN - C(1)	8.02	357	1.50±0.79E-09	3.50±1.64E-09	-1.02±0.81E-07
409	DOWN - C(2)	8.11	350	1.42±0.84E-09	4.26±1.25E-09	-5.58±5.56E-08
409	DOWN - C(3)	8.04	343	7.59±8.48E-10	2.67±1.33E-09	-3.02±5.28E-08
409	DOWN - C(4)	8.23	336	2.10±0.82E-09	3.31±1.34E-09	-5.33±7.91E-08
910	DOWN - C(1)	7.35	1261	2.57±2.76E-09	6.33±0.44E-08	-3.84±7.85E-08
910	DOWN - C(2)	7.33	1168	2.86±1.81E-09	1.26±0.05E-07	-1.28±0.79E-07
910	DOWN - C(3)	6.96	1192	1.91±2.36E-09	5.94±0.38E-08	2.60±7.90E-08

Sample collection quarter noted in parenthesis next to hydraulic position.

Table E - 6

1998 Contamination Indicator and Radiological Indicator Results for the Kent Recessional Sequence

Location Code	Hydraulic Position	pH	Conductivity µmhos/cm@25°C	Gross Alpha µCi/mL	Gross Beta µCi/mL	Tritium µCi/mL
901	UP(1)	8.10	273	1.06±0.70E-09	4.58±1.68E-09	-1.76±8.17E-08
901	UP(3)	7.45	307	6.18±8.01E-10	3.26±1.37E-09	1.11±7.84E-08
902	UP(1)	8.01	449	3.13±0.93E-09	3.74±1.21E-09	-1.19±0.81E-07
902	UP(3)	8.16	447	0.59±1.16E-09	4.23±1.46E-09	-3.33±7.80E-08
1008B	UP(1)	7.98	312	5.66±6.97E-10	2.70±1.61E-09	-1.08±0.81E-07
1008B	UP(3)	7.98	309	-5.48±7.29E-10	9.18±1.66E-09	3.52±7.55E-08
903	DOWN - B(1)	7.71	886	-1.81±1.85E-09	2.27±2.45E-09	-1.42±0.80E-07
903	DOWN - B(3)	7.58	884	3.58±2.09E-09	2.28±1.95E-09	-1.35±0.78E-07
8610	DOWN - B(1)	7.78	993	0.99±1.95E-09	4.86±2.52E-09	-1.20±0.79E-07
8610	DOWN - B(3)	8.03	887	0.49±1.99E-09	9.66±2.35E-09	-6.38±7.74E-08
8611	DOWN - B(1)	7.21	999	0.30±2.06E-09	5.99±3.29E-09	-4.69±7.83E-08
8611	DOWN - B(3)	7.43	915	1.62±1.86E-09	3.38±2.58E-09	-7.03±7.69E-08

Sample collection quarter noted in parenthesis next to hydraulic position.

.

Table E - 7

1998 Contamination Indicator and Radiological Indicator Results at North Plateau Seep Monitoring Locations

Location Code	Sampling Quarter	pH	Conductivity µmhos/cm@25°C	Gross Alpha µCi/mL	Gross Beta µCi/mL	Tritium µCi/mL
SP02	1	*NS*	*NS*	-0.76±1.45E-09	5.64±3.23E-09	9.12±0.81E-07
SP02	3	*NS*	*NS*	2.00±2.87E-09	1.19±0.31E-08	6.32±0.89E-07
SP02	4	*NS*	*NS*	1.84±1.67E-09	3.24±2.76E-09	7.60±0.88E-07
SP04	1	*NS*	*NS*	-0.46±1.64E-09	8.27±3.00E-09	3.50±0.85E-07
SP04	3	*NS*	*NS*	6.17±2.41E-09	1.52±0.22E-08	3.38±0.88E-07
SP04	4	*NS*	*NS*	1.75±1.63E-09	8.19±2.04E-09	3.82±0.72E-07
SP05	1	*NS*	*NS*	0.45±1.08E-09	4.60±2.04E-09	1.31±0.82E-07
SP05	3	*NS*	*NS*	0.74±1.67E-09	5.05±1.80E-09	2.95±0.81E-07
SP06	1	*NS*	*NS*	2.17±1.14E-09	5.11±1.75E-09	7.43±8.18E-08
SP06	3	*NS*	*NS*	-5.47±9.83E-10	3.59±1.27E-09	1.58±0.77E-07
SP11	1	*NS*	*NS*	-1.14±1.53E-09	6.72±3.31E-09	2.27±0.82E-07
SP11	3	*NS*	*NS*	0.80±2.30E-09	6.84±2.79E-09	1.05±0.79E-07
SP12	1	7.06	916	0.32±2.07E-09	2.47±2.87E-09	6.11±0.76E-07
SP12	3	7.54	890	1.75±1.81E-09	6.65±2.23E-09	4.48±0.82E-07
SP12	4	7.23	1078	1.41±2.23E-09	9.30±2.43E-09	9.26±0.95E-07
SP18	1	*NS*	*NS*	3.77±3.96E-10	4.18±1.62E-09	3.36±8.03E-08
GSEEP	DOWN - D(1)	6.44	825	-1.41±1.43E-09	5.58±3.22E-09	8.43±0.92E-07
GSEEP	DOWN - D(2)	6.75	827	0.23±8.77E-10	5.04±1.72E-09	6.70±0.87E-07
GSEEP	DOWN - D(3)	7.28	920	-0.01±1.70E-09	7.11±2.80E-09	7.08±0.85E-07
GSEEP	DOWN - D(4)	6.30	975	0.57±1.54E-09	2.99±2.75E-09	7.65±0.90E-07

Table E - 8

1998 Contamination Indicator and Radiological Indicator Results at Well Points

Location Code	Date Collected	pH	Conductivity µmhos/cm@25°C	Gross Alpha µCi/mL	Gross Beta µCi/mL	Tritium µCi/mL
WP-A	*10/28/98*	9.01	97	1.82±0.83E-09	4.87±0.42E-08	9.22±0.30E-06
WP-C	*10/28/98*	7.46	120	5.21±6.71E-10	1.19±0.06E-07	4.09±0.12E-05
WP-H	*10/28/98*	7.05	582	6.16±1.80E-09	2.78±0.03E-06	6.54±0.23E-06

NS - Not sampled.

Table E - 9

1998 Detections of Volatile Organic Compounds at Selected Groundwater Monitoring Locations

Location Code	Sampling Quarter	1,1,1-TCA (µg/L)	1,1-DCA (µg/L)	DCDFMeth (µg/L)	1,2-DCE(total) (µg/L)	TCE (µg/L)
SP12	1	< 5.0	< 5.0	< 5.0	*NS*	< 5.0
	3	< 5.0	< 5.0	< 5.0	*NS*	< 5.0
803	1	< 5.0	< 5.0	2.0*	*NS*	< 5.0
	2	< 5.0	< 5.0	2.8*	*NS*	< 5.0
	3	< 5.0	< 5.0	< 5.0	*NS*	< 5.0
	4	< 5.0	< 5.0	< 5.0	*NS*	< 5.0
8609	1	< 5.0	< 5.0	< 5.0	*NS*	< 5.0
8612	1	2.0*	30.5	4.5*	23.5	< 5.0
	2	3.0*	29.0	5.0	23.0	< 5.0
	3	3.7*	23.5	< 5.0	25.0	< 5.0
	4	3.2*	25.0	6.4	28.0	< 5.0

Note: Samples are collected according to different schedules (annual, semiannual, or quarterly).
** Compound was detected below the practical quantitation limit (PQL of 5 µg/L).*
NS - Not sampled.

Table E - 10

1998 Tributyl Phosphate Sampling Results at Selected Groundwater Monitoring Locations

Location Code	Date	Tributyl Phosphate (TBP) *(µg/L)*
111	*12/10/97*	4.2*
	12/22/97	2.2*
	06/02/98	< 10.0
8605	*12/09/97*	475
	12/22/97	460
	06/02/98	534

Note: Samples are collected according to different schedules (annual, semiannual, or quarterly).
** Compound was detected below the practical quantitation limit (PQL) of 10 µg/L.*

Table E - 11

1998 Appendix 33 Metals (µg/L) Sampling Results

Location Code	Hydraulic Position	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper
Sand and Gravel									
301	UP(4)	< 10	< 10	200	< 1	< 5	330	< 50	< 25
401	UP(4)	< 10	20	480	< 1	5.3	690	< 50	66.0
111	DOWN - C(1)	< 60	< 10	67	< 5	< 5	< 10	8.7	< 20
408	DOWN - C(4)	2.5	4.0	345	< 1	1.1	94	2.8	5.8
502	DOWN - C(1)	*NS*	< 10	290	*NS*	< 2	420	8.5	4.1
502	DOWN - C(3)	*NS*	< 10	302	*NS*	< 5	398	1.3	< 25
502	DOWN - C(4)	2.5	4.1	333	< 1	1.1	876	3.0	5.8
8605	DOWN - C(1)	< 60	< 10	96	< 5	< 5	< 10	< 50	11.7
116	DOWN - D(4)	< 10	< 10	<200	< 1	< 5	22	< 50	< 25
Weathered Till									
NDATR	DOWN - C(1)	< 10	< 10	<200	< 1	< 5	< 5	< 50	< 25
NDATR	DOWN - C(2)	< 10	< 10	<200	< 1	< 5	< 5	< 50	< 25
NDATR	DOWN - C(3)	< 10	< 10	<200	< 1	< 5	< 10	< 50	< 25
NDATR	DOWN - C(4)	< 10	< 10	<200	< 1	< 5	< 10	< 50	< 25
909	DOWN - C(1)	< 10	10.5	<200	1	< 5	< 5	< 50	< 25

Sample collection quarter noted in parenthesis next to hydraulic position.
NS - Not sampled.

Table E - 11 *(concluded)*

1998 Appendix 33 Metals (µg/L) Sampling Results

Location Code	Hydraulic Position	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Tin	Vanadium	Zinc
Sand and Gravel										
301	UP(4)	4.6	< 0.2	240	6.35	< 10	< 10	< 3000	< 50	41.0
401	UP(4)	30.0	< 0.2	860	5.70	< 10	< 10	< 3000	< 50	170.0
111	DOWN -C(1)	< 3	< 0.2	< 40	< 5	< 10	*NS*	< 100	< 50	6.0
408	DOWN - C(4)	2.1	< 0.2	217	2.40	2.0	4	141	3.00	13.6
502	DOWN - C(1)	< 3	< 0.2	23	< 5	< 10	*NS*	*NS*	< 50	< 20
502	DOWN - C(3)	< 2	< 0.2	24	< 5	3.5	*NS*	*NS*	0.78	4.9
502	DOWN - C(4)	1.5	< 0.2	40	2.40	2.0	4	< 3000	2.35	9.2
8605	DOWN - C(1)	< 3	< 0.2	< 40	< 5	< 10	*NA*	< 100	< 50	< 20
116	DOWN - D(4)	3.2	< 0.2	< 40	7.20	< 10	< 10	< 3000	< 50	21.0
Weathered Till										
NDATR	DOWN - C(1)	<3	< 0.2	< 5	< 5	< 10	< 10	< 3000	< 50	42.4
NDATR	DOWN - C(2)	< 4	< 0.2	< 5	< 5	< 10	< 10	< 3000	< 50	27.6
NDATR	DOWN - C(3)	4.1	< 0.2	< 40	< 5	< 10	< 5	< 3000	< 50	29.0
NDATR	DOWN - C(4)	6.6	< 0.2	< 40	< 5	< 10	< 10	< 3000	< 50	68.5
909	DOWN - C(1)	< 3	< 0.2	14	< 5	< 10	< 10	< 3000	< 50	24.2

Sample collection quarter noted in parenthesis next to hydraulic position.
NS - Not sampled

Table E - 12

1998 Appendix 33 Metals (µg/L) Sampling Results from the WVDP Pilot Program Investigating Chromium and Nickel in the Sand and Gravel Unit

Location Code	Hydraulic Position	Chromium *(Total)*	Nickel *(Total)*
301	UP(1)	87	173
301	UP(2)	22	66
301	UP(3)	33	117
401	UP(1)	193	292
401	UP(2)	115	247
401	UP(3)	584	335
403	UP(1)	808	249
403	UP(2)	1170	91
403	UP(3)	953	92
403	UP(4)	2210	379
201	DOWN(1)	<5	12
201	DOWN(2)	<5	10
201	DOWN(3)	<5	8
201	DOWN(4)	<10	<40
203	DOWN(1)	177	285
203	DOWN(2)	80	194
203	DOWN(3)	399	714
203	DOWN(4)	255	1230
205	DOWN(1)	50	26
205	DOWN(2)	103	120
205	DOWN(3)	109	43
205	DOWN(4)	<10	<40
408	DOWN(1)	52	120
408	DOWN(2)	205	245
408	DOWN(3)	153	238
502	DOWN(1)	439	19
106	DOWN(1)	1550	405
106	DOWN(2)	149	67
106	DOWN(3)	432	142
106	DOWN(4)	1480	1300
116	DOWN(1)	434	183
116	DOWN(2)	565	95
116	DOWN(3)	359	154
601	DOWN(1)	1120	66
601	DOWN(2)	731	41
601	DOWN(3)	1230	557
601	DOWN(4)	285	322
605	DOWN(1)	<5	32
605	DOWN(2)	<5	16
605	DOWN(3)	22	181
605	DOWN(4)	105	360

Note: These analyses were used in the chromium and nickel investigation (See Chapter 3.)

Table E - 13

1998 Sampling Parameters at Early Warning Monitoring Wells (µg/L)

Location Code	Sample Round	Aluminum *Total*	Iron *Total*	Manganese *Total*
502	(1)	37.0	4100	17
	(3)	46.3	2840	12

Table E - 14

1998 Alpha- Beta- and Gamma-emitting Radioisotopic Results (µCi/mL)

Location Code	Hydraulic Position	C-14	I-129	Cs-137
Sand and Gravel				
401	UP(1)	-0.65±1.36E-11	5.64±9.01E-10	0.00±1.48E-08
406	DOWN(1)	-0.69±1.36E-11	-5.74±7.20E-10	0.00±2.61E-08
408	DOWN(1)	-4.28± 6.71E-11	1.11±1.35E-09	0.00±5.27E-09
Weathered Till				
NDATR	DOWN(1)	-0.52± 1.35E-11	1.55±7.52E-10	0.00±1.90E-08
NDATR	DOWN(2)	*NS*	1.38±1.67E-09	*NS*
NDATR	DOWN(3)	1.33± 0.39E-08	2.81±1.73E-09	0.00±1.70E-08
909	DOWN(1)	0.97± 1.50E-11	1.04±0.22E-08	0.00±1.51E-08
909	DOWN(2)	*NS*	7.17±2.04E-09	*NS*

Sample collection quarter noted in parenthesis next to hydraulic position.
NS - Not sampled.

Table E - 14 (continued)

1998 Alpha- Beta- and Gamma-emitting Radioisotopic Results (µCi/mL)

Location Code	Hydraulic Position	Sr-90	Tc-99	Ra-226	Ra-228	U-232
Sand and Gravel						
401	UP(1)	3.80±2.16E-09	-4.88±1.69E-09	7.42±3.79E-10	3.20±0.44E-09	-0.34±1.64E-10
111	DOWN(1)	2.68±0.04E-06	*NS*	*NS*	*NS*	*NS*
406	DOWN(1)	3.62±1.52E-09	8.48±1.51E-09	1.77±2.45E-10	2.62±0.35E-09	1.41±1.01E-10
408	DOWN(1)	2.73±0.00E-04	2.89±0.22E-08	0.81±1.17E-08	3.09±3.22E-08	2.05±5.42E-11
501	DOWN(1)	9.84±0.03E-05	*NS*	*NS*	*NS*	*NS*
502	DOWN(1)	7.29±0.02E-05	*NS*	*NS*	*NS*	*NS*
602	DOWN(1)	1.13±0.26E-08	*NS*	*NS*	*NS*	*NS*
602	DOWN(3)	1.04±0.28E-08	*NS*	*NS*	*NS*	*NS*
8605	DOWN(1)	7.11±0.06E-06	*NS*	*NS*	*NS*	*NS*
8609	DOWN(1)	2.48±0.10E-07	*NS*	*NS*	*NS*	*NS*
8609	DOWN(3)	2.72±0.10E-07	*NS*	*NS*	*NS*	*NS*
105	DOWN(2)	5.30±0.55E-08	*NS*	*NS*	*NS*	*NS*
116	DOWN(1)	3.67±0.41E-08	*NS*	*NS*	*NS*	*NS*
116	DOWN(3)	2.80±0.38E-08	*NS*	*NS*	*NS*	*NS*
605	DOWN(1)	2.94±0.37E-08	*NS*	*NS*	*NS*	*NS*
605	DOWN(3)	2.20±0.30E-08	*NS*	*NS*	*NS*	*NS*
801	DOWN(1)	3.24±0.05E-06	*NS*	*NS*	*NS*	*NS*
801	DOWN(2)	3.79±0.04E-06	*NS*	*NS*	*NS*	*NS*
801	DOWN(3)	3.57±0.04E-06	*NS*	*NS*	*NS*	*NS*
801	DOWN(4)	3.30±0.04E-06	*NS*	*NS*	*NS*	*NS*
8603	DOWN(1)	5.24±0.06E-06	*NS*	*NS*	*NS*	*NS*
8603	DOWN(3)	7.61±0.04E-06	*NS*	*NS*	*NS*	*NS*
Weathered Till						
NDATR	DOWN(1)	4.53±0.31E-08	-7.04±1.65E-09	2.63±2.66E-10	2.56±0.42E-09	0.38±1.41E-10
NDATR	DOWN(2)	5.78±0.57E-08	2.16±1.62E-09	*NS*	*NS*	*NS*
NDATR	DOWN(3)	4.88±0.43E-08	0.12±1.46E-09	6.58±2.95E-10	2.62±0.42E-09	-1.40±7.37E-11
NDATR	DOWN(4)	5.16±0.40E-08	*NS*	*NS*	*NS*	0.74±1.28E-10
909	DOWN(1)	1.92±0.10E-07	-5.56±1.66E-09	2.88±1.99E-10	4.05±0.47E-09	2.16±2.36E-10
909	DOWN(2)	1.62±0.09E-07	1.32±1.60E-09	*NS*	*NS*	2.79±9.93E-11
909	DOWN(4)	*NS*	*NS*	*NS*	*NS*	0.78±1.43E-10

Sample collection quarter noted in parenthesis next to hydraulic position.
NS - Not sampled.

Table E - 14 *(concluded)*

1998 Alpha- Beta- and Gamma-emitting Radioisotopic Results (µCi/mL)

Location Code	Hydraulic Position	U-233/234	U-235/236	U-238	Total U (µg/mL)
Sand and Gravel					
401	UP(1)	3.46±7.34E-11	3.92±8.40E-11	7.95±9.76E-11	7.04±0.60E-05
406	DOWN(1)	1.86±1.20E-10	6.21±7.35E-11	1.95±1.27E-10	2.00±0.08E-04
408	DOWN(1)	3.49±0.13E-10	0.95±2.32E-11	2.27±0.70E-10	4.07±0.13E-04
Weathered Till					
NDATR	DOWN(1)	7.60±2.52E-10	6.99±8.26E-11	6.29±2.23E-10	2.00±0.05E-03
NDATR	DOWN(3)	1.76±0.31E-09	9.37±7.20E-11	1.54±0.29E-09	4.10±0.05E-03
NDATR	DOWN(4)	1.90±0.39E-09	5.68±8.61E-11	1.44±0.33E-09	4.36±0.07E-03
909	DOWN(1)	1.25±0.39E-09	0.92±1.09E-10	9.07±3.28E-10	2.25±0.13E-03
909	DOWN(2)	1.11±0.26E-09	4.51±6.26E-11	9.55±2.36E-10	2.59±0.08E-03
909	DOWN(4)	1.16±0.33E-09	3.42±6.71E-11	1.03±0.30E-09	2.29±0.12E-03

Table E - 15

Modified Practical Quantitation Limits (PQLs) in µg/L for Appendix 33 Parameters

COMPOUND	PQL	COMPOUND	PQL
Appendix 33 Volatiles		*Appendix 33 Volatiles*	
Acetone	10	Methacrylonitrile	5
Acetonitrile	100	Methyl ethyl ketone	10
Acrolein	5	Methyl iodide	5
Acrylonitrile	5	Methyl methacrylate	5
Allyl chloride	5	4-Methyl-2-pentanone	10
Benzene	5	Methylene bromide	10
Bromodichloromethane	5	Methylene chloride	5
Bromoform	5	Pentachloroethane	5
Bromomethane	10	Propionitrile	50
Carbon disulfide	10	Styrene	5
Carbon tetrachloride	5	1,1,1,2-Tetrachloroethane	5
Chlorobenzene	5	1,1,2,2-Tetrachloroethane	5
Chloroethane	10	Tetrachloroethylene	5
Chloroform	5	Toluene	5
Chloromethane	10	1,1,1-Trichloroethane	5
Chloroprene	5	1,1,2-Trichloroethane	5
1,2-Dibromo-3-chloropropane	5	1,2,3-Trichloropropane	5
Dibromochloromethane	5	Vinyl acetate	10
1,2-Dibromoethane	5	Vinyl chloride	10
Dichlorodifluoromethane	5	Xylene (total)	5
1,1-Dichloroethane	5	cis-1,3-Dichloropropene	5
1,2-Dichloroethane	5	trans-1,2-Dichloroethylene	5
1,1-Dichloroethylene	5	trans-1,3-Dichloropropene	5
1,2-Dichloropropane	5	trans-1,4-Dichloro-2-butene	5
Ethyl benzene	5	Trichloroethylene	5
Ethyl methacrylate	5	Trichlorofluoromethane	5
2-Hexanone	10		
Isobutyl alcohol	100		
Metals		*Metals*	
Aluminum	200	Manganese	15
Antimony	10	Lead	3
Arsenic	10	Mercury	0.2
Barium	200	Nickel	5 or 40**
Beryllium	1	Selenium	5
Cadmium	5	Silver	10
Chromium	5 or 10**	Thallium	10
Cobalt	50	Tin	3000
Copper	25	Vanadium	50
Iron	100	Zinc	20

*** Ni and Cr - Lower PQL per WVDP-266, Field Data Collection Plan (West Valley Nuclear Services Co., Inc. and Dames & Moore December 1996)*

Note: Specific quantitation limits are highly matrix-dependent and may not always be achievable.

Table E - 15 (*continued*)

Modified Practical Quantitation Limits (PQLs) in µg/L for Appendix 33 Parameters

COMPOUND	PQL	COMPOUND	PQL
Appendix 33 Semivolatiles		*Appendix 33 Semivolatiles*	
Acenaphthene	10	2,4-Dinitrotoluene	10
Acenaphthylene	10	2,6-Dinitrotoluene	10
Acetophenone	10	Diphenylamine	10
2-Acetylaminofluorene	10	Ethyl methanesulfonate	10
4-Aminobiphenyl	10	Famphur	10
Aniline	10	Fluoranthene	10
Anthracene	10	Fluorene	10
Aramite	10	Hexachlorobenzene	10
Benzo[a]anthracene	10	Hexachlorobutadiene	10
Benzo[a]pyrene	10	Hexachlorocyclopentadiene	10
Benzo[b]fluoranthene	10	Hexachloroethane	10
Benzo[ghi]perylene	10	Hexachlorophene	500
Benzo[k]fluoranthene	10	Hexachloropropene	10
Benzyl alcohol	10	Indeno(1,2,3,-cd)pyrene	10
Bis(2-chlorethyl)ether	10	Isodrin	10
Bis(2-chloroethoxy)methane	10	Isophorone	10
Bis(2-chloroisopropyl)ether	10	Isosafrole	10
Bis(2-ethylhexyl)phthalate	10	Kepone	70
Bis(2-chloro-1- methylethyl) ether	10	Methapyrilene	10
4-Bromophenyl phenyl ether	10	Methyl methanesulfonate	10
Butyl benzyl phthalate	10	3-Methylcholanthrene	10
Chlorobenzilate	10	2-Methylnaphthalene	10
2-Chloronaphthalene	10	1,4-Naphthoquinone	10
2-Chlorophenol	10	1-Naphthylamine	10
4-Chlorophenyl phenyl ether	10	2-Naphthylamine	10
Chrysene	10	Nitrobenzene	10
Di-n-butyl phthalate	10	5-Nitro-o-toluidine	10
Di-n-octyl phthalate	10	4-Nitroquinoline 1-oxide	50
Diallate	10	N-Nitrosodi-n-butylamine	10
Dibenz[a,h]anthracene	10	N-Nitrosodiethylamine	10
Dibenzofuran	10	N-Nitrosodipropylamine	10
3,3-Dichlorobenzidine	10	N-Nitrosodimethylamine	10
2,4-Dichlorophenol	10	N-Nitrosodipropylamine	10
2,6-Dichlorophenol	10	N-Nitrosodiphenylamine	10
Diethyl phthalate	10	N-Nitrosomethylethylamine	10
Dimethoate	10	N-Nitrosomorpholine	10
7, 12-Dimethylbenz[a]anthracene	10	N-Nitrosopiperidine	10
3,3-Dimethylbenzidine	20	N-Nitrosopyrrolidine	10
2,4-Dimethylphenol	10	Naphthalene	10
Dimethyl phthalate	10	0,0,0-Triethyl phosphorothioate	10
4,6-Dinitro-o-cresol	25	0,0-Diethyl 0-2-pyrazinyl- phosphorothioate	10
2,4-Dinitrophenol	25		

Note: Specific quantitation limits are highly matrix-dependent and may not always be achievable.

Table E - 15 *(concluded)*

Modified Practical Quantitation Limits (PQLs) in µg/L for Appendix 33 Parameters

COMPOUND	PQL	COMPOUND	PQL
Appendix 33 Semivolatiles		*Appendix 33 Semivolatiles*	
p-(Dimethylamino)azobenzene	10	2,3,4,6-Tetrachlorophenol	10
p-Chloroaniline	10	Tetraethyl dithiopyrophosphate	10
p-Chloro-m-cresol	10	1,2,4-Trichlorobenzene	10
p-Cresol	10	2,4,5-Trichlorophenol	25
p-Dichlorobenzene	10	2,4,6-Trichlorophenol	10
p-Nitroaniline	25	alpha,alpha-Dimethylphenethylamine	50
p-Nitrophenol	25	m-Cresol	10
p-Phenylenediamine	20	m-Dichlorobenzene	10
Parathion	10	m-Dinitrobenzene	10
Pentachlorobenzene	10	m-Nitroaniline	25
Pentachloronitrobenzene	10	o-Cresol	10
Pentachlorophenol	25	o-Dichlorobenzene	10
Phenacetin	10	o-Nitroaniline	25
Phenanthrene	10	o-Nitrophenol	10
Phenol	10	o-Toluidine	10
Pronamide	10	sym-Trinitrobenzene	10
Pyrene	10	2-Picoline	10
Safrole	10	Pyridine	10
1,2,4,5-Tetrachlorobenzene	10	1,4-Dioxane	10

Note: Specific quantitation limits are highly matrix-dependent and may not always be achievable.

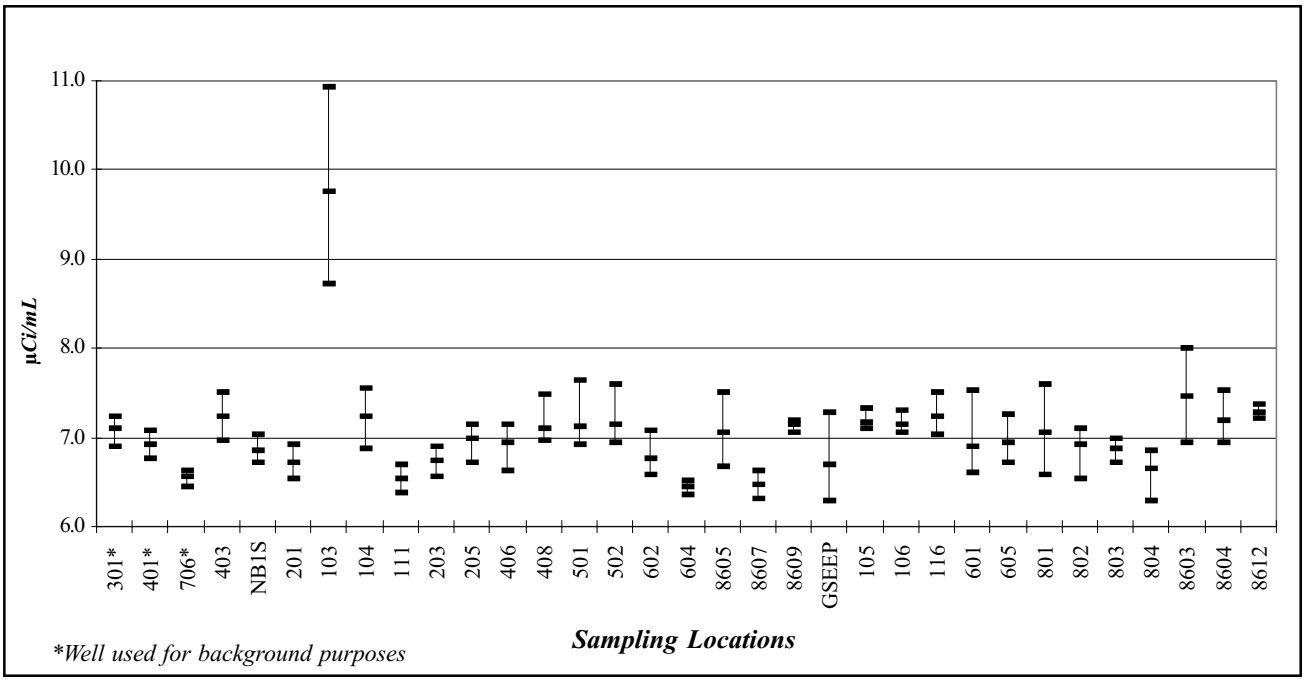

Figure E-1. pH in Groundwater Samples from the Sand and Gravel Unit

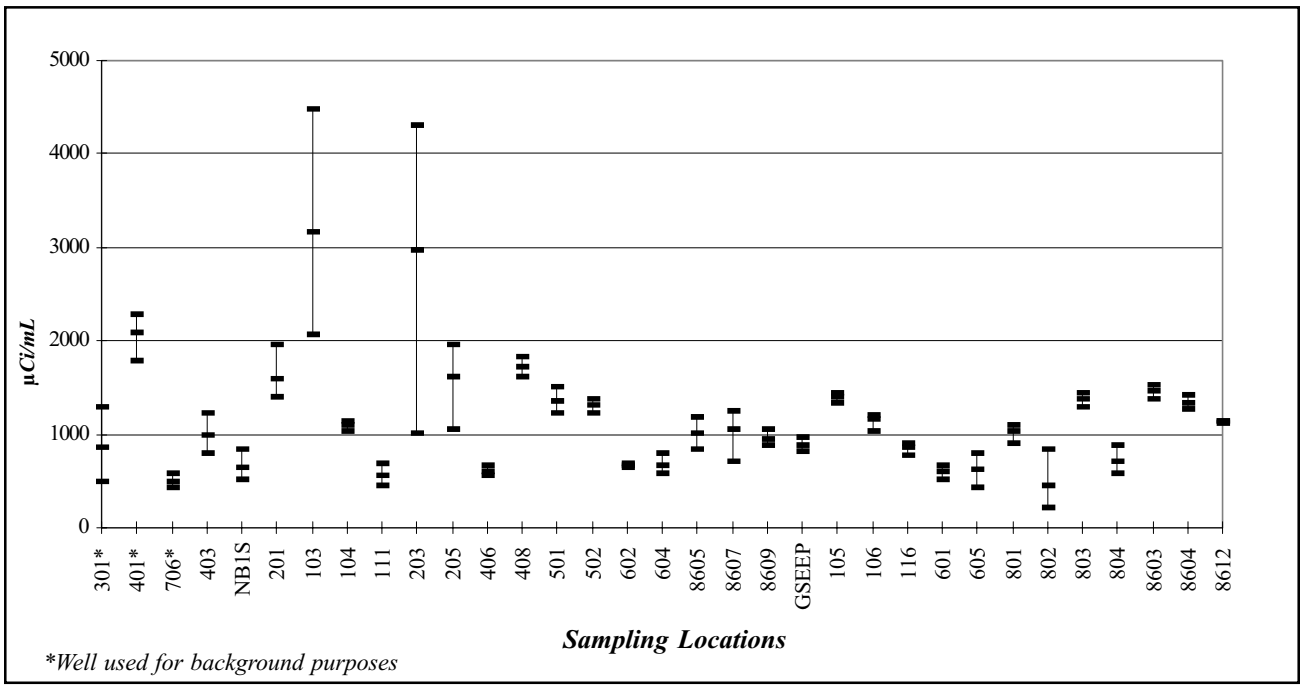

Figure E-2. Conductivity (µmhos/cm@25°C) in Groundwater Samples from the Sand and Gravel Unit

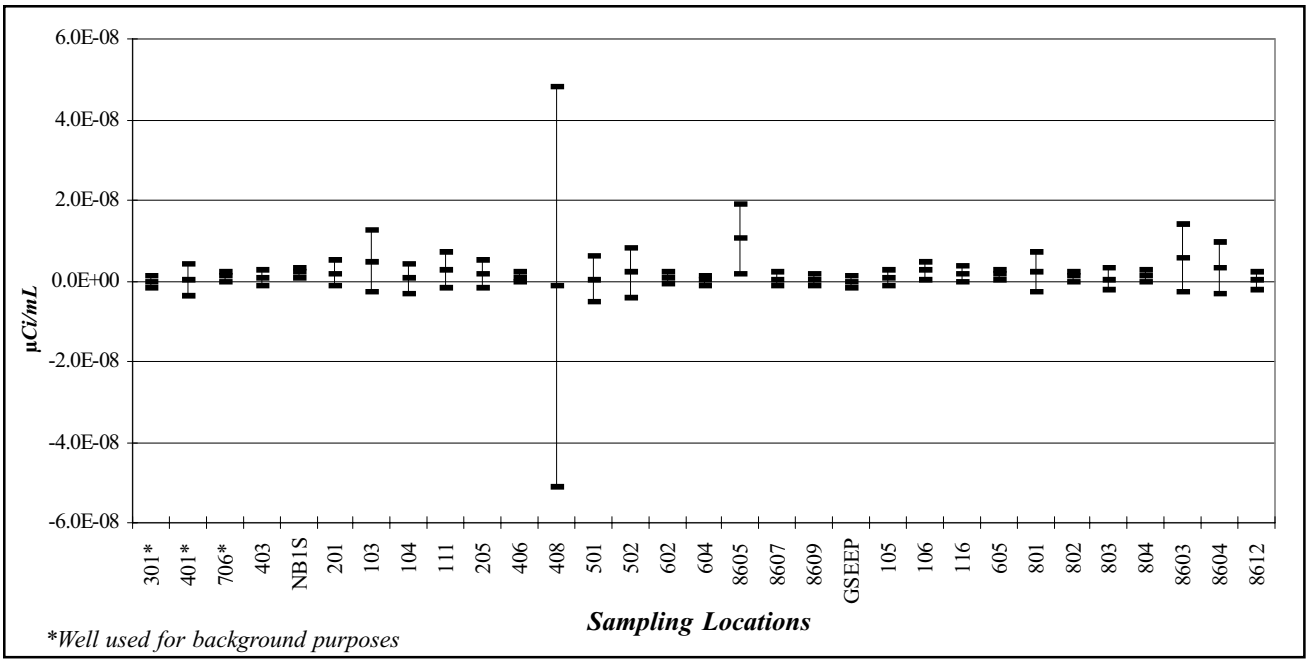

Figure E-3. Gross Alpha (µCi/mL) in Groundwater Samples from the Sand and Gravel Unit (Fig. E-3a follows with magnified scale.)

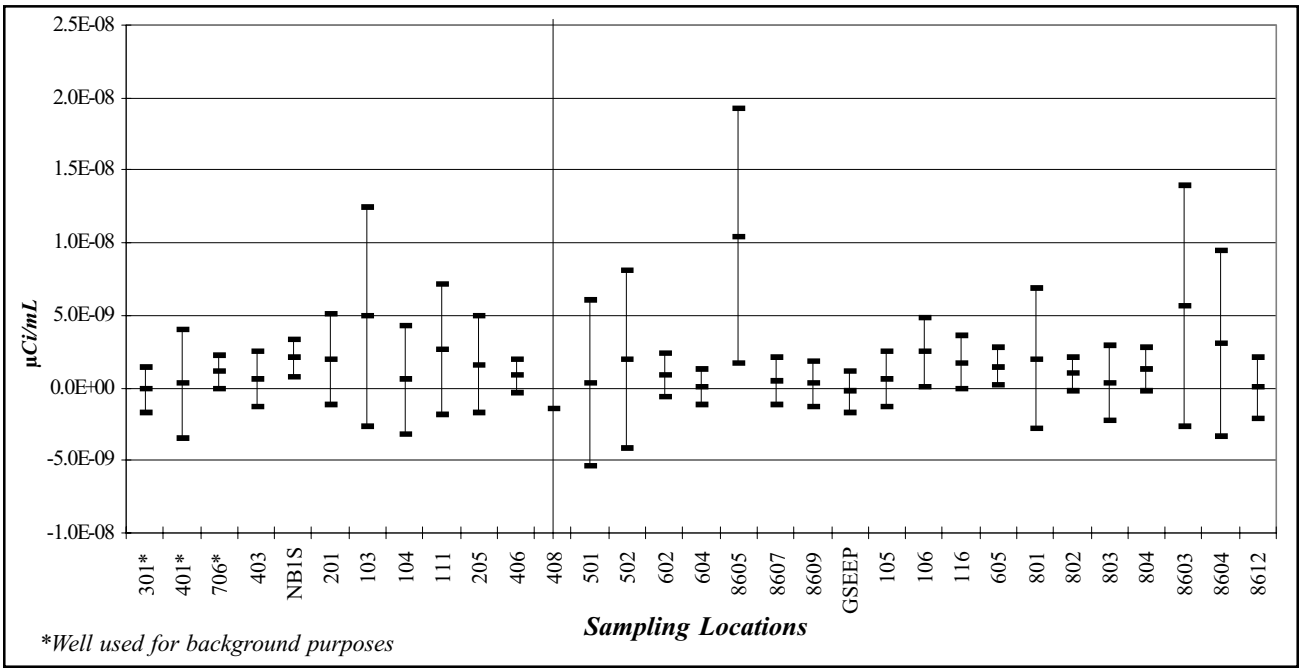

Figure E-3a. Gross Alpha (µCi/mL) in Groundwater Samples from the Sand and Gravel Unit (magnified scale of Fig. E-3)

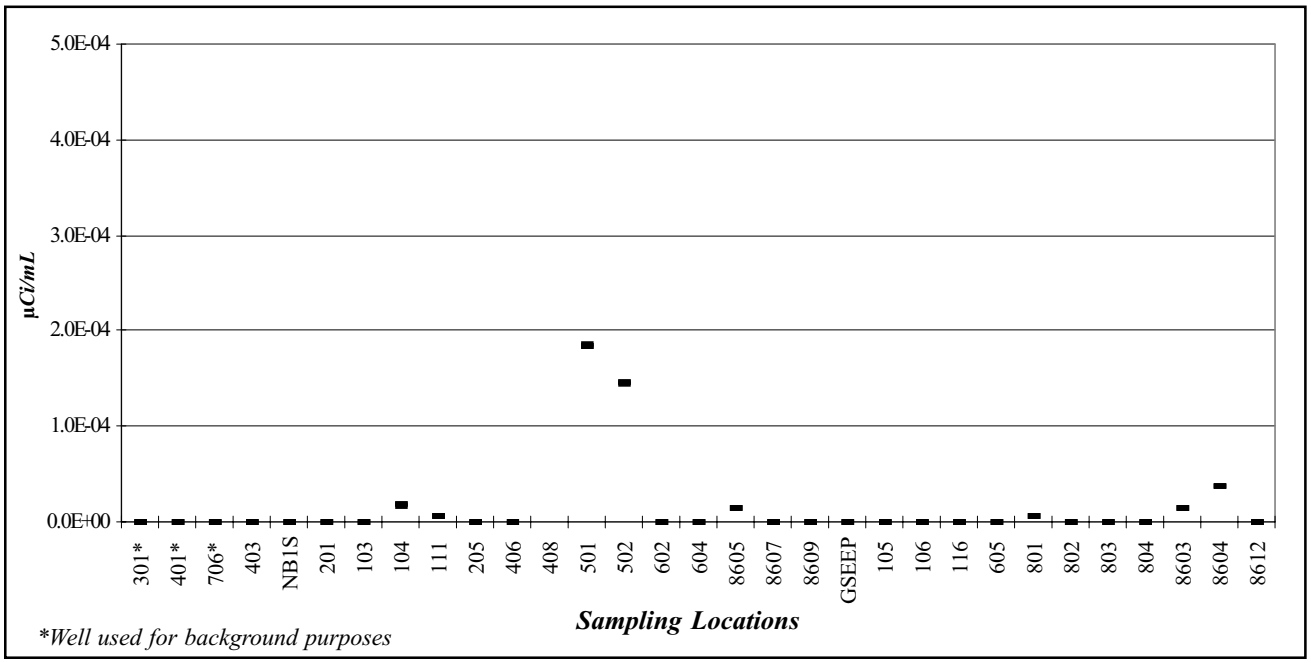

Figure E-4. Gross Beta (µCi/mL) in Groundwater Samples from the Sand and Gravel Unit (Fig. E-4a follows with magnified scale.)

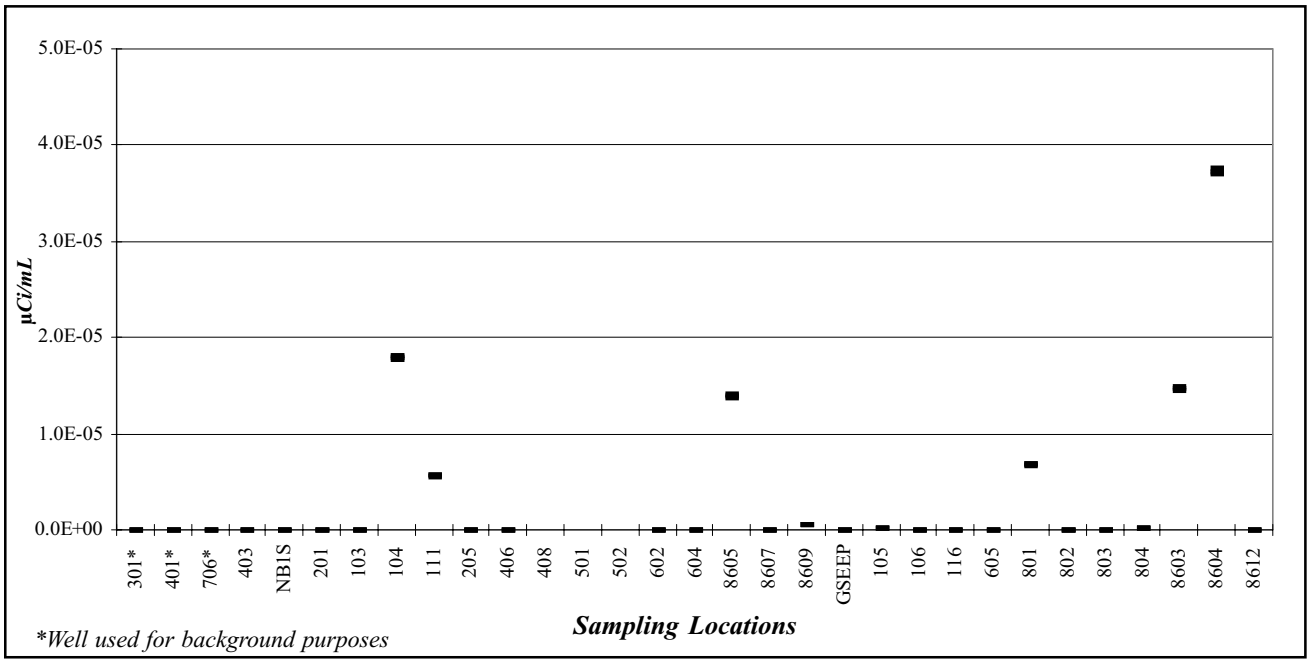

Figure E-4a. Gross Beta (µCi/mL) in Groundwater Samples from the Sand and Gravel Unit (magnified scale of Fig. E-4)*

** Wells with results greater than the maximum value of the Y-axis are not shown in Fig. E-4a. Please refer to Fig. E-4.*

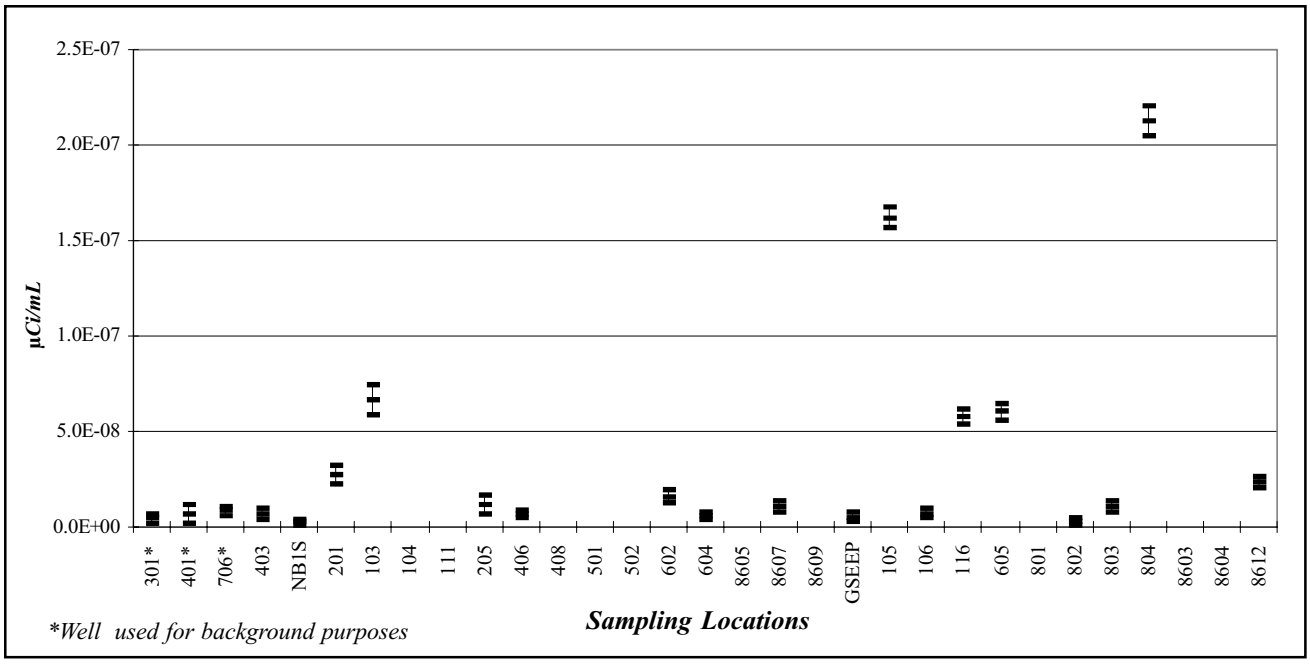

Figure E-4b. Gross Beta (µCi/mL) in Groundwater Samples from the Sand and Gravel Unit (magnified scale of Fig. E-4a)*

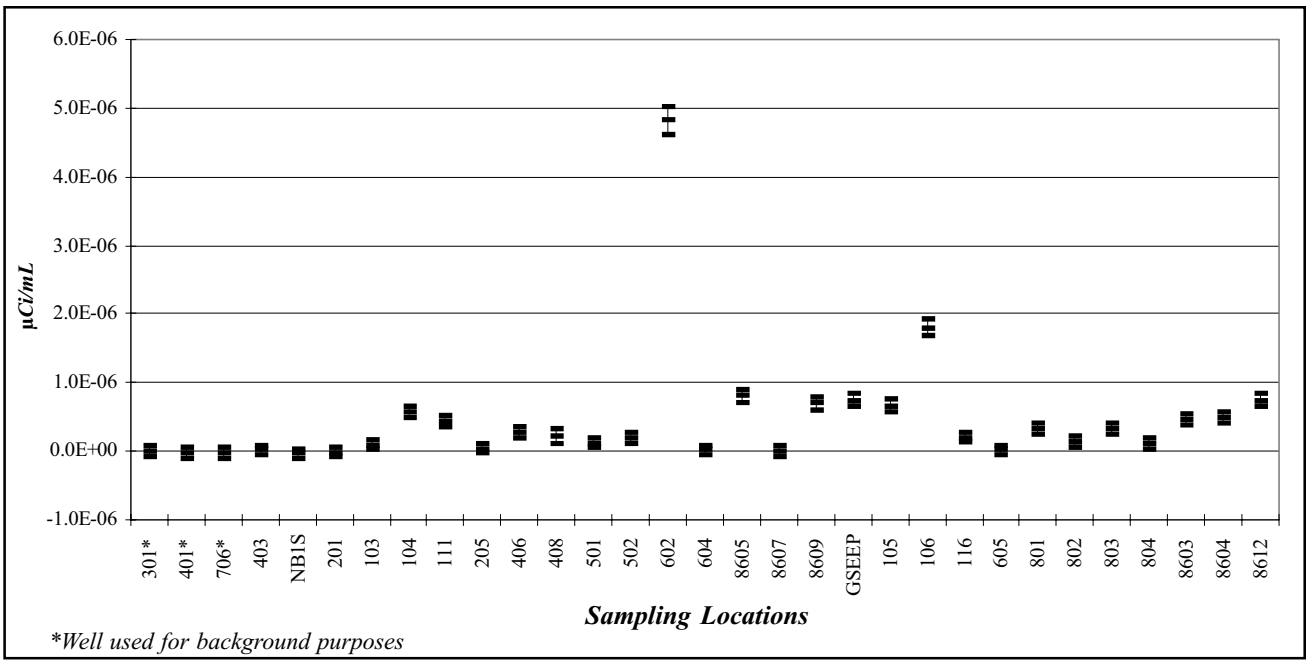

Figure E-5. Tritium Activity (µCi/mL) in Groundwater Samples from the Sand and Gravel Unit (Fig. E-5a follows with magnified scale.)

** Wells with results greater than the maximum value of the Y-axis are not shown in Fig. E-4b. Please refer to Fig. E-4 and E-4a.*

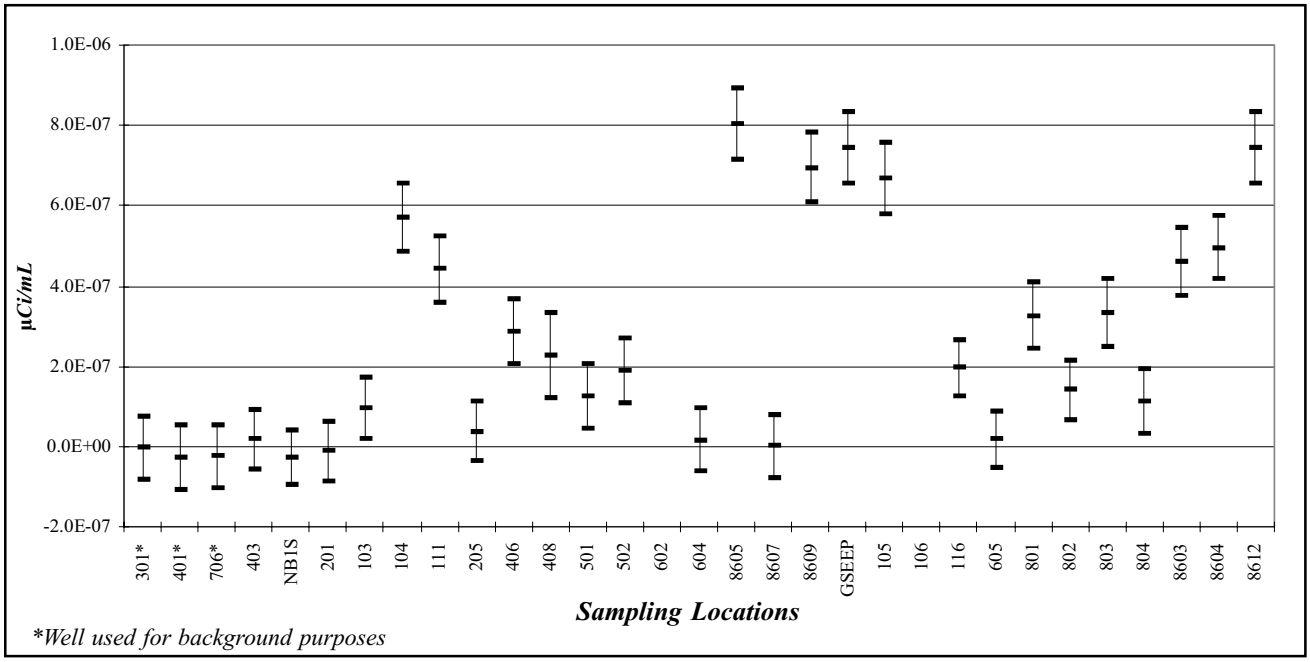

Figure E-5a. Tritium Activity (µCi/mL) in Groundwater Samples from the Sand and Gravel Unit (magnified scale of Fig. E-5)*

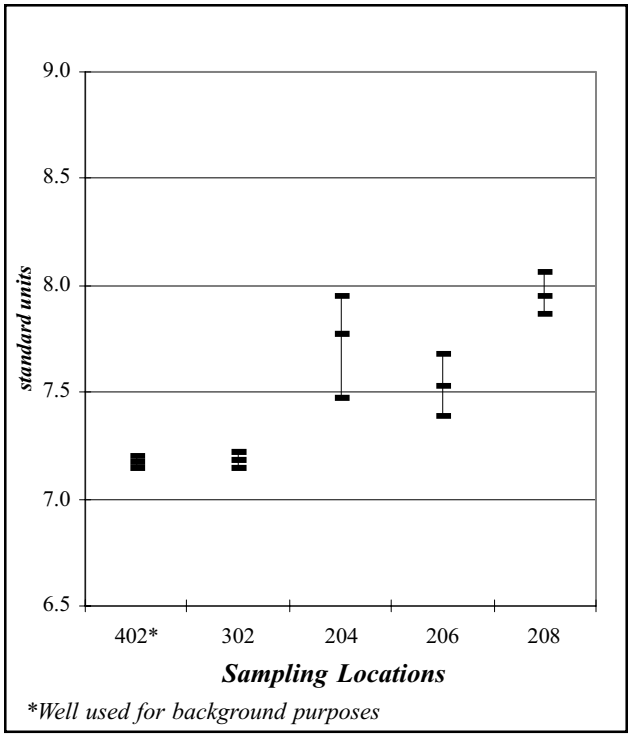

Figure E-6. pH of Groundwater Samples from the Till-sand Unit

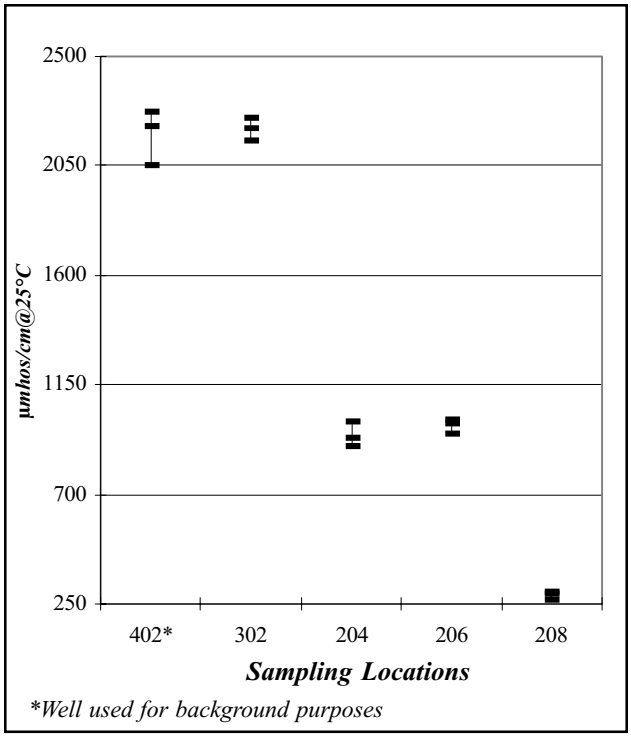

Figure E-7. Conductivity (µmhos/cm@25°C) of Groundwater Samples from the Till-sand Unit

** Wells with results greater than the maximum value of the Y-axis are not shown in Fig. E-5a. Please refer to Fig. E-5.*

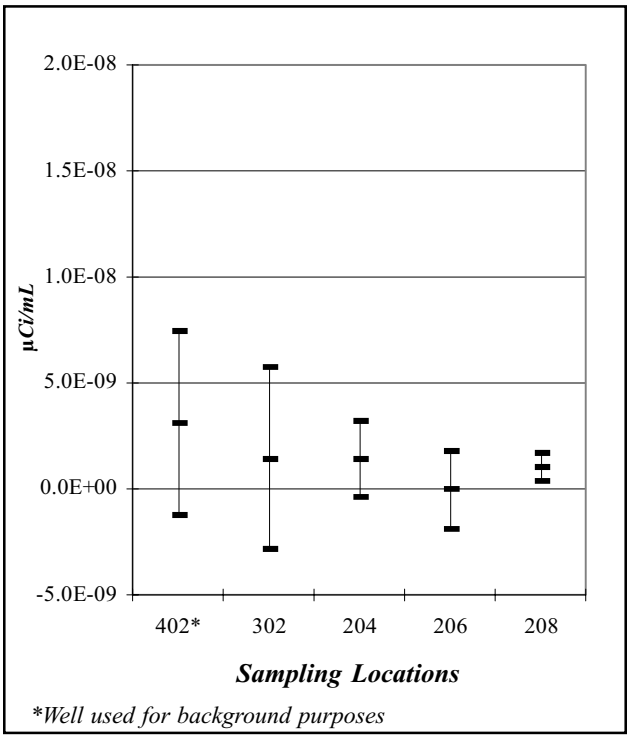

Figure E-8. Gross Alpha (µCi/mL) in Groundwater Samples from the Till-sand Unit

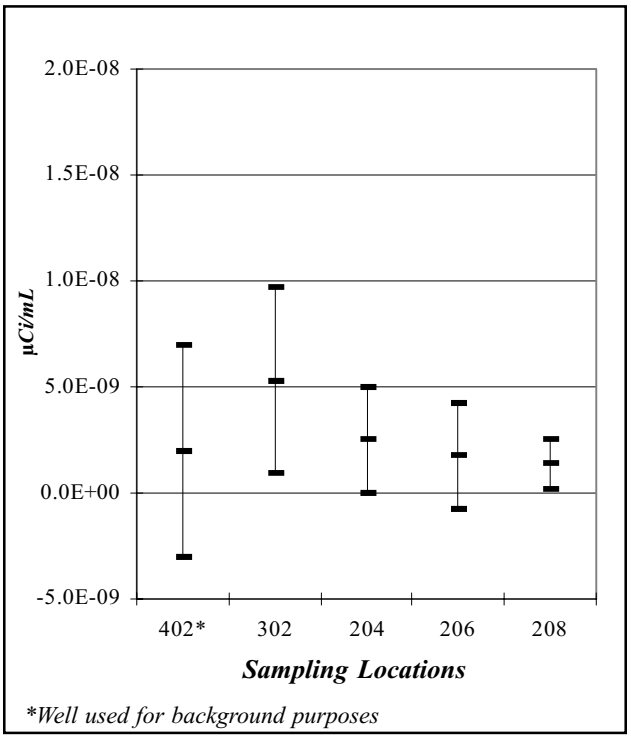

Figure E-9. Gross Beta (µCi/mL) in Groundwater Samples from the Till-sand Unit

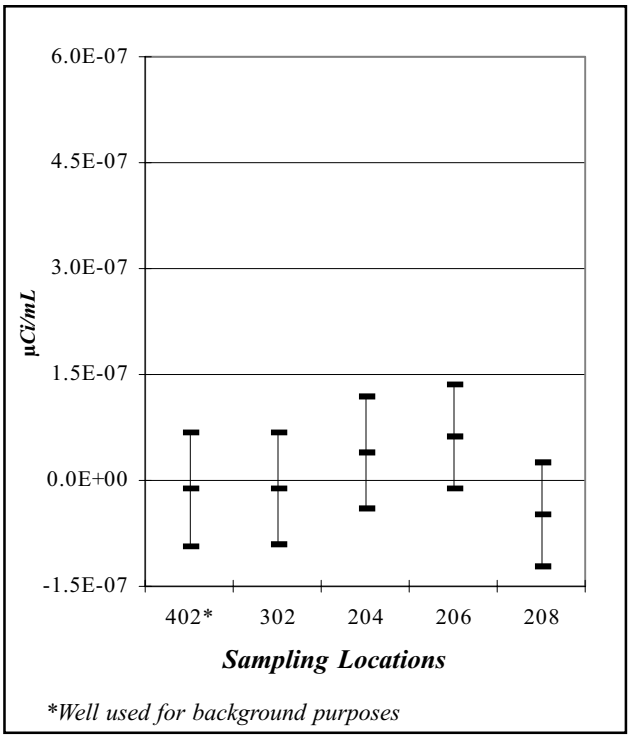

Figure E-10. Tritium Activity (µCi/mL) in Groundwater Samples from the Till-sand Unit

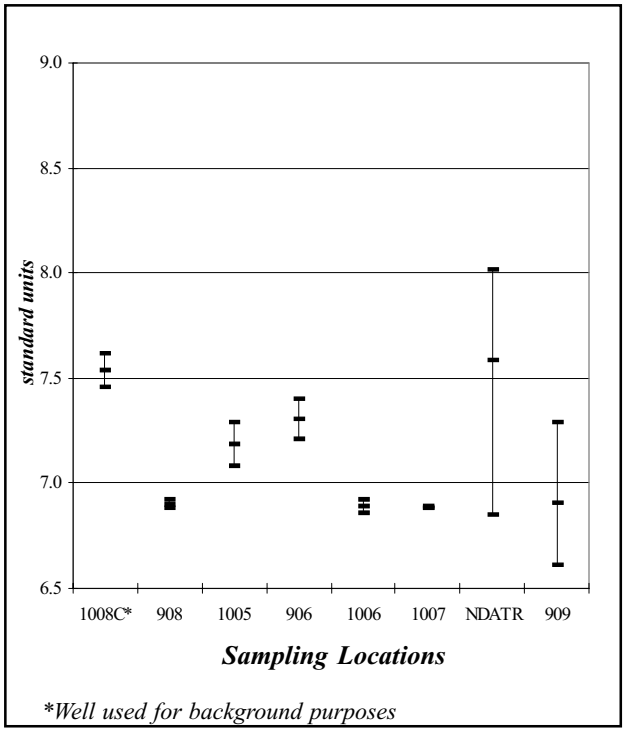

Figure E-11. pH of Groundwater Samples from the Weathered Lavery Till Unit

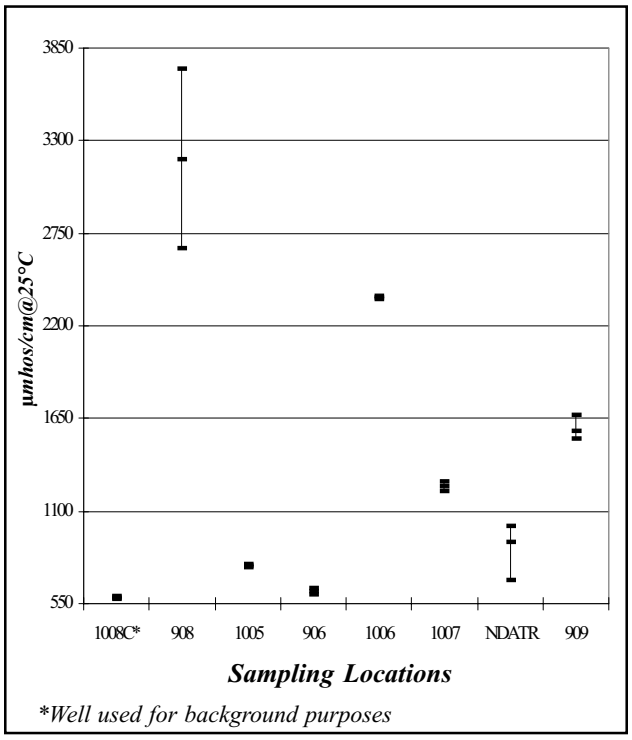

Figure E-12. Conductivity (µmhos/cm@25°C) of Groundwater Samples from the Weathered Lavery Till Unit

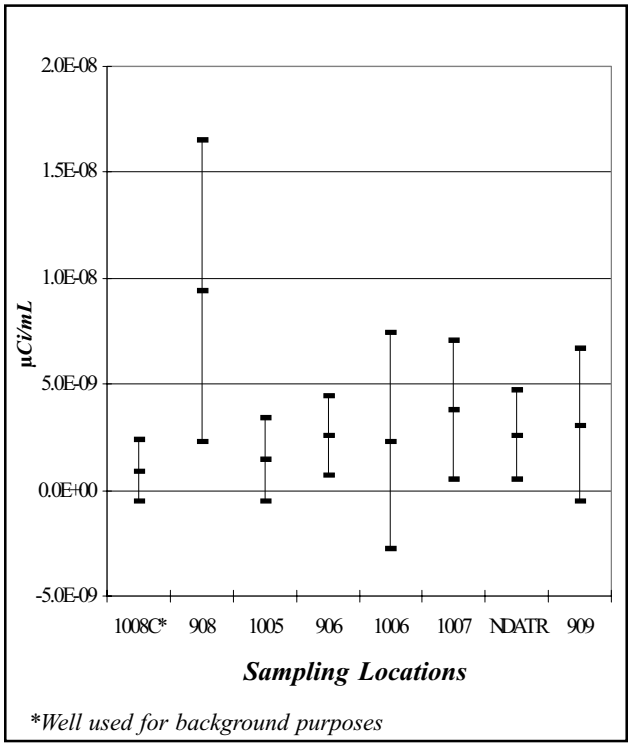

Figure E-13. Gross Alpha (µCi/mL) in Groundwater Samples from the Weathered Lavery Till Unit

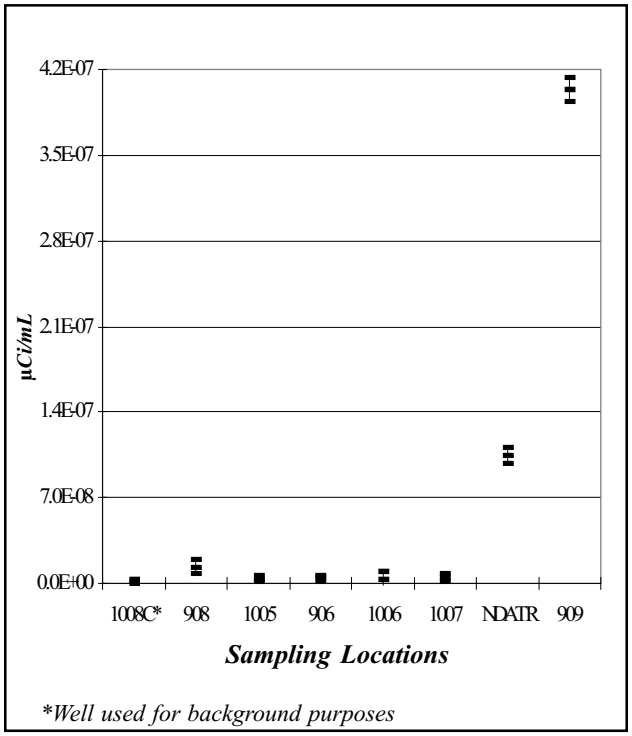

Figure E-14. Gross Beta (µCi/mL) in Groundwater Samples from the Weathered Lavery Till Unit (Fig. E-14a follows with magnified scale)

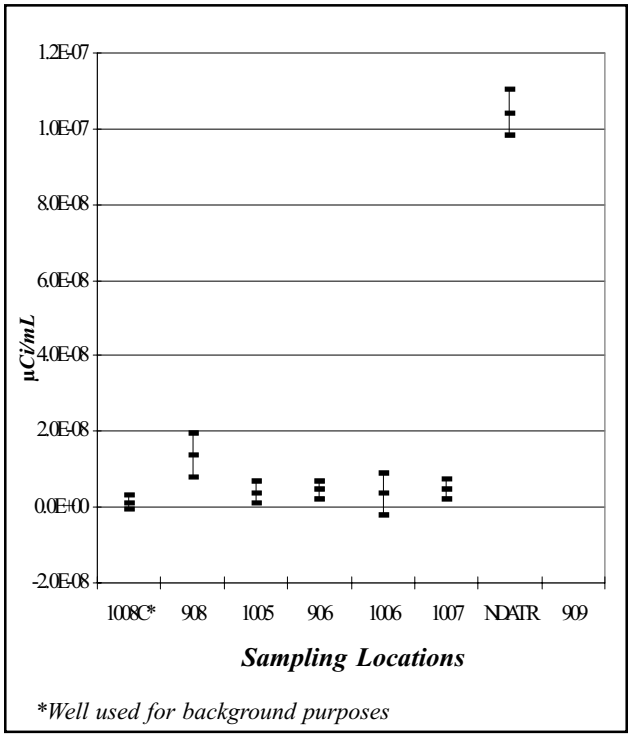

Figure E-14a. Gross Beta (µCi/mL) in Groundwater Samples from the Weathered Lavery Till Unit (magnified scale of Fig. E-14)*

** Wells with results greater than the maximum value of the Y-axis are not shown in Fig. E-14a. Please refer to Fig. E-14.*

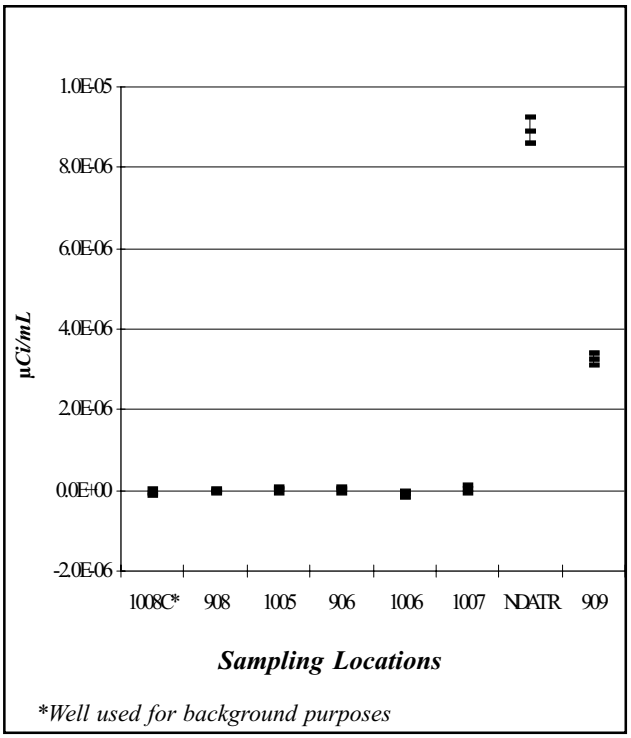

Figure E-15. Tritium Activity (µCi/mL) in Groundwater Samples from the Weathered Lavery Till Unit

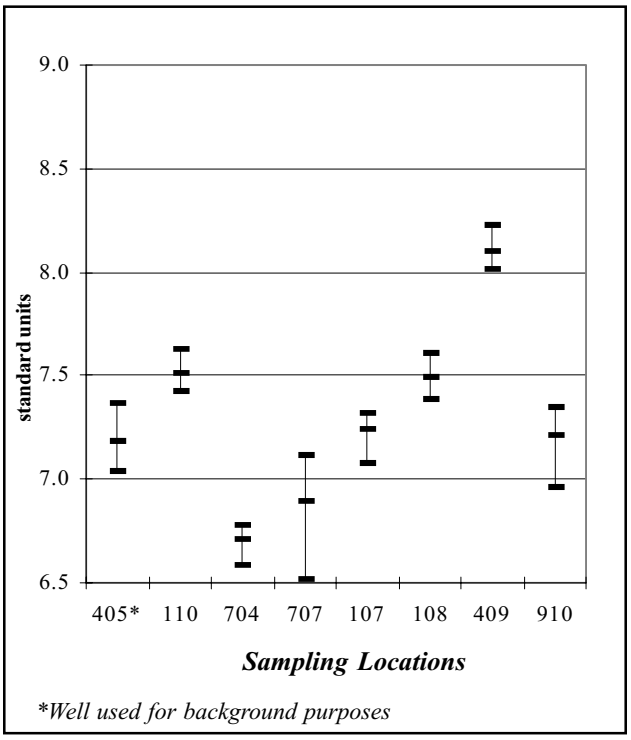

Figure E-16. pH of Groundwater Samples from the Unweathered Lavery Till Unit

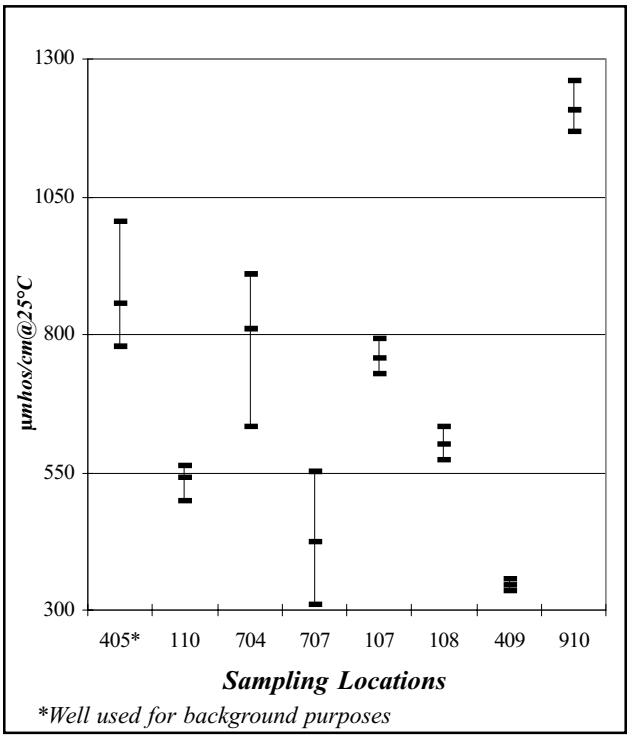

Figure E-17. Conductivity (µmhos/cm@25°C) of Groundwater Samples from the Unweathered Lavery Till Unit

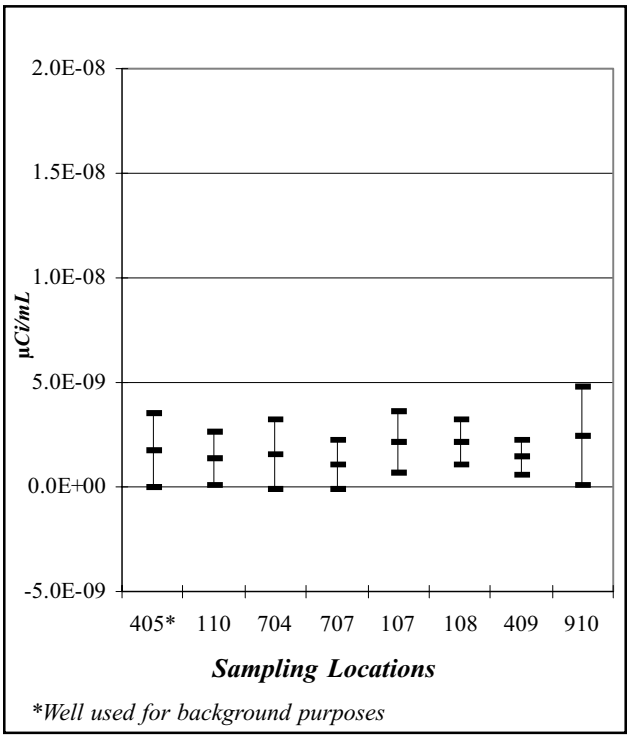

Figure E-18. Gross Alpha (µCi/mL) in Groundwater Samples from the Unweathered Lavery Till Unit

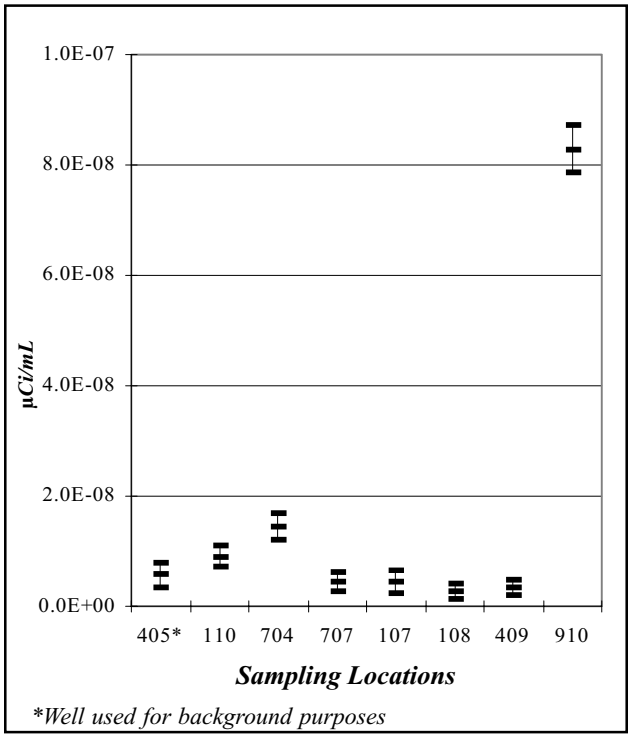

Figure E-19. Gross Beta (µCi/mL) in Groundwater Samples from the Unweathered Lavery Till Unit (Fig. E-19a follows with magnified scale)

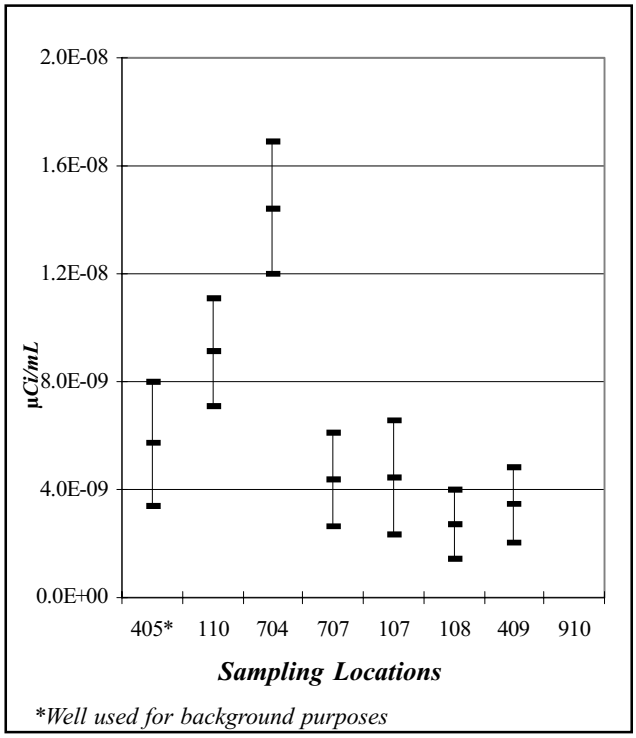

Figure E-19a. Gross Beta (µCi/mL) in Groundwater Samples from the Unweathered Lavery Till Unit (magnified scale of Fig. E-19)*

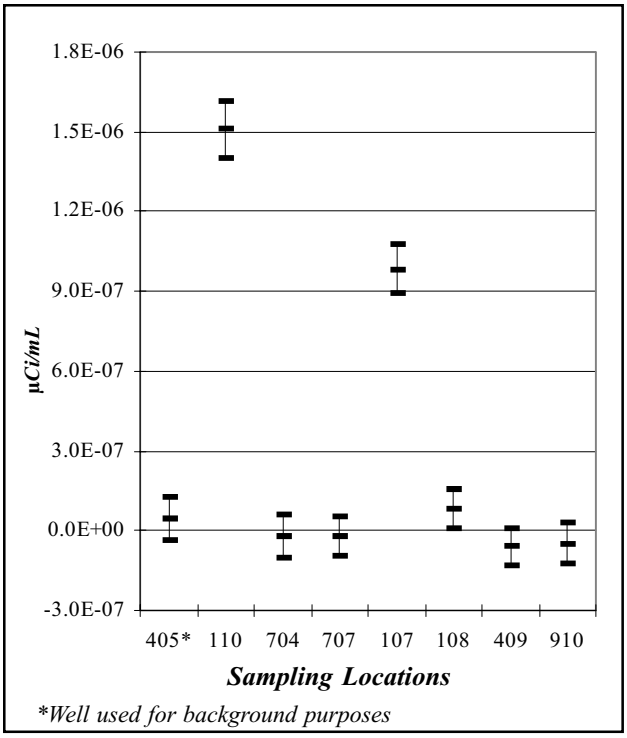

Figure E-20. Tritium Activity (µCi/mL) in Groundwater Samples from the Unweathered Lavery Till Unit

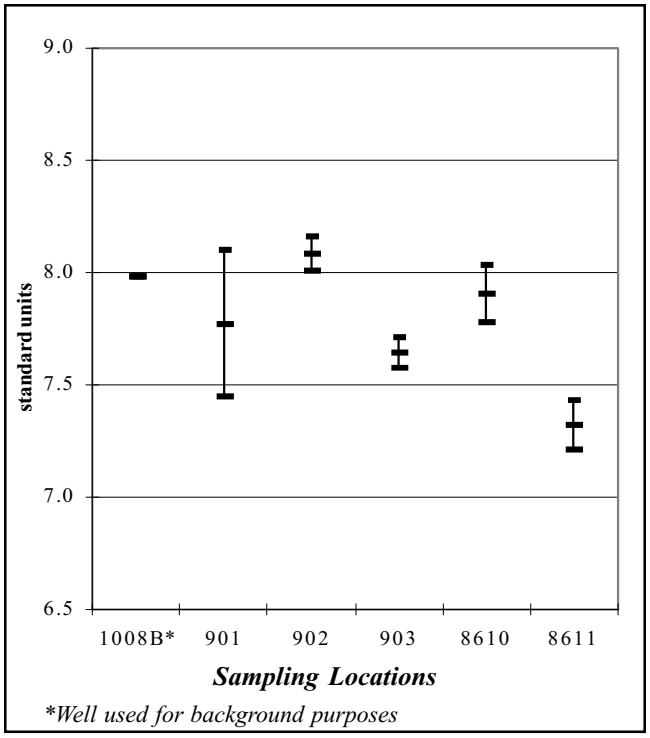

Figure E-21. pH of Groundwater Samples from the Kent Recessional Sequence

** Wells with results greater than the maximum value of the Y-axis are not shown in Fig. E-19a. Please refer to Fig. E-19.*

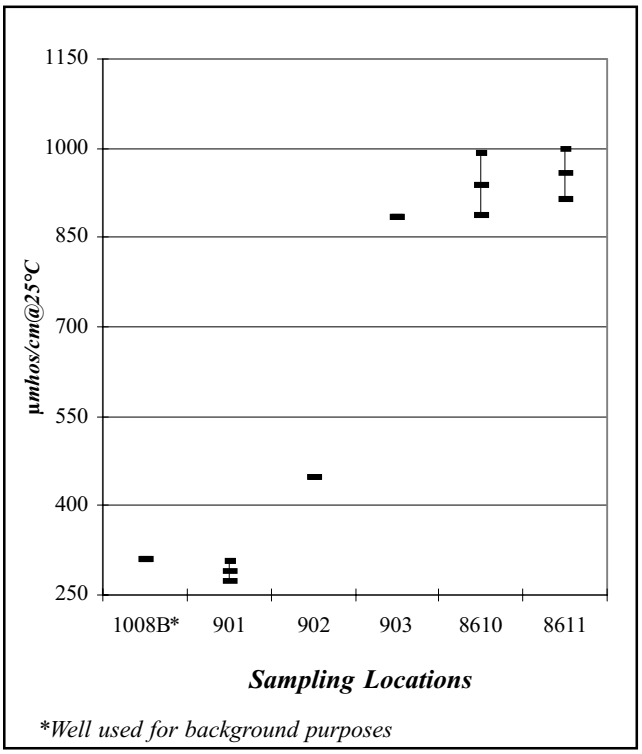

Figure E-22. Conductivity (µmhos/cm@25°C) of Groundwater Samples from the Kent Recessional Sequence

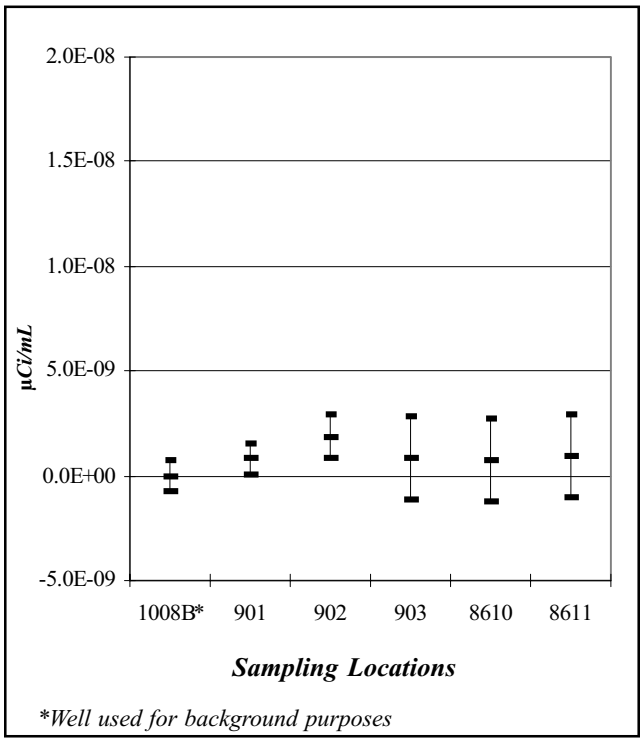

Figure E-23. Gross Alpha (µCi/mL) in Groundwater Samples from the Kent Recessional Sequence

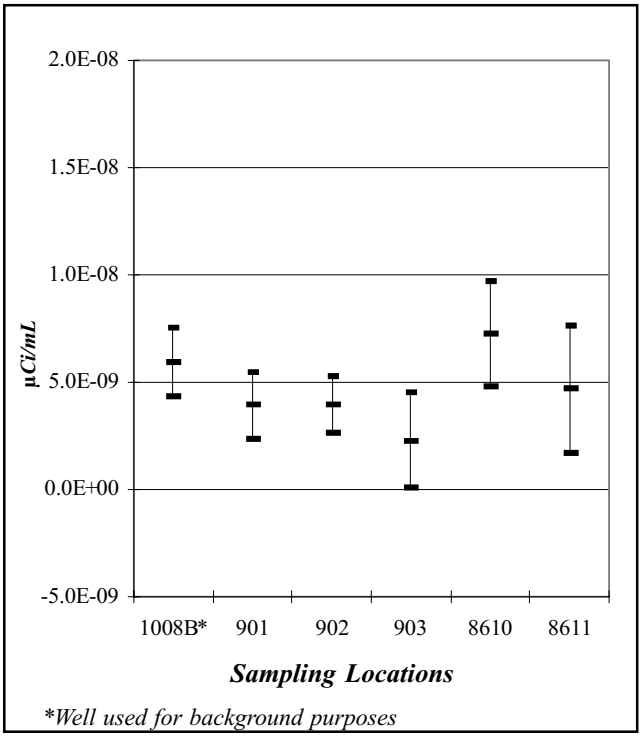

Figure E-24. Gross Beta (µCi/mL) in Groundwater Samples from the Kent Recessional Sequence

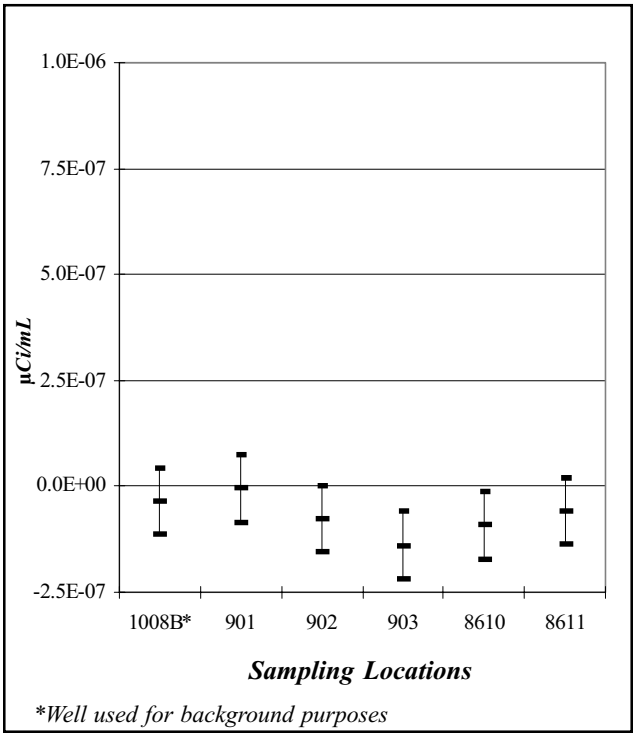

Figure E-25. Tritium Activity (µCi/mL) in Groundwater Samples from the Kent Recessional Sequence