

APPENDIX E

MICROPURGE LOGS

**FINAL REPORT
GROUNDWATER INVESTIGATION
RAMSDELL QUARRY LANDFILL
RAVENNA ARMY AMMUNITION PLANT**

RVAAP RQL MICROPURGE LOG SHEET

PROJECT NAME: Ramsdell Quarry Landfill GW Investigation

DELIVERY ORDER NO. 003

LOCATION ID: RQLmw-006

INITIAL W.L.: 35.49 FT BTOC

DATE: 9/20/98

FINAL W.L.: 36.89 FT BTOC

TIME	FLOW RATE (mls/min)	W.L. (ft BTOC)	TEMP (C)	pH (SU)	COND. (ms/cm)	TURBIDITY (NTU)	D.O. (mg/L)	COMMENTS
1328	~250	36.24	14.41	6.06	785	222	0.31	↓ Flow rate
1333	~60	36.32	14.70	6.07	741	177	0.23	
1338	~50	36.34	*15.33	6.13	742	130	0.30	*Tubing in bright sun. Cover w/ towels
1344	~45	36.40	15.63	6.17	741	76	0.32	
1348	~40	36.42	15.56	6.19	736	15	0.34	Sample - Parameters Stable
<hr/>								
1435	100	? hitting top pump	7.9	6.05	0.766	49	19.99	Initial
1440	40	"	8.7	6.17	0.772	2	9.04	
1445	50	"	8.2	6.28	0.773	1	9.79	
1450	50	"	8.4	6.29	0.766	0	9.94	

RECORDED BY: [Signature]
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QA CHECK BY: [Signature] 06/07/99
(Signature and Date)

RVAAP RQL MICROPURGE LOG SHEET

PROJECT NAME: Ramsdell Quarry Landfill GW Investigation

DELIVERY ORDER NO: 003

LOCATION ID: RQLmw-000

INITIAL W.L.: 36.70 FT BTOC

DATE: 10/19/98

FINAL W.L.: 37.30 FT BTOC

± 0.5 ± 0.2 $\pm 10\%$

TIME	FLOW RATE (m/s/min)	W.L. (ft BTOC)	TEMP (C)	pH (SU)	COND. (ms/cm)	TURBIDITY (NTU)	D.O. (mg/L)	COMMENTS
1505	~90	36.70	15.29	6.49	796	—	5.70	pumping to slow to obtain turbidity
1510	~80	36.76	14.79	6.45	793	13	4.92	
1515	~100	37.04	13.32	6.51	793	9	5.70	pumping too fast - pump rate turn back
1520	~80	37.14	13.58	6.53	782	5	5.36	
1525	~55	37.12	13.87	6.62	769	8	5.56	
1530	~75	37.30	13.56	6.62	771	5	5.63	flow rate increased on its own

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RVAAP ROL MICROPURGE LOG SHEET

PROJECT NAME: Ramsdell Quarry Landfill GW Investigation

DELIVERY ORDER NO: 003

LOCATION ID: RQLmw-006

INITIAL W.L.: 36.92 FT BTOC

DATE: 4/10/99

FINAL W.L.: _____ FT BTOC

TIME	FLOW RATE (m/s/min)	W.L. (ft BTOC) <small>.10/10.u.f.</small>	TEMP (C) <small>.5</small>	pH (SU) <small>.2</small>	COND. (ms/cm) <small>1070</small>	TURBIDITY (NTU)	D.O. (mg/L)	COMMENTS
1520	NR	36.36	12.13	6.59	369	NR	16.15	↓ flow rate
1525	Adjusting	36.42	10.94	6.69	700	16	8.79	
1530	↓	36.54	10.76	6.72	697	3	7.70	
1535	50	36.57	10.96	6.77	694	1	7.11	stabilize - sample
5.27.99 0955	220ml/m	35.92	11.0°	6.20	1.08	166	17.78	↓ flow rate
1000	adjusting	37.72	10.5°	6.05	1.10	44	16.89	
1003	105ml/m	36.81	11.2°	6.00	1.09	6	15.17	stable flow rate
1008	105ml/m	36.81	11.2	5.82	1.08	-10(0)	14.54	refill: 5sec disch: 15sec @ 15psi
1013	↓	36.81	11.3°	5.83	1.07	0	14.31	
1018	↓	36.60	12.7°	5.83	1.07	0	13.49	
1023	135ml/m	36.62	12.1°	5.83	1.06	7	14.41	
1028	↓	36.66	10.8°	5.88	1.06	0	13.64	
1033	adjusting	37.09	10.4	5.85	1.05	0	13.50	temperature spikes are due to direct sunlight on flow cell.
1038		36.95	11.5	5.85	1.04	0	12.78	
1043		36.95	11.8	5.83	1.03	0	12.31	
1048	150ml/min	37.01	11.0	5.72	1.04	0	12.50	Stable - sample TOTAL PURGED = 2gal

K.L. Dornick 5.27.99

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(Signature and Date)

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RVAAP RQL MICROPURGE LOG SHEET

PROJECT NAME: Ramsdell Quarry Landfill GW Investigation

DELIVERY ORDER NO. 003

LOCATION ID: RQLmw-007

INITIAL W.L.: ~8.67 (see p.5) FT BTOC

DATE: 9/20/98

FINAL W.L. _____ FT BTOC

TIME	FLOW RATE (m ³ /min)	W.L. (ft BTOC)	TEMP (C)	pH (SU)	COND. (ms/cm)	TURBIDITY (NTU)	D.O. (mg/L)	COMMENTS
1002	~200	?	16.94	6.13	1400	251	0.10	↓ Flow Rate
1009	~200	?	16.43	6.18	1394	165	0.06	↓ Flow Rate
1014	~120	?	16.59	6.17	1390	55	0.05	
1019	~120	?	16.46	6.18	1387	34	0.03	STABLE
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1210	400	7.12	5.6	6.91	0.668	155	15.08	initial
1215	400	7.12	5.7	6.66	1.00	10	13.28	
1220	400	7.12	5.6	6.62	1.16	0	13.35	
1225	400	7.12	5.5	6.59	1.17	0	13.58	STABLE

11/1/99

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RVAAP RQL MICROPURGE LOG SHEET

PROJECT NAME: Ramsdell Quarry Landfill GW Investigation

DELIVERY ORDER NO: 003

LOCATION ID: RQL-007

INITIAL W.L.: NA - hit top of pump FT BTOC

DATE: 10/20/98

FINAL W.L. NA FT BTOC

TIME	FLOW RATE (m/s/min)	W.L. (ft BTOC)	TEMP (C)	pH (SU)	COND. (ms/cm)	TURBIDITY (NTU)	D.O. (mg/L)	COMMENTS
0930	~400	NA	14.27	6.15	2117	44	2.02	
0935	~60	NA	14.38	6.16	2521	11	1.52	
0940	~55	NA	14.35	6.15	2532	9	1.33	
0945	~55	NA	14.22	6.17	2538	7	1.52	

5/28/99 initial	WL	7.53						
1104	390ml/min	7.60	14.4°C	6.51	1.42	360	17.14	DISCHARGE = 20.5 s REFILL = 5.0 s @ 8psi
1109		7.60	13.1	6.35	1.43	295	15.93	
1114		7.60	12.7	6.36	1.44	115	14.91	
1119		7.60	12.5	6.44	1.46	33	14.12	
1124		7.60	12.1	6.42	1.46	-10 (0)	13.62	Turbidity fluctuations are from new water entering flow cell.
1129	↓	7.60	12.0	6.44	1.46	0	13.42	TOTAL PURGED = ~5 gal.

RECORDED BY: Matthew Root 5/28/99

(Signature and Date)

QA CHECK BY: Matthew Root 06/02/99

(Signature and Date)

RVAAP ROL MICROPURGE LOG SHEET

PROJECT NAME: Ramsdell Quarry Landfill GW Investigation

DELIVERY ORDER NO. 003

LOCATION ID: RQLMN-007

INITIAL W.L.: 6.24 FT BTOC

DATE: 4/11/99

FINAL W.L. 6.42 FT BTOC

TIME	FLOW RATE (m/s/min)	W.L. (ft BTOC)	TEMP (C)	pH (SU)	COND. (ms/cm)	TURBIDITY (NTU)	D.O. (mg/L)	COMMENTS
1520	Adjusting	6.32	8.70 8.77	6.89	541	200	8.79	↓ flow
1525	~500	6.42	8.39	6.80	665	115	6.40	
1530	~500	6.42	8.13	6.75	712	140	5.65	
1535	~500	6.42	8.07	6.74	720	152	5.14	
1540	~500	6.42	8.00	6.73	729	148	4.35	stable

RECORDED BY: [Signature] 4/11/99
(Signature and Date)

QA CHECK BY: [Signature] 4/10/99
(Signature and Date)

RVAAP RQL MICROPURGE LOG SHEET

PROJECT NAME: Ramsdell Quarry Landfill GW Investigation

DELIVERY ORDER NO. 003

LOCATION ID: RQLM₂ - 0008

INITIAL W.L.: 8.89 FT BTOC

DATE: 9/19/98

FINAL W.L.: 9.00 FT BTOC

TIME	FLOW RATE (m ³ /s/min)	W.L. (ft BTOC)	TEMP (C)	pH (SU)	COND. (ms/cm)	TURBIDITY (NTU)	D.O. (mg/L)	COMMENTS
1305	~200	8.89	17.28	6.14	1270	198	1.90	↓ Flow RATE
1310	~120	9.05	16.84	6.08	1339	43	3.49	
1315	~120	9.05	16.58	6.05	1405	22	3.62	
1320	~200	9.05	16.52	6.06	1423	20	3.37	STABLE
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1015	~800	7.32	4.6	6.57	0.792	10	11.55	Initial
1020	~400	7.42	5.4	6.67	0.784	10	11.91	
1025	~400	7.42	5.6	6.65	0.860	3	11.81	
1030	~400	7.42	5.7	6.60	0.862	8	12.25	STABLE

9/14/99

RECORDED BY: [Signature] 9/19/98
(Signature and Date)

QA CHECK BY: [Signature] 06/07/99
(Signature and Date)

RVAAP RQL MICROPURGE LOG SHEET

PROJECT NAME: Ramsdell Quarry Landfill GW Investigation

DELIVERY ORDER NO.: 003

LOCATION ID: RQL MW-008

INITIAL W.L.: NA - pump too high FT BTOC

DATE: 10/20/98

FINAL W.L.: NA FT BTOC

TIME	FLOW RATE (m/s/min)	W.L. (ft BTOC)	TEMP (C)	pH (SU)	COND. (ms/cm)	TURBIDITY (NTU)	D.O. (mg/L)	COMMENTS
1225	~200	14.73 ^{MS 10/20/98}	14.73	6.12	1939	137 ^{MS 10/20/98} 8	2.70	
1230	~100	NA	14.93	6.08	2057	5	1.44	
1235	~80	NA	14.51	6.07	2128	4	1.19	
1240	~80	NA	14.70	6.05	2163	3	1.12	

RECORDED BY: _____

[Signature] 10/20/98
(Signature and Date)

QA CHECK BY: _____

[Signature] 7/19/99
(Signature and Date)

RYAAP ROL MICROPURGE LOG SHEET

PROJECT NAME: Ramsdell Quarry Landfill GW Investigation

DELIVERY ORDER NO. 003

LOCATION ID: RQLMW-008

INITIAL W.L.: 6.20 FT BTOC

DATE: 4/11/99

FINAL W.L.: _____ FT BTOC

TIME	FLOW RATE (m/s/min)	W.L. (ft BTOC)	TEMP (C)	pH (SU)	COND. (ms/cm)	TURBIDITY (NTU)	D.O. (mg/L)	COMMENTS
1400	Adjusting	6.62	7.76	6.84	436	119	6.71	
1405	500	6.62	7.63	6.82	459	42	2.97	
1410	500	6.62	7.61	6.81	467	40	2.45	STABLE
0822	Initial	7.44						
0833	adjusting	7.70 ^{KD}	12.1	6.34	1.11	45	13.03	
0838	240ml/min	7.75 ^{KD}	11.3	6.38	1.14	-10 (φ)	13.32	DISCH = 25 s REFILL = 5 s
0843	500ml/min	7.75	11.0	6.40	1.17	φ	13.80	~5 PSI
0848	500ml/min	7.75	10.9	6.46	1.21	φ	13.94	Stable; sample. Total purged ~ 3 gal

28.99

RECORDED BY: [Signature] W.L. 4/11/99 KL Dominic 5.28.99
(Signature and Date)

QA CHECK BY: [Signature] 4/10/99
(Signature and Date)

RVAAP RQL MICROPURGE LOG SHEET

PROJECT NAME: Ramsdell Quarry Landfill GW Investigation

DELIVERY ORDER NO: 003

LOCATION ID: RQLmw-009

INITIAL W.L.: 7.98 FT BTOC

DATE: 2/19/98

FINAL W.L.: 8.04 FT BTOC

TIME	FLOW RATE (m/s/min)	W.L. (ft BTOC)	TEMP (C)	pH (SU)	COND. (ms/cm)	TURBIDITY (NTU)	D.O. (mg/L)	COMMENTS
0910	100	8.04	17.22	6.45	552	6.5	3.66	initial
0915	~100	8.04	17.12	6.40	562	1.4	3.48	
0920	~100	8.04	17.11	6.39	568	0	2.95	
0925	~100	8.04	17.09	6.39	573	0	2.66	STABLE Total = 3/4 gallons removed
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1/14/99 0750	~400	5.90	3.8	5.61	0.195	374	10.99	initial
0755	~400	5.90	4.5	5.65	0.212	157	13.74	
0800	~400	5.90	4.5	5.70	0.213	142	11.45	
0805	~400	5.90	4.5	5.76	0.214	76 ⁷⁰ 65	12.05	STABLE

RECORDED BY: [Signature] 2/19/98
(Signature and Date)

QA CHECK BY: [Signature] 02/07/99
(Signature and Date)

RVAAP ROL MICROPURGE LOG SHEET

PROJECT NAME: Ramsdell Quarry Landfill GW Investigation

DELIVERY ORDER NO. 003

LOCATION ID: RQL MW-109

INITIAL W.L.: 8.12 FT BTOC

DATE: 10/20/98

FINAL W.L.: 8.18 FT BTOC

TIME	FLOW RATE (m/s/min)	W.L. (ft BTOC)	TEMP (C)	pH (SU)	COND. (ms/cm)	TURBIDITY (NTU)	D.O. (mg/L)	COMMENTS
1400 ^{MR 10/20/98} 1405	~100 ~140	8.12	15.96 14.70 ^{MR 10/20/98}	6.20	1195 500 ^{MR 10/20/98}	11	3.67	
1410	~80	8.20	15.02	6.33	1201	9	6.33	
1415	~80	8.17	15.14	6.38	1223	5	1.31	
1415	~80	8.18	15.21	6.38	1230	3	1.01	

RECORDED BY: [Signature] ^{MR} 10/20/98
(Signature and Date)

QA CHECK BY: [Signature] 7/19/99
(Signature and Date)

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RVAAP ROL MICROPURGE LOG SHEET

PROJECT NAME: Ramsdell Quarry Landfill GW Investigation

DELIVERY ORDER NO. 003

LOCATION ID: RQLmin - 009

INITIAL W.L.: 5.03 FT BTOC

DATE: 4/11/99

FINAL W.L.: 5.40 FT BTOC

TIME	FLOW RATE (m/s/min)	W.L. (ft BTOC)	TEMP (C)	pH (SU)	COND. (ms/cm)	TURBIDITY (NTU)	D.O. (mg/L)	COMMENTS
1010	280	5.40	8.07	6.62	141	153 575 155 74	13.000	
1015	320	5.40	7.64	6.61	144	26	11.06	
1020	320	5.45	7.55	6.60	146	28	9.74	
1025	320	5.40	7.54	6.61	147	27	9.84	STABLE
20.99 0711	initial	6.09'						
0715	adjusting	7.57'	11.7°	5.48	0.336	10	11.29	
0720	360	7.51'	11.6°	5.63	0.373	0	11.02	DISCH = 20.95 Refill = 9.65 9psi
0725	360	7.51'	11.4	5.71	0.396	0	10.95	turbidity erratic.
0730	360	7.51'	11.4	5.77	0.405	0	10.85	stable - sample
								TOTAL PURGED = 3 gal.

RECORDED BY: KL Dominick 5.28.99
(Signature and Date)

QA CHECK BY: Matthew Root 06/10/99
(Signature and Date)

14

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RVAAP RQL MICROPURGE LOG SHEET

PROJECT NAME: Ramsdell Quarry Landfill GW Investigation

DELIVERY ORDER NO. 003

LOCATION ID: 262 MW-010

INITIAL W.L.: 27.60 FT BTOC

DATE: 9/19/98

FINAL W.L.: 27.64 FT BTOC

TIME	FLOW RATE (m/s/min)	W.L. (ft BTOC)	TEMP (C)	pH (SU)	COND. (ms/cm)	TURBIDITY (NTU)	D.O. (mg/L)	COMMENTS
1515	~80	27.65	17.30	6.26	508	206 254	2.54	
1520	~85	27.62	17.12	6.28	508	143	2.30	
1525	~85	27.62	16.73	6.32	509	131	2.24	
1530	~90	27.62	16.65	6.31	511	116	2.36	STABLE
1330	~300	27.20	10.9	5.99	0.836	12	10.08	initial
1335	200	27.20	11.1	6.29	0.605	10	11.02	
1340	200	27.20	11.3	6.30	0.589	0	11.05	
1345	200	27.20	11.5	6.33	0.583	0	11.00	STABLE

11/14/99

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RECORDED BY: [Signature] 9/19/98
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(Signature and Date)