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FINAL REMEDIAL INVESTIGATION REPORT (REVISION 2) FOR OPERABLE UNIT 2 (OU 2) MCCOY ANNEX LANDFILL VOLUME 3 OF 3 APPENDICES D THROUGH F NTC ORLANDO FL
3/7/2001
TETRA TECH

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REMEDIAL INVESTIGATION REPORT

for

OPERABLE UNIT 2 McCOY ANNEX LANDFILL

Naval Training Center
Orlando, Florida

VOLUME III OF III
(APPENDICES D - F)

Southern Division
Naval Facilities Engineering Command

Contract Number N62467-94-D-0888
Contract Task Order CTO-0024

MARCH 2001

TETRA TECH NUS, INC.
800 Oak Ridge Turnpike, A-600 ▪ Oak Ridge, Tennessee 37830
(865) 483-9900 ▪ FAX: (865) 483-2014 ▪ www.tetratech.com

0301-I028

March 7, 2001

Commanding Officer
SOUTHNAVFACENGCOM
ATTN: Ms. Barbara Nwokike, Code 1873
P.O. Box 190010
2155 Eagle Drive
North Charleston, SC 29419-9010

Subject: Final Remedial Investigation Report (Rev. 2), Operable Unit 2, McCoy Annex Landfill
Naval Training Center, Orlando, Florida
Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order No. 0024

Dear Ms. Nwokike:

Enclosed are two copies of the final to Remedial Investigation Report for OU 2. One of the copies has been provided for the Administrative Record. A copy has also been forwarded to Wayne Hansel for the Information Repository at the Orange County Public Library.

This revision contains the following information:

- Changes to Rev. 1 of the Remedial Investigation Report (draft final), issued in March 2000, that resulted from FDEP and USEPA review comments.
- New data from direct push screening activities performed in September 2000 and February 2001.

Please contact me at (865) 220-4730 if you have any questions regarding the report.

Sincerely,

Steven B. McCoy, P.E.
Task Order Manager

SBM:msc

Enclosures (2)

c: Mr. Wayne Hansel, SOUTHNAVFACENGCOM (3)
Mr. David Grabka, FDEP (2)
Ms. Nancy Rodriguez, USEPA Region IV (2)
Mr. Michael Campbell, Tetra Tech NUS
Ms. Jacque Van Audenhove, Tetra Tech NUS
Ms. Debbie Wroblewski, Tetra Tech NUS (cover letter only)
Mr. Mark Perry, Tetra Tech NUS (unbound)
Mr. Steve Tsangaris, CH2M Hill
Mr. Richard Allen, Harding Lawson Associates
File/Edb

CLIENT NAVY SOUTHERN DIVISION NTC ORLANDO, McCOY ANNEX		JOB NUMBER NK-7457
SUBJECT Estimate Porosity of Clay Layer Beneath Surficial Aquifer		
BASED ON RI Geotechnical Data		CALCULATION SHEET NO. **D-1**
BY A. T. Jenkins	CHECKED BY S.B. McCoy	DATE 12-23-98

Problem

Determine an estimate of the porosity of the clay layer that lies at the bottom of the surficial aquifer based on geotechnical data from the RI.

Solution

Given the water content and specific gravity of the solids contained in a representative sample of the clay layer, and assuming that the clay is saturated, the porosity of the clay layer can be calculated using the following relationships:

Equations	Definitions
$\omega = W_w / W_s$	ω = water content, unitless
$W_w = V_w \gamma_w$ for saturated soil	W_w = weight of water, g
$V_w = V_v$ for saturated soil	W_s = weight of solids, g
$W_s = V_s G_s \gamma_w$	γ_w = unit weight of water, g/cc
$V_v = V_t - V_s$	V_w = volume of water, cc
$\theta = V_v / V_t$	V_v = volume of voids, cc
	V_t = total volume, cc
	V_s = volume of solids, cc
	G_s = specific gravity of solids, unitless
	θ = porosity of clay, unitless

Given

The water content for the clay layer is estimated from sample NTC-0232 that was collected from a depth of 32 feet in the boring for deep well 24C (NTC-02). This depth correlates with the top of the clay layer, and the percent of material by weight that passed the 200 sieve (i.e., 56.9% silt and clay size particles) and water content (i.e., 0.32) are consistent with the clay layer and not the overlying sand layer.

The specific gravity was determined for five clay samples that were classified as CL or CH material. The range of the five tests was 2.532 to 2.787, and the average specific gravity was 2.69.

Because the clay lies between two saturated layers (i.e., the overlying surficial aquifer and the underlying confined aquifer) it and the samples analyzed are assumed to be saturated.

The unit weight of water is assumed to be 1 g/cc.

CLIENT NAVY SOUTHERN DIVISION NTC ORLANDO, McCOY ANNEX		JOB NUMBER NK-7457
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Calculation

$\omega = W_w / W_s = 0.32$

And substituting terms, therefore,

$V_v \gamma_w / V_s G_s \gamma_w = 0.32$

Or, rearranging terms gives

$V_v / V_s = 0.32 G_s$

Substituting terms, therefore

$(V_t - V_s) / V_s = 0.32 G_s = (0.32)(2.69) = 0.86$

And, rearranging terms and calculating for a unit sample volume (i.e., $V_t = 1$ cc) gives

$V_s (0.86) + V_s = 1$ cc

And,

$V_s = 1$ cc $/ 1.86 = 0.54$ cc

Therefore,

$V_v = V_t - V_s = 1$ cc $- 0.54$ cc $= 0.46$ cc

And,

$\theta = V_v / V_t = 0.46$

Conclusions

A reasonable estimate of the porosity for the clay layer is 0.46. This is consistent with a published range of porosity for clay materials of 0.4 to 0.7 (Freeze and Cherry 1979).

References

Bowles, J.E., (1978), "Engineering Properties of Soils and Their Measurement", 2nd Edition, McGraw-Hill, Inc.

Freeze, R.A., and J.A. Cherry, (1979), "Groundwater", Prentice-Hall, Inc.

SE2000
Enviro nmental L gger
10 /09 12:37

Unit# 2 000 T est 0

Setups:	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5	INPUT 6	INPUT 7	INPUT 8
Type	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)
Mode	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC
I.D.		OW02	PUMP	MW17A	OW05	OW06	OW07	OW08
Reference	6.04	6.08	6.03	6.55	5.89	5.86	5.13	7.06
PSI at Ref.	10.944	4.133	6.792	1.139	4.318	3.879	4.167	4.128
SG	1	1	1	1	1	1	1	1
Linearity	0	0.017	0.032	0.028	0.027	0.028	0.04	0.046
Scale factor	16	9.964	10.109	9.992	9.954	9.951	10.03	10.007
Offset	4	-0.055	0.041	0.016	0	-0.131	0.037	0.047
Delay mSEC	50	50	50	50	50	50	50	50

Step 0 ######## 16:19

Elapsed Time Minutes	INPUT 1 OW01	INPUT 2 OW02	INPUT 3 PUMP	INPUT 4 MW17A	INPUT 5 OW05	INPUT 6 OW06	INPUT 7 OW07	INPUT 8 OW08
0	6.034	6.07	5.399	6.54	5.886	5.853	5.123	7.053
0.0083	6.034	6.07	6.938	6.543	5.886	5.853	5.126	7.053
0.0166	6.04	6.073	6.874	6.54	5.89	5.853	5.123	7.053
0.025	6.034	6.073	6.922	6.54	5.886	5.856	5.123	7.056
0.0333	6.034	6.07	7.066	6.54	5.886	5.856	5.126	7.056
0.0416	6.034	6.073	7.255	6.54	5.886	5.856	5.123	7.056
0.05	6.04	6.073	7.293	6.543	5.886	5.856	5.126	7.056
0.0583	6.034	6.073	7.504	6.54	5.886	5.853	5.123	7.056
0.0666	6.034	6.073	7.584	6.54	5.89	5.853	5.126	7.056
0.075	6.034	6.073	7.722	6.54	5.89	5.856	5.126	7.056
0.0833	6.04	6.073	7.818	6.54	5.886	5.856	5.126	7.056
0.0916	6.04	6.073	7.943	6.54	5.89	5.856	5.126	7.056
0.1	6.04	6.073	8.08	6.54	5.886	5.856	5.126	7.056
0.1083	6.04	6.076	8.167	6.54	5.886	5.856	5.126	7.056
0.1166	6.04	6.073	8.275	6.54	5.89	5.856	5.126	7.056
0.125	6.04	6.076	8.403	6.54	5.89	5.856	5.126	7.056
0.1333	6.034	6.073	8.493	6.54	5.89	5.856	5.126	7.06
0.1416	6.04	6.073	8.611	6.54	5.89	5.856	5.126	7.06
0.15	6.04	6.073	8.704	6.54	5.89	5.86	5.126	7.06
0.1583	6.04	6.073	8.809	6.543	5.89	5.86	5.126	7.06
0.1666	6.04	6.073	8.944	6.543	5.89	5.86	5.126	7.06
0.175	6.04	6.076	9.017	6.543	5.89	5.86	5.126	7.06
0.1833	6.04	6.076	9.116	6.543	5.893	5.856	5.126	7.06
0.1916	6.04	6.076	9.193	6.543	5.89	5.856	5.126	7.06
0.2	6.04	6.08	9.27	6.54	5.89	5.856	5.13	7.06

0.2083	6.04	6.076	9.382	6.543	5.893	5.86	5.13	7.06
0.2166	6.045	6.08	9.513	6.54	5.89	5.856	5.13	7.06
0.225	6.04	6.08	9.548	6.543	5.893	5.86	5.13	7.06
0.2333	6.045	6.08	9.628	6.543	5.893	5.86	5.13	7.06
0.2416	6.045	6.076	9.737	6.543	5.893	5.86	5.13	7.063
0.25	6.045	6.076	9.788	6.543	5.893	5.86	5.13	7.063
0.2583	6.05	6.08	9.887	6.543	5.896	5.86	5.13	7.06
0.2666	6.045	6.08	9.957	6.543	5.896	5.86	5.13	7.063
0.275	6.045	6.08	10.021	6.543	5.896	5.86	5.13	7.063
0.2833	6.05	6.08	10.114	6.543	5.896	5.86	5.133	7.063
0.2916	6.05	6.076	10.187	6.543	5.896	5.86	5.13	7.063
0.3	6.05	6.08	10.251	6.543	5.899	5.86	5.133	7.063
0.3083	6.05	6.08	10.318	6.543	5.899	5.86	5.13	7.063
0.3166	6.05	6.08	10.366	6.543	5.899	5.863	5.13	7.063
0.325	6.055	6.08	10.392	6.543	5.899	5.86	5.133	7.063
0.3333	6.05	6.08	10.402	6.546	5.899	5.86	5.13	7.063
0.35	6.055	6.076	10.405	6.546	5.899	5.863	5.13	7.063
0.3666	6.055	6.083	10.405	6.546	5.902	5.86	5.13	7.063
0.3833	6.06	6.083	10.405	6.546	5.905	5.863	5.13	7.063
0.4	6.06	6.08	10.405	6.546	5.908	5.863	5.13	7.063
0.4166	6.07	6.08	10.405	6.546	5.908	5.863	5.13	7.063
0.4333	6.07	6.08	10.549	6.55	5.908	5.863	5.13	7.063
0.45	6.07	6.083	10.782	6.546	5.915	5.863	5.13	7.063
0.4666	6.07	6.083	10.772	6.55	5.915	5.863	5.126	7.063
0.4833	6.075	6.083	11.044	6.55	5.918	5.866	5.126	7.063
0.5	6.08	6.086	11.025	6.55	5.921	5.866	5.13	7.063
0.5166	6.085	6.083	11.025	6.55	5.924	5.869	5.126	7.063
0.5333	6.085	6.086	11.239	6.553	5.924	5.869	5.126	7.063
0.55	6.09	6.086	11.236	6.553	5.924	5.869	5.126	7.063
0.5666	6.09	6.089	11.491	6.553	5.93	5.869	5.126	7.063
0.5833	6.095	6.086	11.463	6.553	5.93	5.869	5.126	7.063
0.6	6.1	6.086	11.466	6.556	5.934	5.875	5.13	7.063
0.6166	6.105	6.089	11.725	6.556	5.937	5.872	5.126	7.063
0.6333	6.105	6.089	11.712	6.556	5.94	5.875	5.126	7.066
0.65	6.115	6.092	11.709	6.556	5.943	5.875	5.13	7.066
0.6666	6.115	6.089	12.025	6.559	5.946	5.875	5.126	7.063
0.6833	6.12	6.092	12.108	6.559	5.946	5.875	5.13	7.066
0.7	6.12	6.092	12.134	6.559	5.949	5.878	5.13	7.066
0.7166	6.125	6.095	12.223	6.559	5.956	5.878	5.13	7.066
0.7333	6.13	6.095	12.268	6.562	5.959	5.882	5.13	7.066
0.75	6.135	6.092	12.345	6.562	5.962	5.885	5.13	7.066
0.7666	6.14	6.095	12.383	6.562	5.962	5.885	5.126	7.066
0.7833	6.145	6.098	12.453	6.562	5.965	5.882	5.13	7.066
0.8	6.15	6.098	12.527	6.565	5.968	5.882	5.13	7.066
0.8166	6.15	6.098	12.539	6.565	5.971	5.885	5.126	7.066
0.8333	6.156	6.098	12.594	6.565	5.974	5.888	5.126	7.066
0.85	6.166	6.098	12.642	6.568	5.978	5.888	5.13	7.066
0.8666	6.166	6.098	12.674	6.568	5.981	5.888	5.126	7.066
0.8833	6.171	6.102	12.725	6.572	5.984	5.891	5.126	7.066

0.9	6.176	6.102	12.773	6.572	5.987	5.891	5.13	7.069
0.9166	6.181	6.105	12.824	6.572	5.99	5.894	5.126	7.066
0.9333	6.186	6.102	12.833	6.572	5.993	5.894	5.13	7.066
0.95	6.186	6.102	12.884	6.572	5.997	5.897	5.13	7.066
0.9666	6.196	6.108	12.92	6.575	6	5.897	5.126	7.069
0.9833	6.196	6.108	12.987	6.578	6.003	5.897	5.13	7.069
1	6.206	6.108	13.003	6.578	6.006	5.9	5.13	7.066
1.2	6.256	6.12	13.804	6.587	6.047	5.913	5.13	7.069
1.4	6.312	6.133	14.066	6.6	6.082	5.929	5.13	7.072
1.6	6.362	6.142	14.239	6.613	6.113	5.938	5.13	7.072
1.8	6.408	6.155	14.369	6.622	6.144	5.951	5.133	7.075
2	6.448	6.164	14.468	6.635	6.17	5.96	5.13	7.079
2.2	6.488	6.171	14.532	6.644	6.192	5.973	5.133	7.082
2.4	6.524	6.183	14.599	6.654	6.211	5.979	5.136	7.085
2.6	6.554	6.193	14.644	6.66	6.229	5.989	5.136	7.091
2.8	6.574	6.199	14.67	6.666	6.245	5.995	5.139	7.094
3	6.599	6.205	14.695	6.672	6.255	6.001	5.142	7.101
3.2	6.625	6.212	14.717	6.679	6.267	6.004	5.142	7.104
3.4	6.64	6.215	14.743	6.685	6.277	6.007	5.142	7.107
3.6	6.655	6.221	14.753	6.688	6.286	6.011	5.142	7.107
3.8	6.67	6.224	14.772	6.694	6.292	6.017	5.145	7.11
4	6.685	6.227	14.791	6.698	6.299	6.017	5.149	7.113
4.2	6.69	6.234	14.804	6.704	6.305	6.02	5.149	7.113
4.4	6.705	6.234	14.8	6.707	6.308	6.026	5.149	7.117
4.6	6.715	6.237	14.804	6.71	6.318	6.029	5.152	7.12
4.8	6.72	6.24	14.807	6.713	6.321	6.029	5.152	7.126
5	6.725	6.234	14.823	6.717	6.321	6.026	5.142	7.117
5.2	6.736	6.234	14.829	6.72	6.324	6.023	5.139	7.11
5.4	6.736	6.237	14.826	6.723	6.33	6.023	5.139	7.113
5.6	6.741	6.24	14.823	6.726	6.33	6.029	5.145	7.117
5.8	6.751	6.243	14.832	6.729	6.333	6.029	5.152	7.123
6	6.756	6.249	14.836	6.732	6.337	6.036	5.152	7.126
6.2	6.756	6.249	14.829	6.735	6.34	6.036	5.155	7.132
6.4	6.761	6.253	14.832	6.739	6.34	6.039	5.155	7.136
6.6	6.766	6.253	14.832	6.742	6.34	6.039	5.155	7.136
6.8	6.766	6.256	14.839	6.745	6.343	6.042	5.158	7.136
7	6.766	6.256	14.845	6.745	6.346	6.042	5.158	7.139
7.2	6.776	6.256	14.845	6.748	6.346	6.045	5.158	7.139
7.4	6.776	6.259	14.852	6.751	6.349	6.045	5.158	7.139
7.6	6.781	6.259	14.858	6.751	6.349	6.045	5.158	7.139
7.8	6.781	6.259	14.848	6.754	6.352	6.045	5.158	7.139
8	6.781	6.259	14.836	6.758	6.355	6.048	5.158	7.139
8.2	6.786	6.265	14.848	6.761	6.352	6.045	5.158	7.139
8.4	6.786	6.265	14.871	6.761	6.352	6.048	5.158	7.139
8.6	6.791	6.262	14.848	6.764	6.355	6.048	5.158	7.139
8.8	6.791	6.262	14.845	6.764	6.359	6.048	5.158	7.139
9	6.791	6.265	14.855	6.767	6.359	6.048	5.158	7.136
9.2	6.796	6.265	14.848	6.767	6.359	6.051	5.158	7.136
9.4	6.796	6.265	14.855	6.767	6.359	6.051	5.161	7.139

9.6	6.796	6.265	14.842	6.77	6.362	6.051	5.161	7.139
9.8	6.796	6.268	14.858	6.77	6.362	6.051	5.161	7.142
10	6.801	6.271	14.858	6.773	6.365	6.055	5.164	7.145
12	6.816	6.278	14.896	6.789	6.371	6.061	5.171	7.148
14	6.826	6.278	15.008	6.792	6.381	6.064	5.168	7.148
16	6.836	6.281	15.046	6.802	6.387	6.067	5.168	7.151
18	6.847	6.29	15.069	6.814	6.393	6.073	5.174	7.158
20	6.857	6.29	15.069	6.821	6.396	6.073	5.171	7.155
22	6.862	6.297	15.078	6.827	6.403	6.08	5.177	7.161
24	6.867	6.297	15.11	6.833	6.406	6.08	5.174	7.161
26	6.872	6.3	15.101	6.836	6.409	6.083	5.174	7.161
28	6.877	6.29	15.104	6.839	6.412	6.073	5.161	7.145
30	6.882	6.306	15.129	6.846	6.415	6.086	5.177	7.167
32	6.887	6.309	15.132	6.849	6.418	6.089	5.177	7.17
34	6.892	6.3	15.12	6.852	6.421	6.083	5.164	7.151
36	6.892	6.309	15.161	6.858	6.421	6.092	5.177	7.17
38	6.897	6.312	15.155	6.855	6.425	6.096	5.18	7.177
40	6.902	6.315	15.164	6.858	6.428	6.096	5.177	7.174
42	6.907	6.319	15.177	6.862	6.431	6.096	5.177	7.177
44	6.912	6.319	15.177	6.865	6.431	6.099	5.177	7.177
46	6.917	6.322	15.203	6.871	6.434	6.099	5.177	7.177
48	6.917	6.312	15.18	6.874	6.437	6.089	5.164	7.158
50	6.922	6.319	15.19	6.877	6.44	6.096	5.171	7.17
52	6.927	6.322	15.196	6.88	6.444	6.099	5.174	7.174
54	6.932	6.331	15.231	6.884	6.447	6.105	5.18	7.18
56	6.937	6.344	15.231	6.887	6.447	6.114	5.196	7.202
58	6.937	6.337	15.235	6.89	6.45	6.114	5.19	7.193
60	6.937	6.337	15.244	6.893	6.45	6.111	5.187	7.189
62	6.942	6.341	15.251	6.896	6.453	6.111	5.187	7.189
64	6.942	6.328	15.267	6.899	6.456	6.105	5.18	7.167
66	6.947	6.334	15.254	6.899	6.456	6.108	5.174	7.177
68	6.952	6.344	15.283	6.903	6.459	6.111	5.183	7.186
70	6.957	6.347	15.289	6.906	6.462	6.124	5.196	7.196
72	6.957	6.341	15.283	6.906	6.462	6.111	5.18	7.177
74	6.963	6.347	15.289	6.909	6.466	6.121	5.19	7.189
76	6.963	6.347	15.295	6.912	6.466	6.118	5.183	7.189
78	6.968	6.356	15.305	6.915	6.469	6.127	5.196	7.205
80	6.968	6.356	15.295	6.915	6.469	6.127	5.193	7.202
82	6.973	6.356	15.298	6.918	6.469	6.127	5.19	7.202
84	6.973	6.353	15.308	6.921	6.472	6.124	5.19	7.199
86	6.978	6.359	15.327	6.925	6.475	6.127	5.19	7.202
88	6.978	6.356	15.334	6.925	6.475	6.127	5.187	7.199
90	6.983	6.363	15.33	6.928	6.478	6.13	5.19	7.205
92	6.983	6.359	15.33	6.931	6.478	6.13	5.187	7.199
94	6.988	6.359	15.346	6.931	6.481	6.127	5.183	7.199
96	6.988	6.359	15.346	6.934	6.481	6.13	5.187	7.202
98	6.993	6.366	15.356	6.934	6.481	6.133	5.19	7.205
100	6.993	6.366	15.365	6.931	6.484	6.13	5.193	7.208
120	7.013	6.378	15.391	6.95	6.497	6.127	5.193	7.212

140	7.033	6.381	15.452	6.962	6.506	6.13	5.19	7.212
160	7.053	6.397	15.468	6.978	6.522	6.143	5.199	7.221
180	7.079	6.413	15.5	6.994	6.535	6.158	5.215	7.237
200	7.089	6.416	15.528	7.007	6.544	6.162	5.215	7.237
220	7.104	6.429	15.576	7.019	6.554	6.174	5.215	7.243
240	7.124	6.438	15.602	7.035	6.566	6.184	5.234	7.25
260	7.129	6.441	15.445	7.041	6.563	6.187	5.244	7.256
280	7.129	6.444	15.34	7.047	6.56	6.19	5.244	7.256
300	7.139	6.451	15.35	7.051	6.554	6.193	5.247	7.262
320	7.164	6.463	15.385	7.07	6.56	6.203	5.257	7.269
340	7.169	6.47	15.42	7.079	6.566	6.209	5.263	7.272
360	7.189	6.476	15.445	7.085	6.573	6.218	5.276	7.278
380	7.2	6.485	15.48	7.095	6.579	6.221	5.279	7.281
400	7.215	6.492	15.506	7.107	6.585	6.231	5.291	7.288
420	7.23	6.501	15.547	7.114	6.595	6.237	5.298	7.291
440	7.245	6.507	15.56	7.126	6.601	6.243	5.304	7.297
460	7.255	6.514	15.589	7.129	6.607	6.25	5.307	7.297
480	7.265	6.52	15.63	7.142	6.614	6.256	5.314	7.304
500	7.275	6.523	15.64	7.145	6.617	6.259	5.317	7.307
520	7.285	6.529	15.659	7.155	6.629	6.265	5.32	7.31
540	7.295	6.536	15.685	7.164	6.636	6.269	5.326	7.313
560	7.311	6.542	15.707	7.17	6.642	6.275	5.33	7.319
580	7.316	6.545	15.717	7.18	6.645	6.281	5.336	7.319
600	7.321	6.551	15.736	7.177	6.648	6.281	5.336	7.323
620	7.336	6.558	15.758	7.196	6.654	6.287	5.342	7.329
640	7.346	6.561	15.777	7.199	6.661	6.294	5.345	7.332
660	7.351	6.564	15.793	7.205	6.664	6.297	5.345	7.332
680	7.356	6.57	15.809	7.208	6.667	6.3	5.352	7.335
700	7.371	6.573	15.832	7.218	6.673	6.306	5.352	7.338
720	7.376	6.577	15.832	7.221	6.676	6.306	5.352	7.342
740	7.386	6.58	15.857	7.23	6.68	6.313	5.358	7.345
760	7.391	6.586	15.87	7.237	6.686	6.319	5.364	7.348
780	7.401	6.589	15.883	7.24	6.692	6.322	5.368	7.351
800	7.406	6.595	15.899	7.246	6.695	6.325	5.368	7.351
820	7.422	6.599	15.905	7.252	6.702	6.332	5.374	7.357
840	7.422	6.602	15.927	7.255	6.705	6.335	5.374	7.357
860	7.427	6.602	15.927	7.252	6.705	6.335	5.377	7.357
880	7.437	6.608	15.956	7.268	6.711	6.341	5.38	7.364
900	7.447	6.614	15.969	7.274	6.714	6.344	5.38	7.367
920	7.452	6.617	15.975	7.278	6.717	6.347	5.38	7.37
940	7.462	6.624	15.988	7.287	6.727	6.357	5.387	7.373
960	7.467	6.627	15.991	7.29	6.727	6.357	5.387	7.373
980	7.472	6.63	15.994	7.296	6.733	6.36	5.393	7.376
1000	7.482	6.633	16.023	7.3	6.736	6.366	5.396	7.38
1020	7.487	6.636	16.029	7.306	6.739	6.369	5.396	7.383
1040	7.497	6.643	16.036	7.312	6.746	6.372	5.403	7.386
1060	7.502	6.643	16.061	7.306	6.746	6.376	5.403	7.386
1080	7.512	6.652	16.055	7.325	6.755	6.385	5.412	7.392
1100	7.517	6.652	16.065	7.328	6.758	6.385	5.415	7.392

1120	7.522	6.655	16.077	7.331	6.758	6.391	5.418	7.395
1140	7.532	6.658	16.087	7.337	6.755	6.394	5.425	7.399
1160	7.538	6.665	16.109	7.344	6.758	6.401	5.428	7.402
1180	7.548	6.668	16.119	7.35	6.758	6.404	5.431	7.405
1200	7.553	6.674	16.151	7.353	6.758	6.404	5.431	7.405
1220	7.563	6.674	16.16	7.359	6.761	6.407	5.434	7.411
1240	7.568	6.68	16.157	7.366	6.765	6.41	5.437	7.411
1260	7.573	6.68	16.17	7.369	6.765	6.41	5.434	7.411
1280	7.568	6.683	16.068	7.372	6.758	6.41	5.437	7.414
1300	7.573	6.687	16.052	7.372	6.758	6.413	5.441	7.418
1320	7.578	6.687	16.055	7.375	6.755	6.413	5.444	7.418
1340	7.583	6.693	16.074	7.378	6.758	6.417	5.45	7.424
1360	7.588	6.696	16.093	7.385	6.758	6.417	5.447	7.424
1380	7.593	6.693	16.09	7.385	6.758	6.413	5.437	7.418
1400	7.593	6.699	16.125	7.394	6.758	6.42	5.444	7.424
1420	7.598	6.705	16.119	7.394	6.758	6.42	5.441	7.43
1440	7.603	6.702	16.125	7.397	6.758	6.42	5.441	7.437
1460	7.608	6.709	16.16	7.4	6.761	6.426	5.45	7.443
1480	7.608	6.705	16.151	7.404	6.765	6.42	5.437	7.424
1500	7.613	6.709	16.173	7.404	6.765	6.423	5.437	7.43
1520	7.618	6.721	16.179	7.413	6.768	6.435	5.45	7.456
1540	7.618	6.715	16.179	7.413	6.768	6.429	5.444	7.437
1560	7.618	6.712	16.199	7.416	6.777	6.432	5.441	7.433
1580	7.623	6.715	16.199	7.416	6.787	6.442	5.447	7.437
1600	7.633	6.724	16.195	7.423	6.806	6.457	5.463	7.459
1620	7.633	6.724	16.211	7.426	6.821	6.464	5.463	7.449
1640	7.643	6.724	16.24	7.432	6.837	6.473	5.463	7.446
1660	7.648	6.737	16.23	7.435	6.85	6.489	5.482	7.462
1680	7.654	6.734	16.256	7.441	6.859	6.489	5.476	7.449
1700	7.659	6.734	16.262	7.438	6.865	6.489	5.485	7.446
1720	7.664	6.734	16.256	7.441	6.862	6.492	5.485	7.452
1740	7.664	6.737	16.262	7.438	6.859	6.492	5.488	7.456
1760	7.674	6.74	16.285	7.454	6.865	6.495	5.495	7.456
1780	7.674	6.746	16.282	7.457	6.868	6.498	5.498	7.459
1800	7.684	6.753	16.288	7.46	6.872	6.501	5.501	7.462
1820	7.689	6.753	16.313	7.463	6.875	6.505	5.507	7.462
1840	7.694	6.759	16.32	7.467	6.881	6.508	5.514	7.465
1860	7.699	6.759	16.301	7.47	6.881	6.511	5.517	7.468
1880	7.704	6.765	16.323	7.473	6.887	6.517	5.523	7.472
1900	7.709	6.765	16.326	7.476	6.887	6.517	5.523	7.472
1920	7.709	6.768	16.342	7.479	6.89	6.52	5.523	7.472
1940	7.719	6.772	16.358	7.486	6.894	6.523	5.526	7.475
1960	7.729	6.778	16.368	7.492	6.859	6.527	5.533	7.478
1980	7.729	6.778	16.371	7.489	6.853	6.53	5.533	7.478
2000	7.739	6.781	16.396	7.495	6.856	6.533	5.539	7.481
2020	7.739	6.784	16.412	7.498	6.856	6.536	5.542	7.484
2040	7.744	6.787	16.412	7.501	6.859	6.536	5.542	7.484
2060	7.749	6.79	16.409	7.501	6.859	6.539	5.545	7.484
2080	7.754	6.79	16.422	7.504	6.853	6.539	5.545	7.487

2100	7.754	6.794	16.425	7.508	6.856	6.542	5.549	7.487
2120	7.759	6.794	16.441	7.508	6.856	6.542	5.549	7.491
2140	7.759	6.797	16.454	7.511	6.859	6.542	5.545	7.491
2160	7.764	6.797	16.467	7.514	6.859	6.542	5.545	7.491
2180	7.77	6.8	16.467	7.517	6.862	6.546	5.549	7.494
2200	7.775	6.803	16.467	7.52	6.865	6.552	5.555	7.497
2220	7.78	6.806	16.489	7.523	6.868	6.552	5.558	7.497
2240	7.785	6.809	16.492	7.526	6.872	6.555	5.561	7.497
2260	7.795	6.812	16.693	7.53	6.881	6.558	5.558	7.5
2280	7.805	6.816	16.725	7.536	6.887	6.561	5.561	7.5
2300	7.805	6.812	16.716	7.536	6.894	6.561	5.558	7.503
2320	7.81	6.816	16.728	7.539	6.894	6.561	5.558	7.503
2340	7.815	6.822	16.751	7.542	6.897	6.564	5.558	7.506
2360	7.815	6.819	16.744	7.545	6.897	6.561	5.555	7.506
2380	7.82	6.822	16.747	7.545	6.9	6.564	5.555	7.51
2400	7.825	6.825	16.779	7.552	6.903	6.568	5.558	7.51
2420	7.825	6.825	16.779	7.555	6.903	6.568	5.561	7.51
2440	7.835	6.831	16.77	7.558	6.906	6.571	5.564	7.513
2460	7.835	6.831	16.792	7.561	6.909	6.574	5.568	7.513
2480	7.84	6.834	16.808	7.561	6.913	6.577	5.571	7.516
2500	7.85	6.838	16.802	7.567	6.916	6.58	5.574	7.519
2520	7.85	6.841	16.814	7.571	6.919	6.583	5.58	7.519
2540	7.855	6.841	16.821	7.574	6.922	6.586	5.584	7.522
2560	7.86	6.847	16.818	7.577	6.925	6.59	5.587	7.522
2580	7.86	6.847	16.834	7.571	6.925	6.59	5.59	7.522
2600	7.865	6.847	16.811	7.574	6.928	6.593	5.59	7.525
2620	7.87	6.853	16.827	7.586	6.931	6.596	5.596	7.529
2640	7.88	6.856	16.85	7.59	6.931	6.599	5.596	7.532
2660	7.886	6.86	16.84	7.596	6.938	6.602	5.596	7.535
2680	7.891	6.863	16.853	7.596	6.935	6.602	5.593	7.532
2700	7.891	6.863	16.853	7.599	6.935	6.602	5.596	7.535
2720	7.896	6.866	16.872	7.602	6.938	6.602	5.593	7.538
2740	7.901	6.869	16.875	7.605	6.944	6.602	5.599	7.538
2760	7.901	6.869	16.875	7.608	6.947	6.602	5.603	7.538
2780	7.906	6.878	16.885	7.612	6.947	6.615	5.615	7.554
2800	7.911	6.878	16.907	7.615	6.95	6.612	5.609	7.544
2820	7.911	6.872	16.897	7.618	6.947	6.605	5.603	7.525
2840	7.906	6.872	16.897	7.608	6.944	6.605	5.599	7.538
2860	7.916	6.872	16.917	7.621	6.944	6.605	5.593	7.525
2880	7.921	6.872	16.91	7.621	6.95	6.608	5.593	7.535
2900	7.921	6.882	16.913	7.624	6.947	6.615	5.603	7.551
2920	7.916	6.885	16.926	7.621	6.944	6.618	5.603	7.554
2940	7.921	6.878	16.92	7.618	6.947	6.608	5.593	7.548
2960	7.916	6.872	16.923	7.618	6.95	6.602	5.577	7.532
2980	7.926	6.882	16.933	7.624	6.963	6.612	5.593	7.548
3000	7.921	6.882	16.958	7.627	6.966	6.615	5.593	7.544
3020	7.921	6.872	16.955	7.615	6.966	6.615	5.587	7.522
3040	7.931	6.882	17.031	7.627	6.979	6.63	5.603	7.535
3060	7.936	6.885	17.028	7.634	6.988	6.64	5.603	7.532

3080	7.936	6.885	17.012	7.634	6.994	6.646	5.609	7.538
3100	7.941	6.888	17.028	7.637	7.001	6.656	5.615	7.538
3120	7.941	6.888	17.025	7.627	7.01	6.662	5.622	7.538
3140	7.946	6.891	17.025	7.64	7.02	6.668	5.622	7.541
3160	7.951	6.894	17.041	7.643	7.026	6.675	5.625	7.541
3180	7.951	6.894	17.041	7.64	7.029	6.671	5.625	7.541
3200	7.956	6.897	17.025	7.643	7.042	6.675	5.631	7.541
3220	7.961	6.901	17.063	7.643	7.048	6.678	5.634	7.541
3240	7.961	6.904	17.063	7.643	7.051	6.681	5.637	7.544
3260	7.961	6.901	17.051	7.637	7.057	6.678	5.637	7.541
3280	7.966	6.907	17.06	7.646	7.064	6.684	5.641	7.544
3300	7.976	6.91	17.073	7.649	7.073	6.69	5.65	7.548
3320	7.976	6.913	17.063	7.653	7.076	6.693	5.657	7.548
3340	7.976	6.913	17.07	7.653	7.079	6.693	5.657	7.548
3360	7.986	6.916	17.092	7.659	7.082	6.697	5.663	7.548
3380	7.986	6.916	17.102	7.659	7.082	6.7	5.663	7.548
3400	7.991	6.919	17.098	7.662	7.086	6.703	5.666	7.551
3420	7.991	6.923	17.095	7.662	7.089	6.706	5.669	7.551
3440	7.996	6.923	17.105	7.662	7.089	6.706	5.672	7.551
3460	8.002	6.923	17.114	7.665	7.089	6.706	5.672	7.551
3480	8.002	6.926	17.105	7.668	7.092	6.709	5.676	7.551
3500	8.002	6.926	17.102	7.662	7.092	6.709	5.676	7.551
3520	8.012	6.929	17.13	7.671	7.095	6.712	5.682	7.554
3540	8.012	6.929	17.134	7.671	7.095	6.715	5.682	7.554
3560	8.012	6.932	17.13	7.675	7.095	6.712	5.679	7.551
3580	8.017	6.932	17.121	7.675	7.095	6.715	5.682	7.554
3600	8.017	6.932	17.127	7.675	7.095	6.715	5.682	7.551
3620	8.017	6.932	17.153	7.675	7.098	6.715	5.679	7.551
3640	8.017	6.932	17.153	7.678	7.098	6.715	5.679	7.548
3660	8.022	6.932	17.159	7.678	7.098	6.715	5.682	7.551
3680	8.022	6.935	17.149	7.681	7.101	6.719	5.682	7.551
3700	8.022	6.935	17.165	7.681	7.101	6.719	5.685	7.551
3720	8.027	6.935	17.159	7.684	7.104	6.722	5.688	7.551
3740	8.027	6.938	17.178	7.684	7.104	6.722	5.688	7.551
3760	8.032	6.938	17.175	7.687	7.104	6.722	5.688	7.548
3780	8.032	6.938	17.181	7.687	7.104	6.722	5.685	7.548
3800	8.032	6.938	17.175	7.687	7.104	6.722	5.682	7.548
3820	8.032	6.938	17.185	7.69	7.108	6.722	5.682	7.551
3840	8.037	6.941	17.194	7.69	7.108	6.722	5.679	7.551
3860	8.032	6.938	17.191	7.684	7.104	6.722	5.682	7.548
3880	8.042	6.941	17.223	7.697	7.111	6.728	5.688	7.551
3900	8.042	6.945	17.223	7.697	7.111	6.728	5.691	7.551
3920	8.047	6.948	17.21	7.7	7.114	6.731	5.691	7.551
3940	8.042	6.948	17.226	7.7	7.114	6.731	5.695	7.551
3960	8.047	6.948	17.226	7.703	7.117	6.734	5.701	7.554
3980	8.047	6.948	17.194	7.697	7.117	6.734	5.701	7.551
4000	8.052	6.951	17.22	7.706	7.12	6.737	5.704	7.554
4020	8.057	6.954	17.21	7.709	7.123	6.741	5.707	7.554
4040	8.057	6.954	17.216	7.709	7.123	6.741	5.707	7.554

4060	8.062	6.957	17.236	7.712	7.127	6.744	5.71	7.557
4080	8.062	6.957	17.252	7.716	7.127	6.747	5.71	7.557
4100	8.067	6.957	17.236	7.716	7.127	6.744	5.704	7.557
4120	8.067	6.96	17.239	7.719	7.127	6.747	5.707	7.557
4140	8.072	6.96	17.242	7.722	7.133	6.747	5.714	7.557
4160	8.067	6.96	17.255	7.712	7.136	6.747	5.717	7.557
4180	8.077	6.963	17.258	7.722	7.152	6.756	5.723	7.56
4200	8.072	6.963	17.255	7.725	7.158	6.759	5.723	7.557
4220	8.077	6.967	17.258	7.725	7.161	6.769	5.733	7.563
4240	8.077	6.967	17.271	7.728	7.164	6.769	5.733	7.557
4260	8.077	6.967	17.264	7.728	7.164	6.769	5.736	7.563
4280	8.082	6.97	17.271	7.731	7.167	6.772	5.726	7.563
4300	8.082	6.967	17.258	7.722	7.164	6.769	5.723	7.557
4320	8.087	6.976	17.277	7.734	7.171	6.778	5.733	7.57

END

72-HOUR PUMP TEST, NTC, ORLANDO
MONITORING AT 30 MINUTE INTERVALS

DATE	TIME	FLOW METER	CALCULATED FLOW RATE	OW-3	OW-4	MW-17B	P-1
10/6/98	12:17	165.50		6.35	7.08	7.05	6.030
"	12:54	538.00	10.07	6.40	7.10	7.06	
"	13:17	754.40	9.41	6.45	7.12	7.04	15.460
"	13:47	1030.00	9.19	6.45	7.11	7.06	15.540
"	14:17	1315.70	9.52	6.46	7.11	7.08	
"	14:47	1601.40	9.52	6.48	7.12	7.10	
"	15:20	1914.80	9.50	6.48	7.12	7.12	15.510
"	15:47	2171.30	9.50				15.540
"	16:28	2560.70	9.50	6.51	7.14	7.15	15.890
"	16:47	2748.50	9.88				15.330
"	17:17	3015.90	8.91	6.52	7.14	7.16	15.360
"	17:50	3321.00	9.25				15.410
"	18:17	3570.50	9.24	6.54	7.16	7.19	15.450
"	18:47	3847.60	9.24				
"	19:33	4273.00	9.25	6.56	7.17	7.21	15.580
"	19:47	4402.60	9.26				15.590
"	20:17	4680.60	9.27	6.57	7.18	7.23	15.630
"	20:47	4959.00	9.28				15.660
"	21:17	5236.70	9.26	6.58	7.18	7.26	15.660
"	21:47	5560.00	9.51				15.200
"	22:17	5830.60	9.32	6.57	7.15	7.24	15.745
"	22:47	6080.90	9.26				15.761
"	23:17	6370.70	9.36	6.60	7.15	7.24	15.790
"	23:47	6660.50	9.35				15.828
10/7/98	0:17	6920.10	8.95	6.60	7.14	7.24	15.841
"	0:47	7200.80	9.68				15.820
"	1:17	7470.00	8.97	6.60	7.14	7.26	15.820
"	1:47	7750.90	9.36				15.905
"	2:17	8040.30	9.65	6.60	7.15	7.30	15.943
"	2:47	8310.70	9.01				15.953
"	3:17	8580.60	9.00	6.60	7.17	7.31	15.959
"	3:47	8860.50	9.33				16.004
"	4:17	9150.40	9.66	6.60	7.17	7.31	16.001
"	4:47	9420.20	8.99				16.010
"	5:17	9700.10	9.33	6.61	7.20	7.33	16.020
"	5:47	9980.00	9.33				16.039
"	6:17	10250.90	9.03	6.61	7.20	7.34	16.068
"	6:47	10540.10	9.64				16.069
"	7:17	10810.60	9.02	6.61	7.15	7.35	16.087
"	7:47	11100.40	9.35				16.125
"	8:17	11368.80	9.26	6.68	7.23	7.42	16.140
"	8:47	11647.70	9.30				16.150
"	9:17	11926.80	9.30	6.68	7.23	7.43	16.170
"	9:52	12249.60	9.22				16.050
"	10:17	12478.70	9.16	6.68	7.22	7.43	16.060
"	10:47	12753.30	9.15				16.070
"	11:17	13028.00	9.16	6.69	7.23	7.44	16.100
"	11:47	13303.10	9.17				16.130
"	12:18	13587.30	9.17	6.69	7.22	7.44	16.120
"	12:47	13853.60	9.18				16.150
"	13:17	14129.20	9.19				16.170
"	13:48	14413.80	9.18	6.70	7.23	7.45	16.170
"	14:17	14680.00	9.18	6.70	7.22	7.45	16.200
"	14:47	14955.20	9.17				16.200
"	15:17	15230.50	9.18	6.70	7.24	7.46	16.220
"	15:47						
"	16:17	15781.80	9.19	6.71	7.25	7.48	16.250
"	16:47	16066.90	9.50				16.260
"	17:17	16332.30	8.85	6.72	7.25	7.48	16.290
"	17:49	16262.10	9.18				16.280
"	18:17	16882.80	9.17	6.74	7.26	7.49	16.300
"	18:47	17158.00	9.17				16.310
"	19:17	17440.70	9.42	6.75	7.25	7.50	16.323
"	19:47	17711.00	9.01				
"	20:17	17990.70	9.32	6.75	7.26	7.50	16.352
"	20:47	18268.50	9.26				16.374
"	21:17	18550.20	9.34	6.74	7.25	7.50	16.374
"	21:47	18820.30	9.00				16.384
"	22:17	19091.30	9.03	6.75	7.25	7.51	16.408
"	22:47	19360.50	8.97	6.72	7.25	7.51	16.419

"	23:17	19642.00	9.38				16.425
"	23:47	19920.00	9.27	6.72	7.24	7.51	16.437
10/8/98	0:17	20192.50	9.08				16.463
"	0:47	20466.50	8.93	6.73	6.73	7.52	16.483
"	1:17	20742.20	9.39				16.548
"	1:47	21020.00	9.26	6.75	7.25	7.51	16.597
"	2:17	21303.00	9.43				16.681
"	2:47	21580.10	9.24	6.25	7.27	7.53	16.731
"	3:17	21863.10	9.13				16.732
"	3:47	22140.30	9.24	6.77	7.27	7.53	16.754
"	4:17	22423.80	9.42				16.751
"	4:47	22681.80	8.63	6.77	7.28	7.55	16.972
"	5:17	22977.20	9.53				
"	5:47	23270.60	9.46	6.77	7.28	7.55	16.814
"	6:17	23573.20	9.17				16.815
"	6:47	23870.00	9.89	6.78	7.27	7.55	16.818
"	7:17	2799.50	7.65				
"	7:50	24403.40	9.21	6.80	7.27	7.57	16.830
"	8:18	24655.10	9.35				16.850
"	8:47	24936.10	9.34	6.82	7.30	7.61	16.850
"	9:17	25216.50	9.35				16.870
"	9:47	25496.90	9.35			7.63	16.870
"	10:17	25777.40	9.35				16.870
"	10:47	26058.00	9.35				16.890
"	11:17	26338.90	9.36				16.900
"	11:47	26623.00	9.47	6.83	7.30	7.63	16.920
"	12:17	26900.40	9.25				16.920
"	12:47	27180.80	9.35	6.84	7.31	7.64	16.920
"	13:17	27461.50	9.36				16.930
"	13:47	27742.10	9.35	6.84	7.31	7.65	16.930
"	14:17	28023.10	9.37				16.960
"	14:47	28304.00	9.36	6.83	7.31	7.64	16.990
"	15:20	28615.30	9.43				17.020
"	15:47	28864.50	9.41	6.84	7.31	7.65	17.030
"	16:17	29151.70	9.41				17.050
"	16:47	29433.20	9.38	6.84	7.31	7.65	17.040
"	17:17	29716.20	9.43				17.040
"	17:47	29998.20	9.40	6.84	7.31	7.65	17.030
"	18:17	30280.50	9.41				17.043
"	18:47	30562.70	9.41	6.85	7.31	7.65	17.040
"	19:17	30910.00	9.64				17.063
"	19:47	31160.10	9.26	6.85	7.32	7.64	17.073
"	20:17	31413.40	9.27				17.096
"	20:47	31790.60	9.34	6.86	7.32	7.63	17.105
"	21:17	31971.50	9.56				17.032
"	21:47	32258.60	9.37	6.86	7.32	7.63	17.058
"	22:17	32538.30	9.32				17.085
"	22:47	32820.50	9.41	6.85	7.33	7.65	17.105
"	23:17	33090.70	9.01				17.118
"	23:47	33090.70	9.65	6.84	7.32	7.63	17.126
10/9/98	0:17	33660.10	9.33				17.139
"	0:47	33987.50	9.35	6.84	7.32	7.63	17.139
"	1:17	34240.40	9.37				17.162
"	1:47	34520.40	9.33	6.85	7.33	7.64	17.148
"	2:17	34840.50	9.15				17.156
"	2:47	35122.90	9.41	6.85	7.32	7.65	17.164
"	3:17	35403.30	9.35				17.172
"	3:47	35688.70	9.51	6.85	7.32	7.65	17.178
"	4:17	35970.20	9.88				17.181
"	4:47	36229.70	8.65	6.85	7.32	7.66	17.191
"	5:17	36490.00	8.68				17.197
"	5:47	36770.00	9.33	6.85	7.33	7.67	17.212
"	6:17	37060.30	9.68				17.232
"	6:47	37390.00	9.16	6.85	7.30	7.67	17.220
"	7:17	37640.30	8.34				17.232
"	7:47	37894.10	8.46	6.70	7.34	7.71	17.230
"	8:17	38173.80	9.32				17.240
"	8:47	38453.90	9.34	6.90	7.33	7.72	17.250
"	9:17	38735.00	9.37				17.240
"	9:47	39016.50	9.38	6.90	7.34	7.72	17.260
"	10:17	39297.80	9.38				17.260
"	10:47	39580.90	9.44	6.90	7.35	7.72	17.270
"	11:17	39870.50	9.65				17.270
"	11:47	40141.70	9.04	6.91	7.34	7.74	17.260

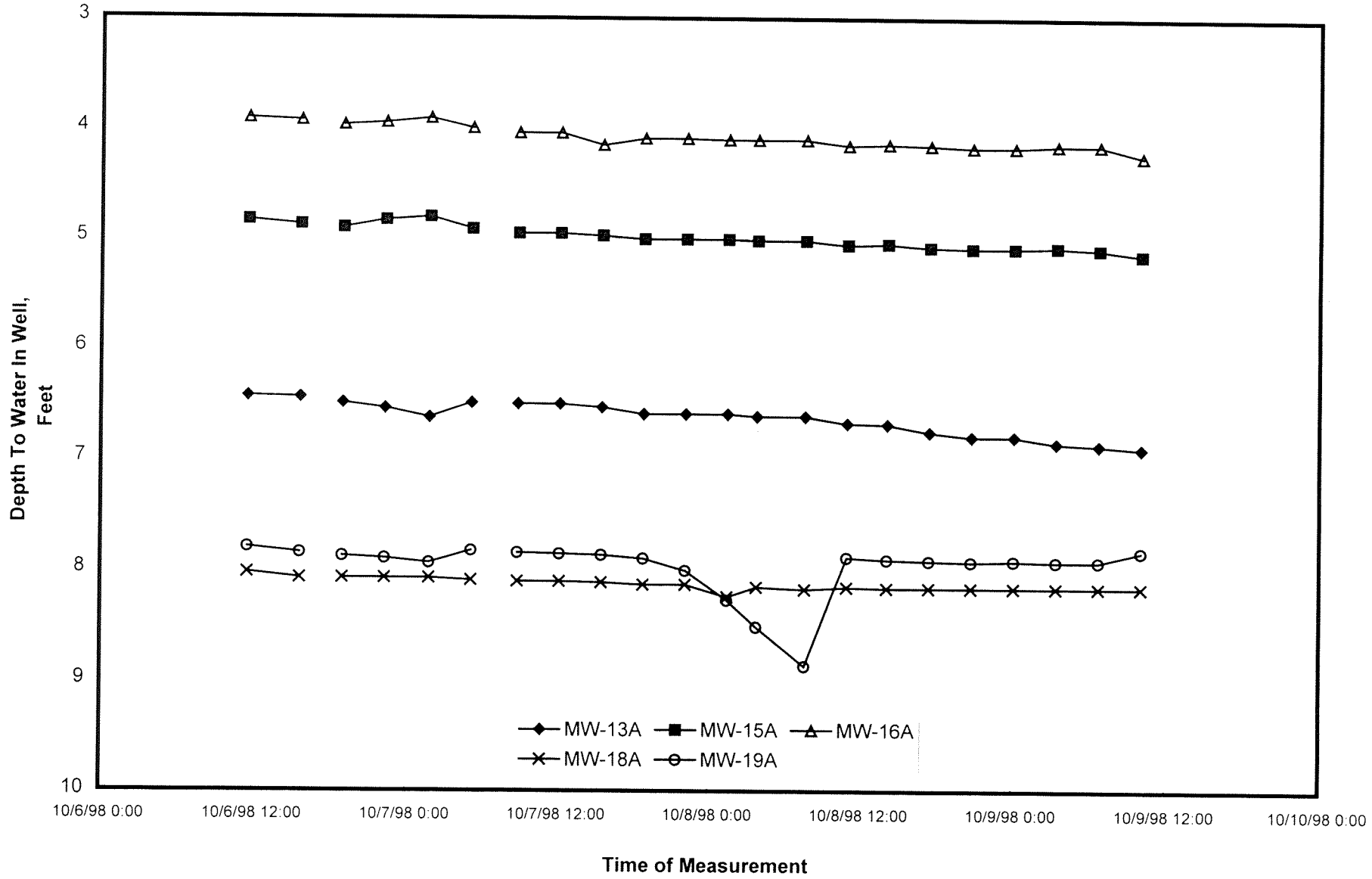
Average Pumping Rate = 9.28 gpm

72-HOUR PUMP TEST, NTC, ORLANDO
MONITORING AT 200 MINUTE INTERVALS

DATE / TIME	Elasped Time (hrs.)	Time per Pump Rate Hrs:Min	Time per Pump Rate, Hrs.	MEASURED FLOW RATE, gpm	Background Wells				
					MW-13A	MW-15A	MW-16A	MW-18A	MW-19A
10/6/98 11:30	0:00				6.44	4.84	3.91	8.03	7.8
10/6/98 15:37	4:07	4:07	4.1166	9.35	6.45	4.88	3.93	8.08	7.85
10/6/98 16:35	0:58								
10/6/98 18:57	2:22				6.50	4.91	3.97	8.08	7.88
10/6/98 22:17	3:20				6.55	4.84	3.95	8.08	7.9
10/7/98 1:47	3:30	10:10	10.1667	9.36	6.63	4.81	3.91	8.08	7.94
10/7/98 5:07	3:20				6.50	4.92	4.00	8.1	7.83
10/7/98 7:30	2:23	5:43	5.7167	9.30					
10/7/98 8:47	1:17	1:17	1.283	8.97	6.51	4.96	4.04	8.11	7.85
10/7/98 12:07	3:20	3:20	3.333	9.08	6.51	4.96	4.04	8.11	7.86
10/7/98 15:27	3:20				6.54	4.98	4.15	8.12	7.87
10/7/98 18:47	3:20	6:40	6.667	8.99	6.60	5.01	4.09	8.14	7.9
10/7/98 22:07	3:20				6.60	5.01	4.09	8.14	8.01
10/8/98 1:27	3:20	6:40	6.667	9.33	6.60	5.01	4.10	8.25	8.28
10/8/98 3:47	2:20				6.62	5.02	4.10	8.16	8.52
10/8/98 7:37	3:50	6:10	6.1667	9.18	6.62	5.02	4.10	8.18	8.87
10/8/98 10:57	3:20	3:20	3.333	9.06	6.68	5.06	4.15	8.16	7.89
10/8/98 14:07	3:10	3:10	3.167	9.23	6.69	5.05	4.14	8.17	7.91
10/8/98 17:27	3:20	3:20	3.333	9.91	6.76	5.08	4.15	8.17	7.92
10/8/98 20:47	3:20	3:20	3.333	9.52	6.80	5.09	4.17	8.17	7.93
10/9/98 0:07	3:20				6.80	5.09	4.17	8.17	7.92
10/9/98 3:27	3:20				6.86	5.08	4.15	8.17	7.93
10/9/98 6:47	3:20				6.88	5.10	4.15	8.17	7.93
10/9/98 10:07	3:20	13:20	13.333	9.96	6.91	5.15	4.25	8.17	7.84
Total Time =	70:37:00	70:37:00	70.6157	9.33					

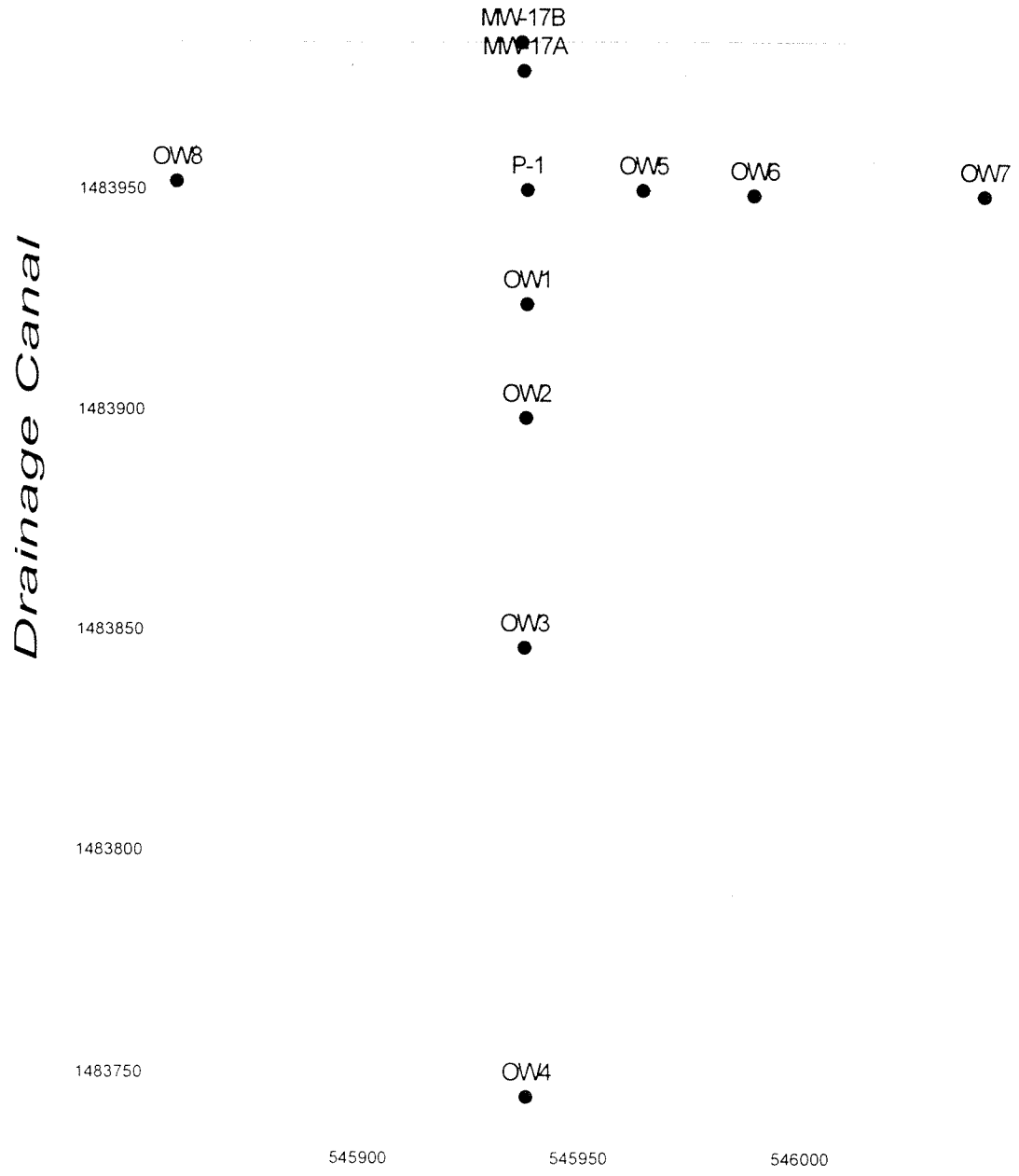
Time Weighted Average Pumping Rate = 9.41 gpm

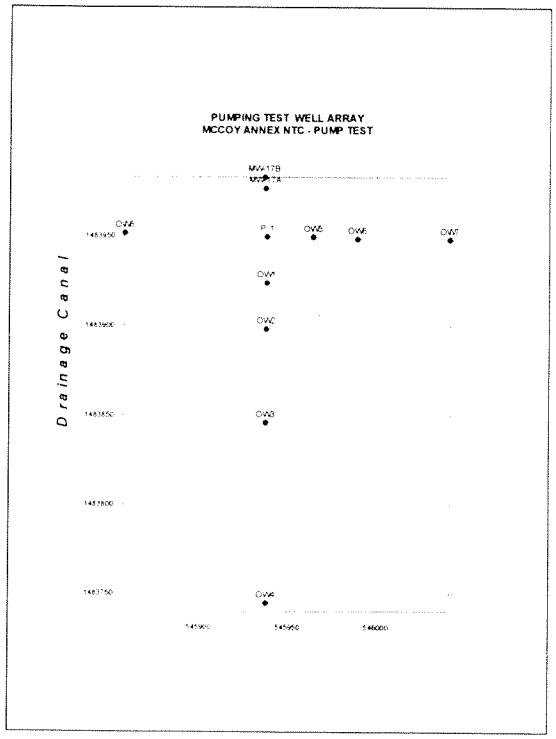
Change In Background Water Levels
During Pumping Test
NTC Orlando, FL



Pump Rate, Manual data BG wells

PUMPING TEST WELL ARRAY
MCCOY ANNEX NTC - PUMP TEST





Map showing: (North is Up on figure)

•Pump test site location on GOAA property, east of N-S drainage canal

•Pumping well, P-1, location in center of observation well array

•array of 10 observation wells (includes existing well pair at MW-17)

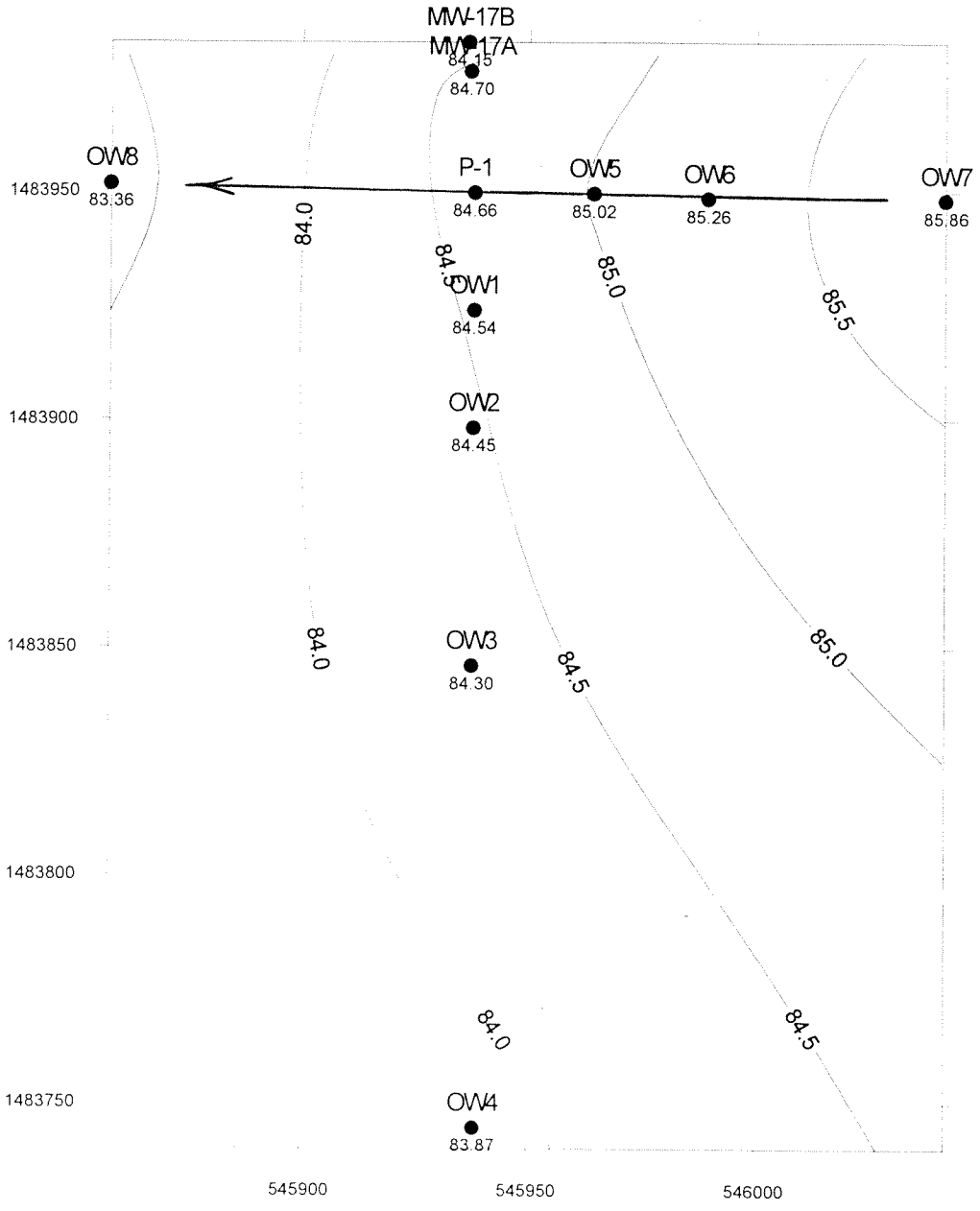
•drainage canal lies about 125 ft to the west of P-1

Wells distances from pumping well:

• 25ft, 50 ft, and 100 ft to the East and South

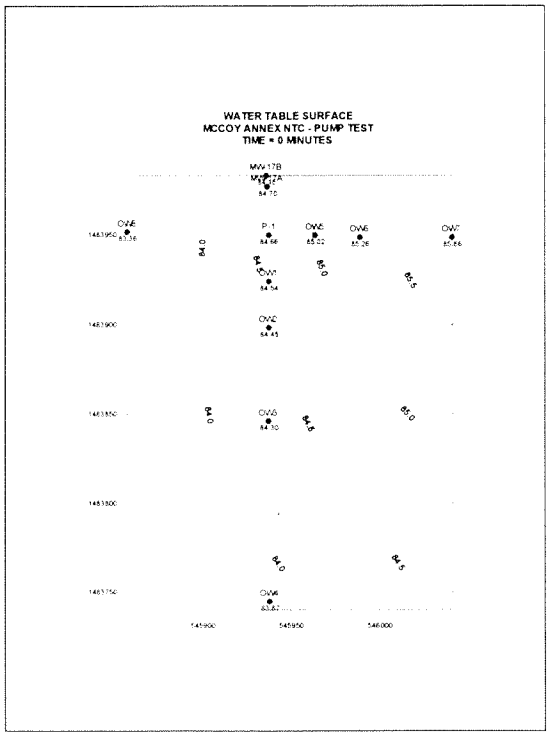
•also, 25 ft to North; 100 ft to West; and 200 ft to South

WATER TABLE SURFACE
MCCOY ANNEX NTC - PUMP TEST
TIME = 0 MINUTES



WT Gradient = 0.014

Scale: 1" ≈ 40'



Water Table Surface Prior to Pumping :

•Water Table is unconfined, about 6 to 7 ft bgs.

•gradient is toward the canal (West)

•gradient is about 0.014

•slight difference between MW-17 A and B, average is more like other wells that are fully penetrating

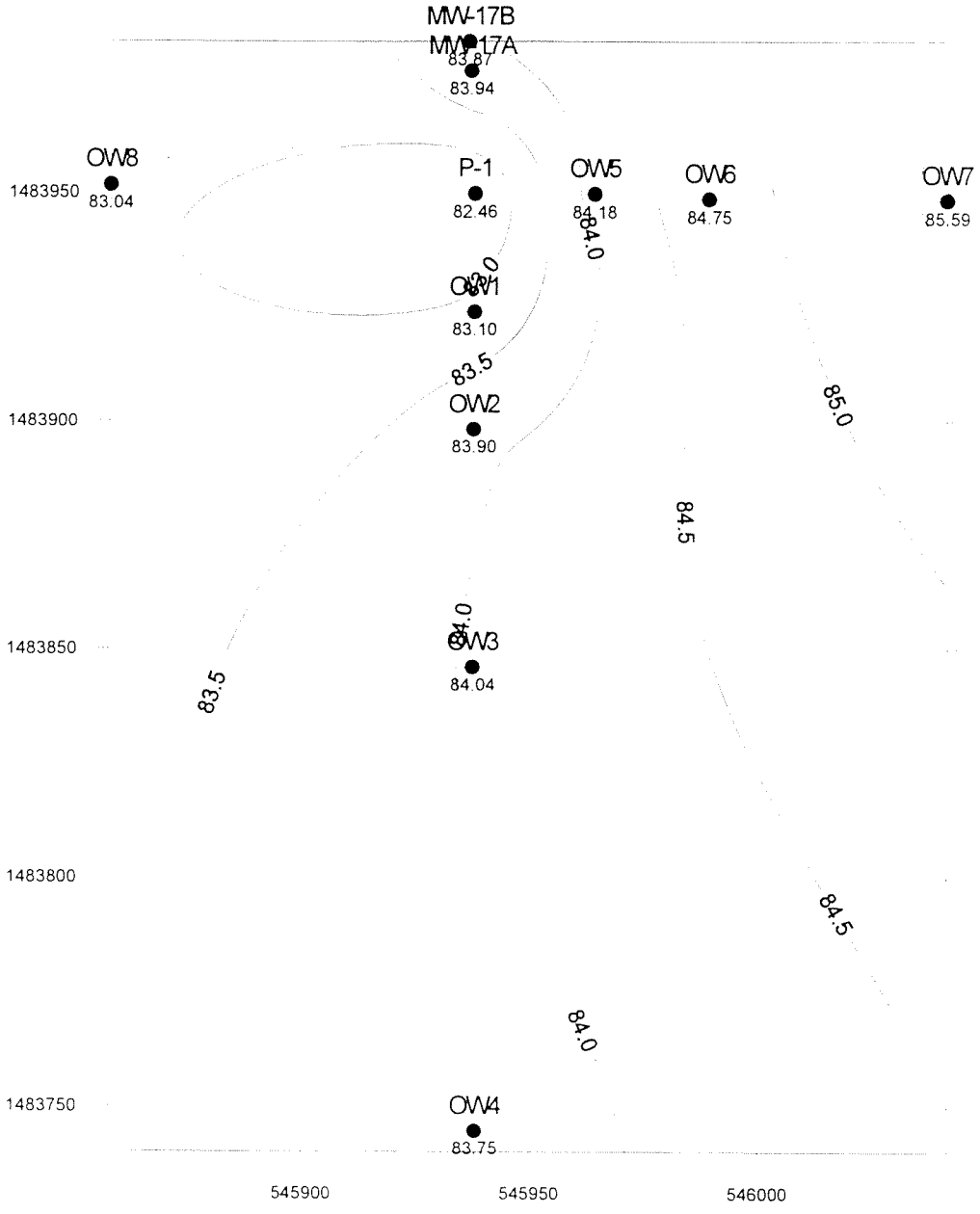
•curvature probably mostly due to lack of control around edges of plot

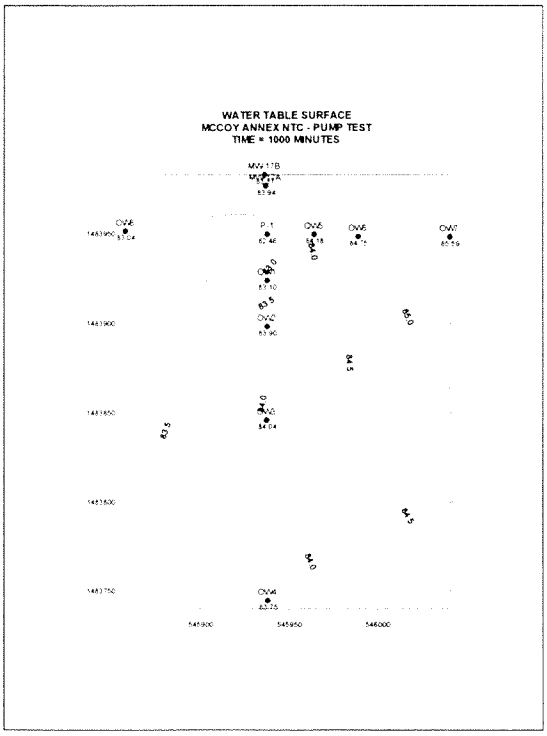
Drainage Canal:

•water level is much lower than WT surface at OW-08

•bottom and sides of canal normally covered with muck (low permeability)

WATER TABLE SURFACE
MCCOY ANNEX NTC - PUMP TEST
TIME = 1000 MINUTES





Water Table Surface after 1000 minutes (16.6 hours) of Pumping:

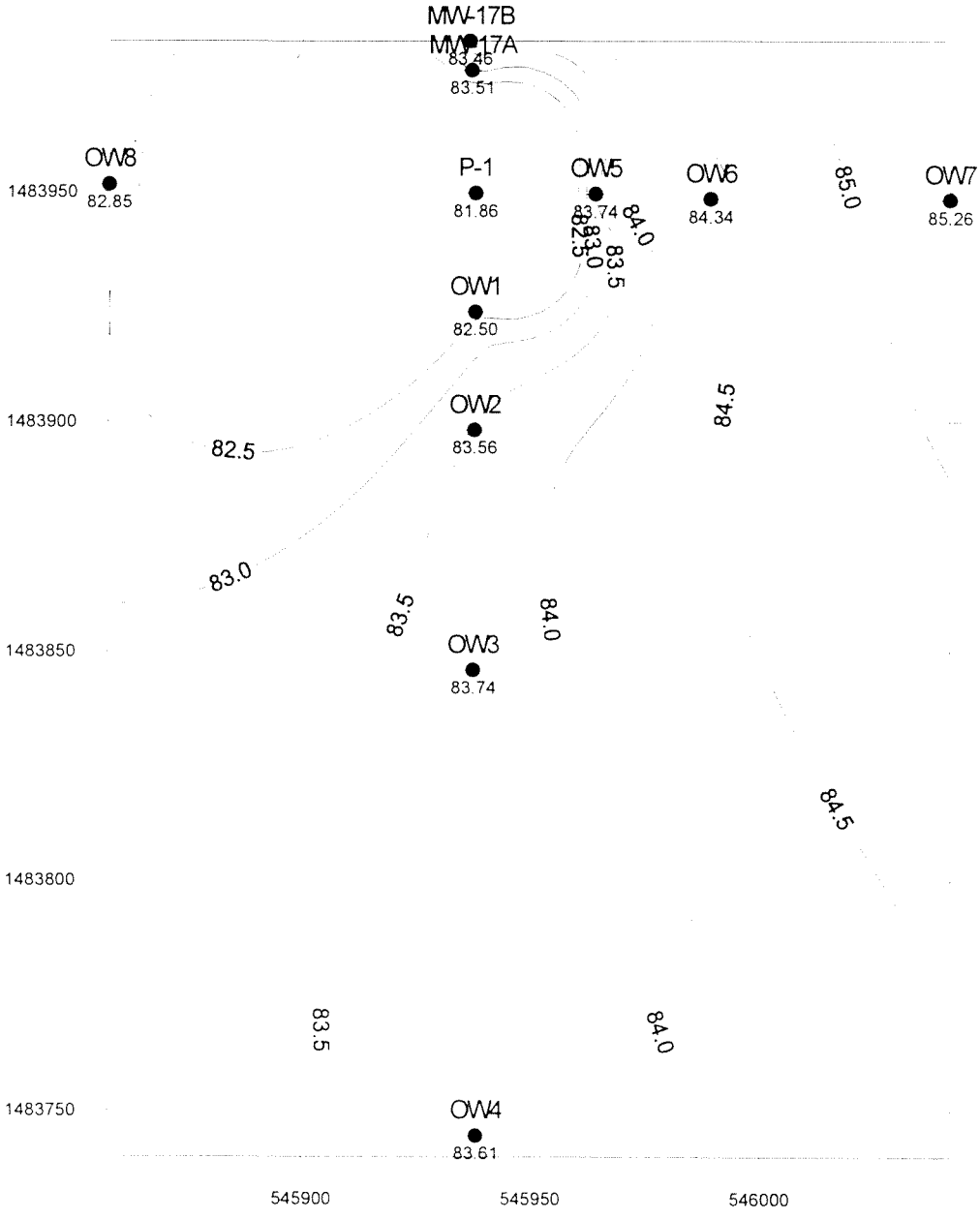
•lowering of WT around pumping well P-1

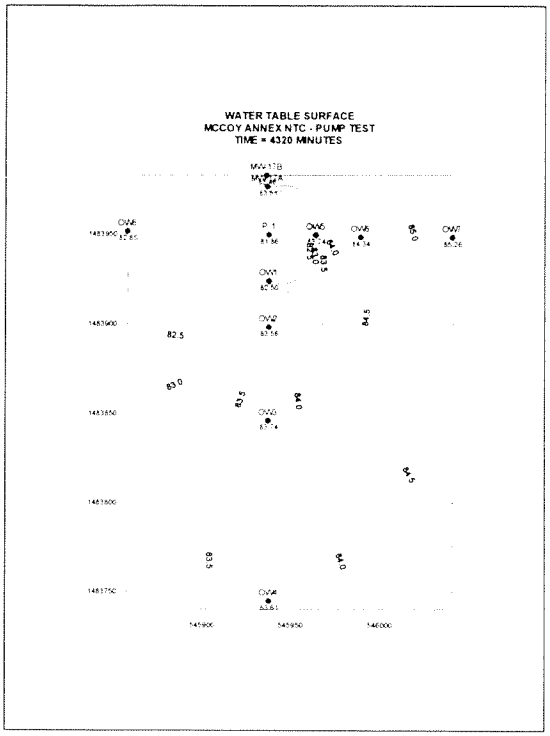
•depression is skewed toward OW-08, the canal, because water level in canal is much lower than the WT (i.e., flows is both ways at OW-08)

•depression also skewed toward OW-01 (South)

•steepest gradient is from the East

WATER TABLE SURFACE
MCCOY ANNEX NTC - PUMP TEST
TIME = 4320 MINUTES





Water Table Surface after 4320 minutes (72 hours) of Pumping:

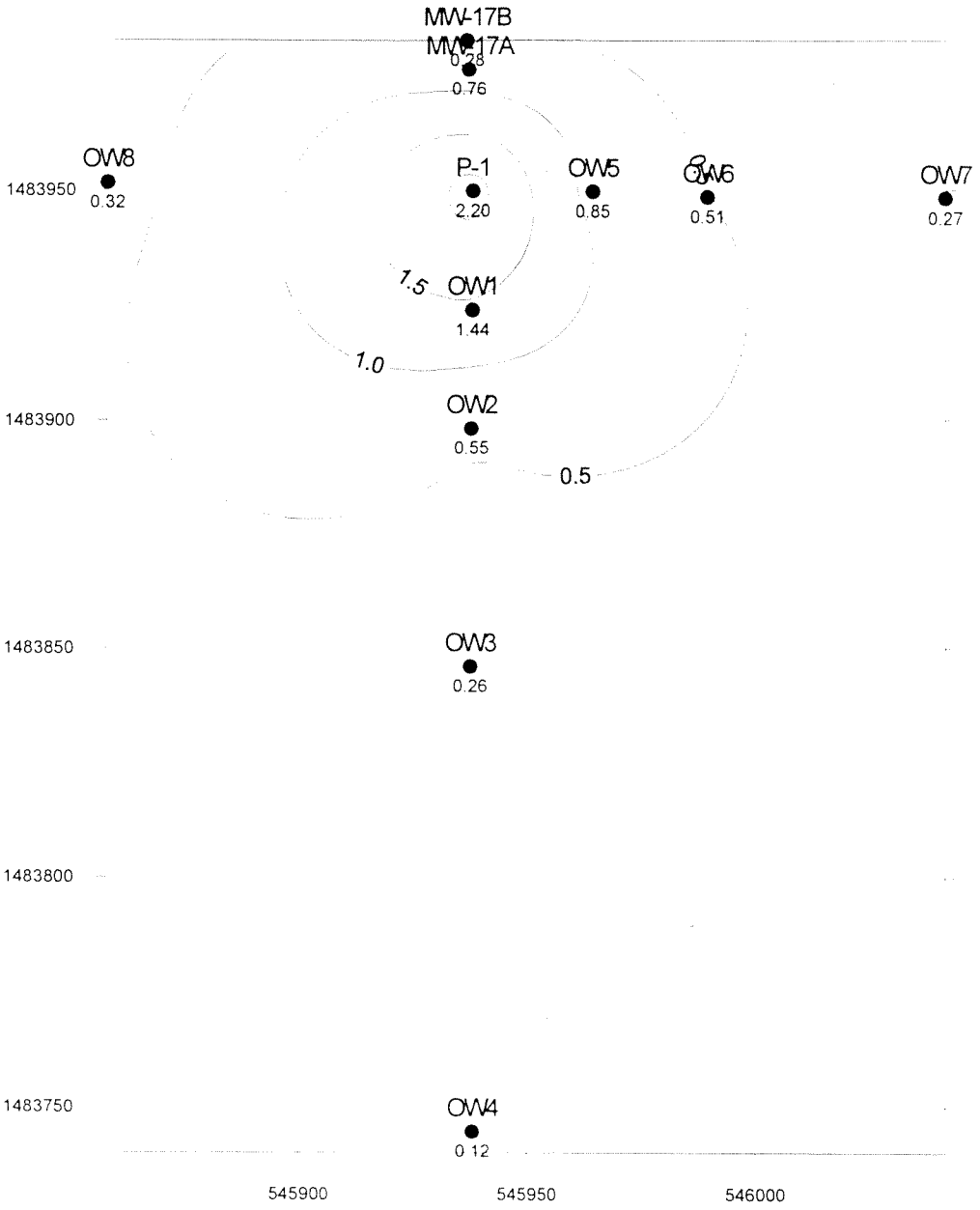
•lowering of WT around pumping well P-1 (about 2.9 ft based on data projected from observation wells; level in pumping well is lower because of head losses)

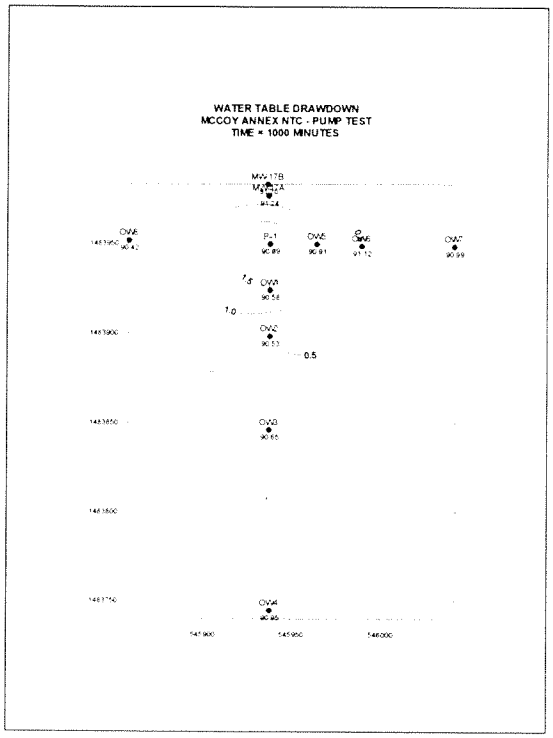
•depression is more skewed toward OW-08; the pumping water level is till much higher than water level in the canal

•depression also more skewed toward OW-01 (South); seems to represent local area of lower conductivity sediments

•steepest gradient is from the East

WATER TABLE DRAWDOWN
MCCOY ANNEX NTC - PUMP TEST
TIME = 1000 MINUTES





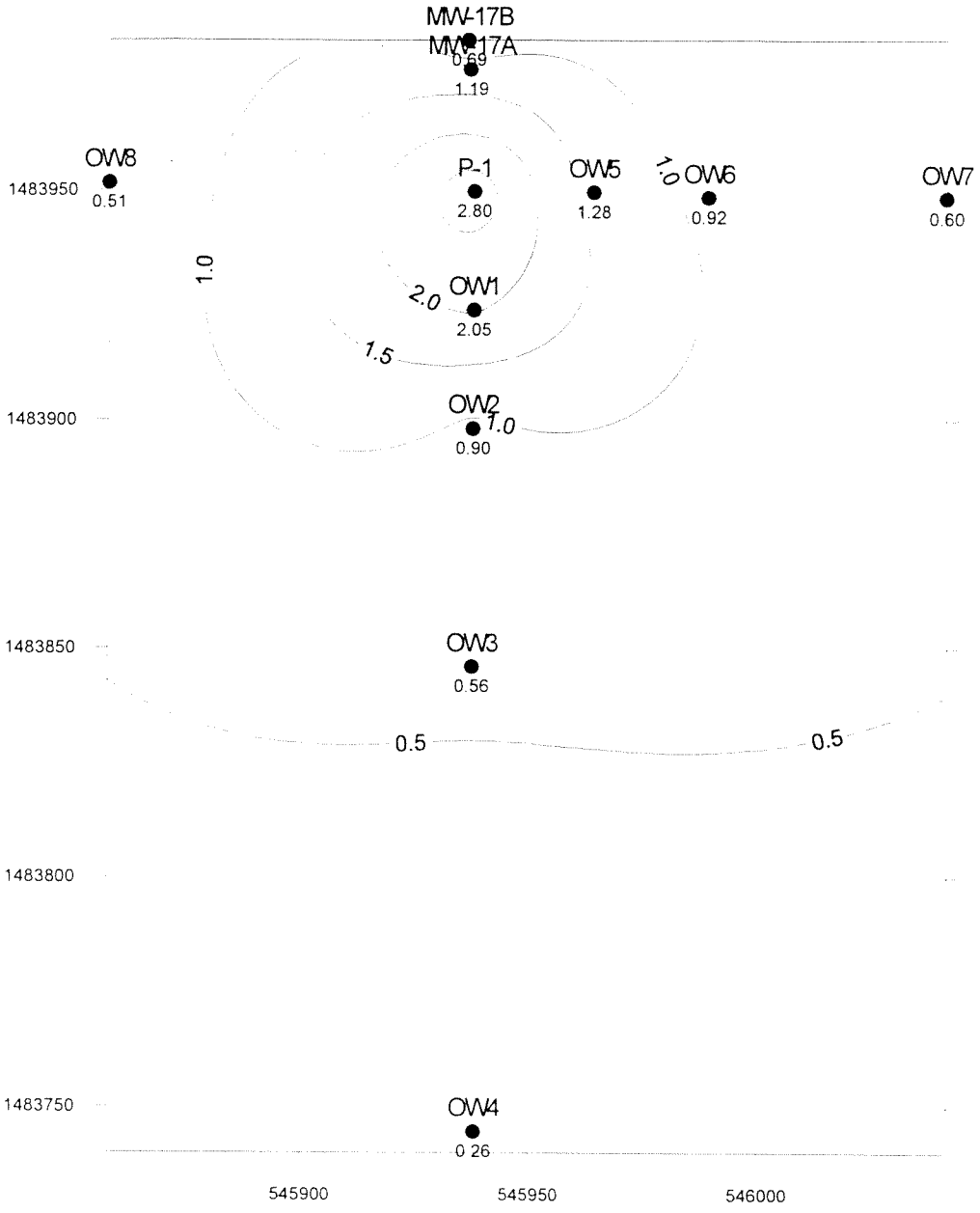
Drawdown after 1000 minutes (16.6 hours) of Pumping:

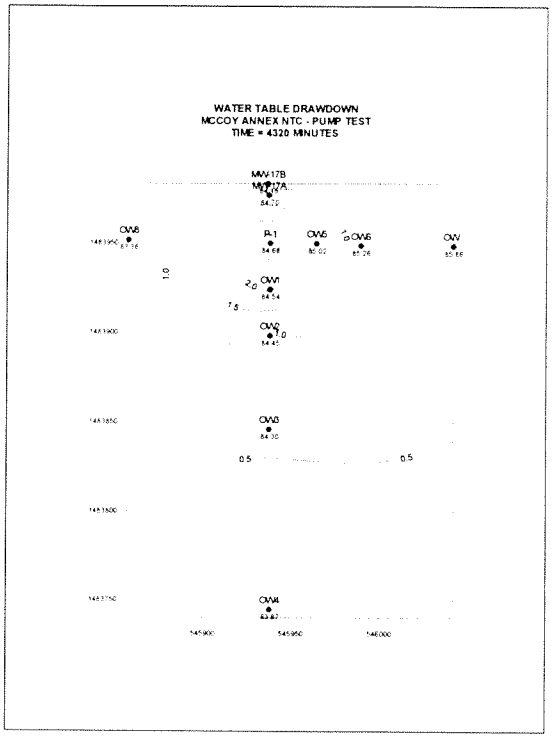
•cone of depression around pumping well, P-1

•aquifer drawdown at P-1 is about 2.2 ft based on data projected from observation wells; observed level in pumping well is much lower because of head losses

•cone is skewed (i.e., drawdown is greater) toward the canal, OW-08

WATER TABLE DRAWDOWN
MCCOY ANNEX NTC - PUMP TEST
TIME = 4320 MINUTES





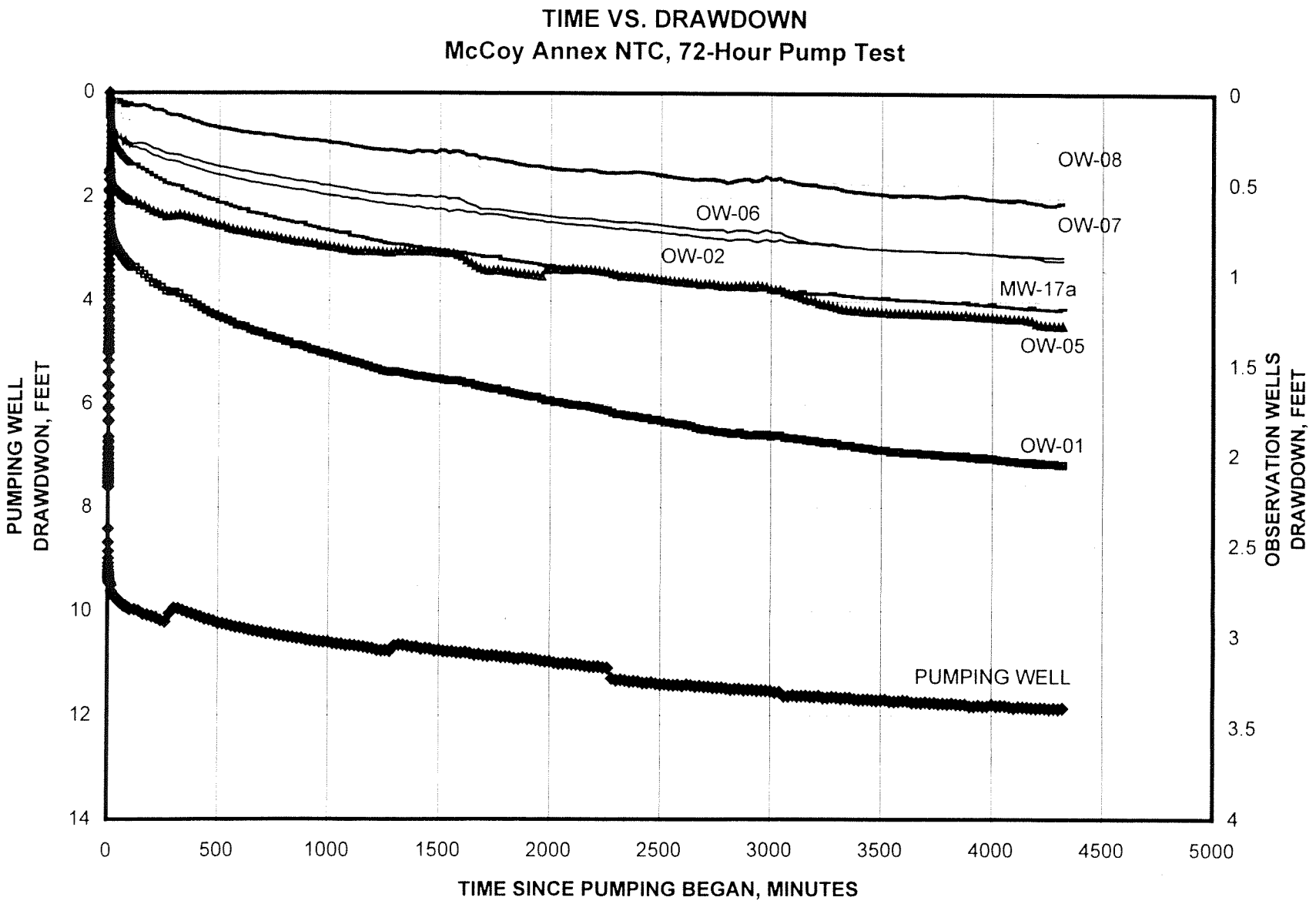
Drawdown after 4320minutes (72 hours) of Pumping:

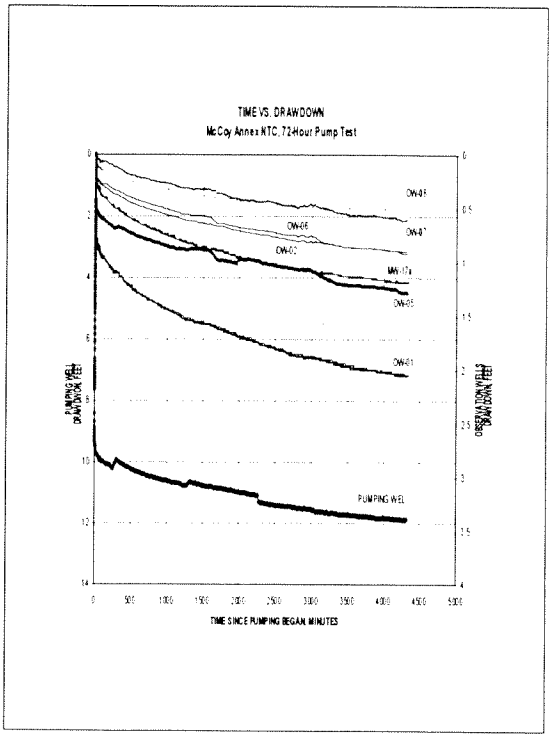
•cone of depression around pumping well, P-1

•aquifer drawdown at P-1 is about 2.9 ft based on data projected from observation wells

•cone is skewed (i.e., drawdown is greater) toward the canal, OW-08

•cone of depression has expanded greatly (see 0.5 ft contour)


TIME VS. DRAWDOWN
McCoy Annex NTC, 72-Hour Pump Test
PUMPING WELL DRAWDWON, FEET
OBSERVATION WELLS DRAWDOWN, FEET
TIME SINCE PUMPING BEGAN, MINUTES
OW-08
OW-06
OW-07
OW-02
MW-17a
OW-05
OW-01
PUMPING WELL
0
2
4
6
8
10
12
14
0
0.5
1
1.5
2
2.5
3
3.5
4
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000



Time vs. Drawdown for all Wells: (Note different scales)

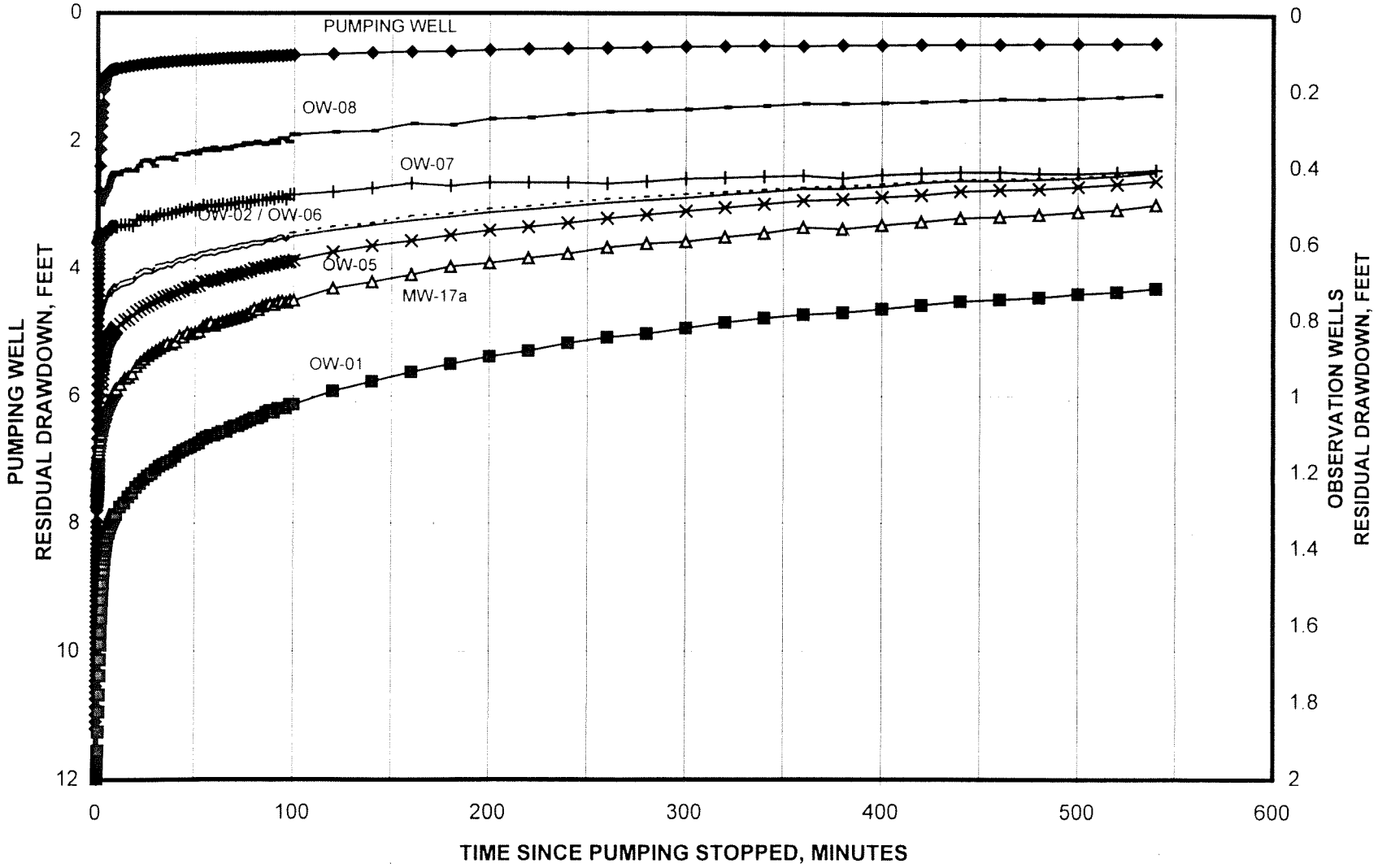
•observed drawdown at P-1 is large because of head losses in well and formation (actual aquifer drawdown more accurately predicted by observation well data projected on semi-log plot

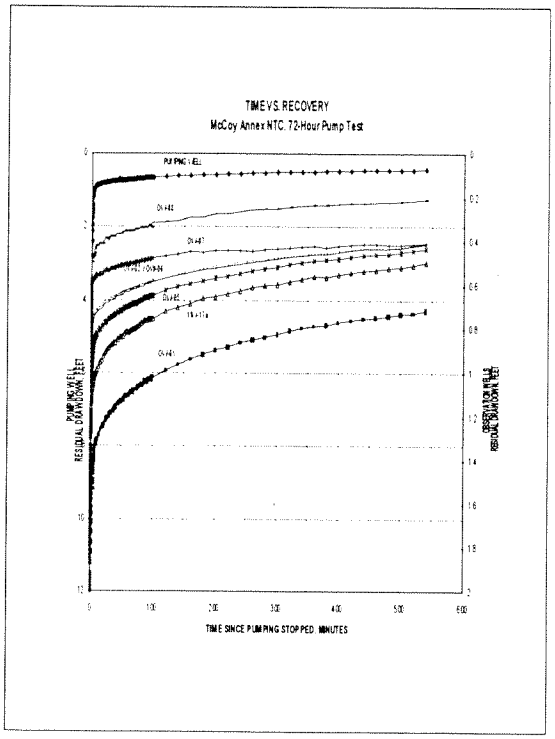
•OW-01 is showing much more drawdown than other wells at 25 ft (OW-05, MW-17)

•wells at 50 ft and 100 ft are responding nearly identical

•after about 3000 minutes wells to the East (OW-5, -6, -7) show increased drawdown compared to other wells at similar distances (could mean that radius of influence has encountered area of lower conductivity material further to the east)

TIME VS. RECOVERY
McCoy Annex NTC, 72-Hour Pump Test





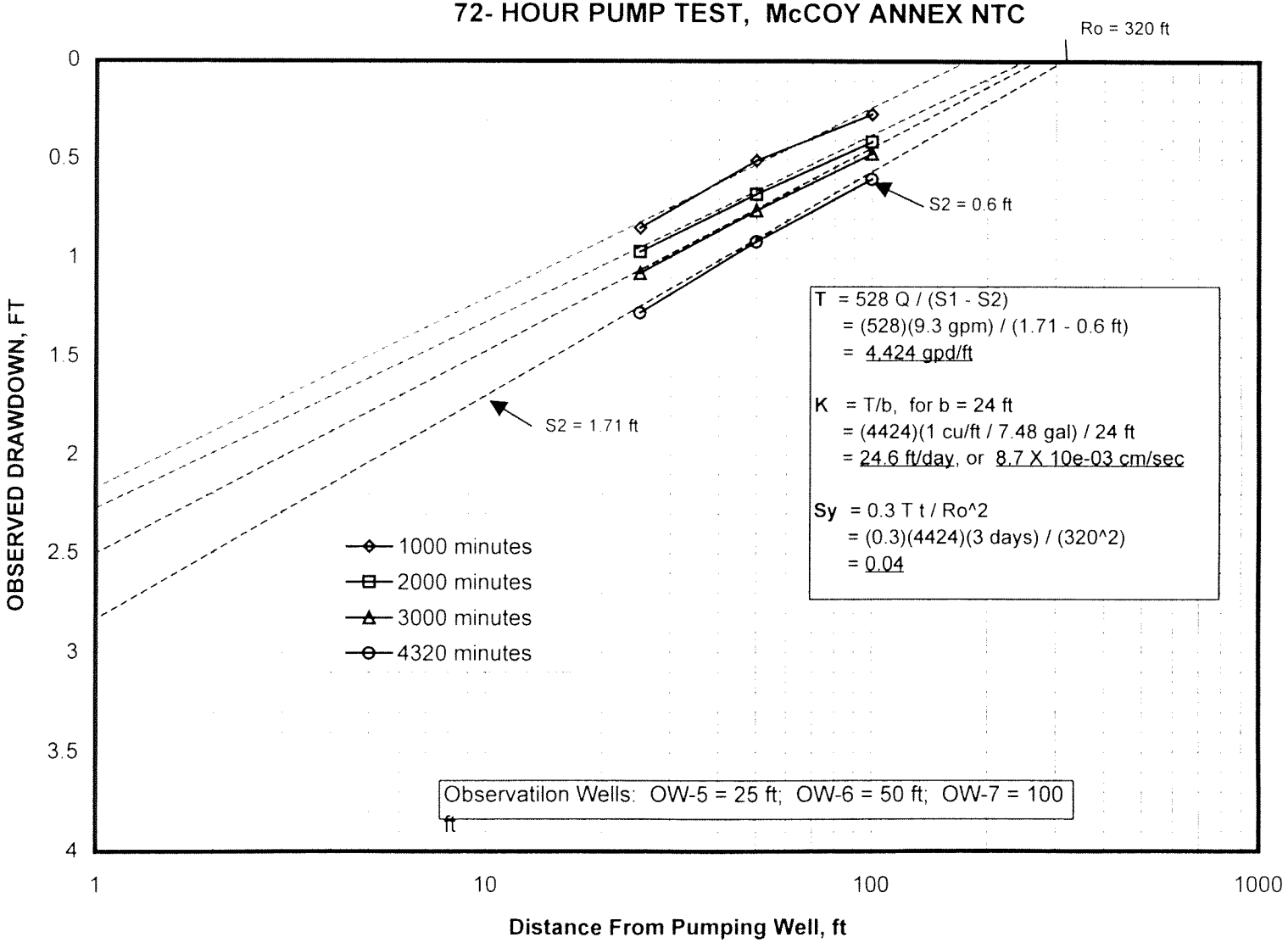
Recovery of Water Levels at the End of Pumping (Note different scales)

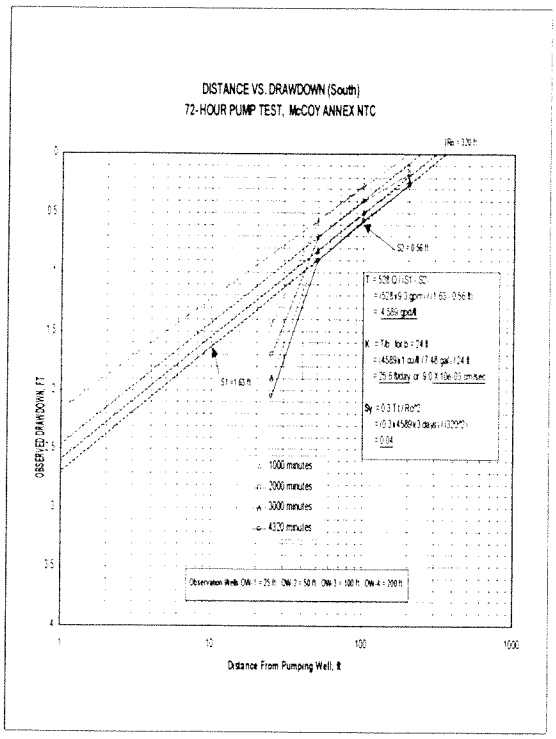
•large recovery in pumping well due to exaggerated drawdown during pumping (actual aquifer drawdown was only about 3 feet)

•recovery curve for OW-07 (out the the East) is much flatter suggesting effects of low conductivity material to the east

•data collection ended at 9 hours because recovery curves were consistent (mindful of budget and field team fatigue)

DISTANCE VS. DRAWDOWN (East)
72- HOUR PUMP TEST, McCOY ANNEX NTC





Distance vs. Drawdown for different Time Intervals: (South Wells)

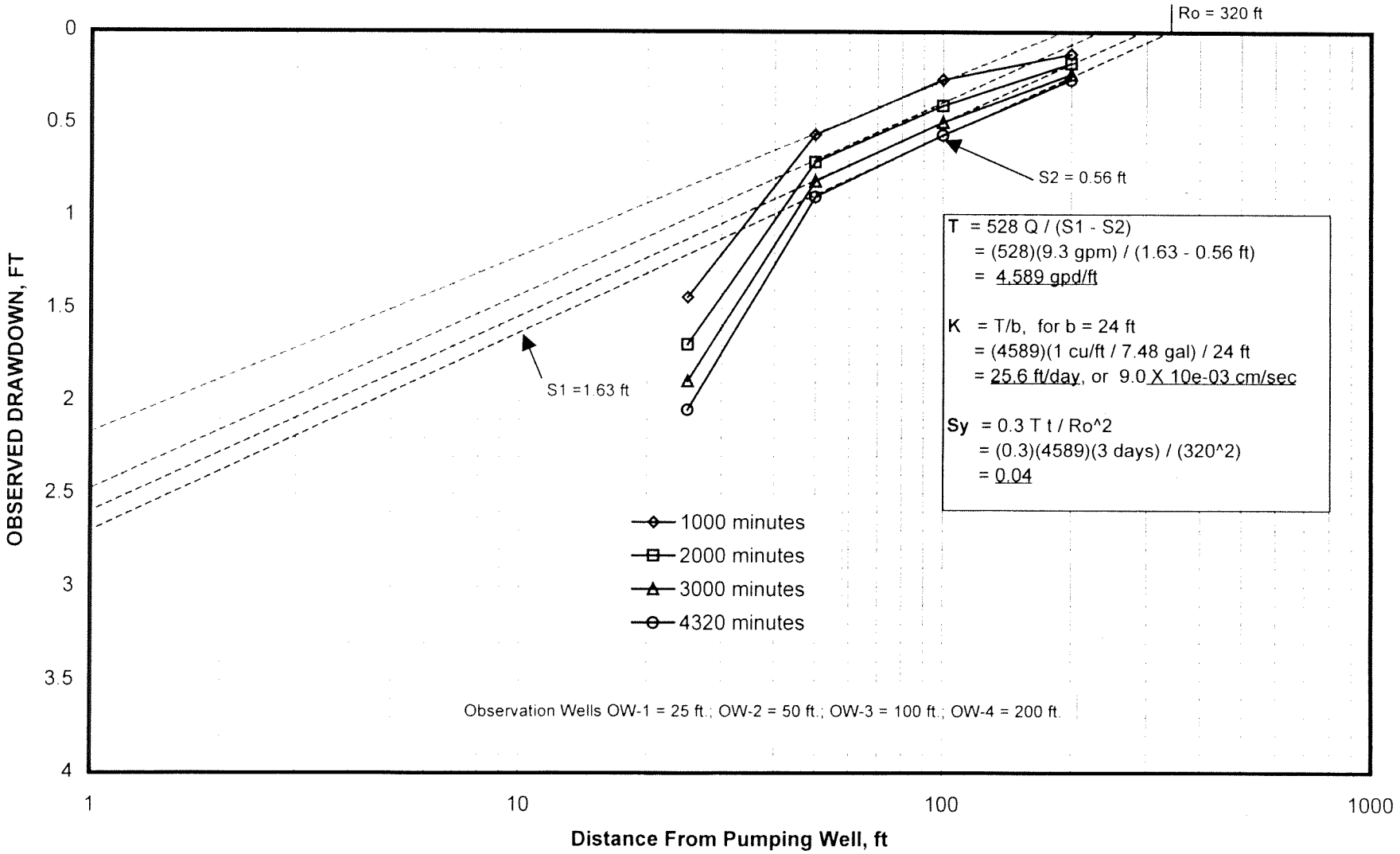
•plot based on line of four wells to the South of P-1 (at 25, 50, 100 and 200 ft)

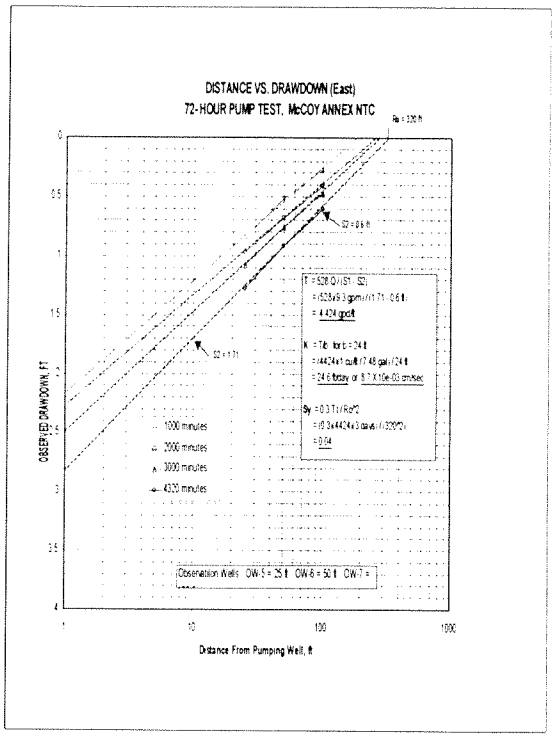
•suspected lowered conductivity zone at OW-01 shows deviation from more distant wells

•radius of influence and drawdown at P-1 very similar to East line of wells

•values for Transmissivity, Hydraulic Conductivity, and Storage (specific yield for unconfined aquifer) are very close to values for East line of wells

DISTANCE VS. DRAWDOWN (South)
72- HOUR PUMP TEST, McCOY ANNEX NTC





Distance vs. Drawdown for different Time Intervals: (East Wells)

•plot based on line of three wells to the east of P-1 (at 25, 50, and 100 ft)

•steady state of drawdown reached after about 1000 minutes (i.e., all line slopes about the same)

•projection of the "best fit" lines allows estimation of the Radius of Influence, Ro, at each time (i.e., 320 ft at 4320 minutes)

•projection of line toward pumping well allows estimate of actual aquifer drawdown in vicinity of pumping well (i.e, about 2.9 ft at 4320 minutes)

•distance vs. drawdown usually provides the best estimate of aquifer parameters if theoretical assumptions are closely meet; data suggest no significant deviations from assumptions within radius of influence

•values for Transmissivity, Hydraulic Conductivity, and Storage (specific yield for unconfined aquifer) are calculated

PUMP TEST CONCLUSIONS

- During baseline conditions when canal water level is lower than water table, flow in unconfined aquifer is toward the canal

- The unconfined aquifer can sustain continuous pumping and a radius of influence >300 ft can be accomplished without drawing water from the canal during normal aquifer water level conditions

- During baseline conditions canal will act as a flow boundary until unconfined aquifer water level is lowered more than about 8 to 10 feet

- Aquifer tranmissivity is approximately 4,500 gal/day/ft

- Specific Yield is low, around 0.04, probably due to fine grained sand as aquifer material and presence of silt as matrix material

- Hydraulic conductivity is around 9e-03 cm/sec

- Lower conductivity sediments may lie to the east of the pump test site; long-term sustained pumping may result in significant dewatering of the surficial aquifer

WELL MW-19B, SLUG OUT
McCOY ANNEX

	SE2000			
	Environmental	Logger		
	15-Dec	17:18		
	Unit#	89613801	Test	7
Setups:	INPUT	1		
---	---			
Type	Level	(F)		
Mode	TOC			
I.D.	9237-1			
Reference	0			
PSI	at	Ref.	1.93	
SG	1			
Linearity	0.415			
Scale	factor	10.018		
Offset	-0.013			
Delay	mSEC	50		
Step	0	19-Nov	15:49:54	
Elapsed	Time	INPUT	1	
---	---			
	0	-4.331		
	0.0083	-5.488		
	0.0166	-4.94		
	0.025	-5.204		
	0.0333	-5.201		
	0.0416	-5.233		
	0.05	-5.253		
	0.0583	-5.276		
	0.0666	-5.292		
	0.075	-5.308		
	0.0833	-5.321		
	0.0916	-5.334		
	0.1	-5.344		
	0.1083	-5.357		
	0.1166	-5.367		
	0.125	-5.377		
	0.1333	-5.383		
	0.1416	-5.393		
	0.15	-5.403		
	0.1583	-5.41		
	0.1666	-5.416		
	0.175	-5.423		
	0.1833	-5.429		
	0.1916	-5.436		

mw19Bslugout

WELL MW-19B, SLUG OUT
McCOY ANNEX

0.2	-5.442
0.2083	-5.449
0.2166	-5.455
0.225	-5.462
0.2333	-5.468
0.2416	-5.475
0.25	-5.481
0.2583	-5.485
0.2666	-5.491
0.275	-5.494
0.2833	-5.501
0.2916	-5.508
0.3	-5.511
0.3083	-5.517
0.3166	-5.521
0.325	-5.527
0.3333	-5.53
0.35	-5.54
0.3666	-5.55
0.3833	-5.557
0.4	-5.566
0.4166	-5.576
0.4333	-5.583
0.45	-5.592
0.4666	-5.599
0.4833	-5.606
0.5	-5.612
0.5166	-5.619
0.5333	-5.625
0.55	-5.632
0.5666	-5.638
0.5833	-5.645
0.6	-5.651
0.6166	-5.658
0.6333	-5.664
0.65	-5.671
0.6666	-5.674
0.6833	-5.681
0.7	-5.687
0.7166	-5.691
0.7333	-5.697
0.75	-5.704
0.7666	-5.707
0.7833	-5.71
0.8	-5.717
0.8166	-5.72
0.8333	-5.726
0.85	-5.73
0.8666	-5.733

mw19Bslugout

WELL MW-19B, SLUG OUT
McCOY ANNEX

0.8833	-5.736
0.9	-5.74
0.9166	-5.746
0.9333	-5.749
0.95	-5.753
0.9666	-5.756
0.9833	-5.759
1	-5.766
1.2	-5.802
1.4	-5.828
1.6	-5.851
1.8	-5.867
2	-5.88
2.2	-5.89
2.4	-5.897
2.6	-5.903
2.8	-5.91
3	-5.913
3.2	-5.916
3.4	-5.919
3.6	-5.919
3.8	-5.919
4	-5.919
4.2	-5.923
4.4	-5.923
4.6	-5.923
4.8	-5.923
5	-5.923
5.2	-5.926
5.4	-5.923
5.6	-5.923
5.8	-5.926
6	-5.923
6.2	-5.926
6.4	-5.926
6.6	-5.926
6.8	-5.926
7	-5.923
7.2	-5.923
7.4	-5.923

END

WELL MW-21A, SLUG OUT
McCOY ANNEX

	SE2000 Environmental 15-Dec	Logger 17:22		
	Unit#	89613801	Test	8
Setups:	INPUT	1		
Type	Level	(F)		
Mode	TOC			
I.D.	9237-1			
Reference	0			
PSI	at	Ref.	1.93	
SG	1			
Linearity	0.415			
Scale	factor	10.018		
Offset	-0.013			
Delay	mSEC	50		
Step	1	19-Nov	16:19:07	
Elapsed	Time	INPUT	1	
	0	2.047		
	0.0083	2.012		
	0.0166	1.084		
	0.025	1.055		
	0.0333	0.979		
	0.0416	0.905		
	0.05	0.864		
	0.0583	0.803		
	0.0666	0.745		
	0.075	0.691		
	0.0833	0.64		
	0.0916	0.589		
	0.1	0.547		
	0.1083	0.502		
	0.1166	0.464		
	0.125	0.426		
	0.1333	0.394		
	0.1416	0.358		
	0.15	0.333		
	0.1583	0.307		
	0.1666	0.285		
	0.175	0.262		
	0.1833	0.246		
	0.1916	0.23		

WELL MW-21A, SLUG OUT
McCOY ANNEX

0.2	0.217
0.2083	0.201
0.2166	0.195
0.225	0.182
0.2333	0.176
0.2416	0.166
0.25	0.16
0.2583	0.157
0.2666	0.15
0.275	0.147
0.2833	0.141
0.2916	0.137
0.3	0.134
0.3083	0.131
0.3166	0.125
0.325	0.125
0.3333	0.121
0.35	0.115
0.3666	0.112
0.3833	0.108
0.4	0.105
0.4166	0.102
0.4333	0.096
0.45	0.096
0.4666	0.089
0.4833	0.089
0.5	0.086
0.5166	0.086
0.5333	0.083
0.55	0.083
0.5666	0.08
0.5833	0.076
0.6	0.076
0.6166	0.073
0.6333	0.073
0.65	0.073
0.6666	0.07
0.6833	0.07
0.7	0.067
0.7166	0.067
0.7333	0.067
0.75	0.067
0.7666	0.067
0.7833	0.064
0.8	0.064
0.8166	0.06
0.8333	0.06
0.85	0.06
0.8666	0.06

WELL MW-21A, SLUG OUT
McCOY ANNEX

0.8833	0.057
0.9	0.057
0.9166	0.057
0.9333	0.057
0.95	0.054
0.9666	0.054
0.9833	0.054
1	0.054
1.2	0.048
1.4	0.041
1.6	0.038
1.8	0.032
2	0.032
2.2	0.025
2.4	0.025
2.6	0.025
2.8	0.025
3	0.022
3.2	0.022
3.4	0.019
3.6	0.019
3.8	0.019
4	0.016
4.2	0.019
4.4	0.016
4.6	0.016
4.8	0.016
5	0.016
5.2	0.012
5.4	0.012
5.6	0.012
5.8	0.012
6	0.016
6.2	0.016
6.4	0.012
6.6	0.012

END

mw21Aslugout

WELL MW-21B, SLUG OUT
McCOY ANNEX

	SE2000			
	Environmental	Logger		
	15-Dec	17:24		
	Unit#	89613801	Test	9
Setups:	INPUT	1		
---	---			
Type	Level	(F)		
Mode	TOC			
I.D.	9237-1			
Reference	0			
PSI	at	Ref.	3.746	
SG	1			
Linearity	0.415			
Scale	factor	10.018		
Offset	-0.013			
Delay	mSEC	50		
Step	0	19-Nov	16:28:40	
Elapsed	Time	INPUT	1	
---	---			
	0	-1.029		
	0.0083	0.88		
	0.0166	0.776		
	0.025	0.753		
	0.0333	0.737		
	0.0416	0.721		
	0.05	0.691		
	0.0583	0.669		
	0.0666	0.656		
	0.075	0.643		
	0.0833	0.633		
	0.0916	0.623		
	0.1	0.614		
	0.1083	0.604		
	0.1166	0.597		
	0.125	0.591		
	0.1333	0.584		
	0.1416	0.581		
	0.15	0.575		
	0.1583	0.571		
	0.1666	0.565		
	0.175	0.562		
	0.1833	0.555		
	0.1916	0.555		

mw21Bslugout

WELL MW-21B, SLUG OUT
McCOY ANNEX

0.2	0.552
0.2083	0.545
0.2166	0.545
0.225	0.542
0.2333	0.539
0.2416	0.536
0.25	0.532
0.2583	0.529
0.2666	0.526
0.275	0.523
0.2833	0.523
0.2916	0.519
0.3	0.516
0.3083	0.513
0.3166	0.513
0.325	0.51
0.3333	0.506
0.35	0.503
0.3666	0.5
0.3833	0.497
0.4	0.49
0.4166	0.487
0.4333	0.484
0.45	0.48
0.4666	0.477
0.4833	0.471
0.5	0.471
0.5166	0.467
0.5333	0.461
0.55	0.458
0.5666	0.458
0.5833	0.451
0.6	0.451
0.6166	0.448
0.6333	0.441
0.65	0.441
0.6666	0.438
0.6833	0.435
0.7	0.432
0.7166	0.428
0.7333	0.428
0.75	0.422
0.7666	0.422
0.7833	0.419
0.8	0.415
0.8166	0.412
0.8333	0.409
0.85	0.406
0.8666	0.406

WELL MW-21B, SLUG OUT
McCOY ANNEX

0.8833	0.402
0.9	0.399
0.9166	0.399
0.9333	0.396
0.95	0.393
0.9666	0.389
0.9833	0.386
1	0.386
1.2	0.36
1.4	0.338
1.6	0.315
1.8	0.299
2	0.282
2.2	0.266
2.4	0.253
2.6	0.243
2.8	0.234
3	0.224
3.2	0.214
3.4	0.208
3.6	0.201
3.8	0.195
4	0.188
4.2	0.185
4.4	0.178
4.6	0.175
4.8	0.172
5	0.169
5.2	0.165
5.4	0.162
5.6	0.159
5.8	0.159
6	0.156
6.2	0.156
6.4	0.152

END

mw21Bslugout

WELL MW-22A, SLUG OUT
McCOY ANNEX

	SE2000			
	Environmental	Logger		
	15-Dec	17:29		
	Unit#	89613801	Test	10
Setups:	INPUT	1		
---	---			
Type	Level	(F)		
Mode	TOC			
I.D.	9237-1			
Reference	0			
PSI	at	Ref.	3.958	
SG	1			
Linearity	0.415			
Scale	factor	10.018		
Offset	-0.013			
Delay	mSEC	50		
Step	1	19-Nov	17:30:35	
Elapsed	Time	INPUT	1	
---	---			
	0	1.176		
	0.0083	0.523		
	0.0166	1.572		
	0.025	1.079		
	0.0333	1.241		
	0.0416	1.108		
	0.05	1.098		
	0.0583	1.053		
	0.0666	1.021		
	0.075	0.991		
	0.0833	0.959		
	0.0916	0.93		
	0.1	0.904		
	0.1083	0.878		
	0.1166	0.852		
	0.125	0.829		
	0.1333	0.806		
	0.1416	0.784		
	0.15	0.764		
	0.1583	0.745		
	0.1666	0.725		
	0.175	0.706		
	0.1833	0.689		
	0.1916	0.673		

mw22Aslugout

WELL MW-22A, SLUG OUT
McCOY ANNEX

0.2	0.657
0.2083	0.641
0.2166	0.628
0.225	0.615
0.2333	0.598
0.2416	0.589
0.25	0.572
0.2583	0.563
0.2666	0.55
0.275	0.54
0.2833	0.53
0.2916	0.517
0.3	0.51
0.3083	0.497
0.3166	0.491
0.325	0.481
0.3333	0.475
0.35	0.458
0.3666	0.442
0.3833	0.429
0.4	0.419
0.4166	0.406
0.4333	0.397
0.45	0.387
0.4666	0.377
0.4833	0.367
0.5	0.361
0.5166	0.351
0.5333	0.348
0.55	0.338
0.5666	0.332
0.5833	0.325
0.6	0.322
0.6166	0.315
0.6333	0.312
0.65	0.306
0.6666	0.302
0.6833	0.296
0.7	0.293
0.7166	0.289
0.7333	0.286
0.75	0.283
0.7666	0.28
0.7833	0.276
0.8	0.273
0.8166	0.27
0.8333	0.266
0.85	0.263
0.8666	0.26

mw22Aslugout

WELL MW-22A, SLUG OUT
McCOY ANNEX

0.8833	0.257
0.9	0.257
0.9166	0.253
0.9333	0.25
0.95	0.25
0.9666	0.247
0.9833	0.244
1	0.24
1.2	0.218
1.4	0.205
1.6	0.192
1.8	0.185
2	0.175
2.2	0.172
2.4	0.166
2.6	0.162
2.8	0.159
3	0.156
3.2	0.153
3.4	0.149
3.6	0.149
3.8	0.146
4	0.143
4.2	0.143
4.4	0.143
4.6	0.14
4.8	0.14
5	0.14
5.2	0.136
5.4	0.136
5.6	0.136
5.8	0.133
6	0.133
6.2	0.133
6.4	0.133
6.6	0.13
6.8	0.133
7	0.13
7.2	0.13

END

mw22Aslugout

WELL MW-22B, SLUG OUT
McCOY ANNEX

	SE2000 Environmental 15-Dec	Logger 17:31		
	Unit#	89613801	Test	11
Setups:	INPUT	1		
---	---			
Type	Level	(F)		
Mode	TOC			
I.D.	9237-1			
Reference	0			
PSI	at	Ref.	9.775	
SG	1			
Linearity	0.415			
Scale	factor	10.018		
Offset	-0.013			
Delay	mSEC	50		
Step	0	19-Nov	17:40:09	
Elapsed	Time	INPUT	1	
---	---			
	0	-1.5		
	0.0083	0.723		
	0.0166	0.883		
	0.025	0.645		
	0.0333	0.649		
	0.0416	0.621		
	0.05	0.621		
	0.0583	0.611		
	0.0666	0.604		
	0.075	0.598		
	0.0833	0.591		
	0.0916	0.584		
	0.1	0.577		
	0.1083	0.57		
	0.1166	0.564		
	0.125	0.56		
	0.1333	0.553		
	0.1416	0.55		
	0.15	0.543		
	0.1583	0.54		
	0.1666	0.536		
	0.175	0.533		
	0.1833	0.53		
	0.1916	0.523		

WELL MW-22B, SLUG OUT
McCOY ANNEX

0.2	0.519
0.2083	0.516
0.2166	0.513
0.225	0.509
0.2333	0.509
0.2416	0.503
0.25	0.499
0.2583	0.496
0.2666	0.492
0.275	0.492
0.2833	0.486
0.2916	0.486
0.3	0.482
0.3083	0.479
0.3166	0.475
0.325	0.472
0.3333	0.472
0.35	0.465
0.3666	0.462
0.3833	0.455
0.4	0.452
0.4166	0.445
0.4333	0.441
0.45	0.435
0.4666	0.431
0.4833	0.428
0.5	0.424
0.5166	0.418
0.5333	0.414
0.55	0.411
0.5666	0.407
0.5833	0.404
0.6	0.401
0.6166	0.397
0.6333	0.39
0.65	0.39
0.6666	0.387
0.6833	0.38
0.7	0.377
0.7166	0.377
0.7333	0.373
0.75	0.37
0.7666	0.367
0.7833	0.363
0.8	0.36
0.8166	0.356
0.8333	0.353
0.85	0.35
0.8666	0.35

WELL MW-22B, SLUG OUT
McCOY ANNEX

0.8833	0.346
0.9	0.343
0.9166	0.343
0.9333	0.339
0.95	0.336
0.9666	0.333
0.9833	0.329
1	0.329
1.2	0.302
1.4	0.278
1.6	0.258
1.8	0.244
2	0.234
2.2	0.221
2.4	0.214
2.6	0.207
2.8	0.2
3	0.193
3.2	0.19
3.4	0.187
3.6	0.18
3.8	0.18
4	0.176
4.2	0.173
4.4	0.173
4.6	0.17
4.8	0.17
5	0.17
5.2	0.17
5.4	0.166
5.6	0.166
5.8	0.166
6	0.163
6.2	0.166
6.4	0.166
6.6	0.166
6.8	0.163
7	0.163
7.2	0.163
7.4	0.163
7.6	0.163

END

WELL MW-23, SLUG OUT
McCOY ANNEX

	SE2000			
	Environmental	Logger		
	15-Dec	17:36		
	Unit#	89613801	Test	12
Setups:	INPUT	1		
---	---			
Type	Level	(F)		
Mode	TOC			
I.D.	9237-1			
Reference	0			
PSI	at	Ref.	5.562	
SG	1			
Linearity	0.415			
Scale	factor	10.018		
Offset	-0.013			
Delay	mSEC	50		
Step	1	19-Nov	18:03:01	
Elapsed	Time	INPUT	1	
---	---			
	0	-0.852		
	0.0083	0.128		
	0.0166	0.135		
	0.025	1.273		
	0.0333	1.224		
	0.0416	1.207		
	0.05	1.191		
	0.0583	1.188		
	0.0666	1.184		
	0.075	1.184		
	0.0833	1.171		
	0.0916	1.168		
	0.1	1.158		
	0.1083	1.165		
	0.1166	1.161		
	0.125	1.155		
	0.1333	1.158		
	0.1416	1.148		
	0.15	1.142		
	0.1583	1.142		
	0.1666	1.142		
	0.175	1.138		
	0.1833	1.132		
	0.1916	1.132		

WELL MW-23, SLUG OUT
McCOY ANNEX

0.2	1.129
0.2083	1.129
0.2166	1.122
0.225	1.122
0.2333	1.119
0.2416	1.115
0.25	1.115
0.2583	1.112
0.2666	1.112
0.275	1.109
0.2833	1.106
0.2916	1.106
0.3	1.102
0.3083	1.099
0.3166	1.099
0.325	1.096
0.3333	1.092
0.35	1.086
0.3666	1.083
0.3833	1.079
0.4	1.073
0.4166	1.073
0.4333	1.066
0.45	1.063
0.4666	1.06
0.4833	1.056
0.5	1.053
0.5166	1.05
0.5333	1.046
0.55	1.043
0.5666	1.04
0.5833	1.037
0.6	1.033
0.6166	1.03
0.6333	1.027
0.65	1.023
0.6666	1.02
0.6833	1.017
0.7	1.014
0.7166	1.01
0.7333	1.007
0.75	1.004
0.7666	1.004
0.7833	0.997
0.8	0.997
0.8166	0.994
0.8333	0.991
0.85	0.987
0.8666	0.984

mw23slugout

WELL MW-23, SLUG OUT
McCOY ANNEX

0.8833	0.984
0.9	0.977
0.9166	0.977
0.9333	0.974
0.95	0.971
0.9666	0.968
0.9833	0.964
1	0.961
1.2	0.928
1.4	0.895
1.6	0.866
1.8	0.836
2	0.81
2.2	0.783
2.4	0.754
2.6	0.727
2.8	0.704
3	0.678
3.2	0.655
3.4	0.632
3.6	0.609
3.8	0.589
4	0.566
4.2	0.546
4.4	0.523
4.6	0.507
4.8	0.487
5	0.467
5.2	0.448
5.4	0.431
5.6	0.415
5.8	0.398
6	0.382
6.2	0.365
6.4	0.349
6.6	0.336
6.8	0.319
7	0.303
7.2	0.29
7.4	0.276
7.6	0.263
7.8	0.25
8	0.237
8.2	0.224
8.4	0.21
8.6	0.201
8.8	0.191
9	0.178
9.2	0.168

mw23slugout

WELL MW-23, SLUG OUT
McCOY ANNEX

9.4	0.158
9.6	0.148
9.8	0.138
10	0.125
12	0.042

END

WELL MW-26, SLUG OUT
McCOY ANNEX

	SE2000 Environmental 15-Dec	Logger 17:42		
	Unit#	89613801	Test	13
Setups:	INPUT	1		
---	---			
Type	Level	(F)		
Mode	TOC			
I.D.	9237-1			
Reference	0			
PSI	at	Ref.	6.055	
SG	1			
Linearity	0.415			
Scale	factor	10.018		
Offset	-0.013			
Delay	mSEC	50		
Step	1	19-Nov	18:43:13	
Elapsed	Time	INPUT	1	
---	---			
	0	1.982		
	0.0083	0.932		
	0.0166	1.067		
	0.025	0.994		
	0.0333	0.991		
	0.0416	0.984		
	0.05	0.984		
	0.0583	0.994		
	0.0666	0.971		
	0.075	0.974		
	0.0833	0.968		
	0.0916	0.965		
	0.1	0.965		
	0.1083	0.965		
	0.1166	0.961		
	0.125	0.961		
	0.1333	0.958		
	0.1416	0.948		
	0.15	0.951		
	0.1583	0.951		
	0.1666	0.945		
	0.175	0.948		
	0.1833	0.945		
	0.1916	0.941		

WELL MW-26, SLUG OUT
McCOY ANNEX

0.2	0.948
0.2083	0.935
0.2166	0.935
0.225	0.935
0.2333	0.938
0.2416	0.938
0.25	0.935
0.2583	0.935
0.2666	0.932
0.275	0.932
0.2833	0.932
0.2916	0.932
0.3	0.932
0.3083	0.928
0.3166	0.928
0.325	0.928
0.3333	0.925
0.35	0.925
0.3666	0.925
0.3833	0.922
0.4	0.922
0.4166	0.918
0.4333	0.918
0.45	0.915
0.4666	0.915
0.4833	0.912
0.5	0.912
0.5166	0.912
0.5333	0.912
0.55	0.908
0.5666	0.908
0.5833	0.908
0.6	0.908
0.6166	0.905
0.6333	0.905
0.65	0.902
0.6666	0.902
0.6833	0.902
0.7	0.902
0.7166	0.899
0.7333	0.899
0.75	0.895
0.7666	0.895
0.7833	0.895
0.8	0.895
0.8166	0.895
0.8333	0.892
0.85	0.892
0.8666	0.889

WELL MW-26, SLUG OUT
McCOY ANNEX

0.8833	0.892
0.9	0.889
0.9166	0.889
0.9333	0.889
0.95	0.889
0.9666	0.885
0.9833	0.885
1	0.882
1.2	0.875
1.4	0.866
1.6	0.859
1.8	0.849
2	0.842
2.2	0.836
2.4	0.829
2.6	0.823
2.8	0.819
3	0.809
3.2	0.806
3.4	0.799
3.6	0.793
3.8	0.786
4	0.783
4.2	0.776
4.4	0.773
4.6	0.766
4.8	0.763
5	0.757
5.2	0.75
5.4	0.747
5.6	0.743
5.8	0.737
6	0.733
6.2	0.727
6.4	0.724
6.6	0.72
6.8	0.717
7	0.714
7.2	0.707
7.4	0.704
7.6	0.697
7.8	0.694
8	0.691
8.2	0.687
8.4	0.684
8.6	0.677
8.8	0.674
9	0.671
9.2	0.667

WELL MW-26, SLUG OUT
McCOY ANNEX

9.4	0.664
9.6	0.661
9.8	0.657
10	0.654

END

mw26slugout

WELL MW-1A, SLUG OUT
McCOY ANNEX

	SE2000 Environmental 15-Dec	Logger 16:33		
	Unit#	89613801	Test	0
Setups:	INPUT	1		
---	---			
Type	Level	(F)		
Mode	TOC			
I.D.	9237-1			
Reference	0			
PSI	at	Ref.	8.587	
SG	1			
Linearity	0.415			
Scale	factor	10.018		
Offset	-0.013			
Delay	mSEC	50		
Step	1	19-Nov	12:25:19	
Elapsed	Time	INPUT	1	
---	---			
	0	16.412		
	0.0083	17.347		
	0.0166	17.563		
	0.025	17.541		
	0.0333	17.538		
	0.0416	17.535		
	0.05	17.535		
	0.0583	17.535		
	0.0666	17.535		
	0.075	17.531		
	0.0833	17.531		
	0.0916	17.531		
	0.1	17.531		
	0.1083	17.531		
	0.1166	17.531		
	0.125	17.531		
	0.1333	17.531		
	0.1416	17.528		
	0.15	17.528		
	0.1583	17.528		
	0.1666	17.528		
	0.175	17.528		
	0.1833	17.528		
	0.1916	17.528		

mw1Aslugout

WELL MW-1A, SLUG OUT
McCOY ANNEX

0.2	17.528
0.2083	17.528
0.2166	17.528
0.225	17.528
0.2333	17.528
0.2416	17.528
0.25	17.528
0.2583	17.528
0.2666	17.528
0.275	17.528
0.2833	17.528
0.2916	17.528
0.3	17.528
0.3083	17.528
0.3166	17.528
0.325	17.528
0.3333	17.528
0.35	17.528
0.3666	17.528
0.3833	17.528
0.4	17.528
0.4166	17.528
0.4333	17.525
0.45	16.872
0.4666	16.875
0.4833	16.875
0.5	16.875
0.5166	16.875
0.5333	16.875
0.55	16.875
0.5666	16.875
0.5833	16.878
0.6	16.875
0.6166	16.878
0.6333	16.875
0.65	16.875
0.6666	16.875
0.6833	16.875
0.7	16.875
0.7166	16.875
0.7333	16.878
0.75	16.875
0.7666	16.875
0.7833	16.875
0.8	16.872
0.8166	16.872
0.8333	16.872
0.85	16.872
0.8666	16.872

WELL MW-1A, SLUG OUT
McCOY ANNEX

0.8833	16.872
0.9	16.872
0.9166	16.872
0.9333	16.872
0.95	16.872
0.9666	16.872
0.9833	16.872
1	16.872
1.2	16.869
1.4	16.869
1.6	16.869
1.8	16.869
2	16.866
2.2	16.866
2.4	16.862
2.6	16.866
2.8	16.862
3	16.862
3.2	16.856

END

mw1Aslugout

WELL MW-1B, SLUG OUT
McCOY ANNEX

	SE2000			
	Environmental	Logger		
	15-Dec	16:40		
	Unit#	89613801	Test	1
Setups:	INPUT	1		
---	---			
Type	Level	(F)		
Mode	TOC			
I.D.	9237-1			
Reference	0			
PSI	at	Ref.	3.592	
SG	1			
Linearity	0.415			
Scale	factor	10.018		
Offset	-0.013			
Delay	mSEC	50		
Step	0	19-Nov	12:34:56	
Elapsed	Time	INPUT	1	
---	---			
	0	-12.306		
	0.0083	-8.262		
	0.0166	-8.84		
	0.025	-10.106		
	0.0333	-10.267		
	0.0416	-10.321		
	0.05	-10.351		
	0.0583	-10.375		
	0.0666	-10.398		
	0.075	-10.422		
	0.0833	-10.439		
	0.0916	-10.459		
	0.1	-10.479		
	0.1083	-10.496		
	0.1166	-10.513		
	0.125	-10.53		
	0.1333	-10.543		
	0.1416	-10.563		
	0.15	-10.573		
	0.1583	-10.59		
	0.1666	-10.607		
	0.175	-10.62		
	0.1833	-10.634		
	0.1916	-10.651		

mw1Bslugout

WELL MW-1B, SLUG OUT
McCOY ANNEX

0.2	-10.661
0.2083	-10.678
0.2166	-10.688
0.225	-10.701
0.2333	-10.715
0.2416	-10.725
0.25	-10.738
0.2583	-10.748
0.2666	-10.762
0.275	-10.775
0.2833	-10.785
0.2916	-10.799
0.3	-10.809
0.3083	-10.815
0.3166	-10.829
0.325	-10.839
0.3333	-10.849
0.35	-10.869
0.3666	-10.89
0.3833	-10.91
0.4	-10.927
0.4166	-10.943
0.4333	-10.96
0.45	-10.98
0.4666	-10.994
0.4833	-11.011
0.5	-11.024
0.5166	-11.041
0.5333	-11.058
0.55	-11.071
0.5666	-11.085
0.5833	-11.098
0.6	-11.112
0.6166	-11.122
0.6333	-11.135
0.65	-11.145
0.6666	-11.156
0.6833	-11.169
0.7	-11.179
0.7166	-11.193
0.7333	-11.203
0.75	-11.213
0.7666	-11.223
0.7833	-11.233
0.8	-11.243
0.8166	-11.253
0.8333	-11.26
0.85	-11.27
0.8666	-11.28

mw1Bslugout

WELL MW-1B, SLUG OUT
McCOY ANNEX

0.8833	-11.29
0.9	-11.297
0.9166	-11.304
0.9333	-11.314
0.95	-11.321
0.9666	-11.327
0.9833	-11.337
1	-11.344
1.2	-11.435
1.4	-13.753
1.6	-13.784
1.8	-13.804
2	-13.821
2.2	-13.828
2.4	-13.838
2.6	-13.845
2.8	-13.845
3	-13.848
3.2	-13.848
3.4	-13.852
3.6	-13.848
3.8	-13.852
4	-13.855
4.2	-13.852
4.4	-13.855
4.6	-13.855
4.8	-13.855
5	-13.855
5.2	-13.855
5.4	-13.855
5.6	-13.858
5.8	-13.855
6	-13.855
6.2	-13.858
6.4	-13.855
6.6	-13.858
6.8	-13.862
7	-13.858

END

WELL MW-6A, SLUG OUT
McCOY ANNEX

	SE2000			
	Environmental	Logger		
	15-Dec	16:50		
	Unit#	89613801	Test	2
Setups:	INPUT	1		
---	---			
Type	Level	(F)		
Mode	TOC			
I.D.	9237-1			
Reference	0			
PSI	at	Ref.	11.048	
SG	1			
Linearity	0.415			
Scale	factor	10.018		
Offset	-0.013			
Delay	mSEC	50		
Step	1	19-Nov	13:10:13	
Elapsed	Time	INPUT	1	
---	---			
	0	15.68		
	0.0083	17.299		
	0.0166	17.191		
	0.025	17.464		
	0.0333	17.328		
	0.0416	17.217		
	0.05	17.117		
	0.0583	17.019		
	0.0666	16.925		
	0.075	16.837		
	0.0833	16.756		
	0.0916	16.681		
	0.1	16.609		
	0.1083	16.544		
	0.1166	16.482		
	0.125	16.427		
	0.1333	16.375		
	0.1416	16.326		
	0.15	16.284		
	0.1583	16.248		
	0.1666	16.212		
	0.175	16.179		
	0.1833	16.157		
	0.1916	16.131		

mw6Aslugout

WELL MW-6A, SLUG OUT
McCOY ANNEX

0.2	16.111
0.2083	16.091
0.2166	16.075
0.225	16.062
0.2333	16.049
0.2416	16.039
0.25	16.029
0.2583	16.02
0.2666	16.013
0.275	16.007
0.2833	15.997
0.2916	15.994
0.3	15.984
0.3083	15.981
0.3166	15.977
0.325	15.971
0.3333	15.968
0.35	15.961
0.3666	15.954
0.3833	15.948
0.4	15.941
0.4166	15.938
0.4333	15.932
0.45	15.928
0.4666	15.925
0.4833	15.922
0.5	15.919
0.5166	15.915
0.5333	15.912
0.55	15.912
0.5666	15.909
0.5833	15.906
0.6	15.906
0.6166	15.902
0.6333	15.899
0.65	15.899
0.6666	15.896
0.6833	15.896
0.7	15.892
0.7166	15.892
0.7333	15.889
0.75	15.889
0.7666	15.889
0.7833	15.886
0.8	15.886
0.8166	15.883
0.8333	15.883
0.85	15.883
0.8666	15.883

mw6Aslugout

WELL MW-6A, SLUG OUT
McCOY ANNEX

0.8833	15.879
0.9	15.879
0.9166	15.879
0.9333	15.876
0.95	15.876
0.9666	15.876
0.9833	15.876
1	15.873
1.2	15.863
1.4	15.857
1.6	15.853
1.8	15.85
2	15.847
2.2	15.844
2.4	15.844
2.6	15.84
2.8	15.84
3	15.837
3.2	15.837
3.4	15.834
3.6	15.834
3.8	15.83
4	15.83
4.2	15.83
4.4	15.83
4.6	15.827
4.8	15.827
5	15.824
5.2	15.824
5.4	15.824
5.6	15.821
5.8	15.824
6	15.821
6.2	15.821

END

WELL MW-6B, SLUG OUT
McCOY ANNEX

	SE2000			
	Environmental	Logger		
	15-Dec	16:53		
	Unit#	89613801	Test	3
Setups:	INPUT	1		
---	---			
Type	Level	(F)		
Mode	TOC			
I.D.	9237-1			
Reference	0			
PSI	at	Ref.	3.674	
SG	1			
Linearity	0.415			
Scale	factor	10.018		
Offset	-0.013			
Delay	mSEC	50		
Step	0	19-Nov	13:36:27	
Elapsed	Time	INPUT	1	
---	---			
	0	-11.766		
	0.0083	-9.935		
	0.0166	-11.011		
	0.025	-9.673		
	0.0333	-10.338		
	0.0416	-10.136		
	0.05	-10.24		
	0.0583	-10.223		
	0.0666	-10.234		
	0.075	-10.24		
	0.0833	-10.244		
	0.0916	-10.25		
	0.1	-10.254		
	0.1083	-10.257		
	0.1166	-10.26		
	0.125	-10.264		
	0.1333	-10.267		
	0.1416	-10.267		
	0.15	-10.271		
	0.1583	-10.274		
	0.1666	-10.277		
	0.175	-10.277		
	0.1833	-10.281		
	0.1916	-10.281		
	0.2	-10.284		

mw6Bslugout

WELL MW-6B, SLUG OUT
McCOY ANNEX

0.2083	-10.284
0.2166	-10.284
0.225	-10.287
0.2333	-10.287
0.2416	-10.287
0.25	-10.291
0.2583	-10.291
0.2666	-10.294
0.275	-10.294
0.2833	-10.294
0.2916	-10.294
0.3	-10.297
0.3083	-10.297
0.3166	-10.297
0.325	-10.297
0.3333	-10.301
0.35	-10.301
0.3666	-10.301
0.3833	-10.304
0.4	-10.304
0.4166	-10.304
0.4333	-10.307
0.45	-10.307
0.4666	-10.311
0.4833	-10.311
0.5	-10.311
0.5166	-10.311
0.5333	-10.314
0.55	-10.314
0.5666	-10.314
0.5833	-10.318
0.6	-10.314
0.6166	-10.318
0.6333	-10.321
0.65	-10.318
0.6666	-10.321
0.6833	-10.321
0.7	-10.318
0.7166	-10.321
0.7333	-10.321
0.75	-10.324
0.7666	-10.324
0.7833	-10.321
0.8	-10.324
0.8166	-10.324
0.8333	-10.324
0.85	-10.324
0.8666	-10.324
0.8833	-10.324

mw6Bslugout

WELL MW-6B, SLUG OUT
McCOY ANNEX

0.9	-10.328
0.9166	-10.328
0.9333	-10.328
0.95	-10.328
0.9666	-10.328
0.9833	-10.328
1	-10.328
1.2	-10.331
1.4	-10.334
1.6	-10.338
1.8	-10.341
2	-10.341
2.2	-10.344
2.4	-10.344
2.6	-10.348
2.8	-10.348
3	-10.351
3.2	-10.351
3.4	-10.355
3.6	-10.355
3.8	-10.355
4	-10.358
4.2	-10.358
4.4	-10.358
4.6	-10.361
4.8	-10.361
5	-10.361
5.2	-10.365
5.4	-10.365
5.6	-10.365
5.8	-10.368
6	-10.368
6.2	-10.368
6.4	-10.371
6.6	-10.371
6.8	-10.375
7	-10.375
7.2	-10.375
7.4	-10.375

END

mw6Bslugout

WELL MW-10A, SLUG IN
McCOY ANNEX

	SE2000			
	Environmental	Logger		
	15-Dec	16:57		
	Unit#	89613801	Test	4
Setups:	INPUT	1		
---	---			
Type	Level	(F)		
Mode	TOC			
I.D.	9237-1			
Reference	0			
PSI	at	Ref.	3.683	
SG	1			
Linearity	0.415			
Scale	factor	10.018		
Offset	-0.013			
Delay	mSEC	50		
Step	1	19-Nov	14:12:30	
Elapsed	Time	INPUT	1	
---	---			
	0	-0.204		
	0.0083	-0.481		
	0.0166	-0.927		
	0.025	-0.966		
	0.0333	-1.038		
	0.0416	-1.12		
	0.05	-0.944		
	0.0583	-0.95		
	0.0666	-0.742		
	0.075	-0.764		
	0.0833	-0.491		
	0.0916	-0.53		
	0.1	-0.51		
	0.1083	-0.478		
	0.1166	-0.445		
	0.125	-0.419		
	0.1333	-0.393		
	0.1416	-0.37		
	0.15	-0.354		
	0.1583	-0.338		
	0.1666	-0.321		
	0.175	-0.312		
	0.1833	-0.299		
	0.1916	-0.289		

mw10Aslugin

WELL MW-10A, SLUG IN
McCOY ANNEX

0.2	-0.279
0.2083	-0.273
0.2166	-0.266
0.225	-0.26
0.2333	-0.253
0.2416	-0.247
0.25	-0.24
0.2583	-0.237
0.2666	-0.23
0.275	-0.227
0.2833	-0.221
0.2916	-0.217
0.3	-0.214
0.3083	-0.208
0.3166	-0.208
0.325	-0.201
0.3333	-0.198
0.35	-0.195
0.3666	-0.185
0.3833	-0.178
0.4	-0.175
0.4166	-0.169
0.4333	-0.165
0.45	-0.162
0.4666	-0.156
0.4833	-0.152
0.5	-0.149
0.5166	-0.143
0.5333	-0.143
0.55	-0.139
0.5666	-0.136
0.5833	-0.133
0.6	-0.13
0.6166	-0.13
0.6333	-0.126
0.65	-0.123
0.6666	-0.12
0.6833	-0.12
0.7	-0.117
0.7166	-0.117
0.7333	-0.113
0.75	-0.113
0.7666	-0.11
0.7833	-0.11
0.8	-0.107
0.8166	-0.11
0.8333	-0.107
0.85	-0.104
0.8666	-0.104

mw10Aslugin

WELL MW-10A, SLUG IN
McCOY ANNEX

0.8833	-0.104
0.9	-0.1
0.9166	-0.1
0.9333	-0.1
0.95	-0.1
0.9666	-0.097
0.9833	-0.097
1	-0.094
1.2	-0.087
1.4	-0.081
1.6	-0.074
1.8	-0.065
2	-0.058
2.2	-0.055
2.4	-0.055
2.6	-0.055
2.8	-0.052
3	-0.052
3.2	-0.052
3.4	-0.055
3.6	-0.058
3.8	-0.065
4	-0.068
4.2	-0.078
4.4	-0.081
4.6	-0.081
4.8	-0.084
5	-0.087
5.2	-0.094
5.4	-0.097
5.6	-0.1
5.8	-0.107
6	-0.113
6.2	-0.117
6.4	-0.117

END

mw10Aslugin

WELL MW-10B, SLUG OUT
McCOY ANNEX

	SE2000			
	Environmental	Logger		
	15-Dec	16:59		
	Unit#	89613801	Test	5
Setups:	INPUT	1		
---	---			
Type	Level	(F)		
Mode	TOC			
I.D.	9237-1			
Reference	0			
PSI	at	Ref.	1.416	
SG	1			
Linearity	0.415			
Scale	factor	10.018		
Offset	-0.013			
Delay	mSEC	50		
Step	0	19-Nov	14:21:37	
Elapsed	Time	INPUT	1	
---	---			
	0	-6.156		
	0.0083	-4.044		
	0.0166	-4.472		
	0.025	-4.29		
	0.0333	-4.297		
	0.0416	-4.306		
	0.05	-4.323		
	0.0583	-4.336		
	0.0666	-4.345		
	0.075	-4.355		
	0.0833	-4.361		
	0.0916	-4.368		
	0.1	-4.374		
	0.1083	-4.384		
	0.1166	-4.387		
	0.125	-4.394		
	0.1333	-4.4		
	0.1416	-4.404		
	0.15	-4.41		
	0.1583	-4.413		
	0.1666	-4.42		
	0.175	-4.423		
	0.1833	-4.426		
	0.1916	-4.433		

mw10Bslugout

WELL MW-10B, SLUG OUT
McCOY ANNEX

0.2	-4.436
0.2083	-4.439
0.2166	-4.446
0.225	-4.449
0.2333	-4.452
0.2416	-4.455
0.25	-4.462
0.2583	-4.465
0.2666	-4.468
0.275	-4.472
0.2833	-4.475
0.2916	-4.478
0.3	-4.481
0.3083	-4.485
0.3166	-4.488
0.325	-4.491
0.3333	-4.494
0.35	-4.501
0.3666	-4.507
0.3833	-4.517
0.4	-4.52
0.4166	-4.53
0.4333	-4.533
0.45	-4.54
0.4666	-4.546
0.4833	-4.553
0.5	-4.559
0.5166	-4.566
0.5333	-4.569
0.55	-4.575
0.5666	-4.579
0.5833	-4.585
0.6	-4.592
0.6166	-4.595
0.6333	-4.601
0.65	-4.605
0.6666	-4.611
0.6833	-4.618
0.7	-4.621
0.7166	-4.624
0.7333	-4.631
0.75	-4.634
0.7666	-4.64
0.7833	-4.644
0.8	-4.647
0.8166	-4.653
0.8333	-4.657
0.85	-4.66
0.8666	-4.666

mw10Bslugout

WELL MW-10B, SLUG OUT
McCOY ANNEX

0.8833	-4.67
0.9	-4.676
0.9166	-4.679
0.9333	-4.683
0.95	-4.686
0.9666	-4.689
0.9833	-4.695
1	-4.699
1.2	-4.744
1.4	-4.78
1.6	-4.812
1.8	-4.842
2	-4.868
2.2	-4.89
2.4	-4.91
2.6	-4.926
2.8	-4.942
3	-4.955
3.2	-4.968
3.4	-4.978
3.6	-4.984
3.8	-4.991
4	-4.997
4.2	-5.004
4.4	-5.014
4.6	-5.017
4.8	-5.02
5	-5.023
5.2	-5.027
5.4	-5.03
5.6	-5.033
5.8	-5.033
6	-5.036
6.2	-5.04
6.4	-5.04
6.6	-5.04
6.8	-5.043
7	-5.043
7.2	-5.043
7.4	-5.046
7.6	-5.046

END

mw10Bslugout

WELL MW-19A, SLUG OUT
McCOY ANNEX

	SE2000			
	Environmental	Logger		
	15-Dec	17:03		
	Unit#	89613801	Test	6
Setups:	INPUT	1		
---	---			
Type	Level	(F)		
Mode	TOC			
I.D.	9237-1			
Reference	0			
PSI	at	Ref.	4.532	
SG	1			
Linearity	0.415			
Scale	factor	10.018		
Offset	-0.013			
Delay	mSEC	50		
Step	1	19-Nov	15:38:36	
Elapsed	Time	INPUT	1	
---	---			
	0	8.144		
	0.0083	8.513		
	0.0166	7.947		
	0.025	7.918		
	0.0333	7.858		
	0.0416	7.81		
	0.05	7.762		
	0.0583	7.721		
	0.0666	7.679		
	0.075	7.644		
	0.0833	7.609		
	0.0916	7.577		
	0.1	7.549		
	0.1083	7.523		
	0.1166	7.501		
	0.125	7.478		
	0.1333	7.456		
	0.1416	7.437		
	0.15	7.421		
	0.1583	7.408		
	0.1666	7.392		
	0.175	7.38		
	0.1833	7.37		
	0.1916	7.357		

mw19Aslugout

WELL MW-19A, SLUG OUT
McCOY ANNEX

0.2	7.348
0.2083	7.341
0.2166	7.332
0.225	7.325
0.2333	7.319
0.2416	7.313
0.25	7.309
0.2583	7.303
0.2666	7.3
0.275	7.293
0.2833	7.29
0.2916	7.287
0.3	7.284
0.3083	7.281
0.3166	7.277
0.325	7.274
0.3333	7.271
0.35	7.265
0.3666	7.262
0.3833	7.255
0.4	7.255
0.4166	7.249
0.4333	7.246
0.45	7.242
0.4666	7.242
0.4833	7.239
0.5	7.236
0.5166	7.236
0.5333	7.233
0.55	7.233
0.5666	7.23
0.5833	7.23
0.6	7.226
0.6166	7.223
0.6333	7.223
0.65	7.223
0.6666	7.22
0.6833	7.22
0.7	7.22
0.7166	7.22
0.7333	7.217
0.75	7.217
0.7666	7.217
0.7833	7.217
0.8	7.214
0.8166	7.214
0.8333	7.214
0.85	7.214
0.8666	7.214

WELL MW-19A, SLUG OUT
McCOY ANNEX

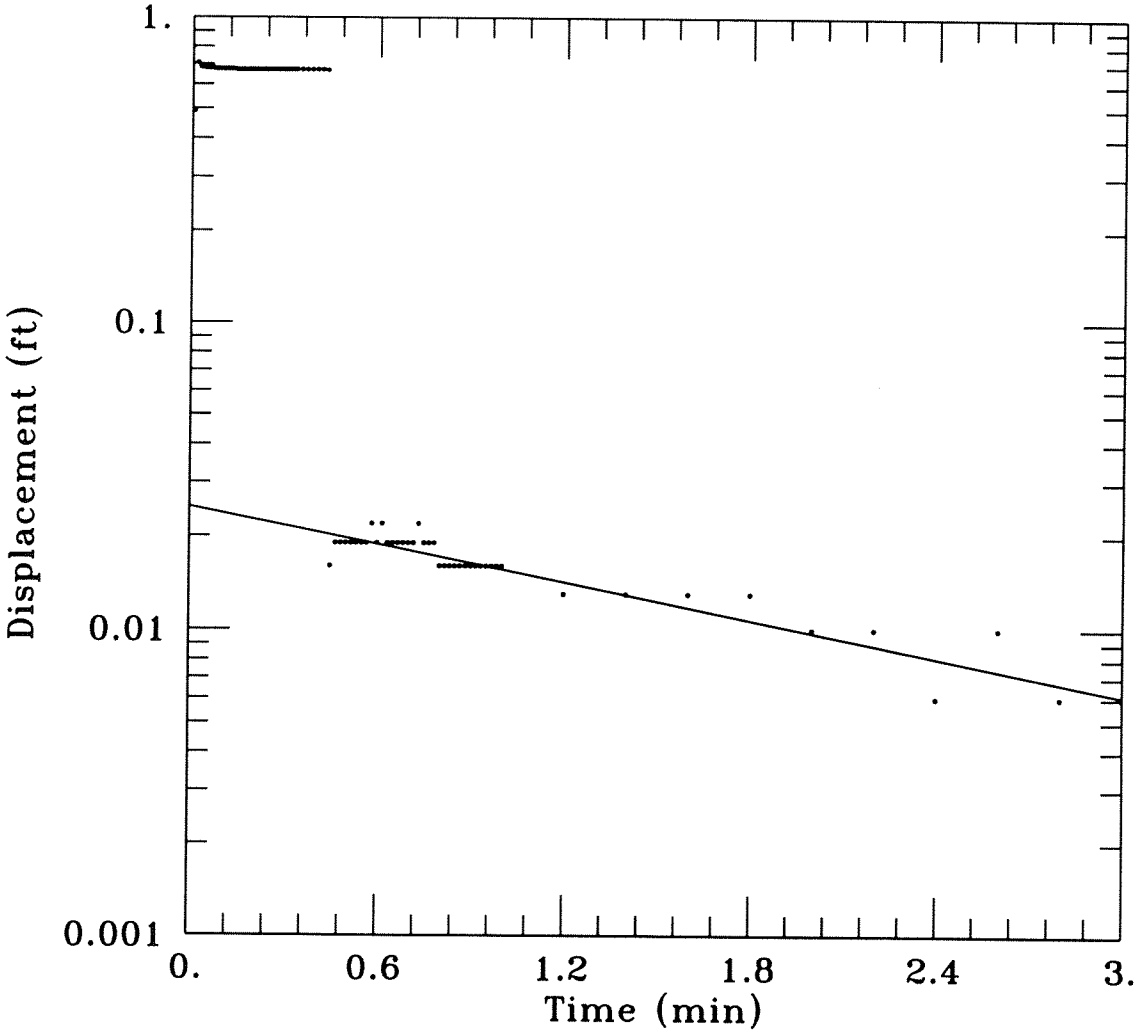
0.8833	7.21
0.9	7.21
0.9166	7.21
0.9333	7.21
0.95	7.21
0.9666	7.21
0.9833	7.207
1	7.207
1.2	7.201
1.4	7.201
1.6	7.198
1.8	7.194
2	7.194
2.2	7.194
2.4	7.194
2.6	7.191
2.8	7.191
3	7.191
3.2	7.191
3.4	7.191
3.6	7.191
3.8	7.191
4	7.188
4.2	7.191
4.4	7.191
4.6	7.191
4.8	7.188
5	7.191
5.2	7.188
5.4	7.188
5.6	7.188
5.8	7.185
6	7.188
6.2	7.188
6.4	7.191
6.6	7.188
6.8	7.188
7	7.191
7.2	7.188
7.4	7.188
7.6	7.188
7.8	7.188
8	7.188
8.2	7.191
8.4	7.188
8.6	7.188

END

mw19Aslugout

Client: NAVY SOUTH-DIV	Company: Tetra Tech NUS
Location: McCOY ANNEX, NTC ORLANDO	Project: CT00024

WELL 1A, SLUG OUT TEST



DATA SET:
1AOUT.DAT
12/21/98

AQUIFER MODEL:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: November 19, 1998

TEST DATA:
H0 = 0.8 ft
rc = 0.083 ft
rw = 0.42 ft
L = 10. ft
b = 23.61 ft
H = 6.01 ft

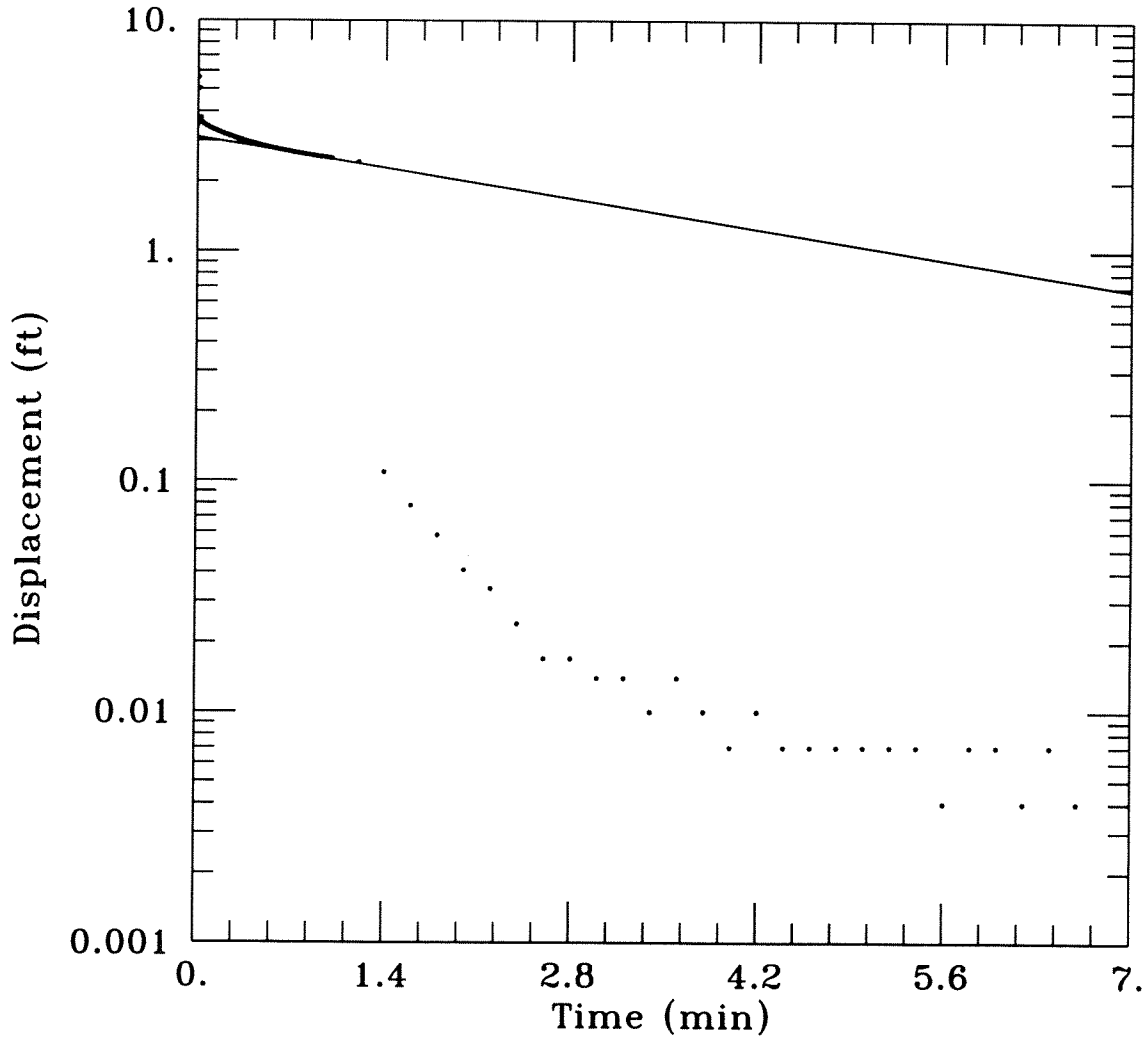
PARAMETER ESTIMATES:
K = 0.0014 cm/sec
y0 = 0.025 ft

A. Jenkins 12-21-98

AQTESOLV

Client: NAVY SOUTH-DIV	Company: Tetra Tech NUS
Location: McCOY ANNEX, NTC ORLANDO	Project: CT00024

WELL 1B, SLUG OUT TEST



DATA SET:
1BOUT.DAT
12/21/98

AQUIFER MODEL:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: November 19, 1998

TEST DATA:
H0 = 3.5 ft
rc = 0.083 ft
rw = 0.42 ft
L = 5. ft
b = 24.07 ft
H = 20.97 ft

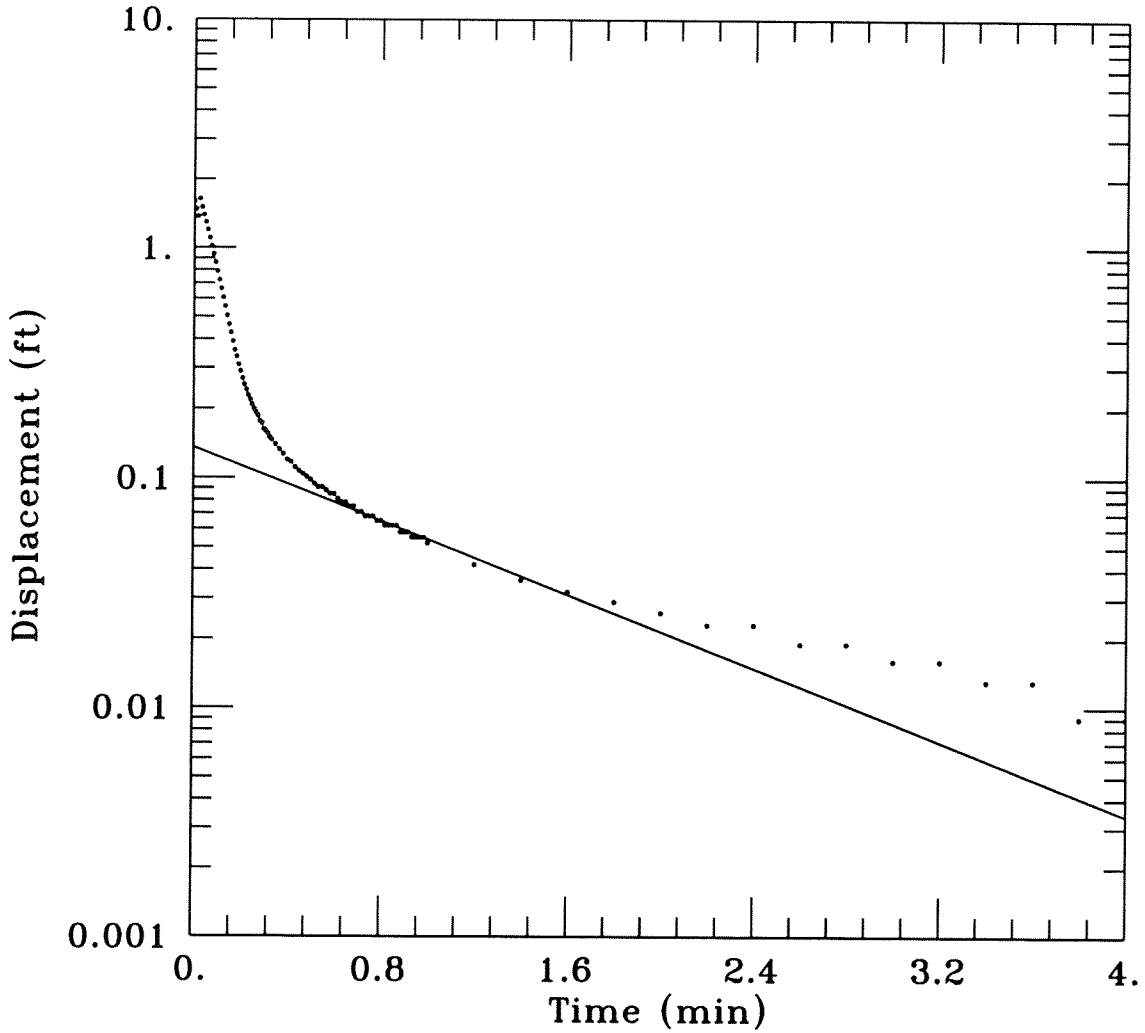
PARAMETER ESTIMATES:
K = 0.0015 cm/sec
y0 = 3.1 ft

A. Jenkins 12-21-98

AQTESOLV

Client: NAVY SOUTH-DIV	Company: Tetra Tech NUS
Location: McCOY ANNEX, NTC ORLANDO	Project: CTO0024

WELL 6A, SLUG OUT TEST



DATA SET:
6AOUT.DAT
12/21/98

AQUIFER MODEL:
Unconfined
SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: November 19, 1998

TEST DATA:
H0 = 1.6 ft
rc = 0.083 ft
rw = 0.42 ft
L = 10. ft
b = 37.49 ft
H = 11.89 ft

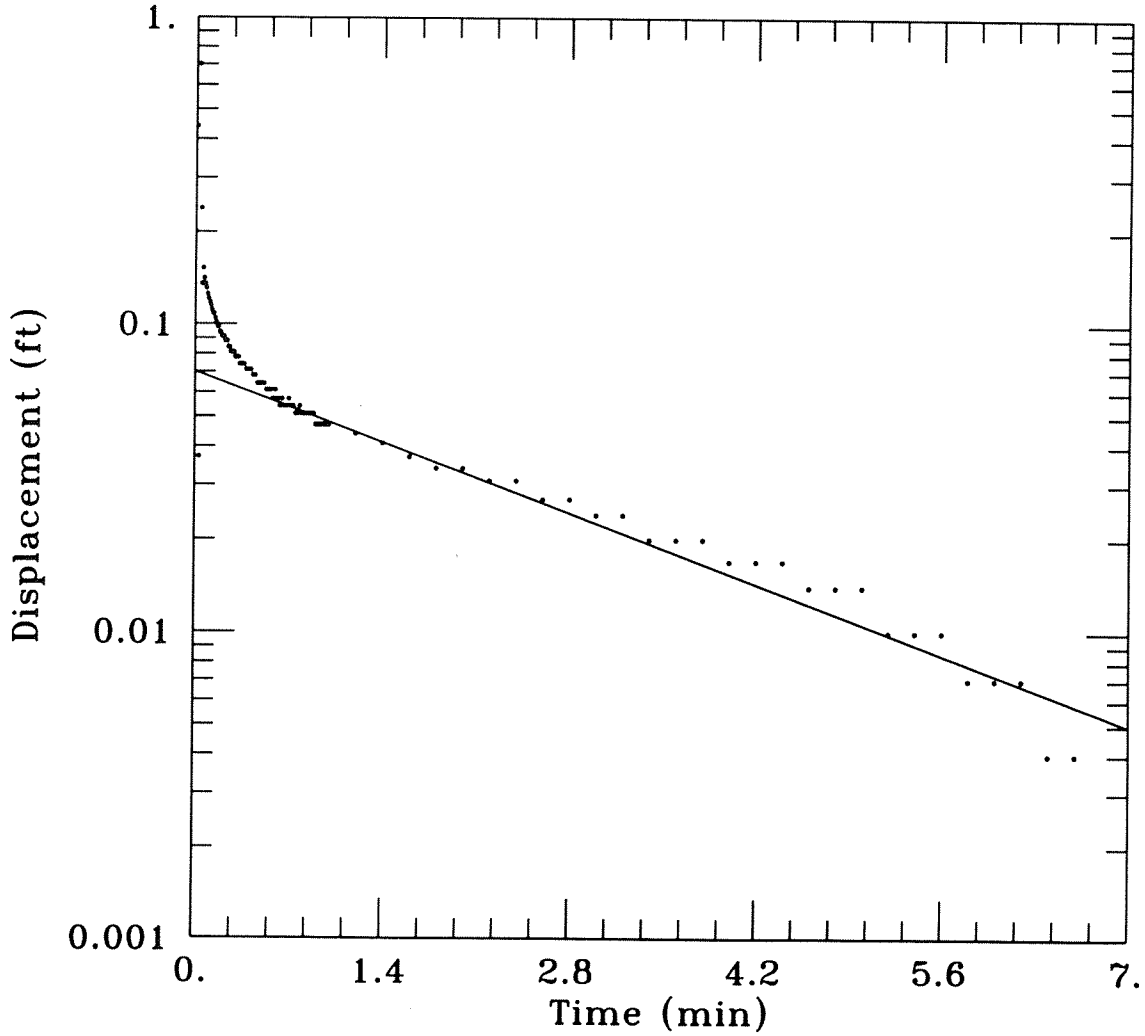
PARAMETER ESTIMATES:
K = 0.003153 cm/sec
y0 = 0.1362 ft

A Jenkins 12-21-98

AQTESOLV

Client: NAVY SOUTH-DIV	Company: Tetra Tech NUS
Location: McCOY ANNEX, NTC ORLANDO	Project: CT00024

WELL 6B, SLUG OUT TEST



DATA SET:
6BOUT.DAT
12/21/98

AQUIFER MODEL:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: November 19, 1998

TEST DATA:
H0 = 0.2 ft
rc = 0.083 ft
rw = 0.42 ft
L = 5. ft
b = 37.85 ft
H = 36.15 ft

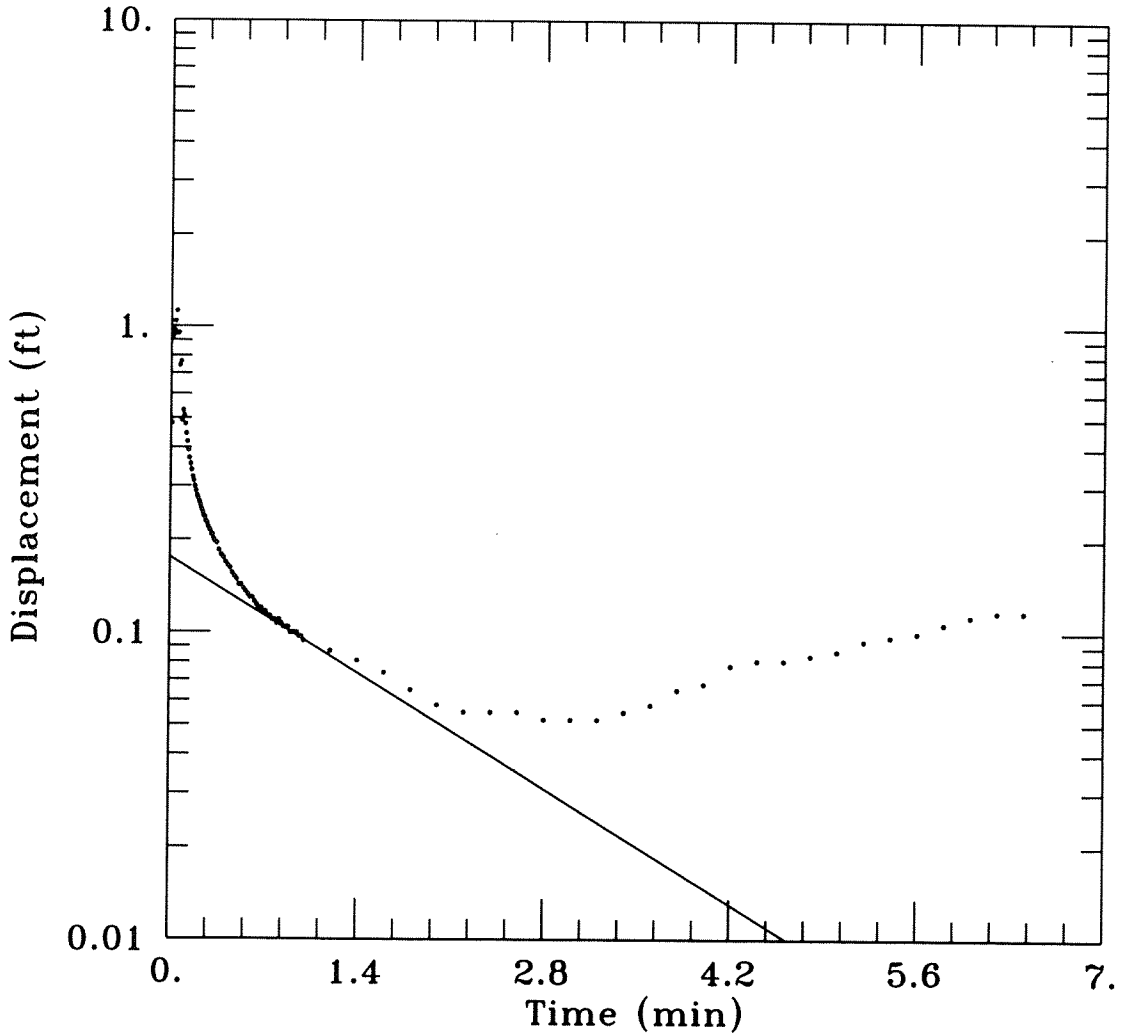
PARAMETER ESTIMATES:
K = 0.00288 cm/sec
y0 = 0.0701 ft

A. Jenkins 12-21-98

AQTESOLV

Client: NAVY SOUTH-DIV	Company: Tetra Tech NUS
Location: McCOY ANNEX, NTC ORLANDO	Project: CT00024

WELL 10A, SLUG IN TEST



DATA SET:
10AIN.DAT
12/21/98

AQUIFER MODEL:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: November 19, 1998

TEST DATA:
H0 = 0.9 ft
rc = 0.083 ft
rw = 0.42 ft
L = 10. ft
b = 31.15 ft
H = 9.15 ft

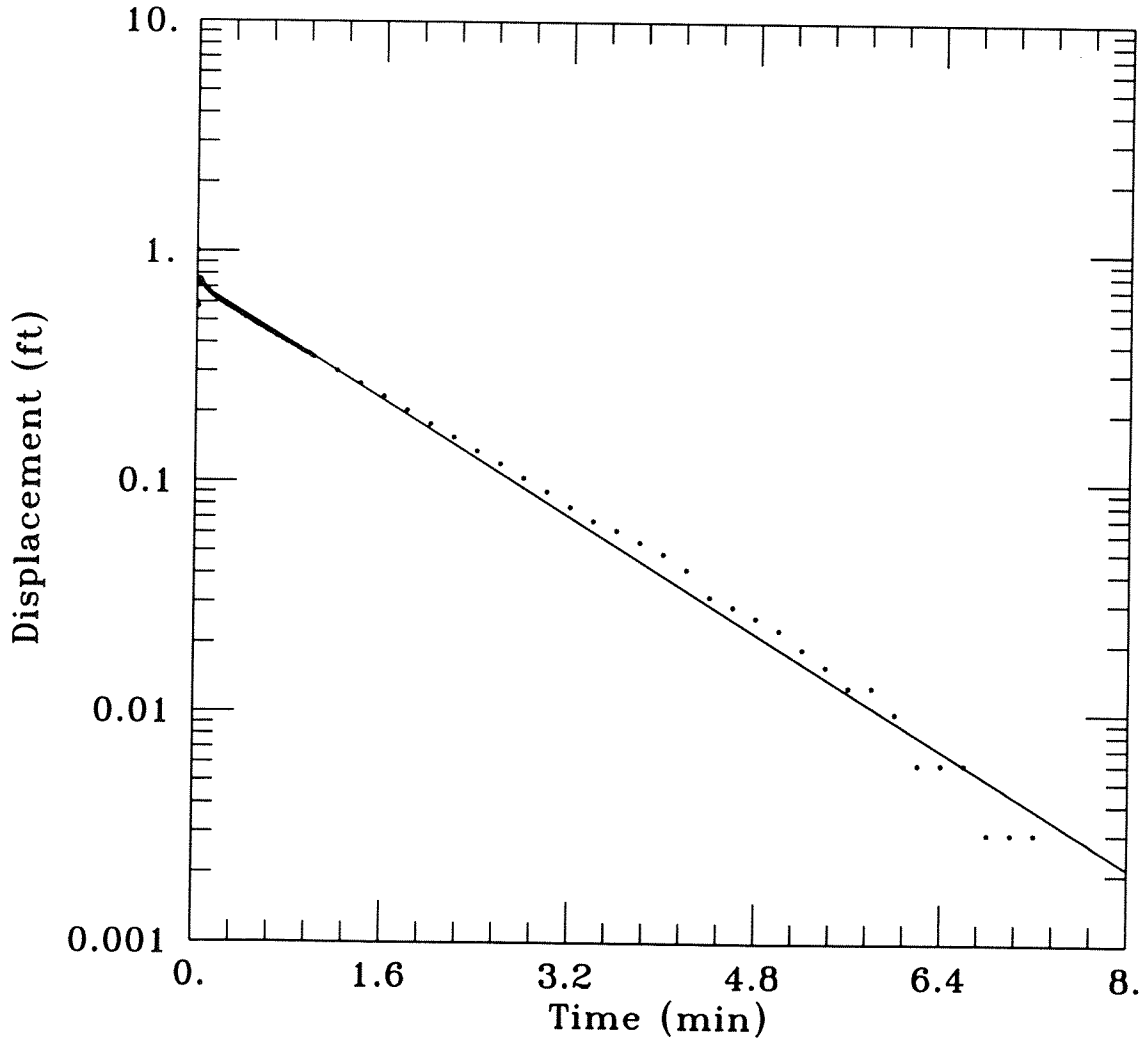
PARAMETER ESTIMATES:
K = 0.002017 cm/sec
y0 = 0.1756 ft

A. Jenkins 12-21-98

AQTESOLV

Client: NAVY SOUTH-DIV	Company: Tetra Tech NUS
Location: McCOY ANNEX, NTC ORLANDO	Project: CT00024

WELL 10B, SLUG OUT TEST



DATA SET:
10BOUT.DAT
12/21/98

AQUIFER MODEL:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: November 19, 1998

TEST DATA:
H0 = 0.6 ft
rc = 0.083 ft
rw = 0.42 ft
L = 5. ft
b = 31.26 ft
H = 30.26 ft

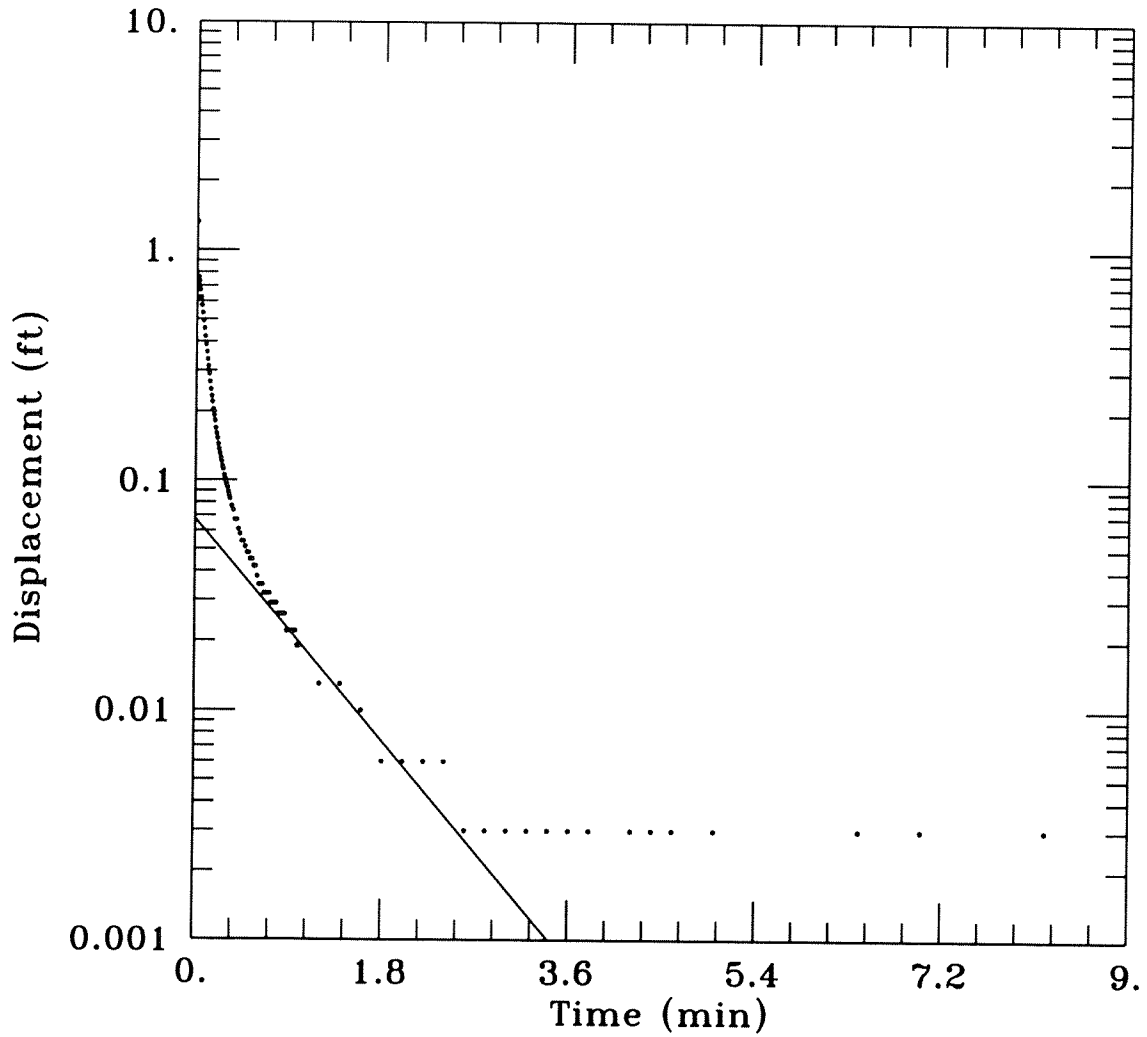
PARAMETER ESTIMATES:
K = 0.00557 cm/sec
y0 = 0.7238 ft

A. Jenkins 12-21-98

AQTESOLV

Client: NAVY SOUTH-DIV	Company: Tetra Tech NUS
Location: McCOY ANNEX, NTC ORLANDO	Project: CT00024

WELL 19A, SLUG OUT TEST



DATA SET:
19AOUT.DAT
12/21/98

AQUIFER MODEL:
Unconfined
SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: November 19, 1998

TEST DATA:
H0 = 0.7 ft
rc = 0.083 ft
rw = 0.42 ft
L = 10. ft
b = 27.98 ft
H = 5.28 ft

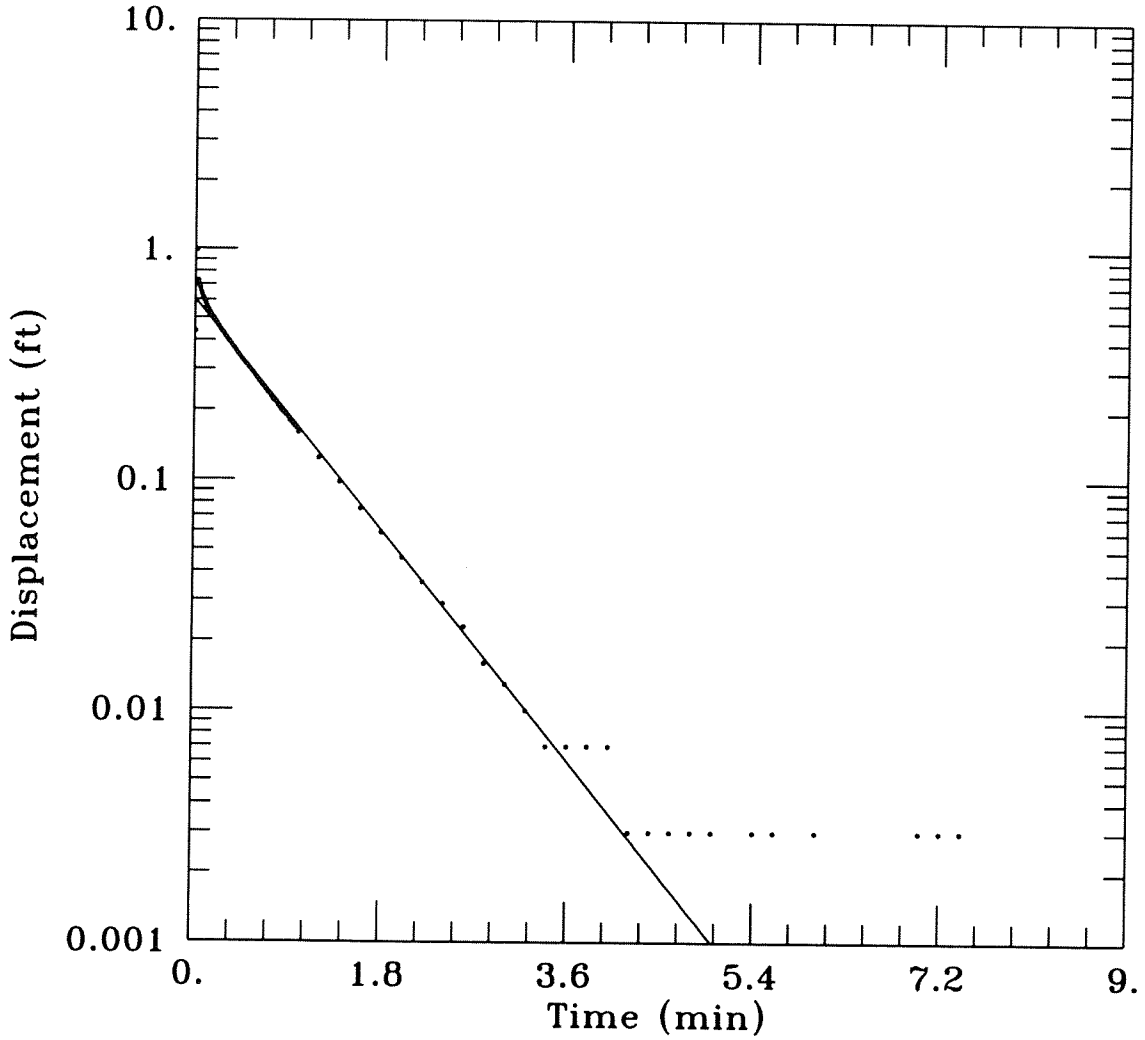
PARAMETER ESTIMATES:
K = 0.00422 cm/sec
y0 = 0.06777 ft

A. Jenkins 12-21-98

AQTESOLV

Client: NAVY SOUTH-DIV	Company: Tetra Tech NUS
Location: McCOY ANNEX, NTC ORLANDO	Project: CT00024

WELL 19B, SLUG OUT TEST



DATA SET:
19BOUT.DAT
12/21/98

AQUIFER MODEL:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: November 19, 1998

TEST DATA:
H0 = 0.7 ft
rc = 0.083 ft
rw = 0.42 ft
L = 5. ft
b = 28.58 ft
H = 27.68 ft

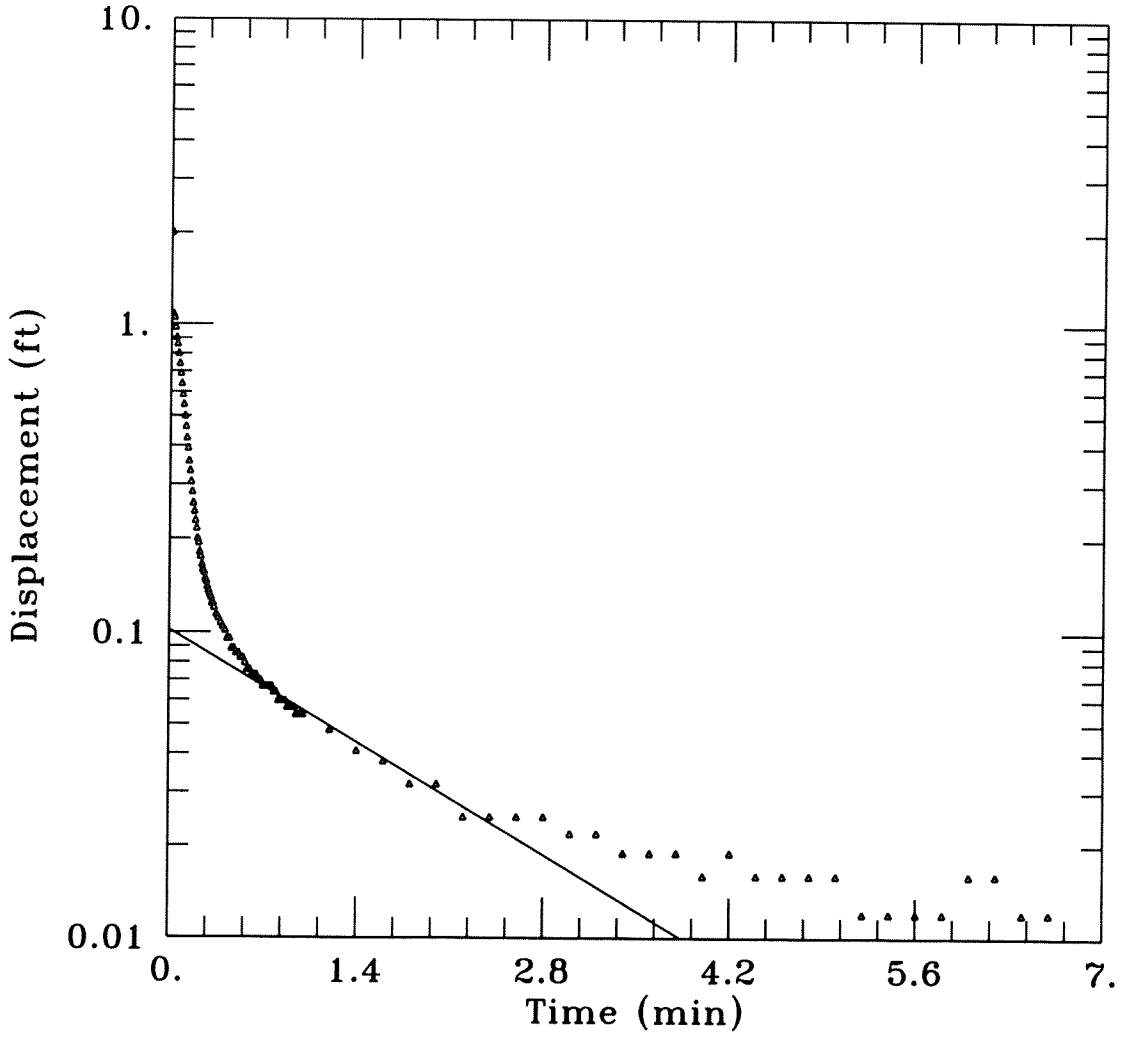
PARAMETER ESTIMATES:
K = 0.00873 cm/sec
y0 = 0.6042 ft

A. Jenkins 12-21-98

AQTESOLV

Client: NAVY SOUTH-DIV	Company: Tetra Tech NUS
Location: McCOY ANNEX, NTC ORLANDO	Project: CT00024

WELL 21A, SLUG OUT TEST



DATA SET:
21AOUT.DAT
12/18/98

AQUIFER MODEL:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: November 19, 1998

TEST DATA:
H0 = 2. ft
rc = 0.083 ft
rw = 0.42 ft
L = 10. ft
b = 22.54 ft
H = 7.34 ft

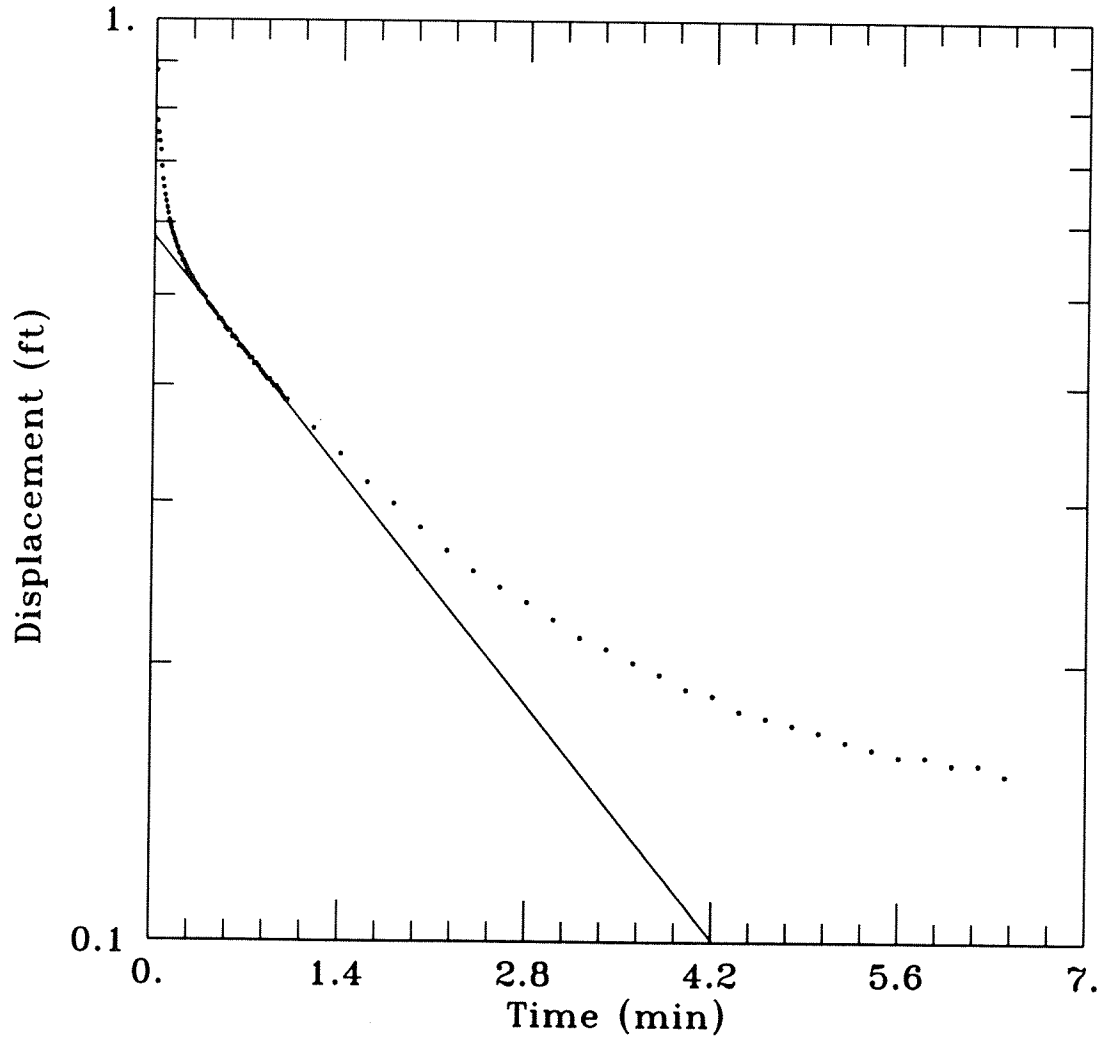
PARAMETER ESTIMATES:
K = 0.0019 cm/sec
y0 = 0.102 ft

A. Jenkins 12-21-98

AQTESOLV

Client: NAVY SOUTH-DIV	Company: Tetra Tech NUS
Location: McCOY ANNEX, NTC ORLANDO	Project: CT00024

WELL 21B, SLUG OUT TEST



DATA SET:
21BOUT.DAT
12/21/98

AQUIFER MODEL:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: November 19, 1998

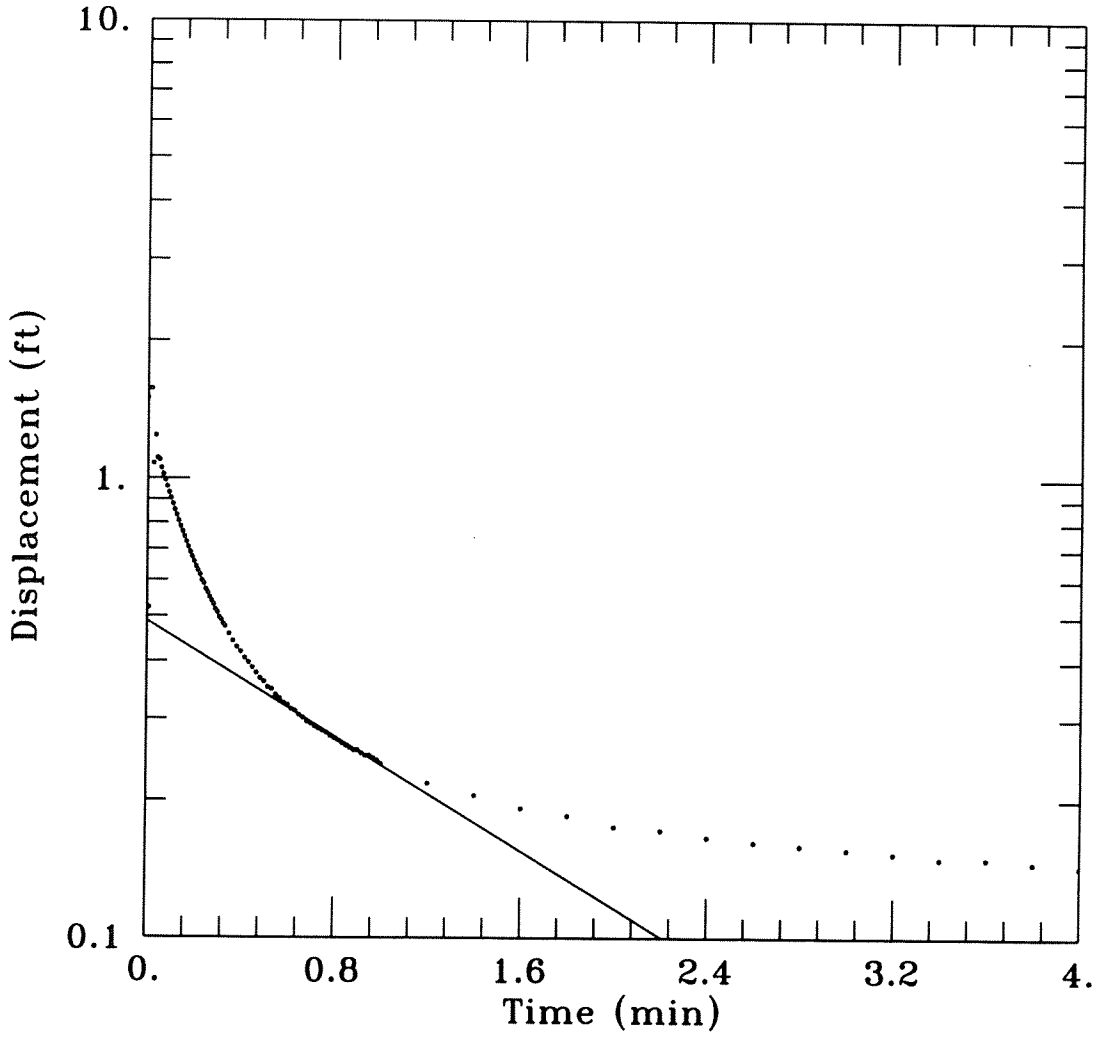
TEST DATA:
H0 = 0.8 ft
rc = 0.083 ft
rw = 0.42 ft
L = 5. ft
b = 22.72 ft
H = 22.72 ft

PARAMETER ESTIMATES:
K = 0.0031 cm/sec
y0 = 0.58 ft

AQTESOLV

Client: NAVY SOUTH-DIV	Company: Tetra Tech NUS
Location: McCOY ANNEX, NTC ORLANDO	Project: CT00024

WELL 22A, SLUG OUT TEST



DATA SET:
22AOUT.DAT
12/21/98

AQUIFER MODEL:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: November 19, 1998

TEST DATA:
H0 = 1.5 ft
rc = 0.083 ft
rw = 0.42 ft
L = 10. ft
b = 28.52 ft
H = 13.82 ft

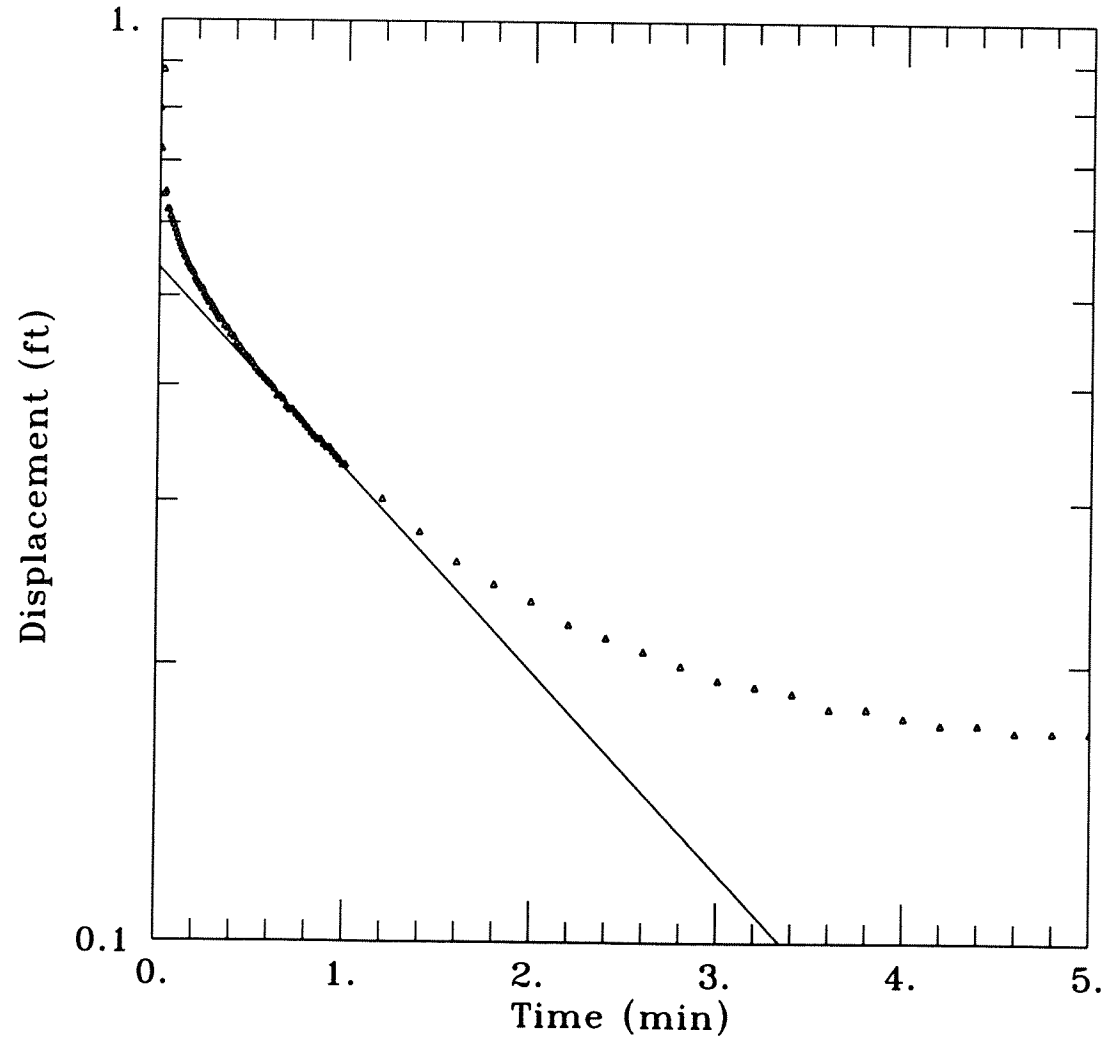
PARAMETER ESTIMATES:
K = 0.002564 cm/sec
y0 = 0.4887 ft

A. Jenkins 12-21-98

AQTESOLV

Client: NAVY SOUTH-DIV	Company: Tetra Tech NUS
Location: McCOY ANNEX, NTC ORLANDO	Project: CT00024

WELL 22B, SLUG OUT TEST



DATA SET:
22BOUT.DAT
12/18/98

AQUIFER MODEL:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: November 19, 1998

TEST DATA:
H0 = 0.8 ft
rc = 0.083 ft
rw = 0.42 ft
L = 5. ft
b = 28.23 ft
H = 28.23 ft

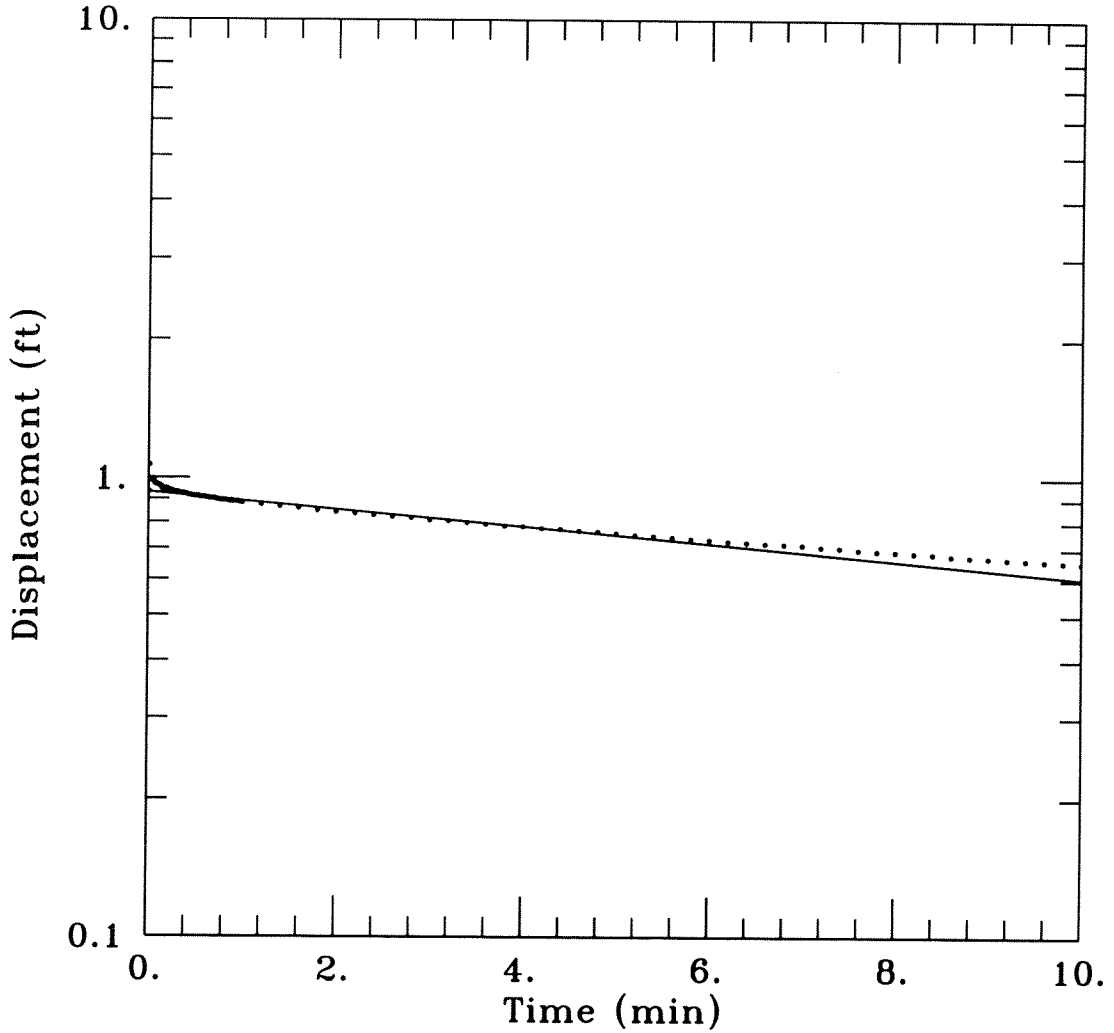
PARAMETER ESTIMATES:
K = 0.003591 cm/sec
y0 = 0.537 ft

A. Jenkins 12-21-98

AQTESOLV

Client: NAVY SOUTH-DIV	Company: Tetra Tech NUS
Location: McCOY ANNEX, NTC ORLANDO	Project: CT00024

WELL 26, SLUG OUT TEST



DATA SET:
26OUT.DAT
12/21/98

AQUIFER MODEL:
Confined

SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: November 19, 1998

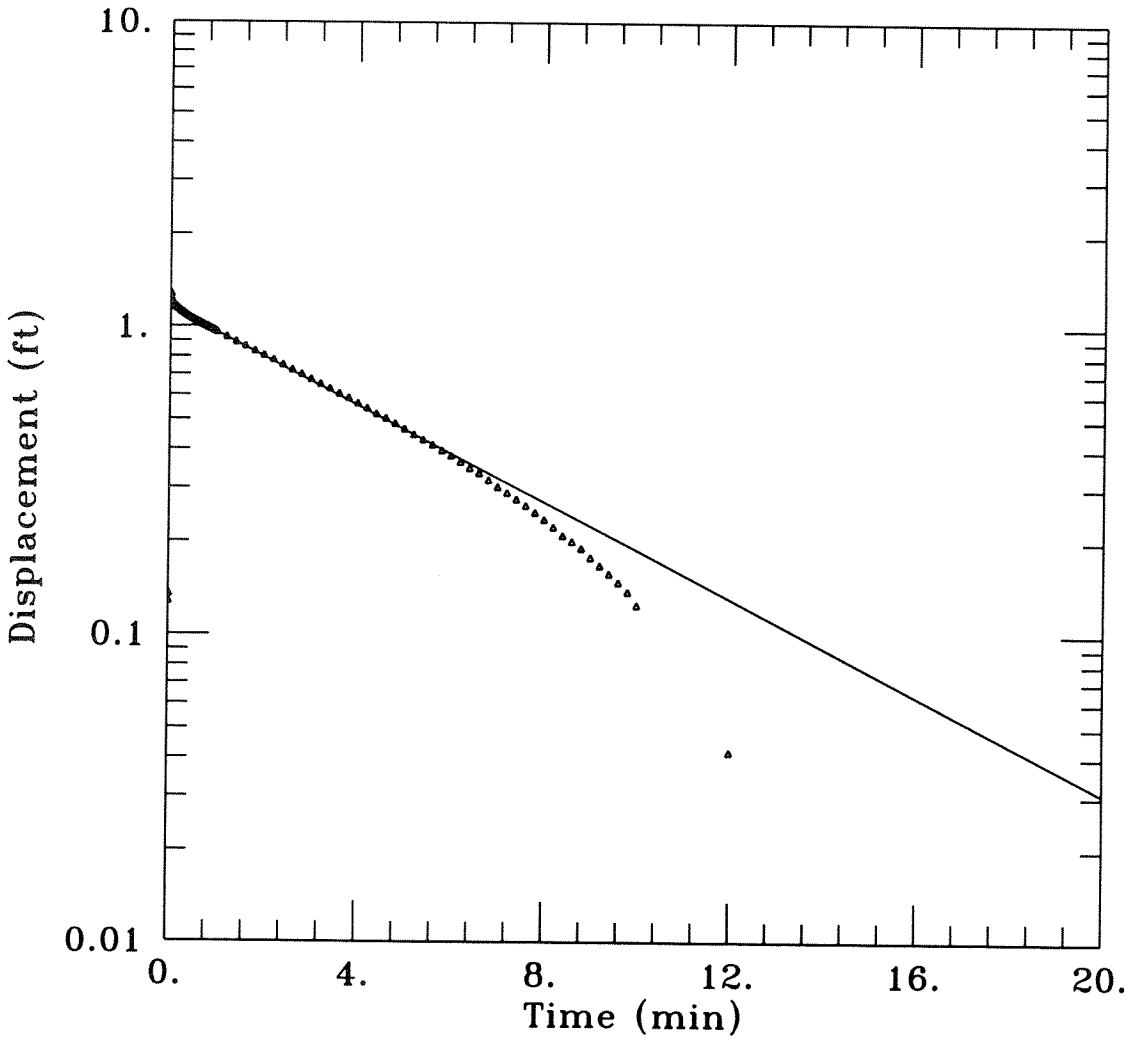
TEST DATA:
H0 = 1. ft
rc = 0.083 ft
rw = 0.25 ft
L = 5. ft
b = 50. ft
H = 17.52 ft

PARAMETER ESTIMATES:
K = 0.0001306 cm/sec
y0 = 0.9306 ft

AQTESOLV

Client: NAVY SOUTH-DIV	Company: Tetra Tech NUS
Location: McCOY ANNEX, NTC ORLANDO	Project: CT00024

WELL 23, SLUG OUT TEST



DATA SET:
23OUT.DAT
12/18/98

AQUIFER MODEL:
Confined

SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: November 19, 1998

TEST DATA:
H0 = 1.2 ft
rc = 0.083 ft
rw = 0.25 ft
L = 5. ft
b = 50. ft
H = 9.86 ft

PARAMETER ESTIMATES:
K = 0.0006483 cm/sec
y0 = 1.145 ft

A. Jenkins 12-21-98

AQTESOLV

D-96

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APPENDIX E-1
RAGS D Tables E1.1 and E1.2

TABLE E1.1

SELECTION OF EXPOSURE PATHWAYS
AREA 1
OPERABLE UNIT 2 - MCCOY ANNES LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis[2]	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Surface Soil[1]	Surface Soil/ Air	Entire Surface	Site Maintenance Worker	Adult	Ingestion	On-site	Quant	The site is currently an active golf course in which workers are engaged in maintenance activities.
						Dermal	On-site	Quant	The site is currently an active golf course in which workers are engaged in maintenance activities.
						Inhalation	On-site	Quant	The site is currently an active golf course in which workers are engaged in maintenance activities.
				Recreational User (Golfer)	Adult and Adolescent	Ingestion	On-site	Quant	The site is currently an active site in which recreators are regularly onsite.
						Dermal	On-site	Quant	The site is currently an active site in which recreators are regularly onsite.
						Inhalation	On-site	Quant	The site is currently an active site in which recreators are regularly onsite.
	Groundwater	Groundwater	Tap Water	Site Maintenance Worker	Adult	Ingestion	On-site	None	Shallow groundwater is not and is not expected to be used as a water supply. Water is provided by the city.
				Recreators (Golfer)	Adult and Adolescent	Ingestion	On-site	None	Shallow groundwater is not and is not expected to be used as a water supply Water is provided by the city.
		Groundwater/ Air	Entire Area	Site Maintenance Worker	Adult	Dermal	On-site	None	Dermal contact with groundwater does not occur under current land use and is not anticipated under future land use.
						Inhalation	On-site	None	Minimal exposure is anticipated; therefore, it wasn't quantified.
				Recreators (Golfer)	Adult and Adolescent	Dermal	On-site	None	Dermal contact with groundwater does not occur under current land use and is not anticipated under future land use.
						Inhalation	On-site	None	Minimal exposure is anticipated; therefore, it wasn't quantified.
	Surface Water	Surface Water/ Air	Ponds, Canals, etc	Site Maintenance Worker	Adult	Ingestion	On-site	Quant	Site worker / golf ball retriever may be in contact with the surface waters during maintenance of the golf course.
						Dermal	On-site	Quant	Site worker / golf ball retriever may be in contact with the surface waters during maintenance of the golf course.
						Inhalation	On-site	None	Minimal exposure is anticipated; therefore, it wasn't quantified.
				Recreational User (Golfer)	Adult and Adolescent	Ingestion	On-site	None	Minimal exposure is anticipated; therefore, it wasn't quantified.
						Dermal	On-site	None	Minimal exposure is anticipated; therefore, it wasn't quantified.
						Inhalation	On-site	None	Minimal exposure is anticipated; therefore, it wasn't quantified.
				Resident (trespasser/visitor)	Adult and Adolescent	Ingestion	Off-site	Quant	Access to ponds and canals is not restricted to offsite residents. Wading may occur.
						Dermal	Off-site	Quant	Access to ponds and canals is not restricted to offsite residents. Wading may occur.
						Inhalation	Off-site	None	Minimal exposure is anticipated; therefore, it wasn't quantified.

TABLE E1.1

SELECTION OF EXPOSURE PATHWAYS
AREA 1
OPERABLE UNIT 2 - MCCOY ANNES LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis[2]	Rationale for Selection or Exclusion of Exposure Pathway
	Sediments	Sediments	Ponds, Canals, etc	Site Maintenance Worker	Adult	Ingestion	On-site	Quant	Site worker / golf ball retriever may be in contact with surface water sediment during maintenance of the golf course.
						Dermal	On-site	Quant	Site worker / golf ball retriever may be in contact with surface water sediment during maintenance of the golf course.
						Inhalation	On-site	None	Minimal exposure is anticipated; therefore, it wasn't quantified.
				Recreational User (Golfer)	Adult and Adolescent	Ingestion	On-site	None	Minimal exposure is anticipated; therefore, it wasn't quantified.
						Dermal	On-site	None	Minimal exposure is anticipated; therefore, it wasn't quantified.
						Inhalation	On-site	None	Minimal exposure is anticipated; therefore, it wasn't quantified.
				Resident (trespasser/visitor)	Adult and Adolescent	Ingestion	Off-site	Quant	Access to ponds and canals is not restricted to offsite residents. Wading may occur.
						Dermal	Off-site	Quant	Access to ponds and canals is not restricted to offsite residents. Wading may occur.
						Inhalation	Off-site	None	Minimal exposure is anticipated; therefore, it wasn't quantified.
Future	Surface/ Subsurface Soil	Surface/ Subsurface Soil	Entire Area	Excavation/Construction Worker	Adult	Ingestion	On-site	None	No excavation is expected on the site. Deed restrictions will be placed as part of the reuse plan because of the landfill beneath the site.
						Dermal	On-site	None	No excavation is expected on the site. Deed restrictions will be placed as part of the reuse plan because of the landfill beneath the site.
		Air	Entire Area	Excavation/Construction Worker	Adult	Inhalation	On-site	None	No excavation is expected on the site. Deed restrictions will be placed on the site because of the landfill beneath the site.
	Surface Soil	Surface Soil/ Air	Entire Area	Resident	Adult and Child	Ingestion	On-site	Quant	The site is expected to remain a golf course in the future, and deed restrictions will prevent any onsite residents. This pathway was evaluated for comparison purposes.
						Dermal	On-site	Quant	The site is expected to remain a golf course in the future, and deed restrictions will prevent any onsite residents. This pathway was evaluated for comparison purposes.
						Inhalation	On-site	Quant	The site is expected to remain a golf course in the future, and deed restrictions will prevent any onsite residents. This pathway was evaluated for comparison purposes.
	Surface Water	Surface Water/ Air	Ponds, Canals, etc	Resident	Adult and Adolescent	Ingestion	On-site	Quant	The site is expected to remain a golf course, and deed restrictions will prevent onsite residents. This pathway was evaluated for comparison purposes. Parameters are those used for offsite residents.
						Dermal	On-site	Quant	The site is expected to remain a golf course, and deed restrictions will prevent onsite residents. This pathway was evaluated for comparison purposes. Parameters are those used for offsite residents.
						Inhalation	On-site	Quant	The site is expected to remain a golf course, and deed restrictions will prevent onsite residents. This pathway was evaluated for comparison purposes. Parameters are those used for offsite residents.
	Sediments	Sediments	Ponds, Canals, etc	Resident	Adult and Adolescent	Ingestion	On-site	Quant	The site is expected to remain a golf course, and deed restrictions will prevent onsite residents. This pathway was evaluated for comparison purposes. Parameters are those used for offsite residents.
						Dermal	On-site	Quant	The site is expected to remain a golf course, and deed restrictions will prevent onsite residents. This pathway was evaluated for comparison purposes. Parameters are those used for offsite residents.

TABLE E1.1

SELECTION OF EXPOSURE PATHWAYS
AREA 1
OPERABLE UNIT 2 - MCCOY ANNES LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis[2]	Rationale for Selection or Exclusion of Exposure Pathway
						Inhalation	On-site	Quant	The site is expected to remain a golf course, and deed restrictions will prevent onsite residents. This pathway was evaluated for comparison purposes. Parameters are those used for offsite residents.
	Groundwater	Groundwater/ Air	Shallow Excavation	Excavation/Construction Worker	Adult	Ingestion	On-site	None	No excavation is expected on the site. Deed restrictions will be placed on the site because of the landfill beneath the site.
						Dermal	On-site	None	No excavation is expected on the site. Deed restrictions will be placed on the site because of the landfill beneath the site.
						Inhalation	On-site	None	No excavation is expected on the site. Deed restrictions will be placed on the site because of the landfill beneath the site.
			Tap Water / Vapor	Resident	Adult	Ingestion	On-site	Quant	No residents currently reside onsite. The site is expected to remain a golf course in the future, and deed restrictions will prevent any onsite residents. Any use of the shallow groundwater for domestic water supply is unlikely. This pathway was evaluated for comparison purposes.
						Dermal	On-site	Quant	No residents currently reside onsite. The site is expected to remain a golf course in the future, and deed restrictions will prevent any onsite residents. Any use of the shallow groundwater for domestic water supply is unlikely. This pathway was evaluated for comparison purposes.
						Inhalation	On-site	Quant	No residents currently reside onsite. The site is expected to remain a golf course in the future, and deed restrictions will prevent any onsite residents. Any use of the shallow groundwater for domestic water supply is unlikely. This pathway was evaluated for comparison purposes.
					Child	Ingestion	On-site	Quant	No residents currently reside onsite. The site is expected to remain a golf course in the future, and deed restrictions will prevent any onsite residents. Any use of the shallow groundwater for domestic water supply is unlikely. This pathway was evaluated for comparison purposes.
						Dermal	On-site	Quant	No residents currently reside onsite. The site is expected to remain a golf course in the future, and deed restrictions will prevent any onsite residents. Any use of the shallow groundwater for domestic water supply is unlikely. This pathway was evaluated for comparison purposes.
						Inhalation	On-site	Quant	No residents currently reside onsite. The site is expected to remain a golf course in the future, and deed restrictions will prevent any onsite residents. Any use of the shallow groundwater for domestic water supply is unlikely. This pathway was evaluated for comparison purposes.

Footnotes:

1 Surface soil is defined as soil collected from 0 to 1 feet below ground surface (bgs).

2 Quant = Quantitative.

TABLE E1.2

SELECTION OF EXPOSURE PATHWAYS
AREA 2/3
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis[2]	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Surface Soil(1)	Surface Soil/ Air	Entire Surface	Site Maintenance Worker	Adult	Ingestion	On-site	Quant(2)	The site is currently an active golf course with proposed soccer, baseball fields, picnic areas, and trails.
						Dermal	On-site	Quant	The site is currently an active golf course with proposed soccer, baseball fields, picnic areas, and trails.
						Inhalation	On-site	Quant	The site is currently an active golf course with proposed soccer, baseball fields, picnic areas, and trails.
				Recreational User	Adult and Child	Ingestion	On-site	Quant	The site is currently an active golf course with proposed soccer, baseball fields, picnic areas, and trails.
						Dermal	On-site	Quant	The site is currently an active golf course with proposed soccer, baseball fields, picnic areas, and trails.
						Inhalation	On-site	Quant	The site is currently an active golf course with proposed soccer, baseball fields, picnic areas, and trails.
	Groundwater	Groundwater	Tap Water	Site Maintenance Worker	Adult	Ingestion	On-site	None	Shallow groundwater is not and is not expected to be used as a water supply Water is provided by the city.
				Recreators	Adult and Child	Ingestion	On-site	None	Shallow groundwater is not and is not expected to be used as a water supply Water is provided by the city.
		Groundwater/ Air	Entire Area	Site Maintenance Worker	Adult	Dermal	On-site	None	Dermal contact with groundwater does not occur under current land use and is not anticipated under future land use.
						Inhalation	On-site	None	Minimal exposure is anticipated (i.e., so low such that it is not worth quantifying).
				Recreators	Adult and Child	Dermal	On-site	None	Dermal contact with groundwater does not occur under current land use and is not anticipated under future land use.
						Inhalation	On-site	None	Minimal exposure is anticipated (i.e., so low such that it is not worth quantifying).
	Surface Water	Surface Water/ Air	Ponds, Canals, etc	Site Maintenance Worker	Adult	Ingestion	On-site	Quant	Site worker / golf ball retriever may be in contact with the surface waters during maintenance of the golf course.
						Dermal	On-site	Quant	Site worker / golf ball retriever may be in contact with the surface waters during maintenance of the golf course.
						Inhalation	On-site	None	Minimal exposure is anticipated (i.e., so low such that it is not worth quantifying).
				Recreational User	Adult and Child	Ingestion	On-site	None	Minimal exposure is anticipated (i.e., so low such that it is not worth quantifying).
						Dermal	On-site	None	Minimal exposure is anticipated (i.e., so low such that it is not worth quantifying).
						Inhalation	On-site	None	Minimal exposure is anticipated (i.e., so low such that it is not worth quantifying).
				Resident (trespasser/visitor)	Adult and Adolescent	Ingestion	Off-site	Quant	Access to ponds and canals is not restricted to offsite residents. Wading may occur.
						Dermal	Off-site	Quant	Access to ponds and canals is not restricted to offsite residents. Wading may occur.
						Inhalation	Off-site	None	Minimal exposure is anticipated (i.e., so low such that it is not worth quantifying).

TABLE E1.2

SELECTION OF EXPOSURE PATHWAYS
AREA 2/3
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis[2]	Rationale for Selection or Exclusion of Exposure Pathway
	Sediments	Sediments	Ponds, Canals, etc	Site Maintenance Worker	Adult	Ingestion	On-site	Quant	Site worker / golf ball retriever may be in contact with surface water sediment during maintenance of the golf course.
						Dermal	On-site	Quant	Site worker / golf ball retriever may be in contact with surface water sediment during maintenance of the golf course.
						Inhalation	On-site	None	Minimal exposure is anticipated (i.e., so low such that it is not worth quantifying).
				Recreational User (Golfer)	Adult and Adolescent	Ingestion	On-site	None	Minimal exposure is anticipated (i.e., so low such that it is not worth quantifying).
						Dermal	On-site	None	Minimal exposure is anticipated (i.e., so low such that it is not worth quantifying).
						Inhalation	On-site	None	Minimal exposure is anticipated (i.e., so low such that it is not worth quantifying).
				Resident (trespasser/visitor)	Adult and Adolescent	Ingestion	Off-site	Quant	Access to ponds and canals is not restricted to offsite residents. Wading may occur.
						Dermal	Off-site	Quant	Access to ponds and canals is not restricted to offsite residents. Wading may occur.
						Inhalation	Off-site	None	Minimal exposure is anticipated (i.e., so low such that it is not worth quantifying).
Future	Surface/ Subsurface Soil	Surface/ Subsurface Soil	Entire Area	Excavation/Construction Worker	Adult	Ingestion	On-site	None	No excavation is expected on the site. Deed restrictions will be placed as part of the reuse plan because of the landfill beneath the site.
						Dermal	On-site	None	No excavation is expected on the site. Deed restrictions will be placed as part of the reuse plan because of the landfill beneath the site.
		Air	Entire Area	Excavation/Construction Worker	Adult	Inhalation	On-site	None	No excavation is expected on the site. Deed restrictions will be placed on the site because of the landfill beneath the site.
	Surface Soil	Surface Soil/ Air	Entire Area	Resident	Adult and Child	Ingestion	On-site	Quant	The site is expected to remain a golf course in the future, and deed restrictions will prevent any onsite residents. This pathway was evaluated for comparison purposes.
						Dermal	On-site	Quant	The site is expected to remain a golf course in the future, and deed restrictions will prevent any onsite residents. This pathway was evaluated for comparison purposes.
						Inhalation	On-site	Quant	The site is expected to remain a golf course in the future, and deed restrictions will prevent any onsite residents. This pathway was evaluated for comparison purposes.
	Surface Water	Surface Water/ Air	Ponds, Canals, etc	Resident	Adult and Adolescent	Ingestion	On-site	Quant	The site is expected to remain a golf course, and deed restrictions will prevent onsite residents. This pathway was evaluated for comparison purposes. Parameters are those used for offsite residents.
						Dermal	On-site	Quant	The site is expected to remain a golf course, and deed restrictions will prevent onsite residents. This pathway was evaluated for comparison purposes. Parameters are those used for offsite residents.
						Inhalation	On-site	Quant	The site is expected to remain a golf course, and deed restrictions will prevent onsite residents. This pathway was evaluated for comparison purposes. Parameters are those used for offsite residents.
	Sediments	Sediments	Ponds, Canals, etc	Resident	Adult and Adolescent	Ingestion	On-site	Quant	The site is expected to remain a golf course, and deed restrictions will prevent onsite residents. This pathway was evaluated for comparison purposes. Parameters are those used for offsite residents.
						Dermal	On-site	Quant	The site is expected to remain a golf course, and deed restrictions will prevent onsite residents. This pathway was evaluated for comparison purposes. Parameters are those used for offsite residents.

TABLE E1.2

SELECTION OF EXPOSURE PATHWAYS
AREA 2/3
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis[2]	Rationale for Selection or Exclusion of Exposure Pathway
						Inhalation	On-site	Quant	The site is expected to remain a golf course, and deed restrictions will prevent onsite residents. This pathway was evaluated for comparison purposes. Parameters are those used for offsite residents.
	Groundwater	Groundwater/ Air	Shallow Excavation	Excavation/Construction Worker	Adult	Ingestion	On-site	None	No excavation is expected on the site. Deed restrictions will be placed on the site because of the landfill beneath the site.
						Dermal	On-site	None	No excavation is expected on the site. Deed restrictions will be placed on the site because of the landfill beneath the site.
						Inhalation	On-site	None	No excavation is expected on the site. Deed restrictions will be placed on the site because of the landfill beneath the site.
			Tap Water / Vapor	Resident	Adult	Ingestion	On-site	Quant	No residents currently reside onsite. The site is expected to remain a golf course in the future, and deed restrictions will prevent any onsite residents. Any use of the shallow groundwater for domestic water supply is unlikely. This pathway was evaluated for comparison purposes.
						Dermal	On-site	Quant	No residents currently reside onsite. The site is expected to remain a golf course in the future, and deed restrictions will prevent any onsite residents. Any use of the shallow groundwater for domestic water supply is unlikely. This pathway was evaluated for comparison purposes.
						Inhalation	On-site	Quant	No residents currently reside onsite. The site is expected to remain a golf course in the future, and deed restrictions will prevent any onsite residents. Any use of the shallow groundwater for domestic water supply is unlikely. This pathway was evaluated for comparison purposes.
					Child	Ingestion	On-site	Quant	No residents currently reside onsite. The site is expected to remain a golf course in the future, and deed restrictions will prevent any onsite residents. Any use of the shallow groundwater for domestic water supply is unlikely. This pathway was evaluated for comparison purposes.
						Dermal	On-site	Quant	No residents currently reside onsite. The site is expected to remain a golf course in the future, and deed restrictions will prevent any onsite residents. Any use of the shallow groundwater for domestic water supply is unlikely. This pathway was evaluated for comparison purposes.
						Inhalation	On-site	Quant	No residents currently reside onsite. The site is expected to remain a golf course in the future, and deed restrictions will prevent any onsite residents. Any use of the shallow groundwater for domestic water supply is unlikely. This pathway was evaluated for comparison purposes.

Footnotes:

1 Surface soil is defined as soil collected from 0 to 1 feet below ground surface (bgs).

2 Quant = Quantitative.

APPENDIX E-2
RAGS D Tables E2.1 through E2.10

TABLE E2.1

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil/ Air
Exposure Point: Area 1

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[4]
Organic Volatiles (mg/kg)																
67-64-1	Acetone	OV	0.123	J	51.4		S116	6/8	0.012	51.4	NA	780 N	770	FL Residential	no	BSL
108-88-3	Toluene	OV	0.0096	J	0.0096	J	S124	1/36	0.0054 - 1.4	0.0096	NA	1600 N	300	FL Residential	no	BSL
1330-20-7	Xylenes, Total	OV	0.0074	J	0.0074	J	S124	1/36	0.0054 - 1.4	0.0074	NA	16000 N	290	FL Residential	no	BSL
Organic Semivolatiles (mg/kg)																
50-32-8	**Benzo(a)pyrene**	OS	0.048	J	0.105	J	S115	2/36	0.09 - 0.12	0.105	NA	0.087 C	0.1	FL Residential	yes	ASL
206-44-0	Fluoranthene	OS	0.509	J	0.509	J	S115	1/36	0.36 - 0.47	0.509	NA	310 N	2800	FL Residential	no	BSL
Pesticides (mg/kg)																
72-55-9	4,4'-DDE	PEST	0.0013	J	0.0045	J	S129	6/36	0.0009 - 0.0011	0.0045	NA	1.9 C	3.2	FL Residential	no	BSL
50-29-3	4,4'-DDT	PEST	0.0091	J	0.0091	J	S128	1/36	0.0043 - 0.005	0.0091	NA	1.9 C	3.2	FL Residential	no	BSL
60-57-1	Dieldrin	PEST	0.003		0.003		S155	1/36	0.0009 - 0.0011	0.003	NA	0.04 C	0.07	FL Residential	no	BSL
5103-71-9	gamma-Chlordane	PEST	0.0019	J	0.0019	J	S115	1/36	0.0009 - 0.001	0.0019	NA	1.8 C	3	FL Residential	no	BSL
76-44-8	Heptachlor	PEST	0.0011	J	0.003		S137	2/36	0.0009 - 0.0011	0.003	NA	0.14 C	0.01	FL Residential	no	BSL
Metals (mg/kg)																
7429-90-5	Aluminum	M	524		5090		S151	36/36	NA	5090	4870	7800 N	72000	FL Residential	no	BSL
7440-38-2	**Arsenic**	M	0.58		4.8		S133	27/36	0.48 - 0.56	4.8	1.9	0.43 C	0.8	FL Residential	yes	ASL
7440-39-3	Barium	M	1.9		18.7		S151	36/36	NA	18.7	21.6	550 N	105	FL Residential	no	BSL
7440-70-2	Calcium	M	214	J	16000	J	S126	36/36	NA	16000	33568	100,000	Not Avail	--	no	BSL
7440-47-3	Chromium	M	1.4		6		S151	33/36	1.2	6	7.7	23 N	290	FL Residential	no	BSL
7440-48-4	Cobalt	M	0.22		0.22		S151	1/36	0.18 - 0.21	0.22	N/A	470 N	4700	FL Residential	no	BSL
7440-50-8	Copper	M	2.3		5		S154	7/36	0.64 - 2.5	5	2.6	310 N	105	FL Residential	no	BSL
7439-89-6	Iron	M	137	J	925	J	S139	36/36	NA	925	843	2300 N	23000	FL Residential	no	BSL
7439-92-1	Lead	M	1.6		11.6	J	S152	36/36	NA	11.6	21.3	400	500	FL Residential	no	BSL
7439-95-4	Magnesium	M	27.6		332		S126	35/36	25.8	332	381	460,468	Not Avail	--	no	BSL
7439-96-5	Manganese	M	0.6		35.5		S160	36/36	NA	35.5	10.8	160/1100 N	1600	FL Residential	no	BSL
7439-97-6	Mercury	M	0.13		0.22		S153	2/36	0.09 - 0.1	0.22	0.05	2.3 N	3.7	FL Residential	no	BSL
7440-02-0	Nickel	M	0.26		1.4		S151	30/36	0.22 - 0.25	1.4	N/A	160 N	105	FL Residential	no	BSL
7440-09-7	Potassium	M	12.8		77.2		S151	35/36	11.1	77.2	210	1,000,000	Not Avail	--	no	BSL
7782-49-2	Selenium	M	0.45		0.54		S157	7/36	0.4 - 0.45	0.54	1.1	39 N	390	FL Residential	no	BSL
7440-22-4	Silver	M	0.24		2.4		S153	3/36	0.22 - 0.25	2.4	N/A	39 N	390	FL Residential	no	BSL
7440-62-2	Vanadium	M	0.5		6.6		S151	36/36	NA	6.6	4.9	55 N	15	FL Residential	no	BSL
7440-66-6	Zinc	M	4.5		9.6		S157	7/36	0.67 - 4.1	9.6	4.6	2300 N	23000	FL Residential	no	BSL
TPH (mg/kg)																
NA5	Diesel range organics	PET	9.66		47.8		S135	8/36	9 - 12	47.8	NA	160[5]	1,000[5]	FL Residential	no	BSL
NA3	Cation ex. capacity	PET	1470		3520		S158	9/9	NA	3520	NA	NA	Not Avail	--	NA	--
Radionuclides (pCi/L)																
NA8	Gross alpha	RAD	0.46		2.72		S151	36/36	NA	2.72	NA	Not Avail	5	40 CFR	no	BSL
NA9	Gross beta	RAD	0.157		1.42		S151	34/36	-0.562 - 0.096	1.42	NA	Not Avail	15	40 CFR	no	BSL
NA14	Total organic carbon	MIS	1.1		21600		S119	9/9	NA	21600	NA	NA	Not Avail	--	NA	--

[1] Maximum concentration used as screening value

[2] The background screening value is twice the average of detected concentrations for inorganic analytes.

[3] Risk-Based Concentration Table, USEPA Region III, Residential use (Cancer benchmark value = 1E-06, HQ=0.1) 10/1/98

[4] Rationale Codes

Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Background Levels (BKG); No Toxicity Information (NTX); Essential Nutrient (NUT); Below Screening Levels (BSL)

[5] Naphthalene was used as a surrogate for Diesel Range Organics

Definitions:
NA = Not Applicable
40 CFR = Code of Federal Regulations, 40. These radionuclides (except for gross alpha and gross beta) are considered daughter products in the decay chain of radium. The screening level given is for radium. (The screening levels for gross alpha and gross beta are for those particles.)

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
FL Residential from Technical Report: Development of Soil Cleanup Levels for Chapter 62-777, F.A.C. (May 1999)
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
COPC = Chemical of Potential Concern

TABLE E2.2

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil/ Air
Exposure Point: Area 2/

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[5]
Organic Volatiles (mg/kg)																	
67-64-1	Acetone	OV	0.033	J	18.5	J	mg/kg	S32	7/34	0.005 - 0.012	18.5	NA	780 N	770	FL Residential	no	BSL
75-09-2	Methylene chloride	OV	0.0023		0.0163	J	mg/kg	H46	9/63	0.0004 - 0.35	0.0163	NA	85 C	16	FL Residential	no	BSL
127-18-4	Tetrachloroethene	OV	0.003		0.003		mg/kg	S92	1/63	0.0005 - 0.35	0.003	NA	12 C	10	FL Residential	no	BSL
108-88-3	Toluene	OV	0.0015		0.0149	J	mg/kg	H43	13/63	0.0009 - 0.35	0.0149	NA	1600 N	300	FL Residential	no	BSL
1330-20-7	Xylenes, Total	OV	0.0028		0.0078		mg/kg	S20	6/63	0.001 - 0.35	0.0078	NA	16000 N	290	FL Residential	no	BSL
Organic Semivolatiles (mg/kg)																	
56-55-3	**Benzo(a)anthracene**	OS	0.465	J	1.06		mg/kg	S102	4/63	0.34 - 1.8	1.06	NA	0.87 C	1.4	FL Residential	yes	ASL
50-32-8	**Benzo(a)pyrene**	OS	0.112		1.03	J	mg/kg	S62	11/63	0.084 - 0.39	1.03	NA	0.087 C	0.1	FL Residential	yes	ASL
205-99-2	**Benzo(b)fluoranthene**	OS	0.676	J	1.09	J	mg/kg	S62	3/63	0.34 - 1.6	1.09	NA	0.87 C	1.4	FL Residential	yes	ASL
191-24-2	Benzo(g,h,i)perylene	OS	0.38		1.39	J	mg/kg	S62	3/63	0.34 - 1.6	1.39	NA	Not Avail	2300	FL Residential	no	BSL
207-08-9	**Benzo(k)fluoranthene**	OS	0.586	J	0.755	J	mg/kg	S82	3/63	0.34 - 1.6	0.755	NA	8.7 C	15	FL Residential	yes	cPAH
218-01-9	**Chrysene**	OS	0.486	J	1.13	J	mg/kg	S62	4/63	0.34 - 1.6	1.13	NA	87 C	140	FL Residential	yes	cPAH
53-70-3	**Dibenzo(a,h)anthracene**	OS	0.116		0.398	J	mg/kg	S62	5/63	0.084 - 0.39	0.398	NA	0.087 C	0.1	FL Residential	yes	ASL
206-44-0	Fluoranthene	OS	0.191	J	1.85		mg/kg	S102	8/63	0.34 - 1.6	1.85	NA	310 N	2800	FL Residential	no	BSL
193-39-5	**Indeno(1,2,3-cd)pyrene**	OS	0.797		1.17	J	mg/kg	S62	3/63	0.34 - 1.6	1.17	NA	0.87 C	1.5	FL Residential	yes	ASL
85-01-8	Phenanthrene	OS	0.456		1.42		mg/kg	S102	2/63	0.34 - 1.6	1.42	NA	Not Avail	1900	FL Residential	no	BSL
129-00-0	Pyrene	OS	0.145	J	1.37		mg/kg	S102	7/63	0.34 - 1.6	1.37	NA	230 N	2200	FL Residential	no	BSL
Pesticides (mg/kg)																	
72-54-8	4,4'-DDD	PES	0.0053		0.0053		mg/kg	S30	1/63	0.0019 - 0.015	0.0053	NA	2.7 C	4.5	FL Residential	no	BSL
72-55-9	4,4'-DDE	PES	0.0016		0.041		mg/kg	S30	14/63	0.0009 - 0.009	0.041	NA	1.9 C	3.2	FL Residential	no	BSL
50-29-3	4,4'-DDT	PES	0.0061		0.0098		mg/kg	S51	4/63	0.0034 - 0.034	0.0098	NA	1.9 C	3.2	FL Residential	no	BSL
NA1	alpha-Chlordane	PES	0.0013		0.0031		mg/kg	S90	4/63	0.0008 - 0.007	0.0031	NA	1.8 C	3	FL Residential	no	BSL
60-57-1	Dieldrin	PES	0.001		0.001		mg/kg	S101	1/63	0.0009 - 0.0074	0.001	NA	0.04 C	0.07	FL Residential	no	BSL
33213-65-9	Endosulfan II	PES	0.0022		0.0045		mg/kg	S92	2/63	0.0012 - 0.094	0.0045	NA	47 N	410	FL Residential	no	BSL
5103-74-2	gamma-Chlordane	PES	0.0013		0.003		mg/kg	S90	4/63	0.0009 - 0.0072	0.003	NA	1.8 C	3	FL Residential	no	BSL
76-44-8	Heptachlor	PES	0.0011		0.0027		mg/kg	H31	7/63	0.0009 - 0.0074	0.0027	NA	0.14 C	0.01	FL Residential	no	BSL
Metals (mg/kg)																	
7429-90-5	Aluminum	M	58.4		4980		mg/kg	S110	63/63	NA	4980	4870	7800 N	72000	FL Residential	no	BSL
7440-36-0	Antimony	M	0.4		0.84		mg/kg	H45	2/63	0.28 - 0.45	0.84	Not Avail	3.1 N	26	FL Residential	no	BSL
7440-38-2	**Arsenic**	M	0.35		4.8		mg/kg	S52	38/63	0.24 - 0.75	4.8	1.9	0.43 C	0.8	FL Residential	yes	ASL
7440-39-3	Barium	M	2.4		26.7		mg/kg	S01	36/63	1.1 - 8.6	26.7	21.6	550 N	105	FL Residential	no	BSL
7440-43-9	Cadmium	M	0.06		0.23		mg/kg	S22	9/63	0.05 - 3.5	0.23	Not Avail	3.9 N	75	FL Residential	no	BSL
7440-70-2	Calcium	M	58.4		12700		mg/kg	S81	59/63	20.9 - 91	12700	33568	1000000 (nutrient)	Not Avail	--	no	BSL
7440-47-3	Chromium	M	0.21		6.5		mg/kg	S80	54/63	0.59 - 3.5	6.5	7.7	23 N	290	FL Residential	no	BKG
7440-48-4	Cobalt	M	0.15		0.27		mg/kg	S22	10/63	0.14 - 0.28	0.27	Not Avail	470 N	4700	FL Residential	no	BSL
7440-50-8	Copper	M	0.3		11.9		mg/kg	H01	49/63	0.29 - 2.2	11.9	2.6	310 N	105	FL Residential	no	BSL
7439-89-6	Iron	M	19.7		1240	J	mg/kg	S32	63/63	NA	1240	843	2300 N	23000	FL Residential	no	BSL
7439-92-1	Lead	M	2.2		13.5		mg/kg	S22	58/63	1.1 - 2.4	13.5	21.3	400	500	FL Residential	no	BSL
7439-95-4	Magnesium	M	10.2		212		mg/kg	S01	52/63	3.8 - 28.9	212	381	460468 (nutrient)	Not Avail	--	no	BSL
7439-96-5	Manganese	M	0.53		21.2		mg/kg	S80	51/63	0.05 - 1.1	21.2	10.8	160/1100 N	1600	FL Residential	no	BSL
7439-97-6	Mercury	M	0.09		0.13		mg/kg	S80	5/63	0.04 - 0.14	0.13	0.05	2.3 N	3.7	FL Residential	no	BSL
7440-02-0	Nickel	M	0.24		5.4		mg/kg	S140	47/63	0.21 - 2.4	5.4	Not Avail	160 N	105	FL Residential	no	BSL
7440-09-7	Potassium	M	11.2		93.4		mg/kg	S01	43/63	10.5 - 41.2	93.4	210	1000000 (nutrient)	Not Avail	--	no	BSL
7782-49-2	Selenium	M	0.3		0.56		mg/kg	S01	6/63	0.29 - 0.62	0.56	1.1	39 N	390	FL Residential	no	BKG
7440-22-4	Silver	M	0.24		0.83		mg/kg	S102	8/63	0.12 - 0.33	0.83	Not Avail	39 N	390	FL Residential	no	BSL
7440-23-5	Sodium	M	128		128		mg/kg	S81	1/63	86.8 - 190	128	Not Avail	1000000 (nutrient)	Not Avail	--	no	BSL
7440-28-0	Thallium	M	0.45		0.45		mg/kg	H37	1/63	0.26 - 0.67	0.45	Not Avail	0.55 N	Not Avail	--	no	BSL
7440-62-2	Vanadium	M	0.22		5.8		mg/kg	S70	47/63	0.16 - 2.3	5.8	4.9	55 N	15	FL Residential	no	BSL
7440-66-6	Zinc	M	2.9		33.8		mg/kg	S01	39/63	0.42 - 4.2	33.8	4.6	2300 N	23000	FL Residential	no	BSL

TABLE E2.2

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[5]
TPH (mg/kg)																	
NA5	Diesel range organics	PET	7.26	J	52.5		mg/kg	S102	34/53	0.22 - 10	52.5	NA	160 [6]	1000 [6]	FL Residential	no	BSL
NA7	Gasoline range organics	PET	0.128		0.128		mg/kg	H35	1/53	0.11 - 0.12	0.128	NA	470 [6]	420 [6]	FL Residential	no	BSL
74-82-8	Tph (c8-c40)	PET	23.8		65.3		mg/kg	S01	10/10	NA	65.3	NA	NA	350 [6]	FL Residential	no	BSL
Radionuclides (pCi/g)																	
74-82-8	Actinium-228	RAD	0.4		0.8		pCi/g	H47	6/6	NA	0.8	NA	Not Avail	5	40 CFR	no	BSL
74-82-8	Bismuth-214	RAD	0.4		1.2		pCi/g	H49	4/4	NA	1.2	NA	Not Avail	5	40 CFR	no	BSL
74-82-8	Cesium-137	RAD	0.1		0.2		pCi/g	H44	2/2	NA	0.2	NA	Not Avail	Not Avail	--	no	BSL
NA8	**Gross alpha**	RAD	0.111		10.4		pCi/g	H43	58/63	0-1.6	10.4	NA	Not Avail	5	40 CFR	yes	NTX [4]
NA9	**Gross beta**	RAD	0.196		28		pCi/g	H47	54/63	-1.381	28	NA	Not Avail	15	40 CFR	yes	NTX [4]
74-82-8	Lead-210	RAD	2.3		2.3		pCi/g	H44	1/1	NA	2.3	NA	Not Avail	5	40 CFR	no	BSL
74-82-8	Lead-212	RAD	0.2		0.4		pCi/g	S01	6/6	NA	0.4	NA	Not Avail	5	40 CFR	no	BSL
74-82-8	Lead-214	RAD	0.5		1.4		pCi/g	H49	9/9	NA	1.4	Not Avail	Not Avail	5	40 CFR	no	BSL
74-82-8	Thallium-208	RAD	0.1		0.4		pCi/g	S01	4/4	NA	0.4	Not Avail		5	40 CFR	no	BSL
NA3	Cation ex. capacity	MIS	750		10100		mg/kg	H49	11/11	NA	10100	Not Avail	Not Avail		--	no	NA
87-86-5	Pentachlorophenol	MIS	0.0045		0.0047		ug/kg	S01	2/63	2 - 3.3	0.0047	Not Avail	5.3 C	Not Avail	FL Residential	no	BSL
NA14	Total organic carbon	MIS	9860		30000		mg/kg	S121	11/11	NA	30000	Not Avail		Not Avail		NA	

[1] Maximum concentration used as screening value

[2] The background screening value is twice the average of detected concentrations for inorganic analytes

[3] Risk-Based Concentration Table, USEPA Region III, (Cancer benchmark value = 1E-06, HQ = 0.1) 10/1/98

[4] No toxicity information available. These analytes will be discussed qualitatively in the text

[5] Rationale Codes

Selection Reason	All carcinogenic PAHs are COPCs if one is selected - Region 4 guidance (cPAH)
	Above Screening Levels (ASL)
Deletion Reason	Background Levels (BKG)
	No Toxicity Information (NTX)
	Essential Nutrient (NUT)
	Below Screening Levels (BSL)

[6] Naphthalene was used as a surrogate for DRO. Hexane was used as a surrogate for GRO. TRPH screening levels were used for TPH

Definitions

NA = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

40 CFR = Code of Federal Regulations, 40. These radionuclides are considered daughter products in the decay chain of radium. The screening level given is for radium. (The screening levels for gross alpha and gross beta are for those particles.)
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
FL Residential fromTechnical Report: Development of Soil Cleanup Levels for Chapter 62-777, F.A.C. (May 1999)

TABLE E2.3A

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (7)
Organic Volatiles (µg/L)																
108-88-3	Toluene	OV	16.3		16.3		SW011	1/21	2	16.3	2 U	75 N	475	FI SW	no	BSL
Organic Semivolatiles (µg/L)																
56-55-3	**Benzo(a)anthracene**	OS	0.14	J	0.14	J	SW019	1/21	0.2 - 4	0.14	4 U	0.092 C	0.0028	Ambient	yes	ASL
50-32-8	**Benzo(a)pyrene**	OS	0.17	J	0.17	J	SW019	1/21	0.2	0.17	0.2 U	0.0092 C	0.0028	Ambient	yes	ASL
205-99-2	**Benzo(b)fluoranthene**	OS	0.245		0.39		SW019	1/21	0.2 - 4	0.39	4 U	0.092 C	0.0028	Ambient	yes	ASL
117-81-7	**Bis(2-Ethylhexyl)phthalate**	OS	10.3		10.3		SW008	1/21	6	10.3	6 U	4.8 C	0.02	FI SW	yes	ASL
193-39-5	**Indeno(1,2,3-cd)pyrene**	OS	0.14	J	0.14	J	SW019	1/21	0.2 - 7.5	0.14	7.5 U	0.092 C	0.0028	Ambient	yes	ASL
Metals (µg/L)																
7429-90-5	**Aluminum**	M	468	J	87000		SW021	16/22	96.8 - 672	87000	246 U	3700 N	13 eco	FI SW	yes	ASL
7440-38-2	**Arsenic**	M	3.625		18.4		SW010	6/22	3.1 - 10	18.4	4.5 U	0.045 C	0.018	Ambient	yes	ASL
7440-39-3	**Barium**	M	10.6		524		SW021	20/22	10 - 200	524	10 U	260 N	Not Avail	--	yes	ASL
7440-70-2	Calcium	M	9460		74500		SW017	22/22	NA	74500	10400	1,055,398 (nutrient)	Not Avail	--	no	NUT
7440-47-3	**Chromium**	M	2.2		74.2		SW021	5/22	1.8 - 25	74.2	1.8 U	11 N	11 eco	FI SW	yes	ASL
7440-48-4	Cobalt	M	12.4		12.4		SW010	1/22	0.71 - 50	12.4	1.7 U	220 N	Not Avail	--	no	BSL
7440-50-8	Copper	M	1.8		82.7		SW021	17/22	2.7 - 30	82.7	2.7 U	150 N	1300	Ambient	no	BSL
7439-89-6	**Iron**	M	146	J	149000		SW020	21/22	205	149000	272 J	1100 N	300[4]	Ambient	yes	ASL[4]
7439-92-1	**Lead**	M	5.7		109		SW021	7/22	1.4 - 12.6	109	1.4 U	15 N	50	Ambient	yes	ASL
7439-95-4	Magnesium	M	731		12600		SW017	22/22	NA	12600	1090	118,807 (nutrient)	Not Avail	--	no	NUT
7439-96-5	**Manganese**	M	6.4		1360	J	SW010	18/22	3.1 - 11.6	1360	6.5 J	73 N	50	Ambient	yes	ASL
7439-97-6	**Mercury**	M	0.06		0.18		SW010	7/22	0.16 - 10	0.18	0.16 U	1.1 N	0.012	FI SW	yes	ASL
7440-02-0	Nickel	M	2.9		17.7		SW021	3/22	1.6 - 40	17.7	2 U	73 N	610	Ambient	no	BSL
7440-09-7	Potassium	M	341		18800		SW017	20/22	426 - 650	18800	1850	297,015 (nutrient)	Not Avail	--	no	NUT
7782-49-2	Selenium	M	4		4		SW010	1/22	2.3 - 10	4	3.7 U	18 N	10	FI SW	no	BSL
7440-23-5	Sodium	M	2680		30300		SW013	22/22	NA	30300	7520	395,022 (nutrient)	Not Avail	--	no	NUT
7440-62-2	**Vanadium**	M	2		272		SW010	8/22	1.4 - 50	272	1.6 U	26 N	Not Avail	--	yes	ASL
7440-66-6	Zinc	M	11.1		565		SW016	17/22	3.8 - 10.8	565	7.4 U	1100 N	Not Avail	--	no	BSL
Radionuclides (pCi/L)																
	Cobalt-60	RAD	10.3		11.1		SW019	1/1	NA	11.1	Not Avail	2.5	--	--	no	BSL[5]
	Gross alpha	RAD	1.07	J	32.9		SW021	15/22	-0.2 - 0.29	32.9	0.36 U	Not Avail	15	FI SW	no	NTX[6]
	Gross beta	RAD	1.19		18.5		SW017	16/22	NA	18.5	1.52	Not Avail	50	40 CFR	no	BSL
mg/L																
	Alkalinity	MIS	61.3		61.3		SW008	1/1	NA	61.3	Not Avail	Not Avail	--	--	NA	--
NA19	Alkalinity as caco3	MIS	17.1		64.4		SW010	8/8	NA	64.4	23.9	Not Avail	--	--	NA	--
7440-66-6	Hardness as caco3	MIS	28.6		202		SW017	20/20	NA	202	34.4	Not Avail	--	--	NA	--
	Total Dissolved Solids	MIS	67		365		SW007	9/9	NA	365	106	NA	Not Avail	--	NA	--
	Total Organic Carbon	MIS	6.3		108		SW020	12/12	NA	108	Not Avail	NA	Not Avail	--	NA	--
	Total Suspended Solids	MIS	11		725		SW010	7/9	4	725	9	NA	Not Avail	--	NA	--

[1] Maximum concentration used as screening value
[2] The background screening value is twice the average of detected concentrations for inorganic analytes
[3] Risk-Based Concentration Table, USEPA Region III, (Cancer benchmark value = 1E-06, HQ = 0.1) 10-1-98
[4] The RfD for iron is not a proper RfD-it is derived based on iron consumption of beer brewed in iron vessels See the uncertainty section
[5] Results for cobalt-60 were unreasonably high and were not included in this risk assessment The samples were reanalyzed and no cobalt-60 was detected
[6] No toxicity information available. These analytes will be discussed qualitatively in the text
[7] Rationale Codes

Selection Reason: Above Screening Levels (ASL)

Deletion Reason:
Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
NA = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
U = Not Detected
C = Carcinogenic
N = Non-Carcinogenic
40 CFR = 40 Code of Federal Regulations 141
Ambient = Ambient Water Quality Criteria - Human Health MCL = Federal Maximum Contaminant Level
FL SW = Technical Report: Development of Soil Cleanup Target Levels for Chapter 62-777, F.A.C. (1999)

TABLE E2.3B

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PHASE III
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water/ Air
Exposure Point: Ponds, Canals, Etc

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (6)
Organic Volatiles (ug/L)																
108-88-3	Toluene	OV	16.3		16.3		NTCSW01100	1/22	2	16.3	2 U	75 N	475	FI SW	no	BSL
Organic Semivolatiles (ug/L)																
117-81-7	**Bis(2-Ethylhexyl)phthalate**	OS	4.3	J	6.6	J	NTCSW01203	3/22	6 - 10	6.6	6 U	4.8 C	0.02	FI SW	yes	ASL
91-20-3	Naphthalene	OS	0.43	J	0.43	J	NTCSW01903	1/22	2 - 5	0.43	2.1 U	0.65 N	26	FI SW	no	BSL
Metals (ug/L)																
7429-90-5	**Aluminum**	M	569		15300	J	NTCSW01803	11/22	69.1-402	15300	246 U	3700 N	13 eco	FI SW	yes	ASL
7440-38-2	**Arsenic**	M	4.8		7		NTCSW00900	4/22	2.3-4.5	7	4.5 U	0.045 C	0.018	Ambient	yes	ASL
7440-39-3	Barium	M	10.6		67.4		NTCSW01300	21/22	10	67.4	10 U	260 N	Not Avail	--	no	BSL
7440-70-2	Calcium	M	9460		74500		NTCSW01700	22/22	-	74500	10400	1,055,398 (nutrient)	Not Avail	--	no	NUT
7440-47-3	**Chromium**	M	2.2		14.5		NTCSW01803	5/22	0.8-12.7	14.5	1.8 U	11 N	11 eco	FI SW	yes	ASL
7440-50-8	Copper	M	0.91		13.8		NTCSW00900	14/22	0.7-2.7	13.8	2.7 U	150 N	1300	Ambient	no	BSL
7439-89-6	**Iron**	M	146	J	7090		NTCSW01100	18/22	80.7-205	7090	272 J	1100 N	300[4]	Ambient	yes	ASL [4]
7439-92-1	**Lead**	M	1.2		16.6		NTCSW00600	5/22	1.1-8.1	16.6	1.4 U	15 N	50	Ambient	yes	ASL
7439-95-4	Magnesium	M	731		12600		NTCSW01700	22/22	-	12600	1090	118,807 (nutrient)	Not Avail	--	no	NUT
7439-96-5	**Manganese**	M	4.7		159		NTCSW00103	16/22	2.5-10.1	159	6.5 J	73 N	50	Ambient	yes	ASL
7439-97-6	**Mercury**	M	0.00092		0.15		NTCSW01100	13/22	0.16-0.2	0.15	0.16 U	1.1 N	0.012	FI SW	yes	ASL
7440-02-0	Nickel	M	2.2		5.7		NTCSW01903	4/22	1.5-6.9	5.7	2 U	73 N	610	Ambient	no	BSL
7440-09-7	Potassium	M	341		18800		NTCSW01700	12/22	446-1400	18800	1850	297,015 (nutrient)	Not Avail	--	no	NUT
7440-23-5	Sodium	M	2680		30300		NTCSW01300	22/22	-	30300	7520	395,022 (nutrient)	Not Avail	--	no	NUT
7440-62-2	Vanadium	M	2		15		NTCSW00900	8/22	0.64-6	15	1.6 U	26 N	Not Avail	--	no	BSL
7440-66-6	Zinc	M	6.5		565		NTCSW01600	13/22	0.5-10.8	565	7.4 U	1100 N	Not Avail	--	no	BSL
Radionuclides (pCi/L)																
	Gross alpha	RAD	0.5		18.1		NTCSW00103	16/22	0-0.29	18.1	0.36 U	Not Avail	15	FL SW	yes	NTX [5]
	Gross beta	RAD	1.19		18.5		NTCSW01700	17/22	0.07-0.7	18.5	1.52	Not Avail	50	40 CFR	no	BSL
mg/L																
NA19	Alkalinity as caco3	MIS	17.1		64.4		NTCSW01000	10/10	NA	64.4	23.9	Not Avail	--	--	NA	--
7440-66-6	Hardness as caco3	MIS	28.6		155		NTCSW01000	9/9	NA	155	34.4	Not Avail	--	--	NA	--
	Total Dissolved Solids	MIS	67		365		NTCSW00700	10/10	NA	365	106	NA	Not Avail	--	NA	--
	Total Organic Carbon	MIS	6.3		108		NTCSW02000	12/12	NA	108	Not Avail	NA	Not Avail	--	NA	--
	Total Suspended Solids	MIS	9		725		NTCSW01000	8/10	4	725	9	NA	Not Avail	--	NA	--

[1] Maximum concentration used as screening value
[2] The background screening value is twice the average of detected concentrations for inorganic analytes.
[3] Risk-Based Concentration Table, USEPA Region III, (Cancer benchmark value = 1E-06, HQ = 0.1) 4-99
[4] The RfD for iron is not a proper RfD-it is derived based on iron consumption of beer brewed in iron vessels. See the uncertainty section.
[5] No toxicity information available. These analytes will be discussed qualitatively in the text
[6] Rationale Codes

Selection Reason: Above Screening Levels (ASL)

Deletion Reason:
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
NA = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
U = Not Detected
C = Carcinogenic
N = Non-Carcinogenic
40 CFR = 40 Code of Federal Regulations 141
Ambient = Ambient Water Quality Criteria - Human Health MCL = Federal Maximum Contaminant Level
FL SW = Technical Report: Development of Soil Cleanup Target Levels for Chapter 62-777, F.A.C. (1999)

TABLE E2.4

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Sediments
Exposure Medium: Sediments
Exposure Point: Ponds, Canals, Etc.

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source[4]	COPC Flag	Rationale for Contaminant Deletion or Selection[6]
Organic Volatiles (mg/kg)																
71-43-2	Benzene	OV	0.0041		0.0041		NTCSD00800	1/22	2.45-8.2	0.0041	0.0063 U	22 C	1.1	FL Residential	no	BSL
75-15-0	Carbon disulfide	OV	0.0738		0.0738		NTCSD01100	1/22	2.4-17	0.0738	0.0063 U	780 N	200	FL Residential	no	BSL
100-41-4	Ethylbenzene	OV	0.0042		0.0042		NTCSD00800	1/22	2.45-8.2	0.0042	0.0063 U	780 N	1100	FL Residential	no	BSL
108-88-3	Toluene	OV	0.0026	J	0.0599		NTCSD01400	5/22	2.45-8.2	0.0599	0.0063 U	1600 N	380	FL Residential	no	BSL
1330-20-7	Xylenes, total	OV	0.0059		0.0059		NTCSD00800	1/22	6-10.45	0.0059	0.0063 U	16000 N	5900	FL Residential	no	BSL
Organic Semivolatiles (mg/kg)																
M+P-CRESOL	3&4-Methylphenol	OS	0.223	J	0.223	J	NTCSD01900-D	1/22	400-540	0.223	470 U	39 N	250	FL Residential	no	BSL
Pesticides (mg/kg)																
72-54-8	4,4'-DDD	PES	0.0045		0.0045		NTCSD01600	1/22	2.1-4.9	0.0045	0.0023 U	2.7 C	4.6	FL Residential	no	BSL
72-55-9	4,4'-DDE	PES	0.0034		0.0082		NTCSD00503	3/22	1-4.9	0.0082	0.0011 U	1.9 C	3.3	FL Residential	no	BSL
5103-71-9	alpha-Chlordane	PES	0.0011	J	0.0011	J	NTCSD01503	1/21	0.88-4.9	0.0011	0.0009 U	1.8 C	3.1 b	FL Residential	no	BSL
5103-74-2	gamma-Chlordane	PES	0.002	J	0.0054	J	NTCSD01003	2/22	1-4.9	0.0054	0.001 U	1.8 C	3.1 b	FL Residential	no	BSL
959-98-8	Endosulfan I	PES	0.0013	J	0.0026	J	NTCSD00103	3/22	1.1-4.6	0.0026	0.0011U	47 N	410	FL Residential	no	BSL
Metals (mg/kg)																
7429-90-5	**Aluminum**	M	233	J	11400		NTCSD00103	22/22	NA	11400	409 J	7800 N	72000	FL Residential	yes	ASL
7440-36-0	Antimony	M	0.3		0.3		NTCSD01503	1/22	0.28-0.63	0.3	NA	3.1 N	26	FL Residential	no	BSL
7440-38-2	**Arsenic**	M	0.07		5.3		NTCSD00103	7/22	0.31-1.5	5.3	0.57 U	0.43 C	0.8	FL Residential	yes	ASL
7440-39-3	Barium	M	1.7		52.2		NTCSD00103	22/22	NA	52.2	2.2	550 N	110	FL Residential	no	BSL
7440-41-7	Beryllium	M	0.81		0.81		NTCSD01403	1/22	0.01-0.63	0.81	0.46	1.6 N	120	FL Residential	no	BSL
7440-70-2	Calcium	M	42.6		4820		NTCSD00103	16/22	113-630	4820	186	1000000 NUT	Not Avail	--	no	NUT
7440-47-3	Chromium	M	0.63		18.9		NTCSD00103	17/22	0.77-1.7	18.9	0.76	23 N	210	FL Residential	no	BSL
7440-48-4	Cobalt	M	0.29		0.29		NTCSD00900	1/22	0.08-6.3	0.29	0.22 U	470 N	4700	FL Residential	no	BSL
7440-50-8	Copper	M	0.34		25.9		NTCSD00103	16/22	0.335-3.2	25.9	0.71	310 N	110 d	FL Residential	no	BSL
7439-89-6	**Iron**	M	37.1		5130	J	NTCSD00103	22/22	NA	5130	137	2300 N	23000	FL Residential	yes	ASL
7439-92-1	Lead	M	0.61	J	33.2		NTCSD00103	21/22	13	33.2	1.2	400	400	FL Residential	no	BSL
7439-95-4	Magnesium	M	47.8		228		NTCSD01403	9/22	4.1-630	228	12.3 U	460468 NUT	Not Avail	--	no	BSL
7439-96-5	Manganese	M	0.74		37.6		NTCSD00103	10/22	0.25-3	37.6	0.58	160/1100 N	1600	FL Residential	no	BSL
7439-97-6	Mercury	M	0.02		0.1		NTCSD01700	4/22	0.02-0.31	0.1	0.1 U	2.3 N	3.4	FL Residential	no	BSL
7440-02-0	Nickel	M	0.24		5.7		NTCSD00103	7/22	0.2-5	5.7	0.25 U	160 N	110 d	FL Residential	no	BSL
7440-09-7	Potassium	M	13.2		71.9		NTCSD02200	7/22	21.3-630	71.9	20.8	1600/11000	Not Avail	--	no	BSL
7782-49-2	Selenium	M	0.46		2		NTCSD00103	4/22	0.29-13	2	0.47 U	39 N	390	FL Residential	no	BSL
7440-23-5	Sodium	M	41.9		412		NTCSD01700	4/22	72.2-994	412	104 U	1600	Not Avail	--	no	BSL
7440-62-2	**Vanadium**	M	0.3		27.1		NTCSD01003	21/22	0.44	27.1	0.64	55 N	15 d	FL Residential	yes	ASL
7440-66-6	Zinc	M	1.4		143		NTCSD00103	12/22	0.23-8.3	143	2.7	2300 N	23000	FL Residential	no	BSL
TPH (mg/kg)																
	Tph (c8-c40)	PET	20		21.6		NTCSD01700	2/12	10-12	21.6		470[7]	500[7]	FL Residential	no	BSL

TABLE E2.4

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source[4]	COPC Flag	Rationale for Contaminant Deletion or Selection[6]
Radionuclides (pCi/g)																
	Actinium-228	RAD	0.4		1.8		NTCSD01800	10/10	-	1.8		Not Avail	5	40 CFR	no	BSL
	Bismuth-214	RAD	0.6		2.5		NTCSD01800	7/7	-	2.5		Not Avail	5	40 CFR	no	BSL
	Gross alpha	RAD	0.186		15		NTCSD01403	20/22	0.2-0.6	15	0.495		5	40 CFR	yes	NTX[5]
	Gross beta	RAD	0.346	J	5.7		NTCSD01403	11/22	0-1.8	5.7	0.07 U		15	40 CFR	no	BSL
	Lead-212	RAD	0.2		0.7		NTCSD01900	11/11	-	0.7		Not Avail	5	40 CFR	no	BSL
	Lead-214	RAD	0.4		2		NTCSD01800	12/12	-	2		Not Avail	5	40 CFR	no	BSL
	Potassium-40	RAD	3.3		3.3		NTCSD01600-D	1/1	-	3.3		Not Avail	10	e	no	BKG
	Thallium-208	RAD	0.2		0.5		NTCSD01600,	6/6	-	0.5		Not Avail	5	40 CFR	no	BSL
	Total organic compound	MIS	1210		41800		NTCSD01900	12/12	NA	41800		NA	Not Avail	--	NA	

[1] Maximum concentration used as screening value
[2] Background values twice the average
[3] Risk-Based Concentration Table, USEPA Region III, (Cancer benchmark value = 1E-06, HQ = 0.1)
[4] State of Florida goals for soil (direct exposure - residential)
[5] No toxicity information available. These analytes will be discussed qualitatively in the text.
[6] Rationale Codes

Selection Reason	Above Screening Levels (ASL)
Deletion Reason	Background Levels (BKG) Essential Nutrient (NUT) Below Screening Level (BSL) No Toxicity Information (NTX)

[7] Hexane was used as a surrogate for TPH (c8-c40).

Definitions:

NA = Not Applicable
Not Avail = Not available
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

[a] Value for 4-Methylphenol
[b] Value for Chlordane
[c] Appendix C-1: ABB-ES 1998, RI/FS General Information Report
[d] Value derived for acute toxicity concerns
[e] A Handbook of Radioactivity Measurements Procedures, NCRP Report No. 58, page 251

J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
40 CFR = Code of Federal Regulations, 40. These radionuclides (except for gross alpha and gross beta) are considered daughter products in the decay chain of radium. The screening level given is for radium. (The screening level for gross alpha and gross beta is for those particles).

TABLE E2.5

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil/ Air
Exposure Point: Area 1

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[4]
Organic Volatiles (mg/kg)																
67-64-1	Acetone	OV	0.123	J	51.4		S116	6/8	0.012	51.4	N/A	780 N	770	FL Residential	no	BSL
108-88-3	Toluene	OV	0.0096	J	0.0096	J	S124	1/36	0.0054 - 1.4	0.0096	N/A	1600 N	300	FL Residential	no	BSL
1330-20-7	Xylenes, Total	OV	0.0074	J	0.0074	J	S124	1/36	0.0054 - 1.4	0.0074	N/A	16000 N	290	FL Residential	no	BSL
Organic Semivolatiles (mg/kg)																
50-32-8	**Benzo(a)pyrene**	OS	0.048	J	0.105	J	S115	2/36	0.09 - 0.12	0.105	N/A	0.087 C	0.1	FL Residential	yes	ASL
206-44-0	Fluoranthene	OS	0.509	J	0.509	J	S115	1/36	0.36 - 0.47	0.509	N/A	310 N	2800	FL Residential	no	BSL
Pesticides (mg/kg)																
72-55-9	4,4'-DDE	PEST	0.0013	J	0.0045	J	S129	6/36	0.0009 - 0.0011	0.0045	N/A	1.9 C	3.2	FL Residential	no	BSL
50-29-3	4,4'-DDT	PEST	0.0091	J	0.0091	J	S128	1/36	0.0043 - 0.005	0.0091	N/A	1.9 C	3.2	FL Residential	no	BSL
60-57-1	Dieldrin	PEST	0.003		0.003		S155	1/36	0.0009 - 0.0011	0.003	N/A	0.04 C	0.07	FL Residential	no	BSL
5103-71-9	gamma-Chlordane	PEST	0.0019	J	0.0019	J	S115	1/36	0.0009 - 0.001	0.0019	N/A	1.8 C	3	FL Residential	no	BSL
76-44-8	Heptachlor	PEST	0.0011	J	0.003		S137	2/36	0.0009 - 0.0011	0.003	N/A	0.14 C	0.01	FL Residential	no	BSL
Metals (mg/kg)																
7429-90-5	Aluminum	M	524		5090		S151	36/36	NA	5090	4870	7800 N	72000	FL Residential	no	BSL
7440-38-2	**Arsenic**	M	0.58		4.8		S133	27/36	0.48 - 0.56	4.8	1.9	0.43 C	0.8	FL Residential	yes	ASL
7440-39-3	Barium	M	1.9		18.7		S151	36/36	NA	18.7	21.6	550 N	105	FL Residential	no	BSL
7440-70-2	Calcium	M	214	J	16000	J	S126	36/36	NA	16000	33568	100,000	Not Avail	--	no	BSL
7440-47-3	Chromium	M	1.4		6		S151	33/36	1.2	6	7.7	23 N	290	FL Residential	no	BSL
7440-48-4	Cobalt	M	0.22		0.22		S151	1/36	0.18 - 0.21	0.22	N/A	470 N	4700	FL Residential	no	BSL
7440-50-8	Copper	M	2.3		5		S154	7/36	0.64 - 2.5	5	2.6	310 N	105	FL Residential	no	BSL
7439-89-6	Iron	M	137	J	925	J	S139	36/36	NA	925	843	2300 N	23000	FL Residential	no	BSL
7439-92-1	Lead	M	1.6		11.6	J	S152	36/36	NA	11.6	21.3	400	500	FL Residential	no	BSL
7439-95-4	Magnesium	M	27.6		332		S126	35/36	25.8	332	381	460,468	Not Avail	--	no	BSL
7439-96-5	Manganese	M	0.6		35.5		S160	36/36	NA	35.5	10.8	160/1100 N	1600	FL Residential	no	BSL
7439-97-6	Mercury	M	0.13		0.22		S153	2/36	0.09 - 0.1	0.22	0.05	2.3 N	3.7	FL Residential	no	BSL
7440-02-0	Nickel	M	0.26		1.4		S151	30/36	0.22 - 0.25	1.4	N/A	160 N	105	FL Residential	no	BSL
7440-09-7	Potassium	M	12.8		77.2		S151	35/36	11.1	77.2	210	1,000,000	Not Avail	--	no	BSL
7782-49-2	Selenium	M	0.45		0.54		S157	7/36	0.4 - 0.45	0.54	1.1	39 N	390	FL Residential	no	BSL
7440-22-4	Silver	M	0.24		2.4		S153	3/36	0.22 - 0.25	2.4	N/A	39 N	390	FL Residential	no	BSL
7440-62-2	Vanadium	M	0.5		6.6		S151	36/36	NA	6.6	4.9	55 N	15	FL Residential	no	BSL
7440-66-6	Zinc	M	4.5		9.6		S157	7/36	0.67 - 4.1	9.6	4.6	2300 N	23000	FL Residential	no	BSL
TPH (mg/kg)																
NA5	Diesel range organics	PET	9.66		47.8		S135	8/36	9 - 12	47.8	N/A	160[5]	1,000[5]	FL Residential	no	BSL
NA3	Cation ex. capacity	PET	1470		3520		S158	9/9	NA	3520	N/A	NA	Not Avail	--	NA	--
Radionuclides (pCi/L)																
NA8	Gross alpha	RAD	0.46		2.72		S151	36/36	NA	2.72	N/A	Not Avail	5	40 CFR	no	BSL
NA9	Gross beta	RAD	0.157		1.42		S151	34/36	-0.562 - 0.096	1.42	N/A	Not Avail	15	40 CFR	no	BSL
NA14	Total organic carbon	MIS	1.1		21600		S119	9/9	NA	21600	N/A	NA	Not Avail	--	NA	--

[1] Maximum concentration used as screening value

[2] The background screening value is twice the average of detected concentrations for inorganic analytes.

[3] Risk-Based Concentration Table, USEPA Region III, Residential use(Cancer benchmark value = 1E-06, HQ = 0.1) 10/1/98

[4] Rationale Codes

Selection Reason: Toxicity Information Available (TX); Above Screening Levels (ASL)

Deletion Reason: Background Levels (BKG); No Toxicity Information (NTX); Essential Nutrient (NUT); Below Screening Levels (BSL)

[5] Naphthalene was used as a surrogate for Diesel Range Organics

Definitions: N/A = Not Applicable

40 CFR = Code of Federal Regulations, 40. These radionuclides (except for gross alpha and gross beta) are considered daughter products in the decay chain of radium. The screening level given is for radium. (The screening levels for gross alpha and gross beta are for those particles)

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

FL Residential from Technical Report: Development of Soil Cleanup Levels for Chapter 62-777, F.A.C. (May 1999)

J = Estimated Value

C = Carcinogenic

N = Non-Carcinogenic

COPC = Chemical of Potential Concern

TABLE E2.6

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil/ Air
Exposure Point: Area 2/3

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[5]
Organic Volatiles (mg/kg)																
67-64-1	Acetone	OV	0.033	J	18.5	J	S32	7/34	0.005 - 0.012	18.5	N/A	780 N	770	FL Residential	no	BSL
75-09-2	Methylene chloride	OV	0.0023		0.0163	J	H46	9/63	0.0004 - 0.35	0.0163	N/A	85 C	16	FL Residential	no	BSL
127-18-4	Tetrachloroethene	OV	0.003		0.003		S92	1/63	0.0005 - 0.35	0.003	N/A	12 C	10	FL Residential	no	BSL
108-88-3	Toluene	OV	0.0015		0.0149	J	H43	13/63	0.0009 - 0.35	0.0149	N/A	1600 N	300	FL Residential	no	BSL
1330-20-7	Xylenes, Total	OV	0.0028		0.0078		S20	6/63	0.001 - 0.35	0.0078	N/A	16000 N	290	FL Residential	no	BSL
Organic Semivolatiles (mg/kg)																
56-55-3	**Benzo(a)anthracene**	OS	0.465	J	1.06		S102	4/63	0.34 - 1.8	1.06	N/A	0.87 C	1.4	FL Residential	yes	ASL
50-32-8	**Benzo(a)pyrene**	OS	0.112		1.03	J	S62	11/63	0.084 - 0.39	1.03	N/A	0.087 C	0.1	FL Residential	yes	ASL
205-99-2	**Benzo(b)fluoranthene**	OS	0.676	J	1.09	J	S62	3/63	0.34 - 1.6	1.09	N/A	0.87 C	1.4	FL Residential	yes	ASL
191-24-2	Benzo(g,h,i)perylene	OS	0.38		1.39	J	S62	3/63	0.34 - 1.6	1.39	N/A	Not Avail	2300	FL Residential	no	BSL
207-08-9	**Benzo(k)fluoranthene**	OS	0.586	J	0.755	J	S82	3/63	0.34 - 1.6	0.755	N/A	8.7 C	15	FL Residential	yes	cPAH
218-01-9	**Chrysene**	OS	0.486	J	1.13	J	S62	4/63	0.34 - 1.6	1.13	N/A	87 C	140	FL Residential	yes	cPAH
53-70-3	**Dibenzo(a,h)anthracene**	OS	0.116		0.398	J	S62	5/63	0.084 - 0.39	0.398	N/A	0.087 C	0.1	FL Residential	yes	ASL
206-44-0	Fluoranthene	OS	0.191	J	1.85		S102	8/63	0.34 - 1.6	1.85	N/A	310 N	2800	FL Residential	no	BSL
193-39-5	**Indeno(1,2,3-cd)pyrene**	OS	0.797		1.17	J	S62	3/63	0.34 - 1.6	1.17	N/A	0.87 C	1.5	FL Residential	yes	ASL
85-01-8	Phenanthrene	OS	0.456		1.42		S102	2/63	0.34 - 1.6	1.42	N/A	Not Avail	1900	FL Residential	no	BSL
129-00-0	Pyrene	OS	0.145	J	1.37		S102	7/63	0.34 - 1.6	1.37	N/A	230 N	2200	FL Residential	no	BSL
Pesticides (mg/kg)																
72-54-8	4,4'-DDD	PES	0.0053		0.0053		S30	1/63	0.0019 - 0.015	0.0053	N/A	2.7 C	4.5	FL Residential	no	BSL
72-55-9	4,4'-DDE	PES	0.0016		0.041		S30	14/63	0.0009 - 0.009	0.041	N/A	1.9 C	3.2	FL Residential	no	BSL
50-29-3	4,4'-DDT	PES	0.0061		0.0098		S51	4/63	0.0034 - 0.034	0.0098	N/A	1.9 C	3.2	FL Residential	no	BSL
NA1	alpha-Chlordane	PES	0.0013		0.0031		S90	4/63	0.0008 - 0.007	0.0031	N/A	1.8 C	3	FL Residential	no	BSL
60-57-1	Dieldrin	PES	0.001		0.001		S101	1/63	0.0009 - 0.0074	0.001	N/A	0.04 C	0.07	FL Residential	no	BSL
33213-65-9	Endosulfan II	PES	0.0022		0.0045		S92	2/63	0.0012 - 0.094	0.0045	N/A	47 N	410	FL Residential	no	BSL
5103-74-2	gamma-Chlordane	PES	0.0013		0.003		S90	4/63	0.0009 - 0.0072	0.003	N/A	1.8 C	3	FL Residential	no	BSL
76-44-8	Heptachlor	PES	0.0011		0.0027		H31	7/63	0.0009 - 0.0074	0.0027	N/A	0.14 C	0.01	FL Residential	no	BSL
Metals (mg/kg)																
7429-90-5	Aluminum	M	58.4		4980		S110	63/63	NA	4980	4870	7800 N	72000	FL Residential	no	BSL
7440-36-0	Antimony	M	0.4		0.84		H45	2/63	0.28 - 0.45	0.84	Not Avail	3.1 N	26	FL Residential	no	BSL
7440-38-2	**Arsenic**	M	0.35		4.8		S52	38/63	0.24 - 0.75	4.8	1.9	0.43 C	0.8	FL Residential	yes	ASL
7440-39-3	Barium	M	2.4		26.7		S01	36/63	1.1 - 8.6	26.7	21.6	550 N	105	FL Residential	no	BSL
7440-43-9	Cadmium	M	0.06		0.23		S22	9/63	0.05 - 3.5	0.23	Not Avail	3.9 N	75	FL Residential	no	BSL
7440-70-2	Calcium	M	58.4		12700		S81	59/63	20.9 - 91	12700	33568	1000000 (nutrient)	Not Avail	--	no	BSL
7440-47-3	Chromium	M	0.21		6.5		S80	54/63	0.59 - 3.5	6.5	7.7	23 N	290	FL Residential	no	BKG
7440-48-4	Cobalt	M	0.15		0.27		S22	10/63	0.14 - 0.28	0.27	Not Avail	470 N	4700	FL Residential	no	BSL
7440-50-8	Copper	M	0.3		11.9		H01	49/63	0.29 - 2.2	11.9	2.6	310 N	105	FL Residential	no	BSL
7439-89-6	Iron	M	19.7		1240	J	S32	63/63	NA	1240	843	2300 N	23000	FL Residential	no	BSL
7439-92-1	Lead	M	2.2		13.5		S22	58/63	1.1 - 2.4	13.5	21.3	400	500	FL Residential	no	BSL
7439-95-4	Magnesium	M	10.2		212		S01	52/63	3.8 - 28.9	212	381	460468 (nutrient)	Not Avail	--	no	BSL
7439-96-5	Manganese	M	0.53		21.2		S80	51/63	0.05 - 1.1	21.2	10.8	160/1100 N	1600	FL Residential	no	BSL
7439-97-6	Mercury	M	0.09		0.13		S80	5/63	0.04 - 0.14	0.13	0.05	2.3 N	3.7	FL Residential	no	BSL
7440-02-0	Nickel	M	0.24		5.4		S140	47/63	0.21 - 2.4	5.4	Not Avail	160 N	105	FL Residential	no	BSL
7440-09-7	Potassium	M	11.2		93.4		S01	43/63	10.5 - 41.2	93.4	210	1000000 (nutrient)	Not Avail	--	no	BSL
7782-49-2	Selenium	M	0.3		0.56		S01	6/63	0.29 - 0.62	0.56	1.1	39 N	390	FL Residential	no	BKG
7440-22-4	Silver	M	0.24		0.83		S102	8/63	0.12 - 0.33	0.83	Not Avail	39 N	390	FL Residential	no	BSL
7440-23-5	Sodium	M	128		128		S81	1/63	86.8 - 190	128	Not Avail	1000000 (nutrient)	Not Avail	--	no	BSL
7440-28-0	Thallium	M	0.45		0.45		H37	1/63	0.26 - 0.67	0.45	Not Avail	0.55 N	Not Avail	--	no	BSL
7440-62-2	Vanadium	M	0.22		5.8		S70	47/63	0.16 - 2.3	5.8	4.9	55 N	15	FL Residential	no	BSL
7440-66-6	Zinc	M	2.9		33.8		S01	39/63	0.42 - 4.2	33.8	4.6	2300 N	23000	FL Residential	no	BSL
TPH (mg/kg)																
NA5	Diesel range organics	PET	7.26	J	52.5		S102	34/53	0.22 - 10	52.5	N/A	160[6]	1000[6]	FL Residential	no	BSL
NA7	Gasoline range organics	PET	0.128		0.128		H35	1/53	0.11 - 0.12	0.128	N/A	470[6]	420[6]	FL Residential	no	BSL
74-82-8	Tph (c8-c40)	PET	23.8		65.3		S01	10/10	NA	65.3	N/A	NA	350[6]	FL Residential	no	BSL

TABLE E2.6

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[5]
Radionuclides (pCi/g)																
74-82-8	Actinium-228	RAD	0.4		0.8		H47	6/6	NA	0.8	Not Avail	Not Avail	5	40 CFR	no	BSL
74-82-8	Bismuth-214	RAD	0.4		1.2		H49	4/4	NA	1.2	Not Avail	Not Avail	5	40 CFR	no	BSL
74-82-8	Cesium-137	RAD	0.1		0.2		H44	2/2	NA	0.2	Not Avail	Not Avail	Not Avail	--	no	BSL
NA8	**gross Alpha**	RAD	0.111		10.4		H43	58/63	0-1.6	10.4	Not Avail	Not Avail	5	40 CFR	yes	NTX [4]
NA9	**gross Beta**	RAD	0.196		28		H47	54/63	-1.381	28	Not Avail	Not Avail	15	40 CFR	yes	NTX [4]
74-82-8	Lead-210	RAD	2.3		2.3		H44	1/1	NA	2.3	Not Avail	Not Avail	5	40 CFR	no	BSL
74-82-8	Lead-212	RAD	0.2		0.4		S01	6/6	NA	0.4	Not Avail	Not Avail	5	40 CFR	no	BSL
74-82-8	Lead-214	RAD	0.5		1.4		H49	9/9	NA	1.4	Not Avail	Not Avail	5	40 CFR	no	BSL
74-82-8	Thallium-208	RAD	0.1		0.4		S01	4/4	NA	0.4	Not Avail		5	40 CFR	no	BSL
mg/L except where noted																
NA3	Cation ex. capacity	MIS	750		10100		H49	11/11	NA	10100	Not Avail	Not Avail		--	no	NA
87-86-5	Pentachlorophenol	MIS	0.0045		0.0047		S01	2/63	2 - 3.3	0.0047	Not Avail	5.3 C	Not Avail	FL Residential	no	BSL
NA14	Total organic carbon	MIS	9860		30000		S121	11/11	NA	30000	Not Avail		Not Avail		NA	

[1] Maximum concentration used as screening value
[2] The background screening value is twice the average of detected concentrations for inorganic analytes
[3] Risk-Based Concentration Table, USEPA Region III, (Cancer benchmark value = 1E-06, HQ = 0.1) 10/1/98
[4] No toxicity information available These analytes will be discussed qualitatively in the text
[5] Rationale Codes

Selection Reason — All carcinogenic PAHs are COPCs if one is selected - Region 4 guidance (cPAH)
Above Screening Levels (ASL)

Deletion Reason — Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Levels (BSL)

[6] Naphthalene was used as a surrogate for DRO Hexane was used as a surrogate for GRO TRPH screening levels were used for TPH

Definitions

N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
40 CFR = Code of Federal Regulations, 40 These radionuclides are considered daughter products in the decay chain of radium
The screening level given is for radium. (The screening levels for gross alpha and gross beta are for those compounds.)
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
FL Residential fromTechnical Report: Development of Soil Cleanup Levels for Chapter 62-777, F.A.C. (May 1999)

TABLE E2.7A

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water/ Air
Exposure Point: Ponds, Canals, Etc

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (7)
Organic Volatiles (µg/L)																
108-88-3	Toluene	OV	16.3		16.3		SW011	1/21	2	16.3	2 U	75 N	475	FI SW	no	BSL
Organic Semivolatiles (µg/L)																
56-55-3	**Benzo(a)anthracene**	OS	0.14	J	0.14	J	SW019	1/21	0.2 - 4	0.14	4 U	0.092 C	0.0028	Ambient	yes	ASL
50-32-8	**Benzo(a)pyrene**	OS	0.17	J	0.17	J	SW019	1/21	0.2	0.17	0.2 U	0.0092 C	0.0028	Ambient	yes	ASL
205-99-2	**Benzo(b)fluoranthene**	OS	0.245		0.39		SW019	1/21	0.2 - 4	0.39	4 U	0.092 C	0.0028	Ambient	yes	ASL
117-81-7	**Bis(2-Ethylhexyl)phthalate**	OS	10.3		10.3		SW008	1/21	6	10.3	6 U	4.8 C	0.02	FI SW	yes	ASL
193-39-5	**Indeno(1,2,3-cd)pyrene**	OS	0.14	J	0.14	J	SW019	1/21	0.2 - 7.5	0.14	7.5 U	0.092 C	0.0028	Ambient	yes	ASL
Metals (µg/L)																
7429-90-5	**Aluminum**	M	468	J	87000		SW021	16/22	96.8 - 672	87000	246 U	3700 N	13 eco	FI SW	yes	ASL
7440-38-2	**Arsenic**	M	3.625		18.4		SW010	6/22	3.1 - 10	18.4	4.5 U	0.045 C	0.018	Ambient	yes	ASL
7440-39-3	**Barium**	M	10.6		524		SW021	20/22	10 - 200	524	10 U	260 N	Not Avail	--	yes	ASL
7440-70-2	Calcium	M	9460		74500		SW017	22/22	NA	74500	10400	1,055,398 (nutrient)	Not Avail	--	no	NUT
7440-47-3	**Chromium**	M	2.2		74.2		SW021	5/22	1.8 - 25	74.2	1.8 U	11 N	11 eco	FI SW	yes	ASL
7440-48-4	Cobalt	M	12.4		12.4		SW010	1/22	0.71 - 50	12.4	1.7 U	220 N	Not Avail	--	no	BSL
7440-50-8	Copper	M	1.8		82.7		SW021	17/22	2.7 - 30	82.7	2.7 U	150 N	1300	Ambient	no	BSL
7439-89-6	**Iron**	M	146	J	149000		SW020	21/22	205	149000	272 J	1100 N	300[4]	Ambient	yes	ASL[4]
7439-92-1	**Lead**	M	5.7		109		SW021	7/22	1.4 - 12.6	109	1.4 U	15 N	50	Ambient	yes	ASL
7439-95-4	Magnesium	M	731		12600		SW017	22/22	NA	12600	1090	118,807 (nutrient)	Not Avail	--	no	NUT
7439-96-5	**Manganese**	M	6.4		1360	J	SW010	18/22	3.1 - 11.6	1360	6.5 J	73 N	50	Ambient	yes	ASL
7439-97-6	**Mercury**	M	0.06		0.18		SW010	7/22	0.16 - 10	0.18	0.16 U	1.1 N	0.012	FI SW	yes	ASL
7440-02-0	Nickel	M	2.9		17.7		SW021	3/22	1.6 - 40	17.7	2 U	73 N	610	Ambient	no	BSL
7440-09-7	Potassium	M	341		18800		SW017	20/22	426 - 650	18800	1850	297,015 (nutrient)	Not Avail	--	no	NUT
7782-49-2	Selenium	M	4		4		SW010	1/22	2.3 - 10	4	3.7 U	18 N	10	FI SW	no	BSL
7440-23-5	Sodium	M	2680		30300		SW013	22/22	NA	30300	7520	395,022 (nutrient)	Not Avail	--	no	NUT
7440-62-2	**Vanadium**	M	2		272		SW010	8/22	1.4 - 50	272	1.6 U	26 N	Not Avail	--	yes	ASL
7440-66-6	Zinc	M	11.1		565		SW016	17/22	3.8 - 10.8	565	7.4 U	1100 N	Not Avail	--	no	BSL
Radionuclides (pCi/L)																
	Cobalt-60	RAD	10.3		11.1		SW019	1/1	NA	11.1	Not Avail	2.5	--	--	no	BSL[5]
	Gross alpha	RAD	1.07	J	32.9		SW021	15/22	-0.2 - 0.29	32.9	0.36 U	Not Avail	15	FI SW	no	NTX[6]
	Gross beta	RAD	1.19		18.5		SW017	16/22	NA	18.5	1.52	Not Avail	50	40 CFR	no	BSL
mg/L																
	Alkalinity	MIS	61.3		61.3		SW008	1/1	NA	61.3	Not Avail	Not Avail	--	--	NA	--
NA19	Alkalinity as caco3	MIS	17.1		64.4		SW010	8/8	NA	64.4	23.9	Not Avail	--	--	NA	--
7440-66-6	Hardness as caco3	MIS	28.6		202		SW017	20/20	NA	202	34.4	Not Avail	--	--	NA	--
	Total Dissolved Solids	MIS	67		365		SW007	9/9	NA	365	106	NA	Not Avail	--	NA	--
	Total Organic Carbon	MIS	6.3		108		SW020	12/12	NA	108	Not Avail	NA	Not Avail	--	NA	--
	Total Suspended Solids	MIS	11		725		SW010	7/9	4	725	9	NA	Not Avail	--	NA	--

[1] Maximum concentration used as screening value
[2] The background screening value is twice the average of detected concentrations for inorganic analytes.
[3] Risk-Based Concentration Table, USEPA Region III, (Cancer benchmark value = 1E-06, HQ = 0.1) 10-1-98
[4] The RfD for iron is not a proper RfD-it is derived based on iron consumption of beer brewed in iron vessels. See the uncertainty section.
[5] Results for Cobalt-60 were unreasonably high and were not included in this risk assessment. The samples were reanalyzed and no Cobalt-60 was detected.
[6] No toxicity information available. These analytes will be discussed qualitatively in the text.
[7] Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: No Toxicity Information (NTX); Essential Nutrient (NUT); Below Screening Level (BSL)

Definitions:
NA = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
U = Not Detected
C = Carcinogenic
N = Non-Carcinogenic
40 CFR = 40 Code of Federal Regulations 141
Ambient = Ambient Water Quality Criteria - Human Health MCL = Federal Maximum Contaminant Level
FL SW = Technical Report: Development of Soil Cleanup Target Levels for Chapter 62-777, F.A.C. (1999)

TABLE E2.7B

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PHASE III
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water/ Air
Exposure Point: Ponds, Canals, Etc

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (6)
Organic Volatiles (µg/L)																
108-88-3	Toluene	OV	16.3		16.3		NTCSW01100	1/22	2	16.3	2 U	75 N	475	FI SW	no	BSL
Organic Semivolatiles (µg/L)																
117-81-7	**Bis(2-Ethylhexyl)phthalate**	OS	4.3	J	6.6	J	NTCSW01203	3/22	6 - 10	6.6	6 U	4.8 C	0.02	FI SW	yes	ASL
91-20-3	Naphthalene	OS	0.43	J	0.43	J	NTCSW01903	1/22	2 - 5	0.43	2.1 U	0.65 N	26	FI SW	no	BSL
Metals (µg/L)																
7429-90-5	**Aluminum**	M	569		15300	J	NTCSW01803	11/22	69.1-402	15300	246 U	3700 N	13 eco	FI SW	yes	ASL
7440-38-2	**Arsenic**	M	4.8		7		NTCSW00900	4/22	2.3-4.5	7	4.5 U	0.045 C	0.018	Ambient	yes	ASL
7440-39-3	Barium	M	10.6		67.4		NTCSW01300	21/22	10	67.4	10 U	260 N	Not Avail	--	no	BSL
7440-70-2	Calcium	M	9460		74500		NTCSW01700	22/22	-	74500	10400	1,055,398 (nutrient)	Not Avail	--	no	NUT
7440-47-3	**Chromium**	M	2.2		14.5		NTCSW01803	5/22	0.8-12.7	14.5	1.8 U	11 N	11 eco	FI SW	yes	ASL
7440-50-8	Copper	M	0.91		13.8		NTCSW00900	14/22	0.7-2.7	13.8	2.7 U	150 N	1300	Ambient	no	BSL
7439-89-6	**Iron**	M	146	J	7090		NTCSW01100	18/22	80.7-205	7090	272 J	1100 N	300[4]	Ambient	yes	ASL[4]
7439-92-1	**Lead**	M	1.2		16.6		NTCSW00600	5/22	1.1-8.1	16.6	1.4 U	15 N	50	Ambient	yes	ASL
7439-95-4	Magnesium	M	731		12600		NTCSW01700	22/22	-	12600	1090	118,807 (nutrient)	Not Avail	--	no	NUT
7439-96-5	**Manganese**	M	4.7		159		NTCSW00103	16/22	2.5-10.1	159	6.5 J	73 N	50	Ambient	yes	ASL
7439-97-6	**Mercury**	M	0.00092		0.15		NTCSW01100	13/22	0.16-0.2	0.15	0.16 U	1.1 N	0.012	FI SW	yes	ASL
7440-02-0	Nickel	M	2.2		5.7		NTCSW01903	4/22	1.5-6.9	5.7	2 U	73 N	610	Ambient	no	BSL
7440-09-7	Potassium	M	341		18800		NTCSW01700	12/22	446-1400	18800	1850	297,015 (nutrient)	Not Avail	--	no	NUT
7440-23-5	Sodium	M	2680		30300		NTCSW01300	22/22	-	30300	7520	395,022 (nutrient)	Not Avail	--	no	NUT
7440-62-2	Vanadium	M	2		15		NTCSW00900	8/22	0.64-6	15	1.6 U	26 N	Not Avail	--	no	BSL
7440-66-6	Zinc	M	6.5		565		NTCSW01600	13/22	0.5-10.8	565	7.4 U	1100 N	Not Avail	--	no	BSL
Radionuclides (pCi/L)																
	Gross alpha	RAD	0.5		18.1		NTCSW00103	16/22	0-0.29	18.1	0.36 U	Not Avail	15	FL SW	yes	NTX[5]
	Gross beta	RAD	1.19		18.5		NTCSW01700	17/22	0.07-0.7	18.5	1.52	Not Avail	50	40 CFR	no	BSL
mg/kg																
NA19	Alkalinity as caco3	MIS	17.1		64.4		NTCSW01000	10/10	NA	64.4	23.9	Not Avail	--	--	NA	--
7440-66-6	Hardness as caco3	MIS	28.6		155		NTCSW01000	9/9	NA	155	34.4	Not Avail	--	--	NA	--
	Total Dissolved Solids	MIS	67		365		NTCSW00700	10/10	NA	365	106	NA	Not Avail	--	NA	--
	Total Organic Carbon	MIS	6.3		108		NTCSW02000	12/12	NA	108	Not Avail	NA	Not Avail	--	NA	--
	Total Suspended Solids	MIS	9		725		NTCSW01000	8/10	4	725	9	NA	Not Avail	--	NA	--

[1] Maximum concentration used as screening value
[2] The background screening value is twice the average of detected concentrations for inorganic analytes.
[3] Risk-Based Concentration Table, USEPA Region III, (Cancer benchmark value = 1E-06, HQ = 0.1) 4-99
[4] The RfD for iron is not a proper RfD-it is derived based on iron consumption of beer brewed in iron vessels. See the uncertainty section.
[5] No toxicity information available. These analytes will be discussed qualitatively in the text.
[6] Rationale Codes

Selection Reason:
- Frequent Detection (FD)
- Toxicity Information Available (TX)
- Above Screening Levels (ASL)

Deletion Reason:
- Infrequent Detection (IFD)
- Background Levels (BKG)
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)

Definitions:
- NA = Not Applicable
- COPC = Chemical of Potential Concern
- ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
- J = Estimated Value
- U = Not Detected
- C = Carcinogenic
- N = Non-Carcinogenic
- 40 CFR = 40 Code of Federal Regulations 141
- Ambient = Ambient Water Quality Criteria - Human Health MCL = Federal Maximum Contaminant Level
- FL SW = Technical Report: Development of Soil Cleanup Target Levels for Chapter 62-777, F.A.C. (1999)

TABLE E2.8

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Sediments
Exposure Medium: Sediments
Exposure Point: Ponds, Canals, Etc

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source[4]	COPC Flag	Rationale for Contaminant Deletion or Selection[5]
Organic Volatiles (mg/kg)																
71-43-2	Benzene	OV	0.0041		0.0041		NTCSD00800	1/22	2.45-8.2	0.0041	0.0063 U	12 C	1.1	FL Residential	no	BSL
75-15-0	Carbon disulfide	OV	0.0738		0.0738		NTCSD01100	1/22	2.4-17	0.0738	0.0063 U	780 N	200	FL Residential	no	BSL
100-41-4	Ethylbenzene	OV	0.0042		0.0042		NTCSD00800	1/22	2.45-8.2	0.0042	0.0063 U	780 N	1100	FL Residential	no	BSL
108-88-3	Toluene	OV	0.0026	J	0.0599		NTCSD01400	5/22	2.45-8.2	0.0599	0.0063 U	1600 N	380	FL Residential	no	BSL
1330-20-7	Xylenes, total	OV	0.0059		0.0059		NTCSD00800	1/22	6-10.45	0.0059	0.0063 U	16000 N	5900	FL Residential	no	BSL
Organic Semivolatiles (mg/kg)																
M+P-CRESOLS	3&4-Methylphenol	OS	0.223	J	0.223	J	NTCSD01900-D	1/22	400-540	0.223	470 U	39 N	250	FL Residential	no	BSL
Pesticides (mg/kg)																
72-54-8	4,4'-DDD	PES	0.0045		0.0045		NTCSD01600	1/22	2.1-4.9	0.0045	0.0023 U	2.7 C	4.6	FL Residential	no	BSL
72-55-9	4,4'-DDE	PES	0.0034		0.0082		NTCSD00503	3/22	1-4.9	0.0082	0.0011 U	1.9 C	3.3	FL Residential	no	BSL
5103-71-9	alpha-Chlordane	PES	0.0011	J	0.0011	J	NTCSD01503	1/21	0.88-4.9	0.0011	0.0009 U	1.8 C	3.1 b	FL Residential	no	BSL
5103-74-2	gamma-Chlordane	PES	0.002	J	0.0054	J	NTCSD01003	2/22	1-4.9	0.0054	0.001 U	1.8 C	3.1 b	FL Residential	no	BSL
959-98-8	Endosulfan I	PES	0.0013	J	0.0026	J	NTCSD00103	3/22	1.1-4.6	0.0026	0.0011U	47 N	410	FL Residential	no	BSL
Metals (mg/kg)																
7429-90-5	**Aluminum**	M	233	J	11400		NTCSD00103	22/22	NA	11400	409 J	7800 N	72000	FL Residential	yes	ASL
7440-36-0	Antimony	M	0.3		0.3		NTCSD01503	1/22	0.28-0.63	0.3	NA	3.1 N	26	FL Residential	no	BSL
7440-38-2	**Arsenic**	M	0.07		5.3		NTCSD00103	7/22	0.31-1.5	5.3	0.57 U	0.43 C	0.8	FL Residential	yes	ASL
7440-39-3	Barium	M	1.7		52.2		NTCSD00103	22/22	NA	52.2	2.2	550 N	110	FL Residential	no	BSL
7440-41-7	Beryllium	M	0.81		0.81		NTCSD01403	1/22	0.01-0.63	0.81	0.46	15.6 N	120	FL Residential	no	BSL
7440-70-2	Calcium	M	42.6		4820		NTCSD00103	16/22	113-630	4820	186	1000000 NUT	Not Avail	--	no	NUT
7440-47-3	Chromium	M	0.63		18.9		NTCSD00103	17/22	0.77-1.7	18.9	0.76	23 N	210	FL Residential	no	BSL
7440-48-4	Cobalt	M	0.29		0.29		NTCSD00900	1/22	0.08-6.3	0.29	0.22 U	470 N	4700	FL Residential	no	BSL
7440-50-8	Copper	M	0.34		25.9		NTCSD00103	16/22	0.335-3.2	25.9	0.71	310 N	110 d	FL Residential	no	BSL
7439-89-6	**Iron**	M	37.1		5130	J	NTCSD00103	22/22	NA	5130	137	2300 N	23000	FL Residential	yes	ASL
7439-92-1	Lead	M	0.61	J	33.2		NTCSD00103	21/22	13	33.2	1.2	400	400	FL Residential	no	BSL
7439-95-4	Magnesium	M	47.8		228		NTCSD01403	9/22	4.1-630	228	12.3 U	460468 NUT	Not Avail	--	no	BSL
7439-96-5	Manganese	M	0.74		37.6		NTCSD00103	10/22	0.25-3	37.6	0.58	160/1100 N	1600	FL Residential	no	BSL
7439-97-6	Mercury	M	0.02		0.1		NTCSD01700	4/22	0.02-0.31	0.1	0.1 U	2.3 N	3.4	FL Residential	no	BSL
7440-02-0	Nickel	M	0.24		5.7		NTCSD00103	7/22	0.2-5	5.7	0.25 U	160 N	110 d	FL Residential	no	BSL
7440-09-7	Potassium	M	13.2		71.9		NTCSD02200	7/22	21.3-630	71.9	20.8	1600/11000	Not Avail	--	no	BSL
7782-49-2	Selenium	M	0.46		2		NTCSD00103	4/22	0.29-13	2	0.47 U	39 N	390	FL Residential	no	BSL
7440-23-5	Sodium	M	41.9		412		NTCSD01700	4/22	72.2-994	412	104 U	1600	Not Avail	--	no	BSL
7440-62-2	**Vanadium**	M	0.3		27.1		NTCSD01003	21/22	0.44	27.1	0.64	55 N	15 d	FL Residential	yes	ASL
7440-66-6	Zinc	M	1.4		143		NTCSD00103	12/22	0.23-8.3	143	2.7	2300 N	23000	FL Residential	no	BSL

TABLE E2.8

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source[4]	COPC Flag	Rationale for Contaminant Deletion or Selection[6]
TPH (mg/kg)																
	Tph (c8-c40)	PET	20		21.6		NTCSD01700	2/12	10-12	21.6		470[7]	500[7]	FL Residential	no	BSL
Radionuclides (pCi/g)																
	Actinium-228	RAD	0.4		1.8		NTCSD01800	10/10	-	1.8		Not Avail	5	40 CFR	no	BSL
	Bismuth-214	RAD	0.6		2.5		NTCSD01800	7/7	-	2.5		Not Avail	5	40 CFR	no	BSL
	gross Alpha	RAD	0.186		15		NTCSD01403	20/22	0.2-0.6	15	0.495		5	40 CFR	yes	NTX[5]
	gross Beta	RAD	0.346	J	5.7		NTCSD01403	11/22	0-1.8	5.7	0.07 U		15	40 CFR	no	BSL
	Lead-212	RAD	0.2		0.7		NTCSD01900	11/11	-	0.7		Not Avail	5	40 CFR	no	BSL
	Lead-214	RAD	0.4		2		NTCSD01800	12/12	-	2		Not Avail	5	40 CFR	no	BSL
	Potassium-40	RAD	3.3		3.3		NTCSD01600-D	1/1	-	3.3		Not Avail	10	e	no	BKG
	Thallium-208	RAD	0.2		0.5		NTCSD01600, NTCSD02200, NTCSD01300	6/6	-	0.5		Not Avail	5	40 CFR	no	BSL
	Total organic compound	MIS	1210		41800		NTCSD01900	12/12	NA	41800		NA	Not Avail	--	NA	

[1] Maximum concentration used as screening value
[2] Background values twice the average
[3] Risk-Based Concentration Table, USEPA Region III, (Cancer benchmark value = 1E-06, HQ = 0.1)
[4] State of Florida goals for soil (direct exposure - residential)
[5] No toxicity information available. These analytes will be discussed qualitatively in the text.
[6] Rationale Codes

Selection Reason	Frequent Detection (FD)
	Above Screening Levels (ASL)
Deletion Reason	Background Levels (BKG)
	Essential Nutrient (NUT)
	Below Screening Level (BSL)
	No Toxicity Information (NTX)

[7] Hexane was used as a surrogate for TPH (c8-c40)

Definitions:

NA = Not applicable
Not Avail = Not available
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
40 CFR = Code of Federal Regulations, 40. These radionuclides (except for gross alpha and gross beta) are considered daughter products in the decay chain of radium. The screening level given is for radium. (The screening level for gross alpha and gross beta is for those particles.)

[a] Value for 4-Methylphenol
[b] Value for Chlordane
[c] Appendix C-1, ABB-ES 1998, RI/FS General Information Report
[d] Value derived for acute toxicity concerns.
[e] A Handbook of Radioactivity Measurements Procedures, NCRP Report No. 58, page 251

TABLE E2.9A

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Tap Water/ Vapor (Area 1)

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Organic Volatiles (µg/L)																
71-43-2	**Benzene**	OV	5.5		6.2		OU2MW03B	2/10	1	6.2	Not Avail	0.32 C	1	FL Residential	yes	ASL
108-90-7	**Chlorobenzene**	OV	19.1		19.1		OU2MW03B	1/10	2	19.1	Not Avail	11 N	100	FL Residential	yes	ASL
100-41-4	Ethylbenzene	OV	4.1		4.1		OU2MW03A	1/10	2	4.1	Not Avail	130 N	700	FL Residential	no	BSL
74-82-8	Methane	OV	140		1310		OU2MW03A	8/10	50	1310	Not Avail	Not Avail	Not Avail	--	no	NTX
108-88-3	Toluene	OV	8		8		OU2MW03A	1/10	2	8	Not Avail	75 N	1000	FL Residential	no	BSL
75-01-4	**Vinyl Chloride**	OV	4.8		4.8		OU2MW03A	1/10	1	4.8	Not Avail	0.04 C	1	FL Residential	yes	ASL
1330-20-7	Xylenes, Total	OV	15.7		15.7		OU2MW03A	1/10	6	15.7	Not Avail	1200 N	10000	FL Residential	no	BSL
Organic Semivolatiles (µg/L)																
156-59-2	cis-1,2-dichloroethene	OS	2		2		OU2MW03A	1/10	2	2	Not Avail	6.1 N	70	FL Residential	no	BSL
106-46-7	**1,4-Dichlorobenzene**	OS	6.3	J	6.3	J	OU2MW03B	1/10	10	6.3	Not Avail	0.47 C	75	FL Residential	yes	ASL
91-20-3	Naphthalene	OS	4.8	J	4.8	J	OU2MW03B	1/10	5	4.8	Not Avail	73 N	20	FL Residential	no	BSL
Metals (µg/L)																
7429-90-5	**Aluminum**	M	4520	J	152000	J	OU2MW06B	8/10	1000 - 1610	152000	4067	3700 N	50	MCL	yes	ASL
7440-38-2	**Arsenic**	M	38.6		38.6		OU2MW06B	1/10	3.1 - 17.7	38.6	5	0.045 C	50	FL Residential	yes	ASL
7440-39-3	**Barium**	M	1590	J	3910	J	OU2MW06B	2/10	0.47 - 1350	3910	31.4	260 N	2000	FL Residential	yes	ASL
7440-70-2	Calcium	M	8910	J	60000	J	OU2MW06B	10/10	NA	60000	36830	1056398 (nutrient)	Not Avail	--	no	NUT
7440-47-3	**Chromium**	M	34.3	J	223	J	OU2MW06B	7/10	0.96 - 10.3	223	7.8	11 N	100	FL Residential	yes	ASL
7440-50-8	Copper	M	29.1	J	113		OU2MW06B	3/10	1.2	113	5.4	150 N	1000s	FL Residential	no	BSL
7439-89-6	**Iron**	M	1400	J	26400	J	OU2MW03A	9/10	2500 - 3980	26400	1227	1100 N	300s	MCL	yes	ASL[4]
7439-92-1	**Lead**	M	18.3	J	197	J	OU2MW06B	7/10	3.6 - 5.2	197	4	Not Avail	15	FL Residential	yes	ASL
7439-95-4	Magnesium	M	3182.5		13200	J	OU2MW03A	6/10	10	13200	4560	118807 (nutrient)	Not Avail	--	no	NUT
7439-96-5	**Manganese**	M	20.375		194	J	OU2MW03A	8/10	0.39 - 18.1	194	17	73 N	50s	FL Residential	yes	ASL
7439-97-6	Mercury	M	0.29		0.29		OU2MW01A	1/10	0.2 - 1	0.29	0.12	1.1 N	2	FL Residential	no	BSL
7440-09-7	Potassium	M	8530	J	19400	J	OU2MW06A	3/10	25 - 25.3	19400	5400	297015 (nutrient)	Not Avail	--	no	NUT
7782-49-2	**Selenium**	M	30.325		55.3	J	OU2MW05B	2/10	2.3 - 10.7	55.3	9.7	18 N	50	FL Residential	yes	ASL
7440-23-5	Sodium	M	8630	J	75800	J	OU2MW06A	9/10	330	75800	18222	395022 (nutrient)	160000	FL Residential	no	BSL
7440-62-2	**Vanadium**	M	40.225		222	J	OU2MW03B	8/10	1.1	222	20.6	26 N	49	FL Residential	yes	ASL
7440-66-6	Zinc	M	112	J	268	J	OU2MW01B	2/10	51.8 - 564	268	4	1100 N	5000s	FL Residential	no	BSL
TPH (mg/l)																
	Tph (c8-c40)	PET	0.676		1.16		OU2MW03A	2/9	0.5	1.16	Not Avail	NA	5[8]	FL Residential	no	BSL

TABLE E2.9A

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Radionuclides (pCi/l)																
	Cesium-137	RAD	9.8		9.8		OU2MW03A	1/1	NA	9.8	Not Avail	1.5	Not Avail	--	no	BSL[5]
	Cobalt-60	RAD	18.3		18.3		OU2MW06B	1/1	NA	18.3	Not Avail	2.5	Not Avail	--	no	BSL[5]
	gross Alpha	RAD	6.9		221		OU2MW06B	10/10	NA	221	13	Not Avail	15	FL Residential	yes	NTX[6]
	gross Beta	RAD	6.4		192		OU2MW06B	10/10	NA	192	9.5	Not Avail	50	40 CFR	yes	NTX[6]
(mg/L except where noted)																
	Cyanide	MIS	0.035		0.035		OU2MW03B	1/10	0.005	0.035	Not Avail	73 N	200	FL Residential	no	BSL
	Alkalinity as caco3	MIS	7		31		OU2MW02B	9/10	5	31	Not Avail	Not Avail	Not Avail	--	NA	--
	Biochemical oxygen demand	MIS	2.2		41.2		OU2MW06B	7/10	5 - 25	41.2	NA	NA	Not Avail	--	NA	--
	Chloride	MIS	4.6		300	J	OU2MW06B	8/10	1.6 - 50.5	300	Not Avail	Not Avail	250000s	FL Residential	no	BSL
	Chemical oxygen demand	MIS	17.5		102	J	OU2MW05B	5/10	20	102	Not Avail	NA	NA	--	NA	--
	Hardness as caco3	MIS	22.2		198		OU2MW06B	10/10	NA	198	Not Avail	Not Avail	Not Avail	--	NA	--
	Nitrate, as nitrogen	MIS	0.14		0.38		OU2MW05A	2/10	0.11 - 0.32	0.38	Not Avail	5800 N	10000	FL Residential	no	BSL
	Orthophosphate	MIS	0.09		2.5		OU2MW06B	6/10	0.1	2.5	Not Avail	Not Avail	Not Avail	--	NA	--
	Ph	MIS	4.8		8.9		OU2MW06B	10/10	NA	8.9	Not Avail		6.5-8.5	MCL	NA	--
	Plate count, Total (CFU/m)	MIS	2600		73900		OU2MW03A	10/10	NA	73900	Not Avail	NA	NA		NA	--
	Redox potential (MV)	MIS	92.6		466		OU2MW01A	10/10	NA	466	Not Avail	NA	NA		NA	--
	Sulfate	MIS	14		1150		OU2MW01B	7/10	10 - 20	1150	Not Avail	Not Avail	250000s	FL Residential	no	BSL
	Total dissolved solids	MIS	110		27900		OU2MW06B	10/10	NA	27900	Not Avail	Not Avail	500000s	FL Residential	no	BSL
	Total organic carbon	MIS	5.2		809		OU2MW06B	10/10	NA	809	Not Avail	NA	NA		NA	--
	Total suspended solids	MIS	11		4930		OU2MW06B	10/10	NA	4930	Not Avail	NA	--		NA	--
	Turbidity (NTU)	MIS	381		37000		OU2MW06B	6/6	NA	37000	Not Avail	NA	--		NA	--

(1) Maximum concentration used as screening value
(2) The background screening value is twice the average of detected concentrations for inorganic analytes
(3) Risk-Based Concentration Table, USEPA Region III, (Cancer benchmark value = 1E-06, HQ = 0.1) 4-99
(4) The RID for iron is not a proper RID-it is derived based on iron consumption of beer brewed in iron vessels. See the uncertainty section
(5) Results for Cesium-137 and Cobalt-60 were unreasonable and were not included in this risk assessment. The samples were reanalyzed and no Cesium-137 or Cobalt-60 were found
(6) No toxicity information available. These analytes will be discussed qualitatively in the text
(7) Rationale Codes

Selection Reason	Above Screening Levels (ASL)
Deletion Reason	Background Levels (BKG)
	No Toxicity Information (NTX)
	Essential Nutrient (NUT)
	Below Screening Level (BSL)

(8) Florida screening levels for TRPH used for TPH (c8-c40)

Definitions:
NA = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
U = Not Detected
C = Carcinogenic
N = Non-Carcinogenic
MCL = Federal Maximum Contaminant Level
FL GCTL from Technical Report: Development of Groundwater Cleanup Levels for Chapter 62-777, F.A.C. (May 1999)
s = Secondary Standard, presented but not used in COPC selection
40 CFR = 40 Code of Federal Regulations 141

TABLE E2.9B

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PHASE III
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Tap Water/ Vapor (Area 1

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening(1)	Background Value(2)	Screening Toxicity Values(3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection(5)
Organic Volatiles (µg/L)																
71-43-2	**Benzene**	OV	3.4	J	3.4	J	OU2MW03B	1/5	5	3.4	Not Avail	0.32 C	1	FL GCTL	yes	ASL
108-90-7	**Chlorobenzene**	OV	23		23		OU2MW03B	1/5	5	23	Not Avail	11 N	100	FL GCTL	yes	ASL
Organic Semivolatiles (µg/L)																
106-46-7	**1,4-Dichlorbenzene**	OS	6.3	J	6.3	J	OU2MW03B	1/5	10	6.3	Not Avail	0.47 C	75	FL GCTL	yes	ASL
91-20-3	Naphthalene	OS	4.8	J	4.8	J	OU2MW03B	1/5	5	4.8	Not Avail	73 N	20	FL GCTL	no	BSL
Metals (µg/L)																
7429-90-5	Aluminum	M	467		981		OU2MW02A	4/5	172-232	981	4067	3700 N	50s	MCL	no	BKG
7440-38-2	Arsenic	M	2.9		2.9		OU2MW02A	1/5	2.2-2.3	2.9	5	0.045 C	50	FL GCTL	no	BKG
7440-39-3	Barium	M	22.2		91.6		OU2MW03A	3/5	4.9-13.9	91.6	31.4	260 N	2000	FL GCTL	no	BSL
7440-70-2	Calcium	M	11700		41500		OU2MW03B	5/5	NA	41500	36830	1056398 (nutrient)	Not Avail	--	no	NUT
7440-48-4	Cobalt	M	2.4		5.2		OU2MW03A	2/5	1.4-7.3	5.2	NA	220 N	420	FL GCTL	no	BSL
7440-50-8	Copper	M	1.1		1.4		OU2MW03A	2/5	1-4.8	1.4	5.4	150 N	1000s	FL GCTL	no	BSL, BKG
7439-89-6	**Iron**	M	1460		23700		OU2MW03A	5/5	NA	23700	1227	1100 N	300s	MCL	yes	ASL(4)
7439-95-4	Magnesium	M	1280		8570		OU2MW03B	5/5	NA	8570	4560	118807 (nutrient)	Not Avail	--	no	NUT
7439-96-5	**Manganese**	M	12.1		616		OU2MW03A	3/5	10.5-20.7	616	17	73 N	50s	FL GCTL	yes	ASL
7440-02-0	Nickel	M	16.8		16.8		OU2MW03A	1/5	1.3-10.7	16.8	NA	73 N	100	FL GCTL	no	BSL
7440-09-7	Potassium	M	895		2960		OU2MW03B	3/5	1360-2310	2960	5400	297015 (nutrient)	Not Avail	--	no	NUT, BKG
7440-23-5	Sodium	M	11500		34100		OU2MW03B	3/5	9730-10800	34100	18222	395022 (nutrient)	160000	FL GCTL	no	NUT, BSL
7440-62-2	Vanadium	M	6.2		7.4		OU2MW03B	2/5	2.6-11.3	7.4	20.6	26 N	49	FL GCTL	no	BSL
7440-66-6	Zinc	M	126		126		OU2MW03A	1/5	3.6-21.2	126	4	1100 N	5000s	FL GCTL	no	BSL
TPH (mg/L)																
	Tph (c8-c40)	PET	0.676		1.16		OU2MW03A00	2/5	0.5	1.16	NA	NA	5 (8)	FL GCTL	no	BSL
Radionuclides (pCi/L)																
	gross Alpha	RAD	1.2		11.9		OU2MW02A	5/5	NA	11.9	13	Not Avail	15	FL GCTL	no	BSL
	gross Beta	RAD	2.7		8.8		OU2MW03A	5/5	NA	8.8	9.5	Not Avail	50	40 CFR	no	BSL
mg/L except where noted																
	Alkalinty as caco3	MIS	8		31		OU2MW02B	6/6		31	Not Avail	Not Avail	Not Avail	--	NA	--
	Biochemical oxygen demand	MIS	2.2		4.8		OU2MW02A	4/5	25	41.2	NA	NA	Not Avail	--	NA	--
	Chloride	MIS	7.5		60		OU2MW03A	4/5	1	300	Not Avail	Not Avail	250000s	FL GCTL	no	BSL
	Chemical oxygen demand	MIS	25		74.3		OU2MW01B	3/5	20	102	Not Avail	NA	NA	--	NA	--
	Hardness as caco3	MIS	28.7		146		OU2MW03A	6/6	NA	146	Not Avail	Not Avail	Not Avail	--	NA	--
	Orthophosphate	MIS	0.13		1.9		OU2MW01B	4/5	0.1	1.9	Not Avail	Not Avail	Not Avail	--	NA	--
	Ph	MIS	5.6		5.9		OU2MW02B	5/5	NA	5.9	Not Avail		6.5-8.5	MCL	no	BSL
	Plate count, Total (CFU/m)	MIS	4300		73900		OU2MW03A	5/5	NA	73900	Not Avail	NA	NA		NA	--
	Redox potential (MV)	MIS	149		370		OU2MW01B	5/5	NA	370	Not Avail	NA	NA		NA	--
	Sulfate	MIS	14		1150		OU2MW01B	4/5	20	1150	Not Avail	Not Avail	250000s	FL GCTL	no	BSL
	Total dissolved solids	MIS	110		1500		OU2MW02B	6/6	NA	1500	Not Avail	Not Avail	500000s	FL GCTL	no	BSL
	Total organic carbon	MIS	5.2		77.2		OU2MW03A	5/5	NA	77.2	Not Avail	NA	NA		NA	--
	Total suspended solids	MIS	21		1030		OU2MW03B	6/6	NA	1030	Not Avail	NA	--		NA	--
	Turbidity (NTU)	MIS	0.85		10		OU2MW03A	5/5	NA	10	Not Avail	NA	--		NA	--

(1) Maximum concentration used as screening value
(2) The background screening value is twice the average of detected concentrations for inorganic analytes
(3) Risk-Based Concentration Table, USEPA Region III. (Cancer benchmark value = 1E-06; HQ = 0.1) 4-99
(4) The RfD for iron is not a proper RfD-it is derived based on iron consumption of beer brewed in iron vessels. See the uncertainty section
(5) Rationale Codes

Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Background Levels (BKG); Essential Nutrient (NUT); Below Screening Level (BSL)

Definitions:
NA = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
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TABLE E2.10A

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
OPERABLE UNIT 2 - McCOY ANNEX LANDFILL
PHASE I AND PHASE II

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe Future
Medium Groundwater
Exposure Medium Groundwater/Air
Exposure Point Tap Water/ Vapor (Area 2/3

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frrequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[6]
Organic Volatiles (µg/L)																
79-34-5	**1,1,2,2-Tetrachloroethane**	OV	0 92	J	0 92	J	OU2MW20A	1/10	1	0 92	Not Avail	0 053 C	0 5	FL GCTL	yes	ASL
78-93-3	2-Butanone	OV	13 3	J	15 3	J	OU2MW20A	2/2	NA	15 3	Not Avail	190 N	4200	FL GCTL	no	BSL
591-78-6	2-Hexanone	OV	9 7	J	12 9		OU2MW20A	2/10	10	12 9	Not Avail	150 N	280	FL GCTL	no	BSL
108-10-1	4-Methyl-2-pentanone	OV	8 5	J	10 4		OU2MW20A	2/10	10	10 4	Not Avail	14 N	560	FL GCTL	no	BSL
71-43-2	**Benzene**	OV	8 6		9 2		OU2MW11B	2/10	1	9 2	Not Avail	0 32 C	1	FL GCTL	yes	ASL
108-90-7	**Chlorobenzene**	OV	6 6		13		OU2MW12B	2/10	2	13	Not Avail	11 N	100	FL GCTL	yes	ASL
67-66-3	**Chloroform**	OV	2		6 3		OU2MW20B	3/10	2	6 3	Not Avail	0 15 C	100	FL GCTL	yes	ASL
74-82-8	**Methane**	OV	54 9		1150		OU2MW11B	6/10	50	1150	Not Avail	Not Avail	Not Avail	---	yes	NTX[4]
127-18-4	**Tetrachloroethene**	OV	2 8		64 3		OU2MW18B	2/10	2	64 3	Not Avail	1 1 C	3	FL GCTL	yes	ASL
108-88-3	Toluene	OV	1 6	J	8 1		OU2MW11A	3/10	2	8 1	Not Avail	75 N	1000	FL GCTL	no	BSL
156-60-5	Trans-1,2-dichloroethene	OV	7 7		7 7		OU2MW11B	1/10	2	7 7	Not Avail	12 N	100	FL GCTL	no	BSL
79-01-6	**Trichloroethene**	OV	3 4		1250		OU2MW18B	2/10	2	1250	Not Avail	1 6 C	3	FL GCTL	yes	ASL
75-01-4	**Vinyl Chloride**	OV	1 5		20 3		OU2MW18B	3/10	1	20 3	Not Avail	0 04	1	FL GCTL	yes	ASL
1330-20-7	Xylenes, Total	OV	37 2		37 2		OU2MW11B	1/10	6	37 2	Not Avail	1200 N	10000	FL GCTL	no	BSL
Organic Semivolatiles (µg/L)																
156-59-2	**cis-1,2-dichloroethene**	OS	26 5		62		OU2MW18B	2/10	2	62	Not Avail	6 1 N	70	FL GCTL	yes	ASL
84-66-2	Diethyl Phthalate	OS	5	J	5	J	OU2MW18B	1/10	10	5	Not Avail	2900 N	5600	FL GCTL	no	BSL
131-11-3	Dimethyl Phthalate	OS	14 9		14 9		OU2MW20B	1/10	10	14 9	Not Avail	37000 N	70000	FL GCTL	no	BSL
91-20-3	Naphthalene	OS	6 1		6 1		OU2MW12B	1/10	5	6 1	Not Avail	73 N	20	FL GCTL	no	BSL
Metals (µg/L)																
7429-90-5	**Aluminum**	M	5530	J	126000	J	OU2MW11A	8/10	877 - 988	126000	4067	3700 N	200s	FL GCTL	yes	ASL
7440-39-3	**Barium**	M	279	J	1520	J	OU2MW14B	2/10	0 47 - 1360	1520	31 4	260 N	2000	FL GCTL	yes	ASL
7440-70-2	Calcium	M	7950	J	43700	J	OU2MW14B	9/10	6 6	43700	36830	1055398 (nutrient)	Not Avail	---	no	NUT
7440-47-3	**Chromium**	M	43 6	J	163	J	OU2MW11A	4/10	0 96 - 32 2	163	7 8	11 N	100	FL GCTL	yes	ASL
7440-50-8	Copper	M	26 8		97 1		OU2MW11A	3/10	1 2 - 1 4	97 1	5 4	150 N	1300	FL GCTL	no	BSL
7439-89-6	**Iron**	M	1740	J	11600	J	OU2MW11A	8/10	1180 - 2630	11600	1227	1100 N	300	FL GCTL	yes	ASL[5]
7439-92-1	**Lead**	M	24 5	J	164	J	OU2MW11A	6/10	2 1 - 11 7	164	4	15	15	FL GCTL	yes	ASL
7439-95-4	Magnesium	M	5260	J	8440	J	OU2MW11A	3/10	10 - 24	8440	4560	118807 (nutrient)	Not Avail	---	no	NUT
7439-96-5	Manganese	M	19 2	J	60 6	J	OU2MW20B	8/10	0 39 - 15	60 6	17	73 N	50s	FL GCTL	no	BSL
7440-09-7	Potassium	M	24000	J	24000	J	OU2MW11B	1/10	25 - 5000	24000	5400	297016 (nutrient)	Not Avail	---	no	NUT
7782-49-2	**Selenium**	M	31 4		36 7		OU2MW11A	1/10	2 3 - 9	36 7	9 7	18 N	50	FL GCTL	yes	ASL
7440-23-5	Sodium	M	3157 5	J	51900	J	OU2MW11B	9/10	330	51900	18222	395022 (nutrient)	16000	FL GCTL	no	NUT
7440-62-2	**Vanadium**	M	73 6	J	236	J	OU2MW11A	3/10	1 1 - 1 5	236	20 6	26 N	49	FL GCTL	yes	ASL
7440-66-6	Zinc	M	73 2	J	111	J	OU2MW20A	2/10	146 - 213	111	4	1100 N	5000s	FL GCTL	no	BSL
TPH (µg/L)																
	TPH (c8-c40)	PET	0 64		0 718		OU2MW12B	2/10	0 5	0 718		NA	5	FL GCTL	no	BSL

TABLE E2.10A

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
OPERABLE UNIT 2 - McCOY ANNEX LANDFILL
PHASE I AND PHASE II

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frrequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[6]
Radionuclides																
	Gross Alpha	RAD	3 3		68		OU2MW14B	10/10	NA	68	13	Not Avail	15	FL GCTL	yes	NTX[4]
	Gross Beta	RAD	1 6		43 5		OU2MW11B	10/10	NA	43 5	9 5	Not Avail	50	FL GCTL	no	BSL
mg/L except where noted																
	Alkalinity As Caco3	MIS	8 5		61 7		OU2MW20B	9/10	5	61 7	Not Avail	Not Avail	Not Avail	---	NA	
	Biochemical Oxygen Demand	MIS	3 2		39		OU2MW14A	5/10	4 8 - 10	39	Not Avail	Not Avail	Not Avail	---	NA	
	Chemical Oxygen Demand	MIS	25	J	97	J	OU2MW14B	7/10	20	97	Not Avail	Not Avail	NA	---	NA	
	Chloride	MIS	5 5		40		OU2MW11A	9/10	4 5	40	Not Avail	Not Avail	250000s	FL GCTL	no	BSL
	Hardness As Caco3	MIS	19 9		131		OU2MW14B	9/10	4	131	Not Avail	Not Avail	Not Avail	---	NA	
	Nitrate, As Nitrogen	MIS	0 22		0 22		OU2MW20A	1/9	0 11 - 0 25	0 22	Not Avail	5800 N	10000	FL GCTL	no	BSL
	Orthophosphate	MIS	0 12		4 3		OU2MW11B	7/10	0 1	4 3	Not Avail	Not Avail	Not Avail	---	NA	
	Ph	MIS	4 6		6 1		OU2MW20B	10/10	NA	6 1	Not Avail	Not Avail	6 5-8 5	FL GCTL	NA	
	Plate Count, Total (CFU/m)	MIS	0		48200		OU2MW20B	10/10	NA	48200	Not Avail	Not Avail	NA	---	NA	
	Redox Potential (MV)	MIS	90 8		462		OU2MW20A	10/10	NA	462	Not Avail	Not Avail	NA	---	NA	
	Sulfate	MIS	16 1		163		OU2MW14B	7/10	10 - 20	163	Not Avail	Not Avail	250000	FL GCTL	no	BSL
	Total Dissolved Solids	MIS	77		3720		OU2MW11A	10/10	NA	3720	Not Avail	Not Avail	500000	FL GCTL	NA	
	Total Organic Carbon	MIS	4 5		50 6		OU2MW14A	10/10	NA	50 6	Not Avail	Not Avail	NA	---	NA	
	Total Suspended Solids	MIS	10		10000		OU2MW20B	10/10	NA	10000	Not Avail	Not Avail	NA	---	NA	
	Turbidity (NTU)	MIS	9		10500		OU2MW11A	8/8	NA	10500	Not Avail	Not Avail	NA	---	NA	

(1) Maximum concentration used as screening value
(2) The background screening value is twice the average of detected concentrations for inorganic analytes.
(3) Risk-Based Concentration Table, USEPA Region III, (Cancer benchmark value = 1E-06, HQ = 0 1) 10-1-98
(4) No toxicity information availble. These analytes will be discussed qualitatively in the text
(5) The RfD for iron is not a proper Rfd-it is derived based on iron consumption of beer brewed in iron vessels. See the uncertainty section
(6) Rationale Codes

Selection Reason: Above Screening Levels (ASL)

Deletion Reason:
Background Levels (BKG)
Essential Nutrient (NUT)
Below Screening Level (BSL)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable
COPC = Chemical of Potential Concern

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
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MCL = Federal Maximum Contaminant Level
FL Residential from Technical Report Development of Groundwater Cleanup Levels for Chapter 62-777, F A C. (May 1999)
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TABLE E2.10B

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PHASE III
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenarion Timeframe Future
Medium Groundwater
Exposure Medium Groundwater/Air
Exposure Point Tap Water/ Vapor (Area 2/3

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frrequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[6]
Organic Volatiles (µg/L)																
78-93-3	2-Butanone	OV	13.3	J	13.3	J	OU2MW20B	1/2		13.3	Not Avail	190 N	4200	FL GCTL	no	BSL
591-78-6	2-Hexanone	OV	9.7	J	9.7	J	OU2MW20B	1/9		9.7	Not Avail	150 N	280	FL GCTL	no	BSL
108-10-1	4-Methyl-2-pentanone	OV	8.5	J	8.5	J	OU2MW20B	1/9		8.5	Not Avail	14 N	560	FL GCTL	no	BSL
71-43-2	**Benzene**	OV	1.3		1.3		OU2MW12B	1/9	1-50	1.3	Not Avail	0.32 C	1	FL GCTL	yes	ASL
75-15-0	Carbon Disulfide	OV	0.87	J	1.4		OU2MW12B	2/9	1.2-50	1.4	Not Avail	100 N	700	FL GCTL	no	BSL
108-90-7	Chlorobenzene	OV	0.16	J	0.16	J	OU2MW20A	1/9	1.9-50	0.16	Not Avail	11 N	100	FL GCTL	no	BSL
67-66-3	**Chloroform**	OV	6.3		6.3		OU2MW20B	1/9		6.3	Not Avail	0.15 C	5.7	FL GCTL	yes	ASL
74-87-3	Chloromethane	OV	0.19	J	0.19	J	OU2MW20A	1/9	1-50	0.19	Not Avail	2.1 C	2.7	FL GCTL	no	BSL
156-59-2	**cis-1,2-dichloroethene**	OV	0.26	J	66	J	OU2MW18B	2/9	1-2	66	Not Avail	6.1 N	70	FL GCTL	yes	ASL
74-82-8	Methane	OV	54.9		720		OU2MW12B	5/9		720	Not Avail	Not Avail	Not Avail		no	NTX[4]
127-18-4	**Tetrachloroethene**	OV	5.1	J	34	J	OU2MW18B	2/9	1-2	34	Not Avail	1.1 C	3	FL GCTL	yes	ASL
108-88-3	Toluene	OV	5.8		8.1		OU2MW11A	1/9	1-2	8.1	Not Avail	75 N	1000	MCL	no	BSL
79-01-6	**Trichloroethene**	OV	0.71	J	1200	J	OU2MW18B	2/9	1-2	1200	Not Avail	1.6 C	3	FL GCTL	yes	ASL
75-01-4	**Vinyl Chloride**	OV	0.64	J	20	J	OU2MW18B	2/9	1	20	Not Avail	0.04 C	1	FL GCTL	yes	ASL
Organic Semivolatiles (µg/L)																
84-66-2	Diethyl Phthalate	OS	5	J	5	J	OU2MW18B	1/9		5	Not Avail	2900 N	5600	FL GCTL	no	BSL
131-11-3	Dimethyl Phthalate	OS	14.9		14.9		OU2MW20B	1/9		14.9	Not Avail	37000 N	70000	FL GCTL	no	BSL
91-20-3	Naphthalene	OS	6.1		6.1		OU2MW12B	1/9		6.1	Not Avail	73 N	20	FL GCTL	no	BSL
Metals (µg/L)																
7429-90-5	Aluminum	M	251		1740	J	OU2MW11A	8/9	988	1740	4067	3700 N	50	MCL	no	BKG, BSL
7440-38-2	**Arsenic**	M	2.2		5.2		OU2MW18B	2/9	2.2-3.1	5.2	5	0.045 C	50	FL GCTL	yes	ASL
7440-39-3	Barium	M	8.4		103		OU2MW18A	7/9	0.47-12.3	103	31.4	260 N	2000	FL GCTL	no	BSL
7440-43-9	Cadmium	M	0.74		0.74		OU2MW14A	1/9		0.74	5.6	1.8 N	5	FL GCTL	no	BSL
7440-70-2	Calcium	M	2780		13100		OU2MW12B	8/9	6.6	13100	36830	1055398 (nutrient)	Not Avail	-	no	NUT, BKG
7440-50-8	Copper	M	1.7		1.7		OU2MW11A	1/9	1-1.2	1.7	5.4	150 N	1000s	FL GCTL	no	BSL
7439-89-6	**Iron**	M	215	J	2640		OU2MW12B	8/9	1180	2640	1227	1100 N	300s	FL GCTL	yes	ASL[5]
7439-92-1	Lead	M	1.9		1.9		OU2MW14A	1/9	1.2-2.1	1.9	4	15	15	FL GCTL	no	BSL
7439-95-4	Magnesium	M	1140		2910		OU2MW14A	8/9	10	2910	4560	118807 (nutrient)	Not Avail		no	NUT, BKG
7439-96-5	Manganese	M	3.6		23.3		OU2MW12B	4/9	1.7-4.8	23.3	17	73 N	50s	FL GCTL	no	BSL
7440-02-0	Nickel	M	1.9		3		OU2MW14A	2/9	1.3-6.2	3	NA	73 N	100	FL GCTL	no	BSL
7440-09-7	Potassium	M	541	J	1600		OU2MW12B	8/9	25	1600	5400	297016 (nutrient)	Not Avail		no	NUT
7440-23-5	Sodium	M	2080		15600		OU2MW14A	9/9		15600	18222	395022 (nutrient)	16000	FL GCTL	no	NUT
7440-62-2	**Vanadium**	M	3.1		37.1		OU2MW20A	3/9	1.1-7.9	37.1	20.6	26 N	49	FL GCTL	yes	ASL
7440-66-6	Zinc	M	50.8		50.8		OU2MW20B	1/9	4.4-174	50.8	4	1100 N	5000s	FL GCTL	no	BSL
TPH (mg/l)																
	Tph (c8-c40)	PET	0.718		0.718		OU2MW12B	1/9	0.5	0.718		NA	5	FL GCTL	no	BSL

TABLE E2.10B

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PHASE III
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frrequency	Range of Detection Limits	Concentration Used For Screening(1)	Background Value(2)	Screening Toxicity Values(3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection(4)
Radionuclides (pCi/L)																
	gross Alpha	RAD	1.5		12.4		OU2MW18A	9/9	NA	12.4	13	Not Avail	15	FDEP 1998	no	BSL
	gross Beta	RAD	1.8		10.1		OU2MW18A	9/9	NA	10.1	9.5	Not Avail	50	40 CFR	no	BSL
mg/L except where noted																
	Alkalinity as caco3	MIS	8.5		61.7		OU2MW20B	8/9	NA	61.7	Not Avail	Not Avail	Not Avail	---	NA	---
	Biochemical oxygen demand	MIS	3.2		39		OU2MW14A	4/9		39	Not Avail	Not Avail	Not Avail	---	NA	---
	Chemical oxygen demand	MIS	27	J	97	J	OU2MW14B	6/9		97	Not Avail	Not Avail	NA	---	NA	---
	Chloride	MIS	9.5		40		OU2MW11A	8/9		40	Not Avail	Not Avail	250000s	FL GCTL	no	BSL
	Hardness as caco3	MIS	19.9		131		OU2MW14B	9/10	NA	131	Not Avail	Not Avail	Not Avail		NA	---
	Nitrate, as nitrogen	MIS	0.22		0.22		OU2MW20A	1/8	0.01-.11	0.22	Not Avail	5800 N	10000	FL GCTL	no	BSL
	Orthophosphate	MIS	0.12		0.58		OU2MW12B	6/9		0.58	Not Avail	Not Avail	Not Avail	---	NA	---
	Ph	MIS	4.6		6.1		OU2MW20B	9/9	NA	6.1	Not Avail	Not Avail	6.5-8.5	FL GCTL	NA	---
	Plate count, Total (CFM/m)	MIS	2070		48200		OU2MW20B	9/9	NA	48200	Not Avail	Not Avail	NA	---	NA	---
	Redox potential (MV)	MIS	90.8		462		OU2MW20A	9/9	NA	462	Not Avail	Not Avail	NA	---	NA	---
	Sulfate	MIS	16.1		163		OU2MW14B	6/9	NA	163	Not Avail	Not Avail	250000	FL GCTL	no	BSL
	Total dissolved solids	MIS	77		3720		OU2MW11A	10/10	NA	3720	Not Avail	Not Avail	500000	FL GCTL	NA	---
	Total organic carbon	MIS	4.5		50.6		OU2MW14A	9/9	NA	50.6	Not Avail	Not Avail	NA	---	NA	---
	Total suspended solids	MIS	10		10000		OU2MW20B	9/10	4	10000	Not Avail	Not Avail	NA	---	NA	---
	Turbidity (NTU)	MIS	1.1		10		OU2MW20B	6/7	NA	10	Not Avail	Not Avail	NA	---	NA	---

(1) Maximum concentration used as screening value
(2) The background screening value is twice the average of detected concentrations for inorganic analytes
(3) Risk-Based Concentration Table, USEPA Region III, (Cancer benchmark value = 1E-06, HQ = 0.1) 4-99
(4) No toxicity information available These analytes will be discussed qualitatively in the text
(5) The RfD for iron is not a proper RfD-it is derived based on iron consumption of beer brewed in iron vessels See the uncertainty section
(6) Rationale Codes

Selection Reason — Above Screening Levels (ASL)

Deletion Reason — Background Levels (BKG); No Toxicity Information (NTX); Essential Nutrient (NUT); Below Screening Level (BSL)

Florida screening levels for TRPH used for TPH (c8-c40)

Definitions

NA = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
MCL = Federal Maximum Contaminant Level
FL GCTL from Technical Report Development of Groundwater Cleanup Levels for Chapter 62-777, F.A.C. (May 1999)
s = Secondary Standard, presented but not used in COPC selection
40 CFR = 40 Code of Federal Regulations 141

APPENDIX E-3
RAGS D Tables E3.1 through E3.10

TABLE E3.1

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY - SURFACE SOIL - AREA 1
OPERABLE UNIT 2 - MCCOY ANEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil/ Air
Exposure Point: Area 1

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo(a)pyrene (equiv)	µg/kg	1.56E+02	1.60E+02	2.11E+02	J	mg/kg	1.60E-01	L	[1]
Arsenic	mg/kg	1.44E+00	1.75E+00	4.80E+00		mg/kg	2.23E+00	L	[1]

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (L);

(1) Data are assumed to be log-normally distributed.
(2) The 95% UCL exceeded the maximum; therefore the maximum was used.
(3) There were less than 10 samples taken; therefore, the maximum was used.

EPC = exposure point concentration
equiv = equivalent
J = estimated value
UCL = upper confidence level

TABLE E3.2

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY - SURFACE SOIL - AREA 2/3
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/ Future
Medium: Surface Soil
Exposure Medium: Surface Soil/ Air
Exposure Point: Area 2/3

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo[a]pyrene (equiv)	µg/kg	2.59E+02	2.58E+02	1.72E+03	J	mg/kg	1.99E-01	L	[1]
Arsenic	mg/kg	1.25E+00	1.53E+00	4.80E+00		mg/kg	2.06E+00	L	[1]

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (L):

(1) Data are assumed to be log-normally distributed.
(2) The 95% UCL exceeded the maximum; therefore the maximum was used.
(3) There were less than 10 samples taken; therefore, the maximum was used.

EPC = exposure point concentration
equiv = equivalent
J = estimated value
UCL = upper confidence level

TABLE E3.3A

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY - SURFACE WATER
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/ Future
Medium: Surface Water
Exposure Medium: Surface Water/ Air
Exposure Point: Ponds, Canals, etc

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo(a)pyrene (equiv)	µg/l	2.34E+00	3.19E+00	3.41E-01 (*)		µg/l	3.41E-01	max	[2]
Bis(2ethylhexyl)phthalate	µg/l	3.35E+00	3.95E+00	1.03E+01		µg/l	3.68E+00	L	[1]
Aluminum	µg/l	7.04E+03	1.39E+04	8.70E+04		µg/l	5.16E+04	L	[1]
Arsenic	µg/l	4.46E+00	6.40E+00	1.84E+01		µg/l	6.37E+00	L	[1]
Barium	µg/l	6.18E+01	1.02E+02	5.24E+02		µg/l	1.07E+02	L	[1]
Chromium	µg/l	7.87E+00	1.38E+01	7.42E+01		µg/l	1.35E+01	L	[1]
Iron	µg/l	1.52E+04	2.83E+04	1.49E+05		µg/l	7.50E+04	L	[1]
Lead	µg/l	1.35E+01	2.30E+01	1.09E+02		µg/l	3.90E+01	L	[1]
Manganese	µg/l	1.21E+02	2.30E+02	1.36E+03	J	µg/l	4.20E+02	L	[1]
Mercury	µg/l	1.03E-01	1.15E-01	1.80E-01		µg/l	9.90E-02	L	[1]
Vanadium	µg/l	2.22E+01	4.37E+01	2.72E+02		µg/l	7.15E+01	L	[1]

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (L):

(1) Data are assumed to be log-normally distributed.
(2) The 95% UCL exceeded the maximum; therefore the maximum was used.
(3) There were less than 10 samples taken; therefore, the maximum was used.

* Equivalent concentration at only sample location with detection. Because of high detection limits, some calculated benzo(a)pyrene equivalent concentrations calculated for sample locations with no detectable cPAH concentrations were higher.

EPC = exposure point concentration
equiv = equivalent
J = estimated value
UCL = upper confidence level

TABLE E3.3B

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY - SURFACE WATER
PHASE III
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/ Future
Medium: Surface Water
Exposure Medium: Surface Water/ Air
Exposure Point: Ponds, Canals, etc

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Bis(2ethylhexyl)phthalate	µg/l	4.04E+00	4.45E+00	6.60E+00	J	µg/l	4.51E+00	L	[1]
Aluminum	µg/l	1.58E+03	2.85E+03	1.53E+04	J	µg/l	6.53E+03	L	[1]
Arsenic	µg/l	2.13E+00	2.72E+00	7.00E+00		µg/l	2.67E+00	L	[1]
Chromium	µg/l	3.04E+00	4.41E+00	1.45E+01		µg/l	5.10E+00	L	[1]
Iron	µg/l	1.79E+03	2.60E+03	7.09E+03		µg/l	7.09E+03	max	[2]
Lead	µg/l	2.54E+00	3.72E+00	1.66E+01		µg/l	4.54E+00	L	[1]
Manganese	µg/l	2.54E+01	3.86E+01	1.59E+02		µg/l	6.82E+01	L	[1]
Mercury	µg/l	4.92E-02	6.75E-02	1.50E-01		µg/l	1.50E-01	max	[2]

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (L):

(1) Data are assumed to be log-normally distributed.

(2) The 95% UCL exceeded the maximum; therefore the maximum was used.

(3) There were less than 10 samples taken; therefore, the maximum was used.

EPC = exposure point concentration

J = estimated value

TABLE E3.4

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY - SEDIMENTS
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Sediments
Exposure Medium: Sediments
Exposure Point: Ponds, Canals, etc.

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aluminum	mg/kg	2.82E+03	3.87E+03	1.14E+04		mg/kg	5.38E+03	L	[1]
Arsenic	mg/kg	5.59E-01	9.56E-01	5.30E+00		mg/kg	7.29E-01	L	[1]
Iron	mg/kg	6.80E+02	1.07E+03	5.13E+03	J	mg/kg	1.18E+03	L	[1]
Vanadium	mg/kg	5.45E+00	8.02E+00	2.71E+01		mg/kg	1.33E+01	L	[1]

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (L):

(1) Data are assumed to be log-normally distributed

(2) The 95% UCL exceeded the maximum; therefore the maximum was used.

(3) There were less than 10 samples taken; therefore, the maximum was used.

EPC = exposure point concentration
J = estimated value

TABLE E3.5

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY - SURFACE SOIL - AREA 1
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil/ Air
Exposure Point: Area 1

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo(a)pyrene (equiv)	µg/kg	1.56E+02	1.60E+02	2.11E+02	J	mg/kg	1.60E-01	L	[1]
Arsenic	mg/kg	1.44E+00	1.75E+00	4.80E+00		mg/kg	2.23E+00	L	[1]

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (L):

(1) Data are assumed to be log-normally distributed.
(2) The 95% UCL exceeded the maximum; therefore the maximum was used.
(3) There were less than 10 samples taken; therefore, the maximum was used.

EPC = exposure point concentration
equiv = equivalent
J = estimated value
UCL = upper confidence level

TABLE E3.6

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY - SURFACE SOIL - AREA 2/3
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil/ Air
Exposure Point: Area 2/3

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo[a]pyrene (equiv)	µg/kg	2.59E+02	2.58E+02	1.72E+03	J	mg/kg	1.99E-01	L	[1]
Arsenic	mg/kg	1.25E+00	1.53E+00	4.80E+00		mg/kg	2.06E+00	L	[1]

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (L):

(1) Data are assumed to be log-normally distributed.
(2) The 95% UCL exceeded the maximum; therefore the maximum was used.
(3) There were less than 10 samples taken; therefore, the maximum was used.

EPC = exposure point concentration
equiv = equivalent
J = estimated value
UCL = upper confidence level

TABLE E3.7A

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY - SURFACE WATER
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL
PHASE I AND PHASE II

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water/ Air
Exposure Point: Ponds, Canals, etc

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo(a)pyrene (equiv)	µg/l	2.34E+00	3.19E+00	3.41E-01 (*)		µg/l	3.41E-01	max	[2]
Bis(2ethylhexyl)phthalate	µg/l	3.35E+00	3.95E+00	1.03E+01		µg/l	3.68E+00	L	[1]
Aluminum	µg/l	7.04E+03	1.39E+04	8.70E+04		µg/l	5.16E+04	L	[1]
Arsenic	µg/l	4.46E+00	6.40E+00	1.84E+01		µg/l	6.37E+00	L	[1]
Barium	µg/l	6.18E+01	1.02E+02	5.24E+02		µg/l	1.07E+02	L	[1]
Chromium	µg/l	7.87E+00	1.38E+01	7.42E+01		µg/l	1.35E+01	L	[1]
Iron	µg/l	1.52E+04	2.83E+04	1.49E+05		µg/l	7.50E+04	L	[1]
Lead	µg/l	1.35E+01	2.30E+01	1.09E+02		µg/l	3.90E+01	L	[1]
Manganese	µg/l	1.21E+02	2.30E+02	1.36E+03	J	µg/l	4.20E+02	L	[1]
Mercury	µg/l	1.03E-01	1.15E-01	1.80E-01		µg/l	9.90E-02	L	[1]
Vanadium	µg/l	2.22E+01	4.37E+01	2.72E+02		µg/l	7.15E+01	L	[1]

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (L):

(1) Data are assumed to be log-normally distributed.
(2) The 95% UCL exceeded the maximum; therefore the maximum was used.
(3) There were less than 10 samples taken; therefore, the maximum was used.

* Equivalent concentration at only sample location with detection. Because of high detection limits, some calculated benzo(a)pyrene equivalent concentrations calculated for sample locations with no detectable cPAH concentrations were higher.

EPC = exposure point concentration
equiv = equivalent
J = estimated value
UCL = upper confidence level

TABLE E3.7B

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY - SURFACE WATER
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL
PHASE III

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water/ Air
Exposure Point: Ponds, Canals, etc

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Bis(2ethylhexyl)phthalate	µg/l	4.04E+00	4.45E+00	6.60E+00	J	µg/l	4.51E+00	L	[1]
Aluminum	µg/l	1.58E+03	2.85E+03	1.53E+04	J	µg/l	6.53E+03	L	[1]
Arsenic	µg/l	2.13E+00	2.72E+00	7.00E+00		µg/l	2.67E+00	L	[1]
Chromium	µg/l	3.04E+00	4.41E+00	1.45E+01		µg/l	5.10E+00	L	[1]
Iron	µg/l	1.79E+03	2.60E+03	7.09E+03		µg/l	7.09E+03	max	[2]
Lead	µg/l	2.54E+00	3.72E+00	1.66E+01		µg/l	4.54E+00	L	[1]
Manganese	µg/l	2.54E+01	3.86E+01	1.59E+02		µg/l	6.82E+01	L	[1]
Mercury	µg/l	4.92E-02	6.75E-02	1.50E-01		µg/l	1.50E-01	max	[2]

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (L):

(1) Data are assumed to be log-normally distributed.
(2) The 95% UCL exceeded the maximum; therefore the maximum was used.
(3) There were less than 10 samples taken; therefore, the maximum was used.

EPC = exposure point concentration
J = estimated value
UCL = upper confidence level

TABLE E3.8

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY - SEDIMENTS
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Sediments
Exposure Medium: Sediments
Exposure Point: Ponds, Canals, etc.

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aluminum	mg/kg	2.82E+03	3.87E+03	1.14E+04		mg/kg	5.38E+03	L	[1]
Arsenic	mg/kg	5.59E-01	9.56E-01	5.30E+00		mg/kg	7.29E-01	L	[1]
Iron	mg/kg	6.80E+02	1.07E+03	5.13E+03	J	mg/kg	1.18E+03	L	[1]
Vanadium	mg/kg	5.45E+00	8.02E+00	2.71E+01		mg/kg	1.33E+01	L	[1]

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (L):

(1) Data are assumed to be log-normally distributed.
(2) The 95% UCL exceeded the maximum; therefore the maximum was used.
(3) There were less than 10 samples taken; therefore, the maximum was used.

EPC = exposure point concentration
J = estimated value
UCL = upper confidence level

TABLE E3.9A

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY - GROUNDWATER - AREA 1
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Tap Water/ Vapors (Area 1)

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzene	µg/l	1.57E+00	2.88E+00	6.20E+00		µg/l	4.20E+00	L	[1]
Chlorobenzene	µg/l	2.81E+00	6.13E+00	1.91E+01		µg/l	5.22E+00	L	[1]
Vinyl Chloride	µg/l	9.30E-01	1.72E+00	4.80E+00		µg/l	1.49E+00	L	[1]
1,4-Dichlorobenzene	µg/l	5.13E+00	5.37E+00	6.30E+00	J	µg/l	5.66E+00	L	[1]
Aluminum	µg/l	4.66E+04	7.31E+04	1.52E+05	J	µg/l	1.52E+05	max	[2]
Arsenic	µg/l	7.31E+00	1.38E+01	3.86E+01		µg/l	2.03E+01	L	[1]
Barium	µg/l	8.31E+02	1.61E+03	3.91E+03	J	µg/l	3.91E+03	max	[2]
Chromium	µg/l	6.75E+01	1.08E+02	2.23E+02	J	µg/l	2.23E+02	max	[2]
Lead	µg/l	4.91E+01	8.29E+01	1.97E+02	J	µg/l	1.97E+02	max	[2]
Iron	µg/l	9.37E+03	1.42E+04	2.64E+04	J	µg/l	2.64E+04	max	[2]
Manganese	µg/l	4.82E+01	8.00E+01	1.94E+02	J	µg/l	1.94E+02	max	[2]
Selenium	µg/l	9.14E+00	1.76E+01	5.53E+01	J	µg/l	4.11E+01	L	[1]
Vanadium	µg/l	9.02E+01	1.33E+02	2.22E+02	J	µg/l	2.22E+02	max	[2]

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (L):

(1) Data are assumed to be log-normally distributed.
(2) The 95% UCL exceeded the maximum; therefore the maximum was used.
(3) There were less than 10 samples taken; therefore, the maximum was used.

EPC = exposure point concentration
J = estimated value
UCL = upper confidence level

TABLE E3.9B

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY - GROUNDWATER - AREA 1
PHASE III
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Tap Water/ Vapors (Area 1)

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzene	µg/l	1.48E+00	2.80E+00	3.40E+00	J	µg/l	3.40E+00	max	[3]
Chlorobenzene	µg/l	5.70E+00	1.49E+01	2.30E+01		µg/l	2.30E+01	max	[3]
1,4-dichlorobenzene	µg/l	5.26E+00	5.37E+00	6.30E+00		µg/l	6.30E+00	max	[3]
Iron	µg/l	9.67E+03	1.88E+04	2.37E+04		µg/l	2.37E+04	max	[3]
Manganese	µg/l	1.36E+02	3.92E+02	6.16E+02		µg/l	6.16E+02	max	[3]

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (L);

(1) Data are assumed to be log-normally distributed
(2) The 95% UCL exceeded the maximum; therefore the maximum was used.
(3) There were less than 10 samples taken; therefore, the maximum was used.

EPC = exposure point concentration
equiv = equivalent
J = estimated value
UCL = upper confidence level

TABLE E3.10A

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY - GROUNDWATER -AREA 2/3
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Tap Water/ Vapors (Area 2/3)

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1,2,2- Tetrachloroethane	µg/l	5.42E-01	6.19E-01	9.20E-01	J	µg/l	6.11E-01	L	[1]
Benzene	µg/l	2.18E+00	4.23E+00	9.20E+00		µg/l	7.85E+00	L	[1]
Chlorobenzene	µg/l	2.76E+00	5.08E+00	1.30E+01		µg/l	6.38E+00	L	[1]
Chloroform	µg/l	1.74E+00	2.70E+00	6.30E+00		µg/l	2.71E+00	L	[1]
Tetrachloroethene	µg/l	7.51E+00	1.91E+01	6.43E+01		µg/l	2.14E+01	L	[1]
Trichloroethene	µg/l	1.26E+02	3.55E+02	1.25E+03		µg/l	1.25E+03	max	[2]
Vinyl Chloride	µg/l	4.35E+00	8.91E+00	2.03E+01		µg/l	2.03E+01	max	[2]
cis-1,2-dichloroethene	µg/l	9.65E+00	2.13E+01	6.20E+01		µg/l	6.20E+01	max	[2]
Aluminum	µg/l	3.63E+04	6.09E+04	1.26E+05		µg/l	1.25E+05	max	[2]
Barium	µg/l	3.25E+02	5.93E+02	1.52E+03		µg/l	1.52E+03	max	[2]
Chromium	µg/l	4.40E+01	7.61E+01	1.63E+02	J	µg/l	1.62E+02	max	[2]
Iron	µg/l	4.97E+03	7.23E+03	1.16E+04	J	µg/l	1.16E+04	max	[2]
Lead	µg/l	3.86E+01	6.69E+01	1.61E+02	J	µg/l	1.61E+02	max	[2]
Selenium	µg/l	5.51E+00	1.14E+01	3.67E+01	J	µg/l	1.48E+01	L	[1]
Vanadium	µg/l	4.13E+01	8.50E+01	2.36E+02	J	µg/l	2.25E+02	max	[2]

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (L):

(1) Data are assumed to be log-normally distributed.
(2) The 95% UCL exceeded the maximum; therefore the maximum was used.
(3) There were less than 10 samples taken; therefore, the maximum was used.

EPC = exposure point concentration
J = estimated value
UCL = upper confidence level

TABLE E3.10B

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY - GROUNDWATER -AREA 2/3
PHASE III
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Tap Water/ Vapors (Area 2/3)

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzene	µg/l	3.31E+00	8.36E+00	1.30E+00		µg/l	1.30E+00	max	[3]
Tetrachloroethene	µg/l	5.07E+00	1.18E+01	3.40E+01	J	µg/l	3.40E+01	max	[3]
Trichloroethene	µg/l	1.34E+02	3.82E+02	1.20E+03	J	µg/l	1.20E+03	max	[3]
Vinyl Chloride	µg/l	2.68E+00	6.71E+00	2.00E+01	J	µg/l	2.00E+01	max	[3]
cis-1,2-dichloroethene	µg/l	8.08E+00	2.15E+01	6.60E+01	J	µg/l	6.60E+01	max	[3]
Arsenic	µg/l	1.74E+00	2.58E+00	5.20E+00		µg/l	5.20E+00	max	[3]
Iron	µg/l	1.39E+03	1.92E+03	2.64E+03	J	µg/l	2.64E+03	max	[3]
Vanadium	µg/l	6.16E+00	1.34E+01	3.71E+01		µg/l	3.71E+01	max	[3]

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (L);

[1] Data are assumed to be log-normally distributed
[2] The 95% UCL exceeded the maximum; therefore the maximum was used.
[3] There were less than 10 samples taken; therefore, the maximum was used.

EPC = exposure point concentration
J = estimated value
UCL = upper confidence level

APPENDIX E-4
RAGS D Tables E4.1 through E4.17

TABLE E4.1

VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF SITE MAINTENANCE WORKERS TO SURFACE SOIL
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil[1]
Exposure Medium: Surface Soil/Air
Exposure Point: Entire Site (Area 1 and Area 2/3)
Receptor Population: Site Maintenance Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Ingestion CDI[2] (mg/kg-day) =
	IR	Ingestion Rate of Soil	mg/day	50	USEPA 1991	$\frac{Csoil \times IR \times FI \times EF \times ED \times CF}{BW \times AT}$
	FI	Fraction ingested from contaminated source	unitless	1.0	USEPA Region 4 1995	USEPA, December 1989
	EF	Exposure Frequency	days/year	250	USEPA Region 4 1995	
	ED	Exposure Duration	years	25	USEPA Region 4 1995	
	CF	Conversion Factor	kg/mg	1.0E-06	--	
	BW	Body Weight	kg	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	USEPA 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Dermal CDI[2] (mg/kg-day) =
	CF	Conversion Factor	kg/mg	1.0E-06	--	$\frac{Csoil \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$
	SA	Skin Surface Area Available for Contact	cm^{2}/day	5,800	USEPA 1992	
	AF	Soil to Skin Adherence Factor	mg/cm^2	1.0	USEPA Region 4 1995	USEPA, December 1989
	ABS	Absorption Factor	unitless	1% (organics) 0.1% (inorganics)	USEPA Region 4 1995	
	EF	Exposure Frequency	days/year	250	USEPA Region 4 1995	
	ED	Exposure Duration	years	25	USEPA Region 4 1995	
	BW	Body Weight	kg	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	USEPA 1989	
Inhalation	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Inhalation CDI[2] (mg/kg/day) =
	Cair	Chemical Concentration in Air	mg/m^3	calculated		$\frac{Cair \times IR \times EF \times ED}{BW \times AT}$
	IR	Inhalation Rate of Air	m^3/day	20	USEPA Region 4 1995	
	EF	Exposure Frequency	days/year	250	USEPA Region 4 1995	Cair = Csoil x (1/PEF + 1/VF)
	ED	Exposure Duration	years	25	USEPA Region 4 1995	
	BW	Body Weight	kg	70	USEPA, March 1991	USEPA, December 1989
	PEF	Particulate Emission Factor	m^3/kg	1.24E+09	Focused RA	
	VF	Volatization Factor	mg^3/kg	chemical specific		
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	USEPA 1989	

1 Surface is defined as soil collected from depths of 0 to 1 foot bgs.
2 CDI = Chronic Daily Intake

Ingestion RME - Cancer	1.75E-07
Ingestion RME - Noncancer	4.89E-07
Dermal RME - Cancer	2.03E-05
Dermal RME - Noncancer	5.68E-05
Inhalation RME - Cancer	6.99E-02
Inahalation RME - Noncancer	1.96E-01

TABLE E4.2A

VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF
ADULT GOLFERS TO SURFACE SOIL
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil/Air
Exposure Point: Area 1
Receptor Population: Golfer
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Ingestion CDI[2] (mg/kg-day) =
	IR	Ingestion Rate of Soil	mg/day	50	Assumption: Focused RA	$\frac{Csoil \times IR \times Fi \times EF \times ED \times CF}{BW \times AT}$
	FI	Fraction ingested from Contaminated Source	unitless	1.0	USEPA Region 4 1995	
	EF	Exposure Frequency	days/year	100	Assumption: Focused RA	USEPA, December 1989
	ED	Exposure Duration	years	20	Assumption: Focused RA	
	CF	Conversion Factor	kg/mg	1.0E-06		
	BW	Body Weight	kg	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA1989	
	AT-N	Averaging Time (Non-Cancer)	days	7,300	USEPA 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Dermal CDI[2] (mg/kg-day) =
	CF	Conversion Factor	kg/mg	1.0E-06	--	$\frac{Csoil \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$
	SA	Skin Surface Area Available for contact	cm^2 day	5,800	USEPA 1992	
	AF	Soil to Skin Adherence Factor	mg/cm^2-event	1.0	USEPA Region 4 1995	USEPA, December 1989
	ABS	Absorption Factor	unitless	1% (organics)	USEPA Region 4 1995	
				0.1% (inorganics)		
	EF	Exposure Frequency	days/year	100	Assumption: Focused RA	
	ED	Exposure Duration	years	20	Assumption: Focused RA	
	BW	Body Weight	kg	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	7,300	USEPA 1989	
Inhalation	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Inhalation CDI[2] (mg/kg/day) =
	Cair	Chemical Concentration in Air	mg/m^3	calculated		$\frac{Cair \times IR \times ET \times EF \times ED}{BW \times AT}$
	IR	Inhalation Rate of Air	m^3/hr	0.833	USEPA Region 4 1995	
	EF	Exposure Frequency	days/year	100	Assumption: Focused RA	Cair = Csoil x (1/PEF + 1/VF)
	ED	Exposure Duration	years	20	Assumption: Focused RA	
	ET	Exposure Time	hours/day	5	Assumption: Focused RA	
	BW	Body Weight	kg	70	EPA 1989	USEPA, December 1989
	PEF	Particulate Emission Factor	m^3/kg	1.24E+09	Focused RA	
	VF	Volatization Factor	mg^3/kg	chemical specific		
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	7,300	USEPA 1989	

1. Surface is defined as soil collected from depths of 0 to 1 foot bgs.
2. CDI = Chronic Daily Intake

Ingestion RME - Cancer	5.59E-08
Ingestion RME - Noncancer	1.96E-07
Dermal RME - Cancer	6.49E-06
Dermal RME - Noncancer	2.27E-05
Inhalation RME - Cancer	4.66E-03
Inahalation RME - Noncancer	1.63E-02

TABLE E4.2B

VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF ADULT RECREATORS TO SURFACE SOIL OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil/Air
Exposure Point: Area 2/3
Receptor Population: Recreator
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Ingestion CDI[2] (mg/kg-day) = Csoil x IR x Fi x EF x ED x CF / BW x AT; USEPA, December 1989
	IR	Ingestion Rate of Soil	mg/day	100	USEPA 1989	
	FI	Fraction ingested from Contaminated Source	unitless	0.5	Assumption	
	EF	Exposure Frequency	days/year	75	RAIS webpage	
	ED	Exposure Duration	years	20	Assumption	
	CF	Conversion Factor	kg/mg	1.0E-06		
	BW	Body Weight	kg	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA1989	
	AT-N	Averaging Time (Non-Cancer)	days	7,300	USEPA 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Dermal CDI[2] (mg/kg-day) = Csoil x CF x SA x AF x ABS x EF x ED / BW x AT; USEPA, December 1989
	CF	Conversion Factor	kg/mg	1.0E-06	--	
	SA	Skin Surface Area Available for contact	cm^2/ day	5,800	USEPA 1992	
	AF	Soil to Skin Adherence Factor	mg/cm^2-event	0.08	RAGS E 2000, adult soccer	
	ABS	Absorption Factor	unitless	1% (organics) 0.1% (inorganics)	USEPA Region 4 1995	
	EF	Exposure Frequency	days/year	75	RAIS webpage	
	ED	Exposure Duration	years	20	Assumption	
	BW	Body Weight	kg	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	7,300	USEPA 1989	
Inhalation	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Inhalation CDI[2] (mg/kg/day) = Cair x IR x ET x EF x ED / BW x AT; Cair = Csoil x (1/PEF + 1/VF); USEPA, December 1989
	Cair	Chemical Concentration in Air	mg/m^3	calculated		
	IR	Inhalation Rate of Air	m^3/hr	2.5	USEPA Region 4 1995, worker	
	EF	Exposure Frequency	days/year	75	RAIS webpage	
	ED	Exposure Duration	years	20	Assumption	
	ET	Exposure Time	hours/day	5	Assumption	
	BW	Body Weight	kg	70	EPA 1989	
	PEF	Particulate Emission Factor	m^3/kg	1.24E+09	Focused RA	
	VF	Volatization Factor	mg^3/kg	chemical specific		
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	7,300	USEPA 1989	

1 Surface is defined as soil collected from depths of 0 to 1 foot bgs.

2 CDI = Chronic Daily Intake

Ingestion RME - Cancer	4.19E-08
Ingestion RME - Noncancer	1.47E-07
Dermal RME - Cancer	3.89E-07
Dermal RME - Noncancer	1.36E-06
Inhalation RME - Cancer	1.05E-02
Inahalation RME - Noncancer	3.67E-02

TABLE 4.3A

VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF
CHILD RECREATORS TO SURFACE SOIL
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil/Air
Exposure Point: Area 1
Receptor Population: Golfer
Receptor Age: Adolescent

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Ingestion CDI[2] (mg/kg-day) =
	IR	Ingestion Rate of Soil	mg/day	50	Focused RA	Csoil x IR x Fi x EF x ED x CF
	FI	Fraction ingested from Contaminated Source	unitless	1.0	USEPA Region 4 1995	BW x AT
	EF	Exposure Frequency	days/year	100	Assumption: Focused RA	USEPA 1989
	ED	Exposure Duration	years	10	Assumption: Focused RA	
	CF	Conversion Factor	kg/mg	1.0E-06		
	BW	Body Weight	kg	45	USEPA Region 4 1995	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Dermal CDI[2] (mg/kg-day) =
	CF	Conversion Factor	kg/mg	1.0E-06	--	Csoil x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area Available for Contact	cm^2/day	4,540	Focused RA	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	1.0	USEPA Region 4 1995	USEPA 1989
	ABS	Absorption Factor	unitless	1% (organics) 0.1% (inorganics)	USEPA Region 4 1995	
	EF	Exposure Frequency	days/year	100	Assumption: Focused RA	
	ED	Exposure Duration	years	10	Assumption: Focused RA	
	BW	Body Weight	kg	45	USEPA Region 4 1995	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA 1989	
Inhalation	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Inhalation CDI[2] (mg/kg-day) =
	Cair	Chemical Concentration in Air	mg/m^3	calculated		Cair x IR x ET x EF x ED
	IR	Inhalation Rate of Air	m^3/day	0.833	USEPA Region 4 1995	BW x AT
	EF	Exposure Frequency	days/year	100	Assumption: Focused RA	Cair = Csoil x (1/PEF + 1/VF)
	ED	Exposure Duration	years	10	Assumption: Focused RA	
	ET	Exposure Time	hours/day	5	Assumption: Focused RA	
	BW	Body Weight	kg	45	USEPA Region 4 1995	USEPA 1989
	PEF	Particulate Emission Factor	m^3/kg	1.24E+09	Focused RA	
	VF	Volatization Factor	mg^3/kg	chemical specific		
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA 1989	

1 Surface is defined as soil collected from depths of 0 to 1 foot bgs.
2 CDI = Chronic Daily Intake

Ingestion RME - Cancer	4.35E-08
Ingestion RME - Noncancer	3.04E-07
Dermal RME - Cancer	3.95E-06
Dermal RME - Noncancer	2.76E-05
Inhalation RME - Cancer	3.62E-03
Inhalation RME - Noncancer	2.54E-02

TABLE 4.3B

VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF CHILD RECREATORS TO SURFACE SOIL OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil/Air
Exposure Point: Area 2/3
Receptor Population: Recreator
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Ingestion CDI[2] (mg/kg-day) =
	IR	Ingestion Rate of Soil	mg/day	200	Focused RA	Csoil x IR x Fi x EF x ED x CF / BW x AT
	FI	Fraction ingested from Contaminated Source	unitless	0.5	Assumption	USEPA 1989
	EF	Exposure Frequency	days/year	75	RAIS webpage	
	ED	Exposure Duration	years	6	USEPA Region 4 1995	
	CF	Conversion Factor	kg/mg	1.0E-06		
	BW	Body Weight	kg	15	USEPA Region 4 1995	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Dermal CDI[2] (mg/kg-day) =
	CF	Conversion Factor	kg/mg	1.0E-06	--	Csoil x CF x SA x AF x ABS x EF x ED / BW x AT
	SA	Skin Surface Area Available for Contact	cm^2/day	2,800	USEPA 1992	
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.03	RAGS E 2000, child soccer	USEPA 1989
	ABS	Absorption Factor	unitless	1% (organics) 0.1% (inorganics)	USEPA Region 4 1995	
	EF	Exposure Frequency	days/year	75	RAIS webpage	
	ED	Exposure Duration	years	6	USEPA Region 4 1995	
	BW	Body Weight	kg	15	USEPA Region 4 1995	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA 1989	
Inhalation	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Inhalation CDI[2] (mg/kg-day) =
	Cair	Chemical Concentration in Air	mg/m^3	calculated		Cair x IR x ET x EF x ED / BW x AT
	IR	Inhalation Rate of Air	m^3/day	15	USEPA Region 4 1995, child	Cair = Csoil x (1/PEF + 1/VF)
	EF	Exposure Frequency	days/year	75	RAIS webpage	
	ED	Exposure Duration	years	6	USEPA Region 4 1995	
	ET	Exposure Time	hours/day	5	Assumption	
	BW	Body Weight	kg	15	USEPA Region 4 1995	USEPA 1989
	PEF	Particulate Emission Factor	m^3/kg	1.24E+09	Focused RA	
	VF	Volatization Factor	mg^3/kg	chemical specific		
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA 1989	

1 Surface is defined as soil collected from depths of 0 to 1 foot bgs.

2 CDI = Chronic Daily Intake

Ingestion RME - Cancer	1.17E-07
Ingestion RME - Noncancer	1.37E-06
Dermal RME - Cancer	9.86E-08
Dermal RME - Noncancer	1.15E-06
Inhalation RME - Cancer	8.81E-02
Inahalation RME - Noncancer	1.03E+00

TABLE E4.4

VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF
SITE MAINTENANCE WORKER TO SURFACE WATER
PHASE I AND PHASE II
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water/Air
Exposure Point: Ponds, Canals, etc.
Receptor Population: Site Maintenance Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cwater	Chemical Concentration in Surface Water	ug/l	See Table 3	See Table 3	Ingestion CDI[1] (mg/kg-day) =
	CF	Conversion Factor	mg/ug	1.0E-03	--	
	ET	Exposure Time	hours/event	1	Assumption	Cwater x EF x ET x CR x ED x CF / BW x AT
	CR	Contact Rate	l/hr	0.01	USEPA Region 4 1995	
	EF	Exposure Frequency	events/year	50	Assumption	
	ED	Exposure Duration	years	25	USEPA Region 4 1995	
	BW	Body Weight	kg	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	USEPA 1989	
Dermal	Cwater	Chemical Concentration in Surface Water	ug/l	See Table 3	See Table 3	DAD[2] (mg/kg-day) =
	DAevent	Absorbed Dose per Event	mg/cm^2-event	chemical-specific	USEPA 1992	
	EV	Event Frequency	events/day	1	Assumption	DAevent X EV X ED x EF X A / BW x AT
	ED	Exposure Duration	years	25	USEPA Region 4 1995	
	EF	Exposure Frequency	days/year	50	Assumption	
	A	Skin Surface Available for Contact	cm^2	10,000	USEPA 1992 [3]	
	t_{event}	Duration of Event	hours/event	1.0	Assumption	DAevent as defined in USEPA 2000
	Kp	Permeability Coefficient from Water	cm/hour	chemical-specific	USEPA 1992	
	τ	Lag Time	hours	chemical-specific	USEPA 1992	
	t^*	Time to Reach Steady State	hours	chemical-specific	USEPA 1992	
	B	Bunge Model Constant	dimensionless	chemical-specific	USEPA 1992	
	BW	Body Weight	kg	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	USEPA 1989	

(1) CDI = Chronic Daily Intake

(2) DAD = Dermally Absorbed Dose

(3) Dermal Exposure Assessment: Principles and Applications gives 20,000 cm^2 mean total surface area for adult; approximately 50% of total surface area assumed exposed by wading

Ingestion RME - Cancer	6.99E-09
Ingestion RME - Noncancer	1.96E-08
Dermal RME - Cancer	6.99E+00
Dermal RME - Noncancer	1.96E+01

CALCULATION OF DAevent FOR DERMAL CONTACT WITH SURFACE WATER

	org/inorg	log Kow	MW	Kp [cm/hr]	Kp,max [cm/hr]	Cw [ug/l]	Cw [mg/L]	Cw [mg/cm^3]	tevent [hr/event]	τevent [hr]	B	c	b	t* [hr]	FA	DAevent org [mg/cm^2-event]	DAevent inorg [mg/cm^2-event]
Aluminum	i			1.00E-03	NA	6.53E+03	6.5275217	0.00652752	1.00E+00								6.53E-06
Arsenic	i			1.00E-03	NA	2.67E+00	0.002673	2.673E-06	1.00E+00								2.67E-09
Bis(2-ethylhexyl)phthalate	o	5.11	391	2.72E-02	NA	4.51E+00	0.0045069	4.5069E-06	1.00E+00	#######	2.07E-01	4.83E-01	4.44E-01	#######	8.00E-01	1.09E-06	
Chromium	i			1.00E-03	NA	5.10E+00	0.0051039	5.10E-06	1.00E+00								5.10E-09
Iron	i			1.00E-03	NA	7.09E+03	7.09	7.09E-03	1.00E+00								7.09E-06
Lead	i			1.00E-03	NA	4.54E+00	0.004538	4.54E-06	1.00E+00								4.54E-09
Manganese	i			1.00E-03	NA	6.82E+01	0.0682452	6.82E-05	1.00E+00								6.82E-08
Mercury	i			1.00E-03	NA	1.50E-01	0.00015	1.50E-07	1.00E+00								1.50E-10

Reference: USEPA. 2000. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, (Part E, *Supplemental Guidance for Dermal Risk Assessment), Interim Guidance.*

CALCULATION OF DAevent FOR DERMAL CONTACT WITH SURFACE WATER

	org/ inorg	log Kow	MW	Kp [cm/hr]	Kp,max [cm/hr]	Cw [ug/l]	Cw [mg/L]	Cw [mg/cm^3]	tevent [hr/event]	τevent [hr]	B	c	b	t* [hr]	FA	DAevent org [mg/cm^2-event]	DAevent inorg [mg/cm^2-event]
Aluminum	i			1.00E-03	NA	5.16E+04	51.605547	0.05160555	1.00E+00								5.16E-05
Arsenic	i			1.00E-03	NA	6.37E+00	0.0063741	6.3741E-06	1.00E+00								6.37E-09
Barium	i			1.00E-03	NA	1.07E+02	0.1074175	0.00010742	1.00E+00								1.07E-07
Benzo(a)pyrene (equiv)	o	6.1	250	7.70E-01	1.70E-01	3.41E-01	0.0003405	3.405E-07	1.00E+00	2.64E+00	1.03E+00	1.20E+00	1.44E+00	1.02E+01	1.00E+00	2.60E-07	
Bis(2-ethylhexyl)phthala	o	5.11	391	2.72E-02	NA	3.68E+00	0.0036794	3.6794E-06	1.00E+00	1.62E+01	2.07E-01	4.83E-01	4.44E-01	3.90E+01	8.00E-01	8.91E-07	
Chromium	i			1.00E-03	NA	1.35E+01	0.0135082	1.35E-05	1.00E+00								1.35E-08
Iron	i			1.00E-03	NA	7.50E+04	74.971138	7.50E-02	1.00E+00								7.50E-05
Lead	i			1.00E-03	NA	3.90E+01	0.0390278	3.90E-05	1.00E+00								3.90E-08
Manganese	i			1.00E-03	NA	4.20E+02	0.4196882	4.20E-04	1.00E+00								4.20E-07
Mercury	i			1.00E-03	NA	9.90E-02	9.9E-05	9.90E-08	1.00E+00								9.90E-11
Vanadium	i			1.00E-03	NA	7.15E+01	0.0715274	7.15E-05	1.00E+00								7.15E-08

Reference: USEPA. 2000. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, (Part E, *Supplemental Guidance for Dermal Risk Assessment), Interim Guidance.*

TABLE E4.5

VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF ADULT RESIDENT TO SURFACE WATER
PHASE I AND PHASE II

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water/Air
Exposure Point: Ponds, Canals, etc.
Receptor Population: Trespasser
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cwater	Chemical Concentration in Surface Wate	ug/l	See Table 3	See Table 3	Ingestion CDI[1] (mg/kg-day) =
	CF	Conversion Factor	mg/ug	1.0E-03	--	
	ET	Exposure Time	hours/event	2.6	USEPA 1989	$\frac{Cwater \times CF \times EF \times ET \times CR \times ED}{BW \times AT}$
	CR	Contact Rate	l/hr	0.01	USEPA Region 4 1995	
	EF	Exposure Frequency	events/year	45	USEPA Region 4 1995	
	ED	Exposure Duration	years	20	Assumption	
	BW	Body Weight	kg	70	USEPA 1989	USEPA, December 1989
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	7,300	USEPA 1989	
Dermal	Cwater	Chemical Concentration in Surface Water	ug/l	See Table 3	See Table 3	DAD[2] (mg/kg-day) =
	DAevent	Absorbed Dose per Event	mg/cm^2-event	chemical-specific	USEPA 1992	
	EV	Event Frequency	events/day	1	Assumption	$\frac{DAevent \times EV \times ED \times EF \times A}{BW \times AT}$
	ED	Exposure Duration	years	20	Assumption	
	EF	Exposure Frequency	days/year	45	USEPA Region 4 1995	
	A	Skin Surface Available for Contact	cm^2	10,000	USEPA 1992 (3)	DAevent as defined in USEPA 2000
	t_{event}	Duration of Event	hours/event	2.6	USEPA 1989	
	Kp	Permeability Coefficient from Water	cm/hour	chemical-specific	USEPA 1992	
	τ	Lag Time	hours	chemical-specific	USEPA 1992	
	t^*	Time to Reach Steady State	hours	chemical-specific	USEPA 1992	
	B	Bunge Model Constant	dimensionless	chemical-specific	USEPA 1992	
	BW	Body Weight	kg	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	7,300	USEPA 1989	

(1) CDI = Chronic Daily Intake

(2) DAD = Dermally Absorbed Dose

(3) Dermal Exposure Assessment: Principles and Applications gives 20,000 cm^2 mean total surface area for adult; approximately 50% of total surface area assumed exposed by wading

Ingestion RME - Cancer	1.31E-08
Ingestion RME - Noncancer	4.58E-08
Dermal RME - Cancer	5.03E+00
Dermal RME - Noncancer	1.76E+01

CALCULATION OF DAevent FOR DERMAL CONTACT WITH SURFACE WATER

	org/inorg	log Kow	MW	Kp [cm/hr]	Kp,max [cm/hr]	Cw [ug/l]	Cw [mg/L]	Cw [mg/cm^3]	tevent [hr/event]	τevent [hr]	B	c	b	t* [hr]	FA	DAevent org [mg/cm^2-event]	DAevent inorg [mg/cm^2-event]
Aluminum	i			1.00E-03	NA	6.53E+03	6.5275217	0.00652752	2.60E+00								1.70E-05
Arsenic	i			1.00E-03	NA	2.67E+00	0.002673	2.673E-06	2.60E+00								6.95E-09
Bis(2-ethylhexyl)phthalate	o	5.11	391	2.72E-02	NA	4.51E+00	0.0045069	4.5069E-06	2.60E+00	1.62E+01	2.07E-01	4.83E-01	4.44E-01	3.90E+01	8.00E-01	1.76E-06	
Chromium	i			1.00E-03	NA	5.10E+00	0.0051039	5.10E-06	2.60E+00								1.33E-08
Iron	i			1.00E-03	NA	7.09E+03	7.09	7.09E-03	2.60E+00								1.84E-05
Lead	i			1.00E-03	NA	4.54E+00	0.004538	4.54E-06	2.60E+00								1.18E-08
Manganese	i			1.00E-03	NA	6.82E+01	0.0682452	6.82E-05	2.60E+00								1.77E-07
Mercury	i			1.00E-03	NA	1.50E-01	0.00015	1.50E-07	2.60E+00								3.90E-10

Reference: USEPA. 2000. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, (Part E, *Supplemental Guidance for Dermal Risk Assessment), Interim Guidance.*

CALCULATION OF DAevent FOR DERMAL CONTACT WITH SURFACE WATER

	org/inorg	log Kow	MW	Kp [cm/hr]	Kp,max [cm/hr]	Cw [ug/l]	Cw [mg/L]	Cw [mg/cm^3]	tevent [hr/event]	τevent [hr]	B	c	b	t* [hr]	FA	DAevent org [mg/cm^2-event]	DAevent inorg [mg/cm^2-event]
Aluminum	i			1.00E-03	NA	5.16E+04	51.6055472	0.05160555	2.60E+00								1.34E-04
Arsenic	i			1.00E-03	NA	6.37E+00	0.0063741	6.3741E-06	2.60E+00								1.66E-08
Barium	i			1.00E-03	NA	1.07E+02	0.1074175	0.00010742	2.60E+00								2.79E-07
Benzo(a)pyrene (equ	o	6.1	250	7.20E-01	1.70E-01	3.41E-01	0.0003405	3.405E-07	2.60E+00	2.64E+00	1.03E+00	1.20E+00	1.44E+00	1.02E+01	1.00E+00	4.19E-07	
Bis(2-ethylhexyl)phth	o	5.11	391	2.72E-02	NA	3.68E+00	0.0036794	3.6794E-06	2.60E+00	1.62E+01	2.07E-01	4.83E-01	4.44E-01	3.90E+01	8.00E-01	1.44E-06	
Chromium	i			1.00E-03	NA	1.35E+01	0.0135082	1.35E-05	2.60E+00								3.51E-08
Iron	i			1.00E-03	NA	7.50E+04	74.9711382	7.50E-02	2.60E+00								1.95E-04
Lead	i			1.00E-03	NA	3.90E+01	0.0390278	3.90E-05	2.60E+00								1.01E-07
Manganese	i			1.00E-03	NA	4.20E+02	0.4196882	4.20E-04	2.60E+00								1.09E-06
Mercury	i			1.00E-03	NA	9.90E-02	9.9E-05	9.90E-08	2.60E+00								2.57E-10
Vanadium	i			1.00E-03	NA	7.15E+01	0.0715274	7.15E-05	2.60E+00								1.86E-07

Reference: USEPA. 2000. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, (Part E, *Supplemental Guidance for Dermal Risk Assessment), Interim Guidance.*

TABLE E4.6

VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF
ADOLESCENT RESIDENT TO SURFACE WATER
PHASE I AND PHASE II

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water/Air
Exposure Point: Ponds, Canals, etc.
Receptor Population: Resident (trespasser/visitor)
Receptor Age: Adolescent

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cwater	Chemical Concentration in Surface Water	ug/l	See Table 3	See Table 3	Ingestion CDI[1] (mg/kg-day) =
	CF	Conversion Factor	mg/ug	1.0E-03	--	
	ET	Exposure Time	hours/event	2.6	USEPA 1989	Cwater x EF x ET x CR x ED
	CR	Contact Rate	l/hr	0.01	USEPA Region 4 1995	BW x AT
	EF	Exposure Frequency	events/year	100	Assumption	
	ED	Exposure Duration	years	10	USEPA Region 4 1995	
	BW	Body Weight	kg	45	USEPA Region 4 1995	USEPA 1989
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA, December 1989	
Dermal	Cwater	Chemical Concentration in Surface Water	ug/l	See Table 3	See Table 3	DAD[2] (mg/kg-day) =
	DAevent	Absorbed Dose per Event	mg/cm^2-event	chemical-specific	USEPA 1992	
	EV	Event Frequency	events/day	1	Assumption	DAevent X EV X ED x EF X A
	ED	Exposure Duration	years	10	Assumption	BW x AT
	EF	Exposure Frequency	days/year	100	Assumption	
	A	Skin Surface Available for Contact[3]	cm^2	9,050	USEPA 1992	DAevent as defined in USEPA 2000
	t_{event}	Duration of Event	hours/event	2.6	USEPA 1989	
	Kp	Permeability Coefficient from Water	cm/hour	chemical-specific	USEPA 1992	
	τ	Lag Time	hours	chemical-specific	USEPA 1992	
	t^*	Time to Reach Steady State	hours	chemical-specific	USEPA 1992	
	B	Bunge Model Constant	dimensionless	chemical-specific	USEPA 1992	
	BW	Body Weight	kg	45	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA 1989	

(1) CDI = Chronic Daily Intake

(2) DAD = Dermally Absorbed Dose

(3) Table 8-4 of Dermal Exposure Assessment: Principles And Applications, Interim Report 1992 gives 18,100 cm2 total surface area for 13-14 yr old boys; approximately 50% of total surface area assumed exposed by wading

Ingestion RME - Cancer	2.26E-08
Ingestion RME - Noncancer	1.58E-07
Dermal RME - Cancer	7.87E+00
Dermal RME - Noncancer	5.51E+01

CALCULATION OF DAevent FOR DERMAL CONTACT WITH SURFACE WATER

	org/inorg	log Kow	MW	Kp [cm/hr]	Kp,max [cm/hr]	Cw [ug/l]	Cw [mg/L]	Cw [mg/cm^3]	tevent [hr/event]	τevent [hr]	B	c	b	t* [hr]	FA	DAevent org [mg/cm^2-event]	DAevent inorg [mg/cm^2-event]
Aluminum	i			1.00E-03	NA	6.53E+03	6.5275217	0.00652752	2.60E+00								1.70E-05
Arsenic	i			1.00E-03	NA	2.67E+00	0.002673	2.673E-06	2.60E+00								6.95E-09
Bis(2-ethylhexyl)phthalate	o	5.11	391	2.72E-02	NA	4.51E+00	0.0045069	4.5069E-06	2.60E+00	1.62E+01	2.07E-01	4.83E-01	4.44E-01	3.90E+01	8.00E-01	1.76E-06	
Chromium	i			1.00E-03	NA	5.10E+00	0.0051039	5.10E-06	2.60E+00								1.33E-08
Iron	i			1.00E-03	NA	7.09E+03	7.09	7.09E-03	2.60E+00								1.84E-05
Lead	i			1.00E-03	NA	4.54E+00	0.004538	4.54E-06	2.60E+00								1.18E-08
Manganese	i			1.00E-03	NA	6.82E+01	0.0682452	6.82E-05	2.60E+00								1.77E-07
Mercury	i			1.00E-03	NA	1.50E-01	0.00015	1.50E-07	2.60E+00								3.90E-10

Reference: USEPA. 2000. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, (Part E, *Supplemental Guidance for Dermal Risk Assessment), Interim Guidance.*

1.4083E-06

CALCULATION OF DAevent FOR DERMAL CONTACT WITH SURFACE WATER

	org/inorg	log Kow	MW	Kp [cm/hr]	Kp,max [cm/hr]	Cw [ug/l]	Cw [mg/L]	Cw [mg/cm^3]	tevent [hr/event]	τevent [hr]	B	c	b	t* [hr]	FA	DAevent org [mg/cm^2-event	DAevent inorg ng/cm^2-event
Aluminum	i			1.00E-03	NA	5.16E+04	51.6055472	0.05160555	2.60E+00								1.34E-04
Arsenic	i			1.00E-03	NA	6.37E+00	0.0063741	6.3741E-06	2.60E+00								1.66E-08
Barium	i			1.00E-03	NA	1.07E+02	0.1074175	0.00010742	2.60E+00								2.79E-07
Benzo(a)pyrene (equiv)	o	6.1	250	7.20E-01	1.70E-01	3.41E-01	0.0003405	3.405E-07	2.60E+00	2.64E+00	1.03E+00	1.20E+00	1.44E+00	1.02E+01	1.00E+00	4.19E-07	
Bis(2-ethylhexyl)phthalate	o	5.11	391	2.72E-02	NA	3.68E+00	0.0036794	3.6794E-06	2.60E+00	1.62E+01	2.07E-01	4.83E-01	4.44E-01	3.90E+01	8.00E-01	1.44E-06	
Chromium	i			1.00E-03	NA	1.35E+01	0.0135082	1.35E-05	2.60E+00								3.51E-08
Iron	i			1.00E-03	NA	7.50E+04	74.9711382	7.50E-02	2.60E+00								1.95E-04
Lead	i			1.00E-03	NA	3.90E+01	0.0390278	3.90E-05	2.60E+00								1.01E-07
Manganese	i			1.00E-03	NA	4.20E+02	0.4196882	4.20E-04	2.60E+00								1.09E-06
Mercury	i			1.00E-03	NA	9.90E-02	9.9E-05	9.90E-08	2.60E+00								2.57E-10
Vanadium	i			1.00E-03	NA	7.15E+01	0.0715274	7.15E-05	2.60E+00								1.86E-07

Reference: USEPA. 2000. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, (Part E, *Supplemental Guidance for Dermal Risk Assessment), Interim Guidance.*

TABLE E4.7

VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF
SITE MAINTENANCE WORKER TO SEDIMENT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Ponds, Canals, etc.
Receptor Population: Site Maintenance Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csed	Chemical Concentration in Sediment	mg/kg	See Table 3	See Table 3	Ingestion CDI[1] (mg/kg-day) =
	IR	Ingestion rate	mg/day	5	Assumption	$\frac{Csed \times EF \times IR \times CF \times FI \times ED}{BW \times AT}$
	CF	Conversion Factor	kg/mg	1.E-06		
	FI	Fraction Ingested	unitless	1	USEPA Region 4 1995	
	EF	Exposure Frequency	day/year	50	Assumption	
	ED	Exposure Duration	years	25	USEPA Region 4 1995	USEPA 1989
	BW	Body Weight	kg	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	USEPA 1989	
Dermal	Csed	Chemical Concentration in Sediment	mg/kg	See Table 3	See Table 3	Dermal CDI[1] (mg/kg-day) =
	CF	Conversion Factor	kg^2/mg^2	1.0E-06	--	$\frac{Csed \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$
	SA	Skin Surface Area Available for Contact	cm^2/day	10,000 [2]	USEPA 1992	
	AF	Adherence Factor	mg/cm^2	1.0	USEPA Region 4 1995	USEPA 1989
	ABS	Absorption Factor	unitless	1% (organics) 0.1% (inorganics)	USEPA Region 4 1995	
	EF	Exposure Frequency	days/year	50	Assumption	
	ED	Exposure Duration	years	25	USEPA Region 4 1995	
	BW	Body Weight	kg	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	USEPA 1989	

(1) CDI = Chronic Daily Intake

(2) Dermal Exposure Assessment: Principles and Applications gives 20,000 cm^2 mean total surface area for adult; approximately 50% of total surface area assumed exposed by wading.

Ingestion RME - Cancer	3.49E-09
Ingestion RME - Noncancer	9.78E-09
Dermal RME - Cancer	6.99E-06
Dermal RME - Noncancer	1.96E-05

TABLE E4.8

VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF
ADULT RESIDENT TO SEDIMENT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Ponds, Canals, etc.
Receptor Population: Resident (Trespasser/Visitor)
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csed	Chemical Concentration in Sediment	mg/kg	See Table 3	See Table 3	Ingestion CDI[1] (mg/kg-day) = $\frac{Csed \times EF \times IR \times CF \times FI \times ED}{BW \times AT}$
	IR	Ingestion rate	mg/day	5	Assumption	
	CF	Conversion Factor	kg/mg	1.E-06		
	FI	Fraction Ingested	unitless	1.00	USEPA Region 4 1995	
	EF	Exposure Frequency	day/year	45	USEPA Region 4 1995	
	ED	Exposure Duration	years	20	Assumption	USEPA 1989
	BW	Body Weight	kg	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	7,300	USEPA 1989	
Dermal	Csed	Chemical Concentration in Sediment	mg/kg	See Table 3	See Table 3	Dermal CDI[1] (mg/kg-day) = $\frac{Csed \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$
	CF	Conversion Factor	kg^2/mg^2	1.0E-06	--	
	SA	Skin Surface Area Available for Contact	cm^2/day	10,000 [2]	USEPA 1992	
	AF	Adherence Factor	mg/cm^2	1.0	USEPA Region 4 1995	USEPA 1989
	ABS	Absorption Factor	unitless	1% (organics) 0.1% (inorganics)	USEPA Region 4 1995	
	EF	Exposure Frequency	days/year	45	USEPA Region 4 1995	
	ED	Exposure Duration	years	20	Assumption	
	BW	Body Weight	kg	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA 1989	

(1) CDI = Chronic Daily Intake

(2) Dermal Exposure Assessment: Principles and Applications gives 20,000 cm^2 mean total surface area for adult; approximately 50% of total surface area assumed exposed by wading.

Ingestion RME - Cancer	2.52E-09
Ingestion RME - Noncancer	8.81E-09
Dermal RME - Cancer	5.03E-06
Dermal RME - Noncancer	1.47E-05

TABLE E4.9

VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF ADOLESCENT RESIDENT TO SEDIMENT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Ponds, Canals, etc.
Receptor Population: Resident (Trespasser/Visitor)
Receptor Age: Adolescent

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csed	Chemical Concentration in Sediment	mg/kg	See Table 3	See Table 3	Ingestion CDI[(1)] (mg/kg-day) =
	IR	Ingestion rate	mg/day	5	Assumption	$\frac{Csed \times EF \times IR \times CF \times FI \times ED}{BW \times AT}$
	CF	Conversion Factor	kg/mg	1.E-06		
	FI	Fraction Ingested	unitless	1.00	USEPA Region 4 1995	
	EF	Exposure Frequency	day/year	100	Assumption	
	ED	Exposure Duration	years	10	Assumption	USEPA 1989
	BW	Body Weight	kg	45	USEPA Region 4 1995	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA 1989	
Dermal	Csed	Chemical Concentration in Sediment	mg/kg	See Table 3	See Table 3	Dermal CDI[(1)] (mg/kg-day) =
	CF	Conversion Factor	kg^2/mg^2	1.0E-06	--	$\frac{Csed \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$
	SA	Skin Surface Area Available for Contact	cm^2/day	9,050 [(2)]	USEPA 1992	
	AF	Adherence Factor	mg/cm^2	1.0	USEPA Region 4 1995	USEPA 1989
	ABS	Absorption Factor	unitless	1% (organics) 0.1% (inorganics)	USEPA Region 4 1995	
	EF	Exposure Frequency	days/year	100	Assumption	
	ED	Exposure Duration	years	10	Assumption	
	BW	Body Weight	kg	45	USEPA Region 4 1995	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA 1989	

(1) CDI = Chronic Daily Intake

(2) Table 8-4 of Dermal Exposure Assessment: Principles And Applications, Interim Report 1992 gives 18,100 cm^2 total surface area for 13-14 yr old boys; approximately 50% of total surface area assumed exposed by wading.

Ingestion RME - Cancer	4.35E-09
Ingestion RME - Noncancer	3.04E-08
Dermal RME - Cancer	7.87E-06
Dermal RME - Noncancer	5.51E-05

TABLE E4.10

VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF ADULT RESIDENT TO SURFACE SOIL
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Soil[1]
Exposure Medium: Surface Soil/Air
Exposure Point: Area 1 and Area 2/3
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Ingestion CDI[2] (mg/kg-day) =
	IR	Ingestion Rate of Soil	mg/day	100	USEPA Region 4 1995	$\frac{Csoil \times IR \times Fi \times EF \times ED \times CF}{BW \times AT}$
	FI	Fraction ingested from Contaminated Source	unitless	1.0	USEPA Region 4 1995	
	EF	Exposure Frequency	days/year	350	USEPA Region 4 1995	USEPA 1989
	ED	Exposure Duration	years	24	USEPA Region 4 1995	
	CF	Conversion Factor	kg/mg	1.0E-06	--	
	BW	Body Weight	kg	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Dermal CDI[2] (mg/kg-day) =
	CF	Conversion Factor	kg/mg	1.0E-06	--	$\frac{Csoil \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$
	SA	Skin Surface Area Available for Contact	cm^2 / day	5,800	USEPA 1992	
	AF	Soil to Skin Adherence Factor	mg/cm^2	1.0	USEPA Region 4 1995	USEPA 1989
	ABS	Absorption Factor	unitless	1% (organics) 0.1% (inorganics)	USEPA Region 4 1995	
	EF	Exposure Frequency	days/year	350	USEPA Region 4 1995	
	ED	Exposure Duration	years	24	USEPA Region 4 1995	
	BW	Body Weight	kg	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA 1989	
Inhalation	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Inhalation CDI[2] (mg/kg/day) =
	Cair	Chemical Concentration in Air	mg/m^3	calculated		$\frac{Cair \times IR \times EF \times ED}{BW \times AT}$
	IR	Inhalation Rate of Air	m^3/day	20	USEPA Region 4 1995	Cair = Csoil x (1/PEF + 1/VF)
	EF	Exposure Frequency	days/year	350	USEPA Region 4 1995	
	ED	Exposure Duration	years	24	USEPA Region 4 1995	
	BW	Body Weight	kg	70	USEPA 1989	USEPA, December 1989
	PEF	Particulate Emission Factor	m^3/kg	1.24E+09	Focused RA	
	VF	Volatization Factor	mg^3/kg	chemical specific		
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA 1989	

1 Surface is defined as soil collected from depths of 0 to 1 foot bgs.
2 CDI = Chronic Daily Intake

Ingestion RME - Cancer	4.70E-07
Ingestion RME - Noncancer	1.37E-06
Dermal RME - Cancer	2.72E-05
Dermal RME - Noncancer	7.95E-05
Inhalation RME - Cancer	9.39E-02
Inahalation RME - Noncancer	2.74E-01

TABLE E4.11

VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF CHILD RESIDENT TO SURFACE SOIL
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Soil[1]
Exposure Medium: Surface Soil/Air
Exposure Point: Area 1
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Ingestion CDI[2] (mg/kg-day) =
	IR	Ingestion Rate of Soil	mg/day	200	USEPA Region 4 1995	$\frac{Csoil \times IR \times Fi \times EF \times ED \times CF}{BW \times AT}$
	FI	Fraction ingested from Contaminated Source	unitless	1.0	USEPA Region 4 1995	USEPA 1989
	EF	Exposure Frequency	days/year	350	USEPA Region 4 1995	
	ED	Exposure Duration	years	6	USEPA Region 4 1995	
	CF	Conversion Factor	kg/mg	1.0E-06	--	
	BW	Body Weight	kg	15	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Dermal CDI[2] (mg/kg-day) =
	CF	Conversion Factor	kg/mg	1.0E-06	--	$\frac{Csoil \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$
	SA	Skin Surface Area Available for Contact	cm^2 / day	2,295	USEPA 1992 (4)	
	AF	Soil to Skin Adherence Factor	mg/cm^2	1.0	USEPA Region 4 1995	USEPA 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	1% (organics) 0.1% (inorganics)	USEPA Region 4 1995	
	EF	Exposure Frequency	days/year	350	USEPA Region 4 1995	
	ED	Exposure Duration	years	6	USEPA Region 4 1995	
	BW	Body Weight	kg	15	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA 1989	
Inhalation	Csoil	Chemical Concentration in Soil	mg/kg	See Table 3	See Table 3	Inhalation CDI[2] (mg/kg-day) =
	Cair	Chemical Concentration in Air	mg/m3	calculated		$\frac{Cair \times IR \times EF \times ED}{BW \times AT}$
	IR	Inhalation Rate of Air	m3/day	15	USEPA Region 4 1995	Cair = Csoil x (1/PEF + 1/VF)
	EF	Exposure Frequency	days/year	350	USEPA Region 4 1995	
	ED	Exposure Duration	years	6	USEPA Region 4 1995	
	BW	Body Weight	kg	15	USEPA 1989	USEPA 1989
	PEF	Particulate Emission Factor	m3/kg	1.24E+09	Focused RA	
	VF	Volatization Factor	mg3/kg	chemical specific		
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA 1989	

1 Surface is defined as soil collected from depths of 0 to 1 foot bgs.
2 CDI = Chronic Daily Intake
3 Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment
4 Table 8-4 of Dermal Exposure Assessment: Principles and Application 1992 gives the total body area as 9180 cm2 for a 6 yr old boy; approximately 25% of total body area is assumed to be exposed.

TABLE E4.12

VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF
ADULT RESIDENT TO SURFACE WATER

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Entire Site (Area 1 and Area 2/3)
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cwater	Chemical Concentration in Surface Water	ug/l	See Table 3	See Table 3	Ingestion CDI[1] (mg/kg-day) =
	CF	Conversion Factor	mg/ug	1.0E-03	--	
	ET	Exposure Time	hours/event	2.6	USEPA 1989	Cwater x EF x ET x CR x ED
	CR	Contact Rate	l/hr	0.01	USEPA Region 4 1995	BW x AT
	EF	Exposure Frequency	events/year	45	USEPA Region 4 1995	
	ED	Exposure Duration	years	20	Assumption	
	BW	Body Weight	kg	70	USEPA 1989	USEPA 1989
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	7,300	USEPA 1989	
Dermal	Cwater	Chemical Concentration in Surface Water	ug/l	See Table 3	See Table 3	DAD (2) (mg/kg-day) =
	DAevent	Absorbed Dose per Event	mg/cm2-event	chemical-specific	USEPA 1992	
	EV	Event Frequency	events/day	1	Assumption	DAevent X EV X ED x EF X A
	ED	Exposure Duration	years	20	Assumption	BW x AT
	EF	Exposure Frequency	days/year	45	USEPA Region 4 1995	
	A	Skin Surface Available for Contact[3]	cm2	10000	USEPA 1992 (3)	
	tevent	Duration of Event	hours/event	2.6	USEPA 1989	
	Kp	Permeability Coefficient from Water	cm/hour	chemical-specific	USEPA 1992	
	t	Lag Time	hours	chemical-specific	USEPA 1992	
	t*	Time to Reach Steady State	hours	chemical-specific	USEPA 1992	
	B	Bunge Model Constant	dimensionless	chemical-specific	USEPA 1992	
	BW	Body Weight	kg	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	7300	USEPA 1989	

(1) CDI = Chronic Daily Intake

(2) DAD = Dermally Absorbed Dose

(3) Dermal Exposure Assessment: Principles and Applications gives 20,000 cm2 mean total surface area for adult; approximately 50% of total surface area assumed exposed by wading

Ingestion RME - Car	1.31E-08
Ingestion RME - Nonc	4.58E-08
Dermal RME - Can	5.03E+00
Dermal RME - Nonca	1.76E+01

CALCULATION OF DAevent FOR DERMAL CONTACT WITH SURFACE WATER

	org/inorg	log Kow	MW	Kp [cm/hr]	Kp,max [cm/hr]	Cw [ug/l]	Cw [mg/L]	Cw [mg/cm³]	tevent [hr/event]	τevent [hr]	B	c	b	t* [hr]	FA	DAevent org [mg/cm²-event]	DAevent inorg [mg/cm²-event]
Aluminum	i			1.00E-03	NA	6.53E+03	6.5275217	0.0065275	2.60E+00								1.70E-05
Arsenic	i			1.00E-03	NA	2.67E+00	0.002673	2.673E-06	2.60E+00								6.95E-09
Bis(2-ethylhexyl)phthalate	o	5.11	391	2.72E-02	NA	4.51E+00	0.0045069	4.507E-06	2.60E+00	1.62E+01	2.07E-01	4.83E-01	4.44E-01	3.90E+01	8.00E-01	1.76E-06	
Chromium	i			1.00E-03	NA	5.10E+00	0.0051039	5.10E-06	2.60E+00								1.33E-08
Iron	i			1.00E-03	NA	7.09E+03	7.09	7.09E-03	2.60E+00								1.84E-05
Lead	i			1.00E-03	NA	4.54E+00	0.004538	4.54E-06	2.60E+00								1.18E-08
Manganese	i			1.00E-03	NA	6.82E+01	0.0682452	6.82E-05	2.60E+00								1.77E-07
Mercury	i			1.00E-03	NA	1.50E-01	0.00015	1.50E-07	2.60E+00								3.90E-10

Reference: USEPA. 2000. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, (Part E, *Supplemental Guidance for Dermal Risk Assessment), Interim Guidance.*

CALCULATION OF DAevent FOR DERMAL CONTACT WITH SURFACE WATER

	org/inorg	log Kow	MW	Kp [cm/hr]	Kp,max [cm/hr]	Cw [ug/l]	Cw [mg/L]	Cw [mg/cm^3]	tevent [hr/event]	τevent [hr]	B	c	b	t* [hr]	FA	DAevent org [mg/cm^2-event]	DAevent inorg [mg/cm^2-event]
Aluminum	i			1.00E-03	NA	5.16E+04	51.6055472	0.05160555	2.60E+00								1.34E-04
Arsenic	i			1.00E-03	NA	6.37E+00	0.0063741	6.3741E-06	2.60E+00								1.66E-08
Barium	i			1.00E-03	NA	1.07E+02	0.1074175	0.00010742	2.60E+00								2.79E-07
Benzo(a)pyrene (equiv	o	6.1	250	7.20E-01	1.70E-01	3.41E-01	0.0003405	3.405E-07	2.60E+00	2.64E+00	1.03E+00	1.20E+00	1.44E+00	1.02E+01	1.00E+00	4.19E-07	
Bis(2-ethylhexyl)phtha	o	5.11	391	2.72E-02	NA	3.68E+00	0.0036794	3.6794E-06	2.60E+00	1.62E+01	2.07E-01	4.83E-01	4.44E-01	3.90E+01	8.00E-01	1.44E-06	
Chromium	i			1.00E-03	NA	1.35E+01	0.0135082	1.35E-05	2.60E+00								3.51E-08
Iron	i			1.00E-03	NA	7.50E+04	74.9711382	7.50E-02	2.60E+00								1.95E-04
Lead	i			1.00E-03	NA	3.90E+01	0.0390278	3.90E-05	2.60E+00								1.01E-07
Manganese	i			1.00E-03	NA	4.20E+02	0.4196882	4.20E-04	2.60E+00								1.09E-06
Mercury	i			1.00E-03	NA	9.90E-02	9.9E-05	9.90E-08	2.60E+00								2.57E-10
Vanadium	i			1.00E-03	NA	7.15E+01	0.0715274	7.15E-05	2.60E+00								1.86E-07

Reference: USEPA. 2000. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, (Part E, *Supplemental Guidance for Dermal Risk Assessment), Interim Guidance.*

TABLE E4.13

VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF ADOLESCENT RESIDENT TO SURFACE WATER
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water/Air
Exposure Point: Ponds, Canals, etc.
Receptor Population: Resident
Receptor Age: Adolescent

Exposure Route	Paramete Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cwater	Chemical Concentration in Surface Water	ug/l	See Table 3	See Table 3	Ingestion CDI[1] (mg/kg-day) =
	CF	Conversion Factor	mg/ug	1.0E-03	--	
	ET	Exposure Time	hours/event	2.6	USEPA 1989	Cwater x EF x ET x CR x ED
	CR	Contact Rate	l/hr	0.01	USEPA Region 4 1995	BW x AT
	EF	Exposure Frequency	events/year	100	Assumption	
	ED	Exposure Duration	years	10	USEPA Region 4 1995	
	BW	Body Weight	kg	45	USEPA Region 4 1995	USEPA 1989
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA 1989	
Dermal	Cwater	Chemical Concentration in Surface Water	ug/l	See Table 3	See Table 3	DAD[2] (mg/kg-day) =
	DAevent	Absorbed Dose per Event	mg/cm^2-event	chemical-specific	USEPA 1992	
	EV	Event Frequency	events/day	1	Assumption	DAevent X EV X ED x EF X A
	ED	Exposure Duration	years	10	Assumption	BW x AT
	EF	Exposure Frequency	days/year	100	Assumption	
	A	Skin Surface Available for Contact[3]	cm^2	9,050	USEPA 1992	DAevent as defined in USEPA 2000
	tevent	Duration of Event	hours/event	2.6	USEPA 1989	For equations, see Table 4 references.
	Kp	Permeability Coefficient from Water	cm/hour	chemical-specific	USEPA 1992	
	τ	Lag Time	hours	chemical-specific	USEPA 1992	
	t*	Time to Reach Steady State	hours	chemical-specific	USEPA 1992	
	B	Bunge Model Constant	dimensionless	chemical-specific	USEPA 1992	
	BW	Body Weight	kg	45	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA 1989	

(1) CDI = Chronic Daily Intake

(2) DAD = Dermally Absorbed Dose

(3) Table 8-4 of Dermal Exposure Assessment: Principles And Applications, Interim Report 1992 gives 18,100 cm2 total surface area for 13-14 yr old boys; approximately 50% of total surface area assumed exposed by wading

Ingestion RME - Cancer	2.26E-08
Ingestion RME - Noncancer	1.58E-07
Dermal RME - Cancer	7.87E+00
Dermal RME - Noncancer	5.51E+01

CALCULATION OF DAevent FOR DERMAL CONTACT WITH SURFACE WATER

	org/inorg	log Kow	MW	Kp [cm/hr]	Kp,max [cm/hr]	Cw [ug/l]	Cw [mg/L]	Cw [mg/cm^3]	tevent [hr/event]	τevent [hr]	B	c	b	t* [hr]	FA	DAevent org [mg/cm^2-event]	DAevent inorg [mg/cm^2-event]
Aluminum	i			1.00E-03	NA	6.53E+03	6.5275217	0.00652752	2.60E+00								1.70E-05
Arsenic	i			1.00E-03	NA	2.67E+00	0.002673	2.673E-06	2.60E+00								6.95E-09
Bis(2-ethylhexyl)phthalate	o	5.11	391	2.72E-02	NA	4.51E+00	0.0045069	4.5069E-06	2.60E+00	1.62E+01	2.07E-01	4.83E-01	4.44E-01	3.90E+01	8.00E-01	1.76E-06	
Chromium	i			1.00E-03	NA	5.10E+00	0.0051039	5.10E-06	2.60E+00								1.33E-08
Iron	i			1.00E-03	NA	7.09E+03	7.09	7.09E-03	2.60E+00								1.84E-05
Lead	i			1.00E-03	NA	4.54E+00	0.004538	4.54E-06	2.60E+00								1.18E-08
Manganese	i			1.00E-03	NA	6.82E+01	0.0682452	6.82E-05	2.60E+00								1.77E-07
Mercury	i			1.00E-03	NA	1.50E-01	0.00015	1.50E-07	2.60E+00								3.90E-10

Reference: USEPA. 2000. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, (Part E, *Supplemental Guidance for Dermal Risk Assessment), Interim Guidance.*

CALCULATION OF DAevent FOR DERMAL CONTACT WITH SURFACE WATER

	org/inorg	log Kow	MW	Kp [cm/hr]	Kp,max [cm/hr]	Cw [ug/l]	Cw [mg/L]	Cw [mg/cm³]	tevent [hr/event]	τevent [hr]	B	c	b	t* [hr]	FA	DAevent org [mg/cm²-event]	DAevent inorg [mg/cm²-event]
Aluminum	i			1.00E-03	NA	5.16E+04	51.6055472	0.05160555	2.60E+00								1.34E-04
Arsenic	i			1.00E-03	NA	6.37E+00	0.0063741	6.3741E-06	2.60E+00								1.66E-08
Barium	i			1.00E-03	NA	1.07E+02	0.1074175	0.00010742	2.60E+00								2.79E-07
Benzo(a)pyrene (equiv)	o	6.1	250	7.20E-01	1.70E-01	3.41E-01	0.0003405	3.405E-07	2.60E+00	2.64E+00	1.03E+00	1.20E+00	1.44E+00	1.02E+01	1.00E+00	4.19E-07	
Bis(2-ethylhexyl)phthalate	o	5.11	391	2.72E-02	NA	3.68E+00	0.0036794	3.6794E-06	2.60E+00	1.62E+01	2.07E-01	4.83E-01	4.44E-01	3.90E+01	8.00E-01	1.44E-06	
Chromium	i			1.00E-03	NA	1.35E+01	0.0135082	1.35E-05	2.60E+00								3.51E-08
Iron	i			1.00E-03	NA	7.50E+04	74.9711382	7.50E-02	2.60E+00								1.95E-04
Lead	i			1.00E-03	NA	3.90E+01	0.0390278	3.90E-05	2.60E+00								1.01E-07
Manganese	i			1.00E-03	NA	4.20E+02	0.4196882	4.20E-04	2.60E+00								1.09E-06
Mercury	i			1.00E-03	NA	9.90E-02	9.9E-05	9.90E-08	2.60E+00								2.57E-10
Vanadium	i			1.00E-03	NA	7.15E+01	0.0715274	7.15E-05	2.60E+00								1.86E-07

Reference: USEPA. 2000. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, (Part E. *Supplemental Guidance for Dermal Risk Assessment), Interim Guidance.*

TABLE E4.14

VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF ADULT RESIDENT TO SEDIMENT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Ponds, Canals, etc.
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csed	Chemical Concentration in Sediment	mg/kg	See Table 3	See Table 3	Ingestion CDI[1] (mg/kg-day) =
	IR	Ingestion rate	mg/day	5	Assumption	Csed x EF x IR x CF x FI x ED / BW x AT
	CF	Conversion Factor	kg/mg	1.E-06		
	FI	Fraction Ingested	unitless	1.00	USEPA Region 4 1995	
	EF	Exposure Frequency	day/year	45	USEPA Region 4 1995	
	ED	Exposure Duration	years	20	Assumption	USEPA 1989
	BW	Body Weight	kg	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	7,300	USEPA 1989	
Dermal	Csed	Chemical Concentration in Sediment	mg/kg	See Table 3	See Table 3	Dermal CDI[1] (mg/kg-day) =
	CF	Conversion Factor	kg^2/mg^2	1.0E-06	--	Csed x CF x SA x AF x ABS x EF x ED / BW x AT
	SA	Skin Surface Area Available for Contact	cm^2	10,000 [2]	USEPA 1992	
	AF	Adherence Factor	mg/cm^2	1.0	USEPA Region 4 1995	USEPA 1989
	ABS	Absorption Factor	unitless	1% (organics) 0.1% (inorganics)	USEPA Region 4 1995	
	EF	Exposure Frequency	days/year	45	USEPA Region 4 1995	
	ED	Exposure Duration	years	20	Focused RA	
	BW	Body Weight	kg	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA 1989	

(1) CDI = Chronic Daily Intake

(2) Dermal Exposure Assessment: Principles and Applications gives 20,000 cm^2 mean total surface area for adult; approximately 50% of total surface area assumed exposed by wading.

Ingestion RME - Cancer	2.52E-09
Ingestion RME - Noncancer	8.81E-09
Dermal RME - Cancer	5.03E-06
Dermal RME - Noncancer	1.47E-05

TABLE E4.15

VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF
ADOLESCENT RESIDENT TO SEDIMENT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Ponds, Canals, etc.
Receptor Population: Resident
Receptor Age: Adolescent

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csed	Chemical Concentration in Sediment	mg/kg	See Table 3	See Table 3	Ingestion CDI[1] (mg/kg-day) =
	IR	Ingestion rate	mg/day	5	Assumption	Csed x EF x IR x CF x FI x ED / BW x AT
	CF	Conversion Factor	kg/mg	1.E-06		
	FI	Fraction Ingested	unitless	1.00	USEPA Region 4 1995	
	EF	Exposure Frequency	day/year	100	Assumption	
	ED	Exposure Duration	years	10	Assumption	USEPA 1989
	BW	Body Weight	kg	45	USEPA Region 4 1995	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA 1989	
Dermal	Csed	Chemical Concentration in Sediment	mg/kg	See Table 3	See Table 3	Dermal CDI[1] (mg/kg-day) =
	CF	Conversion Factor	kg^2/mg^2	1.0E-06	--	Csed x CF x SA x AF x ABS x EF x ED / BW x AT
	SA	Skin Surface Area Available for Contact	cm2 /day	9050 [2]	USEPA 1992	
	AF	Adherence Factor	mg/cm^2	1.0	USEPA Region 4 1995	USEPA 1989
	ABS	Absorption Factor	unitless	1% (organics) 0.1% (inorganics)	USEPA Region 4 1995	
	EF	Exposure Frequency	days/year	100	Assumption	
	ED	Exposure Duration	years	10	USEPA Region 4 1995	
	BW	Body Weight	kg	45	USEPA Region 4 1995	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA 1989	

(1) CDI = Chronic Daily Intake

(2) Table 8-4 of Dermal Exposure Assessment: Principles And Applications, Interim Report 1992 gives 18,100 cm^2 total surface area for 13-14 yr old boys; approximately 50% of total surface area assumed exposed by wading

Ingestion RME - Cancer	4.35E-09
Ingestion RME - Noncancer	3.04E-08
Dermal RME - Cancer	7.87E-06
Dermal RME - Noncancer	5.51E-05

TABLE E4.16

VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF
ADULT RESIDENT TO GROUNDWATER

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Tap Water/Vapor
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cwater	Chemical Concentration in Groundwater	ug/l	See Table 3	See Table 3	Ingestion CDI[1] (mg/kg-day) =
	CF	Conversion Factor	mg/ug	0.001		
	IR	Ingestion Rate of Groundwater	l/day	2	USEPA Region 4 1995	$\frac{Cwater \times IR \times EF \times ED \times CF}{BW \times AT}$
	EF	Exposure Frequency	days/year	350	USEPA Region 4 1995	
	ED	Exposure Duration	years	24	USEPA Region 4 1995	
	BW	Body Weight	kg	70	USEPA 1989	USEPA 1989
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA 1989	
Dermal	Cwater	Chemical Concentration in Groundwater	ug/l	See Table 3	See Table 3	DAD[2] (mg/kg-day) =
	DAevent	Absorbed Dose per Event	mg/cm^2-event	chemical-specific	USEPA 1992	
	EV	Event Frequency	events/day	1	USEPA 1992	$\frac{DAevent \times EV \times ED \times EF \times A}{BW \times AT}$
	ED	Exposure Duration	years	24	USEPA Region 4 1995	
	EF	Exposure Frequency	days/year	350	USEPA Region 4 1995	
	A	Skin Surface Available for Contact	cm^2	20,000	USEPA 1992 (3)	
	t_{event}	Duration of Event	hours/event	0.2	USEPA 1992	
	Kp	Permeability Coefficient from Water	cm/hour	chemical-specific	USEPA 1992	
	τ	Lag Time	hours	chemical-specific	USEPA 1992	
	t*	Time to Reach Steady State	hours	chemical-specific	USEPA 1992	
	B	Bunge Model Constant	dimensionless	chemical-specific	USEPA 1992	
	BW	Body Weight	kg	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA 1989	
Inhalation						Inhalation risk assumed to be equal to ingestion risk for VOAs.

(1) CDI = Chronic Daily Intake
(2) DAD = Dermally Absorbed Dose
(3) Dermal Exposure Assessment: Principles and Applications gives 20,000 cm2 mean total surface area for adult.

Ingestion RME - Cancer	9.39E-06
Ingestion RME - Noncancer	2.74E-05
Dermal RME - Cancer	9.39E+01
Dermal RME - Noncancer	2.74E+02

CALCULATION OF DAevent FOR DERMAL CONTACT WITH WATER Area 1

	org/inorg	log Kow	MW	Kp [cm/hr]	Kp,max [cm/hr]	Cw [ug/l]	Cw [mg/L]	Cw [mg/cm^3]	tevent [hr/event]	τevent [hr]	B	c	b	t* [hr]	DAevent org [mg/cm^2-event]	DAevent Inorg [mg/cm^2-event]
1,4-Dichlorobenzene	o	3.39	147	4.45E-02	NA	6.30E+00	0.0063	0.0000063	0.2	6.99E-01	2.07E-01	4.83E-01	4.45E-01	1.68E+00	2.90E-07	
Benzene	o	2.13	78.1	1.55E-02	NA	3.40E+00	0.0034	0.0000034	0.2	2.87E-01	5.26E-02	3.69E-01	3.36E-01	6.90E-01	3.49E-08	
Chlorobenzene	o	2.84	112.6	2.97E-02	NA	2.30E+01	0.023	2.30E-05	0.2	4.48E-01	1.21E-01	4.18E-01	3.82E-01	1.08E+00	5.65E-07	
Iron	i			1.00E-03	NA	2.37E+04	23.7	2.37E-02	0.2							4.74E-06
Manganese	i			1.00E-03	NA	6.16E+02	0.616	6.16E-04	0.2							1.23E-07

CALCULATION OF DAevent FOR DERMAL CONTACT WITH WATER Area 2/3

	org/inorg	log Kow	MW	Kp [cm/hr]	Kp,max [cm/hr]	Cw [ug/l]	Cw [mg/L]	Cw [mg/cm^3]	tevent [hr/event]	τevent [hr]	B	c	b	t* [hr]	DAevent org [mg/cm^2-event]	DAevent Inorg [mg/cm^2-event]
Arsenic	i			1.00E-03	NA	5.20E+00	0.0052	0.0000052	0.2							1.04E-09
Benzene	o	2.13	78.1	1.55E-02	NA	1.30E+00	0.0013	0.0000013	0.2	2.87E-01	5.26E-02	3.69E-01	3.36E-01	6.90E-01	1.33E-08	
cis-1,2-dichloroethene	o	1.86	96.9	8.01E-03	NA	6.60E+01	0.066	6.60E-05	0.2	3.66E-01	3.03E-02	3.54E-01	3.22E-01	8.79E-01	3.96E-07	
Iron	i			1.00E-03	NA	2.64E+03	2.64	2.64E-03	0.2							5.28E-07
Tetrachloroethene	o	3.4	165.8	3.54E-02	NA	3.40E+01	0.034	3.40E-05	0.2	8.91E-01	1.76E-01	4.59E-01	4.21E-01	2.14E+00	1.41E-06	
Trichloroethene	o	2.42	131.4	1.22E-02	NA	1.20E+03	1.2	1.20E-03	0.2	5.72E-01	5.37E-02	3.70E-01	3.37E-01	1.37E+00	1.37E-05	
Vanadium	i			1.00E-03	NA	3.71E+01	0.0371	3.71E-05	0.2							7.42E-09
Vinyl Chloride	o	1.36	62.5	5.77E-03	NA	2.00E+01	0.02	2.00E-05	0.2	2.35E-01	1.75E-02	3.45E-01	3.14E-01	5.64E-01	6.92E-08	

Reference: USEPA. 2000. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, (PartE, *Supplemental Guidance for Dermal Risk Assessment), Interim Guidance.*

CALCULATION OF DAevent FOR DERMAL CONTACT WITH WATER Area 1

	org/inorg	log Kow	MW	Kp [cm/hr]	Kp,max [cm/hr]	Cw [ug/l]	Cw [mg/L]	Cw [mg/cm^3]	tevent [hr/event]	τevent [hr]	B	c	b	t* [hr]	DAevent org [mg/cm^2-event]	DAevent inorg [mg/cm^2-event]
1,4-Dichlorobenzene	o	3.39	147	4.45E-02	NA	5.66E+00	0.0056569	5.6569E-06	2.00E-01	6.99E-01	2.07E-01	4.83E-01	4.45E-01	1.68E+00	2.60E-07	
Aluminum	i			1.00E-03	NA	1.52E+05	152	0.152	2.00E-01							3.04E-05
Arsenic	i			1.00E-03	NA	2.03E+01	0.0202663	2.0266E-05	2.00E-01							4.05E-09
Barium	i			1.00E-03	NA	3.91E+03	3.91	0.00391	2.00E-01							7.82E-07
Benzene	o	2.13	78.1	1.55E-02	NA	4.20E+00	0.0042006	4.2006E-06	2.00E-01	2.87E-01	5.26E-02	3.69E-01	3.36E-01	6.90E-01	4.31E-08	
Chlorobenzene	o	2.84	112.6	2.97E-02	NA	5.22E+00	0.0052215	5.22E-06	2.00E-01	4.48E-01	1.21E-01	4.18E-01	3.82E-01	1.08E+00	1.28E-07	
Chromium	i			1.00E-03	NA	2.23E+02	0.223	2.23E-04	2.00E-01							4.46E-08
Iron	i			1.00E-03	NA	2.64E+04	26.4	2.64E-02	2.00E-01							5.28E-06
Lead	i			1.00E-03	NA	1.97E+02	0.197	1.97E-04	2.00E-01							3.94E-08
Manganese	i			1.00E-03	NA	1.94E+02	0.194	1.94E-04	2.00E-01							3.88E-08
Selenium	i			1.00E-03	NA	4.11E+01	0.0411306	4.11E-05	2.00E-01							8.23E-09
Vanadium	i			1.00E-03	NA	2.22E+02	0.222	2.22E-04	2.00E-01							4.44E-08
Vinyl Chloride	o	1.36	62.5	5.77E-03	NA	1.49E+00	0.0014902	1.49E-06	2.00E-01	2.35E-01	1.75E-02	3.45E-01	3.14E-01	5.64E-01	5.15E-09	

CALCULATION OF DAevent FOR DERMAL CONTACT WITH WATER Area 2/3

	org/inorg	log Kow	MW	Kp [cm/hr]	Kp,max [cm/hr]	Cw [ug/l]	Cw [mg/L]	Cw [mg/cm^3]	tevent [hr/event]	τevent [hr]	B	c	b	t* [hr]	DAevent org [mg/cm^2-event]	DAevent inorg [mg/cm^2-event]
1,1,2,2-Tetrachloroethan e	o	2.39	167.9	7.26E-03	NA	6.11E-01	0.0006108	6.108E-07	2.00E-01	9.15E-01	3.62E-02	3.58E-01	3.26E-01	2.20E+00	5.25E-09	
Aluminum	i			1.00E-03	NA	1.25E+05	124.5	0.1245	2.00E-01							2.49E-05
Barium	i			1.00E-03	NA	1.52E+03	1.52	0.00152	2.00E-01							3.04E-07
Benzene	o	2.13	78.1	1.55E-02	NA	7.85E+00	0.0078484	7.8484E-06	2.00E-01	2.87E-01	5.26E-02	3.69E-01	3.36E-01	6.90E-01	8.05E-08	
Chlorobenzene	o	2.84	112.6	2.97E-02	NA	6.38E+00	0.0063764	6.38E-06	2.00E-01	4.48E-01	1.21E-01	4.18E-01	3.82E-01	1.08E+00	1.57E-07	
Chloroform	o	1.97	119.4	7.10E-03	NA	2.71E+00	0.0027126	2.71E-06	2.00E-01	4.90E-01	2.98E-02	3.54E-01	3.22E-01	1.18E+00	1.67E-08	
Chromium	i			1.00E-03	NA	1.62E+02	0.1615	1.62E-04	2.00E-01							3.23E-08
cis-1,2-dichloroethene	o	1.86	96.9	8.01E-03	NA	6.20E+01	0.062	6.20E-05	2.00E-01	3.66E-01	3.03E-02	3.54E-01	3.22E-01	8.79E-01	3.72E-07	
Iron	i			1.00E-03	NA	1.16E+04	11.6	1.16E-02	2.00E-01							2.32E-06
Lead	i			1.00E-03	NA	1.61E+02	0.161	1.61E-04	2.00E-01							3.22E-08
Selenium	i			1.00E-03	NA	1.48E+01	0.01476	1.48E-05	2.00E-01							2.95E-09
Tetrachloroethene	o	3.4	165.8	3.54E-02	NA	2.14E+01	0.0214172	2.14E-05	2.00E-01	8.91E-01	1.76E-01	4.59E-01	4.21E-01	2.14E+00	8.86E-07	
Trichloroethene	o	2.42	131.4	1.22E-02	NA	1.25E+03	1.25	1.25E-03	2.00E-01	5.72E-01	5.37E-02	3.70E-01	3.37E-01	1.37E+00	1.42E-05	
Vanadium	i			1.00E-03	NA	2.25E+02	0.225	2.25E-04	2.00E-01							4.50E-08
Vinyl Chloride	o	1.36	62.5	5.77E-03	NA	2.03E+01	0.0203	2.03E-05	2.00E-01	2.35E-01	1.75E-02	3.45E-01	3.14E-01	5.64E-01	7.02E-08	

Reference: USEPA. 2000. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, (Part E, *Supplemental Guidance for Dermal Risk Assessment), Interim Guidance.*

TABLE E4.17

VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF
CHILD RESIDENT TO GROUNDWATER
PHASE I AND PHASE II

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Tap Water/Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cwater	Chemical Concentration in Groundwater	mg/l	See Table 3	See Table 3	Ingestion CDI(1) (mg/l/day) =
	CF	Conversion Factor	mg/ug	0.001		
	IR	Ingestion Rate of Groundwater	l/day	1	Regional Default[2]	Cwater x IR x EF x ED x CF / BW x AT
	EF	Exposure Frequency	days/year	350	Regional Default[2]	
	ED	Exposure Duration	years	6	Regional Default[2]	
	BW	Body Weight	kg	15	USEPA, December 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA, December 1989	
Dermal	Cwater	Chemical Concentration in Groundwater	ug/l	See Table 3	See Table 3	DAD [2] (mg/kg-day) =
	DAevent	Absorbed Dose per Event	mg/cm^2-event	chemical-specific	USEPA 1992	
	EV	Event Frequency	events/day	1	USEPA 1992	DAevent X EV X ED x EF X A / BW x AT
	ED	Exposure Duration	years	6	USEPA Region 4 1995	
	EF	Exposure Frequency	days/year	350	USEPA Region 4 1995	
	A	Skin Surface Available for Contact	cm^2	9,180	USEPA 1992	
	tevent	Duration of Event	hours/event	0.2	USEPA, August 1996	
	Kp	Permeability Coefficient from Water	cm/hour	chemical-specific	USEPA 1992	
	τ	Lag Time	hours	chemical-specific	USEPA 1992	
	t*	Time to Reach Steady State	hours	chemical-specific	USEPA 1992	
	B	Bunge Model Constant	dimensionless	chemical-specific	USEPA 1992	
	BW	Body Weight	kg	15	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA 1989	
Inhalation						Inhalation risk assumed

Ingestion RME - Cancer	5.48E-06
Ingestion RME - Noncancer	6.39E-05
Dermal RME - Cancer	5.03E+01
Dermal RME - Noncancer	5.87E+02

CALCULATION OF DAevent FOR Child DERMAL CONTACT WITH GROUNDWATER Area 1

	org/inorg	log Kow	MW	Kp [cm/hr]	Kp,max [cm/hr]	Cw [ug/l]	Cw [mg/L]	Cw [mg/cm^3]	tevent [hr/event]	τevent [hr]	B	c	b	t* [hr]	DAevent org [mg/cm^2-event]	DAevent inorg [mg/cm^2-event]
1,4-Dichlorobenzene	o	3.39	147	4.45E-02	NA	6.30E+00	0.0063	0.0000063	2.00E-01	6.99E-01	2.07E-01	4.83E-01	4.45E-01	1.68E+00	2.90E-07	
Benzene	o	2.13	78.1	1.55E-02	NA	3.40E+00	0.0034	0.0000034	2.00E-01	2.87E-01	5.26E-02	3.69E-01	3.36E-01	6.90E-01	3.49E-08	
Chlorobenzene	o	2.84	112.6	2.97E-02	NA	2.30E+01	0.023	2.30E-05	2.00E-01	4.48E-01	1.21E-01	4.18E-01	3.82E-01	1.08E+00	5.65E-07	
Iron	i			1.00E-03	NA	2.37E+04	23.7	2.37E-02	2.00E-01							4.74E-06
Manganese	i			1.00E-03	NA	6.16E+02	0.616	6.16E-04	2.00E-01							1.23E-07

CALCULATION OF DAevent FOR Child DERMAL CONTACT WITH GROUNDWATER Area 2/3

	org/inorg	log Kow	MW	Kp [cm/hr]	Kp,max [cm/hr]	Cw [ug/l]	Cw [mg/L]	Cw [mg/cm^3]	tevent [hr/event]	τevent [hr]	B	c	b	t* [hr]	DAevent org [mg/cm^2-event]	DAevent inorg [mg/cm^2-event]
Arsenic	i			1.00E-03	NA	5.20E+00	0.0052	0.0000052	2.00E-01	1.05E-01						1.04E-09
Benzene	o	2.13	78.1	1.55E-02	NA	1.30E+00	0.0013	0.0000013	2.00E-01	2.87E-01	5.26E-02	3.69E-01	3.36E-01	6.90E-01	1.33E-08	
cis-1,2-dichloroethene	o	1.86	96.9	8.01E-03	NA	6.60E+01	0.066	6.60E-05	2.00E-01	3.66E-01	3.03E-02	3.54E-01	3.22E-01	8.79E-01	3.96E-07	
Iron	i			1.00E-03	NA	2.64E+03	2.64	2.64E-03	2.00E-01	1.05E-01						5.28E-07
Tetrachloroethene	o	3.4	165.8	3.54E-02	NA	3.40E+01	0.034	3.40E-05	2.00E-01	8.91E-01	1.76E-01	4.59E-01	4.21E-01	2.14E+00	1.41E-06	
Trichloroethene	o	2.42	131.4	1.22E-02	NA	1.20E+03	1.2	1.20E-03	2.00E-01	5.72E-01	5.37E-02	3.70E-01	3.37E-01	1.37E+00	1.37E-05	
Vanadium	i			1.00E-03	NA	3.71E+01	0.0371	3.71E-05	2.00E-01	1.05E-01						7.42E-09
Vinyl Chloride	o	1.36	62.5	5.77E-03	NA	2.00E+01	0.02	2.00E-05	2.00E-01	2.35E-01	1.75E-02	3.45E-01	3.14E-01	5.64E-01	6.92E-08	

Reference: USEPA. 2000. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, (PartE, *Supplemental Guidance for Dermal Risk Assessment), Interim Guidance.*

CALCULATION OF DAevent FOR Child DERMAL CONTACT WITH GROUNDWATER Area 1

	org/inorg	log Kow	MW	Kp [cm/hr]	Kp,max [cm/hr]	Cw [ug/l]	Cw [mg/L]	Cw [mg/cm^3]	tevent [hr/event]	τevent [hr]	B	c	b	t* [hr]	DAevent org ng/cm^2-even	DAevent inorg ng/cm^2-event]
1,4-Dichlorobenzene	o	3.39	147	4.45E-02	NA	5.66E+00	0.0056569	5.6569E-06	2.00E-01	6.99E-01	2.07E-01	4.83E-01	4.45E-01	1.68E+00	2.60E-07	
Aluminum	i			1.00E-03	NA	1.52E+05	152	0.152	2.00E-01							3.04E-05
Arsenic	i			1.00E-03	NA	2.03E+01	0.0202663	2.0266E-05	2.00E-01							4.05E-09
Barium	i			1.00E-03	NA	3.91E+03	3.91	0.00391	2.00E-01							7.82E-07
Benzene	o	2.13	78.1	1.55E-02	NA	4.20E+00	0.0042006	4.2006E-06	2.00E-01	2.87E-01	5.26E-02	3.69E-01	3.36E-01	6.90E-01	4.31E-08	
Chlorobenzene	o	2.84	112.6	2.97E-02	NA	5.22E+00	0.0052215	5.22E-06	2.00E-01	4.48E-01	1.21E-01	4.18E-01	3.82E-01	1.08E+00	1.28E-07	
Chromium	i			1.00E-03	NA	2.23E+02	0.223	2.23E-04	2.00E-01							4.46E-08
Iron	i			1.00E-03	NA	2.64E+04	26.4	2.64E-02	2.00E-01							5.28E-06
Lead	i			1.00E-03	NA	1.97E+02	0.197	1.97E-04	2.00E-01							3.94E-08
Manganese	i			1.00E-03	NA	1.94E+02	0.194	1.94E-04	2.00E-01							3.88E-08
Selenium	i			1.00E-03	NA	4.11E+01	0.0411306	4.11E-05	2.00E-01							8.23E-09
Vanadium	i			1.00E-03	NA	2.22E+02	0.222	2.22E-04	2.00E-01							4.44E-08
Vinyl Chloride	o	1.36	62.5	5.77E-03	NA	1.49E+00	0.0014902	1.49E-06	2.00E-01	2.35E-01	1.75E-02	3.45E-01	3.14E-01	5.64E-01	5.15E-09	

CALCULATION OF DAevent FOR Child DERMAL CONTACT WITH GROUNDWATER Area 2/3

	org/inorg	log Kow	MW	Kp [cm/hr]	Kp,max [cm/hr]	Cw [ug/l]	Cw [mg/L]	Cw [mg/cm^3]	tevent [hr/event]	τevent [hr]	B	c	b	t* [hr]	DAevent org ng/cm^2-even	DAevent inorg ng/cm^2-event]
1,1,2,2-Tetrachloroeth a	o	2.39	167.9	7.26E-03	NA	6.11E-01	0.0006108	6.108E-07	2.00E-01	9.15E-01	3.62E-02	3.58E-01	3.26E-01	2.20E+00	5.25E-09	
Aluminum	i			1.00E-03	NA	1.25E+05	124.5	0.1245	2.00E-01	1.05E-01						2.49E-05
Barium	i			1.00E-03	NA	1.52E+03	1.52	0.00152	2.00E-01	1.05E-01						3.04E-07
Benzene	o	2.13	78.1	1.55E-02	NA	7.85E+00	0.0078484	7.8484E-06	2.00E-01	2.87E-01	5.26E-02	3.69E-01	3.36E-01	6.90E-01	8.05E-08	
Chlorobenzene	o	2.84	112.6	2.97E-02	NA	6.38E+00	0.0063764	6.38E-06	2.00E-01	4.48E-01	1.21E-01	4.18E-01	3.82E-01	1.08E+00	1.57E-07	
Chloroform	o	1.97	119.4	7.10E-03	NA	2.71E+00	0.0027126	2.71E-06	2.00E-01	4.90E-01	2.98E-02	3.54E-01	3.22E-01	1.18E+00	1.67E-08	
Chromium	i			1.00E-03	NA	1.62E+02	0.1615	1.62E-04	2.00E-01	1.05E-01						3.23E-08
cis-1,2-dichloroethene	o	1.86	96.9	8.01E-03	NA	6.20E+01	0.062	6.20E-05	2.00E-01	3.66E-01	3.03E-02	3.54E-01	3.22E-01	8.79E-01	3.72E-07	
Iron	i			1.00E-03	NA	1.16E+04	11.6	1.16E-02	2.00E-01	1.05E-01						2.32E-06
Lead	i			1.00E-03	NA	1.61E+02	0.161	1.61E-04	2.00E-01	1.05E-01						3.22E-08
Selenium	i			1.00E-03	NA	1.48E+01	0.01476	1.48E-05	2.00E-01	1.05E-01						2.95E-09
Tetrachloroethene	o	3.4	165.8	3.54E-02	NA	2.14E+01	0.0214172	2.14E-05	2.00E-01	8.91E-01	1.76E-01	4.59E-01	4.21E-01	2.14E+00	8.86E-07	
Trichloroethene	o	2.42	131.4	1.22E-02	NA	1.25E+03	1.25	1.25E-03	2.00E-01	5.72E-01	5.37E-02	3.70E-01	3.37E-01	1.37E+00	1.42E-05	
Vanadium	i			1.00E-03	NA	2.25E+02	0.225	2.25E-04	2.00E-01	1.05E-01						4.50E-08
Vinyl Chloride	o	1.36	62.5	5.77E-03	NA	2.03E+01	0.0203	2.03E-05	2.00E-01	2.35E-01	1.75E-02	3.45E-01	3.14E-01	5.64E-01	7.02E-08	

Reference: USEPA. 2000. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, (Part E, *Supplemental Guidance for Dermal Risk Assessment), Interim Guidance.*

APPENDIX E-5
RAGS D Tables E5.1 and E5.2

TABLE E5.1

NON-CANCER TOXICITY DATA - ORAL/DERMAL
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD	Oral RfD Units	Oral to Dermal Adjustment Factor	Adjusted Dermal RfD[1]	Dermal RfD Units	Primary Target Organ	Comment
1,1,2,2-Tetrachloroethane	NA	6.0E-02	mg/kg-day	0.70	4.20E-02	mg/kg-day	CNS/GI/Liver	
1,4-Dichlorobenzene	NA	3.0E-02	mg/kg-day	0.90	2.70E-02	mg/kg-day	Liver /Blood	
Actinium-228		NA	mg/kg-day	--	NA	mg/kg-day		
Aluminum	NA	1.0E+00	mg/kg-day	0.10	1.00E-01	mg/kg-day	Altered body weight	
Arsenic	Chronic	3.0E-04	mg/kg-day	0.95	2.85E-04	mg/kg-day	Skin/circulatory system	(5)
Barium	Chronic	7.0E-02	mg/kg-day	0.07	4.90E-03	mg/kg-day	Increased blood pressure	
Benzene	Chronic	3.0E-03	mg/kg-day	0.97	2.91E-03	mg/kg-day	Carcinogen	
Benzo(a)pyrene (equiv)	NA	NA	mg/kg-day	0.90	NA	mg/kg-day	Carcinogen	
Bis(2-ethylhexyl)phthalate	Chronic	2.0E-02	mg/kg-day	0.19	3.80E-03	mg/kg-day	Carcinogen/ Liver	
Bismuth-214		NA	mg/kg-day	--	NA	mg/kg-day		
Cesium-137		NA	mg/kg-day	--	NA	mg/kg-day		
Chlorobenzene	Chronic	2.00E-02	mg/kg-day	0.31	6.20E-03	mg/kg-day	kidney / liver	
Chloroform	Chronic	1.0E-02	mg/kg-day	0.20	2.00E-03	mg/kg-day	Liver	
Chromium	Chronic	3.0E-03	mg/kg-day	0.02	6.00E-05	mg/kg-day	NOAEL	(2)
cis-1,2-dichloroethene	Chronic	1.0E-02	mg/kg-day	1.00	1.00E-02	mg/kg-day	blood / liver	
Cobalt-60		NA	mg/kg-day	--	NA	mg/kg-day		
Copper	NA	4.0E-02	mg/kg-day	0.30	1.20E-02	mg/kg-day	Carcinogen	
Dieldrin	Chronic	5.0E-05	mg/kg-day	0.50	2.50E-05	mg/kg-day	Carcinogen	
Gross Alpha		NA	mg/kg-day	--	NA	mg/kg-day		
Gross Beta		NA	mg/kg-day	--	NA	mg/kg-day		
Heptachlor	Chronic	5.0E-04	mg/kg-day	0.72	3.60E-04	mg/kg-day	Carcinogen	
Iron	NA	3.0E-01	mg/kg-day	0.15	4.50E-02	mg/kg-day		
Lead	NA	NA	mg/kg-day	0.15	NA	mg/kg-day	CNS	
Lead-210		NA	mg/kg-day	--	NA	mg/kg-day		
Lead-212		NA	mg/kg-day	--	NA	mg/kg-day		
Lead-214		NA	mg/kg-day	--	NA	mg/kg-day		
Manganese	Chronic	2.0E-02	mg/kg-day	0.04	8.00E-04	mg/kg-day	CNS	(3)
Mercury	Chronic	3.0E-04	mg/kg-day	0.0001	NA	mg/kg-day	CNS	(4)
Methane		NA	mg/kg-day	--	NA	mg/kg-day		
Orthophosphate		NA	mg/kg-day	--	NA	mg/kg-day		
Pentachlorophenol	Chronic	3.0E-02	mg/kg-day	1.00	3.00E-02	mg/kg-day	Carcinogen	
Potassium-40		NA	mg/kg-day	--	NA	mg/kg-day		
Selenium	Chronic	5.0E-03	mg/kg-day	0.44	2.20E-03	mg/kg-day	CNS / GI / Skin	
Tetrachloroethene	Chronic	1.0E-02	mg/kg-day	1.00	1.00E-02	mg/kg-day	Liver	
Thallium-208		NA	mg/kg-day	--	NA	mg/kg-day		
Trichloroethene	NA	6.0E-03	mg/kg-day	0.15	9.00E-04	mg/kg-day	CNS	
Vanadium	Chronic	7.0E-03	mg/kg-day	0.01	7.00E-05	mg/kg-day	NOAEL	
Vinyl chloride	NA	NA	mg/kg-day	1.00	NA	mg/kg-day	Carcinogen	

Source: USEPA Region IV guidance (June 1997).

[1] RfD dermal = RfDoral x (Oral to Dermal Adjustment Factor)

[2] Values given for Chromium (VI)

[3] Integrated Risk Information System Oral RfD

[4] Value is for mercuric chloride.

[5] GI Adsorption for arsenic is given as 0.95 in Saranko, Christopher J., Roberts, Stephen M. (University of Florida). 1998. Letter to Florida Department of Environmental Protection, August 19, 1998. Gainesville, FL.

RfD = Reference dose
NA = Not applicable since an oral RfD is not available for this compound
CNS = Central Nervous System
GI = Gastrointestinal
NOAEL = No Observed Adverse Effect Level

TABLE E5.2

NON-CANCER TOXICITY DATA - INHALATION
OPERABLE UNIT - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC	Inhalation RfC Units	Adjusted Inhalation RfD [1]	Adjusted Inhalation RfD Units	Primary Target Organ	Comment
1,1,2,2-Tetrachloroethane	chronic	NA	mg/m^3	NA	mg/kg-day	CNS/ GI/ Liver	
1,4-Dichlorobenzene	chronic	8.00E-01	mg/m^3	2.29E-01	mg/kg-day	Liver/ Blood	
Actinium-228	chronic	NA	mg/m^3	NA	mg/kg-day	Carcinogen	
Aluminum	chronic	NA	mg/m^3	1.00E-03	mg/kg-day	Altered body weight	
Arsenic	chronic	NA	mg/m^3	NA	mg/kg-day		
Barium	chronic	5.00E-04	mg/m^3	1.40E-04	mg/kg-day	increased blood pressure	
Benzene	chronic	NA	mg/m^3	1.71E-03	mg/kg-day	Carcinogen	
Benzo(a)pyrene (equiv)	chronic	NA	mg/m^3	NA	mg/kg-day	Carcinogen	
Bismuth-214	chronic	NA	mg/m^3	NA	mg/kg-day	Carcinogen	
Cesium-137	chronic	NA	mg/m^3	NA	mg/kg-day	Carcinogen	
Chlorobenzene	chronic	2.00E-02	mg/m^3	5.00E-03	mg/kg-day	kidney / liver	
Chloroform	chronic	NA	mg/m^3	8.60E-05	mg/kg-day	liver	
Chromium	chronic	1.00E-04	mg/m^3	3.00E-05	mg/kg-day	NOAEL	[2]
cis-1,2-dichloroethene	chronic	NA	mg/m^3	NA	mg/kg-day	blood / liver	
Cobalt-60	chronic	NA	mg/m^3	NA	mg/kg-day	Carcinogen	
Copper	chronic	NA	mg/m^3	NA	mg/kg-day	Carcinogen	
Dieldrin	chronic	NA	mg/m^3	NA	mg/kg-day	Carcinogen	
Gross Alpha	chronic	NA	mg/m^3	NA	mg/kg-day		
Gross Beta	chronic	NA	mg/m^3	NA	mg/kg-day		
Heptachlor	chronic	NA	mg/m^3	NA	mg/kg-day	Carcinogen	
Iron	chronic	NA	mg/m^3	NA	mg/kg-day		
Lead	chronic	NA	mg/m^3	NA	mg/kg-day	CNS	
Lead-210	chronic	NA	mg/m^3	NA	mg/kg-day	Carcinogen	
Lead-212	chronic	NA	mg/m^3	NA	mg/kg-day	Carcinogen	
Lead-214	chronic	NA	mg/m^3	NA	mg/kg-day	Carcinogen	
Manganese	chronic	5.00E-05	mg/m^3	1.43E-05	mg/kg-day	CNS	
Mercury	chronic	3.00E-04	mg/m^3	8.60E-05	mg/kg-day	PNS/CNS	
Methane	chronic	NA	mg/m^3	NA	mg/kg-day		
Orthophosphate	chronic	NA	mg/m^3	NA	mg/kg-day		
Pentachlorophenol	chronic	NA	mg/m^3	NA	mg/kg-day		
Potassium-40	chronic	NA	mg/m^3	NA	mg/kg-day	Carcinogen	
Selenium	chronic	NA	mg/m^3	NA	mg/kg-day	CNS / GI / Skin	
Tetrachloroethene	chronic	NA	mg/m^3	1.40E-01	mg/kg-day	liver	
Thallium-208	chronic	NA	mg/m^3	NA	mg/kg-day	Carcinogen	
Trichloroethene	chronic	NA	mg/m^3	NA	mg/kg-day	CNS	
Vanadium	chronic	NA	mg/m^3	NA	mg/kg-day	NOAEL	
Vinyl chloride	chronic	NA	mg/m^3	NA	mg/kg-day	Carcinogen	

Source: IRIS, HEAST

[1] Adjusted Inhalation RfD = Inhalation RfC * [20 m^3/(day-70 kg)]

[2] Chromium VI (particulates)

Notes: RfC = Reference concentration
RfD = Reference dose
CNS = Central Nervous System
PNS = Peripheral Nervous System
IRIS = Integrated Risk Information System, on-line database search (USEPA, October 1, 1998)
HEAST = Health Effects Assessment Summary Tables (USEPA, July 1997)
NCEA = USEPA National Center for Environmental Assessment (USEPA RBC Table, October 1, 1998)
NA = Not applicable since an inhalation RfC is not available for this compound
NOAEL = No Observed Adverse Effect Level

APPENDIX E-6
RAGS D Tables E6.1 and E6.2

TABLE E6.1

CANCER TOXICITY DATA - ORAL/DERMAL
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Chemical of Potential Concern	Oral CSF	Oral to Dermal Adjustment Factor[1]	Adjusted Dermal Cancer Slope Factor[1]	Units	Weight of Evidence/ Cancer Guideline Description	Comments
1,1,2,2-Tetrachloroethane	2.0E-01	0.70	2.86E-01	$(mg/kg-day)^{-1}$	C	
1,4-Dichlorobenzene	2.4E-02	0.90	2.67E-02	$(mg/kg-day)^{-1}$	D	
Actinium-228	(4)	--	N/A	$(mg/kg-day)^{-1}$	A	
Aluminum	NA	0.10	N/A	$(mg/kg-day)^{-1}$	NA	
Arsenic	1.5E+00	0.95	1.58E+00	$(mg/kg-day)^{-1}$	A	(4)
Barium	NA	0.07	N/A	$(mg/kg-day)^{-1}$	D	
Benzene	5.5E-02	0.97	5.67E-02	$(mg/kg-day)^{-1}$	A	
Benzo(a)pyrene (equiv)	7.3E+00	0.90	8.11E+00	$(mg/kg-day)^{-1}$	B2	
Bismuth-214	(4)	--	N/A	$(mg/kg-day)^{-1}$	A	
Cesium-137	(4)	--	N/A	$(mg/kg-day)^{-1}$	A	
Bis(2-ethylhexyl)phthalate	1.4E-02	0.19	7.37E-02			
Chlorobenzene	NA	0.31	N/A	$(mg/kg-day)^{-1}$	D	
Chloroform	6.1E-03	0.20	3.05E-02	$(mg/kg-day)^{-1}$	B2	
Chromium	NA	0.02	N/A	$(mg/kg-day)^{-1}$	D	(2)
cis-1,2-dichloroethene	NA	1.00	N/A	$(mg/kg-day)^{-1}$	NA	
Cobalt-60	(4)	--	N/A	$(mg/kg-day)^{-1}$	A	
Copper	NA	0.30	N/A	$(mg/kg-day)^{-1}$	D	
Dieldrin	1.6E+01	0.50	3.20E+01	$(mg/kg-day)^{-1}$	B2	
Gross Alpha	(4)	--	NA	$(mg/kg-day)^{-1}$	NA	
Gross Beta	(4)	--	NA	$(mg/kg-day)^{-1}$	NA	
Heptachlor	4.5E+00	0.72	6.25E+00	$(mg/kg-day)^{-1}$	B2	
Iron	NA	0.15	N/A	$(mg/kg-day)^{-1}$	NA	
Lead	NA	0.15	N/A	$(mg/kg-day)^{-1}$	B2	
Lead-210	(4)	--	N/A	$(mg/kg-day)^{-1}$	A	
Lead-212	(4)	--	N/A	$(mg/kg-day)^{-1}$	A	
Lead-214	(4)	--	N/A	$(mg/kg-day)^{-1}$	A	
Manganese	NA	0.04	N/A	$(mg/kg-day)^{-1}$	D	
Mercury	NA	0.0001	N/A	$(mg/kg-day)^{-1}$	D	
Methane	NA	--	N/A	$(mg/kg-day)^{-1}$	NA	
Orthophosphate	NA	--	N/A	$(mg/kg-day)^{-1}$	NA	
Pentachlorophenol	1.2E-01	1.00	1.20E-01	$(mg/kg-day)^{-1}$	B2	
Potassium-40	(4)	--	N/A	$(mg/kg-day)^{-1}$	A	(3)
Selenium	NA	0.44	N/A	$(mg/kg-day)^{-1}$	D	
Tetrachloroethene	5.2E-02	1.00	5.20E-02	$(mg/kg-day)^{-1}$	NA	
Thallium-208	(4)	--	NA	$(mg/kg-day)^{-1}$	A	(3)
Trichloroethene	1.1E-02	0.15	7.33E-02	$(mg/kg-day)^{-1}$	NA	
Vanadium	NA	0.01	N/A	$(mg/kg-day)^{-1}$	NA	
Vinyl chloride	1.4E+00	1.00	1.40E+00	$(mg/kg-day)^{-1}$	A	

Source: USEPA Region IV guidance (June 1997).

[1] CSFdermal = CSForal/(Oral to Dermal Adjustment Factor)

[2] Values given for Chromium (VI)

[3] Refer to Radionuclide Carcinogenicity Table.

[4] GI Adsorption for arsenic is given as 0.95 in Saranko, Christopher J., Roberts, Stephen M. (University of Florida). 1998. Letter to Florida Department of Environmental Protection, August 19, 1998. Gainesville, FL.

Notes:

CSF = Cancer Slope Factor
N/A = Not Applicable since an oral CSF is not available for this compound

EPA Group:

A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans.
C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity
NA - Not available

TABLE E6.2

CANCER TOXICITY DATA - INHALATION
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Chemical of Potential Concern	Inhalation Unit Risk	Units for Inhalation Unit Risk	Adjustment Factor(1)	Inhalation CSF	Units for Inhalation CSF	Weight of Evidence/ Cancer Guideline Description	Comments
1,1,2,2-Tetrachloroethane	5.80E-02	$(mg/m^3)^{-1}$	3.50E+00	2.00E-01	$(mg/kg\text{-}day)^{-1}$	C	
1,4-Dichlorobenzene	NA		NA	2.20E-02	$(mg/kg\text{-}day)^{-1}$	D	
Actinium-228	NA		NA	(4)		A	
Aluminum	NA	$(mg/m^3)^{-1}$	NA	NA		NA	
Arsenic	4.30E+00	$(mg/m^3)^{-1}$	3.50E+00	1.51E+01	$(mg/kg\text{-}day)^{-1}$	A	
Barium	NA		NA	NA		D	
Benzene	8.30E-03	$(mg/m^3)^{-1}$	3.50E+00	2.90E-02	$(mg/kg\text{-}day)^{-1}$	A	
Benzo(a)pyrene (equiv)	8.80E-01	$(mg/m^3)^{-1}$	3.50E+00	3.10E+00	$(mg/kg\text{-}day)^{-1}$	B2	(2)
Bismuth-214	NA		NA	(4)		A	
Cesium-137	NA		NA	(4)		A	
Bis(2-ethylhexyl)phthalate	NA	$(mg/m^3)^{-1}$	NA	NA		B2	
Chlorobenzene	NA		NA	NA		D	
Chloroform	2.30E-02	$(mg/m^3)^{-1}$	3.50E+00	8.10E-02	$(mg/kg\text{-}day)^{-1}$	B2	
Chromium	1.20E+01	$(mg/m^3)^{-1}$	3.50E+00	4.10E+01	$(mg/kg\text{-}day)^{-1}$	A	(3)
cis-1,2-dichloroethene	NA		NA	NA		NA	
Cobalt-60	NA		NA	(4)		A	
Copper	NA		NA	NA		D	
Dieldrin	4.60E+00	$(mg/m^3)^{-1}$	3.50E+00	1.60E+01	$(mg/kg\text{-}day)^{-1}$	B2	
Gross Alpha	NA		NA	NA		NA	
Gross Beta	NA		NA	NA		NA	
Heptachlor	1.30E+00	$(mg/m^3)^{-1}$	3.50E+00	4.50E+00	$(mg/kg\text{-}day)^{-1}$	B2	
Iron	NA		NA	NA		NA	
Lead	NA		NA	NA		B2	
Lead-210	NA		NA	(4)		A	
Lead-212	NA		NA	(4)		A	
Lead-214	NA		NA	(4)		A	
Manganese	NA		NA	NA		D	
Mercury	NA		NA	NA		D	
Methane	NA		NA	NA		NA	
Orthophosphate	NA		NA	NA		NA	
Pentachlorophenol	NA		NA	NA		B2	
Potassium-40	NA		NA	(4)		A	
Selenium	NA		NA	NA		D	
Tetrachloroethene	NA	$(mg/m^3)^{-1}$	NA	2.00E-03	$(mg/kg\text{-}day)^{-1}$	NA	
Thallium-208	NA		NA	(4)		A	
Trichloroethene	NA		NA	6.00E-03	$(mg/kg\text{-}day)^{-1}$	NA	
Vanadium	NA		NA	NA		NA	
Vinyl Chloride	8.40E-02	$(mg/m^3)^{-1}$	3.50E+00	3.00E-01	$(mg/kg\text{-}day)^{-1}$	A	

Source: IRIS, HEAST
(1) Adjustment factor used to convert unit risk to CSF.
(2) Inhalation unit risk and inhalation CSF given for benzo (a) pyrene equivalents in Human Health Risk Assessment Bulletin No. 2, November, 1995.
(3) Values given for Chromium VI
(4) Refer to Radionuclide Carcinogenicity Table (HEAST, July 1997).

Notes:
CSF = Cancer Slope Factor
IRIS = Integrated Risk Information System, on-line database search (USEPA, October 1, 1998)
HEAST = Health Effects Assessment Summary Tables (USEPA, July 1997)
NCEA = USEPA National Center for Environmental Assessment (USEPA Region III RBC Table, October 1,1998)
NA = Not applicable/Not available

EPA Group:
A - Human carcinogen
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity
NA - Not available

APPENDIX E-7
RAGS D Tables E7.1 through E7.17

TABLE E7.1

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF SITE MAINTENANCE WORKERS TO SURFACE SOIL
AREA 1

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil(1)
Exposure Medium: Surface Soil/Air
Exposure Point: Area 1
Receptor Population: Site Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	7.8E-08	mg/kg-day		mg/kg-day			
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	1.1E-06	mg/kg-day	3.00E-04	mg/kg-day			3.6E-03
	(total)												3.6E-03
Dermal	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	9.1E-08	mg/kg-day		mg/kg-day			
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	1.3E-07	mg/kg-day	2.85E-04	mg/kg-day			4.4E-04
	(total)												4.4E-04
Inhalation	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	2.53E-11	mg/kg-day		mg/kg-day			
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	3.52E-10	mg/kg-day		mg/kg-day			
	(total)												0.0E+00
												Total Hazard Index Across All Exposure Routes/Pathways	**4.1E-03**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.1

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF SITE MAINTENANCE WORKERS TO SURFACE SOIL
AREA 2/3

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil(1)
Exposure Medium: Surface Soil/Air
Exposure Point: Area 2/3
Receptor Population: Site Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	9.7E-08	mg/kg-day		mg/kg-day			
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	1.0E-06	mg/kg-day	3.00E-04	mg/kg-day			3.4E-03
	(total)												3.4E-03
Dermal	Benzo(a)pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	1.1E-07	mg/kg-day		mg/kg-day			
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	1.2E-07	mg/kg-day	2.85E-04	mg/kg-day			4.1E-04
	(total)												4.1E-04
Inhalation	Benzo(a)pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	3.13E-11	mg/kg-day		mg/kg-day			
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	3.25E-10	mg/kg-day		mg/kg-day			
	(total)												0.0E+00
												Total Hazard Index Across All Exposure Routes/Pathways	**3.8E-03**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.2A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADULT RECREATOR TO SURFACE SOIL
AREA 1

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil/Air
Exposure Point: Area 1
Receptor Population: Golfer
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	3.1E-08	mg/kg-day		mg/kg-day			
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	4.4E-07	mg/kg-day	3.00E-04	mg/kg-day			1.5E-03
	(total)												1.5E-03
Dermal	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	3.6E-08	mg/kg-day		mg/kg-day			
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	5.1E-08	mg/kg-day	2.85E-04	mg/kg-day			1.8E-04
	(total)												1.8E-04
Inhalation	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	2.10E-12	mg/kg-day		mg/kg-day			
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	2.94E-11	mg/kg-day		mg/kg-day			
	(total)												0.0E+00
												Total Hazard Index Across All Exposure Routes/Pathways	**1.6E-03**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.2B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADULT RECREATOR TO SURFACE SOIL
AREA 2/3

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil/Air
Exposure Point: Area 2/3
Receptor Population: Recreator
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	2.9E-08	mg/kg-day		mg/kg-day			
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	3.0E-07	mg/kg-day	3.00E-04	mg/kg-day			1.0E-03
													1.0E-03
Dermal	Benzo(a)pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	2.7E-09	mg/kg-day		mg/kg-day			
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	2.8E-09	mg/kg-day	2.85E-04	mg/kg-day			9.8E-06
	(total)												9.8E-06
Inhalation	Benzo(a)pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	2.61E-12	mg/kg-day		mg/kg-day			
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	2.71E-11	mg/kg-day		mg/kg-day			
	(total)												0.0E+00
												Total Hazard Index Across All Exposure Routes/Pathways	1.0E-03

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE 7.3A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADOLESCENT RECREATOR TO SURFACE SOIL
AREA 1
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil/Air
Exposure Point: Area 1
Receptor Population: Golfer
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	4.9E-08	mg/kg-day		mg/kg-day			
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	6.8E-07	mg/kg-day	3.00E-04	mg/kg-day			2.3E-03
	(total)												2.3E-03
Dermal	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	4.4E-08	mg/kg-day		mg/kg-day			
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	6.2E-08	mg/kg-day	2.85E-04	mg/kg-day			2.2E-04
	(total)												2.2E-04
Inhalation	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	3.27E-12	mg/kg-day		mg/kg-day			
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	4.57E-11	mg/kg-day		mg/kg-day			
	(total)												0.0E+00
												Total Hazard Index Across All Exposure Routes/Pathways	**2.5E-03**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE 7.3B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF CHILD RECREATOR TO SURFACE SOIL
AREA 2/3

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil/Air
Exposure Point: Area 2/3
Receptor Population: Recreator
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	2.7E-07	mg/kg-day		mg/kg-day			
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	2.8E-06	mg/kg-day	3.00E-04	mg/kg-day			9.4E-03
	(total)												9.4E-03
Dermal	Benzo(a)pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	2.3E-09	mg/kg-day		mg/kg-day			
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	2.4E-09	mg/kg-day	2.85E-04	mg/kg-day			8.3E-06
	(total)												8.3E-06
Inhalation	Benzo(a)pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	4.06E-12	mg/kg-day		mg/kg-day			
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	4.21E-11	mg/kg-day		mg/kg-day			
	(total)												0.0E+00
												Total Hazard Index Across All Exposure Routes/Pathways	**9.4E-03**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.4A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF SITE MAINTENANCE WORKERS TO SURFACE WATER
PHASE I AND PHASE II

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water/Air
Exposure Point: Ponds, Canals, etc.
Receptor Population: Site Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)pyrene (equiv)	3.41E-01	ug/l	3.41E-01	ug/l	M	6.7E-09	mg/kg-day		mg/kg-day			
	Bis(2ethylhexyl)phthalate	3.68E+00	ug/l	3.68E+00	ug/l	M	7.2E-08	mg/kg-day	2.00E-02	mg/kg-day			3.6E-06
	Aluminum	5.16E+04	ug/l	5.16E+04	ug/l	M	1.0E-03	mg/kg-day	1.00E+00	mg/kg-day			1.0E-03
	Arsenic	6.37E+00	ug/l	6.37E+00	ug/l	M	1.2E-07	mg/kg-day	3.00E-04	mg/kg-day			4.2E-04
	Barium	1.07E+02	ug/l	1.07E+02	ug/l	M	2.1E-06	mg/kg-day	7.00E-02	mg/kg-day			3.0E-05
	Chromium	1.35E+01	ug/l	1.35E+01	ug/l	M	2.6E-07	mg/kg-day	3.00E-03	mg/kg-day			8.8E-05
	Iron	7.50E+04	ug/l	7.50E+04	ug/l	M	1.5E-03	mg/kg-day	3.00E-01	mg/kg-day			4.9E-03
	Lead	3.90E+01	ug/l	3.90E+01	ug/l	M	7.6E-07	mg/kg-day		mg/kg-day			
	Manganese	4.20E+02	ug/l	4.20E+02	ug/l	M	8.2E-06	mg/kg-day	2.00E-02	mg/kg-day			4.1E-04
	Mercury	9.90E-02	ug/l	9.90E-02	ug/l	M	1.9E-09	mg/kg-day	3.00E-04	mg/kg-day			6.5E-06
	Vanadium	7.15E+01	ug/l	7.15E+01	ug/l	M	1.4E-06	mg/kg-day	7.00E-03	mg/kg-day			2.0E-04
	(total)												7.1E-03
Dermal	Benzo(a)pyrene (equiv)	3.41E-01	ug/l	3.41E-01	ug/l	M	5.1E-06	mg/kg-day		mg/kg-day			
	Bis(2ethylhexyl)phthalate	3.68E+00	ug/l	3.68E+00	ug/l	M	1.7E-05	mg/kg-day	3.80E-03	mg/kg-day			4.6E-03
	Aluminum	5.16E+04	ug/l	5.16E+04	ug/l	M	1.0E-03	mg/kg-day	1.00E-01	mg/kg-day			1.0E-02
	Arsenic	6.37E+00	ug/l	6.37E+00	ug/l	M	1.2E-07	mg/kg-day	2.85E-04	mg/kg-day			4.4E-04
	Barium	1.07E+02	ug/l	1.07E+02	ug/l	M	2.1E-06	mg/kg-day	4.90E-03	mg/kg-day			4.3E-04
	Chromium	1.35E+01	ug/l	1.35E+01	ug/l	M	2.6E-07	mg/kg-day	6.00E-05	mg/kg-day			4.4E-03
	Iron	7.50E+04	ug/l	7.50E+04	ug/l	M	1.5E-03	mg/kg-day	4.50E-02	mg/kg-day			3.3E-02
	Lead	3.90E+01	ug/l	3.90E+01	ug/l	M	7.6E-07	mg/kg-day		mg/kg-day			
	Manganese	4.20E+02	ug/l	4.20E+02	ug/l	M	8.2E-06	mg/kg-day	8.00E-04	mg/kg-day			1.0E-02
	Mercury	9.90E-02	ug/l	9.90E-02	ug/l	M	1.9E-09	mg/kg-day		mg/kg-day			
	Vanadium	7.15E+01	ug/l	7.15E+01	ug/l	M	1.4E-06	mg/kg-day	7.00E-05	mg/kg-day			2.0E-02
	(total)												8.3E-02
												Total Hazard Index Across All Exposure Routes/Pathways	**9.0E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE 7.4B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF SITE MAINTENANCE WORKERS TO SURFACE WATER
PHASE III
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water/Air
Exposure Point: Ponds, Canals, etc.
Receptor Population: Site Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Bis(2ethylhexyl)phthalate	4.51E+00	ug/l	4.51E+00	ug/l	M	8.8E-08	mg/kg-day	2.00E-02	mg/kg-day			4.4E-06
	Aluminum	6.53E+03	ug/l	6.53E+03	ug/l	M	1.3E-04	mg/kg-day	1.00E+00	mg/kg-day			1.3E-04
	Arsenic	2.67E+00	ug/l	2.67E+00	ug/l	M	5.2E-08	mg/kg-day	3.00E-04	mg/kg-day			1.7E-04
	Chromium	5.10E+00	ug/l	5.10E+00	ug/l	M	1.0E-07	mg/kg-day	3.00E-03	mg/kg-day			3.3E-05
	Iron	7.09E+03	ug/l	7.09E+03	ug/l	M	1.4E-04	mg/kg-day	3.00E-01	mg/kg-day			4.6E-04
	Lead	4.54E+00	ug/l	4.54E+00	ug/l	M	8.9E-08	mg/kg-day		mg/kg-day			
	Manganese	6.82E+01	ug/l	6.82E+01	ug/l	M	1.3E-06	mg/kg-day	2.00E-02	mg/kg-day			6.7E-05
	Mercury	1.50E-01	ug/l	1.50E-01	ug/l	M	2.9E-09	mg/kg-day	3.00E-04	mg/kg-day			9.8E-06
	(total)												8.8E-04
Dermal	Bis(2ethylhexyl)phthalate	4.51E+00	ug/l	4.51E+00	ug/l	M	2.1E-05	mg/kg-day	3.80E-03	mg/kg-day			5.6E-03
	Aluminum	6.53E+03	ug/l	6.53E+03	ug/l	M	1.3E-04	mg/kg-day	1.00E-01	mg/kg-day			1.3E-03
	Arsenic	2.67E+00	ug/l	2.67E+00	ug/l	M	5.2E-08	mg/kg-day	2.85E-04	mg/kg-day			1.8E-04
	Chromium	5.10E+00	ug/l	5.10E+00	ug/l	M	1.0E-07	mg/kg-day	6.00E-05	mg/kg-day			1.7E-03
	Iron	7.09E+03	ug/l	7.09E+03	ug/l	M	1.4E-04	mg/kg-day	4.50E-02	mg/kg-day			3.1E-03
	Lead	4.54E+00	ug/l	4.54E+00	ug/l	M	8.9E-08	mg/kg-day		mg/kg-day			
	Manganese	6.82E+01	ug/l	6.82E+01	ug/l	M	1.3E-06	mg/kg-day	8.00E-04	mg/kg-day			1.7E-03
	Mercury	1.50E-01	ug/l	1.50E-01	ug/l	M	2.9E-09	mg/kg-day		mg/kg-day			
	(total)												1.4E-02
												Total Hazard Index Across All Exposure Routes/Pathways	**1.4E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.5A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADULT TRESPASSER TO SURFACE WATER
PHASE I AND PHASE II

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water/Air
Exposure Point: Ponds, Canals, etc.
Receptor Population: Trespasser
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake Non-Cancer Units	Reference Dose (2)	Reference Dose Units	Reference Concentratio	Reference Concentratio Units	Hazard Quotient
Ingestion	Benzo(a)pyrene (equiv)	3.41E-01	ug/l	3.41E-01	ug/l	M	1.6E-08	mg/kg-day		mg/kg-day			
	Bis(2ethylhexyl)phthalate	3.68E+00	ug/l	3.68E+00	ug/l	M	1.7E-07	mg/kg-day	2.00E-02	mg/kg-day			8.4E-06
	Aluminum	5.16E+04	ug/l	5.16E+04	ug/l	M	2.4E-03	mg/kg-day	1.00E+00	mg/kg-day			2.4E-03
	Arsenic	6.37E+00	ug/l	6.37E+00	ug/l	M	2.9E-07	mg/kg-day	3.00E-04	mg/kg-day			9.7E-04
	Barium	1.07E+02	ug/l	1.07E+02	ug/l	M	4.9E-06	mg/kg-day	7.00E-02	mg/kg-day			7.0E-05
	Chromium	1.35E+01	ug/l	1.35E+01	ug/l	M	6.2E-07	mg/kg-day	3.00E-03	mg/kg-day			2.1E-04
	Iron	7.50E+04	ug/l	7.50E+04	ug/l	M	3.4E-03	mg/kg-day	3.00E-01	mg/kg-day			1.1E-02
	Lead	3.90E+01	ug/l	3.90E+01	ug/l	M	1.8E-06	mg/kg-day		mg/kg-day			
	Manganese	4.20E+02	ug/l	4.20E+02	ug/l	M	1.9E-05	mg/kg-day	2.00E-02	mg/kg-day			9.6E-04
	Mercury	9.90E-02	ug/l	9.90E-02	ug/l	M	4.5E-09	mg/kg-day	3.00E-04	mg/kg-day			1.5E-05
	Vanadium	7.15E+01	ug/l	7.15E+01	ug/l	M	3.3E-06	mg/kg-day	7.00E-03	mg/kg-day			4.7E-04
	(total)												1.7E-02
Dermal	Benzo(a)pyrene (equiv)	3.41E-01	ug/l	3.41E-01	ug/l	M	7.4E-06	mg/kg-day		mg/kg-day			
	Bis(2ethylhexyl)phthalate	3.68E+00	ug/l	3.68E+00	ug/l	M	2.5E-05	mg/kg-day	3.80E-03	mg/kg-day			6.7E-03
	Aluminum	5.16E+04	ug/l	5.16E+04	ug/l	M	2.4E-03	mg/kg-day	1.00E-01	mg/kg-day			2.4E-02
	Arsenic	6.37E+00	ug/l	6.37E+00	ug/l	M	2.9E-07	mg/kg-day	2.85E-04	mg/kg-day			1.0E-03
	Barium	1.07E+02	ug/l	1.07E+02	ug/l	M	4.9E-06	mg/kg-day	4.90E-03	mg/kg-day			1.0E-03
	Chromium	1.35E+01	ug/l	1.35E+01	ug/l	M	6.2E-07	mg/kg-day	6.00E-05	mg/kg-day			1.0E-02
	Iron	7.50E+04	ug/l	7.50E+04	ug/l	M	3.4E-03	mg/kg-day	4.50E-02	mg/kg-day			7.6E-02
	Lead	3.90E+01	ug/l	3.90E+01	ug/l	M	1.8E-06	mg/kg-day		mg/kg-day			
	Manganese	4.20E+02	ug/l	4.20E+02	ug/l	M	1.9E-05	mg/kg-day	8.00E-04	mg/kg-day			2.4E-02
	Mercury	9.90E-02	ug/l	9.90E-02	ug/l	M	4.5E-09	mg/kg-day		mg/kg-day			
	Vanadium	7.15E+01	ug/l	7.15E+01	ug/l	M	3.3E-06	mg/kg-day	7.00E-05	mg/kg-day			4.7E-02
	(total)												1.9E-01

Total Hazard Index Across All Exposure Routes/Pathways **2.1E-01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE 7.5B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADULT TRESPASSER TO SURFACE
PHASE III
OU 2 McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water/Air
Exposure Point: Ponds, Canals, etc.
Receptor Population: Trespasser
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Bis(2ethylhexyl)phthalate	4.51E+00	ug/l	4.51E+00	ug/l	M	2.1E-07	mg/kg-day	2.00E-02	mg/kg-day			1.0E-05
	Aluminum	6.53E+03	ug/l	6.53E+03	ug/l	M	3.0E-04	mg/kg-day	1.00E+00	mg/kg-day			3.0E-04
	Arsenic	2.67E+00	ug/l	2.67E+00	ug/l	M	1.2E-07	mg/kg-day	3.00E-04	mg/kg-day			4.1E-04
	Chromium	5.10E+00	ug/l	5.10E+00	ug/l	M	2.3E-07	mg/kg-day	3.00E-03	mg/kg-day			7.8E-05
	Iron	7.09E+03	ug/l	7.09E+03	ug/l	M	3.2E-04	mg/kg-day	3.00E-01	mg/kg-day			1.1E-03
	Lead	4.54E+00	ug/l	4.54E+00	ug/l	M	2.1E-07	mg/kg-day		mg/kg-day			
	Manganese	6.82E+01	ug/l	6.82E+01	ug/l	M	3.1E-06	mg/kg-day	2.00E-02	mg/kg-day			1.6E-04
	Mercury	1.50E-01	ug/l	1.50E-01	ug/l	M	6.9E-09	mg/kg-day	3.00E-04	mg/kg-day			2.3E-05
	(Total)												2.1E-03
Dermal	Bis(2ethylhexyl)phthalate	4.51E+00	ug/l	4.51E+00	ug/l	M	3.1E-05	mg/kg-day	3.80E-03	mg/kg-day			8.2E-03
	Aluminum	6.53E+03	ug/l	6.53E+03	ug/l	M	3.0E-04	mg/kg-day	1.00E-01	mg/kg-day			3.0E-03
	Arsenic	2.67E+00	ug/l	2.67E+00	ug/l	M	1.2E-07	mg/kg-day	2.85E-04	mg/kg-day			4.3E-04
	Chromium	5.10E+00	ug/l	5.10E+00	ug/l	M	2.3E-07	mg/kg-day	6.00E-05	mg/kg-day			3.9E-03
	Iron	7.09E+03	ug/l	7.09E+03	ug/l	M	3.2E-04	mg/kg-day	4.50E-02	mg/kg-day			7.2E-03
	Lead	4.54E+00	ug/l	4.54E+00	ug/l	M	2.1E-07	mg/kg-day		mg/kg-day			
	Manganese	6.82E+01	ug/l	6.82E+01	ug/l	M	3.1E-06	mg/kg-day	8.00E-04	mg/kg-day			3.9E-03
	Mercury	1.50E-01	ug/l	1.50E-01	ug/l	M	6.9E-09	mg/kg-day		mg/kg-day			
	(Total)												2.7E-02
												Total Hazard Index Across All Exposure Routes/Pathways	**2.9E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.6A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADOLESCENT TRESPASSER TO SURFACE WATER
PHASE I AND PHASE II

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water/Air
Exposure Point: Ponds, Canals, etc.
Receptor Population: Trespasser
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)pyrene (equiv)	3.41E-01	ug/l	3.41E-01	ug/l	M	5.4E-08	mg/kg-day		mg/kg-day			
	Bis(2ethylhexyl)phthalate	3.68E+00	ug/l	3.68E+00	ug/l	M	5.8E-07	mg/kg-day	2.00E-02	mg/kg-day			2.9E-05
	Aluminum	5.16E+04	ug/l	5.16E+04	ug/l	M	8.2E-03	mg/kg-day	1.00E+00	mg/kg-day			8.2E-03
	Arsenic	6.37E+00	ug/l	6.37E+00	ug/l	M	1.0E-06	mg/kg-day	3.00E-04	mg/kg-day			3.4E-03
	Barium	1.07E+02	ug/l	1.07E+02	ug/l	M	1.7E-05	mg/kg-day	7.00E-02	mg/kg-day			2.4E-04
	Chromium	1.35E+01	ug/l	1.35E+01	ug/l	M	2.1E-06	mg/kg-day	3.00E-03	mg/kg-day			7.1E-04
	Iron	7.50E+04	ug/l	7.50E+04	ug/l	M	1.2E-02	mg/kg-day	3.00E-01	mg/kg-day			4.0E-02
	Lead	3.90E+01	ug/l	3.90E+01	ug/l	M	6.2E-06	mg/kg-day		mg/kg-day			
	Manganese	4.20E+02	ug/l	4.20E+02	ug/l	M	6.6E-05	mg/kg-day	2.00E-02	mg/kg-day			3.3E-03
	Mercury	9.90E-02	ug/l	9.90E-02	ug/l	M	1.6E-08	mg/kg-day	3.00E-04	mg/kg-day			5.2E-05
	Vanadium	7.15E+01	ug/l	7.15E+01	ug/l	M	1.1E-05	mg/kg-day	7.00E-03	mg/kg-day			1.6E-03
	(total)												5.7E-02
Dermal	Benzo(a)pyrene (equiv)	3.41E-01	ug/l	3.41E-01	ug/l	M	2.3E-05	mg/kg-day		mg/kg-day			
	Bis(2ethylhexyl)phthalate	3.68E+00	ug/l	3.68E+00	ug/l	M	7.9E-05	mg/kg-day	3.80E-03	mg/kg-day			2.1E-02
	Aluminum	5.16E+04	ug/l	5.16E+04	ug/l	M	7.4E-03	mg/kg-day	1.00E-01	mg/kg-day			7.4E-02
	Arsenic	6.37E+00	ug/l	6.37E+00	ug/l	M	9.1E-07	mg/kg-day	2.85E-04	mg/kg-day			3.2E-03
	Barium	1.07E+02	ug/l	1.07E+02	ug/l	M	1.5E-05	mg/kg-day	4.90E-03	mg/kg-day			3.1E-03
	Chromium	1.35E+01	ug/l	1.35E+01	ug/l	M	1.9E-06	mg/kg-day	6.00E-05	mg/kg-day			3.2E-02
	Iron	7.50E+04	ug/l	7.50E+04	ug/l	M	1.1E-02	mg/kg-day	4.50E-02	mg/kg-day			2.4E-01
	Lead	3.90E+01	ug/l	3.90E+01	ug/l	M	5.6E-06	mg/kg-day		mg/kg-day			
	Manganese	4.20E+02	ug/l	4.20E+02	ug/l	M	6.0E-05	mg/kg-day	8.00E-04	mg/kg-day			7.5E-02
	Mercury	9.90E-02	ug/l	9.90E-02	ug/l	M	1.4E-08	mg/kg-day		mg/kg-day			
	Vanadium	7.15E+01	ug/l	7.15E+01	ug/l	M	1.0E-05	mg/kg-day	7.00E-05	mg/kg-day			1.5E-01
	(total)												5.9E-01
												Total Hazard Index Across All Exposure Routes/Pathways	**6.5E-01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.6B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADOLESCENT TRESPASSER TO SURFACE WATER
PHASE I AND PHASE II

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water/Air
Exposure Point: Ponds, Canals, etc.
Receptor Population: Trespasser
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Bis(2ethylhexyl)phthalate	4.51E+00	ug/l	4.51E+00	ug/l	M	7.1E-07	mg/kg-day	2.00E-02	mg/kg-day			3.6E-05
	Aluminum	6.53E+03	ug/l	6.53E+03	ug/l	M	1.0E-03	mg/kg-day	1.00E+00	mg/kg-day			1.0E-03
	Arsenic	2.67E+00	ug/l	2.67E+00	ug/l	M	4.2E-07	mg/kg-day	3.00E-04	mg/kg-day			1.4E-03
	Chromium	5.10E+00	ug/l	5.10E+00	ug/l	M	8.1E-07	mg/kg-day	3.00E-03	mg/kg-day			2.7E-04
	Iron	7.09E+03	ug/l	7.09E+03	ug/l	M	1.1E-03	mg/kg-day	3.00E-01	mg/kg-day			3.7E-03
	Lead	4.54E+00	ug/l	4.54E+00	ug/l	M	7.2E-07	mg/kg-day		mg/kg-day			
	Manganese	6.82E+01	ug/l	6.82E+01	ug/l	M	1.1E-05	mg/kg-day	2.00E-02	mg/kg-day			5.4E-04
	Mercury	1.50E-01	ug/l	1.50E-01	ug/l	M	2.4E-08	mg/kg-day	3.00E-04	mg/kg-day			7.9E-05
	(total)												7.1E-03
Dermal	Bis(2ethylhexyl)phthalate	4.51E+00	ug/l	4.51E+00	ug/l	M	9.7E-05	mg/kg-day	3.80E-03	mg/kg-day			2.6E-02
	Aluminum	6.53E+03	ug/l	6.53E+03	ug/l	M	9.4E-04	mg/kg-day	1.00E-01	mg/kg-day			9.4E-03
	Arsenic	2.67E+00	ug/l	2.67E+00	ug/l	M	3.8E-07	mg/kg-day	2.85E-04	mg/kg-day			1.3E-03
	Chromium	5.10E+00	ug/l	5.10E+00	ug/l	M	7.3E-07	mg/kg-day	6.00E-05	mg/kg-day			1.2E-02
	Iron	7.09E+03	ug/l	7.09E+03	ug/l	M	1.0E-03	mg/kg-day	4.50E-02	mg/kg-day			2.3E-02
	Lead	4.54E+00	ug/l	4.54E+00	ug/l	M	6.5E-07	mg/kg-day		mg/kg-day			
	Manganese	6.82E+01	ug/l	6.82E+01	ug/l	M	9.8E-06	mg/kg-day	8.00E-04	mg/kg-day			1.2E-02
	Mercury	1.50E-01	ug/l	1.50E-01	ug/l	M	2.1E-08	mg/kg-day		mg/kg-day			
	(total)												8.3E-02
												Total Hazard Index Across All Exposure Routes/Pathways	**9.0E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.7

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF SITE MAINTENANCE WORKERS TO SEDIMENT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Ponds, Canals, etc.
Receptor Population: Site Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	5.38E+03	mg/kg	5.38E+03	mg/kg	M	5.3E-05	mg/kg-day	1.00E+00	mg/kg-day			5.3E-05
	Arsenic	7.29E-01	mg/kg	7.29E-01	mg/kg	M	7.1E-09	mg/kg-day	3.00E-04	mg/kg-day			2.4E-05
	Iron	1.18E+03	mg/kg	1.18E+03	mg/kg	M	1.2E-05	mg/kg-day	3.00E-01	mg/kg-day			3.8E-05
	Vanadium	1.33E+01	mg/kg	1.33E+01	mg/kg	M	1.3E-07	mg/kg-day	7.00E-03	mg/kg-day			1.9E-05
	(total)												1.3E-04
Dermal	Aluminum	5.38E+03	mg/kg	5.38E+03	mg/kg	M	1.1E-04	mg/kg-day	1.00E-01	mg/kg-day			1.1E-03
	Arsenic	7.29E-01	mg/kg	7.29E-01	mg/kg	M	1.4E-08	mg/kg-day	2.85E-04	mg/kg-day			5.0E-05
	Iron	1.18E+03	mg/kg	1.18E+03	mg/kg	M	2.3E-05	mg/kg-day	4.50E-02	mg/kg-day			5.1E-04
	Vanadium	1.33E+01	mg/kg	1.33E+01	mg/kg	M	2.6E-07	mg/kg-day	7.00E-05	mg/kg-day			3.7E-03
	(total)												5.3E-03
												Total Hazard Index Across All Exposure Routes/Pathways	**5.5E-03**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.8

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADULT TRESPASSER TO SEDIMENT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Ponds, Canals, etc.
Receptor Population: Trespasser
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	5.38E+03	mg/kg	5.38E+03	mg/kg	M	4.7E-05	mg/kg-day	1.00E+00	mg/kg-day	NA	NA	4.7E-05
	Arsenic	7.29E-01	mg/kg	7.29E-01	mg/kg	M	6.4E-09	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	2.1E-05
	Iron	1.18E+03	mg/kg	1.18E+03	mg/kg	M	1.0E-05	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	3.5E-05
	Vanadium	1.33E+01	mg/kg	1.33E+01	mg/kg	M	1.2E-07	mg/kg-day	7.00E-03	mg/kg-day	NA	NA	1.7E-05
	(total)												1.2E-04
Dermal	Aluminum	5.38E+03	mg/kg	5.38E+03	mg/kg	M	7.9E-05	mg/kg-day	1.00E-01	mg/kg-day	NA	NA	7.9E-04
	Arsenic	7.29E-01	mg/kg	7.29E-01	mg/kg	M	1.1E-08	mg/kg-day	2.85E-04	mg/kg-day	NA	NA	3.8E-05
	Iron	1.18E+03	mg/kg	1.18E+03	mg/kg	M	1.7E-05	mg/kg-day	4.50E-02	mg/kg-day	NA	NA	3.8E-04
	Vanadium	1.33E+01	mg/kg	1.33E+01	mg/kg	M	2.0E-07	mg/kg-day	7.00E-05	mg/kg-day	NA	NA	2.8E-03
	(total)												4.0E-03
												Total Hazard Index Across All Exposure Routes/Pathways	**4.1E-03**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.9

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADOLESCENT TRESPASSER TO SEDIMENT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Ponds, Canals, etc.
Receptor Population: Trespasser
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	5.38E+03	mg/kg	5.38E+03	mg/kg	M	1.6E-04	mg/kg-day	1.00E+00	mg/kg-day	NA	NA	1.6E-04
	Arsenic	7.29E-01	mg/kg	7.29E-01	mg/kg	M	2.2E-08	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	7.4E-05
	Iron	1.18E+03	mg/kg	1.18E+03	mg/kg	M	3.6E-05	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	1.2E-04
	Vanadium	1.33E+01	mg/kg	1.33E+01	mg/kg	M	4.1E-07	mg/kg-day	7.00E-03	mg/kg-day	NA	NA	5.8E-05
	(total)												4.2E-04
Dermal	Aluminum	5.38E+03	mg/kg	5.38E+03	mg/kg	M	3.0E-04	mg/kg-day	1.00E-01	mg/kg-day	NA	NA	3.0E-03
	Arsenic	7.29E-01	mg/kg	7.29E-01	mg/kg	M	4.0E-08	mg/kg-day	2.85E-04	mg/kg-day	NA	NA	1.4E-04
	Iron	1.18E+03	mg/kg	1.18E+03	mg/kg	M	6.5E-05	mg/kg-day	4.50E-02	mg/kg-day	NA	NA	1.4E-03
	Vanadium	1.33E+01	mg/kg	1.33E+01	mg/kg	M	7.3E-07	mg/kg-day	7.00E-05	mg/kg-day	NA	NA	1.0E-02
	(total)												1.5E-02

Total Hazard Index Across All Exposure Routes/Pathways **1.5E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.10

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADULT RESIDENT TO SURFACE SOIL
AREA 1
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Soil(1)
Exposure Medium: Surface Soil/Air
Exposure Point: Area 1
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	2.2E-07	mg/kg-day		mg/kg-day			
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	3.1E-06	mg/kg-day	3.00E-04	mg/kg-day			1.0E-02
	(total)												1.0E-02
Dermal	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	1.3E-07	mg/kg-day		mg/kg-day			
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	1.8E-07	mg/kg-day	2.85E-04	mg/kg-day			6.2E-04
	(total)												6.2E-04
Inhalation	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	3.54E-11	mg/kg-day		mg/kg-day			
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	4.93E-10	mg/kg-day		mg/kg-day			
	(total)												0.0E+00
												Total Hazard Index Across All Exposure Routes/Pathways	**1.1E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.10

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADULT RESIDENT TO SURFACE SOIL
AREA 2/3
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Soil(1)
Exposure Medium: Surface Soil/Air
Exposure Point: Area 2/3
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo[a]pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	2.7E-07	mg/kg-day		mg/kg-day			
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	2.8E-06	mg/kg-day	3.00E-04	mg/kg-day			9.4E-03
	(total)												9.4E-03
Dermal	Benzo[a]pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	1.6E-07	mg/kg-day		mg/kg-day			
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	1.6E-07	mg/kg-day	2.85E-04	mg/kg-day			5.7E-04
	(total)												5.7E-04
Inhalation	Benzo[a]pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	4.39E-11	mg/kg-day		mg/kg-day			
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	4.55E-10	mg/kg-day		mg/kg-day			
	(total)												0.0E+00
												Total Hazard Index Across All Exposure Routes/Pathways	**1.0E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.11

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF RESIDENT CHILD TO SURFACE SOIL
AREA 1
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Soil(1)
Exposure Medium: Surface Soil/Air
Exposure Point: Area 1
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	2.0E-06	mg/kg-day		mg/kg-day			
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	2.9E-05	mg/kg-day	3.00E-04	mg/kg-day			9.5E-02
	(total)												9.5E-02
Dermal	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	2.3E-07	mg/kg-day		mg/kg-day			
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	3.3E-07	mg/kg-day	2.85E-04	mg/kg-day			1.1E-03
	(total)												1.1E-03
Inhalation	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	1.24E-10	mg/kg-day		mg/kg-day			
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	1.73E-09	mg/kg-day		mg/kg-day			
	(total)												0.0E+00
												Total Hazard Index Across All Exposure Routes/Pathways	**9.6E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic

TABLE E7.11

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF RESIDENT CHILD TO SURFACE SOIL
AREA 2/3
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Soil(1)
Exposure Medium: Surface Soil/Air
Exposure Point: Area 2/3
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo[a]pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	2.5E-06	mg/kg-day		mg/kg-day			
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	2.6E-05	mg/kg-day	3.00E-04	mg/kg-day			8.8E-02
	(total)												8.8E-02
Dermal	Benzo[a]pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	2.9E-07	mg/kg-day		mg/kg-day			
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	3.0E-07	mg/kg-day	2.85E-04	mg/kg-day			1.1E-03
	(total)												1.1E-03
Inhalation	Benzo[a]pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	1.54E-10	mg/kg-day		mg/kg-day			
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	1.59E-09	mg/kg-day		mg/kg-day			
	(total)												
												Total Hazard Index Across All Exposure Routes/Pathways	8.9E-02

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.12A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADULT RESIDENT TO SURFACE WATER
PHASE I AND PHASE II

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Entire Site (Area 1 and Area 2/3)
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)pyrene (equiv)	3.41E-01	ug/l	3.41E-01	ug/l	M	1.6E-08	mg/kg-day		mg/kg-day			
	Bis(2ethylhexyl)phthalate	3.68E+00	ug/l	3.68E+00	ug/l	M	1.7E-07	mg/kg-day	2.00E-02	mg/kg-day			8.4E-06
	Aluminum	5.16E+04	ug/l	5.16E+04	ug/l	M	2.4E-03	mg/kg-day	1.00E+00	mg/kg-day			2.4E-03
	Arsenic	6.37E+00	ug/l	6.37E+00	ug/l	M	2.9E-07	mg/kg-day	3.00E-04	mg/kg-day			9.7E-04
	Barium	1.07E+02	ug/l	1.07E+02	ug/l	M	4.9E-06	mg/kg-day	7.00E-02	mg/kg-day			7.0E-05
	Chromium	1.35E+01	ug/l	1.35E+01	ug/l	M	6.2E-07	mg/kg-day	3.00E-03	mg/kg-day			2.1E-04
	Iron	7.50E+04	ug/l	7.50E+04	ug/l	M	3.4E-03	mg/kg-day	3.00E-01	mg/kg-day			1.1E-02
	Lead	3.90E+01	ug/l	3.90E+01	ug/l	M	1.8E-06	mg/kg-day		mg/kg-day			
	Manganese	4.20E+02	ug/l	4.20E+02	ug/l	M	1.9E-05	mg/kg-day	2.00E-02	mg/kg-day			9.6E-04
	Mercury	9.90E-02	ug/l	9.90E-02	ug/l	M	4.5E-09	mg/kg-day	3.00E-04	mg/kg-day			1.5E-05
	Vanadium	7.15E+01	ug/l	7.15E+01	ug/l	M	3.3E-06	mg/kg-day	7.00E-03	mg/kg-day			4.7E-04
	(total)												1.7E-02
Dermal	Benzo(a)pyrene (equiv)	3.41E-01	ug/l	3.41E-01	ug/l	M	7.4E-06	mg/kg-day		mg/kg-day			
	Bis(2ethylhexyl)phthalate	3.68E+00	ug/l	3.68E+00	ug/l	M	7.2E-06	mg/kg-day	3.80E-03	mg/kg-day			5.3E-07
	Aluminum	5.16E+04	ug/l	5.16E+04	ug/l	M	2.4E-03	mg/kg-day	1.00E-01	mg/kg-day			2.4E-02
	Arsenic	6.37E+00	ug/l	6.37E+00	ug/l	M	2.9E-07	mg/kg-day	2.85E-04	mg/kg-day			1.0E-03
	Barium	1.07E+02	ug/l	1.07E+02	ug/l	M	4.9E-06	mg/kg-day	4.90E-03	mg/kg-day			1.0E-03
	Chromium	1.35E+01	ug/l	1.35E+01	ug/l	M	6.2E-07	mg/kg-day	6.00E-05	mg/kg-day			1.0E-02
	Iron	7.50E+04	ug/l	7.50E+04	ug/l	M	3.4E-03	mg/kg-day	4.50E-02	mg/kg-day			7.6E-02
	Lead	3.90E+01	ug/l	3.90E+01	ug/l	M	1.8E-06	mg/kg-day		mg/kg-day			
	Manganese	4.20E+02	ug/l	4.20E+02	ug/l	M	1.9E-05	mg/kg-day	8.00E-04	mg/kg-day			2.4E-02
	Mercury	9.90E-02	ug/l	9.90E-02	ug/l	M	4.5E-09	mg/kg-day		mg/kg-day			
	Vanadium	7.15E+01	ug/l	7.15E+01	ug/l	M	3.3E-06	mg/kg-day	7.00E-05	mg/kg-day			4.7E-02
	(total)												1.8E-01
												Total Hazard Index Across All Exposure Routes/Pathways	**2.0E-01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.12B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADULT RESIDENT TO SURFACE WATER
PHASE III

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Entire Site (Area 1 and Area 2/3)
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Bis(2ethylhexyl)phthalate	4.51E+00	ug/l	4.51E+00	ug/l	M	2.1E-07	mg/kg-day	2.00E-02	mg/kg-day			1.0E-05
	Aluminum	6.53E+03	ug/l	6.53E+03	ug/l	M	3.0E-04	mg/kg-day	1.00E+00	mg/kg-day			3.0E-04
	Arsenic	2.67E+00	ug/l	2.67E+00	ug/l	M	1.2E-07	mg/kg-day	3.00E-04	mg/kg-day			4.1E-04
	Chromium	5.10E+00	ug/l	5.10E+00	ug/l	M	2.3E-07	mg/kg-day	3.00E-03	mg/kg-day			7.8E-05
	Iron	7.09E+03	ug/l	7.09E+03	ug/l	M	3.2E-04	mg/kg-day	3.00E-01	mg/kg-day			1.1E-03
	Lead	4.54E+00	ug/l	4.54E+00	ug/l	M	2.1E-07	mg/kg-day		mg/kg-day			
	Manganese	6.82E+01	ug/l	6.82E+01	ug/l	M	3.1E-06	mg/kg-day	2.00E-02	mg/kg-day			1.6E-04
	Mercury	1.50E-01	ug/l	1.50E-01	ug/l	M	6.9E-09	mg/kg-day	3.00E-04	mg/kg-day			2.3E-05
	(total)												2.1E-03
Dermal	Bis(2ethylhexyl)phthalate	4.51E+00	ug/l	4.51E+00	ug/l	M	3.1E-05	mg/kg-day	3.80E-03	mg/kg-day			8.2E-03
	Aluminum	6.53E+03	ug/l	6.53E+03	ug/l	M	3.0E-04	mg/kg-day	1.00E-01	mg/kg-day			3.0E-03
	Arsenic	2.67E+00	ug/l	2.67E+00	ug/l	M	1.2E-07	mg/kg-day	2.85E-04	mg/kg-day			4.3E-04
	Chromium	5.10E+00	ug/l	5.10E+00	ug/l	M	2.3E-07	mg/kg-day	6.00E-05	mg/kg-day			3.9E-03
	Iron	7.09E+03	ug/l	7.09E+03	ug/l	M	3.2E-04	mg/kg-day	4.50E-02	mg/kg-day			7.2E-03
	Lead	4.54E+00	ug/l	4.54E+00	ug/l	M	2.1E-07	mg/kg-day		mg/kg-day			
	Manganese	6.82E+01	ug/l	6.82E+01	ug/l	M	3.1E-06	mg/kg-day	8.00E-04	mg/kg-day			3.9E-03
	Mercury	1.50E-01	ug/l	1.50E-01	ug/l	M	6.9E-09	mg/kg-day		mg/kg-day			
	(total)												2.7E-02
												Total Hazard Index Across All Exposure Routes/Pathways	**2.9E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.13A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADOLESCENT RESIDENT TO SURFACE WATER
PHASE I AND PHASE II

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water/Air
Exposure Point: Ponds, Canals, etc.
Receptor Population: Resident
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)pyrene (equiv)	3.41E-01	ug/l	3.41E-01	ug/l	M	5.4E-08	mg/kg-day		mg/kg-day			
	Bis(2ethylhexyl)phthalate	3.68E+00	ug/l	3.68E+00	ug/l	M	5.8E-07	mg/kg-day	2.00E-02	mg/kg-day			2.9E-05
	Aluminum	5.16E+04	ug/l	5.16E+04	ug/l	M	8.2E-03	mg/kg-day	1.00E+00	mg/kg-day			8.2E-03
	Arsenic	6.37E+00	ug/l	6.37E+00	ug/l	M	1.0E-06	mg/kg-day	3.00E-04	mg/kg-day			3.4E-03
	Barium	1.07E+02	ug/l	1.07E+02	ug/l	M	1.7E-05	mg/kg-day	7.00E-02	mg/kg-day			2.4E-04
	Chromium	1.35E+01	ug/l	1.35E+01	ug/l	M	2.1E-06	mg/kg-day	3.00E-03	mg/kg-day			7.1E-04
	Iron	7.50E+04	ug/l	7.50E+04	ug/l	M	1.2E-02	mg/kg-day	3.00E-01	mg/kg-day			4.0E-02
	Lead	3.90E+01	ug/l	3.90E+01	ug/l	M	6.2E-06	mg/kg-day		mg/kg-day			
	Manganese	4.20E+02	ug/l	4.20E+02	ug/l	M	6.6E-05	mg/kg-day	2.00E-02	mg/kg-day			3.3E-03
	Mercury	9.90E-02	ug/l	9.90E-02	ug/l	M	1.6E-08	mg/kg-day	3.00E-04	mg/kg-day			5.2E-05
	Vanadium	7.15E+01	ug/l	7.15E+01	ug/l	M	1.1E-05	mg/kg-day	7.00E-03	mg/kg-day			1.6E-03
	(total)												5.7E-02
Dermal	Benzo(a)pyrene (equiv)	3.41E-01	ug/l	3.41E-01	ug/l	M	2.3E-05	mg/kg-day		mg/kg-day			
	Bis(2ethylhexyl)phthalate	3.68E+00	ug/l	3.68E+00	ug/l	M	7.9E-05	mg/kg-day	3.80E-03	mg/kg-day			2.1E-02
	Aluminum	5.16E+04	ug/l	5.16E+04	ug/l	M	7.4E-03	mg/kg-day	1.00E-01	mg/kg-day			7.4E-02
	Arsenic	6.37E+00	ug/l	6.37E+00	ug/l	M	9.1E-07	mg/kg-day	2.85E-04	mg/kg-day			3.2E-03
	Barium	1.07E+02	ug/l	1.07E+02	ug/l	M	1.5E-05	mg/kg-day	4.90E-03	mg/kg-day			3.1E-03
	Chromium	1.35E+01	ug/l	1.35E+01	ug/l	M	1.9E-06	mg/kg-day	6.00E-05	mg/kg-day			3.2E-02
	Iron	7.50E+04	ug/l	7.50E+04	ug/l	M	1.1E-02	mg/kg-day	4.50E-02	mg/kg-day			2.4E-01
	Lead	3.90E+01	ug/l	3.90E+01	ug/l	M	5.6E-06	mg/kg-day		mg/kg-day			
	Manganese	4.20E+02	ug/l	4.20E+02	ug/l	M	6.0E-05	mg/kg-day	8.00E-04	mg/kg-day			7.5E-02
	Mercury	9.90E-02	ug/l	9.90E-02	ug/l	M	1.4E-08	mg/kg-day		mg/kg-day			
	Vanadium	7.15E+01	ug/l	7.15E+01	ug/l	M	1.0E-05	mg/kg-day	7.00E-05	mg/kg-day			1.5E-01
	(total)												5.9E-01
												Total Hazard Index Across All Exposure Routes/Pathways	**6.5E-01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.13B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADOLESCENT RESIDENT TO SURFACE WATER
PHASE III

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water/Air
Exposure Point: Ponds, Canals, etc.
Receptor Population: Resident
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Bis(2ethylhexyl)phthalate	4.51E+00	ug/l	4.51E+00	ug/l	M	7.1E-07	mg/kg-day	2.00E-02	mg/kg-day			3.6E-05
	Aluminum	6.53E+03	ug/l	6.53E+03	ug/l	M	1.0E-03	mg/kg-day	1.00E+00	mg/kg-day			1.0E-03
	Arsenic	2.67E+00	ug/l	2.67E+00	ug/l	M	4.2E-07	mg/kg-day	3.00E-04	mg/kg-day			1.4E-03
	Chromium	5.10E+00	ug/l	5.10E+00	ug/l	M	8.1E-07	mg/kg-day	3.00E-03	mg/kg-day			2.7E-04
	Iron	7.09E+03	ug/l	7.09E+03	ug/l	M	1.1E-03	mg/kg-day	3.00E-01	mg/kg-day			3.7E-03
	Lead	4.54E+00	ug/l	4.54E+00	ug/l	M	7.2E-07	mg/kg-day		mg/kg-day			
	Manganese	6.82E+01	ug/l	6.82E+01	ug/l	M	1.1E-05	mg/kg-day	2.00E-02	mg/kg-day			5.4E-04
	Mercury	1.50E-01	ug/l	1.50E-01	ug/l	M	2.4E-08	mg/kg-day	3.00E-04	mg/kg-day			7.9E-05
	(total)												7.1E-03
Dermal	Bis(2ethylhexyl)phthalate	4.51E+00	ug/l	4.51E+00	ug/l	M	9.7E-05	mg/kg-day	3.80E-03	mg/kg-day			2.6E-02
	Aluminum	6.53E+03	ug/l	6.53E+03	ug/l	M	9.4E-04	mg/kg-day	1.00E-01	mg/kg-day			9.4E-03
	Arsenic	2.67E+00	ug/l	2.67E+00	ug/l	M	3.8E-07	mg/kg-day	2.85E-04	mg/kg-day			1.3E-03
	Chromium	5.10E+00	ug/l	5.10E+00	ug/l	M	7.3E-07	mg/kg-day	6.00E-05	mg/kg-day			1.2E-02
	Iron	7.09E+03	ug/l	7.09E+03	ug/l	M	1.0E-03	mg/kg-day	4.50E-02	mg/kg-day			2.3E-02
	Lead	4.54E+00	ug/l	4.54E+00	ug/l	M	6.5E-07	mg/kg-day		mg/kg-day			
	Manganese	6.82E+01	ug/l	6.82E+01	ug/l	M	9.8E-06	mg/kg-day	8.00E-04	mg/kg-day			1.2E-02
	Mercury	1.50E-01	ug/l	1.50E-01	ug/l	M	2.1E-08	mg/kg-day		mg/kg-day			
	(total)												8.3E-02
										Total Hazard Index Across All Exposure Routes/Pathways			**9.0E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.14

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADULT RESIDENT TO SEDIMENT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Ponds, Canals, etc.
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	5.38E+03	mg/kg	5.38E+03	mg/kg	M	4.7E-05	mg/kg-day	1.00E+00	mg/kg-day			4.7E-05
	Arsenic	7.29E-01	mg/kg	7.29E-01	mg/kg	M	6.4E-09	mg/kg-day	3.00E-04	mg/kg-day			2.1E-05
	Iron	1.18E+03	mg/kg	1.18E+03	mg/kg	M	1.0E-05	mg/kg-day	3.00E-01	mg/kg-day			3.5E-05
	Vanadium	1.33E+01	mg/kg	1.33E+01	mg/kg	M	1.2E-07	mg/kg-day	7.00E-03	mg/kg-day			1.7E-05
	(total)												1.2E-04
Dermal	Aluminum	5.38E+03	mg/kg	5.38E+03	mg/kg	M	7.9E-05	mg/kg-day	1.00E-01	mg/kg-day			7.9E-04
	Arsenic	7.29E-01	mg/kg	7.29E-01	mg/kg	M	1.1E-08	mg/kg-day	2.85E-04	mg/kg-day			3.8E-05
	Iron	1.18E+03	mg/kg	1.18E+03	mg/kg	M	1.7E-05	mg/kg-day	4.50E-02	mg/kg-day			3.8E-04
	Vanadium	1.33E+01	mg/kg	1.33E+01	mg/kg	M	2.0E-07	mg/kg-day	7.00E-05	mg/kg-day			2.8E-03
	(total)												4.0E-03
												Total Hazard Index Across All Exposure Routes/Pathways	**4.1E-03**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.15

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADOLESCENT RESIDENT TO SEDIMENT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Ponds, Canals, etc.
Receptor Population: Resident
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	5.38E+03	mg/kg	5.38E+03	mg/kg	M	1.6E-04	mg/kg-day	1.00E+00	mg/kg-day	NA	NA	1.6E-04
	Arsenic	7.29E-01	mg/kg	7.29E-01	mg/kg	M	2.2E-08	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	7.4E-05
	Iron	1.18E+03	mg/kg	1.18E+03	mg/kg	M	3.6E-05	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	1.2E-04
	Vanadium	1.33E+01	mg/kg	1.33E+01	mg/kg	M	4.1E-07	mg/kg-day	7.00E-03	mg/kg-day	NA	NA	5.8E-05
	(total)												4.2E-04
Dermal	Aluminum	5.38E+03	mg/kg	5.38E+03	mg/kg	M	3.0E-04	mg/kg-day	1.00E-01	mg/kg-day	NA	NA	3.0E-03
	Arsenic	7.29E-01	mg/kg	7.29E-01	mg/kg	M	4.0E-08	mg/kg-day	2.85E-04	mg/kg-day	NA	NA	1.4E-04
	Iron	1.18E+03	mg/kg	1.18E+03	mg/kg	M	6.5E-05	mg/kg-day	4.50E-02	mg/kg-day	NA	NA	1.4E-03
	Vanadium	1.33E+01	mg/kg	1.33E+01	mg/kg	M	7.3E-07	mg/kg-day	7.00E-05	mg/kg-day	NA	NA	1.0E-02
	(total)												1.5E-02
												Total Hazard Index Across All Exposure Routes/Pathways	**1.5E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.16A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADOLESCENT RESIDENT TO GROUNDWATER
PHASE I AND PHASE II - AREA 1

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 1
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzene	4.20E+00	ug/l	4.20E+00	ug/l	M	1.2E-04	mg/kg-day	3.00E-03	mg/kg-day	NA	NA	3.8E-02
	Chlorobenzene	5.22E+00	ug/l	5.22E+00	ug/l	M	1.4E-04	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	7.2E-03
	Vinyl Chloride	1.49E+00	ug/l	1.49E+00	ug/l	M	4.1E-05	mg/kg-day		mg/kg-day	NA	NA	
	1,4 - Dichlorobenzene	5.66E+00	ug/l	5.66E+00	ug/l	M	1.5E-04	mg/kg-day	3.00E-02	mg/kg-day			5.2E-03
	Aluminum	1.52E+05	ug/l	1.52E+05	ug/l	M	4.2E+00	mg/kg-day	1.00E+00	mg/kg-day			4.2E+00
	Arsenic	2.03E+01	ug/l	2.03E+01	ug/l	M	5.6E-04	mg/kg-day	3.00E-04	mg/kg-day			1.9E+00
	Barium	3.91E+03	ug/l	3.91E+03	ug/l	M	1.1E-01	mg/kg-day	7.00E-02	mg/kg-day			1.5E+00
	Chromium	2.23E+02	ug/l	2.23E+02	ug/l	M	6.1E-03	mg/kg-day	3.00E-03	mg/kg-day			2.0E+00
	Lead	1.97E+02	ug/l	1.97E+02	ug/l	M	5.4E-03	mg/kg-day		mg/kg-day			
	Iron	2.64E+04	ug/l	2.64E+04	ug/l	M	7.2E-01	mg/kg-day	3.00E-01	mg/kg-day			2.4E+00
	Manganese	1.94E+02	ug/l	1.94E+02	ug/l	M	5.3E-03	mg/kg-day	2.00E-02	mg/kg-day			2.7E-01
	Selenium	4.11E+01	ug/l	4.11E+01	ug/l	M	1.1E-03	mg/kg-day	5.00E-03	mg/kg-day			2.3E-01
	Vanadium	2.22E+02	ug/l	2.22E+02	ug/l	M	6.1E-03	mg/kg-day	7.00E-03	mg/kg-day			8.7E-01
	(total)												1.3E+01
Dermal	Benzene	4.20E+00	ug/l	4.20E+00	ug/l	M	1.2E-05	mg/kg-day	2.91E-03	mg/kg-day	NA	NA	4.1E-03
	Chlorobenzene	5.22E+00	ug/l	5.22E+00	ug/l	M	3.5E-05	mg/kg-day	6.20E-03	mg/kg-day	NA	NA	5.7E-03
	Vinyl Chloride	1.49E+00	ug/l	1.49E+00	ug/l	M	1.4E-06	mg/kg-day		mg/kg-day	NA	NA	
	1,4 - Dichlorobenzene	5.66E+00	ug/l	5.66E+00	ug/l	M	7.1E-05	mg/kg-day	2.70E-02	mg/kg-day			2.6E-03
	Aluminum	1.52E+05	ug/l	1.52E+05	ug/l	M	8.3E-03	mg/kg-day	1.00E-01	mg/kg-day			8.3E-02
	Arsenic	2.03E+01	ug/l	2.03E+01	ug/l	M	1.1E-06	mg/kg-day	2.85E-04	mg/kg-day			3.9E-03
	Barium	3.91E+03	ug/l	3.91E+03	ug/l	M	2.1E-04	mg/kg-day	4.90E-03	mg/kg-day			4.4E-02
	Chromium	2.23E+02	ug/l	2.23E+02	ug/l	M	1.2E-05	mg/kg-day	6.00E-05	mg/kg-day			2.0E-01
	Lead	1.97E+02	ug/l	1.97E+02	ug/l	M	1.1E-05	mg/kg-day		mg/kg-day			
	Iron	2.64E+04	ug/l	2.64E+04	ug/l	M	1.4E-03	mg/kg-day	4.50E-02	mg/kg-day			3.2E-02
	Manganese	1.94E+02	ug/l	1.94E+02	ug/l	M	1.1E-05	mg/kg-day	8.00E-04	mg/kg-day			1.3E-02
	Selenium	4.11E+01	ug/l	4.11E+01	ug/l	M	2.3E-06	mg/kg-day	2.20E-03	mg/kg-day			1.0E-03
	Vanadium	2.22E+02	ug/l	2.22E+02	ug/l	M	1.2E-05	mg/kg-day	7.00E-05	mg/kg-day			1.7E-01
	(total)												5.7E-01
Inhalation							Inhalation risk assumed to be equal to ingestion risk for VOAs						
	(total)												5.1E-02
												Total Hazard Index Across All Exposure Routes/Pathways	1.4E+01

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.16A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADOLESCENT RESIDENT TO GROUNDWATER
PHASE I AND PHASE II - AREA 2-3

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 2/3
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Hazard Quotient
Ingestion	1,1,2,2- Tetrachloroethane	6.11E-01	ug/l	6.11E-01	ug/l	M	1.7E-05	mg/kg-day	6.00E-02	mg/kg-day	2.8E-04
	Benzene	7.85E+00	ug/l	7.85E+00	ug/l	M	2.2E-04	mg/kg-day	3.00E-03	mg/kg-day	7.2E-02
	Chlorobenzene	6.38E+00	ug/l	6.38E+00	ug/l	M	1.7E-04	mg/kg-day	2.00E-02	mg/kg-day	8.7E-03
	Chloroform	2.71E+00	ug/l	2.71E+00	ug/l	M	7.4E-05	mg/kg-day	1.00E-02	mg/kg-day	7.4E-03
	Tetrachloroethene	2.14E+01	ug/l	2.14E+01	ug/l	M	5.9E-04	mg/kg-day	1.00E-02	mg/kg-day	5.9E-02
	Trichloroethene	1.25E+03	ug/l	1.25E+03	ug/l	M	3.4E-02	mg/kg-day	6.00E-03	mg/kg-day	5.7E+00
	Vinyl Chloride	2.03E+01	ug/l	2.03E+01	ug/l	M	5.6E-04	mg/kg-day		mg/kg-day	
	cis-1,2-dichloroethene	6.20E+01	ug/l	6.20E+01	ug/l	M	1.7E-03	mg/kg-day	1.00E-02	mg/kg-day	1.7E-01
	Aluminum	1.25E+05	ug/l	1.25E+05	ug/l	M	3.4E+00	mg/kg-day	1.00E+00	mg/kg-day	3.4E+00
	Barium	1.52E+03	ug/l	1.52E+03	ug/l	M	4.2E-02	mg/kg-day	7.00E-02	mg/kg-day	5.9E-01
	Chromium	1.62E+02	ug/l	1.62E+02	ug/l	M	4.4E-03	mg/kg-day	3.00E-03	mg/kg-day	1.5E+00
	Iron	1.16E+04	ug/l	1.16E+04	ug/l	M	3.2E-01	mg/kg-day	3.00E-01	mg/kg-day	1.1E+00
	Lead	1.61E+02	ug/l	1.61E+02	ug/l	M	4.4E-03	mg/kg-day		mg/kg-day	
	Selenium	1.48E+01	ug/l	1.48E+01	ug/l	M	4.0E-04	mg/kg-day	5.00E-03	mg/kg-day	8.1E-02
	Vanadium	2.25E+02	ug/l	2.25E+02	ug/l	M	6.2E-03	mg/kg-day	7.00E-03	mg/kg-day	8.8E-01
											1.4E+01
Dermal	1,1,2,2- Tetrachloroethane	6.11E-01	ug/l	6.11E-01	ug/l	M	1.4E-06	mg/kg-day	4.20E-02	mg/kg-day	3.4E-05
	Benzene	7.85E+00	ug/l	7.85E+00	ug/l	M	2.2E-05	mg/kg-day	2.91E-03	mg/kg-day	7.6E-03
	Chlorobenzene	6.38E+00	ug/l	6.38E+00	ug/l	M	4.3E-05	mg/kg-day	6.20E-03	mg/kg-day	6.9E-03
	Chloroform	2.71E+00	ug/l	2.71E+00	ug/l	M	4.6E-06	mg/kg-day	2.00E-03	mg/kg-day	2.3E-03
	Tetrachloroethene	2.14E+01	ug/l	2.14E+01	ug/l	M	2.4E-04	mg/kg-day	1.00E-02	mg/kg-day	2.4E-02
	Trichloroethene	1.25E+03	ug/l	1.25E+03	ug/l	M	3.9E-03	mg/kg-day	9.00E-04	mg/kg-day	4.3E+00
	Vinyl Chloride	2.03E+01	ug/l	2.03E+01	ug/l	M	1.9E-05	mg/kg-day		mg/kg-day	
	cis-1,2-dichloroethene	6.20E+01	ug/l	6.20E+01	ug/l	M	1.0E-04	mg/kg-day	1.00E-02	mg/kg-day	1.0E-02
	Aluminum	1.25E+05	ug/l	1.25E+05	ug/l	M	6.8E-03	mg/kg-day	1.00E-01	mg/kg-day	6.8E-02
	Barium	1.52E+03	ug/l	1.52E+03	ug/l	M	8.3E-05	mg/kg-day	4.90E-03	mg/kg-day	1.7E-02
	Chromium	1.62E+02	ug/l	1.62E+02	ug/l	M	8.8E-06	mg/kg-day	6.00E-05	mg/kg-day	1.5E-01
	Iron	1.16E+04	ug/l	1.16E+04	ug/l	M	6.4E-04	mg/kg-day	4.50E-02	mg/kg-day	1.4E-02
	Lead	1.61E+02	ug/l	1.61E+02	ug/l	M	8.8E-06	mg/kg-day		mg/kg-day	
	Selenium	1.48E+01	ug/l	1.48E+01	ug/l	M	8.1E-07	mg/kg-day	2.20E-03	mg/kg-day	3.7E-04
	Vanadium	2.25E+02	ug/l	2.25E+02	ug/l	M	1.2E-05	mg/kg-day	7.00E-05	mg/kg-day	1.8E-01
	(total)										4.8E+00
Inhalation							Inhalation risk assumed to be equal to ingestion risk for VOAs				
											6.0E+00
										Total Hazard Index Across All Exposure Routes/Pathways	**2.4E+01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.16B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADOLESCENT RESIDENT TO GROUNDWATER
PHASE III - AREA 1

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 1
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzene	3.40E+00	ug/l	3.40E+00	ug/l	M	9.3E-05	mg/kg-day	3.00E-03	mg/kg-day	NA	NA	3.1E-02
	Chlorobenzene	2.30E+01	ug/l	2.30E+01	ug/l	M	6.3E-04	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	3.2E-02
	1,4 - Dichlorobenzene	6.30E+00	ug/l	6.30E+00	ug/l	M	1.7E-04	mg/kg-day	3.00E-02	mg/kg-day	NA	NA	5.8E-03
	Iron	2.37E+04	ug/l	2.37E+04	ug/l	M	6.5E-01	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	2.2E+00
	Manganese	6.16E+02	ug/l	6.16E+02	ug/l	M	1.7E-02	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	8.4E-01
	(total)												3.1E+00
Dermal	Benzene	3.40E+00	ug/l	3.40E+00	ug/l	M	9.6E-06	mg/kg-day	2.91E-03	mg/kg-day	NA	NA	3.3E-03
	Chlorobenzene	2.30E+01	ug/l	2.30E+01	ug/l	M	1.5E-04	mg/kg-day	6.20E-03	mg/kg-day	NA	NA	2.5E-02
	1,4 - Dichlorobenzene	6.30E+00	ug/l	6.30E+00	ug/l	M	7.9E-05	mg/kg-day	2.70E-02	mg/kg-day	NA	NA	2.9E-03
	Iron	2.37E+04	ug/l	2.37E+04	ug/l	M	1.3E-03	mg/kg-day	4.50E-02	mg/kg-day	NA	NA	2.9E-02
	Manganese	6.16E+02	ug/l	6.16E+02	ug/l	M	3.4E-05	mg/kg-day	8.00E-04	mg/kg-day	NA	NA	4.2E-02
	(total)												1.0E-01
Inhalation							Inhalation risk assumed to be equal to ingestion risk for VOAs						
	(total)												6.3E-02
												Total Hazard Index Across All Exposure Routes/Pathways	**3.2E+00**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.16B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADOLESCENT RESIDENT TO GROUNDWATER
PHASE III - AREA 2/3

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 2/3
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Hazard Quotient
Ingestion	Benzene	1.30E+00	ug/l	1.30E+00	ug/l	M	3.6E-05	mg/kg-day	3.00E-03	mg/kg-day	1.2E-02
	Tetrachloroethene	3.40E+01	ug/l	3.40E+01	ug/l	M	9.3E-04	mg/kg-day	1.00E-02	mg/kg-day	9.3E-02
	Trichloroethene	1.20E+03	ug/l	1.20E+03	ug/l	M	3.3E-02	mg/kg-day	6.00E-03	mg/kg-day	5.5E+00
	Vinyl Chloride	2.00E+01	ug/l	2.00E+01	ug/l	M	5.5E-04	mg/kg-day		mg/kg-day	
	cis-1,2-dichloroethene	6.60E+01	ug/l	6.60E+01	ug/l	M	1.8E-03	mg/kg-day	1.00E-02	mg/kg-day	1.8E-01
	Arsenic	5.20E+00	ug/l	5.20E+00	ug/l	M	1.4E-04	mg/kg-day	3.00E-04	mg/kg-day	4.7E-01
	Iron	2.64E+03	ug/l	2.64E+03	ug/l	M	7.2E-02	mg/kg-day	3.00E-01	mg/kg-day	2.4E-01
	Vanadium	3.71E+01	ug/l	3.71E+01	ug/l	M	1.0E-03	mg/kg-day	7.00E-03	mg/kg-day	1.5E-01
	(total)										6.6E+00
Dermal	Benzene	1.30E+00	ug/l	1.30E+00	ug/l	M	3.7E-06	mg/kg-day	2.91E-03	mg/kg-day	1.3E-03
	Tetrachloroethene	3.40E+01	ug/l	3.40E+01	ug/l	M	3.9E-04	mg/kg-day	1.00E-02	mg/kg-day	3.9E-02
	Trichloroethene	1.20E+03	ug/l	1.20E+03	ug/l	M	3.7E-03	mg/kg-day	9.00E-04	mg/kg-day	4.2E+00
	Vinyl Chloride	2.00E+01	ug/l	2.00E+01	ug/l	M	1.9E-05	mg/kg-day		mg/kg-day	
	cis-1,2-dichloroethene	6.60E+01	ug/l	6.60E+01	ug/l	M	1.1E-04	mg/kg-day	1.00E-02	mg/kg-day	1.1E-02
	Arsenic	5.20E+00	ug/l	5.20E+00	ug/l	M	2.8E-07	mg/kg-day	2.85E-04	mg/kg-day	1.0E-03
	Iron	2.64E+03	ug/l	2.64E+03	ug/l	M	1.4E-04	mg/kg-day	4.50E-02	mg/kg-day	3.2E-03
	Vanadium	3.71E+01	ug/l	3.71E+01	ug/l	M	2.0E-06	mg/kg-day	7.00E-05	mg/kg-day	2.9E-02
	(total)										4.2E+00
Inhalation							Inhalation risk assumed to be equal to ingestion risk for VOAs				
	(total)										5.8E+00
										Total Hazard Index Across All Exposure Routes/Pathways	**1.7E+01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.17A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF CHILD RESIDENT TO GROUNDWATER
PHASE I AND PHASE II - AREA 1

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 1
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzene	4.20E+00	ug/l	4.20E+00	ug/l	M	2.7E-04	mg/kg-day	3.00E-03	mg/kg-day	NA	NA	9.0E-02
	Chlorobenzene	5.22E+00	ug/l	5.22E+00	ug/l	M	3.3E-04	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	1.7E-02
	Vinyl Chloride	1.49E+00	ug/l	1.49E+00	ug/l	M	9.5E-05	mg/kg-day		mg/kg-day	NA	NA	
	1,4-Dichlorobenzene	5.66E+00	ug/l	5.66E+00	ug/l	M	3.6E-04	mg/kg-day	3.00E-02	mg/kg-day	NA	NA	1.2E-02
	Aluminum	1.52E+05	ug/l	1.52E+05	ug/l	M	9.7E+00	mg/kg-day	1.00E+00	mg/kg-day	NA	NA	9.7E+00
	Arsenic	2.03E+01	ug/l	2.03E+01	ug/l	M	1.3E-03	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	4.3E+00
	Barium	3.91E+03	ug/l	3.91E+03	ug/l	M	2.5E-01	mg/kg-day	7.00E-02	mg/kg-day	NA	NA	3.6E+00
	Chromium	2.23E+02	ug/l	2.23E+02	ug/l	M	1.4E-02	mg/kg-day	3.00E-03	mg/kg-day	NA	NA	4.8E+00
	Lead	1.97E+02	ug/l	1.97E+02	ug/l	M	1.3E-02	mg/kg-day		mg/kg-day	NA	NA	
	Iron	2.64E+04	ug/l	2.64E+04	ug/l	M	1.7E+00	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	5.6E+00
	Manganese	1.94E+02	ug/l	1.94E+02	ug/l	M	1.2E-02	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	6.2E-01
	Selenium	4.11E+01	ug/l	4.11E+01	ug/l	M	2.6E-03	mg/kg-day	5.00E-03	mg/kg-day	NA	NA	5.3E-01
	Vanadium	2.22E+02	ug/l	2.22E+02	ug/l	M	1.4E-02	mg/kg-day	7.00E-03	mg/kg-day	NA	NA	2.0E+00
	(total)												3.1E+01
Dermal	Benzene	4.20E+00	ug/l	4.20E+00	ug/l	M	2.5E-05	mg/kg-day	2.91E-03	mg/kg-day	NA	NA	8.7E-03
	Chlorobenzene	5.22E+00	ug/l	5.22E+00	ug/l	M	7.5E-05	mg/kg-day	6.20E-03	mg/kg-day	NA	NA	1.2E-02
	Vinyl Chloride	1.49E+00	ug/l	1.49E+00	ug/l	M	3.0E-06	mg/kg-day		mg/kg-day	NA	NA	
	1,4-Dichlorobenzene	5.66E+00	ug/l	5.66E+00	ug/l	M	1.5E-04	mg/kg-day	2.70E-02	mg/kg-day	NA	NA	5.7E-03
	Aluminum	1.52E+05	ug/l	1.52E+05	ug/l	M	1.8E-02	mg/kg-day	1.00E-01	mg/kg-day	NA	NA	1.8E-01
	Arsenic	2.03E+01	ug/l	2.03E+01	ug/l	M	2.4E-06	mg/kg-day	2.85E-04	mg/kg-day	NA	NA	8.3E-03
	Barium	3.91E+03	ug/l	3.91E+03	ug/l	M	4.6E-04	mg/kg-day	4.90E-03	mg/kg-day	NA	NA	9.4E-02
	Chromium	2.23E+02	ug/l	2.23E+02	ug/l	M	2.6E-05	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	4.4E-01
	Lead	1.97E+02	ug/l	1.97E+02	ug/l	M	2.3E-05	mg/kg-day		mg/kg-day	NA	NA	
	Iron	2.64E+04	ug/l	2.64E+04	ug/l	M	3.1E-03	mg/kg-day	4.50E-02	mg/kg-day	NA	NA	6.9E-02
	Manganese	1.94E+02	ug/l	1.94E+02	ug/l	M	2.3E-05	mg/kg-day	8.00E-04	mg/kg-day	NA	NA	2.8E-02
	Selenium	4.11E+01	ug/l	4.11E+01	ug/l	M	4.8E-06	mg/kg-day	2.20E-03	mg/kg-day	NA	NA	2.2E-03
	Vanadium	2.22E+02	ug/l	2.22E+02	ug/l	M	2.6E-05	mg/kg-day	7.00E-05	mg/kg-day	NA	NA	3.7E-01
	(total)												1.2E+00
Inhalation							Inhalation risk assumed to be equal to ingestion risk for VOAs						
													1.2E-01
												Total Hazard Index Across All Exposure Routes/Pathways	3.3E+01

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.17A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF CHILD RESIDENT TO GROUNDWATER
PHASE I AND PHASE II - AREA 2/3

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 2/3
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1,2,2- Tetrachloroethane	6.11E-01	ug/l	6.11E-01	ug/l	M	3.9E-05	mg/kg-day	6.00E-02	mg/kg-day			6.5E-04
	Benzene	7.85E+00	ug/l	7.85E+00	ug/l	M	5.0E-04	mg/kg-day	3.00E-03	mg/kg-day			1.7E-01
	Chlorobenzene	6.38E+00	ug/l	6.38E+00	ug/l	M	4.1E-04	mg/kg-day	2.00E-02	mg/kg-day			2.0E-02
	Chloroform	2.71E+00	ug/l	2.71E+00	ug/l	M	1.7E-04	mg/kg-day	1.00E-02	mg/kg-day			1.7E-02
	Tetrachloroethene	2.14E+01	ug/l	2.14E+01	ug/l	M	1.4E-03	mg/kg-day	1.00E-02	mg/kg-day			1.4E-01
	Trichloroethene	1.25E+03	ug/l	1.25E+03	ug/l	M	8.0E-02	mg/kg-day	6.00E-03	mg/kg-day			1.3E+01
	Vinyl Chloride	2.03E+01	ug/l	2.03E+01	ug/l	M	1.3E-03	mg/kg-day		mg/kg-day			
	cis-1,2-dichloroethene	6.20E+01	ug/l	6.20E+01	ug/l	M	4.0E-03	mg/kg-day	1.00E-02	mg/kg-day			4.0E-01
	Aluminum	1.25E+05	ug/l	1.25E+05	ug/l	M	8.0E+00	mg/kg-day	1.00E+00	mg/kg-day			8.0E+00
	Barium	1.52E+03	ug/l	1.52E+03	ug/l	M	9.7E-02	mg/kg-day	7.00E-02	mg/kg-day			1.4E+00
	Chromium	1.62E+02	ug/l	1.62E+02	ug/l	M	1.0E-02	mg/kg-day	3.00E-03	mg/kg-day			3.4E+00
	Iron	1.16E+04	ug/l	1.16E+04	ug/l	M	7.4E-01	mg/kg-day	3.00E-01	mg/kg-day			2.5E+00
	Lead	1.61E+02	ug/l	1.61E+02	ug/l	M	1.0E-02	mg/kg-day		mg/kg-day			
	Selenium	1.48E+01	ug/l	1.48E+01	ug/l	M	9.4E-04	mg/kg-day	5.00E-03	mg/kg-day			1.9E-01
	Vanadium	2.25E+02	ug/l	2.25E+02	ug/l	M	1.4E-02	mg/kg-day	7.00E-03	mg/kg-day			2.1E+00
													3.2E+01
Dermal	1,1,2,2- Tetrachloroethane	6.11E-01	ug/l	6.11E-01	ug/l	M	3.1E-06	mg/kg-day	4.20E-02	mg/kg-day			7.3E-05
	Benzene	7.85E+00	ug/l	7.85E+00	ug/l	M	4.7E-05	mg/kg-day	2.91E-03	mg/kg-day			1.6E-02
	Chlorobenzene	6.38E+00	ug/l	6.38E+00	ug/l	M	9.2E-05	mg/kg-day	6.20E-03	mg/kg-day			1.5E-02
	Chloroform	2.71E+00	ug/l	2.71E+00	ug/l	M	9.8E-06	mg/kg-day	2.00E-03	mg/kg-day			4.9E-03
	Tetrachloroethene	2.14E+01	ug/l	2.14E+01	ug/l	M	5.2E-04	mg/kg-day	1.00E-02	mg/kg-day			5.2E-02
	Trichloroethene	1.25E+03	ug/l	1.25E+03	ug/l	M	8.3E-03	mg/kg-day	9.00E-04	mg/kg-day			9.3E+00
	Vinyl Chloride	2.03E+01	ug/l	2.03E+01	ug/l	M	4.1E-05	mg/kg-day		mg/kg-day			
	cis-1,2-dichloroethene	6.20E+01	ug/l	6.20E+01	ug/l	M	2.2E-04	mg/kg-day	1.00E-02	mg/kg-day			2.2E-02
	Aluminum	1.25E+05	ug/l	1.25E+05	ug/l	M	1.5E-02	mg/kg-day	1.00E-01	mg/kg-day			1.5E-01
	Barium	1.52E+03	ug/l	1.52E+03	ug/l	M	1.8E-04	mg/kg-day	4.90E-03	mg/kg-day			3.6E-02
	Chromium	1.62E+02	ug/l	1.62E+02	ug/l	M	1.9E-05	mg/kg-day	6.00E-05	mg/kg-day			3.2E-01
	Iron	1.16E+04	ug/l	1.16E+04	ug/l	M	1.4E-03	mg/kg-day	4.50E-02	mg/kg-day			3.0E-02
	Lead	1.61E+02	ug/l	1.61E+02	ug/l	M	1.9E-05	mg/kg-day		mg/kg-day			
	Selenium	1.48E+01	ug/l	1.48E+01	ug/l	M	1.7E-06	mg/kg-day	2.20E-03	mg/kg-day			7.9E-04
	Vanadium	2.25E+02	ug/l	2.25E+02	ug/l	M	2.6E-05	mg/kg-day	7.00E-05	mg/kg-day			3.8E-01
	(total)												1.0E+01
Inhalation							Inhalation risk assumed to be equal to ingestion risk for VOAs						
													1.4E+01
												Total Hazard Index Across All Exposure Routes/Pathways	5.6E+01

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.17B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF CHILD RESIDENT TO GROUNDWATER
PHASE III - AREA 1

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 1
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzene	3.40E+00	ug/l	3.40E+00	ug/l	M	2.2E-04	mg/kg-day	3.00E-03	mg/kg-day			7.2E-02
	Chlorobenzene	2.30E+01	ug/l	2.30E+01	ug/l	M	1.5E-03	mg/kg-day	2.00E-02	mg/kg-day			7.4E-02
	1,4 - Dichlorobenzene	6.30E+00	ug/l	6.30E+00	ug/l	M	4.0E-04	mg/kg-day	3.00E-02	mg/kg-day			1.3E-02
	Iron	2.37E+04	ug/l	2.37E+04	ug/l	M	1.5E+00	mg/kg-day	3.00E-01	mg/kg-day			5.1E+00
	Manganese	6.16E+02	ug/l	6.16E+02	ug/l	M	3.9E-02	mg/kg-day	2.00E-02	mg/kg-day			2.0E+00
	(total)												7.2E+00
Dermal	Benzene	3.40E+00	ug/l	3.40E+00	ug/l	M	2.0E-05	mg/kg-day	2.91E-03	mg/kg-day			7.0E-03
	Chlorobenzene	2.30E+01	ug/l	2.30E+01	ug/l	M	3.3E-04	mg/kg-day	6.20E-03	mg/kg-day			5.3E-02
	1,4 - Dichlorobenzene	6.30E+00	ug/l	6.30E+00	ug/l	M	1.7E-04	mg/kg-day	2.70E-02	mg/kg-day			6.3E-03
	Iron	2.37E+04	ug/l	2.37E+04	ug/l	M	2.8E-03	mg/kg-day	4.50E-02	mg/kg-day			6.2E-02
	Manganese	6.16E+02	ug/l	6.16E+02	ug/l	M	7.2E-05	mg/kg-day	8.00E-04	mg/kg-day			9.0E-02
	(total)												2.2E-01
Inhalation							Inhalation risk assumed to be equal to ingestion risk for VOAs						
													1.5E-01
												Total Hazard Index Across All Exposure Routes/Pathways	**7.5E+00**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.17B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF CHILD RESIDENT TO GROUNDWATER
PHASE III - AREA 2/3

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 2/3
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzene	1.30E+00	ug/l	1.30E+00	ug/l	M	8.3E-05	mg/kg-day	3.00E-03	mg/kg-day			2.8E-02
	Tetrachloroethene	3.40E+01	ug/l	3.40E+01	ug/l	M	2.2E-03	mg/kg-day	1.00E-02	mg/kg-day			2.2E-01
	Trichloroethene	1.20E+03	ug/l	1.20E+03	ug/l	M	7.7E-02	mg/kg-day	6.00E-03	mg/kg-day			1.3E+01
	Vinyl Chloride	2.00E+01	ug/l	2.00E+01	ug/l	M	1.3E-03	mg/kg-day		mg/kg-day			
	cis-1,2-dichloroethene	6.60E+01	ug/l	6.60E+01	ug/l	M	4.2E-03	mg/kg-day	1.00E-02	mg/kg-day			4.2E-01
	Arsenic	5.20E+00	ug/l	5.20E+00	ug/l	M	3.3E-04	mg/kg-day	3.00E-04	mg/kg-day			1.1E+00
	Iron	2.64E+03	ug/l	2.64E+03	ug/l	M	1.7E-01	mg/kg-day	3.00E-01	mg/kg-day			5.6E-01
	Vanadium	3.71E+01	ug/l	3.71E+01	ug/l	M	2.4E-03	mg/kg-day	7.00E-03	mg/kg-day			3.4E-01
													1.5E+01
Dermal	Benzene	1.30E+00	ug/l	1.30E+00	ug/l	M	7.8E-06	mg/kg-day	2.91E-03	mg/kg-day			2.7E-03
	Tetrachloroethene	3.40E+01	ug/l	3.40E+01	ug/l	M	8.3E-04	mg/kg-day	1.00E-02	mg/kg-day			8.3E-02
	Trichloroethene	1.20E+03	ug/l	1.20E+03	ug/l	M	8.0E-03	mg/kg-day	9.00E-04	mg/kg-day			8.9E+00
	Vinyl Chloride	2.00E+01	ug/l	2.00E+01	ug/l	M	4.1E-05	mg/kg-day		mg/kg-day			
	cis-1,2-dichloroethene	6.60E+01	ug/l	6.60E+01	ug/l	M	2.3E-04	mg/kg-day	1.00E-02	mg/kg-day			2.3E-02
	Arsenic	5.20E+00	ug/l	5.20E+00	ug/l	M	6.1E-07	mg/kg-day	2.85E-04	mg/kg-day			2.1E-03
	Iron	2.64E+03	ug/l	2.64E+03	ug/l	M	3.1E-04	mg/kg-day	4.50E-02	mg/kg-day			6.9E-03
	Vanadium	3.71E+01	ug/l	3.71E+01	ug/l	M	4.4E-06	mg/kg-day	7.00E-05	mg/kg-day			6.2E-02
	(total)												9.1E+00
Inhalation							Inhalation risk assumed to be equal to ingestion risk for VOAs						
													1.3E+01
												Total Hazard Index Across All Exposure Routes/Pathways	**3.8E+01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

APPENDIX E-8
RAGS D Tables E8.1 through E8.17

TABLE E8.1

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF SITE MAINTENANCE WORKERS TO SURFACE SOIL
AREA 1

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil(1)
Exposure Medium: Surface Soil/Air
Exposure Point: Area 1
Receptor Population: Site Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	2.8E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	2.0E-07
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	3.9E-07	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	5.9E-07
	(total)										7.9E-07
Dermal	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	3.2E-08	mg/kg-day	8.11E+00	$(mg/kg\text{-}day)^{-1}$	2.6E-07
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	4.5E-08	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	7.1E-08
	(total)										3.3E-07
Inhalation	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	9.0E-12	mg/kg-day	3.10E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-11
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	1.3E-10	mg/kg-day	1.51E+01	$(mg/kg\text{-}day)^{-1}$	1.9E-09
	(total)										1.9E-09
										Total Risk Estimate Across All Exposure Routes/Pathways	**1.1E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.1

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF SITE MAINTENANCE WORKERS TO SURFACE SOIL
AREA 2/3

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil(1)
Exposure Medium: Surface Soil/Air
Exposure Point: Area 2/3
Receptor Population: Site Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	3.5E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	2.5E-07
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	3.6E-07	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	5.4E-07
	(total)										7.9E-07
Dermal	Benzo(a)pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	4.0E-08	mg/kg-day	8.11E+00	$(mg/kg\text{-}day)^{-1}$	3.3E-07
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	4.2E-08	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	6.6E-08
	(total)										3.9E-07
Inhalation	Benzo(a)pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	1.1E-11	mg/kg-day	3.10E+00	$(mg/kg\text{-}day)^{-1}$	3.5E-11
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	1.2E-10	mg/kg-day	1.51E+01	$(mg/kg\text{-}day)^{-1}$	1.8E-09
	(total)										1.8E-09
										Total Risk Estimate Across All Exposure Routes/Pathways	**1.2E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.2

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT GOLFER TO SURFACE SOIL
AREA 1

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil/Air
Exposure Point: Area 1
Receptor Population: Golfer
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	8.9E-09	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	6.5E-08
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	1.2E-07	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	1.9E-07
	(total)										2.5E-07
Dermal	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	1.0E-08	mg/kg-day	8.11E+00	$(mg/kg\text{-}day)^{-1}$	8.4E-08
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	1.4E-08	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-08
	(total)										1.1E-07
Inhalation	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	6.0E-13	mg/kg-day	3.10E+00	$(mg/kg\text{-}day)^{-1}$	1.9E-12
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	8.4E-12	mg/kg-day	1.51E+01	$(mg/kg\text{-}day)^{-1}$	1.3E-10
	(total)										1.3E-10
										Total Risk Estimate Across All Exposure Routes/Pathways	**3.6E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.2

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT RECREATOR TO SURFACE SOIL
OU 2 - McCOY ANNEX LANDFILL
AREA 2/3

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil/Air
Exposure Point: Area 2/3
Receptor Population: Recreator
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	8.3E-09	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	6.1E-08
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	8.6E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-07
	(total)										1.9E-07
Dermal	Benzo(a)pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	7.7E-10	mg/kg-day	8.11E+00	$(mg/kg\text{-}day)^{-1}$	6.3E-09
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	8.0E-10	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-09
	(total)										7.5E-09
Inhalation	Benzo(a)pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	1.7E-12	mg/kg-day	3.10E+00	$(mg/kg\text{-}day)^{-1}$	5.2E-12
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	1.7E-11	mg/kg-day	1.51E+01	$(mg/kg\text{-}day)^{-1}$	2.6E-10
	(total)										2.7E-10
										Total Risk Estimate Across All Exposure Routes/Pathways	**2.0E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE 8.3A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADOLESCENT GOLFER TO SURFACE SOIL
AREA 1

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil/Air
Exposure Point: Area 1
Receptor Population: Golfer
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	7.0E-09	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	5.1E-08
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	9.7E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-07
	(total)										2.0E-07
Dermal	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	6.3E-09	mg/kg-day	8.11E+00	$(mg/kg\text{-}day)^{-1}$	5.1E-08
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	8.8E-09	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-08
	(total)										6.5E-08
Inhalation	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	4.7E-13	mg/kg-day	3.10E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-12
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	6.5E-12	mg/kg-day	1.51E+01	$(mg/kg\text{-}day)^{-1}$	9.8E-11
	(total)										1.0E-10
										Total Risk Estimate Across All Exposure Routes/Pathways	**2.6E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE 8.3B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF CHILD RECREATOR TO SURFACE SOIL
AREA 2/3

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil/Air
Exposure Point: Area 2/3
Receptor Population: Recreator
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	2.3E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-07
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	2.4E-07	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	3.6E-07
	(total)										5.3E-07
Dermal	Benzo(a)pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	2.0E-10	mg/kg-day	8.11E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-09
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	2.0E-10	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	3.2E-10
	(total)										1.9E-09
Inhalation	Benzo(a)pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	1.4E-11	mg/kg-day	3.10E+00	$(mg/kg\text{-}day)^{-1}$	4.4E-11
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	1.5E-10	mg/kg-day	1.51E+01	$(mg/kg\text{-}day)^{-1}$	2.2E-09
	(total)										2.3E-09
										Total Risk Estimate Across All Exposure Routes/Pathways	**5.4E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.4A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF SITE MAINTENANCE WORKERS TO SURFACE WATER
PHASE I AND PHASE II

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water/Air
Exposure Point: Ponds, Canals, etc
Receptor Population: Site Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)pyrene (equiv)	3.41E-01	ug/l	3.41E-01	ug/l	M	2.4E-09	mg/kg-day	7.30E+00	$(mg/kg-day)^{-1}$	1.7E-08
	Bis(2ethylhexyl)phthalate	3.68E+00	ug/l	3.68E+00	ug/l	M	2.6E-08	mg/kg-day	1.40E-02	$(mg/kg-day)^{-1}$	3.6E-10
	Aluminum	5.16E+04	ug/l	5.16E+04	ug/l	M	3.6E-04	mg/kg-day		$(mg/kg-day)^{-1}$	
	Arsenic	6.37E+00	ug/l	6.37E+00	ug/l	M	4.5E-08	mg/kg-day	1.50E+00	$(mg/kg-day)^{-1}$	6.7E-08
	Barium	1.07E+02	ug/l	1.07E+02	ug/l	M	7.5E-07	mg/kg-day		$(mg/kg-day)^{-1}$	
	Chromium	1.35E+01	ug/l	1.35E+01	ug/l	M	9.4E-08	mg/kg-day		$(mg/kg-day)^{-1}$	
	Iron	7.50E+04	ug/l	7.50E+04	ug/l	M	5.2E-04	mg/kg-day		$(mg/kg-day)^{-1}$	
	Lead	3.90E+01	ug/l	3.90E+01	ug/l	M	2.7E-07	mg/kg-day		$(mg/kg-day)^{-1}$	
	Manganese	4.20E+02	ug/l	4.20E+02	ug/l	M	2.9E-06	mg/kg-day		$(mg/kg-day)^{-1}$	
	Mercury	9.90E-02	ug/l	9.90E-02	ug/l	M	6.9E-10	mg/kg-day		$(mg/kg-day)^{-1}$	
	Vanadium	7.15E+01	ug/l	7.15E+01	ug/l	M	5.0E-07	mg/kg-day		$(mg/kg-day)^{-1}$	
	(total)										8.5E-08
Dermal	Benzo(a)pyrene (equiv)	3.41E-01	ug/l	3.41E-01	ug/l	M	1.8E-06	mg/kg-day	8.11E+00	$(mg/kg-day)^{-1}$	(2)
	Bis(2ethylhexyl)phthalate	3.68E+00	ug/l	3.68E+00	ug/l	M	6.2E-06	mg/kg-day	7.37E-02	$(mg/kg-day)^{-1}$	4.6E-07
	Aluminum	5.16E+04	ug/l	5.16E+04	ug/l	M	3.6E-04	mg/kg-day		$(mg/kg-day)^{-1}$	
	Arsenic	6.37E+00	ug/l	6.37E+00	ug/l	M	4.5E-08	mg/kg-day	1.58E+00	$(mg/kg-day)^{-1}$	7.0E-08
	Barium	1.07E+02	ug/l	1.07E+02	ug/l	M	7.5E-07	mg/kg-day		$(mg/kg-day)^{-1}$	
	Chromium	1.35E+01	ug/l	1.35E+01	ug/l	M	9.4E-08	mg/kg-day		$(mg/kg-day)^{-1}$	
	Iron	7.50E+04	ug/l	7.50E+04	ug/l	M	5.2E-04	mg/kg-day		$(mg/kg-day)^{-1}$	
	Lead	3.90E+01	ug/l	3.90E+01	ug/l	M	2.7E-07	mg/kg-day		$(mg/kg-day)^{-1}$	
	Manganese	4.20E+02	ug/l	4.20E+02	ug/l	M	2.9E-06	mg/kg-day		$(mg/kg-day)^{-1}$	
	Mercury	9.90E-02	ug/l	9.90E-02	ug/l	M	6.9E-10	mg/kg-day		$(mg/kg-day)^{-1}$	
	Vanadium	7.15E+01	ug/l	7.15E+01	ug/l	M	5.0E-07	mg/kg-day		$(mg/kg-day)^{-1}$	
	(total)										5.3E-07
										Total Risk Estimate Across All Exposure Routes/Pathways	**6.1E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Significant uncertainty surrounds the calculation of risk from benzo(a)pyrene. This pathway will not be quantified but will be discussed qualitatively in the text.

TABLE 8.4B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF SITE MAINTENANCE WORKERS TO SURFACE WATER
PHASE III
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water/Air
Exposure Point: Ponds, Canals, etc.
Receptor Population: Site Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Bis(2ethylhexyl)phthalate	4.51E+00	ug/l	4.51E+00	ug/l	M	3.1E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	4.4E-10
	Aluminum	6.53E+03	ug/l	6.53E+03	ug/l	M	4.6E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	2.67E+00	ug/l	2.67E+00	ug/l	M	1.9E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-08
	Chromium	5.10E+00	ug/l	5.10E+00	ug/l	M	3.6E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	7.09E+03	ug/l	7.09E+03	ug/l	M	5.0E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Lead	4.54E+00	ug/l	4.54E+00	ug/l	M	3.2E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	6.82E+01	ug/l	6.82E+01	ug/l	M	4.8E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.50E-01	ug/l	1.50E-01	ug/l	M	1.0E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										2.8E-08
Dermal	Bis(2ethylhexyl)phthalate	4.51E+00	ug/l	4.51E+00	ug/l	M	7.6E-06	mg/kg-day	7.37E-02	$(mg/kg\text{-}day)^{-1}$	5.6E-07
	Aluminum	6.53E+03	ug/l	6.53E+03	ug/l	M	4.6E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	2.67E+00	ug/l	2.67E+00	ug/l	M	1.9E-08	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	3.0E-08
	Chromium	5.10E+00	ug/l	5.10E+00	ug/l	M	3.6E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	7.09E+03	ug/l	7.09E+03	ug/l	M	5.0E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Lead	4.54E+00	ug/l	4.54E+00	ug/l	M	3.2E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	6.82E+01	ug/l	6.82E+01	ug/l	M	4.8E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.50E-01	ug/l	1.50E-01	ug/l	M	1.0E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										5.9E-07
										Total Risk Estimate Across All Exposure Routes/Pathways	6.2E-07

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.5A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT TRESPASSER TO SURFACE WATER
PHASE I AND PHASE II

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water/Air
Exposure Point: Ponds, Canals, etc.
Receptor Population: Trespasser
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)pyrene (equiv)	3.41E-01	ug/l	3.41E-01	ug/l	M	4.5E-09	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	3.3E-08
	Bis(2ethylhexyl)phthalate	3.68E+00	ug/l	3.68E+00	ug/l	M	4.8E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	6.7E-10
	Aluminum	5.16E+04	ug/l	5.16E+04	ug/l	M	6.8E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	6.37E+00	ug/l	6.37E+00	ug/l	M	8.3E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-07
	Barium	1.07E+02	ug/l	1.07E+02	ug/l	M	1.4E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Chromium	1.35E+01	ug/l	1.35E+01	ug/l	M	1.8E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	7.50E+04	ug/l	7.50E+04	ug/l	M	9.8E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Lead	3.90E+01	ug/l	3.90E+01	ug/l	M	5.1E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	4.20E+02	ug/l	4.20E+02	ug/l	M	5.5E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	9.90E-02	ug/l	9.90E-02	ug/l	M	1.3E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	7.15E+01	ug/l	7.15E+01	ug/l	M	9.4E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										1.6E-07
Dermal	Benzo(a)pyrene (equiv)	3.41E-01	ug/l	3.41E-01	ug/l	M	2.1E-06	mg/kg-day	8.11E+00	$(mg/kg\text{-}day)^{-1}$	(2)
	Bis(2ethylhexyl)phthalate	3.68E+00	ug/l	3.68E+00	ug/l	M	7.2E-06	mg/kg-day	7.37E-02	$(mg/kg\text{-}day)^{-1}$	5.3E-07
	Aluminum	5.16E+04	ug/l	5.16E+04	ug/l	M	6.8E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	6.37E+00	ug/l	6.37E+00	ug/l	M	8.3E-08	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-07
	Barium	1.07E+02	ug/l	1.07E+02	ug/l	M	1.4E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Chromium	1.35E+01	ug/l	1.35E+01	ug/l	M	1.8E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	7.50E+04	ug/l	7.50E+04	ug/l	M	9.8E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Lead	3.90E+01	ug/l	3.90E+01	ug/l	M	5.1E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	4.20E+02	ug/l	4.20E+02	ug/l	M	5.5E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	9.90E-02	ug/l	9.90E-02	ug/l	M	1.3E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	7.15E+01	ug/l	7.15E+01	ug/l	M	9.4E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										6.6E-07
										Total Risk Estimate Across All Exposure Routes/Pathways	**8.2E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Significant uncertainty surrounds the calculation of risk from benzo(a)pyrene. This pathway will not be quantified but will be discussed qualitatively in the text.

TABLE 8.5B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT TRESPASSER TO SURFACE WATER
PHASE III
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water/Air
Exposure Point: Ponds, Canals, etc.
Receptor Population: Trespasser
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Bis(2ethylhexyl)phthalate	4.51E+00	ug/l	4.51E+00	ug/l	M	5.9E-08	mg/kg-day	1.40E-02	$(mg/kg-day)^{-1}$	8.3E-10
	Aluminum	6.53E+03	ug/l	6.53E+03	ug/l	M	8.5E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	Arsenic	2.67E+00	ug/l	2.67E+00	ug/l	M	3.5E-08	mg/kg-day	1.50E+00	$(mg/kg-day)^{-1}$	5.2E-08
	Chromium	5.10E+00	ug/l	5.10E+00	ug/l	M	6.7E-08	mg/kg-day		$(mg/kg-day)^{-1}$	
	Iron	7.09E+03	ug/l	7.09E+03	ug/l	M	9.3E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	Lead	4.54E+00	ug/l	4.54E+00	ug/l	M	5.9E-08	mg/kg-day		$(mg/kg-day)^{-1}$	
	Manganese	6.82E+01	ug/l	6.82E+01	ug/l	M	8.9E-07	mg/kg-day		$(mg/kg-day)^{-1}$	
	Mercury	1.50E-01	ug/l	1.50E-01	ug/l	M	2.0E-09	mg/kg-day		$(mg/kg-day)^{-1}$	
	(Total)										5.3E-08
Dermal	Bis(2ethylhexyl)phthalate	4.51E+00	ug/l	4.51E+00	ug/l	M	8.9E-06	mg/kg-day	7.37E-02	$(mg/kg-day)^{-1}$	6.5E-07
	Aluminum	6.53E+03	ug/l	6.53E+03	ug/l	M	8.5E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	Arsenic	2.67E+00	ug/l	2.67E+00	ug/l	M	3.5E-08	mg/kg-day	1.58E+00	$(mg/kg-day)^{-1}$	5.5E-08
	Chromium	5.10E+00	ug/l	5.10E+00	ug/l	M	6.7E-08	mg/kg-day		$(mg/kg-day)^{-1}$	
	Iron	7.09E+03	ug/l	7.09E+03	ug/l	M	9.3E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	Lead	4.54E+00	ug/l	4.54E+00	ug/l	M	5.9E-08	mg/kg-day		$(mg/kg-day)^{-1}$	
	Manganese	6.82E+01	ug/l	6.82E+01	ug/l	M	8.9E-07	mg/kg-day		$(mg/kg-day)^{-1}$	
	Mercury	1.50E-01	ug/l	1.50E-01	ug/l	M	2.0E-09	mg/kg-day		$(mg/kg-day)^{-1}$	
	(Total)										7.1E-07
										Total Risk Estimate Across All Exposure Routes/Pathways	**7.6E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.6A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADOLESCENT TRESPASSER TO SURFACE WATER
PHASE I AND PHASE II

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water/Air
Exposure Point: Ponds, Canals, etc.
Receptor Population: Tresspasser
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)pyrene (equiv)	3.41E-01	ug/l	3.41E-01	ug/l	M	7.7E-09	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	5.6E-08
	Bis(2ethylhexyl)phthalate	3.68E+00	ug/l	3.68E+00	ug/l	M	8.3E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.2E-09
	Aluminum	5.16E+04	ug/l	5.16E+04	ug/l	M	1.2E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	6.37E+00	ug/l	6.37E+00	ug/l	M	1.4E-07	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	2.2E-07
	Barium	1.07E+02	ug/l	1.07E+02	ug/l	M	2.4E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Chromium	1.35E+01	ug/l	1.35E+01	ug/l	M	3.1E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	7.50E+04	ug/l	7.50E+04	ug/l	M	1.7E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Lead	3.90E+01	ug/l	3.90E+01	ug/l	M	8.8E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	4.20E+02	ug/l	4.20E+02	ug/l	M	9.5E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	9.90E-02	ug/l	9.90E-02	ug/l	M	2.2E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	7.15E+01	ug/l	7.15E+01	ug/l	M	1.6E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										2.7E-07
Dermal	Benzo(a)pyrene (equiv)	3.41E-01	mg/kg	3.41E-01	mg/kg	M	3.3E-06	mg/kg-day	8.11E+00	$(mg/kg\text{-}day)^{-1}$	(2)
	Bis(2ethylhexyl)phthalate	3.68E+00	mg/kg	3.68E+00	mg/kg	M	1.1E-05	mg/kg-day	7.37E-02	$(mg/kg\text{-}day)^{-1}$	8.3E-07
	Aluminum	5.16E+04	mg/kg	5.16E+04	mg/kg	M	1.1E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	6.37E+00	ug/l	6.37E+00	ug/l	M	1.3E-07	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-07
	Barium	1.07E+02	ug/l	1.07E+02	ug/l	M	2.2E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Chromium	1.35E+01	ug/l	1.35E+01	ug/l	M	2.8E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	7.50E+04	ug/l	7.50E+04	ug/l	M	1.5E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Lead	3.90E+01	ug/l	3.90E+01	ug/l	M	8.0E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	4.20E+02	ug/l	4.20E+02	ug/l	M	8.6E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	9.90E-02	ug/l	9.90E-02	ug/l	M	2.0E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	7.15E+01	ug/l	7.15E+01	ug/l	M	1.5E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										1.0E-06
										Total Risk Estimate Across All Exposure Routes/Pathways	**1.3E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Significant uncertainty surrounds the calculation of risk from benzo(a)pyrene. This pathway will not be quantified but will be discussed qualitatively in the text.

TABLE E8.6B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADOLESCENT TRESPASSER TO SURFACE WATER
PHASE III

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water/Air
Exposure Point: Ponds, Canals, etc.
Receptor Population: Trespasser
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Bis(2ethylhexyl)phthalate	4.51E+00	ug/l	4.51E+00	ug/l	M	1.0E-07	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.4E-09
	Aluminum	6.53E+03	ug/l	6.53E+03	ug/l	M	1.5E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	2.67E+00	ug/l	2.67E+00	ug/l	M	6.0E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	9.1E-08
	Chromium	5.10E+00	ug/l	5.10E+00	ug/l	M	1.2E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	7.09E+03	ug/l	7.09E+03	ug/l	M	1.6E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Lead	4.54E+00	ug/l	4.54E+00	ug/l	M	1.0E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	6.82E+01	ug/l	6.82E+01	ug/l	M	1.5E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.50E-01	ug/l	1.50E-01	ug/l	M	3.4E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										9.2E-08
Dermal	Bis(2ethylhexyl)phthalate	4.51E+00	mg/kg	4.51E+00	mg/kg	M	1.4E-05	mg/kg-day	7.37E-02	$(mg/kg\text{-}day)^{-1}$	1.0E-06
	Aluminum	6.53E+03	mg/kg	6.53E+03	mg/kg	M	1.3E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	2.67E+00	ug/l	2.67E+00	ug/l	M	5.5E-08	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	8.6E-08
	Chromium	5.10E+00	ug/l	5.10E+00	ug/l	M	1.0E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	7.09E+03	ug/l	7.09E+03	ug/l	M	1.5E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Lead	4.54E+00	ug/l	4.54E+00	ug/l	M	9.3E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	6.82E+01	ug/l	6.82E+01	ug/l	M	1.4E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.50E-01	ug/l	1.50E-01	ug/l	M	3.1E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										1.1E-06
										Total Risk Estimate Across All Exposure Routes/Pathways	**1.2E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.7

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF SITE MAINTENANCE WORKERS TO SEDIMENT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Ponds, Canals, etc.
Receptor Population: Site Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aluminum	5.38E+03	mg/kg	5.38E+03	mg/kg	M	1.9E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	Arsenic	7.29E-01	mg/kg	7.29E-01	mg/kg	M	2.5E-09	mg/kg-day	1.50E+00	$(mg/kg-day)^{-1}$	3.8E-09
	Iron	1.18E+03	mg/kg	1.18E+03	mg/kg	M	4.1E-06	mg/kg-day		$(mg/kg-day)^{-1}$	
	Vanadium	1.33E+01	mg/kg	1.33E+01	mg/kg	M	4.7E-08	mg/kg-day		$(mg/kg-day)^{-1}$	
	(total)										3.8E-09
Dermal	Aluminum	5.38E+03	mg/kg	5.38E+03	mg/kg	M	3.8E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	Arsenic	7.29E-01	mg/kg	7.29E-01	mg/kg	M	5.1E-09	mg/kg-day	1.58E+00	$(mg/kg-day)^{-1}$	8.0E-09
	Iron	1.18E+03	mg/kg	1.18E+03	mg/kg	M	8.2E-06	mg/kg-day		$(mg/kg-day)^{-1}$	
	Vanadium	1.33E+01	mg/kg	1.33E+01	mg/kg	M	9.3E-08	mg/kg-day		$(mg/kg-day)^{-1}$	
	(total)										8.0E-09
										Total Risk Estimate Across All Exposure Routes/Pathways	**1.2E-08**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.8

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT TRESPASSER TO SEDIMENT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Ponds, Canals, etc.
Receptor Population: Trespasser
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aluminum	5.38E+03	mg/kg	5.38E+03	mg/kg	M	1.4E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	7.29E-01	mg/kg	7.29E-01	mg/kg	M	1.8E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-09
	Iron	1.18E+03	mg/kg	1.18E+03	mg/kg	M	3.0E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	1.33E+01	mg/kg	1.33E+01	mg/kg	M	3.4E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										2.7E-09
Dermal	Aluminum	5.38E+03	mg/kg	5.38E+03	mg/kg	M	2.7E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	7.29E-01	mg/kg	7.29E-01	mg/kg	M	3.7E-09	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	5.8E-09
	Iron	1.18E+03	mg/kg	1.18E+03	mg/kg	M	5.9E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	1.33E+01	mg/kg	1.33E+01	mg/kg	M	6.7E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										5.8E-09
										Total Risk Estimate Across All Exposure Routes/Pathways	**8.5E-09**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.9

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADOLESCENT TRESPASSER TO SEDIMENT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Ponds, Canals, etc.
Receptor Population: Trespasser
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aluminum	5.38E+03	mg/kg	5.38E+03	mg/kg	M	2.3E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	7.29E-01	mg/kg	7.29E-01	mg/kg	M	3.2E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	4.8E-09
	Iron	1.18E+03	mg/kg	1.18E+03	mg/kg	M	5.1E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	1.33E+01	mg/kg	1.33E+01	mg/kg	M	5.8E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										4.8E-09
Dermal	Aluminum	5.38E+03	mg/kg	5.38E+03	mg/kg	M	4.2E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	7.29E-01	mg/kg	7.29E-01	mg/kg	M	5.7E-09	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	9.1E-09
	Iron	1.18E+03	mg/kg	1.18E+03	mg/kg	M	9.3E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	1.33E+01	mg/kg	1.33E+01	mg/kg	M	1.0E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										9.1E-09
										Total Risk Estimate Across All Exposure Routes/Pathways	**1.4E-08**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.10

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT RESIDENT TO SURFACE SOIL
AREA 1
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Soil(1)
Exposure Medium: Surface Soil/Air
Exposure Point: Area 1
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	7.5E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	5.5E-07
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	1.0E-06	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-06
	(total)										2.1E-06
Dermal	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	4.4E-08	mg/kg-day	8.11E+00	$(mg/kg\text{-}day)^{-1}$	3.5E-07
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	6.1E-08	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	9.6E-08
	(total)										4.5E-07
Inhalation	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	1.2E-11	mg/kg-day	3.10E+00	$(mg/kg\text{-}day)^{-1}$	3.8E-11
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	1.7E-10	mg/kg-day	1.51E+01	$(mg/kg\text{-}day)^{-1}$	2.6E-09
	(total)										2.6E-09
										Total Risk Estimate Across All Exposure Routes/Pathways	**2.6E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE 8.10

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT RESIDENT TO SURFACE SOIL
AREA 2/3
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Soil(1)
Exposure Medium: Surface Soil/Air
Exposure Point: Area 2/3
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo[a]pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	9.3E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	6.8E-07
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	9.7E-07	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-06
	(total)										2.1E-06
Dermal	Benzo[a]pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	5.4E-08	mg/kg-day	8.11E+00	$(mg/kg\text{-}day)^{-1}$	4.4E-07
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	5.6E-08	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	8.9E-08
	(total)										5.3E-07
Inhalation	Benzo[a]pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	1.5E-11	mg/kg-day	3.10E+00	$(mg/kg\text{-}day)^{-1}$	4.7E-11
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	1.6E-10	mg/kg-day	1.51E+01	$(mg/kg\text{-}day)^{-1}$	2.4E-09
	(total)										2.4E-09
										Total Risk Estimate Across All Exposure Routes/Pathways	**2.7E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.11

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF RESIDENT CHILD TO SURFACE SOIL
AREA 1
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Soil(1)
Exposure Medium: Surface Soil/Air
Exposure Point: Area 1
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	1.8E-07	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-06
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	2.4E-06	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-06
	(total)										5.0E-06
Dermal	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	2.0E-08	mg/kg-day	8.11E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-07
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	2.8E-08	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	4.4E-08
	(total)										2.1E-07
Inhalation	Benzo(a)pyrene (equiv)	1.60E-01	mg/kg	1.60E-01	mg/kg	M	1.1E-11	mg/kg-day	3.10E+00	$(mg/kg\text{-}day)^{-1}$	3.3E-11
	Arsenic	2.23E+00	mg/kg	2.23E+00	mg/kg	M	1.5E-10	mg/kg-day	1.51E+01	$(mg/kg\text{-}day)^{-1}$	2.2E-09
	(total)										2.3E-09
										Total Risk Estimate Across All Exposure Routes/Pathways	**5.2E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.11

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF RESIDENT CHILD TO SURFACE SOIL
AREA 2/3
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Soil(1)
Exposure Medium: Surface Soil/Air
Exposure Point: Area 1
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo[a]pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	2.2E-07	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-06
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	2.3E-06	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-06
	(total)										5.0E-06
Dermal	Benzo[a]pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	2.5E-08	mg/kg-day	8.11E+00	$(mg/kg\text{-}day)^{-1}$	2.0E-07
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	2.6E-08	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	4.1E-08
	(total)										2.4E-07
Inhalation	Benzo[a]pyrene (equiv)	1.99E-01	mg/kg	1.99E-01	mg/kg	M	1.3E-11	mg/kg-day	3.10E+00	$(mg/kg\text{-}day)^{-1}$	4.1E-11
	Arsenic	2.06E+00	mg/kg	2.06E+00	mg/kg	M	1.4E-10	mg/kg-day	1.51E+01	$(mg/kg\text{-}day)^{-1}$	2.1E-09
	(total)										2.1E-09
										Total Risk Estimate Across All Exposure Routes/Pathways	**5.2E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E8.12A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT RESIDENT TO SURFACE WATER
PHASE I AND PHASE II

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Entire Site (Area 1 and Area 2/3)
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)pyrene (equiv)	3.41E-01	ug/l	3.41E-01	ug/l	M	4.5E-09	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	3.3E-08
	Bis(2ethylhexyl)phthalate	3.68E+00	ug/l	3.68E+00	ug/l	M	4.8E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	6.7E-10
	Aluminum	5.16E+04	ug/l	5.16E+04	ug/l	M	6.8E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	6.37E+00	ug/l	6.37E+00	ug/l	M	8.3E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-07
	Barium	1.07E+02	ug/l	1.07E+02	ug/l	M	1.4E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Chromium	1.35E+01	ug/l	1.35E+01	ug/l	M	1.8E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	7.50E+04	ug/l	7.50E+04	ug/l	M	9.8E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Lead	3.90E+01	ug/l	3.90E+01	ug/l	M	5.1E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	4.20E+02	ug/l	4.20E+02	ug/l	M	5.5E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	9.90E-02	ug/l	9.90E-02	ug/l	M	1.3E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	7.15E+01	ug/l	7.15E+01	ug/l	M	9.4E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										1.6E-07
Dermal	Benzo(a)pyrene (equiv)	3.41E-01	ug/l	3.41E-01	ug/l	M	2.1E-06	mg/kg-day	8.11E+00	$(mg/kg\text{-}day)^{-1}$	(2)
	Bis(2ethylhexyl)phthalate	3.68E+00	ug/l	3.68E+00	ug/l	M	7.2E-06	mg/kg-day	7.37E-02	$(mg/kg\text{-}day)^{-1}$	5.3E-07
	Aluminum	5.16E+04	ug/l	5.16E+04	ug/l	M	6.8E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	6.37E+00	ug/l	6.37E+00	ug/l	M	8.3E-08	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-07
	Barium	1.07E+02	ug/l	1.07E+02	ug/l	M	1.4E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Chromium	1.35E+01	ug/l	1.35E+01	ug/l	M	1.8E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	7.50E+04	ug/l	7.50E+04	ug/l	M	9.8E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Lead	3.90E+01	ug/l	3.90E+01	ug/l	M	5.1E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	4.20E+02	ug/l	4.20E+02	ug/l	M	5.5E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	9.90E-02	ug/l	9.90E-02	ug/l	M	1.3E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	7.15E+01	ug/l	7.15E+01	ug/l	M	9.4E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										6.6E-07
										Total Risk Estimate Across All Exposure Routes/Pathways	**8.2E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Significant uncertainty surrounds the calculation of risk from benzo(a)pyrene. This pathway will not be quantified but will be discussed qualitatively in the text.

TABLE E8.12B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT RESIDENT TO SURFACE WATER
PHASE III

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Entire Site (Area 1 and Area 2/3)
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Bis(2ethylhexyl)phthalate	4.51E+00	ug/l	4.51E+00	ug/l	M	5.9E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	8.3E-10
	Aluminum	6.53E+03	ug/l	6.53E+03	ug/l	M	8.5E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	2.67E+00	ug/l	2.67E+00	ug/l	M	3.5E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	5.2E-08
	Chromium	5.10E+00	ug/l	5.10E+00	ug/l	M	6.7E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	7.09E+03	ug/l	7.09E+03	ug/l	M	9.3E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Lead	4.54E+00	ug/l	4.54E+00	ug/l	M	5.9E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	6.82E+01	ug/l	6.82E+01	ug/l	M	8.9E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.50E-01	ug/l	1.50E-01	ug/l	M	2.0E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										5.3E-08
Dermal	Bis(2ethylhexyl)phthalate	4.51E+00	ug/l	4.51E+00	ug/l	M	8.9E-06	mg/kg-day	7.37E-02	$(mg/kg\text{-}day)^{-1}$	6.5E-07
	Aluminum	6.53E+03	ug/l	6.53E+03	ug/l	M	8.5E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	2.67E+00	ug/l	2.67E+00	ug/l	M	3.5E-08	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	5.5E-08
	Chromium	5.10E+00	ug/l	5.10E+00	ug/l	M	6.7E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	7.09E+03	ug/l	7.09E+03	ug/l	M	9.3E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Lead	4.54E+00	ug/l	4.54E+00	ug/l	M	5.9E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	6.82E+01	ug/l	6.82E+01	ug/l	M	8.9E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.50E-01	ug/l	1.50E-01	ug/l	M	2.0E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										7.1E-07
										Total Risk Estimate Across All Exposure Routes/Pathways	**7.6E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.13A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADOLESCENT RESIDENT TO SURFACE WATER
PHASE I AND PHASE II

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water/Air
Exposure Point: Ponds, Canals, etc.
Receptor Population: Resident
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)pyrene (equiv)	3.41E-01	ug/l	3.41E-01	ug/l	M	7.7E-09	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	5.6E-08
	Bis(2ethylhexyl)phthalate	3.68E+00	ug/l	3.68E+00	ug/l	M	8.3E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.2E-09
	Aluminum	5.16E+04	ug/l	5.16E+04	ug/l	M	1.2E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	6.37E+00	ug/l	6.37E+00	ug/l	M	1.4E-07	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	2.2E-07
	Barium	1.07E+02	ug/l	1.07E+02	ug/l	M	2.4E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Chromium	1.35E+01	ug/l	1.35E+01	ug/l	M	3.1E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	7.50E+04	ug/l	7.50E+04	ug/l	M	1.7E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Lead	3.90E+01	ug/l	3.90E+01	ug/l	M	8.8E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	4.20E+02	ug/l	4.20E+02	ug/l	M	9.5E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	9.90E-02	ug/l	9.90E-02	ug/l	M	2.2E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	7.15E+01	ug/l	7.15E+01	ug/l	M	1.6E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										2.7E-07
Dermal	Benzo(a)pyrene (equiv)	3.41E-01	ug/l	3.41E-01	ug/l	M	3.3E-06	mg/kg-day	8.11E+00	$(mg/kg\text{-}day)^{-1}$	(2)
	Bis(2ethylhexyl)phthalate	3.68E+00	ug/l	3.68E+00	ug/l	M	1.1E-05	mg/kg-day	7.37E-02	$(mg/kg\text{-}day)^{-1}$	8.3E-07
	Aluminum	5.16E+04	ug/l	5.16E+04	ug/l	M	1.1E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	6.37E+00	ug/l	6.37E+00	ug/l	M	1.3E-07	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-07
	Barium	1.07E+02	ug/l	1.07E+02	ug/l	M	2.2E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Chromium	1.35E+01	ug/l	1.35E+01	ug/l	M	2.8E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	7.50E+04	ug/l	7.50E+04	ug/l	M	1.5E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Lead	3.90E+01	ug/l	3.90E+01	ug/l	M	8.0E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	4.20E+02	ug/l	4.20E+02	ug/l	M	8.6E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	9.90E-02	ug/l	9.90E-02	ug/l	M	2.0E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	7.15E+01	ug/l	7.15E+01	ug/l	M	1.5E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										1.0E-06
										Total Risk Estimate Across All Exposure Routes/Pathways	**1.3E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Significant uncertainty surrounds the calculation of risk from benzo(a)pyrene. This pathway will not be quantified but will be discussed qualitatively in the text.

TABLE E8.13B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADOLESCENT RESIDENT TO SURFACE WATER
PHASE III

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water/Air
Exposure Point: Ponds, Canals, etc.
Receptor Population: Resident
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Bis(2ethylhexyl)phthalate	4.51E+00	ug/l	4.51E+00	ug/l	M	1.0E-07	mg/kg-day	1.40E-02	$(mg/kg-day)^{-1}$	1.4E-09
	Aluminum	6.53E+03	ug/l	6.53E+03	ug/l	M	1.5E-04	mg/kg-day		$(mg/kg-day)^{-1}$	
	Arsenic	2.67E+00	ug/l	2.67E+00	ug/l	M	6.0E-08	mg/kg-day	1.50E+00	$(mg/kg-day)^{-1}$	9.1E-08
	Chromium	5.10E+00	ug/l	5.10E+00	ug/l	M	1.2E-07	mg/kg-day		$(mg/kg-day)^{-1}$	
	Iron	7.09E+03	ug/l	7.09E+03	ug/l	M	1.6E-04	mg/kg-day		$(mg/kg-day)^{-1}$	
	Lead	4.54E+00	ug/l	4.54E+00	ug/l	M	1.0E-07	mg/kg-day		$(mg/kg-day)^{-1}$	
	Manganese	6.82E+01	ug/l	6.82E+01	ug/l	M	1.5E-06	mg/kg-day		$(mg/kg-day)^{-1}$	
	Mercury	1.50E-01	ug/l	1.50E-01	ug/l	M	3.4E-09	mg/kg-day		$(mg/kg-day)^{-1}$	
	(total)										9.2E-08
Dermal	Bis(2ethylhexyl)phthalate	4.51E+00	ug/l	4.51E+00	ug/l	M	1.4E-05	mg/kg-day	7.37E-02	$(mg/kg-day)^{-1}$	1.0E-06
	Aluminum	6.53E+03	ug/l	6.53E+03	ug/l	M	1.3E-04	mg/kg-day		$(mg/kg-day)^{-1}$	
	Arsenic	2.67E+00	ug/l	2.67E+00	ug/l	M	5.5E-08	mg/kg-day	1.58E+00	$(mg/kg-day)^{-1}$	8.6E-08
	Chromium	5.10E+00	ug/l	5.10E+00	ug/l	M	1.0E-07	mg/kg-day		$(mg/kg-day)^{-1}$	
	Iron	7.09E+03	ug/l	7.09E+03	ug/l	M	1.5E-04	mg/kg-day		$(mg/kg-day)^{-1}$	
	Lead	4.54E+00	ug/l	4.54E+00	ug/l	M	9.3E-08	mg/kg-day		$(mg/kg-day)^{-1}$	
	Manganese	6.82E+01	ug/l	6.82E+01	ug/l	M	1.4E-06	mg/kg-day		$(mg/kg-day)^{-1}$	
	Mercury	1.50E-01	ug/l	1.50E-01	ug/l	M	3.1E-09	mg/kg-day		$(mg/kg-day)^{-1}$	
	(total)										1.1E-06
										Total Risk Estimate Across all Exposure Routes/Pathways	1.2E-06

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.14

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT RESIDENT TO SEDIMENT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Ponds, Canals, etc.
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aluminum	5.38E+03	mg/kg	5.38E+03	mg/kg	M	1.4E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	7.29E-01	mg/kg	7.29E-01	mg/kg	M	1.8E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-09
	Iron	1.18E+03	mg/kg	1.18E+03	mg/kg	M	3.0E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	1.33E+01	mg/kg	1.33E+01	mg/kg	M	3.4E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										2.7E-09
Dermal	Aluminum	5.38E+03	mg/kg	5.38E+03	mg/kg	M	2.7E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	7.29E-01	mg/kg	7.29E-01	mg/kg	M	3.7E-09	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	5.8E-09
	Iron	1.18E+03	mg/kg	1.18E+03	mg/kg	M	5.9E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	1.33E+01	mg/kg	1.33E+01	mg/kg	M	6.7E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										5.8E-09
										Total Risk Estimate Across All Exposure Routes/Pathways	**8.5E-09**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.15

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADOLESCENT RESIDENT TO SEDIMENT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Ponds, Canals, etc.
Receptor Population: Resident
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aluminum	5.38E+03	mg/kg	5.38E+03	mg/kg	M	2.3E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	7.29E-01	mg/kg	7.29E-01	mg/kg	M	3.2E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	4.8E-09
	Iron	1.18E+03	mg/kg	1.18E+03	mg/kg	M	5.1E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	1.33E+01	mg/kg	1.33E+01	mg/kg	M	5.8E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										4.8E-09
Dermal	Aluminum	5.38E+03	mg/kg	5.38E+03	mg/kg	M	4.2E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	7.29E-01	mg/kg	7.29E-01	mg/kg	M	5.7E-09	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	9.1E-09
	Iron	1.18E+03	mg/kg	1.18E+03	mg/kg	M	9.3E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	1.33E+01	mg/kg	1.33E+01	mg/kg	M	1.0E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										9.1E-09
										Total Risk Estimate Across All Exposure Routes/Pathways	**1.4E-08**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.16A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT RESIDENT TO GROUNDWATER
PHASE I AND PHASE II - AREA 1

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 1
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzene	4.20E+00	ug/l	4.20E+00	ug/l	M	3.9E-05	mg/kg-day	5.50E-02	$(mg/kg-day)^{-1}$	2.2E-06
	Chlorobenzene	5.22E+00	ug/l	5.22E+00	ug/l	M	4.9E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	Vinyl Chloride	1.49E+00	ug/l	1.49E+00	ug/l	M	1.4E-05	mg/kg-day	1.40E+00	$(mg/kg-day)^{-1}$	2.0E-05
	1,4 - Dichlorobenzene	5.66E+00	ug/l	5.66E+00	ug/l	M	5.3E-05	mg/kg-day	2.40E-02	$(mg/kg-day)^{-1}$	1.3E-06
	Aluminum	1.52E+05	ug/l	1.52E+05	ug/l	M	1.4E+00	mg/kg-day		$(mg/kg-day)^{-1}$	
	Arsenic	2.03E+01	ug/l	2.03E+01	ug/l	M	1.9E-04	mg/kg-day	1.50E+00	$(mg/kg-day)^{-1}$	2.9E-04
	Barium	3.91E+03	ug/l	3.91E+03	ug/l	M	3.7E-02	mg/kg-day		$(mg/kg-day)^{-1}$	
	Chromium	2.23E+02	ug/l	2.23E+02	ug/l	M	2.1E-03	mg/kg-day		$(mg/kg-day)^{-1}$	
	Lead	1.97E+02	ug/l	1.97E+02	ug/l	M	1.9E-03	mg/kg-day		$(mg/kg-day)^{-1}$	
	Iron	2.64E+04	ug/l	2.64E+04	ug/l	M	2.5E-01	mg/kg-day		$(mg/kg-day)^{-1}$	
	Manganese	1.94E+02	ug/l	1.94E+02	ug/l	M	1.8E-03	mg/kg-day		$(mg/kg-day)^{-1}$	
	Selenium	4.11E+01	ug/l	4.11E+01	ug/l	M	3.9E-04	mg/kg-day		$(mg/kg-day)^{-1}$	
	Vanadium	2.22E+02	ug/l	2.22E+02	ug/l	M	2.1E-03	mg/kg-day		$(mg/kg-day)^{-1}$	
	(total)										3.1E-04
Dermal	Benzene	4.20E+00	ug/l	4.20E+00	ug/l	M	4.0E-06	mg/kg-day	5.67E-02	$(mg/kg-day)^{-1}$	2.3E-07
	Chlorobenzene	5.22E+00	ug/l	5.22E+00	ug/l	M	1.2E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	Vinyl Chloride	1.49E+00	ug/l	1.49E+00	ug/l	M	4.8E-07	mg/kg-day	1.40E+00	$(mg/kg-day)^{-1}$	6.8E-07
	1,4 - Dichlorobenzene	5.66E+00	ug/l	5.66E+00	ug/l	M	2.4E-05	mg/kg-day	2.67E-02	$(mg/kg-day)^{-1}$	6.5E-07
	Aluminum	1.52E+05	ug/l	1.52E+05	ug/l	M	2.9E-03	mg/kg-day		$(mg/kg-day)^{-1}$	
	Arsenic	2.03E+01	ug/l	2.03E+01	ug/l	M	3.8E-07	mg/kg-day	1.58E+00	$(mg/kg-day)^{-1}$	6.0E-07
	Barium	3.91E+03	ug/l	3.91E+03	ug/l	M	7.3E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	Chromium	2.23E+02	ug/l	2.23E+02	ug/l	M	4.2E-06	mg/kg-day		$(mg/kg-day)^{-1}$	
	Lead	1.97E+02	ug/l	1.97E+02	ug/l	M	3.7E-06	mg/kg-day		$(mg/kg-day)^{-1}$	
	Iron	2.64E+04	ug/l	2.64E+04	ug/l	M	5.0E-04	mg/kg-day		$(mg/kg-day)^{-1}$	
	Manganese	1.94E+02	ug/l	1.94E+02	ug/l	M	3.6E-06	mg/kg-day		$(mg/kg-day)^{-1}$	
	Selenium	4.11E+01	ug/l	4.11E+01	ug/l	M	7.7E-07	mg/kg-day		$(mg/kg-day)^{-1}$	
	Vanadium	2.22E+02	ug/l	2.22E+02	ug/l	M	4.2E-06	mg/kg-day		$(mg/kg-day)^{-1}$	
	(total)										2.2E-06
Inhalation							Inhalation risk assumed to be equal to ingestion risk for VOAs				
	(total)										2.3E-05
										Total Risk Estimate Across All Exposure Routes/Pathways	3.3E-04

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.16A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT RESIDENT TO GROUNDWATER
PHASE I AND PHASE II - AREA 2/3

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 2/3
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2,2- Tetrachloroethane	6.11E-01	ug/l	6.11E-01	ug/l	M	5.7E-06	mg/kg-day	2.00E-01	(mg/kg-day)$^{-1}$	1.1E-06
	Benzene	7.85E+00	ug/l	7.85E+00	ug/l	M	7.4E-05	mg/kg-day	5.50E-02	(mg/kg-day)$^{-1}$	4.1E-06
	Chlorobenzene	6.38E+00	ug/l	6.38E+00	ug/l	M	6.0E-05	mg/kg-day		(mg/kg-day)$^{-1}$	
	Chloroform	2.71E+00	ug/l	2.71E+00	ug/l	M	2.5E-05	mg/kg-day	6.10E-03	(mg/kg-day)$^{-1}$	1.6E-07
	Tetrachloroethene	2.14E+01	ug/l	2.14E+01	ug/l	M	2.0E-04	mg/kg-day	5.20E-02	(mg/kg-day)$^{-1}$	1.0E-05
	Trichloroethene	1.25E+03	ug/l	1.25E+03	ug/l	M	1.2E-02	mg/kg-day	1.10E-02	(mg/kg-day)$^{-1}$	1.3E-04
	Vinyl Chloride	2.03E+01	ug/l	2.03E+01	ug/l	M	1.9E-04	mg/kg-day	1.40E+00	(mg/kg-day)$^{-1}$	2.7E-04
	cis-1,2-dichloroethene	6.20E+01	ug/l	6.20E+01	ug/l	M	5.8E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Aluminum	1.25E+05	ug/l	1.25E+05	ug/l	M	1.2E+00	mg/kg-day		(mg/kg-day)$^{-1}$	
	Barium	1.52E+03	ug/l	1.52E+03	ug/l	M	1.4E-02	mg/kg-day		(mg/kg-day)$^{-1}$	
	Chromium	1.62E+02	ug/l	1.62E+02	ug/l	M	1.5E-03	mg/kg-day		(mg/kg-day)$^{-1}$	
	Iron	1.16E+04	ug/l	1.16E+04	ug/l	M	1.1E-01	mg/kg-day		(mg/kg-day)$^{-1}$	
	Lead	1.61E+02	ug/l	1.61E+02	ug/l	M	1.5E-03	mg/kg-day		(mg/kg-day)$^{-1}$	
	Selenium	1.48E+01	ug/l	1.48E+01	ug/l	M	1.4E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Vanadium	2.25E+02	ug/l	2.25E+02	ug/l	M	2.1E-03	mg/kg-day		(mg/kg-day)$^{-1}$	
	(total)										4.1E-04
Dermal	1,1,2,2- Tetrachloroethane	6.11E-01	ug/l	6.11E-01	ug/l	M	4.9E-07	mg/kg-day	2.86E-01	(mg/kg-day)$^{-1}$	1.4E-07
	Benzene	7.85E+00	ug/l	7.85E+00	ug/l	M	7.6E-06	mg/kg-day	5.67E-02	(mg/kg-day)$^{-1}$	4.3E-07
	Chlorobenzene	6.38E+00	ug/l	6.38E+00	ug/l	M	1.5E-05	mg/kg-day		(mg/kg-day)$^{-1}$	
	Chloroform	2.71E+00	ug/l	2.71E+00	ug/l	M	1.6E-06	mg/kg-day	3.05E-02	(mg/kg-day)$^{-1}$	4.8E-08
	Tetrachloroethene	2.14E+01	ug/l	2.14E+01	ug/l	M	8.3E-05	mg/kg-day	5.20E-02	(mg/kg-day)$^{-1}$	4.3E-06
	Trichloroethene	1.25E+03	ug/l	1.25E+03	ug/l	M	1.3E-03	mg/kg-day	7.33E-02	(mg/kg-day)$^{-1}$	9.8E-05
	Vinyl Chloride	2.03E+01	ug/l	2.03E+01	ug/l	M	6.6E-06	mg/kg-day	1.40E+00	(mg/kg-day)$^{-1}$	9.2E-06
	cis-1,2-dichloroethene	6.20E+01	ug/l	6.20E+01	ug/l	M	3.5E-05	mg/kg-day		(mg/kg-day)$^{-1}$	
	Aluminum	1.25E+05	ug/l	1.25E+05	ug/l	M	2.3E-03	mg/kg-day		(mg/kg-day)$^{-1}$	
	Barium	1.52E+03	ug/l	1.52E+03	ug/l	M	2.9E-05	mg/kg-day		(mg/kg-day)$^{-1}$	
	Chromium	1.62E+02	ug/l	1.62E+02	ug/l	M	3.0E-06	mg/kg-day		(mg/kg-day)$^{-1}$	
	Iron	1.16E+04	ug/l	1.16E+04	ug/l	M	2.2E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Lead	1.61E+02	ug/l	1.61E+02	ug/l	M	2.2E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Selenium	1.48E+01	ug/l	1.48E+01	ug/l	M	3.0E-06	mg/kg-day		(mg/kg-day)$^{-1}$	
	Vanadium	2.25E+02	ug/l	2.25E+02	ug/l	M	4.2E-06	mg/kg-day		(mg/kg-day)$^{-1}$	
	(total)										1.1E-04
Inhalation								Inhalation risk assumed to be equal to ingestion risk for VOAs			
											4.1E-04
										Total Risk Estimate Across All Exposure Routes/Pathways	**9.4E-04**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.16B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT RESIDENT TO GROUNDWATER
PHASE III - AREA 1

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 1
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzene	3.40E+00	ug/l	3.40E+00	ug/l	M	3.2E-05	mg/kg-day	5.50E-02	$(mg/kg\text{-}day)^{-1}$	1.8E-06
	Chlorobenzene	2.30E+01	ug/l	2.30E+01	ug/l	M	2.2E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	1,4 - Dichlorobenzene	6.30E+00	ug/l	6.30E+00	ug/l	M	5.9E-05	mg/kg-day	2.40E-02	$(mg/kg\text{-}day)^{-1}$	1.4E-06
	Iron	2.37E+04	ug/l	2.37E+04	ug/l	M	2.2E-01	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	6.16E+02	ug/l	6.16E+02	ug/l	M	5.8E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										3.2E-06
Dermal	Benzene	3.40E+00	ug/l	3.40E+00	ug/l	M	3.3E-06	mg/kg-day	5.67E-02	$(mg/kg\text{-}day)^{-1}$	1.9E-07
	Chlorobenzene	2.30E+01	ug/l	2.30E+01	ug/l	M	5.3E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	1,4 - Dichlorobenzene	6.30E+00	ug/l	6.30E+00	ug/l	M	2.7E-05	mg/kg-day	2.67E-02	$(mg/kg\text{-}day)^{-1}$	7.3E-07
	Iron	2.37E+04	ug/l	2.37E+04	ug/l	M	4.5E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	6.16E+02	ug/l	6.16E+02	ug/l	M	1.2E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										9.1E-07
Inhalation								Inhalation risk assumed to be equal to ingestion risk for VOAs.			
	(total)										1.8E-06
										Total Risk Estimate Across All Exposure Routes/Pathways	**5.8E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.16B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT RESIDENT TO GROUNDWATER
PHASE III - AREA 2/3

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 2/3
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzene	1.30E+00	ug/l	1.30E+00	ug/l	M	1.2E-05	mg/kg-day	5.50E-02	$(mg/kg-day)^{-1}$	6.7E-07
	Tetrachloroethene	3.40E+01	ug/l	3.40E+01	ug/l	M	3.2E-04	mg/kg-day	5.20E-02	$(mg/kg-day)^{-1}$	1.7E-05
	Trichloroethene	1.20E+03	ug/l	1.20E+03	ug/l	M	1.1E-02	mg/kg-day	1.10E-02	$(mg/kg-day)^{-1}$	1.2E-04
	Vinyl Chloride	2.00E+01	ug/l	2.00E+01	ug/l	M	1.9E-04	mg/kg-day	1.40E+00	$(mg/kg-day)^{-1}$	2.6E-04
	cis-1,2-dichloroethene	6.60E+01	ug/l	6.60E+01	ug/l	M	6.2E-04	mg/kg-day		$(mg/kg-day)^{-1}$	
	Arsenic	5.20E+00	ug/l	5.20E+00	ug/l	M	4.9E-05	mg/kg-day	1.50E+00	$(mg/kg-day)^{-1}$	7.3E-05
	Iron	2.64E+03	ug/l	2.64E+03	ug/l	M	2.5E-02	mg/kg-day		$(mg/kg-day)^{-1}$	
	Vanadium	3.71E+01	ug/l	3.71E+01	ug/l	M	3.5E-04	mg/kg-day		$(mg/kg-day)^{-1}$	
	(total)										4.8E-04
Dermal	Benzene	1.30E+00	ug/l	1.30E+00	ug/l	M	1.3E-06	mg/kg-day	5.67E-02	$(mg/kg-day)^{-1}$	7.1E-08
	Tetrachloroethene	3.40E+01	ug/l	3.40E+01	ug/l	M	1.3E-04	mg/kg-day	5.20E-02	$(mg/kg-day)^{-1}$	6.9E-06
	Trichloroethene	1.20E+03	ug/l	1.20E+03	ug/l	M	1.3E-03	mg/kg-day	7.33E-02	$(mg/kg-day)^{-1}$	9.4E-05
	Vinyl Chloride	2.00E+01	ug/l	2.00E+01	ug/l	M	6.5E-06	mg/kg-day	1.40E+00	$(mg/kg-day)^{-1}$	9.1E-06
	cis-1,2-dichloroethene	6.60E+01	ug/l	6.60E+01	ug/l	M	3.7E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	Arsenic	5.20E+00	ug/l	5.20E+00	ug/l	M	9.8E-08	mg/kg-day	1.58E+00	$(mg/kg-day)^{-1}$	1.5E-07
	Iron	2.64E+03	ug/l	2.64E+03	ug/l	M	5.0E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	Vanadium	3.71E+01	ug/l	3.71E+01	ug/l	M	7.0E-07	mg/kg-day		$(mg/kg-day)^{-1}$	
	(total)										1.1E-04
Inhalation								Inhalation risk assumed to be equal to ingestion risk for VOAs.			
	(total)										4.0E-04
										Total Risk Estimate Across All Exposure Routes/Pathways	**9.9E-04**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.17A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF CHILD RESIDENT TO GROUNDWATER
PHASE I AND PHASE II - AREA 1

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 1
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzene	4.20E+00	ug/l	4.20E+00	ug/l	M	2.3E-05	mg/kg-day	5.50E-02	$(mg/kg-day)^{-1}$	1.3E-06
	Chlorobenzene	5.22E+00	ug/l	5.22E+00	ug/l	M	2.9E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	Vinyl Chloride	1.49E+00	ug/l	1.49E+00	ug/l	M	8.2E-06	mg/kg-day	1.40E+00	$(mg/kg-day)^{-1}$	1.1E-05
	1,4-Dichlorobenzene	5.66E+00	ug/l	5.66E+00	ug/l	M	3.1E-05	mg/kg-day	2.40E-02	$(mg/kg-day)^{-1}$	7.4E-07
	Aluminum	1.52E+05	ug/l	1.52E+05	ug/l	M	8.3E-01	mg/kg-day		$(mg/kg-day)^{-1}$	
	Arsenic	2.03E+01	ug/l	2.03E+01	ug/l	M	1.1E-04	mg/kg-day	1.50E+00	$(mg/kg-day)^{-1}$	1.7E-04
	Barium	3.91E+03	ug/l	3.91E+03	ug/l	M	2.1E-02	mg/kg-day		$(mg/kg-day)^{-1}$	
	Chromium	2.23E+02	ug/l	2.23E+02	ug/l	M	1.2E-03	mg/kg-day		$(mg/kg-day)^{-1}$	
	Lead	1.97E+02	ug/l	1.97E+02	ug/l	M	1.1E-03	mg/kg-day		$(mg/kg-day)^{-1}$	
	Iron	2.64E+04	ug/l	2.64E+04	ug/l	M	1.4E-01	mg/kg-day		$(mg/kg-day)^{-1}$	
	Manganese	1.94E+02	ug/l	1.94E+02	ug/l	M	1.1E-03	mg/kg-day		$(mg/kg-day)^{-1}$	
	Selenium	4.11E+01	ug/l	4.11E+01	ug/l	M	2.3E-04	mg/kg-day		$(mg/kg-day)^{-1}$	
	Vanadium	2.22E+02	ug/l	2.22E+02	ug/l	M	1.2E-03	mg/kg-day		$(mg/kg-day)^{-1}$	
	(total)										1.8E-04
Dermal	Benzene	4.20E+00	ug/l	4.20E+00	ug/l	M	2.2E-06	mg/kg-day	5.67E-02	$(mg/kg-day)^{-1}$	1.2E-07
	Chlorobenzene	5.22E+00	ug/l	5.22E+00	ug/l	M	6.5E-06	mg/kg-day		$(mg/kg-day)^{-1}$	
	Vinyl Chloride	1.49E+00	ug/l	1.49E+00	ug/l	M	2.6E-07	mg/kg-day	1.40E+00	$(mg/kg-day)^{-1}$	3.6E-07
	1,4-Dichlorobenzene	5.66E+00	ug/l	5.66E+00	ug/l	M	1.3E-05	mg/kg-day	2.67E-02	$(mg/kg-day)^{-1}$	3.5E-07
	Aluminum	1.52E+05	ug/l	1.52E+05	ug/l	M	1.5E-03	mg/kg-day		$(mg/kg-day)^{-1}$	
	Arsenic	2.03E+01	ug/l	2.03E+01	ug/l	M	2.0E-07	mg/kg-day	1.58E+00	$(mg/kg-day)^{-1}$	3.2E-07
	Barium	3.91E+03	ug/l	3.91E+03	ug/l	M	3.9E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	Chromium	2.23E+02	ug/l	2.23E+02	ug/l	M	2.2E-06	mg/kg-day		$(mg/kg-day)^{-1}$	
	Lead	1.97E+02	ug/l	1.97E+02	ug/l	M	2.0E-06	mg/kg-day		$(mg/kg-day)^{-1}$	
	Iron	2.64E+04	ug/l	2.64E+04	ug/l	M	2.7E-04	mg/kg-day		$(mg/kg-day)^{-1}$	
	Manganese	1.94E+02	ug/l	1.94E+02	ug/l	M	2.0E-06	mg/kg-day		$(mg/kg-day)^{-1}$	
	Selenium	4.11E+01	ug/l	4.11E+01	ug/l	M	4.1E-07	mg/kg-day		$(mg/kg-day)^{-1}$	
	Vanadium	2.22E+02	ug/l	2.22E+02	ug/l	M	2.2E-06	mg/kg-day		$(mg/kg-day)^{-1}$	
	(total)										1.2E-06
Inhalation							Inhalation risk assumed to be equal to ingestion risk for VOAs				
	(total)										1.3E-05
										Total Risk Estimate Across All Exposure Routes/Pathways	**1.9E-04**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.17A

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF CHILD RESIDENT TO GROUNDWATER
PHASE I AND PHASE II - AREA 2/3

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 2/3
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2,2- Tetrachloroethane	6.11E-01	ug/l	6.11E-01	ug/l	M	3.3E-06	mg/kg-day	2.00E-01	(mg/kg-day)$^{-1}$	6.7E-07
	Benzene	7.85E+00	ug/l	7.85E+00	ug/l	M	4.3E-05	mg/kg-day	5.50E-02	(mg/kg-day)$^{-1}$	2.4E-06
	Chlorobenzene	6.38E+00	ug/l	6.38E+00	ug/l	M	3.5E-05	mg/kg-day		(mg/kg-day)$^{-1}$	
	Chloroform	2.71E+00	ug/l	2.71E+00	ug/l	M	1.5E-05	mg/kg-day	6.10E-03	(mg/kg-day)$^{-1}$	9.1E-08
	Tetrachloroethene	2.14E+01	ug/l	2.14E+01	ug/l	M	1.2E-04	mg/kg-day	5.20E-02	(mg/kg-day)$^{-1}$	6.1E-06
	Trichloroethene	1.25E+03	ug/l	1.25E+03	ug/l	M	6.8E-03	mg/kg-day	1.10E-02	(mg/kg-day)$^{-1}$	7.5E-05
	Vinyl Chloride	2.03E+01	ug/l	2.03E+01	ug/l	M	1.1E-04	mg/kg-day	1.40E+00	(mg/kg-day)$^{-1}$	1.6E-04
	cis-1,2-dichloroethene	6.20E+01	ug/l	6.20E+01	ug/l	M	3.4E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Aluminum	1.25E+05	ug/l	1.25E+05	ug/l	M	6.8E-01	mg/kg-day		(mg/kg-day)$^{-1}$	
	Barium	1.52E+03	ug/l	1.52E+03	ug/l	M	8.3E-03	mg/kg-day		(mg/kg-day)$^{-1}$	
	Chromium	1.62E+02	ug/l	1.62E+02	ug/l	M	8.8E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Iron	1.16E+04	ug/l	1.16E+04	ug/l	M	6.4E-02	mg/kg-day		(mg/kg-day)$^{-1}$	
	Lead	1.61E+02	ug/l	1.61E+02	ug/l	M	8.8E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Selenium	1.48E+01	ug/l	1.48E+01	ug/l	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Vanadium	2.25E+02	ug/l	2.25E+02	ug/l	M	1.2E-03	mg/kg-day		(mg/kg-day)$^{-1}$	
	(total)										2.4E-04
Dermal	1,1,2,2- Tetrachloroethane	6.11E-01	ug/l	6.11E-01	ug/l	M	2.6E-07	mg/kg-day	2.86E-01	(mg/kg-day)$^{-1}$	7.5E-08
	Benzene	7.85E+00	ug/l	7.85E+00	ug/l	M	4.1E-06	mg/kg-day	5.67E-02	(mg/kg-day)$^{-1}$	2.3E-07
	Chlorobenzene	6.38E+00	ug/l	6.38E+00	ug/l	M	7.9E-06	mg/kg-day		(mg/kg-day)$^{-1}$	
	Chloroform	2.71E+00	ug/l	2.71E+00	ug/l	M	8.4E-07	mg/kg-day	3.05E-02	(mg/kg-day)$^{-1}$	2.6E-08
	Tetrachloroethene	2.14E+01	ug/l	2.14E+01	ug/l	M	4.5E-05	mg/kg-day	5.20E-02	(mg/kg-day)$^{-1}$	2.3E-06
	Trichloroethene	1.25E+03	ug/l	1.25E+03	ug/l	M	7.2E-04	mg/kg-day	7.33E-02	(mg/kg-day)$^{-1}$	5.2E-05
	Vinyl Chloride	2.03E+01	ug/l	2.03E+01	ug/l	M	3.5E-06	mg/kg-day	1.40E+00	(mg/kg-day)$^{-1}$	4.9E-06
	cis-1,2-dichloroethene	6.20E+01	ug/l	6.20E+01	ug/l	M	1.9E-05	mg/kg-day		(mg/kg-day)$^{-1}$	
	Aluminum	1.25E+05	ug/l	1.25E+05	ug/l	M	1.3E-03	mg/kg-day		(mg/kg-day)$^{-1}$	
	Barium	1.52E+03	ug/l	1.52E+03	ug/l	M	1.5E-05	mg/kg-day		(mg/kg-day)$^{-1}$	
	Chromium	1.62E+02	ug/l	1.62E+02	ug/l	M	1.6E-06	mg/kg-day		(mg/kg-day)$^{-1}$	
	Iron	1.16E+04	ug/l	1.16E+04	ug/l	M	1.2E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Lead	1.61E+02	ug/l	1.61E+02	ug/l	M	1.2E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Selenium	1.48E+01	ug/l	1.48E+01	ug/l	M	1.6E-06	mg/kg-day		(mg/kg-day)$^{-1}$	
	Vanadium	2.25E+02	ug/l	2.25E+02	ug/l	M	2.3E-06	mg/kg-day		(mg/kg-day)$^{-1}$	
	(total)										6.0E-05
Inhalation							Inhalation risk assumed to be equal to ingestion risk for VOAs				
	(total)										2.4E-04
										Total Risk Estimate Across All Exposure Routes/Pathways	**5.4E-04**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.17B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF CHILD RESIDENT TO GROUNDWATER
PHASE III - AREA 1

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 1
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzene	3.40E+00	ug/l	3.40E+00	ug/l	M	1.9E-05	mg/kg-day	5.50E-02	$(mg/kg\text{-}day)^{-1}$	1.0E-06
	Chlorobenzene	2.30E+01	ug/l	2.30E+01	ug/l	M	1.3E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	1,4 - Dichlorobenzene	6.30E+00	ug/l	6.30E+00	ug/l	M	3.5E-05	mg/kg-day	2.40E-02	$(mg/kg\text{-}day)^{-1}$	8.3E-07
	Iron	2.37E+04	ug/l	2.37E+04	ug/l	M	1.3E-01	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	6.16E+02	ug/l	6.16E+02	ug/l	M	3.4E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										1.9E-06
Dermal	Benzene	3.40E+00	ug/l	3.40E+00	ug/l	M	1.8E-06	mg/kg-day	5.67E-02	$(mg/kg\text{-}day)^{-1}$	9.9E-08
	Chlorobenzene	2.30E+01	ug/l	2.30E+01	ug/l	M	2.8E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	1,4 - Dichlorobenzene	6.30E+00	ug/l	6.30E+00	ug/l	M	1.5E-05	mg/kg-day	2.67E-02	$(mg/kg\text{-}day)^{-1}$	3.9E-07
	Iron	2.37E+04	ug/l	2.37E+04	ug/l	M	2.4E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	6.16E+02	ug/l	6.16E+02	ug/l	M	6.2E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										4.9E-07
Inhalation							Inhalation risk assumed to be equal to ingestion risk for VOAs.				
	(total)										1.0E-06
										Total Risk Estimate Across all Exposure Routes/Pathways	**3.4E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.17B

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF CHILD RESIDENT TO GROUNDWATER
PHASE III - AREA 2/3

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 2/3
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzene	1.30E+00	ug/l	1.30E+00	ug/l	M	7.1E-06	mg/kg-day	5.50E-02	$(mg/kg\text{-}day)^{-1}$	3.9E-07
	Tetrachloroethene	3.40E+01	ug/l	3.40E+01	ug/l	M	1.9E-04	mg/kg-day	5.20E-02	$(mg/kg\text{-}day)^{-1}$	9.7E-06
	Trichloroethene	1.20E+03	ug/l	1.20E+03	ug/l	M	6.6E-03	mg/kg-day	1.10E-02	$(mg/kg\text{-}day)^{-1}$	7.2E-05
	Vinyl Chloride	2.00E+01	ug/l	2.00E+01	ug/l	M	1.1E-04	mg/kg-day	1.40E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-04
	cis-1,2-dichloroethene	6.60E+01	ug/l	6.60E+01	ug/l	M	3.6E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	5.20E+00	ug/l	5.20E+00	ug/l	M	2.8E-05	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	4.3E-05
	Iron	2.64E+03	ug/l	2.64E+03	ug/l	M	1.4E-02	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.71E+01	ug/l	3.71E+01	ug/l	M	2.0E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										2.8E-04
Dermal	Benzene	1.30E+00	ug/l	1.30E+00	ug/l	M	6.7E-07	mg/kg-day	5.67E-02	$(mg/kg\text{-}day)^{-1}$	3.8E-08
	Tetrachloroethene	3.40E+01	ug/l	3.40E+01	ug/l	M	7.1E-05	mg/kg-day	5.20E-02	$(mg/kg\text{-}day)^{-1}$	3.7E-06
	Trichloroethene	1.20E+03	ug/l	1.20E+03	ug/l	M	6.9E-04	mg/kg-day	7.33E-02	$(mg/kg\text{-}day)^{-1}$	5.0E-05
	Vinyl Chloride	2.00E+01	ug/l	2.00E+01	ug/l	M	3.5E-06	mg/kg-day	1.40E+00	$(mg/kg\text{-}day)^{-1}$	4.9E-06
	cis-1,2-dichloroethene	6.60E+01	ug/l	6.60E+01	ug/l	M	2.0E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	5.20E+00	ug/l	5.20E+00	ug/l	M	1.3E-08	mg/kg-day	1.58E+00	$(mg/kg\text{-}day)^{-1}$	8.3E-08
	Iron	2.64E+03	ug/l	2.64E+03	ug/l	M	2.7E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.71E+01	ug/l	3.71E+01	ug/l	M	3.7E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										5.9E-05
Inhalation							Inhalation risk assumed to be equal to ingestion risk for VOAs				
	(total)										2.4E-04
										Total Risk Estimate Across all Exposure Routes/Pathways	**5.7E-04**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

APPENDIX E-9
RAGS D Tables E9.1 through E9.14

TABLE E9.1A

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - SITE MAINTENANCE WORKER
AREA 1
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Site Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo(a)pyrene (equiv)	2.0E-07	2.8E-11	2.6E-07	4.7E-07	Benzo(a)pyrene (equiv)					
			Arsenic	5.9E-07	1.9E-09	7.1E-08	6.6E-07	Arsenic	Skin	3.6E-03		4.4E-04	4.1E-03
			(Total)	7.9E-07	1.9E-09	3.3E-07	1.1E-06	(Total)		3.6E-03		4.4E-04	4.1E-03
Surface Water	Water	Onsite Ponds	Benzo(a)pyrene (equiv)	1.7E-08		(1)	1.7E-08	Benzo(a)pyrene (equiv)					
			Bis(2ethylhexyl)phthalate	3.6E-10		4.6E-07	4.6E-07	Bis(2ethylhexyl)phthalate	Liver	3.6E-06		4.6E-03	4.6E-03
			Aluminum					Aluminum	Body Weight	1.0E-03		1.0E-02	1.1E-02
			Arsenic	6.7E-08		7.0E-08	1.4E-07	Arsenic	Skin	4.2E-04		4.4E-04	8.5E-04
			Barium					Barium	Blood Pressure	3.0E-05		4.3E-04	4.6E-04
			Chromium					Chromium	NOAEL	8.8E-05		4.4E-03	4.5E-03
			Iron					Iron		4.9E-03		3.3E-02	3.7E-02
			Lead					Lead	CNS				
			Manganese					Manganese	CNS	4.1E-04		1.0E-02	1.1E-02
			Mercury					Mercury	CNS	6.5E-06			6.5E-06
			Vanadium					Vanadium	NOAEL	2.0E-04		2.0E-02	2.0E-02
			(Total)	8.5E-08		5.3E-07	6.1E-07	(Total)		7.1E-03		8.3E-02	9.0E-02
Sediment	Sediment	Onsite Ponds	Aluminum					Aluminum	Body Weight	5.3E-05		1.1E-03	1.1E-03
			Arsenic	3.8E-09		8.0E-09	1.2E-08	Arsenic	Skin	2.4E-05		5.0E-05	7.4E-05
			Iron					Iron		3.8E-05		5.1E-04	5.5E-04
			Vanadium					Vanadium	NOAEL	1.9E-05		3.7E-03	3.7E-03
			(Total)	3.8E-09		8.0E-09	1.2E-08	(Total)		1.3E-04		5.3E-03	5.5E-03

Total Risk Across Soil	1.1E-06
Total Risk Across Surface Water	6.1E-07
Total Risk Across Sediment	1.2E-08
Total Risk Across All Media and All Exposure Routes	1.8E-06

Total Hazard Index Across All Media and All Exposure Routes: 9.9E-02

Total Liver HI =	4.6E-03
Total CNS HI =	1.1E-02
Total Skin HI =	5.0E-03
Total Body Weight HI =	1.2E-02
Total Blood Pressure HI =	4.6E-04

(1) Significant uncertainty surrounds the calculation of risk from benzo(a)pyrene. This pathway will not be quantified but will be discussed qualitatively in the text.

TABLE E9.1B

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - SITE MAINTENANCE WORKER
AREA 1
PHASE III
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Site Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo(a)pyrene (equiv)	2.0E-07	2.8E-11	2.6E-07	4.7E-07	Benzo(a)pyrene (equiv)					
			Arsenic	5.9E-07	1.9E-09	7.1E-08	6.6E-07	Arsenic	Skin	3.6E-03		4.4E-04	4.1E-03
			(Total)	7.9E-07	1.9E-09	3.3E-07	1.1E-06	(Total)		3.6E-03		4.4E-04	4.1E-03
Surface Water	Water	Onsite Ponds	Bis(2ethylhexyl)phthalate	4.4E-10		5.6E-07	5.6E-07	Bis(2ethylhexyl)phthalate	Liver	4.4E-06		5.6E-03	5.6E-03
			Aluminum					Aluminum	Body Weight	1.3E-04		1.3E-03	1.4E-03
			Arsenic	2.8E-08		3.0E-08	5.8E-08	Arsenic	Skin	1.7E-04		1.8E-04	3.6E-04
			Chromium					Chromium	NOAEL	3.3E-05		1.7E-03	1.7E-03
			Iron					Iron		4.6E-04		3.1E-03	3.5E-03
			Lead					Lead	CNS				
			Manganese					Manganese	CNS	6.7E-05		1.7E-03	1.7E-03
			Mercury					Mercury	CNS	9.8E-06			9.8E-06
			(Total)	2.8E-08		5.9E-07	6.2E-07	(Total)		8.8E-04		1.4E-02	1.4E-02
Sediment	Sediment	Onsite Ponds	Aluminum					Aluminum	Body Weight	5.3E-05		1.1E-03	1.1E-03
			Arsenic	3.8E-09		8.0E-09	1.2E-08	Arsenic	Skin	2.4E-05		5.0E-05	7.4E-05
			Barium					Iron		3.8E-05		5.1E-04	5.5E-04
			Vanadium					Vanadium	NOAEL	1.9E-05		3.7E-03	3.7E-03
			(Total)	3.8E-09		8.0E-09	1.2E-08	(Total)		1.3E-04		5.3E-03	5.5E-03

Total Risk Across Soil	1.1E-06
Total Risk Across Surface Water	6.2E-07
Total Risk Across Sediment	1.2E-08
Total Risk Across All Media and All Exposure Routes	1.8E-06

Total Hazard Index Across All Media and All Exposure Routes	2.4E-02
Total Liver HI =	5.6E-03
Total CNS HI =	1.7E-03
Total Skin HI =	4.5E-03
Total Body Weight HI =	2.5E-03
Total Blood Pressure HI =	5.5E-04

TABLE E9.2A

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - SITE MAINTENANCE WORKER
AREA 2/3
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Site Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo(a)pyrene (equiv)	2.5E-07	3.5E-11	3.3E-07	5.8E-07	Benzo(a)pyrene (equiv)					
			Arsenic	5.4E-07	1.8E-09	6.6E-08	6.1E-07	Arsenic	Skin	3.4E-03		4.1E-04	3.8E-03
			(Total)	7.9E-07	1.8E-09	3.9E-07	1.2E-06	(Total)		3.4E-03		4.1E-04	3.8E-03
Surface Water	Water	Onsite Ponds	Benzo(a)pyrene (equiv)	1.7E-08		(1)	1.7E-08	Benzo(a)pyrene (equiv)					
			Bis(2ethylhexyl)phthalate	3.6E-10		4.6E-07	4.6E-07	Bis(2ethylhexyl)phthalate	Liver	3.6E-06		4.6E-03	4.6E-03
			Aluminum					Aluminum	Body Weight	1.0E-03		1.0E-02	1.1E-02
			Arsenic	6.7E-08		7.0E-08	1.4E-07	Arsenic	Skin	4.2E-04		4.4E-04	8.5E-04
			Barium					Barium	Blood Pressure	3.0E-05		4.3E-04	4.6E-04
			Chromium					Chromium	NOAEL	8.8E-05		4.4E-03	4.5E-03
			Iron					Iron		4.9E-03		3.3E-02	3.7E-02
			Lead					Lead	CNS				
			Manganese					Manganese	CNS	4.1E-04		1.0E-02	1.1E-02
			Mercury					Mercury	CNS	6.5E-06			6.5E-06
			Vanadium					Vanadium	NOAEL	2.0E-04		2.0E-02	2.0E-02
			(Total)	8.5E-08		5.3E-07	6.1E-07	(Total)		7.1E-03		8.3E-02	9.0E-02
Sediment	Sediment	Onsite Ponds and Canals	Aluminum					Aluminum	Body Weight	5.3E-05		1.1E-03	1.1E-03
			Arsenic	3.8E-09		8.0E-09	1.2E-08	Arsenic	Skin	2.4E-05		5.0E-05	7.4E-05
			Iron					Iron		3.8E-05		5.1E-04	5.5E-04
			Vanadium					Vanadium	NOAEL	1.9E-05		3.7E-03	3.7E-03
			(Total)	3.8E-09		8.0E-09	1.2E-08	(Total)		1.3E-04		5.3E-03	5.5E-03

Total Risk Across Soil	1.2E-06
Total Risk Across Surface Water	6.1E-07
Total Risk Across Sediment	1.2E-08
Total Risk Across All Media and All Exposure Routes	1.8E-06

Total Hazard Index Across All Media and All Exposure Routes: 9.9E-02

Total Liver HI =	4.6E-03
Total CNS HI =	1.1E-02
Total Skin HI =	4.7E-03
Total Body Weight HI =	1.2E-02
Total Blood Pressure HI =	4.6E-04

(1) Significant uncertainty surrounds the calculation of risk from benzo(a)pyrene. This pathway will not be quantified but will be discussed qualitatively in the text.

TABLE E9.2B

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - SITE MAINTENANCE WORKER
AREA 2/3
PHASE III
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Site Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo(a)pyrene (equiv)	2.5E-07	3.5E-11	3.3E-07	5.8E-07	Benzo(a)pyrene (equiv)					
			Arsenic	5.4E-07	1.8E-09	6.6E-08	6.1E-07	Arsenic	Skin	3.4E-03		4.1E-04	3.8E-03
			(Total)	7.9E-07	1.8E-09	3.9E-07	1.2E-06	(Total)		3.4E-03		4.1E-04	3.8E-03
Surface Water	Water	Onsite Ponds	Bis(2ethylhexyl)phthalate	4.4E-10		5.6E-07	5.6E-07	Bis(2ethylhexyl)phthalate	Liver	4.4E-06		5.6E-03	5.6E-03
			Aluminum					Aluminum	Body Weight	1.3E-04		1.3E-03	1.4E-03
			Arsenic	2.8E-08		3.0E-08	5.8E-08	Arsenic	Skin	1.7E-04		1.8E-04	3.6E-04
			Chromium					Chromium	NOAEL	3.3E-05		1.7E-03	1.7E-03
			Iron					Iron		4.6E-04		3.1E-03	3.5E-03
			Lead					Lead	CNS				
			Manganese					Manganese	CNS	6.7E-05		1.7E-03	1.7E-03
			Mercury					Mercury	CNS	9.8E-06			9.8E-06
			(Total)	2.8E-08		5.9E-07	6.2E-07	(Total)		8.8E-04		1.4E-02	1.4E-02
Sediment	Sediment	Onsite Ponds and Canals	Aluminum					Aluminum	Body Weight	5.3E-05		1.1E-03	1.1E-03
			Arsenic	3.8E-09		8.0E-09	1.2E-08	Arsenic	Skin	2.4E-05		5.0E-05	7.4E-05
			Barium					Iron		3.8E-05		5.1E-04	5.5E-04
			Vanadium					Vanadium	NOAEL	1.9E-05		3.7E-03	3.7E-03
			(Total)	3.8E-09		8.0E-09	1.2E-08	(Total)		1.3E-04		5.3E-03	5.5E-03

Total Risk Across Soil	1.2E-06
Total Risk Across Surface Water	6.2E-07
Total Risk Across Sediment	1.2E-08
Total Risk Across All Media and All Exposure Routes	1.8E-06

Total Hazard Index Across All Media and All Exposure Routes	2.4E-02

Total Liver HI =	5.6E-03
Total CNS HI =	1.7E-03
Total Skin HI =	4.2E-03
Total Body Weight HI =	2.5E-03
Total Blood Pressure HI =	5.5E-04

TABLE E9.3

REASONABLE MAXIUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADULT GOLFER
AREA 1
PHASE III
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Golfer
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo(a)pyrene (equiv)	6.5E-08	1.9E-12	8.4E-08	1.5E-07	Benzo(a)pyrene (equiv)					
			Arsenic	1.9E-07	1.3E-10	2.3E-08	2.1E-07	Arsenic	Skin	1.5E-03		1.8E-04	1.6E-03
			(Total)	2.5E-07	1.3E-10	1.1E-07	3.6E-07	(Total)		1.5E-03		1.8E-04	
						Total Risk Across Soil	3.6E-07					Total Hazard Index Across All Media and All Exposure Routes	1.6E-03

Risk Across All Media and All Exposure Routes	3.6E-07

Total Liver HI =	
Total CNS HI =	
Total Skin HI =	1.6E-03
Total Body Weight HI =	
Total Blood Pressure HI =	

TABLE E9.4

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADULT RECREATOR
AREA 2/3
PHASE III
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Recreator
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo(a)pyrene (equiv)	6.1E-08	5.2E-12	6.3E-09	6.7E-08	Benzo(a)pyrene (equiv)					
			Arsenic	1.3E-07	2.6E-10	1.3E-09	1.3E-07	Arsenic	Skin	1.0E-03		9.8E-06	1.0E-03
			(Total)	1.9E-07	2.7E-10	7.5E-09	2.0E-07	(Total)		1.0E-03		9.8E-06	1.0E-03
			Total Risk Across Soil				2.0E-07	Total Hazard Index Across All Media and All Exposure Routes					1.0E-03

Risk Across All Media and All Exposure Routes: 2.0E-07

Total Liver HI =	
Total CNS HI =	
Total Skin HI =	1.0E-03
Total Body Weight HI =	
Total Blood Pressure HI =	

TABLE E9.5

REASONABLE MAXIUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADOLESCENT GOLFER
AREA 1
PHASE III
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Golfer
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo(a)pyrene (equiv)	5.1E-08	1.4E-12	5.1E-08	1.0E-07	Benzo(a)pyrene (equiv)					
			Arsenic	1.5E-07	9.8E-11	1.4E-08	1.6E-07	Arsenic	Skin	2.3E-03		2.2E-04	2.5E-03
			(Total)	2.0E-07	1.0E-10	6.5E-08	2.6E-07	(Total)		2.3E-03		2.2E-04	2.5E-03
						Total Risk Across Soil	2.6E-07			Total Hazard Index Across All Media and All Exposure Routes			2.5E-03

Total Risk Across All Media and All Exposure Routes	2.6E-07

Total Liver HI =	
Total CNS HI =	
Total Skin HI =	2.5E-03
Total Body Weight HI =	
Total Blood Pressure HI =	

TABLE E9.6

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - CHILD RECREATOR
AREA 2/3
PHASE III
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Recreator
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo(a)pyrene (equiv)	1.7E-07	4.4E-11	1.6E-09	1.7E-07	Benzo(a)pyrene (equiv)					
			Arsenic	3.6E-07	2.2E-09	3.2E-10	3.7E-07	Arsenic	Skin	9.4E-03		8.3E-06	9.4E-03
			(Total)	5.3E-07	2.3E-09	1.9E-09	5.4E-07	(Total)		9.4E-03		8.3E-06	9.4E-03
						Total Risk Across Soil	5.4E-07					Total Hazard Index Across All Media and All Exposure Routes	9.4E-03

Total Risk Across All Media and All Exposure Routes: 5.4E-07

Total Liver HI =	
Total CNS HI =	
Total Skin HI =	9.4E-03
Total Body Weight HI =	
Total Blood Pressure HI =	

TABLE E9.7A

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADULT TRESPASSER
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Water	Onsite Ponds	Benzo(a)pyrene (equiv)	3.3E-08		(1)	3.3E-08	Benzo(a)pyrene (equiv)					
			Bis(2ethylhexyl)phthalate	6.7E-10		5.3E-07	5.3E-07	Bis(2ethylhexyl)phthalate	Liver	8.4E-06		6.7E-03	6.7E-03
			Aluminum					Aluminum	Body Weight	2.4E-03		2.4E-02	2.6E-02
			Arsenic	1.3E-07		1.3E-07	2.6E-07	Arsenic	Skin	9.7E-04		1.0E-03	2.0E-03
			Barium					Barium	Blood Pressure	7.0E-05		1.0E-03	1.1E-03
			Chromium					Chromium	NOAEL	2.1E-04		1.0E-02	1.1E-02
			Iron					Iron		1.1E-02		7.6E-02	8.8E-02
			Lead					Lead	CNS				
			Manganese					Manganese	CNS	9.6E-04		2.4E-02	2.5E-02
			Mercury					Mercury	CNS	1.5E-05			1.5E-05
			Vanadium					Vanadium	NOAEL	4.7E-04		4.7E-02	4.7E-02
			(Total)	1.6E-07		6.6E-07	8.2E-07	(Total)		1.7E-02		1.9E-01	2.1E-01
Sediment	Sediment	Onsite Ponds	Aluminum					Aluminum	Body Weight	4.7E-05		7.9E-04	8.4E-04
			Arsenic	2.7E-09		5.8E-09	8.5E-09	Arsenic	Skin	2.1E-05		3.8E-05	5.9E-05
			Iron					Iron		3.5E-05		3.8E-04	4.2E-04
			Vanadium					Vanadium	NOAEL	1.7E-05		2.8E-03	2.8E-03
			(Total)	2.7E-09		5.8E-09	8.5E-09	(Total)		1.2E-04		4.0E-03	4.1E-03

Total Risk Across Surface Water	8.2E-07
Total Risk Across Sediment	8.5E-09
Total Risk Across All Media and All Exposure Routes	8.3E-07

Total Hazard Index Across All Media and All Exposure Routes	2.1E-01

Total Liver HI =	6.7E-03
Total CNS HI =	2.5E-02
Total Skin HI =	2.1E-03
Total Body Weight HI =	2.7E-02
Total Blood Pressure HI =	1.1E-03

(1) Significant uncertainty surrounds the calculation of risk from benzo(a)pyrene. This pathway will not be quantified but will be discussed qualitatively in the text.

TABLE E9.7B

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADULT TRESPASSER
PHASE III
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Water	Onsite Ponds	Bis(2ethylhexyl)phthalate	8.3E-10		6.5E-07	6.5E-07	Bis(2ethylhexyl)phthalate	Liver	1.0E-05		8.2E-03	8.2E-03
			Aluminum					Aluminum	Body Weight	3.0E-04		3.0E-03	3.3E-03
			Arsenic	5.2E-08		5.5E-08	1.1E-07	Arsenic	Skin	4.1E-04		4.3E-04	8.4E-04
			Chromium					Chromium	NOAEL	7.8E-05		3.9E-03	4.0E-03
			Iron					Iron		1.1E-03		7.2E-03	8.3E-03
			Lead					Lead	CNS				
			Manganese					Manganese	CNS	1.6E-04		3.9E-03	4.1E-03
			Mercury					Mercury	CNS	2.3E-05			2.3E-05
			(Total)	5.3E-08		7.1E-07	7.6E-07	(Total)		2.1E-03		2.7E-02	2.9E-02
Sediment	Sediment	Onsite Ponds	Aluminum					Aluminum	Body Weight	4.7E-05		7.9E-04	8.4E-04
			Arsenic	2.7E-09		5.8E-09	8.5E-09	Arsenic	Skin	2.1E-05		3.8E-05	5.9E-05
			Iron					Iron		3.5E-05		3.8E-04	4.2E-04
			Vanadium					Vanadium	NOAEL	1.7E-05		2.8E-03	2.8E-03
			(Total)	2.7E-09		5.8E-09	8.5E-09	(Total)		1.2E-04		4.0E-03	4.1E-03

Total Risk Across Surface Water	7.6E-07
Total Risk Across Sediment	8.5E-09
Total Risk Across All Media and All Exposure Routes	7.7E-07

Total Hazard Index Across All Media and All Exposure Routes	3.3E-02
Total Liver HI =	8.2E-03
Total CNS HI =	4.1E-03
Total Skin HI =	9.0E-04
Total Body Weight HI =	4.1E-03
Total Blood Pressure HI =	

TABLE E9.8A

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADOLESCENT TRESPASSER
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Water	Onsite Ponds	Benzo(a)pyrene (equiv)	5.6E-08		(1)	5.6E-08	Benzo(a)pyrene (equiv)					
			Bis(2ethylhexyl)phthalate	1.2E-09		8.3E-07	8.3E-07	Bis(2ethylhexyl)phthalate	Liver	2.9E-05		2.1E-02	2.1E-02
			Aluminum					Aluminum	Body Weight	8.2E-03		7.4E-02	8.2E-02
			Arsenic	2.2E-07		2.1E-07	4.2E-07	Arsenic	Skin	3.4E-03		3.2E-03	6.6E-03
			Barium					Barium	Blood Pressure	2.4E-04		3.1E-03	3.4E-03
			Chromium					Chromium	NOAEL	7.1E-04		3.2E-02	3.3E-02
			Iron					Iron		4.0E-02		2.4E-01	2.8E-01
			Lead					Lead	CNS				
			Manganese					Manganese	CNS	3.3E-03		7.5E-02	7.8E-02
			Mercury					Mercury	CNS	5.2E-05			5.2E-05
			Vanadium					Vanadium	NOAEL	1.6E-03		1.5E-01	1.5E-01
			(Total)	2.7E-07		1.0E-06	1.3E-06	(Total)		5.7E-02		5.9E-01	6.5E-01
Sediment	Sediment	Onsite Ponds	Aluminum					Aluminum	Body Weight	1.6E-04		3.0E-03	3.1E-03
			Arsenic	4.8E-09		9.1E-09	1.4E-08	Arsenic	Skin	7.4E-05		1.4E-04	2.1E-04
			Iron					Iron		1.2E-04		1.4E-03	1.6E-03
			Vanadium					Vanadium	NOAEL	5.8E-05		1.0E-02	1.1E-02
			(Total)	4.8E-09		9.1E-09	1.4E-08	(Total)		4.2E-04		1.5E-02	1.5E-02

Total Risk Across Surface Water	1.3E-06
Total Risk Across Sediment	1.4E-08
Total Risk Across All Media and All Exposure Routes	1.3E-06

Total Hazard Index Across All Media and All Exposure Routes	6.7E-01

Total Liver HI =	2.1E-02
Total CNS HI =	7.9E-02
Total Skin HI =	8.2E-02
Total Body Weight HI =	8.5E-02
Total Blood Pressure HI =	3.4E-03

(1) Significant uncertainty surrounds the calculation of risk from benzo(a)pyrene. This pathway will not be quantified but will be discussed qualitatively in the text.

TABLE E9.8B

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADOLESCENT TRESPASSER
PHASE III
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Water	Onsite Ponds	Bis(2ethylhexyl)phthalate	1.4E-09		1.0E-06	1.0E-06	Bis(2ethylhexyl)phthalate	Liver	3.6E-05		2.6E-02	2.6E-02
			Aluminum					Aluminum	Body Weight	1.0E-03		9.4E-03	1.0E-02
			Arsenic	9.1E-08		8.6E-08	1.8E-07	Arsenic	Skin	1.4E-03		1.3E-03	2.8E-03
			Chromium					Chromium	NOAEL	2.7E-04		1.2E-02	1.2E-02
			Iron					Iron		3.7E-03		2.3E-02	2.6E-02
			Lead					Lead	CNS				
			Manganese					Manganese	CNS	5.4E-04		1.2E-02	1.3E-02
			Mercury					Mercury	CNS	7.9E-05			7.9E-05
			(Total)	9.2E-08		1.1E-06	1.2E-06	(Total)		7.1E-03		8.3E-02	9.0E-02
Sediment	Sediment	Onsite Ponds	Aluminum					Aluminum	Body Weight	1.6E-04		3.0E-03	3.1E-03
			Arsenic	4.8E-09		9.1E-09	1.4E-08	Arsenic	Skin	7.4E-05		1.4E-04	2.1E-04
			Iron					Iron		1.2E-04		1.4E-03	1.6E-03
			Vanadium					Vanadium	NOAEL	5.8E-05		1.0E-02	1.1E-02
			(Total)	4.8E-09		9.1E-09	1.4E-08	(Total)		4.2E-04		1.5E-02	1.5E-02

Total Risk Across Surface Water	1.2E-06
Total Risk Across Sediment	1.4E-08
Total Risk Across All Media and All Exposure Routes	1.2E-06

Total Hazard Index Across All Media and All Exposure Routes	1.1E-01
Total Liver HI =	2.6E-02
Total CNS HI =	1.3E-02
Total Skin HI =	3.0E-03
Total Body Weight HI =	1.4E-02
Total Blood Pressure HI =	

TABLE E9.9A

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADULT RESIDENT
AREA 1
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo(a)pyrene (equiv)	5.5E-07	3.8E-11	3.5E-07	9.0E-07	Benzo(a)pyrene (equiv)					
			Arsenic	1.6E-06	2.6E-09	9.6E-08	1.7E-06	Arsenic	Skin	1.0E-02		6.2E-04	1.1E-02
			(Total)	2.1E-06	2.6E-09	4.5E-07	2.6E-06	(Total)		1.0E-02		6.2E-04	1.1E-02
Surface Water	Water	Onsite Ponds	Benzo(a)pyrene (equiv)	3.3E-08		(1)	3.3E-08	Benzo(a)pyrene (equiv)					
			Bis(2ethylhexyl)phthalate	6.7E-10		5.3E-07	5.3E-07	Bis(2ethylhexyl)phthalate	Liver	8.4E-06		6.7E-03	6.7E-03
			Aluminum					Aluminum	Body Weight	2.4E-03		2.4E-02	2.6E-02
			Arsenic	1.3E-07		1.3E-07	2.6E-07	Arsenic	Skin	9.7E-04		1.0E-03	2.0E-03
			Barium					Barium	Blood Pressure	7.0E-05		1.0E-03	1.1E-03
			Chromium					Chromium	NOAEL	2.1E-04		1.0E-02	1.1E-02
			Iron					Iron		1.1E-02		7.6E-02	8.8E-02
			Lead					Lead	CNS				
			Manganese					Manganese	CNS	9.6E-04		2.4E-02	2.5E-02
			Mercury					Mercury	CNS	1.5E-05			1.5E-05
			Vanadium					Vanadium	NOAEL	4.7E-04		4.7E-02	4.7E-02
			(Total)	1.6E-07		6.6E-07	8.2E-07	(Total)		1.7E-02		1.9E-01	2.1E-01
Sediment	Sediment	Onsite Ponds	Aluminum					Aluminum	Body Weight	4.7E-05		7.9E-04	8.4E-04
			Arsenic	2.7E-09		5.8E-09	8.5E-09	Arsenic	Skin	2.1E-05		3.8E-05	5.9E-05
			Iron					Iron		3.5E-05		3.8E-04	4.2E-04
			Vanadium					Vanadium	NOAEL	1.7E-05		2.8E-03	2.8E-03
			(Total)	2.7E-09		5.8E-09	8.5E-09	(Total)		1.2E-04		4.0E-03	4.1E-03
Groundwater	Water	Onsite	Benzene	2.2E-06	2.2E-06	2.3E-07	4.6E-06	Benzene		3.8E-02	3.8E-02	4.1E-03	8.1E-02
			Chlorobenzene					Chlorobenzene	Kidney/Liver	7.2E-03	7.2E-03	5.7E-03	2.0E-02
			Vinyl Chloride	2.0E-05	2.0E-05	6.8E-07	4.0E-05	Vinyl Chloride					
			1,4-Dichlorobenzene	1.3E-06	1.3E-06	6.5E-07	3.2E-06	1,4-Dichlorobenzene	Liver/Blood	5.2E-03	5.2E-03	2.6E-03	1.3E-02
			Aluminum					Aluminum	Body Weight	4.2E+00		8.3E-02	4.2E+00
			Arsenic	2.9E-04		6.0E-07	2.9E-04	Arsenic	Skin	1.9E+00		3.9E-03	1.9E+00
			Barium					Barium	Blood Pressure	1.5E+00		4.4E-02	1.6E+00
			Chromium					Chromium	NOAEL	2.0E+00		2.0E-01	2.2E+00
			Lead					Lead	CNS				
			Iron					Iron		2.4E+00		3.2E-02	2.4E+00
			Manganese					Manganese	CNS	2.7E-01		1.3E-02	2.8E-01
			Selenium					Selenium	CNS/GI/Skin	2.3E-01		1.0E-03	2.3E-01
			Vanadium					Vanadium	NOAEL	8.7E-01		1.7E-01	1.0E+00
			(Total)	3.1E-04	2.3E-05	2.2E-06	3.3E-04	(Total)		1.3E+01	5.1E-02	5.7E-01	1.4E+01

Total Risk Across Soil	2.6E-06
Total Risk Across Surface Water	8.2E-07
Total Risk Across Sediment	8.5E-09
Total Risk Across Groundwater	3.3E-04
Total Risk Across All Media and All Exposure Routes	3.4E-04

Total Hazard Index Across All Media and All Exposure Routes: 1.4E+01

Total Liver HI =	4.0E-02
Total CNS HI =	5.3E-01
Total Skin HI =	2.1E+00
Total Body Weight HI =	4.3E+00
Total Blood Pressure HI =	1.6E+00

(1) Significant uncertainty surrounds the calculation of risk from benzo(a)pyrene. This pathway will not be quantified but will be discussed qualitatively in the text.

TABLE E9.9B

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADULT RESIDENT
PHASE - AREA 1

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo(a)pyrene (equiv)	5.5E-07	3.8E-11	3.5E-07	9.0E-07	Benzo(a)pyrene (equiv)					
			Arsenic	1.6E-06	2.6E-09	9.6E-08	1.7E-06	Arsenic	Skin	1.0E-02		6.2E-04	1.1E-02
			(Total)	2.1E-06	2.6E-09	4.5E-07	2.6E-06	(Total)		1.0E-02		6.2E-04	1.1E-02
Surface Water	Water	Onsite Ponds	Bis(2ethylhexyl)phthalate	8.3E-10		6.5E-07	6.5E-07	Bis(2ethylhexyl)phthalate	Liver	1.0E-05		8.2E-03	8.2E-03
			Aluminum					Aluminum	Body Weight	3.0E-04		3.0E-03	3.3E-03
			Arsenic	5.2E-08		5.5E-08	1.1E-07	Arsenic	Skin	4.1E-04		4.3E-04	8.4E-04
			Chromium					Chromium	NOAEL	7.8E-05		3.9E-03	4.0E-03
			Iron					Iron		1.1E-03		7.2E-03	8.3E-03
			Lead					Lead	CNS				
			Manganese					Manganese	CNS	1.6E-04		3.9E-03	4.1E-03
			Mercury					Mercury	CNS	2.3E-05			2.3E-05
			(Total)	5.3E-08		7.1E-07	7.6E-07	(Total)		2.1E-03		2.7E-02	2.9E-02
Sediment	Sediment	Onsite Ponds	Aluminum					Aluminum	Body Weight	4.7E-05		7.9E-04	8.4E-04
			Arsenic	2.7E-09		5.8E-09	8.5E-09	Arsenic	Skin	2.1E-05		3.8E-05	5.9E-05
			Iron					Iron		3.5E-05		3.8E-04	4.2E-04
			Vanadium					Vanadium	NOAEL	1.7E-05		2.8E-03	2.8E-03
			(Total)	2.7E-09		5.8E-09	8.5E-09	(Total)		1.2E-04		4.0E-03	4.1E-03
Groundwater	Water	Onsite	Benzene	1.8E-06	1.8E-06	1.9E-07	3.7E-06	Benzene		3.1E-02	3.1E-02	3.3E-03	6.5E-02
			Chlorobenzene					Chlorobenzene	Kidney/Liver	3.2E-02	3.2E-02	2.5E-02	8.8E-02
			1,4 - Dichlorobenzene	1.4E-06		7.3E-07	2.1E-06	1,4 - Dichlorobenzene	Liver/Blood	5.8E-03		2.9E-03	8.7E-03
			Iron					Iron		2.2E+00		2.9E-02	2.2E+00
			Manganese					Manganese	CNS	8.4E-01		4.2E-02	8.9E-01
			(Total)	3.2E-06	1.8E-06	9.1E-07	5.8E-06	(Total)		3.1E+00	6.3E-02	1.0E-01	3.2E+00

Total Risk Across Soil	2.6E-06
Total Risk Across Surface Water	7.6E-07
Total Risk Across Sediment	8.5E-09
Total Risk Across Groundwater	5.8E-06
Total Risk Across All Media and All Exposure Routes	9.2E-06

Total Hazard Index Across All Media and All Exposure Routes	3.3E+00

Total Liver HI =	1.0E-01
Total CNS HI =	8.9E-01
Total Skin HI =	1.2E-02
Total Body Weight HI =	4.1E-03
Total Blood Pressure HI =	

TABLE E9.10A

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADULT RESIDENT
AREA 2/3
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo[a]pyrene (equiv)	6.8E-07	4.7E-11	4.4E-07	1.1E-06	Benzo[a]pyrene (equiv)					
			Dieldrin	9.5E-09	1.5E-12	1.1E-08	2.1E-08	Dieldrin		3.5E-05		4.0E-05	7.5E-05
			Heptachlor	2.2E-09	3.5E-13	1.8E-09	4.0E-09	Heptachlor		2.8E-06		2.3E-06	5.1E-06
			Arsenic	1.5E-06	2.4E-09	8.9E-08	1.5E-06	Arsenic	Skin	9.4E-03		5.7E-04	1.0E-02
			Barium					Barium	Blood Pressure	1.9E-04	1.6E-05	1.6E-04	3.7E-04
			(Total)	2.1E-06	2.4E-09	5.3E-07	2.7E-06	(Total)		9.4E-03		5.7E-04	1.0E-02
Surface Water	Water	Onsite Ponds	Benzo(a)pyrene (equiv)	3.3E-08		(1)	3.3E-08	Benzo(a)pyrene (equiv)					
			Bis(2ethylhexyl)phthalate	6.7E-10		5.3E-07	5.3E-07	Bis(2ethylhexyl)phthalate	Liver	8.4E-06		6.7E-03	6.7E-03
			Aluminum					Aluminum	Body Weight	2.4E-03		2.4E-02	2.6E-02
			Arsenic	1.3E-07		1.3E-07	2.6E-07	Arsenic	Skin	9.7E-04		1.0E-03	2.0E-03
			Barium					Barium	Blood Pressure	7.0E-05		1.0E-03	1.1E-03
			Chromium					Chromium	NOAEL	2.1E-04		1.0E-02	1.1E-02
			Iron					Iron		1.1E-02		7.6E-02	8.8E-02
			Lead					Lead	CNS				
			Manganese					Manganese	CNS	9.6E-04		2.4E-02	2.5E-02
			Mercury					Mercury	CNS	1.5E-05			1.5E-05
			Vanadium					Vanadium	NOAEL	4.7E-04		4.7E-02	4.7E-02
			(Total)	1.6E-07		6.6E-07	8.2E-07	(Total)		1.7E-02		1.9E-01	2.1E-01
Sediment	Sediment	Onsite Ponds	Aluminum					Aluminum	Body Weight	4.7E-05		7.9E-04	8.4E-04
			Arsenic	2.7E-09		5.8E-09	8.5E-09	Arsenic	Skin	2.1E-05		3.8E-05	5.9E-05
			Iron					Iron		3.5E-05		3.8E-04	4.2E-04
			Vanadium					Vanadium	NOAEL	1.7E-05		2.8E-03	2.8E-03
			(Total)	2.7E-09		5.8E-09	8.5E-09	(Total)		1.2E-04		4.0E-03	4.1E-03
Groundwater	Water	Onsite	1,1,2,2- Tetrachloroethane	1.1E-06	1.1E-06	1.4E-07	2.4E-06	1,1,2,2- Tetrachloroethane	CNS/GI/Liver	2.8E-04	2.8E-04	3.4E-05	5.9E-04
			Benzene	4.1E-06	4.1E-06	4.3E-07	8.5E-06	Benzene		7.2E-02	7.2E-02	7.6E-03	1.5E-01
			Chlorobenzene					Chlorobenzene	Kidney/Liver	8.7E-03	8.7E-03	6.9E-03	2.4E-02
			Chloroform	1.6E-07	1.6E-07	4.8E-08	3.6E-07	Chloroform	Liver	7.4E-03	7.4E-03	2.3E-03	1.7E-02
			Tetrachloroethene	1.0E-05	1.0E-05	4.3E-06	2.5E-05	Tetrachloroethene	Liver	5.9E-02	5.9E-02	2.4E-02	1.4E-01
			Trichloroethene	1.3E-04	1.3E-04	9.8E-05	3.6E-04	Trichloroethene	CNS	5.7E+00	5.7E+00	4.3E+00	1.6E+01
			Vinyl Chloride	2.7E-04	2.7E-04	9.2E-06	5.4E-04	Vinyl Chloride					
			cis-1,2-dichloroethene					cis-1,2-dichloroethene	Blood/Liver	1.7E-01	1.7E-01	1.0E-02	3.5E-01
			Aluminum					Aluminum	Body Weight	3.4E+00		6.8E-02	3.5E+00
			Barium					Barium	Blood Pressure	5.9E-01		1.7E-02	6.1E-01
			Chromium					Chromium	NOAEL	1.5E+00		1.5E-01	1.6E+00
			Iron					Iron		1.1E+00		1.4E-02	1.1E+00
			Lead					Lead	CNS				
			Selenium					Selenium	CNS/GI/Skin	8.1E-02		4.0E-03	8.5E-02
			Vanadium					Vanadium	NOAEL	8.8E-01		1.8E-01	1.1E+00
			(Total)	4.1E-04	4.1E-04	1.1E-04	9.4E-04	(Total)		1.4E+01	6.0E+00	4.8E+00	2.4E+01

Total Risk Across Soil	2.7E-06
Total Risk Across Surface Water	8.2E-07
Total Risk Across Sediment	8.5E-09
Total Risk Across Groundwater	9.4E-04
Total Risk Across All Media and All Exposure Routes	9.4E-04

Total Hazard Index Across All Media and All Exposure Routes: 2.5E+01

Total Liver HI =	5.4E-01
Total CNS HI =	1.6E+01
Total Skin HI =	9.7E-02
Total Body Weight HI =	3.5E+00
Total Blood Pressure HI =	6.1E-01
Total GI HI =	8.5E-02
Total Kidney HI =	2.4E-02

(1) Significant uncertainty surrounds the calculation of risk from benzo(a)pyrene. This pathway will not be quantified but will be discussed qualitatively in the text.

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADULT RESIDENT
AREA 2/3
PHASE III
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo[a]pyrene (equiv)	6.8E-07	4.7E-11	4.4E-07	1.1E-06	Benzo[a]pyrene (equiv)					
			Arsenic	1.5E-06	2.4E-09	8.9E-08	1.5E-06	Arsenic	Skin	9.4E-03		5.7E-04	1.0E-02
			(Total)	2.1E-06	2.4E-09	5.3E-07	2.7E-06	(Total)		9.4E-03		5.7E-04	1.0E-02
Surface Water	Water	Onsite Ponds	Bis(2ethylhexyl)phthalate	8.3E-10		6.5E-07	6.5E-07	Bis(2ethylhexyl)phthalate	Liver	1.0E-05		8.2E-03	8.2E-03
			Aluminum					Aluminum	Body Weight	3.0E-04		3.0E-03	3.3E-03
			Arsenic	5.2E-08		5.5E-08	1.1E-07	Arsenic	Skin	4.1E-04		4.3E-04	8.4E-04
			Chromium					Chromium	NOAEL	7.8E-05		3.9E-03	4.0E-03
			Iron					Iron		1.1E-03		7.2E-03	8.3E-03
			Lead					Lead	CNS				
			Manganese					Manganese	CNS	1.6E-04		3.9E-03	4.1E-03
			Mercury					Mercury	CNS	2.3E-05			2.3E-05
			(Total)	5.3E-08		7.1E-07	7.6E-07	(Total)		2.1E-03		2.7E-02	2.9E-02
Sediment	Sediment	Onsite Ponds	Aluminum					Aluminum	Body Weight	4.7E-05		7.9E-04	8.4E-04
			Arsenic	2.7E-09		5.8E-09	8.5E-09	Arsenic	Skin	2.1E-05		3.8E-05	5.9E-05
			Iron					Iron		3.5E-05		3.8E-04	4.2E-04
			Vanadium					Vanadium	NOAEL	1.7E-05		2.8E-03	2.8E-03
			(Total)	2.7E-09		5.8E-09	8.5E-09	(Total)		1.2E-04		4.0E-03	4.1E-03
Groundwater	Water	Onsite	Benzene	6.7E-07	6.7E-07	7.1E-08	1.4E-06	Benzene		1.2E-02	1.2E-02	1.3E-03	2.5E-02
			Tetrachloroethene	1.7E-05	1.7E-05	6.9E-06	4.0E-05	Tetrachloroethene	Liver	9.3E-02	9.3E-02	3.9E-02	2.2E-01
			Trichloroethene	1.2E-04	1.2E-04	9.4E-05	3.4E-04	Trichloroethene	CNS	5.5E+00	5.5E+00	4.2E+00	1.5E+01
			Vinyl Chloride	2.6E-04	2.6E-04	9.1E-06	5.4E-04	Vinyl Chloride					
			cis-1,2-dichloroethene					cis-1,2-dichloroethene	Blood/Liver	1.8E-01	1.8E-01	1.1E-02	3.7E-01
			Arsenic	7.3E-05		1.5E-07	7.3E-05	Arsenic	Skin/Circulatory	4.7E-01		1.0E-03	4.8E-01
			Iron					Iron		2.4E-01		3.2E-03	2.4E-01
			Vanadium					Vanadium	NOAEL	1.5E-01		2.9E-02	1.7E-01
			(Total)	4.8E-04	4.0E-04	1.1E-04	9.9E-04	(Total)		6.6E+00	5.8E+00	4.2E+00	1.7E+01

Total Risk Across Soil	2.7E-06
Total Risk Across Surface Water	7.6E-07
Total Risk Across Sediment	8.5E-09
Total Risk Across Groundwater	9.9E-04
Total Risk Across All Media and All Exposure Routes	1.0E-03

Total Hazard Index Across All Media and All Exposure Routes	1.7E+01
Total Liver HI =	6.1E-01
Total CNS HI =	1.5E+01
Total Skin HI =	4.9E-01
Total Body Weight HI =	4.1E-03
Total Circulatory HI =	4.8E-01

TABLE E9.11A

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADOLESCENT RESIDENT
AREA 1
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Water	Onsite Ponds	Benzo(a)pyrene (equiv)	5.6E-08		(1)	5.6E-08	Benzo(a)pyrene (equiv)					
			Bis(2ethylhexyl)phthalate	1.2E-09		8.3E-07	8.3E-07	Bis(2ethylhexyl)phthalate	Liver	2.9E-05		2.1E-02	2.1E-02
			Aluminum					Aluminum	Body Weight	8.2E-03		7.4E-02	8.2E-02
			Arsenic	2.2E-07		2.1E-07	4.2E-07	Arsenic	Skin	3.4E-03		3.2E-03	6.6E-03
			Barium					Barium	Blood Pressure	2.4E-04		3.1E-03	3.4E-03
			Chromium					Chromium	NOAEL	7.1E-04		3.2E-02	3.3E-02
			Iron					Iron		4.0E-02		2.4E-01	2.8E-01
			Lead					Lead	CNS				
			Manganese					Manganese	CNS	3.3E-03		7.5E-02	7.8E-02
			Mercury					Mercury	CNS	5.2E-05			5.2E-05
			Vanadium					Vanadium	NOAEL	1.6E-03		1.5E-01	1.5E-01
			(Total)	2.7E-07		1.0E-06	1.3E-06	(Total)		5.7E-02		5.9E-01	6.5E-01
Sediment	Sediment	Onsite Ponds	Aluminum					Aluminum	Body Weight	1.6E-04		3.0E-03	3.1E-03
			Arsenic	4.8E-09		9.1E-09	1.4E-08	Arsenic	Skin	7.4E-05		1.4E-04	2.1E-04
			Iron					Iron		1.2E-04		1.4E-03	1.6E-03
			Vanadium					Vanadium	NOAEL	5.8E-05		1.0E-02	1.1E-02
			(Total)	4.8E-09		9.1E-09	1.4E-08	(Total)		4.2E-04		1.5E-02	1.5E-02

Total Risk Across Surface Water	1.3E-06
Total Risk Across Sediment	1.4E-08
Total Risk Across All Media and All Exposure Routes	1.3E-06

Total Hazard Index Across All Media and All Exposure Routes	6.7E-01

Total Liver HI =	2.1E-02
Total CNS HI =	7.9E-02
Total Skin HI =	6.8E-03
Total Body Weight HI =	8.5E-02
Total Blood Pressure HI =	3.4E-03

(1) Significant uncertainty surrounds the calculation of risk from benzo(a)pyrene. This pathway will not be quantified but will be discussed qualitatively in the text.

TABLE E9.11B

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADOLESCENT RESIDENT
AREA 1
PHASE III
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe Future
Receptor Population Resident
Receptor Age Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Water	Onsite Ponds	Bis(2ethylhexyl)phthalate	1.4E-09		1.0E-06	1.0E-06	Bis(2ethylhexyl)phthalate	Liver	3.6E-05		2.6E-02	2.6E-02
			Aluminum					Aluminum	Body Weight	1.0E-03		9.4E-03	1.0E-02
			Arsenic	9.1E-08		8.6E-08	1.8E-07	Arsenic	Skin	1.4E-03		1.3E-03	2.8E-03
			Chromium					Chromium	NOAEL	2.7E-04		1.2E-02	1.2E-02
			Iron					Iron		3.7E-03		2.3E-02	2.6E-02
			Lead					Lead	CNS				
			Manganese					Manganese	CNS	5.4E-04		1.2E-02	1.3E-02
			Mercury					Mercury	CNS	7.9E-05			7.9E-05
			(Total)	9.2E-08		1.1E-06	1.2E-06	(Total)		7.1E-03		8.3E-02	9.0E-02
Sediment	Sediment	Onsite Ponds	Aluminum					Aluminum	Body Weight	1.6E-04		3.0E-03	3.1E-03
			Arsenic	4.8E-09		9.1E-09	1.4E-08	Arsenic	Skin	7.4E-05		1.4E-04	2.1E-04
			Iron					Iron		1.2E-04		1.4E-03	1.6E-03
			Vanadium					Vanadium	NOAEL	5.8E-05		1.0E-02	1.1E-02
			(Total)	4.8E-09		9.1E-09	1.4E-08	(Total)		4.2E-04		1.5E-02	1.5E-02
							Total Risk Across Surface Water	1.2E-06					
							Total Risk Across Sediment	1.4E-08					
							Total Risk Across All Media and All Exposure Routes	1.2E-06					Total Hazard Index Across All Media and All Exposure Routes 1.1E-01

Total Liver HI =	2.6E-02
Total CNS HI =	1.3E-02
Total Skin HI =	3.0E-03
Total Body Weight HI =	1.4E-02
Total Blood Pressure HI =	

TABLE E9.12A

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADOLESCENT RESIDENT
AREA 2/3
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Water	Onsite Ponds	Benzo(a)pyrene (equiv)	5.6E-08		(1)	5.6E-08	Benzo(a)pyrene (equiv)					
			Bis(2ethylhexyl)phthalate	1.2E-09		8.3E-07	8.3E-07	Bis(2ethylhexyl)phthalate	Liver	2.9E-05		2.1E-02	2.1E-02
			Aluminum					Aluminum	Body Weight	8.2E-03		7.4E-02	8.2E-02
			Arsenic	2.2E-07		2.1E-07	4.2E-07	Arsenic	Skin	3.4E-03		3.2E-03	6.6E-03
			Barium					Barium	Blood Pressure	2.4E-04		3.1E-03	3.4E-03
			Chromium					Chromium	NOAEL	7.1E-04		3.2E-02	3.3E-02
			Iron					Iron		4.0E-02		2.4E-01	2.8E-01
			Lead					Lead	CNS				
			Manganese					Manganese	CNS	3.3E-03		7.5E-02	7.8E-02
			Mercury					Mercury	CNS	5.2E-05			5.2E-05
			Vanadium					Vanadium	NOAEL	1.6E-03		1.5E-01	1.5E-01
			(Total)	2.7E-07		1.0E-06	1.3E-06	(Total)		5.7E-02		5.9E-01	6.5E-01
Sediment	Sediment	Onsite Ponds	Aluminum					Aluminum	Body Weight	1.6E-04		3.0E-03	3.1E-03
			Arsenic	4.8E-09		9.1E-09	1.4E-08	Arsenic	Skin	7.4E-05		1.4E-04	2.1E-04
			Iron					Iron		1.2E-04		1.4E-03	1.6E-03
			Vanadium					Vanadium	NOAEL	5.8E-05		1.0E-02	1.1E-02
			(Total)	4.8E-09		9.1E-09	1.4E-08	(Total)		4.2E-04		1.5E-02	1.5E-02
							Total Risk Across Surface Water	1.3E-06					
							Total Risk Across Sediment	1.4E-08					
							Total Risk Across All Media and All Exposure Routes	1.3E-06				Total Hazard Index Across All Media and All Exposure Routes	6.7E-01

Total Liver HI =	2.1E-02
Total CNS HI =	7.9E-02
Total Skin HI =	6.8E-03
Total Body Weight HI =	8.5E-02
Total Blood Pressure HI =	3.4E-03

(1) Significant uncertainty surrounds the calculation of risk from benzo(a)pyrene. This pathway will not be quantified but will be discussed qualitatively in the text.

TABLE E9.12B

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADOLESCENT RESIDENT
PHASE III - AREA 2/3

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Water	Onsite Ponds	Bis(2ethylhexyl)phthalate	1.4E-09		1.0E-06	1.0E-06	Bis(2ethylhexyl)phthalate	Liver	3.6E-05		2.6E-02	2.6E-02
			Aluminum					Aluminum	Body Weight	1.0E-03		9.4E-03	1.0E-02
			Arsenic	9.1E-08		8.6E-08	1.8E-07	Arsenic	Skin	1.4E-03		1.3E-03	2.8E-03
			Chromium					Chromium	NOAEL	2.7E-04		1.2E-02	1.2E-02
			Iron					Iron		3.7E-03		2.3E-02	2.6E-02
			Lead					Lead	CNS				
			Manganese					Manganese	CNS	5.4E-04		1.2E-02	1.3E-02
			Mercury					Mercury	CNS	7.9E-05			7.9E-05
			(Total)	9.2E-08		1.1E-06	1.2E-06	(Total)		7.1E-03		8.3E-02	9.0E-02
Sediment	Sediment	Onsite Ponds	Aluminum					Aluminum	Body Weight	1.6E-04		3.0E-03	3.1E-03
			Arsenic	4.8E-09		9.1E-09	1.4E-08	Arsenic	Skin	7.4E-05		1.4E-04	2.1E-04
			Iron					Iron		1.2E-04		1.4E-03	1.6E-03
			Vanadium					Vanadium	NOAEL	5.8E-05		1.0E-02	1.1E-02
			(Total)	4.8E-09		9.1E-09	1.4E-08	(Total)		4.2E-04		1.5E-02	1.5E-02

Total Risk Across Surface Water	1.2E-06
Total Risk Across Sediment	1.4E-08
Total Risk Across All Media and All Exposure Routes	1.2E-06

Total Hazard Index Across All Media and All Exposure Routes	1.1E-01
Total Liver HI =	2.6E-02
Total CNS HI =	1.3E-02
Total Skin HI =	3.0E-03
Total Body Weight HI =	1.4E-02

TABLE E9.13A

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - CHILD RESIDENT
AREA 1
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo(a)pyrene (equiv)	1.3E-06	3.3E-11	1.6E-07	1.4E-06	Benzo(a)pyrene (equiv)					
			Arsenic	3.7E-06	2.2E-09	4.4E-08	3.7E-06	Arsenic	Skin	9.5E-02		1.1E-03	9.6E-02
			(Total)	5.0E-06	2.3E-09	2.1E-07	5.2E-06	(Total)		9.5E-02		1.1E-03	9.6E-02
Groundwater	Water	Onsite	Benzene	1.3E-06	1.3E-06	1.2E-07	2.7E-06	Benzene		9.0E-02	9.0E-02	8.7E-03	1.9E-01
			Chlorobenzene					Chlorobenzene	Kidney/Liver	1.7E-02	1.7E-02	1.2E-02	4.6E-02
			Vinyl Chloride	1.1E-05	1.1E-05	3.6E-07	2.3E-05	Vinyl Chloride					
			1,4-Dichlorobenzene	7.4E-07	7.4E-07	3.5E-07	1.8E-06	1,4-Dichlorobenzene	Liver/Blood	1.2E-02	1.2E-02	5.7E-03	3.0E-02
			Aluminum					Aluminum	Body Weight	9.7E+00		1.8E-01	9.9E+00
			Arsenic	1.7E-04		3.2E-07	1.7E-04	Arsenic	Skin	4.3E+00		8.3E-03	4.3E+00
			Barium					Barium	Blood Pressure	3.6E+00		9.4E-02	3.7E+00
			Chromium					Chromium	NOAEL	4.8E+00		4.4E-01	5.2E+00
			Lead					Lead	CNS				
			Iron					Iron		5.6E+00		6.9E-02	5.7E+00
			Manganese					Manganese	CNS	6.2E-01		2.8E-02	6.5E-01
			Selenium					Selenium	CNS/GI/Skin	5.3E-01		2.2E-03	5.3E-01
			Vanadium					Vanadium	NOAEL	2.0E+00		3.7E-01	2.4E+00
			(Total)	1.8E-04	1.3E-05	1.2E-06	1.9E-04	(Total)		3.1E+01	1.2E-01	1.2E+00	3.3E+01

Total Risk Across Soil	5.2E-06
Total Risk Across Groundwater	1.9E-04
Total Risk Across All Media and All Exposure Routes	2.0E-04

Total Hazard Index Across All Media and All Exposure Routes	3.3E+01

Total Liver HI =	7.5E-02
Total CNS HI =	1.2E+00
Total Skin HI =	5.0E+00
Total Body Weight HI =	9.9E+00
Total Blood Pressure HI =	3.7E+00
Total Kidney HI =	4.6E-02
Total GI HI =	5.3E-01

TABLE E9.13B

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - CHILD RESIDENT
PHASE III - AREA 1

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo(a)pyrene (equiv)	1.3E-06	3.3E-11	1.6E-07	1.4E-06	Benzo(a)pyrene (equiv)					
			Arsenic	3.7E-06	2.2E-09	4.4E-08	3.7E-06	Arsenic	Skin	9.5E-02		1.1E-03	9.6E-02
			(Total)	5.0E-06	2.3E-09	2.1E-07	5.2E-06	(Total)		9.5E-02		1.1E-03	9.6E-02
Groundwater	Water	Onsite	Benzene	1.0E-06	1.0E-06	9.9E-08	2.1E-06	Benzene		7.2E-02	7.2E-02	7.0E-03	1.5E-01
			Chlorobenzene					Chlorobenzene	Kidney/Liver	7.4E-02	7.4E-02	5.3E-02	2.0E-01
			1,4-Dichlorobenzene	8.3E-07		3.9E-07	1.2E-06	1,4 - Dichlorobenzene	Liver/Blood	1.3E-02		6.3E-03	2.0E-02
			Iron					Iron		5.1E+00		6.2E-02	5.1E+00
			Manganese					Manganese	CNS	2.0E+00		9.0E-02	2.1E+00
			(Total)	1.9E-06	1.0E-06	4.9E-07	3.4E-06	(Total)		7.2E+00	1.5E-01	2.2E-01	7.5E+00

Total Risk Across Soil	5.2E-06
Total Risk Across Groundwater	3.4E-06
Total Risk Across All Media and All Exposure Routes	8.5E-06

Total Hazard Index Across All Media and All Exposure Routes	7.7E+00

Total Liver HI =	2.2E-01
Total CNS HI =	2.1E+00
Total Skin HI =	9.6E-02
Total Kidney HI =	2.0E-01
Total Blood Pressure HI =	

TABLE E9.14A

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - CHILD RESIDENT
AREA 2/3
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo[a]pyrene (equiv)	1.6E-06	4.1E-11	2.0E-07	1.8E-06	Benzo[a]pyrene (equiv)					
			Arsenic	3.4E-06	2.1E-09	4.1E-08	3.4E-06	Arsenic	Skin	8.8E-02		1.1E-03	8.9E-02
			(Total)	5.0E-06	2.1E-09	2.4E-07	5.2E-06	(Total)		8.8E-02		1.1E-03	8.9E-02
Groundwater	Water	Onsite	1,1,2,2- Tetrachloroethane	6.7E-07	6.7E-07	7.5E-08	1.4E-06	1,1,2,2- Tetrachloroethane	CNS/GI/Liver	6.5E-04	6.5E-04	7.3E-05	1.4E-03
			Benzene	2.4E-06	2.4E-06	2.3E-07	5.0E-06	Benzene		1.7E-01	1.7E-01	1.6E-02	3.5E-01
			Chlorobenzene					Chlorobenzene	Kidney/Liver	2.0E-02	2.0E-02	1.5E-02	5.6E-02
			Chloroform	9.1E-08	9.1E-08	2.6E-08	2.1E-07	Chloroform	Liver	1.7E-02	1.7E-02	4.9E-03	4.0E-02
			Tetrachloroethene	6.1E-06	6.1E-06	2.3E-06	1.5E-05	Tetrachloroethene	Liver	1.4E-01	1.4E-01	5.2E-02	3.3E-01
			Trichloroethene	7.5E-05	7.5E-05	5.2E-05	2.0E-04	Trichloroethene	CNS	1.3E+01	1.3E+01	9.3E+00	3.6E+01
			Vinyl Chloride	1.6E-04	1.6E-04	4.9E-06	3.2E-04	Vinyl Chloride					
			cis-1,2-dichloroethene					cis-1,2-dichloroethene	Blood/Liver	4.0E-01	4.0E-01	2.2E-02	8.1E-01
			Aluminum					Aluminum	Body Weight	8.0E+00		1.5E-01	8.1E+00
			Barium					Barium	Blood Pressure	1.4E+00		3.6E-02	1.4E+00
			Chromium					Chromium	NOAEL	3.4E+00		3.2E-01	3.8E+00
			Iron					Iron		2.5E+00		3.0E-02	2.5E+00
			Lead					Lead	CNS				
			Selenium					Selenium	CNS/GI/Skin	1.9E-01		8.6E-03	2.0E-01
			Vanadium					Vanadium	NOAEL	2.1E+00		3.8E-01	2.4E+00
			(Total)	2.4E-04	2.4E-04	6.0E-05	5.4E-04	(Total)		3.2E+01	1.4E+01	1.0E+01	5.6E+01

Total Risk Across Soil	5.3E-06
Total Risk Across Groundwater	5.4E-04
Total Risk Across All Media and All Exposure Routes	5.5E-04

Total Hazard Index Across All Media and All Exposure Routes	5.6E+01

Total Liver HI =	1.2E+00
Total CNS HI =	3.6E+01
Total Skin HI =	2.9E-01
Total Body Weight HI =	8.1E+00
Total Blood Pressure HI =	1.4E+00
Total GI HI =	2.0E-01
Total Kidney HI =	5.6E-02

TABLE E9.14B

REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - CHILD RESIDENT
AREA 2/3
PHASE III
OU 2 - McCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo[a]pyrene (equiv)	1.6E-06	4.1E-11	2.0E-07	1.8E-06	Benzo[a]pyrene (equiv)					
			Arsenic	3.4E-06	2.1E-09	4.1E-08	3.4E-06	Arsenic	Skin	8.8E-02		1.1E-03	8.9E-02
			(Total)	5.0E-06	2.1E-09	2.4E-07	5.2E-06	(Total)		8.8E-02		1.1E-03	8.9E-02
Groundwater	Water	Onsite	Benzene	3.9E-07	3.9E-07	3.8E-08	8.2E-07	Benzene		2.8E-02	2.8E-02	2.7E-03	5.8E-02
			Tetrachloroethene	9.7E-06	9.7E-06	3.7E-06	2.3E-05	Tetrachloroethene	Liver	2.2E-01	2.2E-01	8.3E-02	5.2E-01
			Trichloroethene	7.2E-05	7.2E-05	5.0E-05	2.0E-04	Trichloroethene	CNS	1.3E+01	1.3E+01	8.9E+00	3.4E+01
			Vinyl Chloride	1.5E-04	1.5E-04	4.9E-06	3.1E-04	Vinyl Chloride					
			cis-1,2-dichloroethene					cis-1,2-dichloroethene	Blood/Liver	4.2E-01	4.2E-01	2.3E-02	8.7E-01
			Arsenic	4.3E-05		2.1E-08	4.3E-05	Arsenic	Skin	1.1E+00		5.4E-04	1.1E+00
			Iron					Iron		5.6E-01		6.9E-03	5.7E-01
			Vanadium					Vanadium	NOAEL	3.4E-01		6.2E-02	4.0E-01
			(Total)	2.8E-04	2.4E-04	5.9E-05	5.7E-04	(Total)		1.5E+01	1.3E+01	9.1E+00	3.8E+01

Total Risk Across Soil	5.2E-06
Total Risk Across Groundwater	5.7E-04
Total Risk Across All Media and All Exposure Routes	5.8E-04

Total Hazard Index Across All Media and All Exposure Routes	3.8E+01
Total Liver HI =	1.4E+00
Total CNS HI =	3.4E+01
Total Skin HI =	1.2E+00
Total Body Weight HI =	
Total Blood Pressure HI =	

APPENDIX E-10
RAGS D Tables E10.1 through E10.14

TABLE E10.1A

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - SITE MAINTENANCE WORKER
AREA 1
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Site Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Water	Onsite Ponds	Total cancer risk was less than 1E-06					Total non-carcinogenic hazard index was less than 1					
			(Total)										

Total Risk Across Soil
Total Risk Across Surface Water
Total Risk Across Sediment

Total Risk Across All Media and All Exposure Routes

Total Hazard Index Across All Media and All Exposure Routes

Total Liver HI =
Total CNS HI =
Total Skin HI =
Total Body Weight HI =
Total Blood Pressure HI =

TABLE E10.1B

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - SITE MAINTENANCE WORKER
AREA 1
PHASE III
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe	Current/Future
Receptor Population	Site Maintenance Worker
Receptor Age	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
			Total cancer risk was less than 1E-06				
			Total Risk Across Soil				
			Total Risk Across Surface Water				
			Total Risk Across Sediment				
			Total Risk Across All Media and All Exposure Routes				

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total non-carcinogenic hazard index was less than 1					
Total Hazard Index Across All Media and All Exposure Routes					
Total Liver HI =					
Total CNS HI =					
Total Skin HI =					
Total Body Weight HI =					
Total Blood Pressure HI =					

TABLE E10.2A

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - SITE MAINTENANCE WORKER
AREA 2/3
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO. FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Site Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Water	Onsite Ponds	Benzo(a)pyrene (equiv)			(1)		Total non-carcinogenic hazard index was less than 1					
			(Total)										

Total Risk Across Soil	
Total Risk Across Surface Water	
Total Risk Across Sediment	
Total Risk Across All Media and All Exposure Routes	

Total Hazard Index Across All Media and All Exposure Routes

Total Liver HI =	
Total CNS HI =	
Total Skin HI =	
Total Body Weight HI =	
Total Blood Pressure HI =	

(1) Significant uncertainty surrounds the calculation of risk from benzo(a)pyrene. This pathway will not be quantified but will be discussed qualitatively in the text.

TABLE E10.2B

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - SITE MAINTENANCE WORKER
AREA 2/3
PHASE III
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Site Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	On-site	Total carcinogenic risk did not exceed 1E-06 for any COPC					Total non-carcinogneic hazard index was less than 1					

Total Risk Across Soil
Total Risk Across Surface Water
Total Risk Across Sediment

Total Risk Across All Media and All Exposure Routes

Total Hazard Index Across All Media and All Exposure Routes

Total Liver HI =
Total CNS HI =
Total Skin HI =
Total Body Weight HI =
Total Blood Pressure HI =

TABLE E10.3

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - ADULT GOLFER
AREA 1
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Golfer
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Total cancer risk was less than 1E-06					Total non-carcinogenic hazard index was less than 1					

Total Risk Across Soil	
Total Risk Across Surface Water	
Total Risk Across Sediment	
Total Risk Across All Media and All Exposure Routes	

Total Hazard Index Across All Media and All Exposure Routes	
Total Liver HI =	
Total CNS HI =	
Total Skin HI =	
Total Body Weight HI =	
Total Blood Pressure HI =	

TABLE E10.4

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - ADULT RECREATOR
AREA 2/3
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Recreator
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
			Total cancer risk was less than 1E-06				

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total non-carcinogenic hazard index was less than 1					

Total Risk Across Soil	
Total Risk Across Surface Water	
Total Risk Across Sediment	
Total Risk Across All Media and All Exposure Routes	

Total Hazard Index Across All Media and All Exposure Routes	
Total Liver HI =	
Total CNS HI =	
Total Skin HI =	
Total Body Weight HI =	
Total Blood Pressure HI =	

TABLE E10.5

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - ADOLESCENT GOLFER
AREA 1
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Golfer
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Total cancer risk was less than 1E-06					Total non-carcinogenic hazard index was less than 1					

Total Risk Across Soil	
Total Risk Across Surface Water	
Total Risk Across Sediment	
Total Risk Across All Media and All Exposure Routes	

Total Hazard Index Across All Media and All Exposure Routes	
Total Liver HI =	
Total CNS HI =	
Total Skin HI =	
Total Body Weight HI =	
Total Blood Pressure HI =	

TABLE E10.6

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - CHILD RECREATOR
AREA 2/3
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Recreator
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
			Total cancer risk was less than 1E-06				

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total non-carcinogenic hazard index was less than 1					

Total Risk Across Soil	
Total Risk Across Surface Water	
Total Risk Across Sediment	
Total Risk Across All Media and All Exposure Routes	

Total Hazard Index Across All Media and All Exposure Routes

Total Liver HI =	
Total CNS HI =	
Total Skin HI =	
Total Body Weight HI =	
Total Blood Pressure HI =	

TABLE E10.7A

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - ADULT TRESPASSER
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Water	Onsite Ponds and Canals	Benzo(a)pyrene (equiv)			(1)	
			(Total)				
						Total Risk Across Surface Water	
						Total Risk Across Sediment	
						Total Risk Across All Media and All Exposure Routes	

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total non-carcinogenic hazard index was less than 1					
Total Hazard Index Across All Media and All Exposure Routes					

Total Liver HI =
Total CNS HI =
Total Skin HI =
Total Body Weight HI =

(1) Significant uncertainty surrounds the calculation of risk from benzo(a)pyrene. This pathway will not be quantified but will be discussed qualitatively in the text.

TABLE E10.7B

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - ADULT TRESPASSER
PHASE III
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Water	Onsite Ponds and Canals	Total cancer risk was less than 1E-06					Total non-carcinogenic hazard index was less than 1					
			(Total)										

Total Risk Across Surface Water
Total Risk Across Sediment
Total Risk Across All Media and All Exposure Routes

Total Hazard Index Across All Media and All Exposure Routes

Total Liver HI =
Total CNS HI =
Total Skin HI =
Total Body Weight HI =
Total Blood Pressure HI =

TABLE E10.8A

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - ADOLESCENT TRESPASSER
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Water	Onsite Ponds	Benzo(a)pyrene (equiv)			(1)		Total non-carcinogenic hazard index was less than 1					

Total Risk Across Surface Water
Total Risk Across Sediment

Total Risk Across All Media and All Exposure Routes

Total Hazard Index Across All Media and All Exposure Routes

Total Liver HI =
Total CNS HI =
Total Skin HI =
Total Body Weight HI =
Total Blood Pressure HI =

(1) Significant uncertainty surrounds the calculation of risk from benzo(a)pyrene. This pathway will not be quantified but will be discussed qualitatively in the text.

TABLE E10.8B

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - ADOLESCENT TRESPASSER
PHASE III
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Water	Onsite Ponds	Bis(2ethylhexyl)phthalate	1.4E-09		1.0E-06	1.0E-06
			(Total)	1.4E-09		1.0E-06	1.0E-06
			Total Risk Across Surface Water				1.0E-06
			Total Risk Across Sediment				
			Total Risk Across All Media and All Exposure Routes				1.0E-06

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total non-carcinogenic hazard index was less than 1					
Total Hazard Index Across All Media and All Exposure Routes					

Total Liver HI =	
Total CNS HI =	
Total Skin HI =	
Total Body Weight HI =	
Total Blood Pressure HI =	

TABLE E10.9A

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - ADULT RESIDENT
AREA 1
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Arsenic	1.6E-06	2.6E-09	9.6E-08	1.7E-06						
			(Total)	1.6E-06	2.6E-09	9.6E-08	1.7E-06						
Surface Water	Water	Onsite Ponds	Benzo(a)pyrene (equiv)			(1)							
			(Total)										
Groundwater	Water	Onsite	Benzene	2.2E-06	2.2E-06	2.3E-07	4.6E-06						
			Vinyl Chloride	2.0E-05	2.0E-05	6.8E-07	4.0E-05						
			1,4-Dichlorobenzene	1.3E-06	1.3E-06	6.5E-07	3.2E-06						
								Aluminum	Body Weight	4.2E+00		8.3E-02	4.2E+00
			Arsenic	2.9E-04		6.0E-07	2.9E-04	Arsenic	Skin	1.9E+00		3.9E-03	1.9E+00
								Barium	Blood Pressure	1.5E+00		4.4E-02	1.6E+00
								Chromium	NOAEL	2.0E+00		2.0E-01	2.2E+00
								Iron		2.4E+00		3.2E-02	2.4E+00
								Vanadium	NOAEL	8.7E-01		1.7E-01	1.0E+00
			(Total)	3.1E-04	2.3E-05	2.2E-06	3.3E-04	(Total)		1.3E+01		5.4E-01	1.3E+01

Total Risk Across Soil	1.7E-06
Total Risk Across Surface Water	
Total Risk Across Sediment	
Total Risk Across Groundwater	3.3E-04
Total Risk Across All Media and All Exposure Routes	3.3E-04

Total Hazard Index Across All Media and All Exposure Routes	1.3E+01
Total Liver HI =	
Total CNS HI =	
Total Skin HI =	1.9E+00
Total Body Weight HI =	4.2E+00
Total Blood Pressure HI =	1.6E+00

(1) Significant uncertainty surrounds the calculation of risk from benzo(a)pyrene. This pathway will not be quantified but will be discussed qualitatively in the text.

TABLE E10.9B

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - ADULT RESIDENT
AREA 1
PHASE III
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Arsenic	1.6E-06	2.6E-09	9.6E-08	1.7E-06						
			(Total)	1.6E-06	2.6E-09	9.6E-08	1.7E-06						
Groundwater	Water	Onsite	Benzene	1.8E-06	1.8E-06	1.9E-07	3.7E-06						
			1,4-dichlorobenzene	1.4E-06		7.3E-07	2.1E-06	Iron		2.2E+00		2.9E-02	2.2E+00
			(Total)	3.2E-06	1.8E-06	9.1E-07	5.8E-06	(Total)		2.2E+00		2.9E-02	2.2E+00

Total Risk Across Soil	1.7E-06	Total Hazard Index Across All Media and All Exposure Routes	2.2E+00
Total Risk Across Surface Water			
Total Risk Across Sediment		Total Liver HI =	
Total Risk Across Groundwater	5.8E-06	Total CNS HI =	
		Total Skin HI =	
Total Risk Across All Media and All Exposure Routes	7.5E-06	Total Body Weight HI =	
		Total Blood Pressure HI =	

TABLE E10.10A

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - ADULT RESIDENT
AREA 2/3
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo[a]pyrene (equiv)	6.8E-07	4.7E-11	4.4E-07	1.1E-06						
			Arsenic	1.5E-06	2.4E-09	8.9E-08	1.5E-06						
			(Total)	2.1E-06	2.4E-09	2.1E-06	2.7E-06						
Surface Water	Water	Onsite Ponds	Benzo(a)pyrene (equiv)			(1)							
			(Total)										
Groundwater	Water	Onsite	1,1,2,2- Tetrachloroethane	1.1E-06	1.1E-06	1.4E-07	2.4E-06						
			Benzene	4.1E-06	4.1E-06	4.3E-07	8.5E-06						
			Tetrachloroethene	1.0E-05	1.0E-05	4.3E-06	2.5E-05						
			Trichloroethene	1.3E-04	1.3E-04	9.8E-05	3.6E-04	Trichloroethene	CNS	5.7E+00	5.7E+00	4.3E+00	1.6E+01
			Vinyl Chloride	2.7E-04	2.7E-04	9.2E-06	5.4E-04						
								Aluminum	Body Weight	3.4E+00		6.8E-02	3.5E+00
								Chromium	NOAEL	1.5E+00		1.5E-01	1.6E+00
								Iron		1.1E+00		1.4E-02	1.1E+00
								Vanadium	NOAEL	8.8E-01		1.8E-01	1.1E+00
			(Total)	4.1E-04	4.1E-04	1.1E-04	9.4E-04	(Total)		1.3E+01	5.7E+00	4.7E+00	2.3E+01

Total Risk Across Soil	2.7E-06
Total Risk Across Surface Water	
Total Risk Across Sediment	
Total Risk Across Groundwater	9.4E-04
Total Risk Across All Media and All Exposure Routes	9.4E-04

Total Hazard Index Across All Media and All Exposure Routes	2.3E+01

Total Liver HI =	
Total CNS HI =	1.6E+01
Total Skin HI =	
Total Body Weight HI =	3.5E+00
Total Blood Pressure HI =	

(1) Significant uncertainty surrounds the calculation of risk from benzo(a)pyrene. This pathway will not be quantified but will be discussed qualitatively in the text.

TABLE E10.10B

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - ADULT RESIDENT
AREA 2/3
PHASE III
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
			Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Onsite	Benzo[a]pyrene (equiv)	6.8E-07	4.7E-11	4.4E-07	1.1E-06						
		Arsenic	1.5E-06	2.4E-09	8.9E-08	1.5E-06						
		(Total)	2.1E-06	2.4E-09	2.1E-06	2.7E-06						
Water	Onsite	Benzene	6.7E-07	6.7E-07	7.1E-08	1.4E-06						
		Tetrachloroethene	1.7E-05	1.7E-05	6.9E-06	4.0E-05						
		Trichloroethene	1.2E-04	1.2E-04	9.4E-05	3.4E-04	Trichloroethene	CNS	5.5E+00	5.5E+00	4.2E+00	1.5E+01
		Vinyl Chloride	2.6E-04	2.6E-04	9.1E-06	5.4E-04						
		Arsenic	7.3E-05		1.5E-07	7.3E-05						
		(Total)	4.8E-04	4.0E-04	1.1E-04	9.9E-04	(Total)		5.5E+00	5.5E+00	4.2E+00	1.5E+01

Total Risk Across Soil	2.7E-06
Total Risk Across Surface Water	
Total Risk Across Sediment	
Total Risk Across Groundwater	9.9E-04
Total Risk Across All Media and All Exposure Routes	9.9E-04

Total Hazard Index Across All Media and All Exposure Routes	1.5E+01
Total Liver HI =	
Total CNS HI =	1.5E+01
Total Skin HI =	
Total Body Weight HI =	
Total Blood Pressure HI =	

TABLE E10.11A

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - ADOLESCENT RESIDENT
AREA 1
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Residen
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Water	Onsite Ponds and Canals	Benzo(a)pyrene (equiv)			(1)		Total non-carcinogenic hazard index was less than 1					
			(Total)										
				Total Risk Across Surface Water					Total Hazard Index Across All Media and All Exposure Routes				
				Total Risk Across Sediment									
				Total Risk Across All Media and All Exposure Routes					Total Liver HI =				
									Total CNS HI =				
									Total Skin HI =				
									Total Body Weight HI =				
									Total Blood Pressure HI =				

(1) Significant uncertainty surrounds the calculation of risk from benzo(a)pyrene. This pathway will not be quantified but will be discussed qualitatively in the text.

TABLE E10.11B

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - ADOLESCENT RESIDENT
AREA 1
PHASE III
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Water	Onsite Ponds	Bis(2ethylhexyl)phthalate	1.4E-09		1.0E-06	1.0E-06	Total non-carcinogenic hazard index was less than 1					
			(Total)	1.4E-09		1.0E-06	1.0E-06						
			Total Risk Across Surface Water				1.0E-06		Total Hazard Index Across All Media and All Exposure Routes				
			Total Risk Across Sediment										
			Total Risk Across All Media and All Exposure Routes				1.0E-06						

Total Liver HI =
Total CNS HI =
Total Skin HI =
Total Body Weight HI =
Total Blood Pressure HI =

TABLE E10.12A

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - ADOLESCENT RESIDENT
AREA 2/3
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Residen
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Water	Onsite Ponds and Canals	Benzo(a)pyrene (equiv)			(1)		Total non-carcinogenic hazard index was less than 1					
			(Total)										
						Total Risk Across Surface Water						Total Hazard Index Across All Media and All Exposure Routes	
						Total Risk Across Sediment							
						Total Risk Across All Media and All Exposure Routes							

Total Liver HI =
Total CNS HI =
Total Skin HI =
Total Body Weight HI =
Total Blood Pressure HI =

(1) Significant uncertainty surrounds the calculation of risk from benzo(a)pyrene. This pathway will not be quantified but will be discussed qualitatively in the text.

TABLE E10.12B

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - ADOLESCENT RESIDENT
AREA 2/3
PHASE III
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Water	Onsite Ponds	Bis(2ethylhexyl)phthalate	1.4E-09		1.0E-06	1.0E-06
			(Total)	1.4E-09		1.0E-06	1.0E-06
			Total Risk Across Surface Water				1.0E-06
			Total Risk Across Sediment				
			Total Risk Across All Media and All Exposure Routes				1.0E-06

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total non-carcinogenic hazard index was less than 1					
Total Hazard Index Across All Media and All Exposure Routes					

Total Liver HI =
Total CNS HI =
Total Skin HI =
Total Body Weight HI =
Total Blood Pressure HI =

TABLE E10.13A

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - CHILD RESIDENT
AREA 1
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo(a)pyrene (equiv)	1.3E-06	3.3E-11	1.6E-07	1.4E-06						
			Arsenic	3.7E-06	2.2E-09	4.4E-08	3.7E-06						
			(Total)	5.0E-06	2.3E-09	2.1E-07	5.2E-06						
Groundwater	Water	Onsite	Benzene	1.3E-06	1.3E-06	1.2E-07	2.7E-06						
			Vinyl Chloride	1.1E-05	1.1E-05	3.6E-07	2.3E-05						
			1,4-Dichlorobenzene	7.4E-07	7.4E-07	3.5E-07	1.8E-06						
								Aluminum	Body Weight	9.7E+00		1.8E-01	9.9E+00
			Arsenic	1.7E-04		3.2E-07	1.7E-04	Arsenic	Skin	4.3E+00		8.3E-03	4.3E+00
								Barium	Blood Pressure	3.6E+00		9.4E-02	3.7E+00
								Chromium	NOAEL	4.8E+00		4.4E-01	5.2E+00
								Iron		5.6E+00		6.9E-02	5.7E+00
								Vanadium	NOAEL	2.0E+00		3.7E-01	2.4E+00
			(Total)	1.8E-04	1.3E-05	1.2E-06	1.9E-04	(Total)		3.0E+01		1.2E+00	3.1E+01

Total Risk Across Soil	5.2E-06
Total Risk Across Groundwater	1.9E-04
Total Risk Across All Media and All Exposure Routes	2.0E-04

Total Hazard Index Across All Media and All Exposure Routes	3.1E+01
Total Liver HI =	
Total CNS HI =	
Total Skin HI =	4.3E+00
Total Body Weight HI =	9.9E+00
Total Blood Pressure HI =	3.7E+00

TABLE E10.13B

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - CHILD RESIDENT
AREA 1
PHASE III
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo(a)pyrene (equiv)	1.3E-06	3.3E-11	1.6E-07	1.4E-06						
			Arsenic	3.7E-06	2.2E-09	4.4E-08	3.7E-06						
			(Total)	5.0E-06	2.3E-09	2.1E-07	5.2E-06						
Groundwater	Water	Onsite	Benzene	1.0E-06	1.0E-06	5.2E-08	1.1E-06						
			1,4-dichlorobenzene	8.3E-07		3.9E-07	1.2E-06	Iron		5.1E+00		6.2E-02	5.1E+00
								Manganese	CNS	2.0E+00		9.0E-02	2.1E+00
			(Total)	1.9E-06	1.0E-06	4.9E-07	3.4E-06	(Total)		7.0E+00		1.5E-01	7.2E+00
							Total Risk Across Soil	5.2E-06					
							Total Risk Across Groundwater	3.4E-06					
							Total Risk Across All Media and All Exposure Routes	8.5E-06					
									Total Hazard Index Across All Media and All Exposure Routes				7.2E+00

Total Liver HI =	
Total CNS HI =	2.1E+00
Total Skin HI =	
Total Body Weight HI =	
Total Blood Pressure HI =	

TABLE E10.14A

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - CHILD RESIDENT
AREA 2/3
PHASE I AND PHASE II
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo[a]pyrene (equiv)	1.6E-06	4.1E-11	2.0E-07	1.8E-06						
			Arsenic	3.4E-06	2.1E-09	4.1E-08	3.4E-06						
			(Total)	5.0E-06	2.1E-09	2.4E-07	5.2E-06						
Groundwater	Water	Onsite	1,1,2,2- Tetrachloroethane	6.7E-07	6.7E-07	7.5E-08	1.4E-06						
			Benzene	2.4E-06	2.4E-06	2.3E-07	5.0E-06						
			Tetrachloroethene	6.1E-06	6.1E-06	2.3E-06	1.5E-05						
			Trichloroethene	7.5E-05	7.5E-05	5.2E-05	2.0E-04	Trichloroethene	CNS	1.3E+01	1.3E+01	9.3E+00	3.6E+01
			Vinyl Chloride	1.6E-04	1.6E-04	4.9E-06	3.2E-04						
								Aluminum	Body Weight	8.0E+00		1.5E-01	8.1E+00
								Barium	Blood Pressure	1.4E+00		3.6E-02	1.4E+00
								Chromium	NOAEL	3.4E+00		3.2E-01	3.8E+00
								Iron		2.5E+00		3.0E-02	2.5E+00
								Vanadium	NOAEL	2.1E+00		3.8E-01	2.4E+00
			(Total)	2.4E-04	2.4E-04	6.0E-05	5.4E-04	(Total)		3.1E+01	1.3E+01	1.0E+01	5.4E+01
						Total Risk Across Soil	5.2E-06					Total Hazard Index Across All Media and All Exposure Routes	5.4E+01
						Total Risk Across Groundwater	5.4E-04						

Total Risk Across All Media and All Exposure Routes	5.5E-04

Total Liver HI =	
Total CNS HI =	3.6E+01
Total Skin HI =	
Total Body Weight HI =	8.1E+00
Total Blood Pressure HI =	1.4E+00

TABLE E10.14B

REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - CHILD RESIDENT
AREA 2/3
PHASE III
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Onsite	Benzo[a]pyrene (equiv)	1.6E-06	4.1E-11	2.0E-07	1.8E-06						
			Arsenic	3.4E-06	2.1E-09	4.1E-08	3.4E-06						
			(Total)	5.0E-06	2.1E-09	2.4E-07	5.2E-06						
Groundwater	Water	Onsite	Tetrachloroethene	9.7E-06	9.7E-06	3.7E-06	2.3E-05						
			Trichloroethene	7.2E-05	7.2E-05	5.0E-05	2.0E-04	Trichloroethene	CNS	1.3E+01	1.3E+01	8.9E+00	3.4E+01
			Vinyl Chloride	1.5E-04	1.5E-04	4.9E-06	3.1E-04						
			Arsenic	4.3E-05		2.1E-08	4.3E-05	Arsenic	Skin	1.1E+00		5.4E-04	1.1E+00
			(Total)	2.8E-04	2.4E-04	5.9E-05	5.7E-04	(Total)		1.4E+01	1.3E+01	8.9E+00	3.6E+01

Total Risk Across Soil	5.2E-06
Total Risk Across Groundwater	5.7E-04
Total Risk Across All Media and All Exposure Routes	5.8E-04

Total Hazard Index Across All Media and All Exposure Routes	3.6E+01
Total Liver HI =	
Total CNS HI =	3.4E+01
Total Skin HI =	1.1E+00
Total Body Weight HI =	
Total Blood Pressure HI =	

APPENDIX E-11
TOXICITY PROFILES

E.11.1 ALUMINUM

E.11.1.1 Noncancer Toxicity

Aluminum is not generally regarded as an industrial poison. Inhalation of finely divided powder has been reported as a cause of pulmonary fibrosis. Aluminum in aerosols has been implicated in Alzheimer's disease. As with other metals, the powder and dust are the most dangerous forms (Sax and Lewis, 1989). Most hazardous exposures to aluminum occur in refining and smelting processes. Aluminum dust is a respiratory and eye irritant. EPA presented an oral RfD of 1.00 mg/kg/day and an inhalation reference dose of 0.001 mg/kg/day (EPA 1998).

E.11.1.2 Carcinogenicity

Data were not located regarding the carcinogenicity of aluminum to humans. No oral or inhalation cancer slope factor is available for aluminum.

E.11.2 ARSENIC

E.11.2.1 Pharmacokinetics

Several studies confirm that soluble inorganic arsenic compounds and organic arsenic compounds are almost completely (>90 percent) absorbed from the GI tract in both animals and humans (Ishinishi et al. 1986). The absorption efficiency of insoluble inorganic arsenic compounds depends on particle size an stomach pH. Initial distribution of absorbed arsenic is to the liver, kidneys, and lungs, flowed by redistribution to hair, nails, teeth, bone, and skin, which are considered tissues of accumulation. Arsenic has a long half-life in the blood of rats, compared with other animals and humans, because of firm binding to the hemoglobin in erythrocytes.

Metabolism of inorganic arsenic includes reversible oxidation-reduction so that both arsenite (valence of 3) and arsenate (valence of 5) are present in the urine of animals treated with arsenic of either valence (Ishinishi et al. 1986). Arsenite is subsequently oxidized and methylated by a saturable mechanism to form mono- or dimethylarsenate; the latter is the predominant metabolite in the urine of animals or humans. Organic arsenic compounds (arsenilic acid, cacodylic acid) are not readily converted to inorganic arsenic. Excretion of organic or inorganic arsenic is largely via the urine, but considerable species variation exists. Continuously exposed humans appear to excrete 60 to 70 percent of their daily intake of arsenate or arsenite via the urine.

E.11.2.2 Noncancer Toxicity

A lethal dose of arsenic trioxide in humans is 70 to 180 mg. (approximately 50 to 140 mg arsenic; Ishinishi et al. 1986). Acute oral exposure of humans to high doses of arsenic produce liver swelling, skin lesions, disturbed heart function, and neurological effects. The only noncancer effects in humans clearly attributable to chronic oral exposure to arsenic are dermal hyperpigmentation and keratosis, as revealed by studies of several hundred Chinese exposed to naturally occurring arsenic in well water (Tseng 1977; Tseng et al. 1968; EPA 1999). Similar effects were observed in persons exposed to high levels of arsenic in water in Utah and the northern part of Mexico (Cebrian et al. 1983; Southwick et al. 1983). Occupational (predominantly inhalation) exposure is also associated with neurological deficits, anemia, and cardiovascular effects (Ishinishi et al. 1986), but concomitant exposure to other chemicals cannot be ruled out. The EPA (1999) derived an RfD of 0.3 ug/kg/day for chronic oral exposure, based on an NOAEL of 0.8 ug/kg/day for skin lesions from Chinese data. The principal target organ for arsenic appears to be the skin. The nervous system and cardiovascular systems appear to be less significant target organs. Inorganic arsenic may be an essential nutrient, exerting beneficial effects on growth, health, and feed conversion efficiency (Underwood 1977).

E.11.2.3 Carcinogenicity

Inorganic arsenic is clearly a carcinogen in humans. Inhalation exposure is associated with increased risk of lung cancer in persons employed as smelter workers, in arsenical pesticide applicators, and in a population residing near a pesticide manufacturing plant (EPA 1999). Oral exposure to high levels in well water is associated with increased risk of skin cancer (Tseng 1977; EPA 1999). Extensive animal testing with various forms of arsenic given by many routes of exposure to several species, however, has not demonstrated the carcinogenicity of arsenic (International Agency for Research on Cancer [IARC 1980). The EPA (1999) classifies inorganic arsenic in cancer weight-of-evidence Group A (human carcinogen), and recommends an oral unit risk of 0.00005 ug/L in drinking water, based on the incidence of skin cancer in the Tseng (1977) study. The EPA presents a chronic oral slope factor of 1.5 per mg/kg/day based on the same information. The EPA (1999) notes that the uncertainties associated with the oral unit risk are considerably less than those for most carcinogens, so that the unit risk might be reduced in order of magnitude. An inhalation unit risk of 0.0043 per mg/m^3 was derived for inorganic arsenic from the incidence of lung cancer in occupationally exposed men (EPA 1999), equivalent to 15.1 per mg/kg/day, was derived from the same data assuming an inhalation rate of 20 m^3/day and a body weight of 70 kg for humans.

E.11.4 BENZENE

E.11.4.1 Noncancer Toxicity

In humans, short-term inhalation exposure to benzene induced CNS effects such as drowsiness, dizziness, and headaches; long-term exposure induced anemia (ACGIH, 1991). Oral dosing in animals induced hematopoietic effects (Agency for Toxic Substances and Disease Registry [ATSDR], 1995a). The EPA (1998) presents an oral RfD of 0.003 mg/kg/day and an inhalation RfD of 0.00171 mg/kg/day. The CNS and the hematopoietic system are the target organs of benzene.

E.11.4.2 Carcinogenicity

The EPA (1999) classifies benzene in cancer weight-of-evidence Group A (human carcinogen) based on several studies of increased risk of nonlymphocytic leukemia associated with occupational exposure, supported by an increased incidence of neoplasia in rats and mice exposed by inhalation and gavage. A verified oral slope factor of 0.029 per mg/kg/day (EPA 1999) and inhalation unit risk of 8.3e-06 ug/m^3 is based on the increased incidence of leukemia in several occupational (inhalation exposure) studies. The inhalation unit risk is equivalent to 0.029 per mg/kg/day (EPA 1999), assuming an inhalation rate of 20 m^3/day and a body weight of 70 kg for humans.

E.11.5 BENZO [A]PYRENE (BAP)

E.11.5.1 Pharmacokinetics

Benzo (a)pyrene was readily absorbed across the GI (Rees et al. 1971) and respiratory epithelia (Kotin et al. 1969; Vainich et al. 1976). Benzo (a)pyrene was distributed widely in the tissues of treated rats and mice, but primarily to tissues high in fat, such as adipose tissue and mammary gland (Kotin et al. 1969; Schlede et al. 1970a).

Studies of the metabolism of benzo(a)pyrene provide information relevant to other PAHs because of the structural similarities of all members of the class. Metabolism involves microsomal mixed function oxidase hydroxylation of one or more of the phenyl rings with the formation of phenols and dihydrodiols, probably via formation of arene oxide intermediates (EPA 1979). The dihydrodiols may be further oxidized to diol epoxides, which, for certain members of the class, are known to be the ultimate carcinogens (LaVoie et al. 1982). Conjugation with glutathione or glucuronic acid, and reduction to tetrahydrotetrols are important detoxification pathways.

Excretion of benzo(a)pyrene residue was reported to be rapid, although quantitative data were not located (EPA 1979). Excretion occurred mainly via the feces, probably largely due to biliary secretion (Schlede et al. 1970a, 1970b). The EPA (1980a) concluded that accumulation in the body tissues of PAHs from chronic low level exposure would be unlikely.

E.11.5.2 Noncancer Toxicity

The oral RfD and inhalation RfC are not available at this time.

E.11.5.3 Carcinogenicity

The PAHs are ubiquitous, being released to the environment from anthropogenic as well as from natural sources (ATSDR 1995e). Benzo(a)pyrene is the most extensively studied member of the class, inducing tumors in multiple tissues of virtually all laboratory species tested by all routes of exposure. Although epidemiology studies suggested that complex mixtures that contain PAHs (coal tar, soots, coke oven emissions, cigarette smoke) are carcinogenic to humans (EPA 1984), the carcinogenicity cannot be attributed to PAHs alone because of the presence of other potentially carcinogenic substances in these mixtures (ATSDR 1995e). In addition, recent investigations showed that the PAH fraction of roofing tar, cigarette smoke, and coke oven emissions accounted for only 0.1 to 8 percent of the total mutagenic activity of the unfractionated complex mixture in Salmonella (Lewtas 1988). Aromatic amines, nitrogen heterocyclic

compounds, highly oxygenated quinones, diones, and nitrooxygenated compounds, none of which would be expected to arise from in vivo metabolism of PAHs, probably accounted for the majority of the mutagenicity of coke oven emissions and cigarette smoke. Coal tar, which contains a mixture of many PAHs, has a long history of use in the clinical treatment of a variety of skin disorders in humans (ATSDR 1995e).

Because of the lack of human cancer data, assignment of individual PAHs to EPA cancer weight-of-evidence groups was based largely on the results of animal studies with large doses of purified compound (EPA 1984). Frequently, unnatural routes of exposure, including implants of the test chemical in beeswax and trioctanoin in the lungs of female Osborne-Mendel rats, intratracheal instillation, and subcutaneous or intraperitoneal injection, were used. Benzo(a)pyrene was classified in Group B2 (probable human carcinogens).

The EPA (1999) verified a slope factor for oral exposure to benzo(a)pyrene of 7.3 per mg/kg/day, based on several dietary studies in mice and rats. EPA (1998) presents an inhalation slope factor of 3.1 per mg/kg/day for benzo(a)pyrene.

Human data specifically linking benzo(a)pyrene to a carcinogenic effect are lacking. There are, however, multiple animal studies in many species demonstrating benzo(a)pyrene to be carcinogenic following administration by numerous routes. In addition, benzo(a)pyrene has produced positive results in numerous genotoxicity assays.

The data for animal carcinogenicity was sufficient. The animal data consist of dietary, gavage, inhalation, intratracheal instillation, dermal and subcutaneous studies in numerous strains of at least four species of rodents and several primates. Repeated benzo(a)pyrene administration has been associated with increased incidences of total tumors and of tumors at the site of exposure. The tumor types in mice from oral diet studies include forestomach, squamous cell papillomas and carcinomas (Neal and Rigdon 1967).

Benzo(a)pyrene has been shown to cause genotoxic effects in a broad range of prokaryotic and mammalian cell assay systems (EPA 1991).

E.11.6 CHLOROFORM

E.11.6.1 Noncancer Toxicty

Oral or inhalation exposure of animals to chloroform was associated with liver and kidney damage (ACGIH 1991; EPA 1999). In humans, acute inhalation exposure to high levels induced narcosis, ventricular fibrillation, and death (ACGIH 1991). Limited occupational data associated chronic exposure to chloroform with CNS depression, digestive disturbances, and enlarged livers. The EPA (1999) presented a verified chronic oral RfD of 0.01 mg/kg/day based on an LOAEL for fatty cyst formation in the livers of dogs treated orally for 7.5 years and an uncertainty factor of 1000. The same value was presented as a provisional subchronic oral RfD (EPA 1997). The EPA (1998) presented an inhalation RfD of 0.086 ug/kg/day. Target organs for the toxicity of chloroform include the liver and kidney for oral and inhalation exposure, and the heart and CNS for inhalation exposure.

E.11.6.2 Carcinogenicity

Chloroform is classified as a cancer weight-of-evidence group B2 compound (probable human carcinogen), based on increased incidence of several tumor types in rats and liver tumors in mice (EPA 1999). Human carcinogenicity data are inadequate. An oral slope factor of 0.0061 per mg/kg/day was derived from the incidence of kidney tumors in rats treated with chloroform in drinking water for two years (EPA 1999). An inhalation unit risk of 2.3E-05 per mg/m^3 was based on the incidence of hepatocellular carcinomas in mice treated by gavage for 78 weeks. The inhalation unit risk is equivalent to 0.081 per mg/kg/day (EPA 1999), assuming an inhalation rate of 20 m^3/day and a body weight of 70 kg for humans.

E.11.7 CHROMIUM

E.11.7.1 Noncancer Toxicity

In nature, chromium (III) predominates over chromium (VI) (Langård and Norseth 1986). Little chromium (VI) exists in biological materials, except shortly after exposure, because reduction to chromium (III) occurs rapidly. Chromium (III) is considered a nutritionally essential trace element and is considerably less toxic than chromium (VI). No effects were observed in rats consuming 5% chromium (III)/kg/day in the diet for over two years (EPA 1999). The NOEL of 5% Cr2O3 was the basis for a verified chronic oral RfD of 1.5 mg/kg/day (EPA 1997). The same NOEL and an uncertainty factor of 1000 were the basis for a provisional subchronic oral RfD of 1 mg/kg/day (EPA 1997).

Acute oral exposure of humans to high doses of chromium (VI) induced neurological effects, GI hemorrhage and fluid loss, and kidney and liver effects. Parenteral dosing of animals with chromium (VI) is selectively toxic to the kidney tubules. An NOAEL of 2.4 mg chromium (VI) /kg/day in a one-year drinking water study in rats and an uncertainty factor of 500 was the basis of a verified RfD of 0.003 mg/kg/day for chronic oral exposure (EPA 1999). The same NOAEL and an uncertainty factor of 100 were the basis of a provisional subchronic oral RfD of 0.02 mg/kg/day (EPA 1997). An inhalation RfD of 0.03 ug/kg/day was presented by EPA (1999) for chromium (VI).

Occupational (inhalation and dermal) exposure to chromium (III) compounds induced dermatitis (ACGIH 1991). Similar exposure to chromium (VI) induced ulcerative and allergic contact dermatitis, irritation of the upper respiratory tract including ulceration of the mucosa and perforation of the nasal septum, and possibly kidney effects.

A target organ was not identified for chromium (III). The kidney appears to be the principal target organ for repeated oral dosing with chromium (VI). Additional target organs for dermal and inhalation exposure include the skin and respiratory tract.

E.11.7.2 Carcinogenicity

Data were not located regarding the carcinogenicity of chromium (III). The EPA (1999) classifies chromium (VI) in cancer weight-of-evidence Group A (human carcinogen), based on the consistent observation of increased risk of lung cancer in occupational studies of workers in chromate production or the chrome pigment industry. Parenteral dosing of animals with chromium (VI) compounds consistently induced injection-site tumors. There is no evidence that oral exposure to chromium (VI) induces cancer. An inhala-

tion unit risk of 0.012 per mg/m^3, equivalent to 41 per mg/kg/day, assuming humans inhale 20 m^3/day and weigh 70 kg, was based on increased risk of lung cancer deaths in chromate production workers (EPA 1997).

E.11.8 1,4-DICHLOROBENZENE

E.11.8.1 Pharmacokinetics

No data are available to quantitatively evaluate the absorption of 1,4-dichlorobenzene. Absorption via oral administration is assumed to be 100 percent since this chemical is similar in structure to benzene and smaller chlorinated aliphatic hydrocarbons. Approximately 20 percent of the compound is absorbed following inhalation exposure. The dermal absorption of 1,4-dichlorobenzene has not been studied (ATSDR, 1991).

Once absorbed, whether through inhalation or oral exposure, 1,4-dichlorobenzene is mainly deposited in fatty tissue and the liver and kidneys to a lower extent. The major urinary metabolite of 1,4-dichlorobenzene is 2,5-dichlorophenol. This metabolite is eliminated as conjugates of glucuronic and sulfuric acids.

E.11.8.2 Noncancer Toxicity

Studies indicate that the liver is the primary target organ associated with toxic effects for 1,4-dichlorobenzene. Malaise, nausea, anemia, proteinuria, hematuria, as well as liver effects, were observed in humans exposed to this chemical (ATSDR 1991b). EPA presents an oral RfD of 0.03 mg/kg/day (1998).

The U.S. EPA (1997) derived an inhalation RfC for 1,4-dichlorobenzene of 8E-1 mg/m^3 from a NOAEL of 301 mg/m^3 for increased liver weights and an uncertainty factor of 100. The NOAEL was estimated from a subchronic two-generation reproductive study where male and female rats were exposed to varying concentrations of 1,4-dichlorobenzene vapors. Although this study lacked chronic data, chronic lifetime exposure studies support the conclusions drawn from the study. EPA presents an inhalation RfD of 0.229 mg/kg/day (1999).

Oral LD_{50} values for male and female rats were identified as 3,900 and 3,800 mg/kg respectively (ATSDR 1991). A NOAEL of 300 mg/kg/day for hepatic effects was derived. No human studies are available regarding toxic effects of 1,4-dichlorobenzene from oral and dermal exposure.

E.11.8.3 Carcinogenicity

The U.S. EPA (1997) has classified this compound in the cancer weight-of-evidence Group C (possible human carcinogen). This classification is based on several oral exposure studies indicating that this chemical is carcinogenic in male rats. Cancer effect levels of 150 mg/kg/day and 600 mg/kg/day, respectively, were derived for liver and kidney tumors. No reliable carcinogenicity studies were located

for the inhalation of or dermal contact with 1,4-dichlorobenzene. EPA has assigned this compound an oral CSF of 0.024 per mg/kg/day (EPA 1997) and an inhalation CSF of 0.022 per mg/kg/day (1998).

E.11.9 DIELDRIN

E.11.9.1 Noncancer Toxicity

The EPA (1999) derived a RfD of 0.05 ug/kg/day for chronic oral exposure based on a NOAEL of 0.005 mg/kg/day for liver lesions in a two-year rat feeding study (Walker et al., 1969) with an uncertainty factor of 100. The LOAEL was identified as 0.05 mg/kg/day.

At the end of two years the rats had increased liver weights and histopathological examinations revealed liver parenchymal cell changes. These hepatic lesions were considered to be characteristic of exposure to an organochlorine insecticide.

The chronic inhalation RfC is not available at this time.

E.11.9.2 Carcinogenicity

EPA (1999) classifies dieldrin in cancer weight-of-evidence B2. Dieldrin is carcinogenic in seven strains of mice when administered orally. Dieldrin is structurally related to compounds (aldrin, chlordane, heptachlor, heptachlor epoxide, and chlorendic acid) which produce tumors in rodents.

Human carcinogenicity data is considered inadequate. Two studies of workers exposed to aldrin and to dieldrin reported no increased incidence of cancer. Both studies were limited in their ability to detect an excess of cancer deaths.

Animal carcinogenicity data was sufficient. Dieldrin has been shown to be carcinogenic in various strains of mice of both sexes. At different dose levels the effects range from benign liver tumors, to hepatocarcinomas with transplantation confirmation, to pulmonary metastases.

Supporting data for carcinogenicty include genotoxicity tests. Dieldrin causes chromosomal aberrations in mouse cells (Markaryan, 1966; Majumdar et al., 1976) and in human lymphoblastoid cells (Trepanier et al., 1977), mutation in Chinese hamster cells (Ahmed et al., 1977), and unscheduled DNA synthesis in rat (Probst et al., 1981) and human cells (Rocchi et al., 1980).

EPA (1999) presents an oral slope factor of 16 per mg/kg/day based on a diet study in mice that produced liver carcinomas.

This inhalation cancer slope factor of 16 per mg/kg/day was derived from the oral slope factor (EPA 1999).

E.11.10 IRON

E.11.10.1 Noncancer Toxicity

Iron is potentially toxic in all forms and by all routes of exposure. Inorganic iron is a poison by the intraperitoneal route. The inhalation of large amounts of iron dust may result in iron pneumoconiosis or arc welders lung. Chronic exposure to excess levels of iron (>50-100 mg Iron/day) can result in pathological deposition of iron in tissues. The target organs are the pancreas and liver (Sax and Lewis, 1989).

Iron compounds are of varying toxicity. Iron oxides are a potential risk in all industrial settings. In general, ferrous compounds are more toxic than ferric compounds. Acute exposure to excessive levels of ferrous compounds can cause liver and kidney damage, altered respiratory rates and convulsions (Sax and Lewis, 1989). An oral RfD of 0.3 mg/kg/day has been published for iron by EPA (1998). No inhalation RfD has been found for iron.

E.11.10.2 Carcinogenicity

Some iron compounds are suspected human carcinogens. Iron dust is an experimental neoplastigen and an increased incidence of lung cancer has been associated with exposure to iron dust. Iron oxide is an experimental tumorigen and a suspected human carcinogen (Sax and Lewis, 1989). EPA has not published oral or inhalation slope factors for iron.

E.11.11 1,1,2,2-TETRACHLOROETHANE

E.11.11.1 Noncancer Toxicity

Chronic oral exposure of laboratory animals to 1,1,2,2-tetrachloroethane was associated with liver and kidney effects (ATSDR 1989). EPA presents an oral RfD of 0.06 mg/kg/day (1998). Acute occupational exposure to high levels was associated with CNS effects; prolonged exposure to more moderate levels was associated with GI disturbances and liver damage (ACGIH 1986). Inhalation exposure studies in animals confirm that 1,1,2,2-tetrachloroethane is highly hepatotoxic. An inhalation RfC value was not located. The target organs for 1,1,2,2-tetrachloroethane are the liver, kidney, and the CNS.

E.11.11.2 Carcinogenicity

Oral treatment with 1,1,2,2-tetrachloroethane induced a highly significant dose-related increase in hepatocellular carcinomas in rats (ATSDR 1989). Occupational data regarding carcinogenicity in humans are inadequate. The EPA (1999) classifies 1,1,2,2-tetrachloroethane as a cancer weight-of-evidence Group C compound (possible human carcinogen), based on liver tumors in mice, and derived an oral slope factor of 0.2 per mg/kg/day (EPA 1999). The same data serve as the basis for an inhalation unit risk of 5.8E-05 per ug/m^3, which is equivalent to 0.2 per mg/kg/day (EPA 1999), assuming humans inhale 20 m^3 of air/day and weigh 70 kg.

E.11.12 TETRACHLOROETHENE

E.11.12.1 Noncancer Toxicity

Occupational (inhalation and dermal) exposure to tetrachloroethene was associated with neuralgic effects, beginning with incoordination and progressing to dizziness, headache, vertigo, and unconsciousness (ACGIH 1986). The EPA (1999) presented a verified chronic oral RfD for tetrachloroethene of 0.01 mg/kg/day based on an NOAEL for liver toxicity in mice in a subchronic gavage study, and on an NOEL for depressed body weight gain in rats in a subchronic drinking water study. An uncertainty factor of 1000 was used. The EPA (1997) presented a provisional subchronic oral RfD of 0.1 mg/kg/day based on the same NOEL and an uncertainty factor of 100. The EPA (1999) presents an inhalation RfD of 0.14 mg/kg/day. The CNS is the principal target organ for inhalation exposure and the liver is the principal target organ for oral exposure to tetrachloroethene.

E.11.12.2 Carcinogenicity

Inhalation exposure to tetrachloroethene induced mononuclear clell leukemia in rats, and inhalation or oral exposure induced hepatocellular carcinomas in mice (ATSDR 1995b). Occupational exposure data do not suggest a carcinogenic role for tetrachloroethene in humans (ACGIH 1986). Interpretation of the data regarding the carcinogenicity of tetrachloroethene is controversial and the EPA (1999) has not adopted a final position on the cancer weight-of-evidence classification. The EPA has presented an oral slope factor of 0.052 per mg/kg/day and an inhalation slope factor of 0.002 per mg/kg/day (EPA 1998).

E.11.13 TRICHLOROETHENE

E.11.13.1 Noncancer Toxicity

Little is known about the toxicity of prolonged oral exposure to trichloroethene. Acute inhalation exposure to high levels induced anesthesia, tachypnea, and ventricular arrhythmias (ACGIH 1986). Occupational exposure was associated with headache, dizziness, lassitude, and other CNS effects. Prolonged inhalation exposure of animals affected the liver and kidneys. An oral RfD of 0.006 mg/kg/day was presented by EPA (1998). An inhalation RfC value was not located for trichloroethene in IRIS or HEAST. The principal target organs for trichloroethene are the CNS and heart, and, to a lesser extent, the liver and kidney.

E.11.13.2 Carcinogenicity

Carcinogenicity studies in laboratory animals showed increased incidence of hepatocellular carcinomas (gavage exposure) and malignant lymphomas (inhalation exposure) in mice and increased incidence of renal adenocarcinomas in male rats (gavage) (ATSDR, 1995c). Cancer studies in humans were inadequate. Interpretation of the data regarding the carcinogenicity of trichloroethene is controversial, and the EPA (1999) has not adopted a final position on a cancer weight-of-evidence classification. Currently, EPA believes the weight-of-evidence to be on the C-B2 continuum (possible-probable human carcinogen), and presents a slope factor of 0.011 per mg/kg/day for oral exposure and 0.006 per mg/kg/day for inhalation exposure (EPA 1998).

E.11.14 VANADIUM

E.11.14.1 Noncancer Toxicity

The oral toxicity of vanadium compounds to humans is very low (Lagerkvist et al. 1986), probably because little vanadium is absorbed from the GI tract. Effects in humans exposed by inhalation include upper and lower respiratory tract irritation. A provisional subchronic and chronic oral RfD of 0.007 mg/kg/day was derived from an NOEL of 5 ppm in rats in a lifetime drinking water study with vanadyl sulfate and an uncertainty factor of 100 (EPA 1997). A target organ could not be identified for oral exposure. The respiratory tract is the target organ for inhalation exposure.

E.11.14.2 Carcinogenicity

No information was located regarding the carcinogenicity of vanadium.

E.11.15 VINYL CHLORIDE

E.11.15.1 Noncancer Toxicity

Data were not located regarding oral exposure of humans to vinyl chloride (ATSDR 1995d). In rats, lifetime dietary ingestion of vinyl chloride slightly but significantly increased mortality and induced mild histopathologic effects in the liver. Several early occupational studies associated vinyl chloride exposure with a syndrome known as vinyl chloride disease, which includes acroosteolysis (dissolution of the ends of the distal phalanges of the hands), circulatory disturbances in the extremities, Raynaud syndrome (sudden, recurrent bilateral cyanosis of the digits), scleroderma, hematologic effects, effects on the lungs, and imparied liver function and liver damage. Mild neurologic effects were also associated with occupational exposure. Long-term inhalation studies in rats and mice identified elevated relative liver weight as a sensitive indictor of liver effects. Neither inhalation RfC values nor oral RfD values for vinyl chloride were located. The principal target organs for vinyl chloride appear to be the CNS and the liver.

E.11.15.2 Carcinogenicity

The EPA (1997) lists vinyl chloride as a EPA cancer weight-of-evidence Group A compound (human carcinogen) and presents a verified oral slope factor of 1.9 per mg/kg/day, based on the increased incidence of liver and lung tumors in a lifetime dietary study in rats. An inhalation unit risk of 8.4E-05 per mg/m^3, equivalent to 0.3 per mg/kg/day, assuming humans inhale 20 m^3 of air/day and weight 70 kg, is based on liver tumors in rats intermittently exposed by inhalation for 12 months (EPA 1997).

E11.16 BIS(2-ETHYLHEXYL) PHTHALATE

E11.16.1 Noncancer Toxicity

Bis(2-ethylhexyl)phthalate is rapidly absorbed from the gastrointestinal tract primarily as mono(2-ethylhexyl)phthalate. The diester can be absorbed through the skin and from the lungs. It is rapidly metabolized in the blood and tissues to the monoester, which can be excreted as a glucuronide conjugate or further hydrolyzed to phthalic acid and excreted. Animal studies have indicated that the primary target organs are the liver and kidneys; however, higher doses are reported to result in testicular effects and decreased hemoglobin and packed cell volume. The primary intracellular effects of bis(2-ethylhexyl)phthalate in the liver and kidneys are an increase in the smooth endoplasmic reticulum and a proliferation in the number and size of peroxisomes. An epidemiological study reported no toxic effects from occupational exposure to air concentrations of bis(2-ethylhexyl)phthalate up to 0.16 mg/m^3. Other studies on occupational exposures to mixtures of phthalate esters containing bis(2-ethylhexyl)phthalate have reported polyneuritis and sensory-motor polyneuropathy with decreased thrombocytes, leukocytes and hemoglobin in some exposed workers. Developmental toxicity studies with rats and mice have shown that bis(2-ethylhexyl)phthalate is fetotoxic and teratogenic when given orally during gestation. Oral exposure has also been shown to result in decreased sperm count in rats.
A USEPA Reference Dose (RfD) of 0.02 mg/kg/day for both subchronic and chronic oral exposure was calculated from a lowest-observed-adverse-effect level (LOAEL) of 19 mg/kg/day based on increased relative liver weight in guinea pigs given 0, 19, or 64 mg bis(2-ethylhexyl) phthalate/kg/day for 12 months in their diet. A Reference Concentration (RfC) for inhalation exposure is not available.

E11.16.2 Carcinogenicity

Bis(2-ethylhexyl)phthalate is known to induce the proliferation of peroxisomes, which has been associated with carcinogenesis. Dose-dependent, statistically-significant increases in the incidences of hepatocellular carcinomas and combined carcinomas and adenomas were seen in mice and rats exposed to bis(2-ethylhexyl)phthalate in their diet for 103 weeks. An increased incidence of neoplastic nodules and hepatocellular carcinomas was also reported in rats. Based on USEPA guidelines, bis(2-ethylhexyl)phthalate was assigned to weight-of-evidence Group B2, probable human carcinogen, on the basis of an increased incidence of liver tumors in rats and mice. A USEPA carcinogenicity slope factor of 0.014 $(mg/kg/day)^{-1}$ for oral exposure was based on the combined incidence of hepatocellular carcinomas and adenomas in male mice. A quantitative estimation of carcinogenic risk from inhalation exposure is not available.

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APPENDIX E-12
Equations used for UCL Calculations

Appendix E-12
Equations for Upper Confidence Limit (UCL) Calculation

For normally distributed data, the calculation of the UCL is a two-step process. First the standard deviation of the sample set must be determined, as follows:

$$S = \left[\frac{\Sigma(X_i - \bar{X})^2}{(n-1)}\right]^{1/2}$$

where: S = standard deviation
X_i = individual sample value
n = number of samples
$\bar{x}$ = mean sample value

The one-sided UCL on the mean is then calculated as follows:

$$UCL = \bar{X} + t\left(\frac{S}{n^{1/2}}\right)$$

where: UCL = 95 percent Upper confidence limit of the mean
$\bar{X}$ = Arithmetic average
t = One-sided t distribution factor ($t_{0.95}$)
s = standard deviation
n = number of samples

For log-normally distributed data sets, the UCL is calculated using the following equation:

$$UCL = \exp\left(\bar{X} + 0.5s^2 + \frac{Hs}{(n-1)^{1/2}}\right)$$

where: UCL = 95 percent UCL of the mean
exp = Constant (base of the natural log, e)
$\bar{X}$ = Mean of the transformed data
s = Standard deviation of the transformed data
H = H-statistic (from Gilbert, 1987; $H_{0.95}$)
n = Number of samples

This equation uses individual sample results that have been transformed by taking the natural logarithm of the results.

Reference: Gilbert. 1987. *Statistical Methods for Environmental Pollution Monitoring.* Van Nostrand Reinhold. New York.

APPENDIX E-13
Derivation of Essential Nutrient Screening Values for Calcium, Magnesium, Potassium, and Sodium (ABB-ES 1998)

DERIVATION OF SURFACE SOIL AND GROUNDWATER SCREENING CONCENTRATIONS OF ESSENTIAL NUTRIENTS FOR HHCPC SELECTION

DERIVATION OF SURFACE SOIL AND GROUNDWATER SCREENING CONCENTRATIONS FOR HHCPC SELECTION

Certain inorganics (calcium, magnesium, potassium, and sodium) that are present as naturally occurring constituents in soil and groundwater are required in limited intakes to maintain normal human physiological functions and are, therefore, considered essential nutrients. The Risk Assessment Guidance for Superfund (RAGS), Volume I, Part A, regarding the treatment of essential nutrients in selection of human health contaminants of potential concern (HHCPCs), states that essential nutrients need not be quantitatively evaluated in a public health risk assessment if they are (1) present at low concentrations (only slightly above background) and (2) toxic only at doses much higher than those which might be related to exposure at the site (USEPA, 1989). In this report, "only slightly above background" is interpreted to mean that the arithmetic mean of the site concentrations is less than two times the arithmetic mean of the background concentrations. The focus of this section of the document is the technical approach for determining that an analyte is "toxic only at doses higher than those associated with exposures at the site" and a mechanism for making that determination by employing soil and groundwater screening concentrations. The screening concentrations are used to streamline the process and to eliminate the need to calculate essential nutrient doses as part of HHCPC selection at every site. If the maximum concentration of an essential nutrient does not exceed the appropriate screening concentration shown below, the essential nutrient is considered nontoxic. Essential nutrients are not retained as HHCPCs if they are detected at concentrations that are either consistent with background or do not exceed the screening concentrations.

Currently, no published essential nutrient screening concentrations for use in risk assessment HHCPC selection are available. Therefore, ABB-ES has derived surface soil and groundwater screening concentrations of essential nutrients that, when contacted in accordance with the exposure assumptions described below, are not expected to result in adverse health effects. The screening concentrations for groundwater and surface soil are presented in Table A-8-1. The essential nutrient concentrations in surface soil and groundwater are to be compared directly to the nutrient screening concentrations for the purposes of HHCPC selection.

DOCUMENTATION OF SURFACE SOIL AND GROUNDWATER SCREENING CONCENTRATIONS

The essential nutrient toxicity screening concentrations were derived in two steps: first, a "nontoxic" dose was identified for each essential nutrient; second, the soil and groundwater concentrations associated with the "nontoxic" doses were calculated using standard residential exposure assumptions. The details of the derivation of the screening values are presented below.

Identification of Nontoxic Doses. The identification of doses which are not toxic is often accomplished by identifying reference doses (RfDs), which are

published by USEPA. These RfDs represent doses, including a margin of safety, to which even sensitive subpopulations could be exposed for a lifetime without adverse noncarcinogenic effects. Because no RfDs for calcium, magnesium, potassium, or sodium are available in the Integrated Risk Information System (IRIS) (USEPA, 1994a) or the Health Effects Assessment Summary Tables (HEAST) (USEPA, 1994b), other published nontoxic doses were sought out. Recommended Dietary Allowances (RDAs) prepared by the Food and Nutrition Board (FNB) of the National Research Council (NRC, 1989) have been selected here to represent nontoxic doses.

Table A-8-1
Essential Nutrient Screening Concentrations for Surface Soil and Groundwater

Baseline Risk Assessment for CAMP Group A
Naval Weapons Station
Charleston, South Carolina

Essential Nutrient	Surface Soil Screening Concentration (mg/kg)	Groundwater Screening Concentration (µg/ℓ)
Calcium	[1]1,000,000	1,055,398
Magnesium	460,468	118,807
Potassium	[1]1,000,000	297,016
Sodium	[1]1,000,000	396,022

[1] Actual calculated screening concentration is greater than 1,000,000 milligrams per kilogram (Table A-8-5), indicating that this essential nutrient would not be present at toxic levels in surface soil.

Notes: As described below, screening concentrations for surface soil and groundwater represent conservative screening concentrations for other media. These surface soil and groundwater screening concentrations are used to screen sediment, subsurface soil, sludge, and surface water, respectively.

mg/kg = milligrams per kilogram.
µg/ℓ = micrograms per liter.

RDAs are defined by the FNB as "the levels of intake of essential nutrients that, on the basis of scientific knowledge, are judged by the Food and Nutrition Board to be adequate to meet the known nutrient needs of practically all healthy persons." It is assumed here that because the RDA represents a requirement for good nutrition, it also represents a dose that is nontoxic. Although some essential nutrients (arsenic for example) have been classified as carcinogens, none of the five nutrients discussed here have been classified as carcinogens. The available RDA data for calcium, magnesium, potassium, and sodium are presented in Table A-8-2. From this data set, RDAs for children were preferentially selected to coincide with the child exposure scenario. RDAs were converted from units of milligrams per day to units of milligrams per kilogram per day by dividing the RDA by the child resident body weight of 15 kilograms (USEPA, 1991).

Table A-8-2
Recommended Dietary Allowances[1]

Baseline Risk Assessment for CAMP Group A
Naval Weapons Station
Charleston, South Carolina

Nutrient	RDA	Age (years)	Oral Absorption (Percent)	Typical Dietary Intake (mg/day)	Toxicity Threshold (mg/day)	Oral RDA (mg/kg/day)[2]	Dermal RDA (mg/kg/day)[3]
Calcium	800 (mg/day)	1 - 10	40	743 (average of all ages)	NA	53.3	21.2
	1,200 (mg/day)	11 - 24		1,179	NA		
	800 (mg/day)	>24		743 (average of all ages); 530 (women ages 35-50)	>2,500		
Magnesium	6 (mg/kg/day)	1 - 15	50	193 (age 1-5)	NA	6	3
	4.5 (mg/kg/day)	>15		207 - 329	NA		
Potassium	15 - 20 (mg/kg/day)	1 - 10	90	1,500	NA	15	13.5
	1,600 - 2,000 (mg/day)	>20		2,500	18,000 (hyperkalemia)		
Sodium	300 (mg/day)	2 - 5	90[4]	NA	NA	20	18
	500 (mg/day)	Adult		1,000 - 5,000	2,400 (intake not to be exceeded)		

[1] All data are from the National Resource Council (1989).
[2] Adjusted oral recommended daily allowance (RDA) calculated by dividing the RDA (milligrams per kilogram) by the bodyweight of a child ages 1 to 6 (15 kilogram) (USEPA, 1991); RDAs provided in milligrams per kilogram per day were not modified.
[3] Adjusted dermal RDA calculated by multiplying the oral RDA by the oral absorption efficiency (USEPA, 1989).
[4] Oral absorption data not available; value for potassium used as a surrogate based on physio-chemical similarities.

Notes: RDA = recommended daily allowance.
mg/day = milligrams per day.
mg/kg = milligrams per kilogram.
mg/kg/day = milligrams per kilogram per day.

Dermal RDAs were developed by adjusting the oral RDA to compensate for the oral absorption efficiency in a manner similar to that presented in Appendix A of RAGS, Volume I, Part A (USEPA, 1989).

Calculation of Screening Concentrations Risk-based screening concentrations for essential nutrients were derived by estimating concentrations in soil and groundwater that correspond to the RDAs for a residential exposure scenario. When the dose is equal to the RDA, the hazard quotient for the situation would equal one. Risk calculation spreadsheets have been used to assist in the calculation of the screening concentrations. When the concentration of an essential nutrient and the associated hazard quotient are known, only a simple calculation is needed to identify the concentration associated with a hazard quotient of one. An arbitrary nutrient concentration has been entered into risk spreadsheets to derive associated hazard quotient values as shown in Tables A-8-3 and A-8-4. Once that information was available, the equality shown below was used to calculate screening soil concentration with the target hazard quotient equal to one.

$$\frac{\textit{Baseline Soil Concentration}}{\textit{Baseline Hazard Quotient}} = \frac{\textit{Screening Soil Concentration}}{\textit{Target Hazard Quotient}}$$

Screening groundwater concentrations were calculated in a similar manner. The surface soil and groundwater risk assessment spreadsheets used to calculate the hazard quotients for each essential nutrient were developed by ABB-ES for use in baseline risk assessments. The baseline soil concentration is arbitrary and is used only to establish a baseline hazard quotient to solve the equality.

To derive screening concentrations that would be protective to the majority of the exposed population, the exposure assumptions for the most sensitive receptor (e.g., a child resident) were used. For groundwater, screening concentrations were based on ingestion of groundwater as drinking water. For surface soil, screening concentrations were based on ingestion of surface soil and dermal contact with surface soil. Child resident exposure to surface soil and groundwater used as drinking water is usually greater than or equal to oral and dermal exposure to media treated as soil and groundwater, respectively, for exposure assessment. Therefore, screening values for surface soil represent conservative screening values for sediment, subsurface soil, and sludge, and screening values for groundwater used as drinking water represent conservative screening values for surface water. The exposure parameters for the child resident are presented in the accompanying surface soil and groundwater screening concentration spreadsheets (Tables A-8-3 and A-8-4, respectively).

The calculated essential nutrient screening concentrations for surface soil and groundwater are presented in Table A-8-5. These values represent the concentrations of individual essential nutrients in media that if contacted in accordance with the exposure parameters used to derive the screening concentration, it would theoretically result in the receptor receiving his or her recommended dietary allowance of an essential nutrient solely from the contacted media. For some nutrients, the calculated screening concentrations exceed 1,000,000 mg/kg (i.e., 100 percent). Such concentrations indicate that no concentration of nutrient in the particular medium would result in an intake that exceeds the RDA, given the exposure assumptions on which the screening value is based. Because these

screening concentrations do not take into account the additivity of exposures between media (and other dietary intakes, including food), a receptor exposed to essential nutrients that are present in multiple media at the screening concentrations would, in essence, be receiving more than his or her recommended dietary allowance of nutrient. However, data provided in Table A-8-2 indicate that the toxicity threshold for most essential nutrients is several times greater than the RDA; the RDA is not a toxicity threshold value. Therefore, these screening concentrations do not represent concentrations which, if exceeded, would necessarily result in deleterious effects.

APPENDIX E-14
Hand Calculations

Tetra Tech, Inc. **CALCULATION WORKSHEET** PAGE 1 OF 11

CLIENT	JOB NUMBER
NAVAL TRAINING CENTER	7457
SUBJECT	
OU 2 McCoy Annex Landfill	
BASED ON	**DRAWING NUMBER**

BY	CHECKED BY	APPROVED BY	DATE
R. Warren	J. Bender		2-20-01

Surface soil Intake and Risk calculations

Ingestion CDI (Chronic Daily Intake)

$$\frac{C_{soil} \times IR \times FI \times EF \times ED \times CF}{BW \times AT}$$ Table E4.1

where:

C_{soil} = 0.16 mg/kg benzo(a)pyrene (equiv) Area 1
IR = 50 mg/day
FI = 1.0 for current / future site maintenance workers
EF = 250 days/year
ED = 25 years
CF = 1×10^{-6} kg/mg
BW = 70 kg
AT = 25550 days (cancer)
= 9125 days (non-cancer)

$$CDI = 0.16 \frac{mg}{kg} \cdot 50 \frac{mg}{day} \cdot 1.0 \cdot \frac{250 \frac{day}{yr} \cdot 25\ yr \cdot 1 \times 10^{-6} \frac{kg}{mg}}{70 kg \cdot 25550\ day}$$

$= 2.8 \times 10^{-5}$ mg/kg day ✓ Table E3.1 ingestion intake

benzo(a)pyrene CSF 7.3 $(mg/kg\text{-}day)^{-1}$

Cancer Risk CDI · CSF $2.8 \times 10^{-5} \times 7.3 = 2.0 \times 10^{-7}$ ✓

CLIENT	JOB NUMBER		
Naval Training Center			
SUBJECT			
OU 2 - McCoy Annex Landfill			
BASED ON	DRAWING NUMBER		
BY: R Warren	CHECKED BY: JBerdar	APPROVED BY	DATE

Dermal CDI

$$\frac{C_{soil} \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$ Table E4.1

Factors As on previous page plus:
SA = 5800 cm^2/day
AF = 1.0 mg/cm^2
ABS = 0.01 (organics)

$$\frac{0.116\ mg/kg \cdot 1\times10^{-6}\ kg/mg \cdot 5800\ cm^2/day \cdot 1.0\ mg/cm^2 \cdot 0.01 \cdot 250\ d \cdot 25\ yr}{70\ kg \cdot 25550\ day \cdot 4\ yr}$$

$= 3.2 \times 10^{-8}$ mg/kg-day ✓ Table E8.1 dermal intake

benzo(a)pyrene CSF dermal = 8.11 $(mg/kg\text{-}day)^{-1}$

Cancer Risk = CDI · CSF = $3.2\times10^{-8} \cdot 8.11 = 2.6\times10^{-7}$ ✓

Inhalation CDI =

$$\frac{C_{AIR} \times IR \times EF \times ED}{BW \times AT}$$

where $C_{AIR} = C_{soil}\left(\frac{1}{PEF} + \frac{1}{VF}\right)$

where factors As above plus:
IR = 20 m^3/day
PEF = 1.24×10^9 m^3/kg
VF = not Applicable

Tetra Tech, Inc. **CALCULATION WORKSHEET**

CLIENT	JOB NUMBER		
Naval Training Center			
SUBJECT			
OU 2 MacCox Annex Landfill			
BASED ON	DRAWING NUMBER		
BY R. Warren	CHECKED BY J Bender	APPROVED BY	DATE

$$C_{AIR} = 0.16 \frac{mg}{kg} \left(\frac{1}{1.24 \times 10^{9}} \cdot NA \right) = 1.3 \times 10^{-10} \frac{mg}{m^3}$$

$$CDI = \frac{1.3 \times 10^{-10} \frac{mg}{m^3} \cdot 20 \frac{m^3}{day} \cdot 250 \frac{day}{yr} \cdot 25\ yr}{70\ kg \cdot 25550\ day}$$

$$= 9.0 \times 10^{-12}\ mg/kg\text{-}day$$ ✓ Table E8.1 inhalation intake

Benzo(a)pyrene CSF inhalation = $3.1\ (mg/kg\text{-}day)^{-1}$

Cancer Risk = CDI × CSF $9.0 \times 10^{-12} \times 3.1 = 2.8 \times 10^{-11}$ ✓

CLIENT	JOB NUMBER		
Naval Training Center			
SUBJECT: OU 2 McCoy Annex Layout			
BASED ON	DRAWING NUMBER		
BY: R. Lawrence	CHECKED BY: J Bender	APPROVED BY	DATE

Surface Water Intake and Risk Calculations

Ingestion, CDI =

$$\frac{C_{SW} \times EF \times ET \times CR \times ED \times CF}{BW \times AT}$$ Table E4.4A

C_{SW} = 0.341 µg/L benzo(a)pyrene (equiv.)
EF = 50 events/yr
ET = 1 hour/event
CR = 0.01 L/hour
ED = 25 yr
CF = 1×10^{-3} mg/µg
BW = 70 kg
AT = 25550 days (Cancer)

current/future site maintenance worker

$$0.341 \frac{\mu g}{L} \cdot \frac{50 \text{ events} \cdot 1 \text{ hr} \cdot 0.01 \text{ L} \cdot 25 \text{ yr} \cdot 1 \times 10^{-3} \frac{mg}{\mu g}}{\frac{\text{yr}}{\text{event}} \cdot \frac{\text{hr}}{\text{day}}}$$
$$70 \text{ kg} \cdot 25550 \text{ day}$$

$= 2.4 \times 10^{-9}$ mg/kg-day ✓ Table E8.4A ingestion intake

× benzo(a)pyrene CSF oral (7.3 $(mg/kg\text{-}day)^{-1}$)

$= 1.7 \times 10^{-8}$ ✓ carcinogenic risk

CLIENT		JOB NUMBER	
[illegible]			
SUBJECT			
[illegible]			
BASED ON		DRAWING NUMBER	
BY	CHECKED BY	APPROVED BY	DATE
R. Wagner	J Bender		

Dermal CDI

$$DA_{event} \times EV \times ED \times EF \times A \quad \text{Table E4.4}$$
$$BW \times AT$$

EV = 1 event/day
ED = 25 yr
EF = 50 day/yr
A = 10,000 cm²
BW = 70 kg
AT = 25550 days (cancer)

DA_{event} =

for organics if $t_{event} \leq t^*$

$$= 2 \cdot FA \cdot K_p \cdot C_{sw} \cdot \sqrt{\frac{6 \cdot \tau \cdot t_{event}}{\pi}} \quad \text{Eq. A}$$

if $t_{event} > t^*$

$$= K_p \cdot C_{sw} \cdot \left(\frac{t_{event}}{1+B} + 2\tau \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right) \text{Eq. B}$$

for inorganics

$$= K_p \cdot C_{sw} \cdot t_{event} \quad \text{Eq C}$$

where K_p, τ, t^*, FA are chemical specific and [illegible]

For benzo(a)pyrene:

K_p = 0.17 cm/hr
τ = 0.64 hr
t^* = 10.2 hr (use Eq B)
FA = 1.0

CLIENT	JOB NUMBER		
Naval Training Center			
SUBJECT			
OU 2 McCoy Hunter Landfill			
BASED ON	DRAWING NUMBER		
BY	CHECKED BY	APPROVED BY	DATE
R. Johnson	J Bender		

$$DA_{event} = 2 \cdot 1.0 \cdot 0.17 \frac{cm}{hr} \cdot 0.341 \frac{\mu g}{L} \cdot \sqrt{\frac{6 \cdot 2.64\ hr/event \cdot 1\ hr/event}{\pi}}$$

$$= 2.16 \times 10^{-7} \frac{mg}{cm^2\text{-event}}$$ ✓

$$CDI = \frac{2.16 \times 10^{-7} \frac{mg}{cm^2\text{-event}} \times 1 \frac{event}{day} \cdot 50\ day^{-1} \cdot 25\ yr \cdot 10{,}000\ cm^2}{70\ kg \cdot 25550\ day^{-1}}$$

$$= 1.8 \times 10^{-6}\ mg/kg\text{-day}^{-1}$$ ✓ Table E.8.4 dermal volatile

$\times$ benzo(a)pyrene dermal CSF (8.11 $(mg/kg\text{-day})^{-1}$)

$= 1.5 \times 10^{-5}$ cancer risk ✓

Tetra Tech, Inc. **CALCULATION WORKSHEET**

CLIENT	JOB NUMBER		
Naval Training Center			
SUBJECT: OU2 McCoy Annex Landfill			
BASED ON	DRAWING NUMBER		
BY: R Warren	CHECKED BY: J Bender	APPROVED BY	DATE

Sediment Intake and Risk Calculations

Ingestion CDI:

$$\frac{C_{SED} \times EF \times IR \times CF \times FI \times ED}{BW \times AT}$$ Table E 4.7

C_{SED} = 0.729 mg/kg Arsenic
EF = 50 day/yr
IR = 5 mg/day
CF = 1×10^{-6} kg/mg
FI = 1.0
ED = 25 yr
BW = 70 kg
AT = 25550 (cancer)

$$CDI = \frac{0.729\,\frac{mg}{kg} \cdot 50\,\frac{day}{yr} \cdot 5\,\frac{mg}{day} \cdot 1 \times 10^{-6}\,\frac{kg}{mg} \cdot 1 \cdot 25\,yr}{70\,kg \cdot 25550\,day}$$

$= 2.5 \times 10^{-9}$ mg/kg-day ✓ Table E 8.7 ingestion intake

x Arsenic CSF oral of 1.5 $(mg/kg\text{-}day)^{-1}$

$= 3.8 \times 10^{-9}$ ✓ cancer risk

Dermal CDI =

$$\frac{C_{SED} \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

SA = 10,000 cm²/day
AF 1.0 mg/cm²
ABS = 0.001 (inorganic)

CLIENT	JOB NUMBER		
Naval Training Center			
SUBJECT: OU 2 McCoy Annex Landfill			
BASED ON	DRAWING NUMBER		
BY: R. Warren	CHECKED BY: J Bender	APPROVED BY	DATE

$$= \frac{0.729\frac{mg}{kg} \cdot 1\times10^{-6}\frac{kg}{mg} \cdot 10000\frac{cm^2}{day} \cdot 1\frac{mg}{cm^2} \cdot 0.001 \cdot 50\frac{day}{yr} \cdot 25\,yr}{70\,kg \cdot 25550\,day}$$

$= 5.1 \times 10^{-9}$ mg / kg-day ✓ Table E8.7 dermal intake Arsenic

× Arsenic CSF dermal 1.58 $(mg/kg\text{-}day)^{-1}$

8.0×10^{-9} cancer risk ✓

Noncarcinogenic Risks

Ingestion CDI for sediment as before with

AT = 9125 (noncancer)

$$\frac{0.729\frac{mg}{kg} \cdot 50\frac{day}{yr} \cdot 5\frac{mg}{day} \cdot 1\times10^{-6}\frac{kg}{mg} \cdot 1 \times 25\,yr}{70\,kg \times 9125\,day}$$

$= 7.1 \times 10^{-9}$ mg / kg-day ✓ Table E7.7 intake ingestion

÷ Arsenic RfD ingestion of 3×10^{-4} mg/kg-day

$= 2.4 \times 10^{-5}$ ✓ Hazard quotient Arsenic ingestion of sediment

Dermal CDI for sediment as for cancer except

AT = 9125 (noncancer)

Tetra Tech, Inc. **CALCULATION WORKSHEET**

CLIENT	JOB NUMBER		
Naval Training Center			
SUBJECT			
OU 2 Phase Annex Landfill			
BASED ON	DRAWING NUMBER		
BY R Warren	CHECKED BY J Binder	APPROVED BY	DATE

$$CDI_{Dermal} = \frac{0.729\,\frac{mg}{kg} \times 1\times10^{-6}\,\frac{kg}{mg} \cdot 10{,}000\,\frac{cm^2}{day} \cdot 1\,\frac{mg}{cm^2} \cdot 0.001 \cdot 50\,\frac{day}{yr} \cdot 25}{70\,kg \cdot 9125\,day}$$

$= 1.4\times10^{-8}$ mg/kg-day ✓ Table E 7.7

÷ Arsenic RFD dermal (2.85×10^{-4} mg/kg-day)

$= 5.0\times10^{-5}$ ✓ Hazard Quotient Arsenic dermal exposure to sediment

CLIENT	JOB NUMBER		
Naval Training Center			
SUBJECT			
D x Z McCoy Energy Landfill			
BASED ON	DRAWING NUMBER		
BY	CHECKED BY	APPROVED BY	DATE
L Wallace	J Bender		

Groundwater Intake and Risk Calculations

Ingestion CDI =

$$\frac{C_{water} \times IR \times EF \times ED \times CF}{BW \times AT}$$ Table E4.16B

where

C_{water} = 5.2 µg/L arsenic Area 3/3
IR = 2 L/day
EF = 350 day/yr
ED = 24 yr
CF = 0.001 mg/µg
BW = 70 kg
AT = 25550 day (cancer)

For Adult Resident

$$CDI = \frac{5.2\ \mu g}{L} \cdot \frac{2\ L}{day} \cdot \frac{350\ day}{yr} \cdot \frac{24\ yr}{} \cdot \frac{0.001\ mg}{\mu g} \Big/ 70\ kg \cdot 25550\ day$$

$= 4.9 \times 10^{-5}$ mg/kg-day ✓ Table E8.16B ingest intake

x Arsenic oral CSF of 1.5 $(mg/kg\text{-}day)^{-1}$

$= 7.3 \times 10^{-5}$ Arsenic cancer ingest risk.

Dermal CDI =

$$\frac{DA_{event} \times EV \times ED \times EF \times A}{BW \times AT}$$ Table E4.16B

$DA_{event} = K_p \cdot C_{water} \cdot t_{event} = 1.04 \times 10^{-9}$ ✓ mg/cm²-event

Tetra Tech, Inc. **CALCULATION WORKSHEET** PAGE 11 OF 11

CLIENT	JOB NUMBER		
Naval Training Center			
SUBJECT			
OU 2 [illegible]			
BASED ON	DRAWING NUMBER		
BY R. Warren	CHECKED BY J Bender	APPROVED BY	DATE

EV = 1 event / day
ED = 24 yr
EF = 350 day/yr
A = 20,000 cm^2
t_{event} = 0.2 hr / event
k_p = 0.001 cm / hr

$$CDI = \frac{1.04 \times 10^{-9} \frac{mg}{cm^2\ event} \cdot 1 \frac{event}{day} \cdot 24 yr \cdot 350 \frac{day}{yr} \cdot 20{,}000\ cm^2}{70 kg \cdot 25550\ day}$$

$= 9.8 \times 10^{-8}$ mg / kg-day ✓ Table E 8.16 B dermal As intake

x Arsenic dermal CSF of 1.58 $(mg/kg\text{-}day)^{-1}$

$= 1.5 \times 10^{-7}$ ✓ As cancer risk from ground water

APPENDIX E-15
RAGS D Tables for Calculations Including Turbid Wells

TABLE E2.9C
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PHASE III WITH TURBID WELLS
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL
NTC ORLANDO

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Tap Water Vapor (Area 1

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection(5)
Organic Volatiles (ug/L)																
71-43-2	**Benzene**	OV	3.4	J	3.4	J	OU2MW03B	1/6	1-5	3.4	Not Avail	0.36 C	1	FL GCTL	yes	ASL
108-90-7	**Chlorobenzene**	OV	23		23		OU2MW03B	1/6	2-5	23	Not Avail	3.5 N	100	FL GCTL	yes	ASL
Organic Semivolatiles (ug/L)																
106-46-7	**1,4-Dichlorbenzene**	OS	6.3	J	6.3	J	OU2MW03B	1/6	10	6.3	Not Avail	0.47 C	75	FL GCTL	yes	ASL
91-20-3	Naphthalene	OS	4.8	J	4.8	J	OU2MW03B	1/6	5	4.8	Not Avail	73 N	20	FL GCTL	no	BSL
Metals (ug/L)																
7429-90-5	Aluminum	M	467		17250	J	OU2MW01A	4/6	172-232	17250	4067	3700 N	50s	MCL	no	BKG
7440-38-2	Arsenic	M	2.9		2.9		OU2MW02A	1/6	2.2-2.3	2.9	5	0.045 C	50	FL GCTL	no	BKG
7440-39-3	Barium	M	22.2		91.6		OU2MW03A	4/6	4.9-13.9	91.6	31.4	260 N	2000	FL GCTL	no	BSL
7440-70-2	Calcium	M	8970	J	41500		OU2MW03B	6/6	NA	41500	36830	1056398 (nutrient)	Not Avail	--	no	NUT
7440-47-3	**Chromium**	M	16.95	J	16.95	J	OU2MW01A	1/6	0.98-3.5	16.95	7.8	11 N	100	FL GCTL	yes	ASL
7440-48-4	Cobalt	M	2.4		5.2		OU2MW03A	2/6	1.4-7.3	5.2	NA	220 N	420	FL GCTL	no	BSL
7440-50-8	Copper	M	0.575		1.4		OU2MW03A	3/6	1-4.8	1.4	5.4	150 N	1000s	FL GCTL	no	BSL, BKG
7439-89-6	**Iron**	M	1460		23700		OU2MW03A	6/6	NA	23700	1227	1100 N	300s	MCL	yes	ASL[4]
7439-92-1	Lead	M	6.45	J	6.45	J	OU2MW01A	1/6	1.2	6.45	4	Not Avail	15	FL GCTL	no	BSL
7439-95-4	Magnesium	M	1280		8570		OU2MW03B	6/6	NA	8570	4560	118807 (nutrient)	Not Avail	--	no	NUT
7439-96-5	**Manganese**	M	6.7	J	616		OU2MW03A	4/6	10.5-20.7	616	17	73 N	50s	FL GCTL	yes	ASL
7440-02-0	Nickel	M	16.8		16.8		OU2MW03A	1/6	1.3-10.7	16.8	NA	73 N	100	FL GCTL	no	BSL
7440-09-7	Potassium	M	895		2960		OU2MW03B	4/6	1360-2310	2960	5400	297015 (nutrient)	Not Avail	--	no	NUT, BKG
7782-49-2	Selenium	M	2.625		2.625		OU2MW01A	1/6	2.4-4.6	2.625	9.7	18 N	50	FL GCTL	no	BSL
7440-23-5	Sodium	M	6685		34100		OU2MW03B	4/6	9730-10800	34100	18222	395022 (nutrient)	160000	FL GCTL	no	NUT, BSL
7440-62-2	**Vanadium**	M	6.2		64.95	J	OU2MW03B	3/6	2.6-11.3	64.95	20.6	26 N	49	FL GCTL	yes	ASL
7440-66-6	Zinc	M	126		126		OU2MW03A	1/6	3.6-21.2	126	4	1100 N	5000s	FL GCTL	no	BSL
TPH (mg/L)																
	TPH (c8-c40)	PET	0.676		1.16		OU2MW03A00	2/6	0.5	1.16	NA	NA	5 (8)	FL GCTL	no	BSL
Radionuclides (pCi/L)																
	Gross alpha	RAD	1.2		11.9		OU2MW02A	6/6	NA	11.9	13	Not Avail	15	FL GCTL	no	BSL
	Gross beta	RAD	2.7		8.8		OU2MW03A	6/6	NA	8.8	9.5	Not Avail	50	40 CFR	no	BSL
mg/L except where noted																
	Alkalinity as caco3	MIS	7		31		OU2MW02B	6/6	NA	31	Not Avail	Not Avail	Not Avail	--	NA	--
	Biochemical oxygen demand	MIS	2.2		4.8		OU2MW02A	4/6	25	41.2	NA	NA	Not Avail	--	NA	--
	Chloride	MIS	7.5		60		OU2MW03A	5/6	1	300	Not Avail	Not Avail	250000s	FL GCTL	no	BSL
	Chemical oxygen demand	MIS	25		74.3		OU2MW01B	3/6	20	102	Not Avail	NA	NA	--	NA	--
	Hardness as caco3	MIS	26		146		OU2MW03A	6/6	NA	146	Not Avail	Not Avail	Not Avail	--	NA	--
	Orthophosphate	MIS	0.13		1.9		OU2MW01B	4/6	0.1	1.9	Not Avail	Not Avail	Not Avail	--	NA	--
	Ph	MIS	5.4		5.9		OU2MW02B	6/6	NA	5.9	Not Avail		6.5-8.5	MCL	no	BSL
	Plate count, Total (CFU/m)	MIS	4300		73900		OU2MW03A	6/6	NA	73900	Not Avail	NA	NA		NA	--
	Redox potential (MV)	MIS	149		466		OU2MW01A	6/6	NA	466	Not Avail	NA	NA		NA	--
	Sulfate	MIS	14		1150		OU2MW01B	5/6	20	1150	Not Avail	Not Avail	250000s	FL GCTL	no	BSL
	Total dissolved solids	MIS	110		14000		OU2MW01A	6/6	NA	14000	Not Avail	Not Avail	500000s	FL GCTL	no	BSL
	Total organic carbon	MIS	5.2		77.2		OU2MW03A	6/6	NA	77.2	Not Avail	NA	NA		NA	--
	Total suspended solids	MIS	21		1460		OU2MW01A	6/6	NA	1460	Not Avail	NA	--		NA	--
	Turbidity (NTU)	MIS	0.85		159		OU2MW01A	6/6	NA	159	Not Avail	NA	--		NA	--

(1) Maximum concentration used as screening value
(2) The background screening value is twice the average of detected concentrations for inorganic analytes
(3) Risk-Based Concentration Table USEPA Region III (Cancer benchmark value = 1E-06 HQ = 0.1) 4-99
(4) The RfD for iron is not a proper RfD-it is derived based on iron consumption of beer brewed in iron vessels See the uncertainty section
(5) Rationale Codes

Selection Reason
- Frequent Detection (FD)
- Toxicity Information Available (TX)
- Above Screening Levels (ASL)

Deletion Reason
- Infrequent Detection (IFD)
- Background Levels (BKG)
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)

Definitions
- NA = Not Applicable
- COPC = Chemical of Potential Concern
- ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
- J = Estimated Value
- U = Not Detected
- C = Carcinogenic
- N = Non-Carcinogenic
- MCL = Federal Maximum Contaminant Level
- FL GCTL from Technical Report Development of Groundwater Cleanup Levels for Chapter 62-777, F.A.C. (1999)
- s = Secondary Standard, presented but not used in COPC selection
- 40 CFR = 40 Code of Federal Regulations 141

TABLE E2.10C

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PHASE III WITH TURBID WELLS
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Tap Water/ Vapor (Area 2/3

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frrequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Screening Toxicity Values[3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[4]
Organic Volatiles (µg/L)																
78-93-3	2-Butanone	OV	13.3	J	13.3	J	OU2MW20B	1/2		13.3	Not Avail	190 N	4200	FL GCTL	no	BSL
591-78-6	2-Hexanone	OV	9.7	J	9.7	J	OU2MW20B	1/10		9.7	Not Avail	150 N	280	FL GCTL	no	BSL
108-10-1	4-Methyl-2-pentanone	OV	8.5	J	8.5	J	OU2MW20B	1/10		8.5	Not Avail	290 N	560	FL GCTL	no	BSL
71-43-2	**Benzene**	OV	1.3		7.6		OU2MW11B	2/10	1-50	7.6	Not Avail	0.36 C	1	FL GCTL	yes	ASL
75-15-0	Carbon Disulfide	OV	0.87	J	1.4		OU2MW12B	2/10	1.2-50	1.4	Not Avail	104 N	700	FL GCTL	no	BSL
108-90-7	**Chlorobenzene**	OV	0.16	J	4		OU2MW11B	2/10	1.9-50	4	Not Avail	3.5 N	100	FL GCTL	yes	ASL
67-66-3	**Chloroform**	OV	6.3		6.3		OU2MW20B	1/10		6.3	Not Avail	0.15 C	5.7	FL GCTL	yes	ASL
74-87-3	Chloromethane	OV	0.19	J	0.19	J	OU2MW20A	1/10	1-50	0.19	Not Avail	2.1 C	2.7	FL GCTL	no	BSL
156-59-2	**cis-1,2-dichloroethene**	OV	0.26	J	66	J	OU2MW18B	3/10	1-2	66	Not Avail	6.1 N	70	FL GCTL	yes	ASL
74-82-8	Methane	OV	54.9		1150		OU2MW11B	6/10		1150	Not Avail	Not Avail	Not Avail	---	no	NTX[4]
127-18-4	**Tetrachloroethene**	OV	5.1	J	34	J	OU2MW18B	2/10	1-2	34	Not Avail	1.1 C	3	FL GCTL	yes	ASL
108-88-3	Toluene	OV	1.2		8.1		OU2MW11A	2/10	1-2	8.1	Not Avail	75 N	1000	MCL	no	BSL
156-60-5	**Trans-1,2-dichloroethene**	OV	12		12		OU2MW11B	1/10		12	Not Avail	12 N	100	FL GCTL	yes	ASL
79-01-6	**Trichloroethene**	OV	0.71	J	1200	J	OU2MW18B	3/10	1-2	1200	Not Avail	1.6 C	3	FL GCTL	yes	ASL
75-01-4	**Vinyl Chloride**	OV	0.64	J	20	J	OU2MW18B	3/10	1	20	Not Avail	0.019 C	1	FL GCTL	yes	ASL
1330-20-7	Xylenes, Total	OV	11		11		OU2MW11B	1/10		11	Not Avail	1200 N	10000	MCL	no	BSL
Organic Semivolatiles (µg/L)																
84-66-2	Diethyl Phthalate	OS	5	J	5	J	OU2MW18B	1/10		5	Not Avail	2900 N	5600	FL GCTL	no	BSL
131-11-3	Dimethyl Phthalate	OS	14.9		14.9		OU2MW20B	1/10		14.9	Not Avail	37000 N	70000	FL GCTL	no	BSL
91-20-3	Naphthalene	OS	6.1		6.1		OU2MW12B	1/10		6.1	Not Avail	73 N	20	FL GCTL	no	BSL
Metals (µg/L)																
7429-90-5	**Aluminum**	M	251		21400	J	OU2MW11B	9/10	988	21400	4067	3700 N	50	MCL	yes	ASL
7440-38-2	**Arsenic**	M	2.2		5.2		OU2MW18B	2/10	2.2-3.1	5.2	5	0.045 C	50	FL GCTL	yes	ASL
7440-39-3	**Barium**	M	8.4		260	J	OU2MW11B	8/10	0.47-12.3	260	31.4	260 N	2000	FL GCTL	yes	ASL
7440-43-9	Cadmium	M	0.74		0.74		OU2MW14A	1/10		0.74	5.6	1.8 N	5	FL GCTL	no	BSL
7440-70-2	Calcium	M	2780		24700	J	OU2MW11B	9/10	6.6	24700	36830	1055398 (nutrient)	Not Avail	---	no	NUT, BKG
7440-50-8	Copper	M	1.7		6.7		OU2MW11B	2/10	1-1.2	6.7	5.4	150 N	1000s	FL GCTL	no	BSL
7439-89-6	**Iron**	M	215	J	5290	J	OU2MW11B	9/10	1180	5290	1227	1100 N	300s	FL GCTL	yes	ASL[5]
7439-92-1	Lead	M	1.9		12	J	OU2MW11B	2/10	1.2-2.1	12	4	15	15	FL GCTL	no	BSL
7439-95-4	Magnesium	M	1140		4320	J	OU2MW11B	9/10	10	4320	4560	118807 (nutrient)	Not Avail	---	no	NUT, BKG
7439-96-5	Manganese	M	3.6		23.3		OU2MW12B	5/10	1.7-4.8	23.3	17	73 N	50s	FL GCTL	no	BSL
7440-02-0	Nickel	M	1.9		3		OU2MW14A	2/10	1.3-6.2	3	NA	73 N	100	FL GCTL	no	BSL
7440-09-7	Potassium	M	541	J	11400		OU2MW12B	8/10	25	11400	5400	297016 (nutrient)	Not Avail	---	no	NUT
7440-23-5	Sodium	M	2080		22400		OU2MW11B	10/10		22400	18222	395022 (nutrient)	16000	FL GCTL	no	NUT
7440-62-2	**Vanadium**	M	3.1		37.1		OU2MW20A	4/10	1.1-7.9	37.1	20.6	26 N	49	FL GCTL	yes	ASL
7440-66-6	**Zinc**	M	50.8		1550	J	OU2MW11B	2/10	4.4-174	1550	4	1100 N	5000s	FL GCTL	yes	ASL
TPH (mg/L)																
	TPH (c8-c40)	PET	0.64		0.718		OU2MW12B	2/10	0.5	0.718		NA	5	FL GCTL	no	BSL

TABLE E2.10C

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PHASE III WITH TURBID WELLS
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frrequency	Range of Detection Limits	Concentration Used For Screening(1)	Background Value(2)	Screening Toxicity Values(3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection(6)
Radionuclides (pCi/L)																
	gross Alpha	RAD	1 5		12 4		OU2MW18A	10/10	NA	12.4	13	Not Avail	15	FDEP 1998	no	BSL
	gross Beta	RAD	1 8		19		OU2MW11B	10/10	NA	19	9.5	Not Avail	50	40 CFR	no	BSL
mg/L except where noted																
	Alkalinity as caco3	MIS	8 5		61 7		OU2MW20B	9/10	NA	61 7	Not Avail	Not Avail	Not Avail	---	NA	
	Biochemical oxygen demand	MIS	3 2		39		OU2MW14A	5/10		39	Not Avail	Not Avail	Not Avail	---	NA	
	Chemical oxygen demand	MIS	25	J	97	J	OU2MW14B	7/10		97	Not Avail	Not Avail	NA	---	NA	
	Chloride	MIS	5 5		40		OU2MW11A	9/10		40	Not Avail	Not Avail	250000s	FL GCTL	no	BSL
	Hardness as caco3	MIS	19 9		131		OU2MW14B	10/10	NA	131	Not Avail	Not Avail	Not Avail	---	NA	
	Nitrate, as nitrogen	MIS	0 22		0 22		OU2MW20A	1/8	0 01- 11	0 22	Not Avail	5800 N	10000	FL GCTL	no	BSL
	Orthophosphate	MIS	0 12		4 3		OU2MW11B	7/10		4 3	Not Avail	Not Avail	Not Avail		NA	
	Ph	MIS	4 6		6 1		OU2MW20B	10/10	NA	6 1	Not Avail	Not Avail	6 5-8 5	FL GCTL	NA	
	Plate count, Total (CFU/m)	MIS	2070		48200		OU2MW20B	10/10	NA	48200	Not Avail	Not Avail	NA	---	NA	
	Redox potential (MV)	MIS	90 8		462		OU2MW20A	10/10	NA	462	Not Avail	Not Avail	NA	---	NA	
	Sulfate	MIS	16 1		163		OU2MW14B	7/10	NA	163	Not Avail	Not Avail	250000	FL GCTL	no	BSL
	Total dissolved solids	MIS	77		3720		OU2MW11A	10/10	NA	3720	Not Avail	Not Avail	500000	FL GCTL	NA	
	Total organic carbon	MIS	4 5		50 6		OU2MW14A	10/10	NA	50 6	Not Avail	Not Avail	NA	---	NA	
	Total suspended solids	MIS	10		10000		OU2MW20B	9/10	4	10000	Not Avail	Not Avail	NA	---	NA	
	Turbidity (NTU)	MIS	1 1		320		OU2MW11B	7/10	NA	320	Not Avail	Not Avail	NA	---	NA	

(1) Maximum concentration used as screening value
(2) The background screening value is twice the average of detected concentrations for inorganic analytes
(3) Risk-Based Concentration Table, USEPA Region III, (Cancer benchmark value = 1E-06, HQ = 0 1) 4-99
(4) No toxicity information availble These analytes will be discussed qualitatively in the text
(5) The RfD for iron is not a proper Rfd-it is derived based on iron consumption of beer brewed in iron vessels See the uncertainty section

(6) Rationale Codes

Selection Reason
- Frequent Detection (FD)
- Toxicity Information Available (TX)
- Above Screening Levels (ASL)

Deletion Reason
- Infrequent Detection (IFD)
- Background Levels (BKG)
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)

Florida screening levels for TRPH used for TPH (c8-c40)

Definitions
- NA = Not Applicable
- COPC = Chemical of Potential Concern
- ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
- J = Estimated Value
- U = Not Detected
- C = Carcinogenic
- N = Non-Carcinogenic
- MCL = Federal Maximum Contaminant Level
- FL GCTL from Technical Report Development of Groundwater Cleanup Levels for Chapter 62-777, F A C (May 1999)
- s = Secondary Standard, presented but not used in COPC selection
- 40 CFR = 40 Code of Federal Regulations 141

TABLE E3.9C

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY - GROUNDWATER - AREA 1
PHASE III WITH TURBID WELLS
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Tap Water/ Vapors (Area 1)

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzene	µg/l			3.40E+00	J	µg/l	3.40E+00	max	[3]
Chlorobenzene	µg/l			2.30E+01		µg/l	2.30E+01	max	[3]
1,4-Dichlorobenzene	µg/l			6.30E+00	J	µg/l	6.30E+00	max	[3]
Chromium	µg/l			1.70E+01	J	µg/l	1.70E+01	max	[3]
Iron	µg/l			2.37E+04		µg/l	2.37E+04	max	[3]
Manganese	µg/l			6.16E+02		µg/l	6.16E+02	max	[3]
Vanadium	µg/l			6.50E+01	J	µg/l	6.50E+01	max	[3]

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (L);

(1) Data are assumed to be log-normally distributed
(2) The 95% UCL exceeded the maximum; therefore the maximum was used.
(3) There were less than 10 samples taken; therefore, the maximum was used.

J = estimated value
UCL = upper confidence level
EPC = exposure point concentration

TABLE E3.10C

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY - GROUNDWATER -AREA 2/3
PHASE III WITH TURBID WELLS
OPERABLE UNIT 2 - MCCOY ANNEX LANDFILL

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Tap Water/ Vapors (Area 2/3)

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzene	µg/l	3.74E+02	8.26E+00	7.6		µg/l	7.6	max	[2]
Chlorobenzene	µg/l	3.61E+00	8.01E+00	4		µg/l	4	max	[2]
Chloroform	µg/l	3.79E+00	8.23E+00	6.3		µg/l	6.3	max	[2]
cis-1,2-dichloroethene	µg/l	1.12E+01	2.42E+01	66	J	µg/l	66	max	[2]
Tetrachloroethene	µg/l	4.62E+00	1.06E+01	34	J	µg/l	15.242	L	[1]
Trans-1,2-dichloroethene	µg/l	3.80E+00	8.17E+00	12		µg/l	12.603	L	[1]
Trichloroethene	µg/l	1.21E+02	3.41E+02	1200	J	µg/l	1200	max	[2]
Vinyl Chloride	µg/l	4.01E+00	8.32E+00	20	J	µg/l	20	max	[2]
Aluminum	µg/l	2.85E+03	6.64E+03	21400	J	µg/l	8478	L	[1]
Arsenic	µg/l	1.69E+00	2.43E+00	5.2		µg/l	2.385	L	[1]
Barium	µg/l	4.92E+01	9.53E+01	260	J	µg/l	260	max	[2]
Iron	µg/l	1.89E+03	2.76E+03	5290	J	µg/l	5290	max	[2]
Vanadium	µg/l	8.13E+00	1.54E+01	37.1		µg/l	37.1	max	[2]
Zinc	µg/l	1.73E+02	4.54E+02	1550	J	µg/l	1550	max	[2]

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (L):

(1) Data are assumed to be log-normally distributed.
(c) The 95% UCL exceeded the maximum; therefore the maximum was used.
(3) There were less than 10 samples taken; therefore, the maximum was used.

EPC = exposure point concentration
J = estimated value
UCL = upper confidence level

CALCULATION OF DAevent FOR DERMAL CONTACT WITH WATER Area 1

	org/inorg	log Kow	MW	Kp [cm/hr]	Kp,max [cm/hr]	Cw [ug/l]	Cw [mg/L]	Cw [mg/cm^3]	tevent [hr/event]	τevent [hr]	B	c	b	t* [hr]	DAevent org [mg/cm^2-event]	DAevent Inorg [mg/cm^2-event]
1,4-Dichlorobenzene	o	3.39	147	4.45E-02	NA	6.3	0.0063	0.0000063	0.2	6.99E-01	2.07E-01	4.83E-01	4.45E-01	1.68E+00	2.90E-07	
Benzene	o	2.13	78.1	1.55E-02	NA	3.4	0.0034	0.0000034	0.2	2.87E-01	5.26E-02	3.69E-01	3.36E-01	6.90E-01	3.49E-08	
Chlorobenzene	o	2.84	112.6	2.97E-02	NA	23	0.023	2.30E-05	0.2	4.48E-01	1.21E-01	4.18E-01	3.82E-01	1.08E+00	5.65E-07	
Chromium	i			1.00E-03	NA	16.95	0.01695	1.70E-05	0.2							3.39E-09
Iron	i			1.00E-03	NA	23700	23.7	2.37E-02	0.2							4.74E-06
Manganese	i			1.00E-03	NA	616	0.616	6.16E-04	0.2							1.23E-07
Vanadium	i			1.00E-03	NA	64.95	0.06495	6.50E-05	0.2							1.30E-08

CALCULATION OF DAevent FOR DERMAL CONTACT WITH WATER Area 2/3

	org/inorg	log Kow	MW	Kp [cm/hr]	Kp,max [cm/hr]	Cw [ug/l]	Cw [mg/L]	Cw [mg/cm^3]	tevent [hr/event]	τevent [hr]	B	c	b	t* [hr]	DAevent org [mg/cm^2-event]	DAevent Inorg [mg/cm^2-event]
Aluminum	i			1.00E-03	NA	8478	8.478	0.008478	0.2							1.70E-06
Arsenic	i			1.00E-03	NA	2.385	0.002385	2.385E-06	0.2							4.77E-10
Barium	i			1.00E-03	NA	260	0.26	0.00026	0.2							5.20E-08
Benzene	o	2.13	78.1	1.55E-02	NA	7.6	0.0076	0.0000076	0.2	2.87E-01	5.26E-02	3.69E-01	3.36E-01	6.90E-01	7.80E-08	
Chlorobenzene	o	2.84	112.6	2.97E-02	NA	4	0.004	4.00E-06	0.2	4.48E-01	1.21E-01	4.18E-01	3.82E-01	1.08E+00	9.82E-08	
Chloroform	o	1.97	119.4	7.10E-03	NA	6.3	0.0063	6.30E-06	0.2	4.90E-01	2.98E-02	3.54E-01	3.22E-01	1.18E+00	3.87E-08	
Trans-1,2-dichloroethen e	o	1.86	96.9	8.01E-03		12.603	0.012603	1.26E-05	0.2	3.66E-01	3.03E-02	3.54E-01	3.22E-01	8.79E-01	7.55E-08	
cis-1,2-dichloroethene	o	1.86	96.9	8.01E-03	NA	66	0.066	6.60E-05	0.2	3.66E-01	3.03E-02	3.54E-01	3.22E-01	8.79E-01	3.96E-07	
Iron	i			1.00E-03	NA	5290	5.29	5.29E-03	0.2							1.06E-06
Tetrachloroethene	o	3.4	165.8	3.54E-02	NA	15.242	0.015242	1.52E-05	0.2	8.91E-01	1.76E-01	4.59E-01	4.21E-01	2.14E+00	6.30E-07	
Trichloroethene	o	2.42	131.4	1.22E-02	NA	1200	1.2	1.20E-03	0.2	5.72E-01	5.37E-02	3.70E-01	3.37E-01	1.37E+00	1.37E-05	
Vanadium	i			1.00E-03	NA	37.1	0.0371	3.71E-05	0.2							7.42E-09
Vinyl Chloride	o	1.36	62.5	5.77E-03	NA	20	0.02	2.00E-05	0.2	2.35E-01	1.75E-02	3.45E-01	3.14E-01	5.64E-01	6.92E-08	
Zinc	i			1.00E-03	NA	1.55E+03	1.55	1.55E-03	0.2							3.10E-07

Reference: USEPA. 2000. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, (PartE, *Supplemental Guidance for Dermal Risk Assessment), Interim Guidance.*

TABLE E7.16C

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADULT RESIDENT TO GROUNDWATER
PHASE III - AREA 1
WITH TURBID WELLS

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 1
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzene	3.40E+00	ug/l	3.40E+00	ug/l	M	9.3E-05	mg/kg-day	3.00E-03	mg/kg-day	NA	NA	3.1E-02
	Chlorobenzene	2.30E+01	ug/l	2.30E+01	ug/l	M	6.3E-04	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	3.2E-02
	1,4-Dichlorobenzene	6.30E+00	ug/l	6.30E+00	ug/l	M	1.7E-04	mg/kg-day	3.00E-02	mg/kg-day	NA	NA	5.8E-03
	Chromium	1.70E+01	ug/l	1.70E+01	ug/l	M	4.6E-04	mg/kg-day	3.00E-03	mg/kg-day	NA	NA	1.5E-01
	Iron	2.37E+04	ug/l	2.37E+04	ug/l	M	6.5E-01	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	2.2E+00
	Manganese	6.16E+02	ug/l	6.16E+02	ug/l	M	1.7E-02	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	8.4E-01
	Vanadium	6.50E+01	ug/l	6.50E+01	ug/l	M	1.8E-03	mg/kg-day	7.00E-03	mg/kg-day	NA	NA	2.5E-01
	(total)												3.5E+00
Dermal	Benzene	3.40E+00	ug/l	3.40E+00	ug/l	M	9.6E-06	mg/kg-day	2.91E-03	mg/kg-day	NA	NA	3.3E-03
	Chlorobenzene	2.30E+01	ug/l	2.30E+01	ug/l	M	1.5E-04	mg/kg-day	6.20E-03	mg/kg-day	NA	NA	2.5E-02
	1,4-Dichlorobenzene	6.30E+00	ug/l	6.30E+00	ug/l	M	7.9E-05	mg/kg-day	2.70E-02	mg/kg-day	NA	NA	2.9E-03
	Chromium	1.70E+01	ug/l	1.70E+01	ug/l	M	9.3E-07	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	1.5E-02
	Iron	2.37E+04	ug/l	2.37E+04	ug/l	M	1.3E-03	mg/kg-day	4.50E-02	mg/kg-day	NA	NA	2.9E-02
	Manganese	6.16E+02	ug/l	6.16E+02	ug/l	M	3.4E-05	mg/kg-day	8.00E-04	mg/kg-day	NA	NA	4.2E-02
	Vanadium	6.50E+01	ug/l	6.50E+01	ug/l	M	3.6E-06	mg/kg-day	7.00E-05	mg/kg-day	NA	NA	5.1E-02
	(total)												1.7E-01
Inhalation							Inhalation risk assumed to be equal to ingestion risk for VOAs						
													6.8E-02
												Total Hazard Index Across All Exposure Routes/Pathways	**3.7E+00**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.16C

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADULT RESIDENT TO GROUNDWATER
PHASE III - AREA 2/3
WITH TURBID WELLS

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 2/3
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Hazard Quotient
Ingestion	Benzene	7.60E+00	ug/l	7.60E+00	ug/l	M	2.1E-04	mg/kg-day	3.00E-03	mg/kg-day	6.9E-02
	Chlorobenzene	4.00E+00	ug/l	4.00E+00	ug/l	M	1.1E-04	mg/kg-day	2.00E-02	mg/kg-day	5.5E-03
	Chloroform	6.30E+00	ug/l	6.30E+00	ug/l	M	1.7E-04	mg/kg-day	1.00E-02	mg/kg-day	1.7E-02
	cis-1,2-dichloroethene	6.60E+01	ug/l	6.60E+01	ug/l	M	1.8E-03	mg/kg-day	1.00E-02	mg/kg-day	1.8E-01
	Tetrachloroethene	1.52E+01	ug/l	1.52E+01	ug/l	M	4.2E-04	mg/kg-day	1.00E-02	mg/kg-day	4.2E-02
	Trans-1,2-dichloroethene	1.26E+01	ug/l	1.26E+01	ug/l	M	3.5E-04	mg/kg-day	2.00E-02	mg/kg-day	1.7E-02
	Trichloroethene	1.20E+03	ug/l	1.20E+03	ug/l	M	3.3E-02	mg/kg-day	6.00E-03	mg/kg-day	5.5E+00
	Vinyl Chloride	2.00E+01	ug/l	2.00E+01	ug/l	M	5.5E-04	mg/kg-day		mg/kg-day	
	Aluminum	8.48E+03	ug/l	8.48E+03	ug/l	M	2.3E-01	mg/kg-day	1.00E+00	mg/kg-day	2.3E-01
	Arsenic	2.39E+00	ug/l	2.39E+00	ug/l	M	6.5E-05	mg/kg-day	3.00E-04	mg/kg-day	2.2E-01
	Barium	2.60E+02	ug/l	2.60E+02	ug/l	M	7.1E-03	mg/kg-day	7.00E-02	mg/kg-day	1.0E-01
	Iron	5.29E+03	ug/l	5.29E+03	ug/l	M	1.4E-01	mg/kg-day	3.00E-01	mg/kg-day	4.8E-01
	Vanadium	3.71E+01	ug/l	3.71E+01	ug/l	M	1.0E-03	mg/kg-day	7.00E-03	mg/kg-day	1.5E-01
	Zinc	1.55E+03	ug/l	1.55E+03	ug/l	M	4.2E-02	mg/kg-day	3.00E-01	mg/kg-day	1.4E-01
											7.1E+00
Dermal	Benzene	7.60E+00	ug/l	7.60E+00	ug/l	M	2.1E-05	mg/kg-day	2.91E-03	mg/kg-day	7.3E-03
	Chlorobenzene	4.00E+00	ug/l	4.00E+00	ug/l	M	2.7E-05	mg/kg-day	6.20E-03	mg/kg-day	4.3E-03
	Chloroform	6.30E+00	ug/l	6.30E+00	ug/l	M	1.1E-05	mg/kg-day	2.00E-03	mg/kg-day	5.3E-03
	cis-1,2-dichloroethene	6.60E+01	ug/l	6.60E+01	ug/l	M	1.1E-04	mg/kg-day	1.00E-02	mg/kg-day	1.1E-02
	Tetrachloroethene	1.52E+01	ug/l	1.52E+01	ug/l	M	1.7E-04	mg/kg-day	1.00E-02	mg/kg-day	1.7E-02
	Trans-1,2-dichloroethene	1.26E+01	ug/l	1.26E+01	ug/l	M	2.1E-05	mg/kg-day	1.60E-02	mg/kg-day	1.3E-03
	Trichloroethene	1.20E+03	ug/l	1.20E+03	ug/l	M	3.7E-03	mg/kg-day	9.00E-04	mg/kg-day	4.2E+00
	Vinyl Chloride	2.00E+01	ug/l	2.00E+01	ug/l	M	1.9E-05	mg/kg-day		mg/kg-day	
	Aluminum	8.48E+03	ug/l	8.48E+03	ug/l	M	4.6E-04	mg/kg-day	1.00E-01	mg/kg-day	4.6E-03
	Arsenic	2.39E+00	ug/l	2.39E+00	ug/l	M	1.3E-07	mg/kg-day	2.85E-04	mg/kg-day	4.6E-04
	Barium	2.60E+02	ug/l	2.60E+02	ug/l	M	1.4E-05	mg/kg-day	4.90E-03	mg/kg-day	2.9E-03
	Iron	5.29E+03	ug/l	5.29E+03	ug/l	M	2.9E-04	mg/kg-day	4.50E-02	mg/kg-day	6.4E-03
	Vanadium	3.71E+01	ug/l	3.71E+01	ug/l	M	2.0E-06	mg/kg-day	7.00E-05	mg/kg-day	2.9E-02
	Zinc	1.55E+03	ug/l	1.55E+03	ug/l	M	8.5E-05	mg/kg-day	7.50E-02	mg/kg-day	1.1E-03
	(total)										4.2E+00
Inhalation							Inhalation risk assumed to be equal to ingestion risk for VOAs				
											5.8E+00
											1.7E+01

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.17C

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF CHILD RESIDENT TO GROUNDWATER
PHASE III - AREA 1
WITH TURBID WELLS

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 1
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzene	3.40E+00	ug/l	3.40E+00	ug/l	M	2.2E-04	mg/kg-day	3.00E-03	mg/kg-day	NA	NA	7.2E-02
	Chlorobenzene	2.30E+01	ug/l	2.30E+01	ug/l	M	1.5E-03	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	7.4E-02
	1,4-Dichlorobenzene	6.30E+00	ug/l	6.30E+00	ug/l	M	4.0E-04	mg/kg-day	3.00E-02	mg/kg-day	NA	NA	1.3E-02
	Chromium	1.70E+01	ug/l	1.70E+01	ug/l	M	1.1E-03	mg/kg-day	3.00E-03	mg/kg-day	NA	NA	3.6E-01
	Iron	2.37E+04	ug/l	2.37E+04	ug/l	M	1.5E+00	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	5.1E+00
	Manganese	6.16E+02	ug/l	6.16E+02	ug/l	M	3.9E-02	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	2.0E+00
	Vanadium	6.50E+01	ug/l	6.50E+01	ug/l	M	4.2E-03	mg/kg-day	7.00E-03	mg/kg-day	NA	NA	5.9E-01
	(total)												8.1E+00
Dermal	Benzene	3.40E+00	ug/l	3.40E+00	ug/l	M	2.0E-05	mg/kg-day	2.91E-03	mg/kg-day	NA	NA	7.0E-03
	Chlorobenzene	2.30E+01	ug/l	2.30E+01	ug/l	M	3.3E-04	mg/kg-day	6.20E-03	mg/kg-day	NA	NA	5.3E-02
	1,4-Dichlorobenzene	6.30E+00	ug/l	6.30E+00	ug/l	M	1.7E-04	mg/kg-day	2.70E-02	mg/kg-day	NA	NA	6.3E-03
	Chromium	1.70E+01	ug/l	1.70E+01	ug/l	M	2.0E-06	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	3.3E-02
	Iron	2.37E+04	ug/l	2.37E+04	ug/l	M	2.8E-03	mg/kg-day	4.50E-02	mg/kg-day	NA	NA	6.2E-02
	Manganese	6.16E+02	ug/l	6.16E+02	ug/l	M	7.2E-05	mg/kg-day	8.00E-04	mg/kg-day	NA	NA	9.0E-02
	Vanadium	6.50E+01	ug/l	6.50E+01	ug/l	M	7.6E-06	mg/kg-day	7.00E-05	mg/kg-day	NA	NA	1.7E+01
	(total)												1.7E+01
Inhalation							Inhalation risk assumed to be equal to ingestion risk for VOAs						
	(total)												1.6E-01
												Total Hazard Index Across All Exposure Routes/Pathways	**2.5E+01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E7.17C

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF CHILD RESIDENT TO GROUNDWATER
PHASE III - AREA 2/3
WITH TURBID WELLS

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 2/3
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzene	7.60E+00	ug/l	7.60E+00	ug/l	M	4.9E-04	mg/kg-day	3.00E-03	mg/kg-day			1.6E-01
	Chlorobenzene	4.00E+00	ug/l	4.00E+00	ug/l	M	2.6E-04	mg/kg-day	2.00E-02	mg/kg-day			1.3E-02
	Chloroform	6.30E+00	ug/l	6.30E+00	ug/l	M	4.0E-04	mg/kg-day	1.00E-02	mg/kg-day			4.0E-02
	cis-1,2-dichloroethene	6.60E+01	ug/l	6.60E+01	ug/l	M	4.2E-03	mg/kg-day	1.00E-02	mg/kg-day			4.2E-01
	Tetrachloroethene	1.52E+01	ug/l	1.52E+01	ug/l	M	9.7E-04	mg/kg-day	1.00E-02	mg/kg-day			9.7E-02
	Trans-1,2-dichloroethene	1.26E+01	ug/l	1.26E+01	ug/l	M	8.1E-04	mg/kg-day	2.00E-02	mg/kg-day			4.0E-02
	Trichloroethene	1.20E+03	ug/l	1.20E+03	ug/l	M	7.7E-02	mg/kg-day	6.00E-03	mg/kg-day			1.3E+01
	Vinyl Chloride	2.00E+01	ug/l	2.00E+01	ug/l	M	1.3E-03	mg/kg-day		mg/kg-day			1.4E+01
	Aluminum	8.48E+03	ug/l	8.48E+03	ug/l	M	5.4E-01	mg/kg-day	1.00E+00	mg/kg-day			5.4E-01
	Arsenic	2.39E+00	ug/l	2.39E+00	ug/l	M	1.5E-04	mg/kg-day	3.00E-04	mg/kg-day			5.1E-01
	Barium	2.60E+02	ug/l	2.60E+02	ug/l	M	1.7E-02	mg/kg-day	7.00E-02	mg/kg-day			2.4E-01
	Iron	5.29E+03	ug/l	5.29E+03	ug/l	M	3.4E-01	mg/kg-day	3.00E-01	mg/kg-day			1.1E+00
	Vanadium	3.71E+01	ug/l	3.71E+01	ug/l	M	2.4E-03	mg/kg-day	7.00E-03	mg/kg-day			3.4E-01
	Zinc	1.55E+03	ug/l	1.55E+03	ug/l	M	9.9E-02	mg/kg-day	3.00E-01	mg/kg-day			3.3E-01
													3.0E+01
Dermal	Benzene	7.60E+00	ug/l	7.60E+00	ug/l	M	4.6E-05	mg/kg-day	2.91E-03	mg/kg-day			3.3E+01
	Chlorobenzene	4.00E+00	ug/l	4.00E+00	ug/l	M	5.8E-05	mg/kg-day	6.20E-03	mg/kg-day			9.3E-03
	Chloroform	6.30E+00	ug/l	6.30E+00	ug/l	M	2.3E-05	mg/kg-day	2.00E-03	mg/kg-day			1.1E-02
	cis-1,2-dichloroethene	6.60E+01	ug/l	6.60E+01	ug/l	M	2.3E-04	mg/kg-day	1.00E-02	mg/kg-day			2.2E-01
	Tetrachloroethene	1.52E+01	ug/l	1.52E+01	ug/l	M	3.7E-04	mg/kg-day	1.00E-02	mg/kg-day			3.7E-02
	Trans-1,2-dichloroethene	1.26E+01	ug/l	1.26E+01	ug/l	M	4.4E-05	mg/kg-day	1.60E-02	mg/kg-day			2.8E-03
	Trichloroethene	1.20E+03	ug/l	1.20E+03	ug/l	M	8.0E-03	mg/kg-day	9.00E-04	mg/kg-day			8.9E+00
	Vinyl Chloride	2.00E+01	ug/l	2.00E+01	ug/l	M	4.1E-05	mg/kg-day		mg/kg-day			
	Aluminum	8.48E+03	ug/l	8.48E+03	ug/l	M	1.0E-03	mg/kg-day	1.00E-01	mg/kg-day			1.0E-02
	Arsenic	2.39E+00	ug/l	2.39E+00	ug/l	M	2.8E-07	mg/kg-day	2.85E-04	mg/kg-day			9.8E-04
	Barium	2.60E+02	ug/l	2.60E+02	ug/l	M	3.1E-05	mg/kg-day	4.90E-03	mg/kg-day			6.2E-03
	Iron	5.29E+03	ug/l	5.29E+03	ug/l	M	6.2E-04	mg/kg-day	4.50E-02	mg/kg-day			1.4E-02
	Vanadium	3.71E+01	ug/l	3.71E+01	ug/l	M	4.4E-06	mg/kg-day	7.00E-05	mg/kg-day			6.2E-02
	Zinc	1.55E+03	ug/l	1.55E+03	ug/l	M	1.8E-04	mg/kg-day	7.50E-02	mg/kg-day			2.4E-03
	(total)												4.3E+01
Inhalation							Inhalation risk assumed to be equal to ingestion risk for VOAs						
	(total)												2.7E+01
												Total Hazard Index Across All Exposure Routes/Pathways	1.0E+02

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E8.16C

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT RESIDENT TO GROUNDWATER
PHASE III - AREA 1
WITH TURBID WELLS

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 1
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzene	3.40E+00	ug/l	3.40E+00	ug/l	M	3.2E-05	mg/kg-day	5.50E-02	$(mg/kg-day)^{-1}$	1.8E-06
	Chlorobenzene	2.30E+01	ug/l	2.30E+01	ug/l	M	2.2E-04	mg/kg-day		$(mg/kg-day)^{-1}$	
	1,4-Dichlorobenzene	6.30E+00	ug/l	6.30E+00	ug/l	M	5.9E-05	mg/kg-day	2.40E-02	$(mg/kg-day)^{-1}$	1.4E-06
	Chromium	1.70E+01	ug/l	1.70E+01	ug/l	M	1.6E-04	mg/kg-day		$(mg/kg-day)^{-1}$	
	Iron	2.37E+04	ug/l	2.37E+04	ug/l	M	2.2E-01	mg/kg-day		$(mg/kg-day)^{-1}$	
	Manganese	6.16E+02	ug/l	6.16E+02	ug/l	M	5.8E-03	mg/kg-day		$(mg/kg-day)^{-1}$	
	Vanadium	6.50E+01	ug/l	6.50E+01	ug/l	M	6.1E-04	mg/kg-day		$(mg/kg-day)^{-1}$	
	(total)										3.2E-06
Dermal	Benzene	3.40E+00	ug/l	3.40E+00	ug/l	M	3.3E-06	mg/kg-day	5.67E-02	$(mg/kg-day)^{-1}$	1.9E-07
	Chlorobenzene	2.30E+01	ug/l	2.30E+01	ug/l	M	5.3E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	1,4-Dichlorobenzene	6.30E+00	ug/l	6.30E+00	ug/l	M	2.7E-05	mg/kg-day	2.67E-02	$(mg/kg-day)^{-1}$	7.3E-07
	Chromium	1.70E+01	ug/l	1.70E+01	ug/l	M	3.2E-07	mg/kg-day		$(mg/kg-day)^{-1}$	
	Iron	2.37E+04	ug/l	2.37E+04	ug/l	M	4.5E-04	mg/kg-day		$(mg/kg-day)^{-1}$	
	Manganese	6.16E+02	ug/l	6.16E+02	ug/l	M	1.2E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	Vanadium	6.50E+01	ug/l	6.50E+01	ug/l	M	1.2E-06	mg/kg-day		$(mg/kg-day)^{-1}$	
	(total)										9.1E-07
Inhalation							Inhalation risk assumend to be equal to ingestion risk for VOAs.				
											3.2E-06
											7.3E-06

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E8.16C

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT RESIDENT TO GROUNDWATER
PHASE III - AREA 2/3
WITH TURBID WELLS

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 2/3
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzene	7.6	ug/l	7.6	ug/l	M	7.1E-05	mg/kg-day	5.50E-02	(mg/kg-day)$^{-1}$	3.9E-06
	Chlorobenzene	4	ug/l	4	ug/l	M	3.8E-05	mg/kg-day		(mg/kg-day)$^{-1}$	
	Chloroform	6.3	ug/l	6.3	ug/l	M	5.9E-05	mg/kg-day	6.10E-03	(mg/kg-day)$^{-1}$	3.6E-07
	cis-1,2-dichloroethene	66	ug/l	66	ug/l	M	6.2E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Tetrachloroethene	15.242	ug/l	15.242	ug/l	M	1.4E-04	mg/kg-day	5.20E-02	(mg/kg-day)$^{-1}$	7.4E-06
	Trans-1,2-dichloroethene	12.603	ug/l	12.603	ug/l	M	1.2E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Trichloroethene	1200	ug/l	1200	ug/l	M	1.1E-02	mg/kg-day	1.10E-02	(mg/kg-day)$^{-1}$	1.2E-04
	Vinyl Chloride	20	ug/l	20	ug/l	M	1.9E-04	mg/kg-day	1.40E+00	(mg/kg-day)$^{-1}$	2.6E-04
	Aluminum	8478	ug/l	8478	ug/l	M	8.0E-02	mg/kg-day		(mg/kg-day)$^{-1}$	
	Arsenic	2.385	ug/l	2.385	ug/l	M	2.2E-05	mg/kg-day	1.50E+00	(mg/kg-day)$^{-1}$	3.4E-05
	Barium	260	ug/l	260	ug/l	M	2.4E-03	mg/kg-day		(mg/kg-day)$^{-1}$	
	Iron	5290	ug/l	5290	ug/l	M	5.0E-02	mg/kg-day		(mg/kg-day)$^{-1}$	
	Vanadium	37.1	ug/l	37.1	ug/l	M	3.5E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Zinc	1550	ug/l	1550	ug/l	M	1.5E-02	mg/kg-day		(mg/kg-day)$^{-1}$	
	(total)										4.3E-04
Dermal	Benzene	7.6	ug/l	7.6	ug/l	M	7.3E-06	mg/kg-day	5.67E-02	(mg/kg-day)$^{-1}$	4.2E-07
	Chlorobenzene	4	ug/l	4	ug/l	M	9.2E-06	mg/kg-day		(mg/kg-day)$^{-1}$	
	Chloroform	6.3	ug/l	6.3	ug/l	M	3.6E-06	mg/kg-day	3.05E-02	(mg/kg-day)$^{-1}$	1.1E-07
	cis-1,2-dichloroethene	66	ug/l	66	ug/l	M	3.7E-05	mg/kg-day		(mg/kg-day)$^{-1}$	
	Tetrachloroethene	15.242	ug/l	15.242	ug/l	M	5.9E-05	mg/kg-day	5.20E-02	(mg/kg-day)$^{-1}$	3.1E-06
	Trans-1,2-dichloroethene	12.603	ug/l	12.603	ug/l	M	7.1E-06	mg/kg-day		(mg/kg-day)$^{-1}$	
	Trichloroethene	1200	ug/l	1200	ug/l	M	1.3E-03	mg/kg-day	7.33E-02	(mg/kg-day)$^{-1}$	9.4E-05
	Vinyl Chloride	20	ug/l	20	ug/l	M	6.5E-06	mg/kg-day	1.40E+00	(mg/kg-day)$^{-1}$	9.1E-06
	Aluminum	8478	ug/l	8478	ug/l	M	1.6E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Arsenic	2.385	ug/l	2.385	ug/l	M	4.5E-08	mg/kg-day	1.58E+00	(mg/kg-day)$^{-1}$	7.1E-08
	Barium	260	ug/l	260	ug/l	M	4.9E-06	mg/kg-day		(mg/kg-day)$^{-1}$	
	Iron	5290	ug/l	5290	ug/l	M	9.9E-05	mg/kg-day		(mg/kg-day)$^{-1}$	
	Vanadium	37.1	ug/l	37.1	ug/l	M	7.0E-07	mg/kg-day		(mg/kg-day)$^{-1}$	
	Zinc	1550	ug/l	1550	ug/l	M	2.9E-05	mg/kg-day		(mg/kg-day)$^{-1}$	
	(total)										1.1E-04
Inhalation							Inhalation risk assumend to be equal to ingestion risk for VOAs.				
											4.0E-04
											9.4E-04

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE E8.17C

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF CHILD RESIDENT TO GROUNDWATER
PHASE III - AREA 1
WITH TURBID WELLS

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 1
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzene	3.40E+00	ug/l	3.40E+00	ug/l	M	1.9E-05	mg/kg-day	5.50E-02	$(mg/kg\text{-}day)^{-1}$	1.0E-06
	Chlorobenzene	2.30E+01	ug/l	2.30E+01	ug/l	M	1.3E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	1,4-Dichlorobenzene	6.30E+00	ug/l	6.30E+00	ug/l	M	3.5E-05	mg/kg-day	2.40E-02	$(mg/kg\text{-}day)^{-1}$	8.3E-07
	Chromium	1.70E+01	ug/l	1.70E+01	ug/l	M	9.3E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.37E+04	ug/l	2.37E+04	ug/l	M	1.3E-01	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	6.16E+02	ug/l	6.16E+02	ug/l	M	3.4E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	6.50E+01	ug/l	6.50E+01	ug/l	M	3.6E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										1.9E-06
Dermal	Benzene	3.40E+00	ug/l	3.40E+00	ug/l	M	1.8E-06	mg/kg-day	5.67E-02	$(mg/kg\text{-}day)^{-1}$	9.9E-08
	Chlorobenzene	2.30E+01	ug/l	2.30E+01	ug/l	M	2.8E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	1,4-Dichlorobenzene	6.30E+00	ug/l	6.30E+00	ug/l	M	1.5E-05	mg/kg-day	2.67E-02	$(mg/kg\text{-}day)^{-1}$	3.9E-07
	Chromium	1.70E+01	ug/l	1.70E+01	ug/l	M	1.7E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.37E+04	ug/l	2.37E+04	ug/l	M	2.4E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	6.16E+02	ug/l	6.16E+02	ug/l	M	6.2E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	6.50E+01	ug/l	6.50E+01	ug/l	M	6.5E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										4.9E-07
Inhalation							Inhalation risk assumed to be equal to ingestion risk for VOAs.				
											1.9E-06
										Total Risk Estimate Across All Exposure Routes/Pathways	**4.2E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE E8.17C

REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF CHILD RESIDENT TO GROUNDWATER
PHASE III - AREA 2/3
WITH TURBID WELLS

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Area 2/3
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzene	7.60E+00	ug/l	7.60E+00	ug/l	M	4.2E-05	mg/kg-day	5.50E-02	$(mg/kg-day)^{-1}$	2.3E-06
	Chlorobenzene	4.00E+00	ug/l	4.00E+00	ug/l	M	2.2E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	Chloroform	6.30E+00	ug/l	6.30E+00	ug/l	M	3.5E-05	mg/kg-day	6.10E-03	$(mg/kg-day)^{-1}$	2.1E-07
	cis-1,2-dichloroethene	6.60E+01	ug/l	6.60E+01	ug/l	M	3.6E-04	mg/kg-day		$(mg/kg-day)^{-1}$	
	Tetrachloroethene	1.52E+01	ug/l	1.52E+01	ug/l	M	8.4E-05	mg/kg-day	5.20E-02	$(mg/kg-day)^{-1}$	4.3E-06
	Trans-1,2-dichloroethene	1.26E+01	ug/l	1.26E+01	ug/l	M	6.9E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	Trichloroethene	1.20E+03	ug/l	1.20E+03	ug/l	M	6.6E-03	mg/kg-day	1.10E-02	$(mg/kg-day)^{-1}$	7.2E-05
	Vinyl Chloride	2.00E+01	ug/l	2.00E+01	ug/l	M	1.1E-04	mg/kg-day	1.40E+00	$(mg/kg-day)^{-1}$	1.5E-04
	Aluminum	8.48E+03	ug/l	8.48E+03	ug/l	M	4.6E-02	mg/kg-day		$(mg/kg-day)^{-1}$	
	Arsenic	2.39E+00	ug/l	2.39E+00	ug/l	M	1.3E-05	mg/kg-day	1.50E+00	$(mg/kg-day)^{-1}$	2.0E-05
	Barium	2.60E+02	ug/l	2.60E+02	ug/l	M	1.4E-03	mg/kg-day		$(mg/kg-day)^{-1}$	
	Iron	5.29E+03	ug/l	5.29E+03	ug/l	M	2.9E-02	mg/kg-day		$(mg/kg-day)^{-1}$	
	Vanadium	3.71E+01	ug/l	3.71E+01	ug/l	M	2.0E-04	mg/kg-day		$(mg/kg-day)^{-1}$	
	Zinc	1.55E+03	ug/l	1.55E+03	ug/l	M	8.5E-03	mg/kg-day		$(mg/kg-day)^{-1}$	
	(total)										2.5E-04
Dermal	Benzene	7.60E+00	ug/l	7.60E+00	ug/l	M	3.9E-06	mg/kg-day	5.67E-02	$(mg/kg-day)^{-1}$	2.2E-07
	Chlorobenzene	4.00E+00	ug/l	4.00E+00	ug/l	M	4.9E-06	mg/kg-day		$(mg/kg-day)^{-1}$	
	Chloroform	6.30E+00	ug/l	6.30E+00	ug/l	M	1.9E-06	mg/kg-day	3.05E-02	$(mg/kg-day)^{-1}$	5.9E-08
	cis-1,2-dichloroethene	6.60E+01	ug/l	6.60E+01	ug/l	M	2.0E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	Tetrachloroethene	1.52E+01	ug/l	1.52E+01	ug/l	M	3.2E-05	mg/kg-day	5.20E-02	$(mg/kg-day)^{-1}$	1.6E-06
	Trans-1,2-dichloroethene	1.26E+01	ug/l	1.26E+01	ug/l	M	3.8E-06	mg/kg-day		$(mg/kg-day)^{-1}$	
	Trichloroethene	1.20E+03	ug/l	1.20E+03	ug/l	M	6.9E-04	mg/kg-day	7.33E-02	$(mg/kg-day)^{-1}$	5.0E-05
	Vinyl Chloride	2.00E+01	ug/l	2.00E+01	ug/l	M	3.5E-06	mg/kg-day	1.40E+00	$(mg/kg-day)^{-1}$	4.9E-06
	Aluminum	8.48E+03	ug/l	8.48E+03	ug/l	M	8.5E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	Arsenic	2.39E+00	ug/l	2.39E+00	ug/l	M	2.4E-08	mg/kg-day	1.58E+00	$(mg/kg-day)^{-1}$	3.8E-08
	Barium	2.60E+02	ug/l	2.60E+02	ug/l	M	2.6E-06	mg/kg-day		$(mg/kg-day)^{-1}$	
	Iron	5.29E+03	ug/l	5.29E+03	ug/l	M	5.3E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	Vanadium	3.71E+01	ug/l	3.71E+01	ug/l	M	3.7E-07	mg/kg-day		$(mg/kg-day)^{-1}$	
	Zinc	1.55E+03	ug/l	1.55E+03	ug/l	M	1.6E-05	mg/kg-day		$(mg/kg-day)^{-1}$	
	(total)										5.7E-05
Inhalation							Inhalation risk assumed to be equal to ingestion risk for VOAs				
											2.3E-04
										Total Risk Estimate Across All Exposure Routes/Pathways	**5.4E-04**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG:	PERMANENT DATUM: Mean Sea Level	OTHER SERVICES:
GAMMA INDUCTION RES	LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL

WELL IDENTIFICATION: OLD–OU2–01B

COUNTY: ORANGE STATE: FL

COORDINATES:
N:
E:

ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439

WELL: OLD–OU2–01B

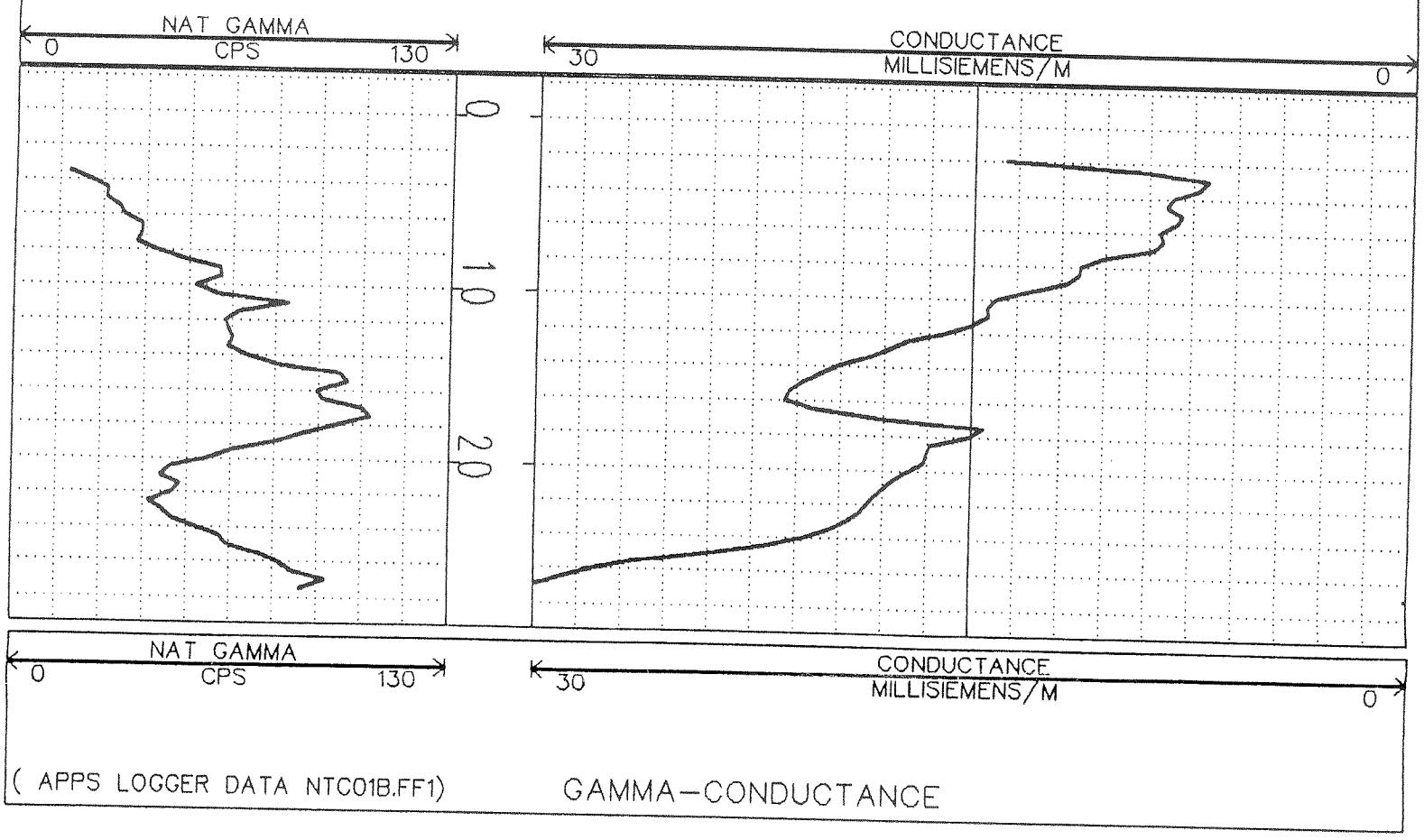
LOCATION: NTC ORLANDO

98–1

	Run No. 1		Run No. 1
Date	06–24–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	27 FEET	Fluid Viscosity	
Footage Logged	27 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	CLIFF HARRISON

REMARKS:

(APPS LOGGER DATA NTC01B.FF1) GAMMA–CONDUCTANCE



(APPS LOGGER DATA NTC01B.FF1) GAMMA–CONDUCTANCE

Woodward-Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98-1

GEOPHYSICAL WELL LOG: GAMMA INDUCTION RES	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	OTHER SERVICES:

COMPANY: BROWN AND ROOT/TETRA TECH
NTC-ORL
WELL IDENTIFICATION: OLD-OU2-02B

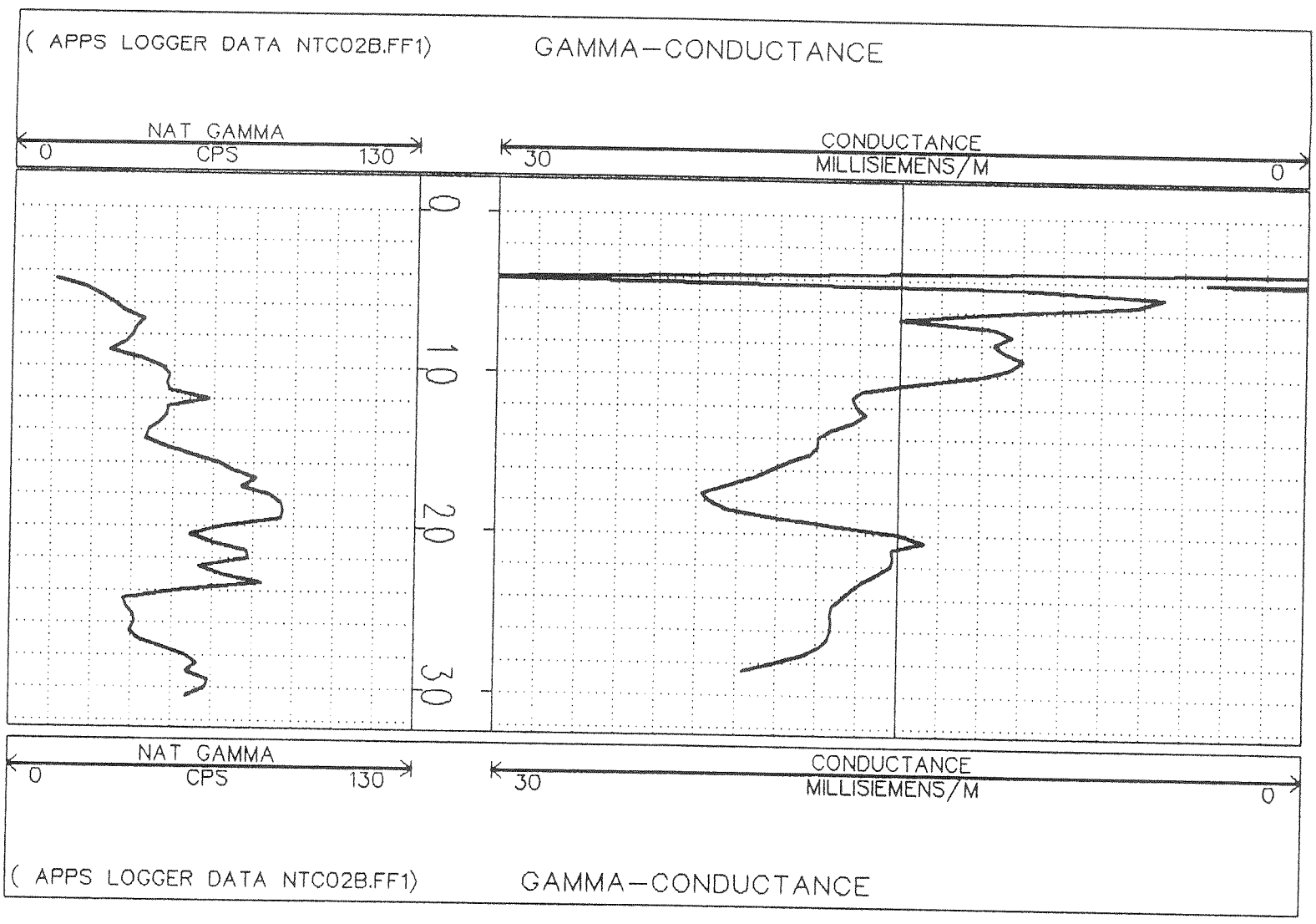
COUNTY: ORANGE STATE: FL

COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98-1
WELL: OLD-OU2-02B
LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06-24-98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	31 FEET	Fluid Viscosity	
Footage Logged	31 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	CLIFF HARRISON

REMARKS:



Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG: GAMMA INDUCTION RES	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	OTHER SERVICES:

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL
WELL IDENTIFICATION: OLD–OU2–03B

COUNTY: ORANGE STATE: FL

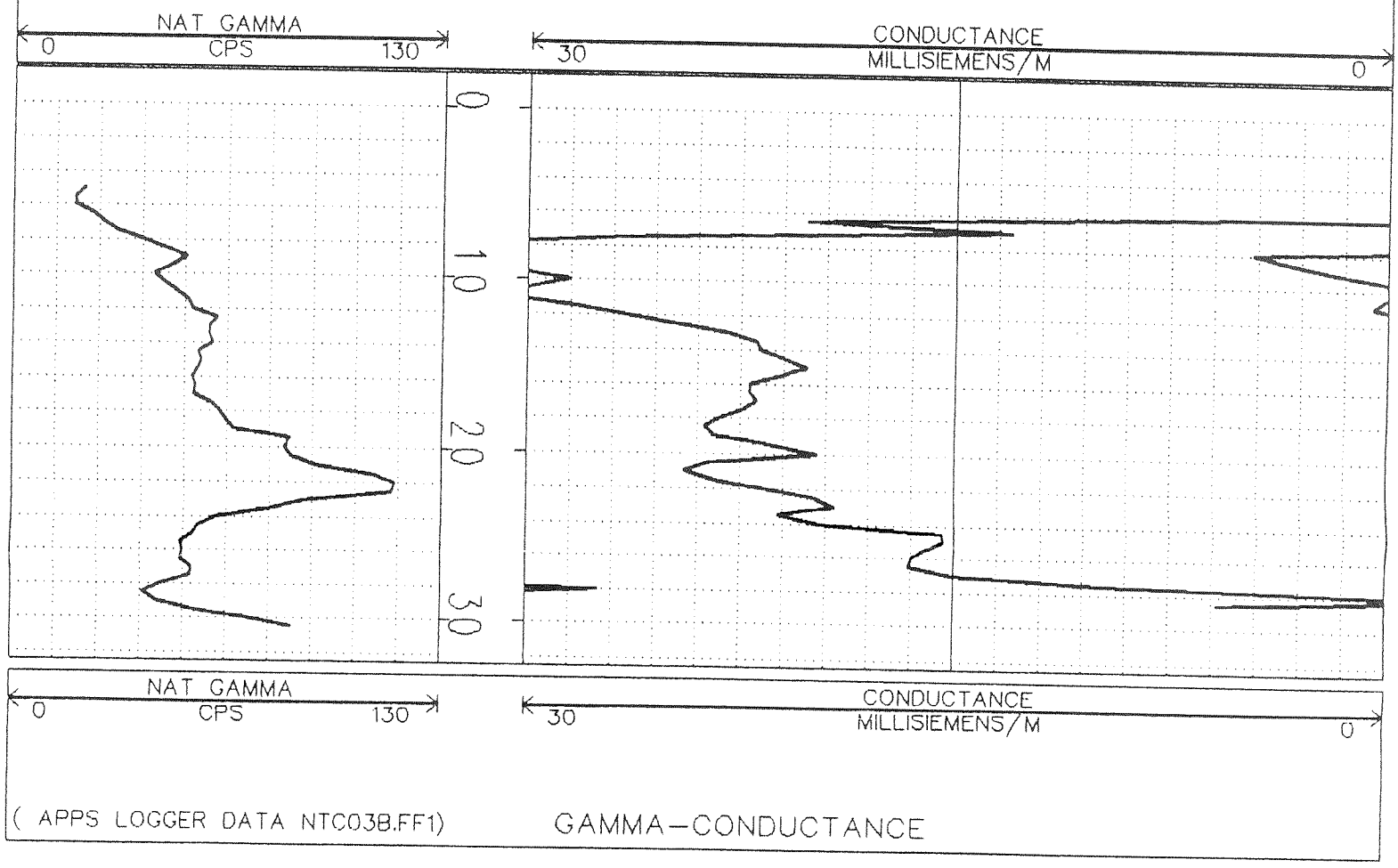
COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98–1
WELL: OLD–OU2–03B
LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06–24–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	31 FEET	Fluid Viscosity	
Footage Logged	31 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	CLIFF HARRISON

REMARKS:

(APPS LOGGER DATA NTC03B.FF1) GAMMA–CONDUCTANCE



(APPS LOGGER DATA NTC03B.FF1) GAMMA–CONDUCTANCE

Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG: GAMMA INDUCTION RES	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	OTHER SERVICES:

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL
WELL IDENTIFICATION: OLD–OU2–04B

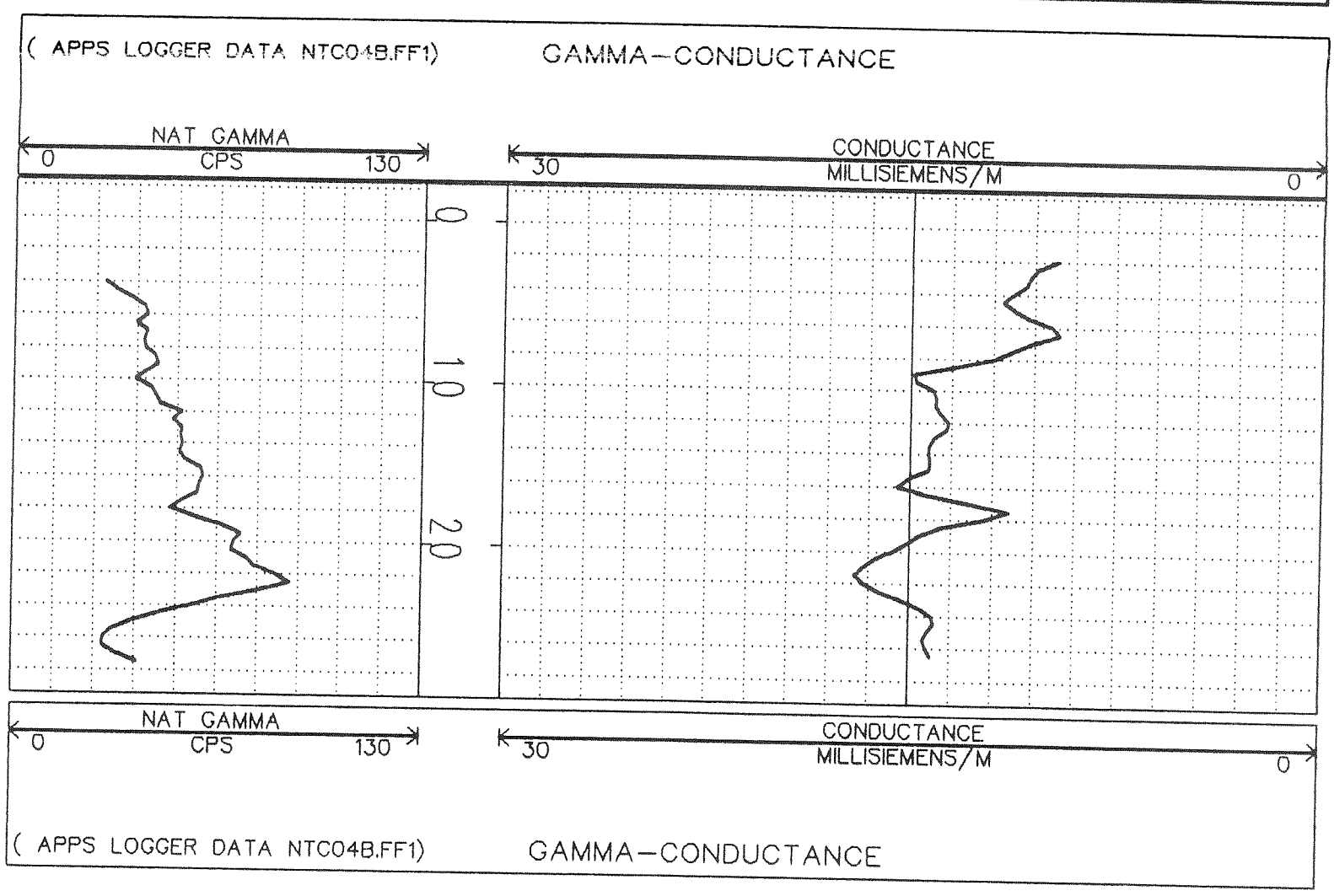
COUNTY: ORANGE STATE: FL

COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98–1
WELL: OLD–OU2–04B
LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06–25–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	27 FEET	Fluid Viscosity	
Footage Logged	27 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	

REMARKS:



Woodward-Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98-1

GEOPHYSICAL WELL LOG: GAMMA INDUCTION RES	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	OTHER SERVICES:

COMPANY: BROWN AND ROOT/TETRA TECH
NTC-ORL
WELL IDENTIFICATION: OLD-OU2-05B

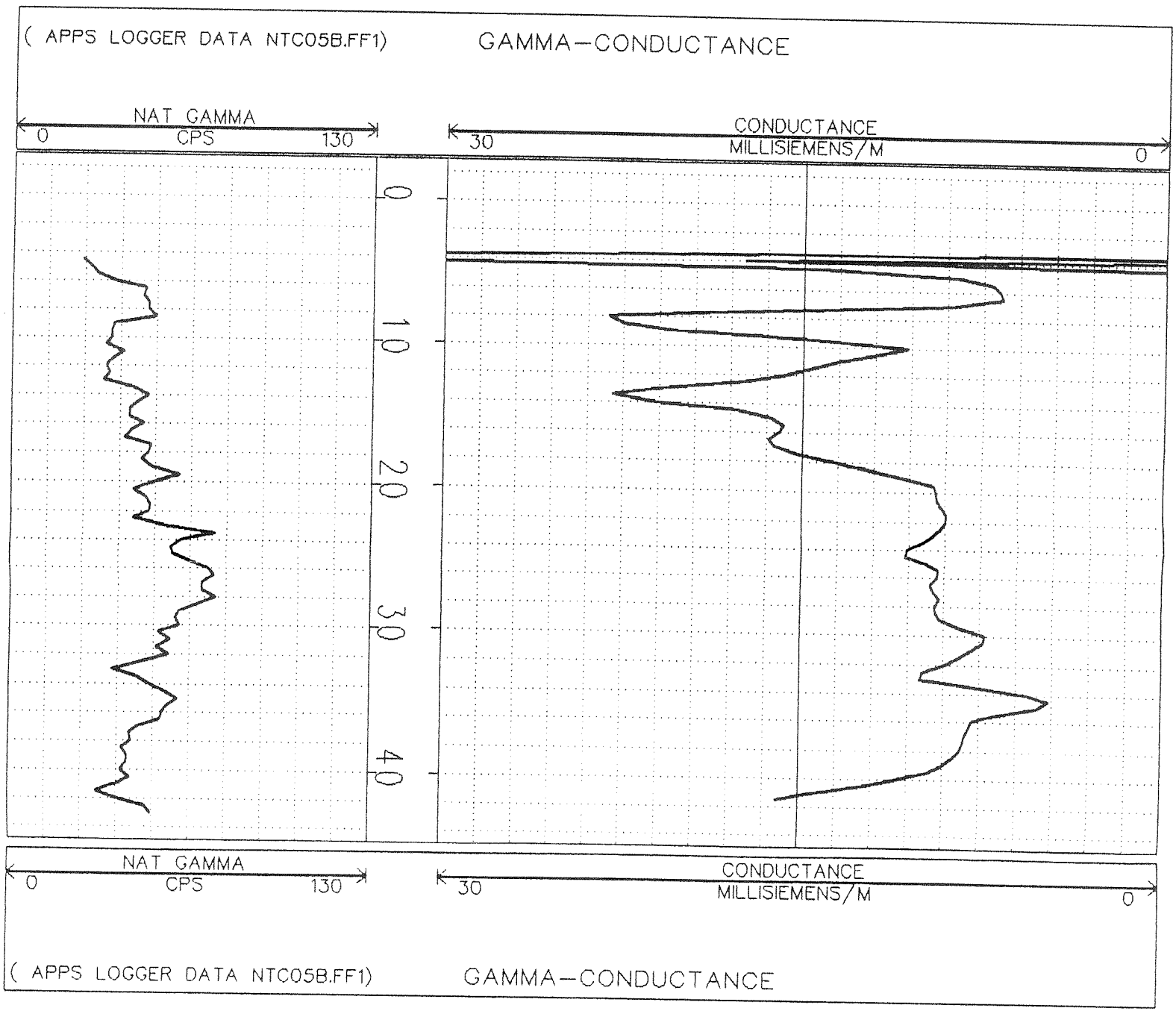
COUNTY: ORANGE STATE: FL

COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98-1
WELL: OLD-OU2-05B
LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06-24-98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	43 FEET	Fluid Viscosity	
Footage Logged	43 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	CLIFF HARRISON

REMARKS:



Woodward-Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98-1

GEOPHYSICAL WELL LOG:	PERMANENT DATUM: Mean Sea Level	OTHER SERVICES:
GAMMA INDUCTION RES	LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	

COMPANY: BROWN AND ROOT/TETRA TECH
NTC-ORL

WELL IDENTIFICATION: OLD-OU2-06B

COUNTY: ORANGE STATE: FL

COORDINATES:
N:
E:

ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98-1

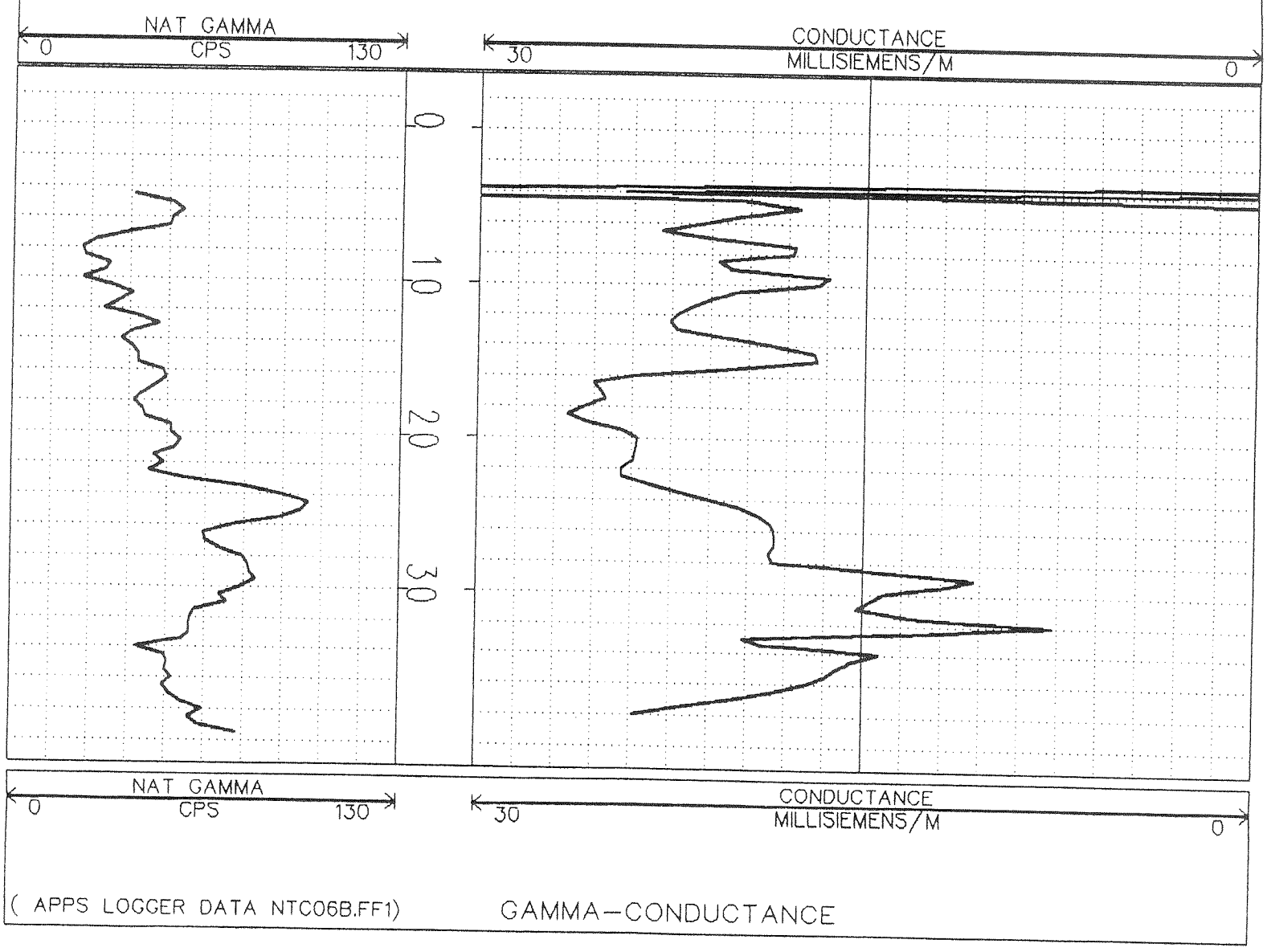
WELL: OLD-OU2-06B

LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06-24-98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	39 FEET	Fluid Viscosity	
Footage Logged	39 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	CLIFF HARRISON

REMARKS:

(APPS LOGGER DATA NTC06B.FF1) GAMMA-CONDUCTANCE



(APPS LOGGER DATA NTC06B.FF1) GAMMA-CONDUCTANCE

Woodward-Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98-1

GEOPHYSICAL WELL LOG: GAMMA INDUCTION RES	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	OTHER SERVICES:

COMPANY: BROWN AND ROOT/TETRA TECH
NTC-ORL
WELL IDENTIFICATION: OLD-OU2-07B

COUNTY: ORANGE STATE: FL

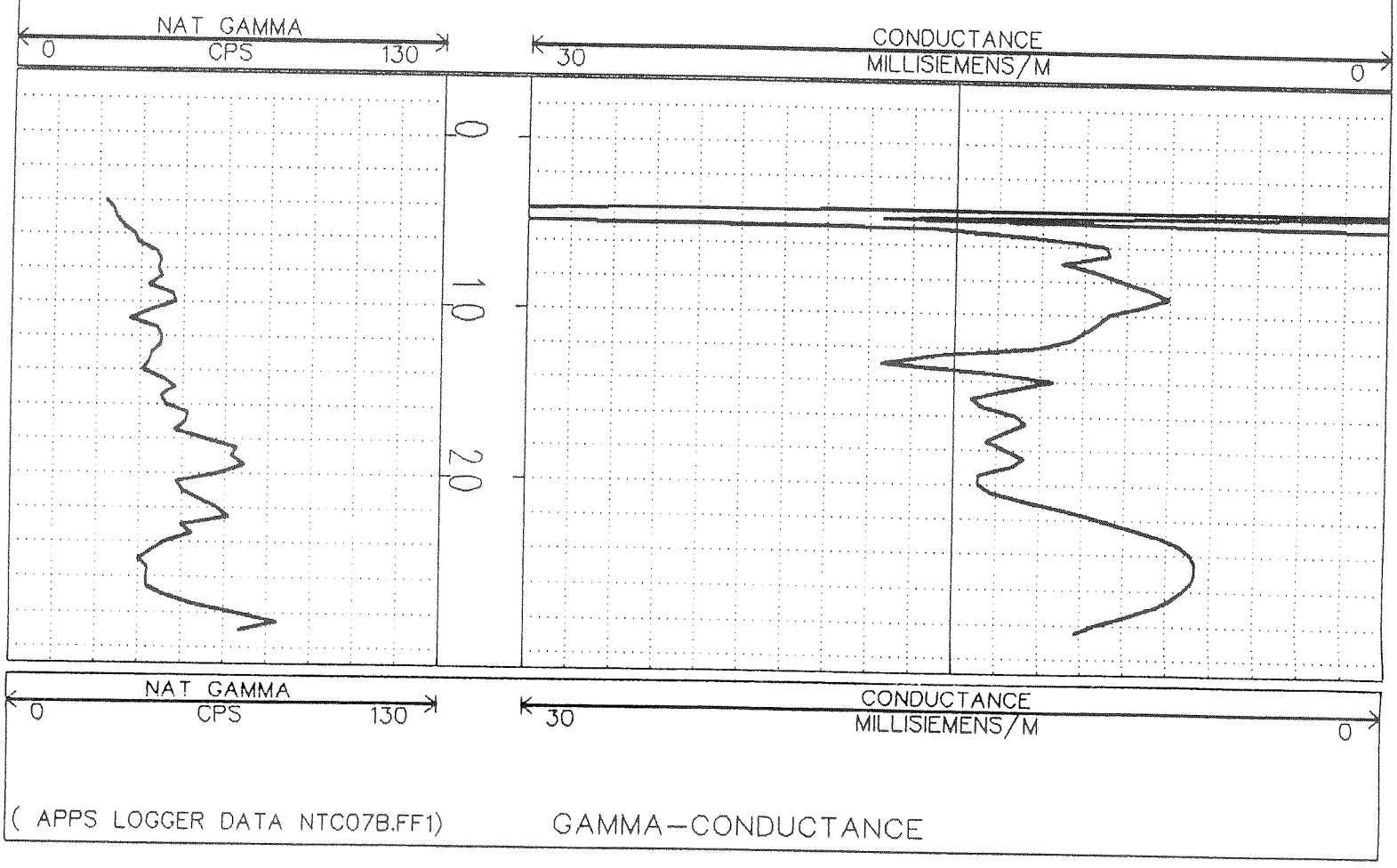
COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98-1
WELL: OLD-OU2-07B
LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06-24-98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	29 FEET	Fluid Viscosity	
Footage Logged	29 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	CLIFF HARRISON

REMARKS:

(APPS LOGGER DATA NTC07B.FF1) GAMMA-CONDUCTANCE



(APPS LOGGER DATA NTC07B.FF1) GAMMA-CONDUCTANCE

Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG: GAMMA INDUCTION RES	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	OTHER SERVICES:

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL
WELL IDENTIFICATION: OLD–OU2–08B

COUNTY: ORANGE STATE: FL

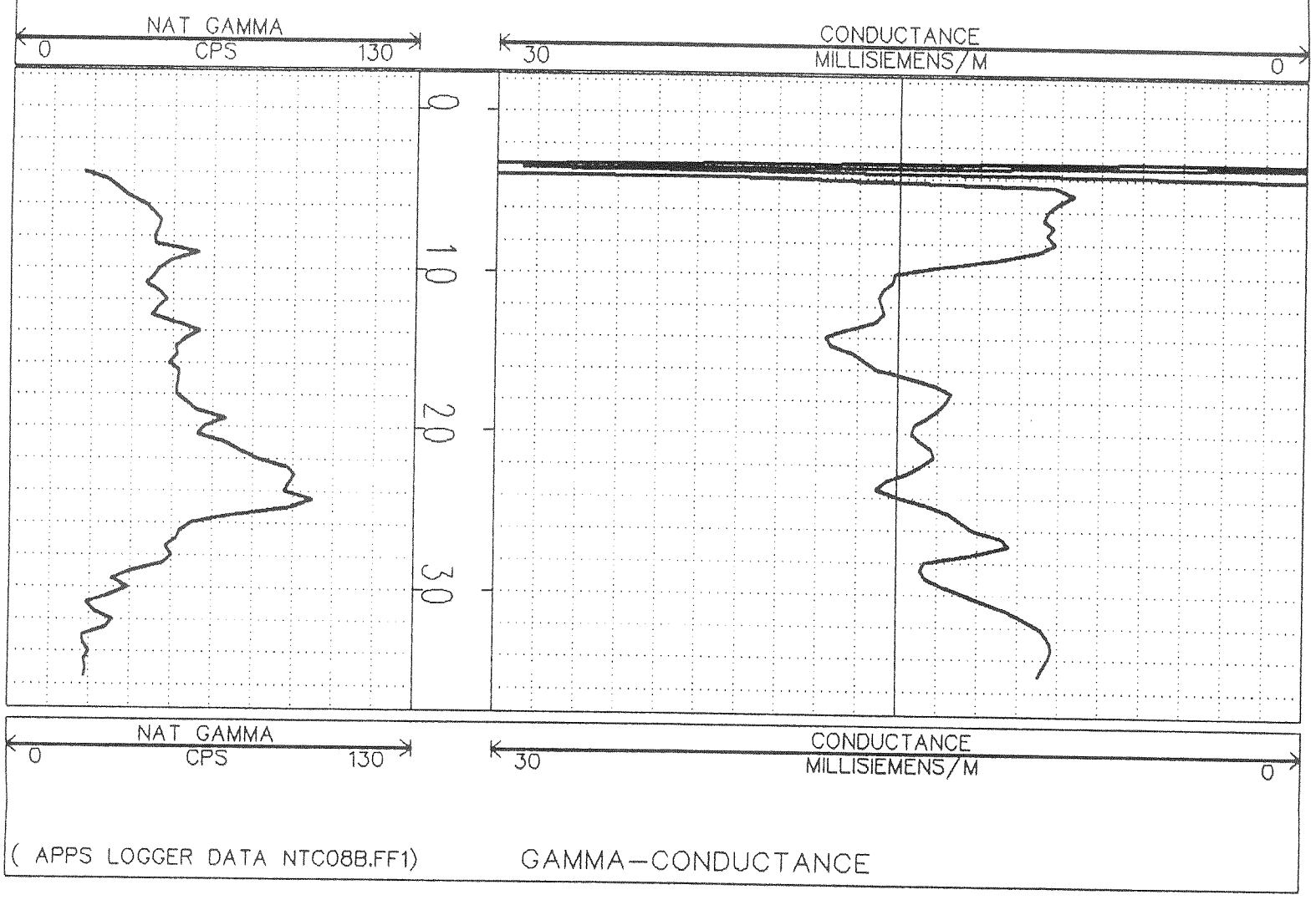
COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98–1
WELL: OLD–OU2–08B
LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06–24–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	36 FEET	Fluid Viscosity	
Footage Logged	36 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	CLIFF HARRISON

REMARKS:

(APPS LOGGER DATA NTC08B.FF1) GAMMA–CONDUCTANCE



(APPS LOGGER DATA NTC08B.FF1) GAMMA–CONDUCTANCE

Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG: GAMMA INDUCTION RES	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	OTHER SERVICES:

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL
WELL IDENTIFICATION: OLD–OU2–09B

COUNTY: ORANGE STATE: FL

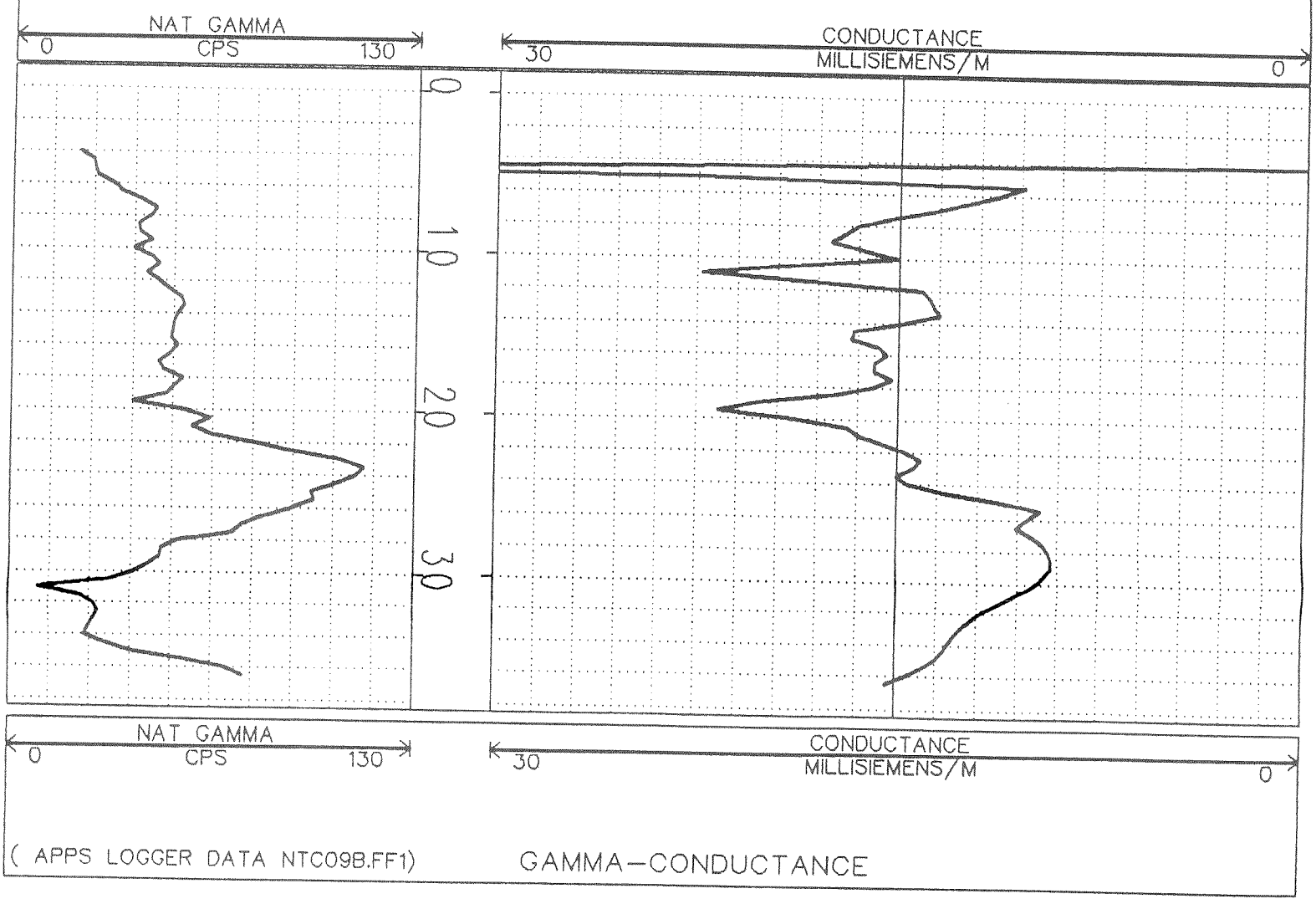
COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439
WELL: OLD–OU2–09B
LOCATION: NTC ORLANDO
98–1

	Run No. 1		Run No. 1
Date	06–25–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	37 FEET	Fluid Viscosity	
Footage Logged	37 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	

REMARKS:

(APPS LOGGER DATA NTC09B.FF1) GAMMA–CONDUCTANCE



(APPS LOGGER DATA NTC09B.FF1) GAMMA–CONDUCTANCE

Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG: GAMMA INDUCTION RES	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	OTHER SERVICES:

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL
WELL IDENTIFICATION: OLD–OU2–10B

COUNTY: ORANGE STATE: FL

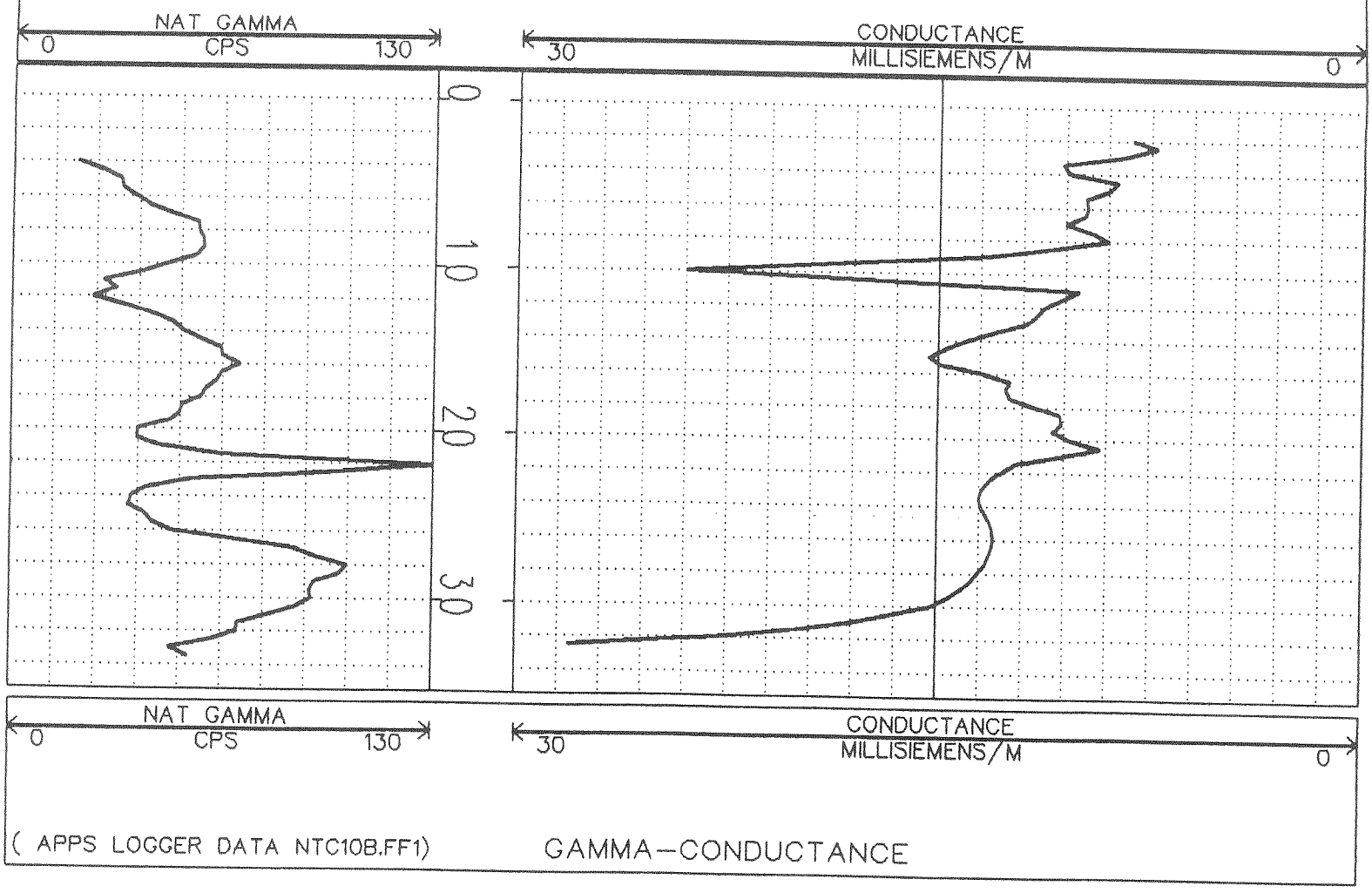
COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98–1
WELL: OLD–OU2–10B
LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06–25–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	33 FEET	Fluid Viscosity	
Footage Logged	33 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	

REMARKS:

(APPS LOGGER DATA NTC10B.FF1) GAMMA–CONDUCTANCE



(APPS LOGGER DATA NTC10B.FF1) GAMMA–CONDUCTANCE

Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG: GAMMA INDUCTION RES	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	OTHER SERVICES:

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL
WELL IDENTIFICATION: OLD–OU2–11B

COUNTY: ORANGE STATE: FL

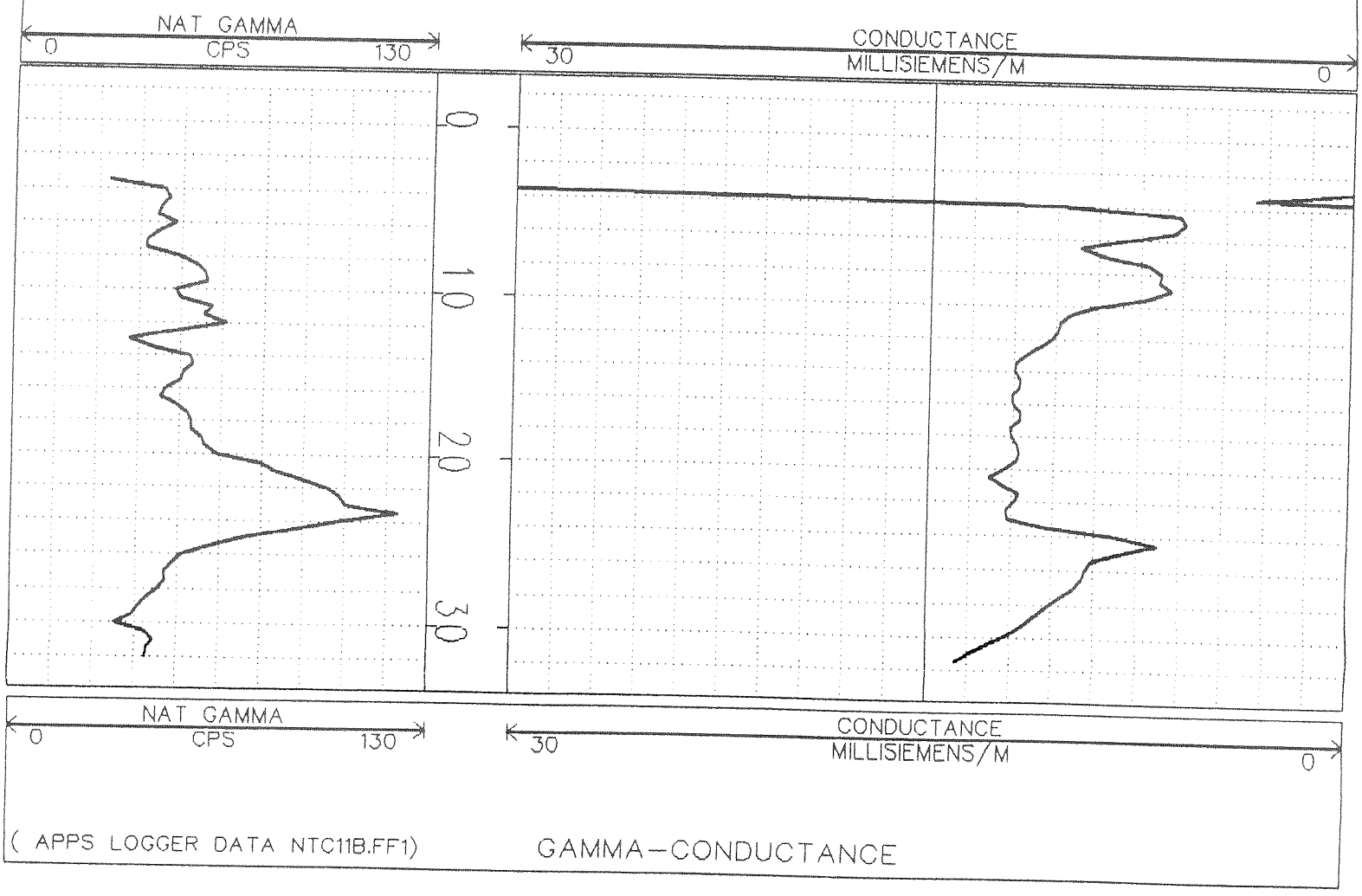
COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98–1
WELL: OLD–OU2–11B
LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06–24–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	32 FEET	Fluid Viscosity	
Footage Logged	32 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	CLIFF HARRISON

REMARKS:

(APPS LOGGER DATA NTC11B.FF1) GAMMA–CONDUCTANCE



(APPS LOGGER DATA NTC11B.FF1) GAMMA–CONDUCTANCE

Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG: GAMMA INDUCTION RES	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	OTHER SERVICES:

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL
WELL IDENTIFICATION: OLD–OU2–12B

COUNTY: ORANGE STATE: FL

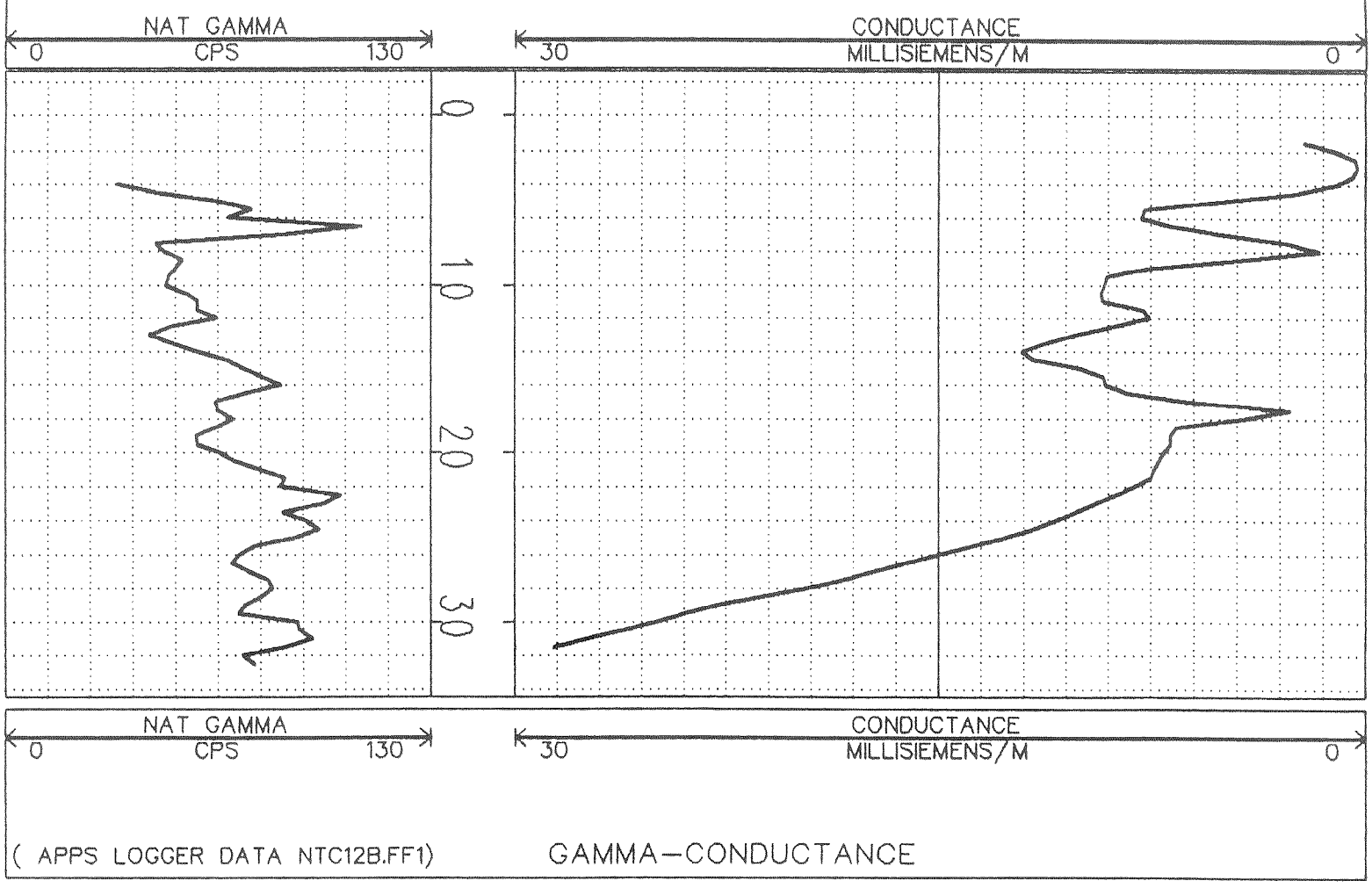
COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98–1
WELL: OLD–OU2–12B
LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06–25–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	33 FEET	Fluid Viscosity	
Footage Logged	33 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	

REMARKS:

(APPS LOGGER DATA NTC12B.FF1) GAMMA–CONDUCTANCE



(APPS LOGGER DATA NTC12B.FF1) GAMMA–CONDUCTANCE

Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG:	PERMANENT DATUM: Mean Sea Level	OTHER SERVICES:
GAMMA INDUCTION RES	LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL
WELL IDENTIFICATION: OLD–OU2–13B

COUNTY: ORANGE STATE: FL

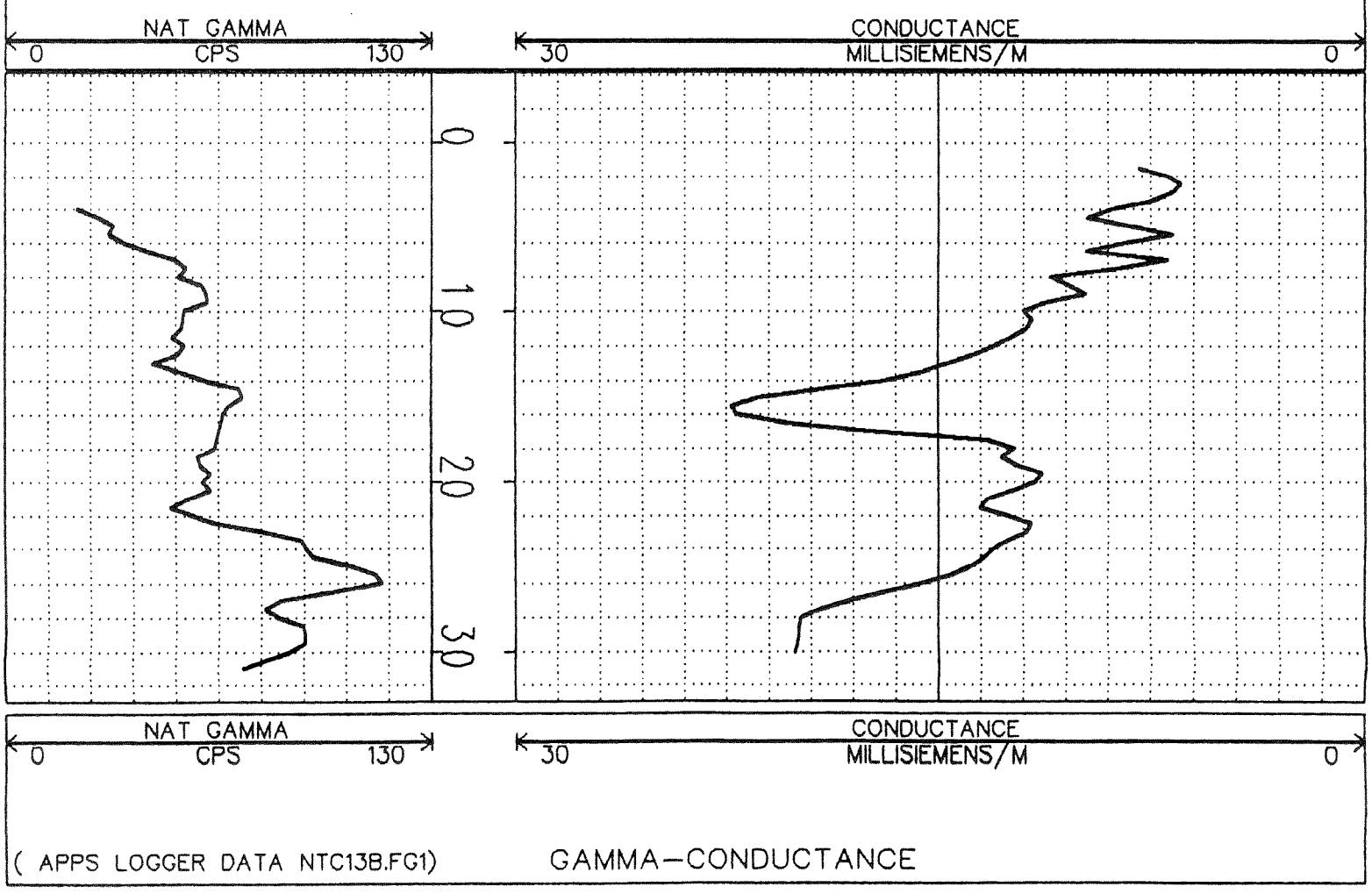
COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98–1
WELL: OLD–OU2–13B
LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06–25–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	31 FEET	Fluid Viscosity	
Footage Logged	31 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	

REMARKS:

(APPS LOGGER DATA NTC13B.FG1) GAMMA–CONDUCTANCE



(APPS LOGGER DATA NTC13B.FG1) GAMMA–CONDUCTANCE

Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG:	PERMANENT DATUM: Mean Sea Level	OTHER SERVICES:
GAMMA INDUCTION RES	LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL

WELL IDENTIFICATION: OLD–OU2–14B

COUNTY: ORANGE STATE: FL

COORDINATES:
N:
E:

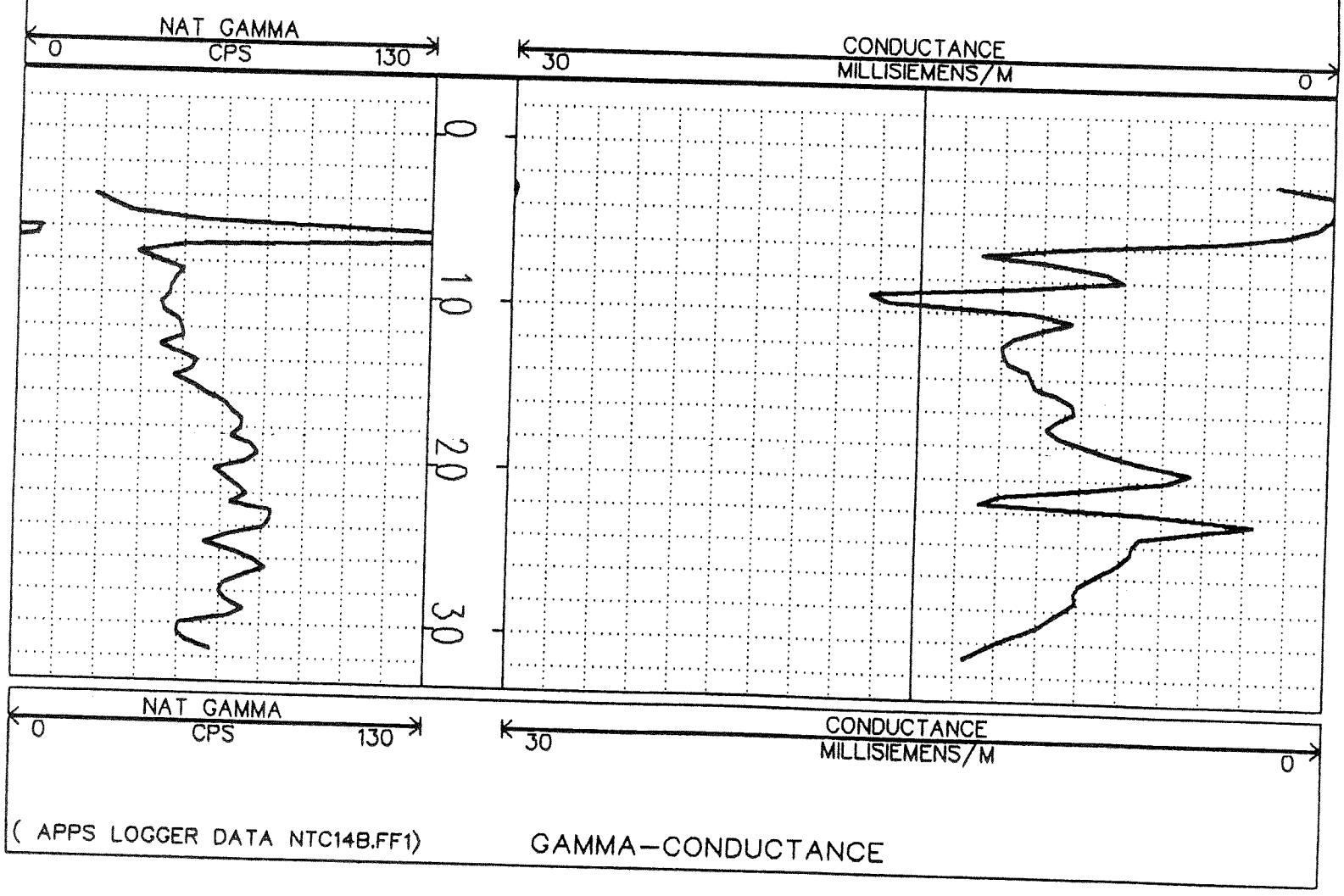
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439
WELL: OLD–OU2–14B
LOCATION: NTC ORLANDO
98–1

	Run No. 1		Run No. 1
Date	06–25–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	32 FEET	Fluid Viscosity	
Footage Logged	32 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	

REMARKS:

(APPS LOGGER DATA NTC14B.FF1) GAMMA–CONDUCTANCE



(APPS LOGGER DATA NTC14B.FF1) GAMMA–CONDUCTANCE

Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG: GAMMA INDUCTION RES	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	OTHER SERVICES:

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL
WELL IDENTIFICATION: OLD–OU2–15B

COUNTY: ORANGE STATE: FL

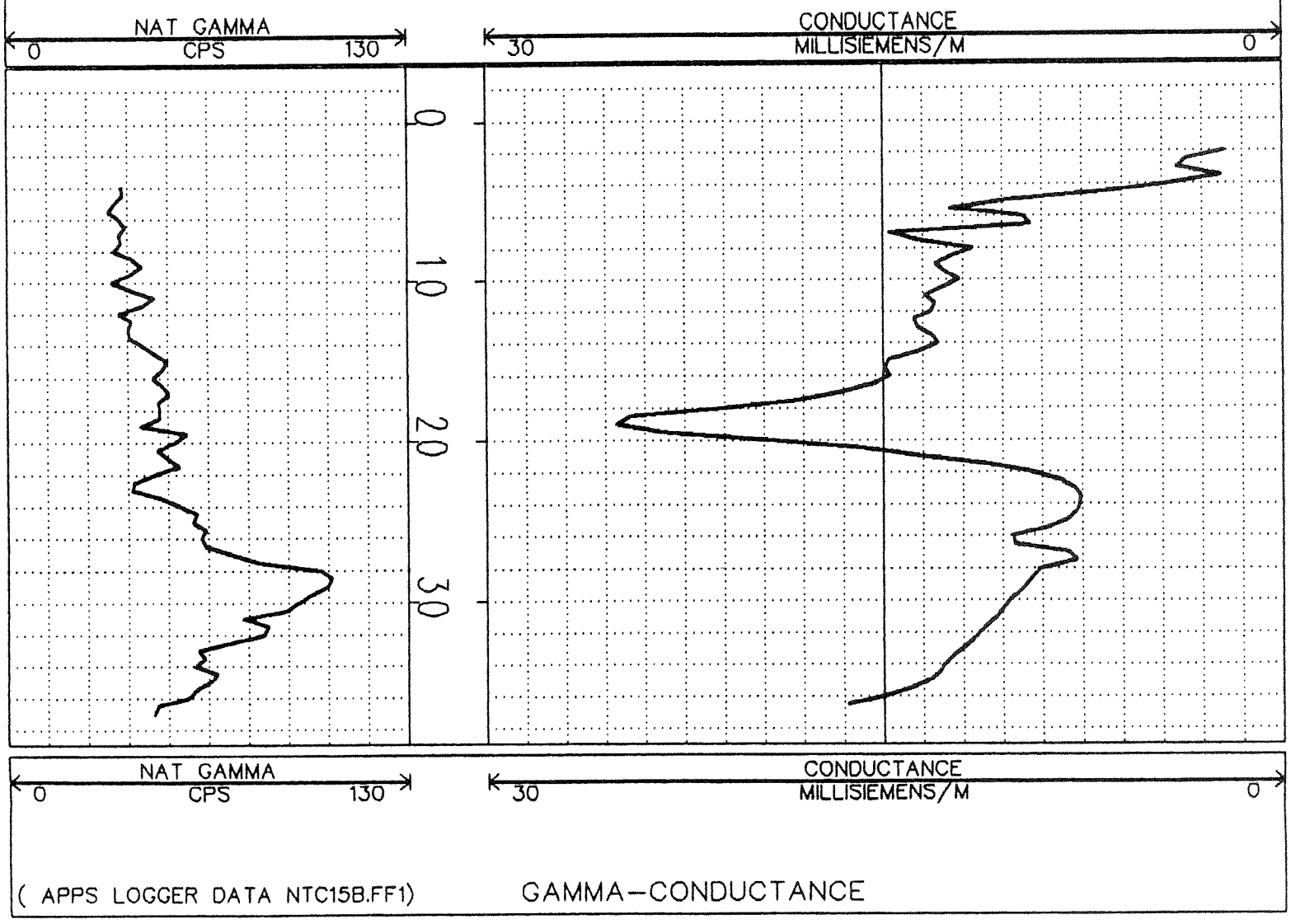
COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98–1
WELL: OLD–OU2–15B
LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06–25–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	37 FEET	Fluid Viscosity	
Footage Logged	37 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	

REMARKS:

(APPS LOGGER DATA NTC15B.FF1) GAMMA–CONDUCTANCE



(APPS LOGGER DATA NTC15B.FF1) GAMMA–CONDUCTANCE

Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG:	PERMANENT DATUM: Mean Sea Level	OTHER SERVICES:
GAMMA INDUCTION RES	LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL
WELL IDENTIFICATION: OLD–OU2–16B

COUNTY: ORANGE STATE: FL

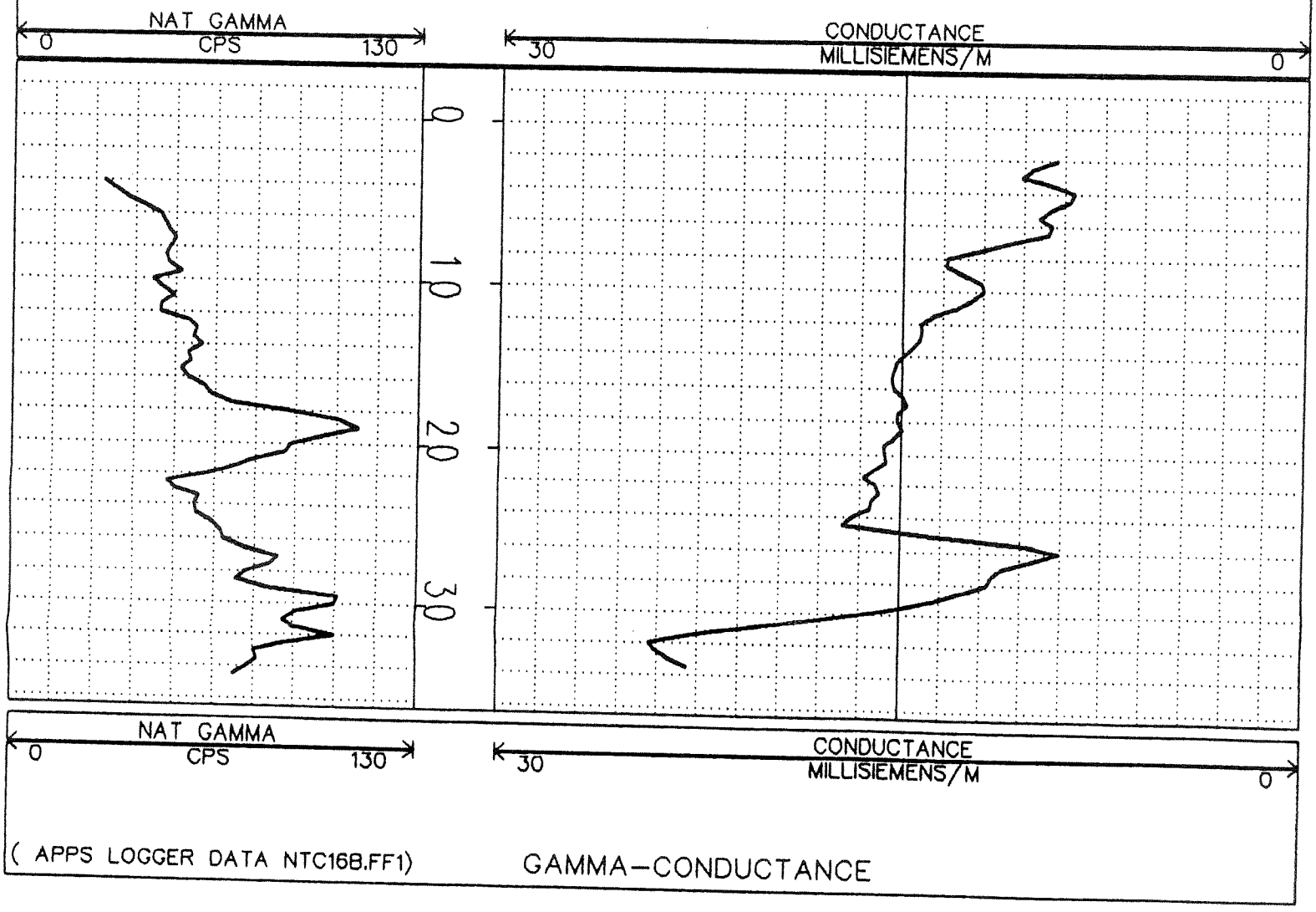
COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439
WELL: OLD–OU2–16B
LOCATION: NTC ORLANDO
98–1

	Run No. 1		Run No. 1
Date	06–25–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	35 FEET	Fluid Viscosity	
Footage Logged	35 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	

REMARKS:

(APPS LOGGER DATA NTC16B.FF1) GAMMA–CONDUCTANCE



(APPS LOGGER DATA NTC16B.FF1) GAMMA–CONDUCTANCE

Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG: GAMMA INDUCTION RES	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	OTHER SERVICES:

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL
WELL IDENTIFICATION: OLD–OU2–17B

COUNTY: ORANGE STATE: FL

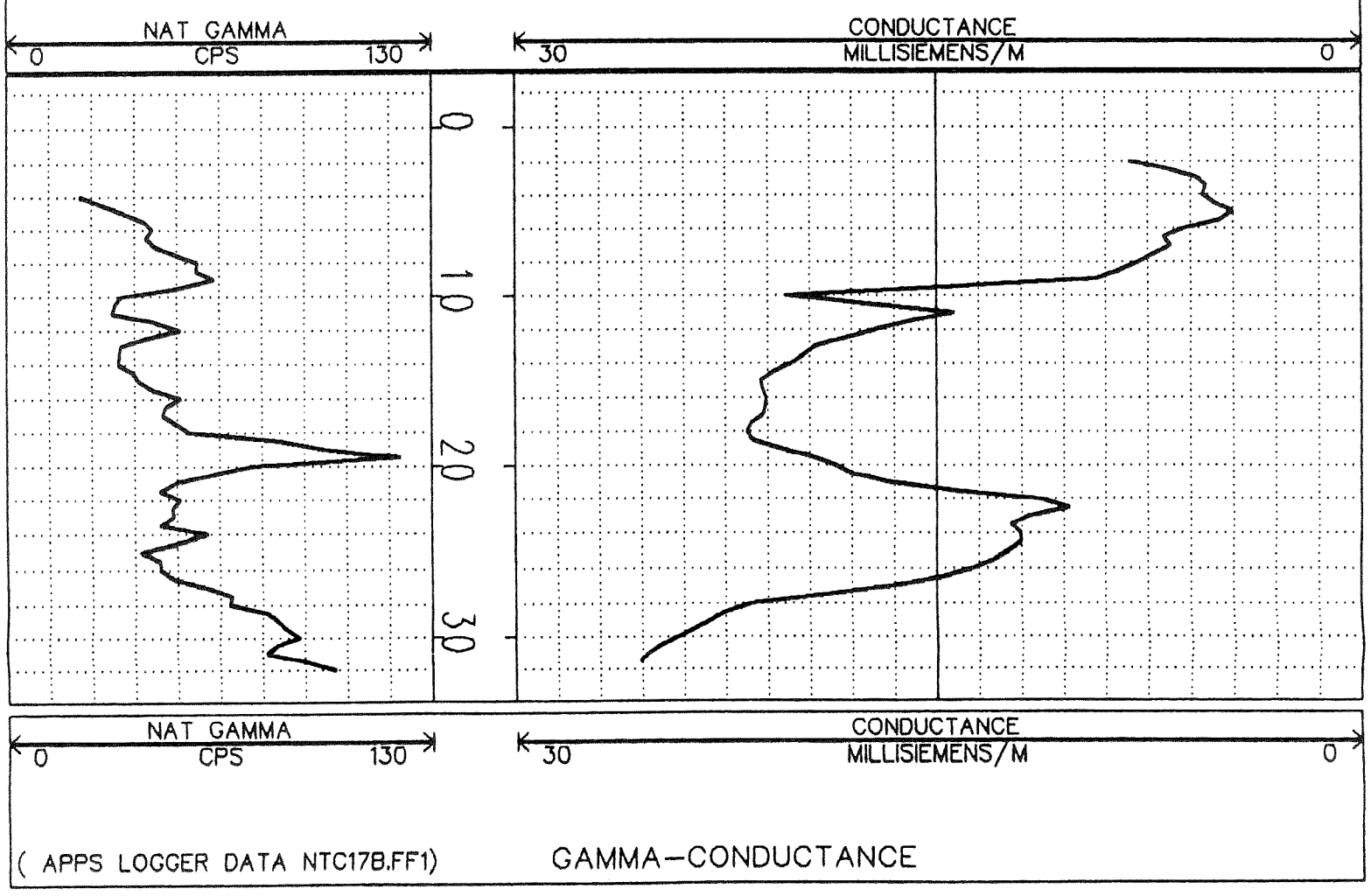
COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98–1
WELL: OLD–OU2–17B
LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06–25–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	32 FEET	Fluid Viscosity	
Footage Logged	32 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	

REMARKS:

(APPS LOGGER DATA NTC17B.FF1) GAMMA–CONDUCTANCE



(APPS LOGGER DATA NTC17B.FF1) GAMMA–CONDUCTANCE

Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG: GAMMA INDUCTION RES	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	OTHER SERVICES:

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL
WELL IDENTIFICATION: OLD–OU2–18B

COUNTY: ORANGE STATE: FL

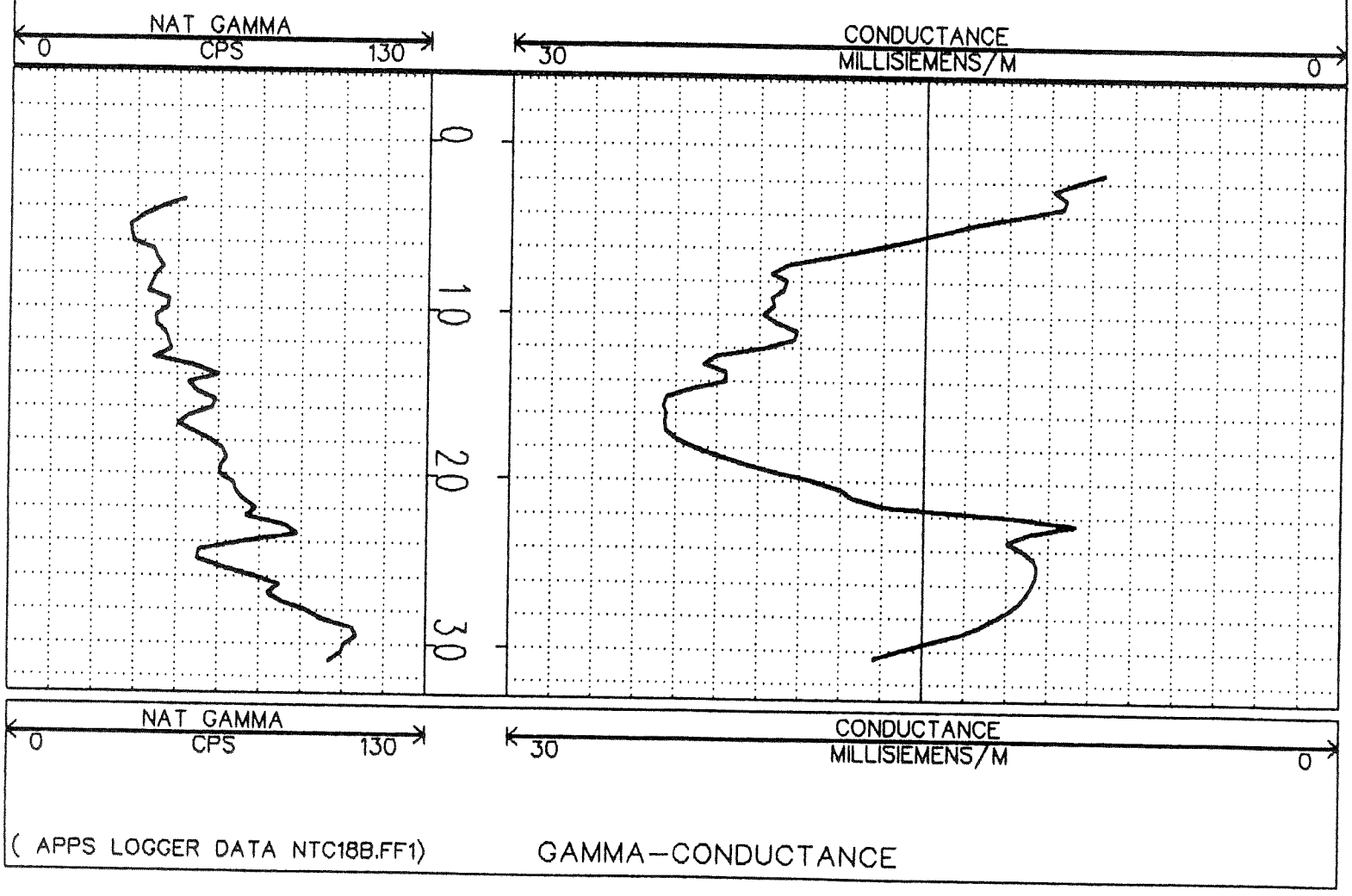
COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98–1
WELL: OLD–OU2–18B
LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06–25–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	31 FEET	Fluid Viscosity	
Footage Logged	31 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	

REMARKS:

(APPS LOGGER DATA NTC18B.FF1) GAMMA–CONDUCTANCE



(APPS LOGGER DATA NTC18B.FF1) GAMMA–CONDUCTANCE

Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG:	PERMANENT DATUM: Mean Sea Level	OTHER SERVICES:
GAMMA INDUCTION RES	LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL
WELL IDENTIFICATION: OLD–OU2–19B

COUNTY: ORANGE STATE: FL

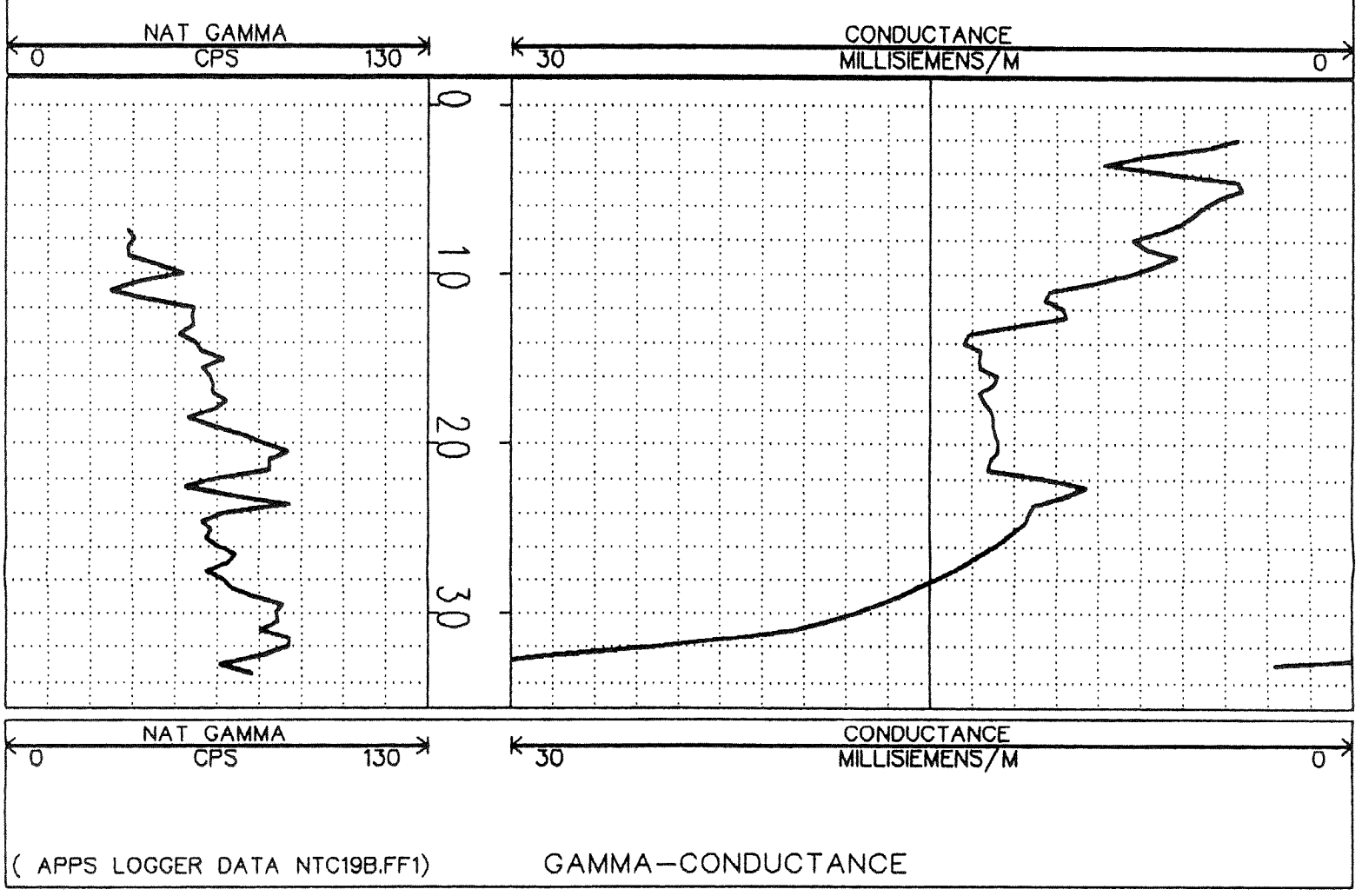
COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98–1
WELL: OLD–OU2–19B
LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06–25–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	33 FEET	Fluid Viscosity	
Footage Logged	33 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	

REMARKS:

(APPS LOGGER DATA NTC19B.FF1) GAMMA–CONDUCTANCE



(APPS LOGGER DATA NTC19B.FF1) GAMMA–CONDUCTANCE

Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG:	PERMANENT DATUM: Mean Sea Level	OTHER SERVICES:
GAMMA INDUCTION RES	LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL
WELL IDENTIFICATION: OLD–OU2–20B

COUNTY: ORANGE STATE: FL

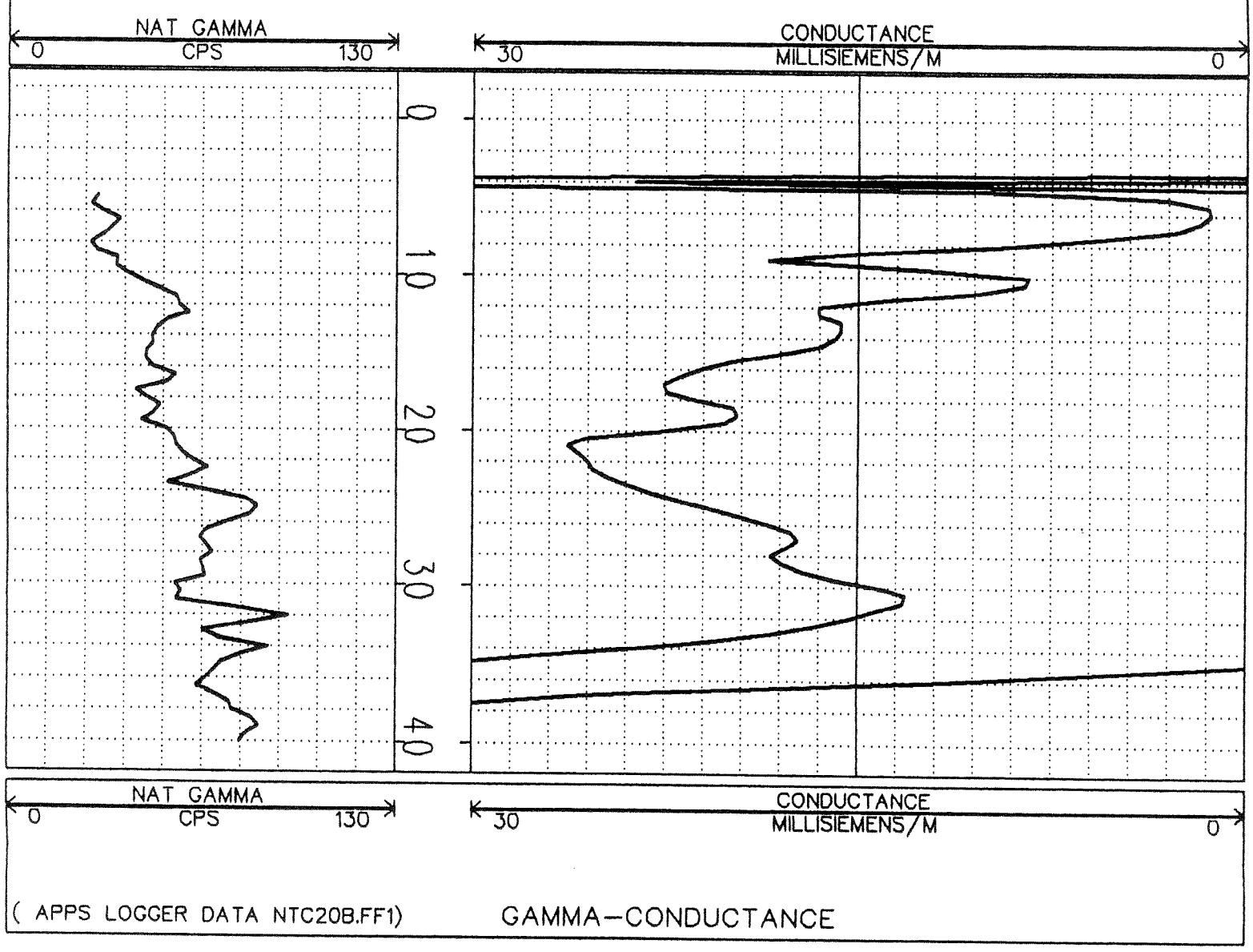
COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439
WELL: OLD–OU2–20B
LOCATION: NTC ORLANDO
98–1

	Run No. 1		Run No. 1
Date	06–25–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	40 FEET	Fluid Viscosity	
Footage Logged	40 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	

REMARKS:

(APPS LOGGER DATA NTC20B.FF1) GAMMA–CONDUCTANCE



(APPS LOGGER DATA NTC20B.FF1) GAMMA–CONDUCTANCE

Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG: GAMMA INDUCTION RES	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	OTHER SERVICES:

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL
WELL IDENTIFICATION: OLD–OU2–21B

COUNTY: ORANGE STATE: FL

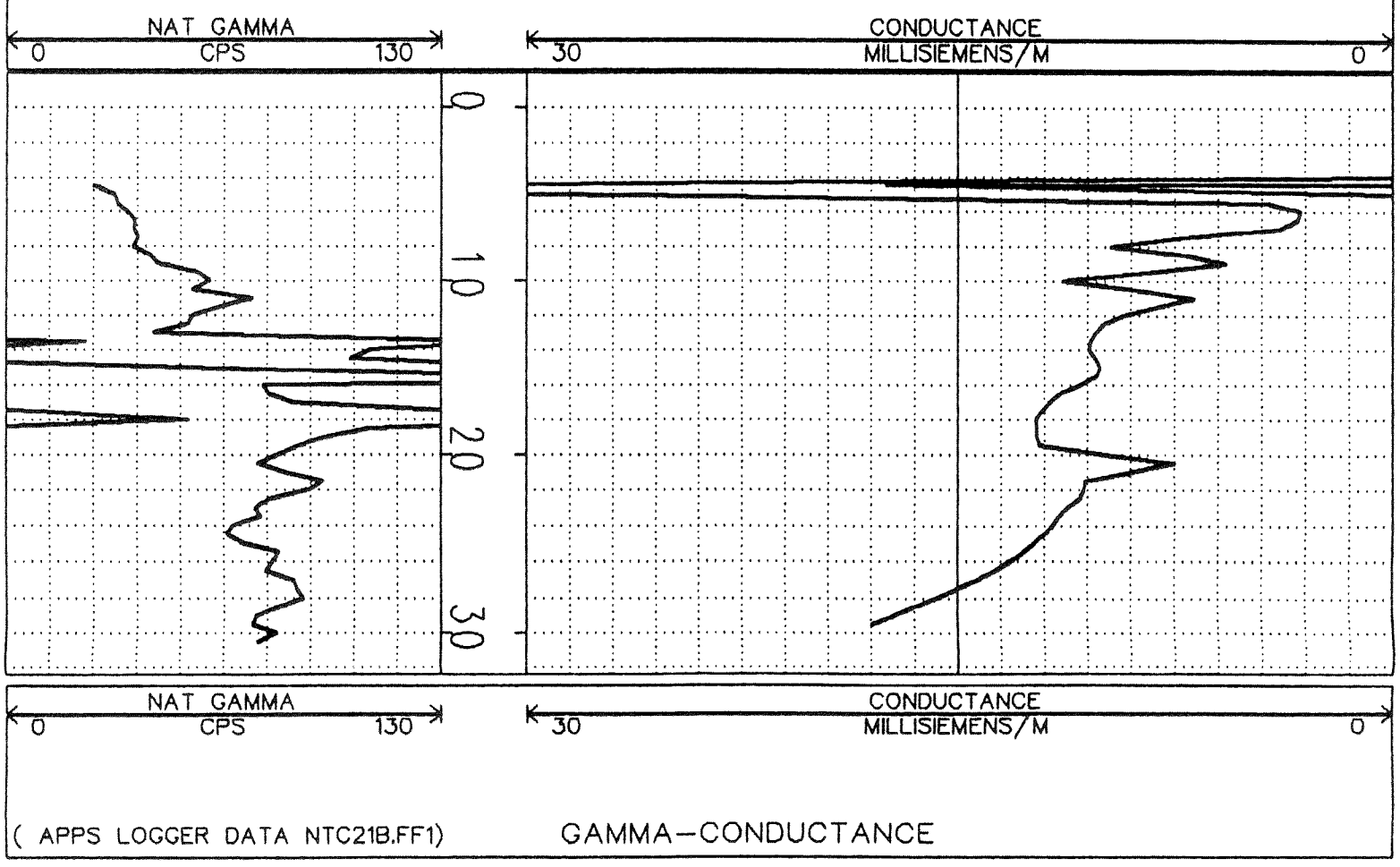
COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98–1
WELL: OLD–OU2–21B
LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06–25–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	31 FEET	Fluid Viscosity	
Footage Logged	31 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	

REMARKS:

(APPS LOGGER DATA NTC21B.FF1) GAMMA–CONDUCTANCE



(APPS LOGGER DATA NTC21B.FF1) GAMMA–CONDUCTANCE

Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG:	PERMANENT DATUM: Mean Sea Level	OTHER SERVICES:
GAMMA INDUCTION RES	LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL
WELL IDENTIFICATION: OLD–OU2–22B

COUNTY: ORANGE STATE: FL

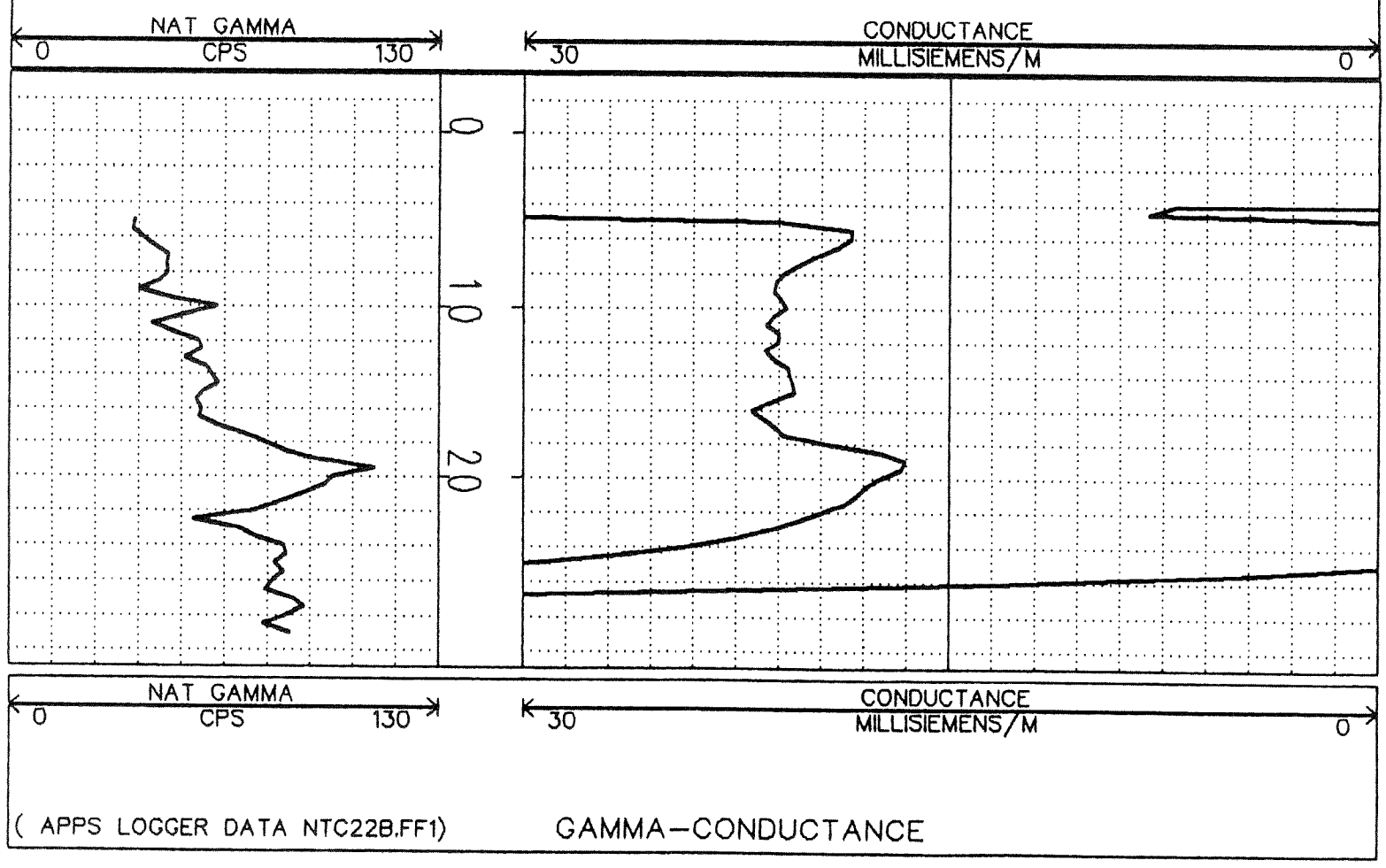
COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98–1
WELL: OLD–OU2–22B
LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06–25–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	29 FEET	Fluid Viscosity	
Footage Logged	29 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	

REMARKS:

(APPS LOGGER DATA NTC22B.FF1) GAMMA–CONDUCTANCE



(APPS LOGGER DATA NTC22B.FF1) GAMMA–CONDUCTANCE

Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG:	PERMANENT DATUM: Mean Sea Level	OTHER SERVICES:
GAMMA INDUCTION RES	LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL
WELL IDENTIFICATION: OLD–OU2–23C

COUNTY: ORANGE STATE: FL

COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98–1
WELL: OLD–OU2–23C
LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06–25–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	56 FEET	Fluid Viscosity	
Footage Logged	56 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	

REMARKS:

(APPS LOGGER DATA NTCH1.FF1) GAMMA–CONDUCTANCE

(APPS LOGGER DATA NTCH1.FF1) GAMMA–CONDUCTANCE

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3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG: GAMMA INDUCTION RES	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	OTHER SERVICES:

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL
WELL IDENTIFICATION: OLD–OU2–24C

COUNTY: ORANGE STATE: FL

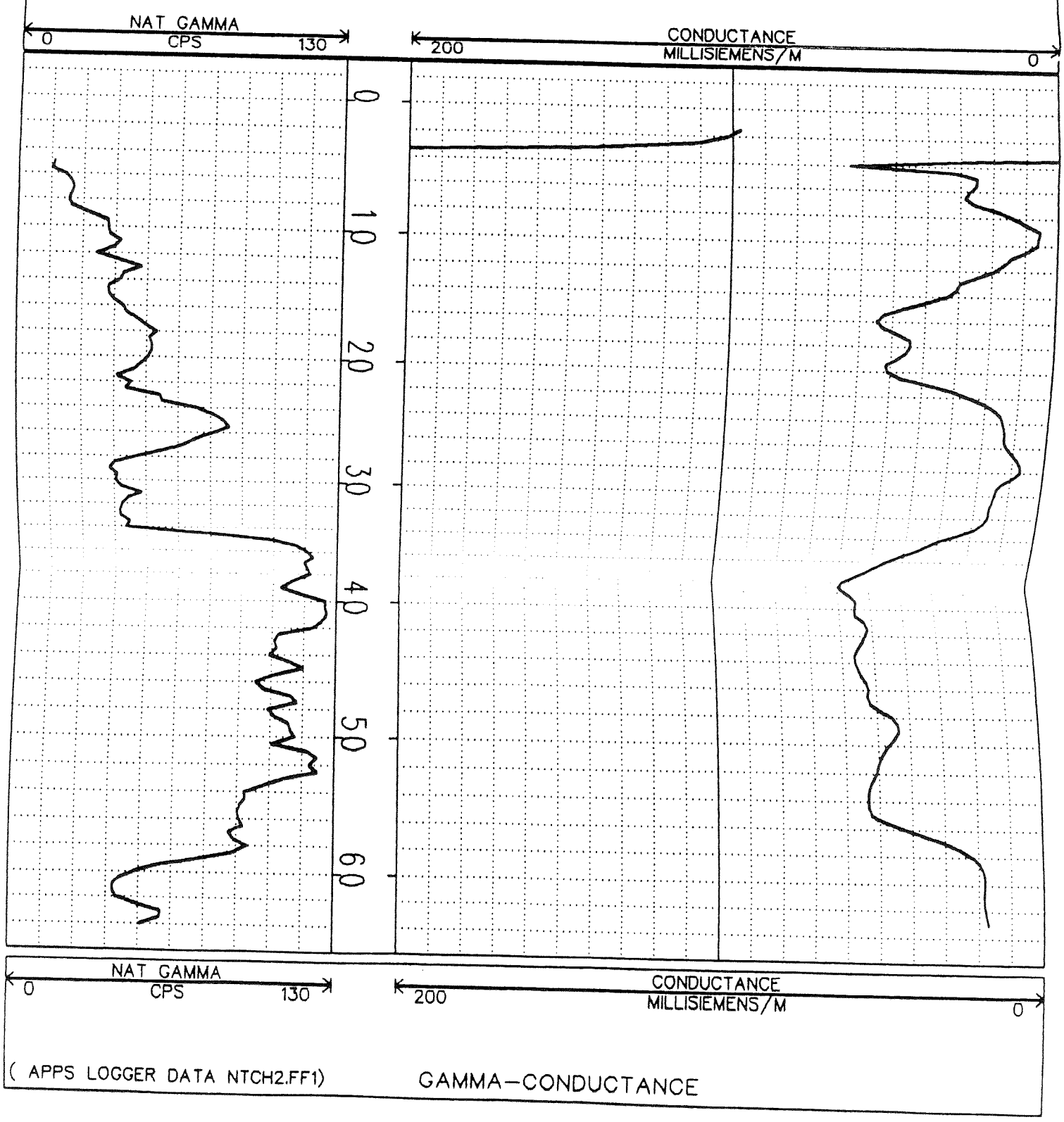
COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98–1
WELL: OLD–OU2–24C
LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06–25–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	64 FEET	Fluid Viscosity	
Footage Logged	64 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	

REMARKS:

(APPS LOGGER DATA NTCH2.FF1) GAMMA–CONDUCTANCE



(APPS LOGGER DATA NTCH2.FF1) GAMMA–CONDUCTANCE

Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG: GAMMA INDUCTION RES	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	OTHER SERVICES:

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL
WELL IDENTIFICATION: OLD–OU2–25C

COUNTY: ORANGE STATE: FL

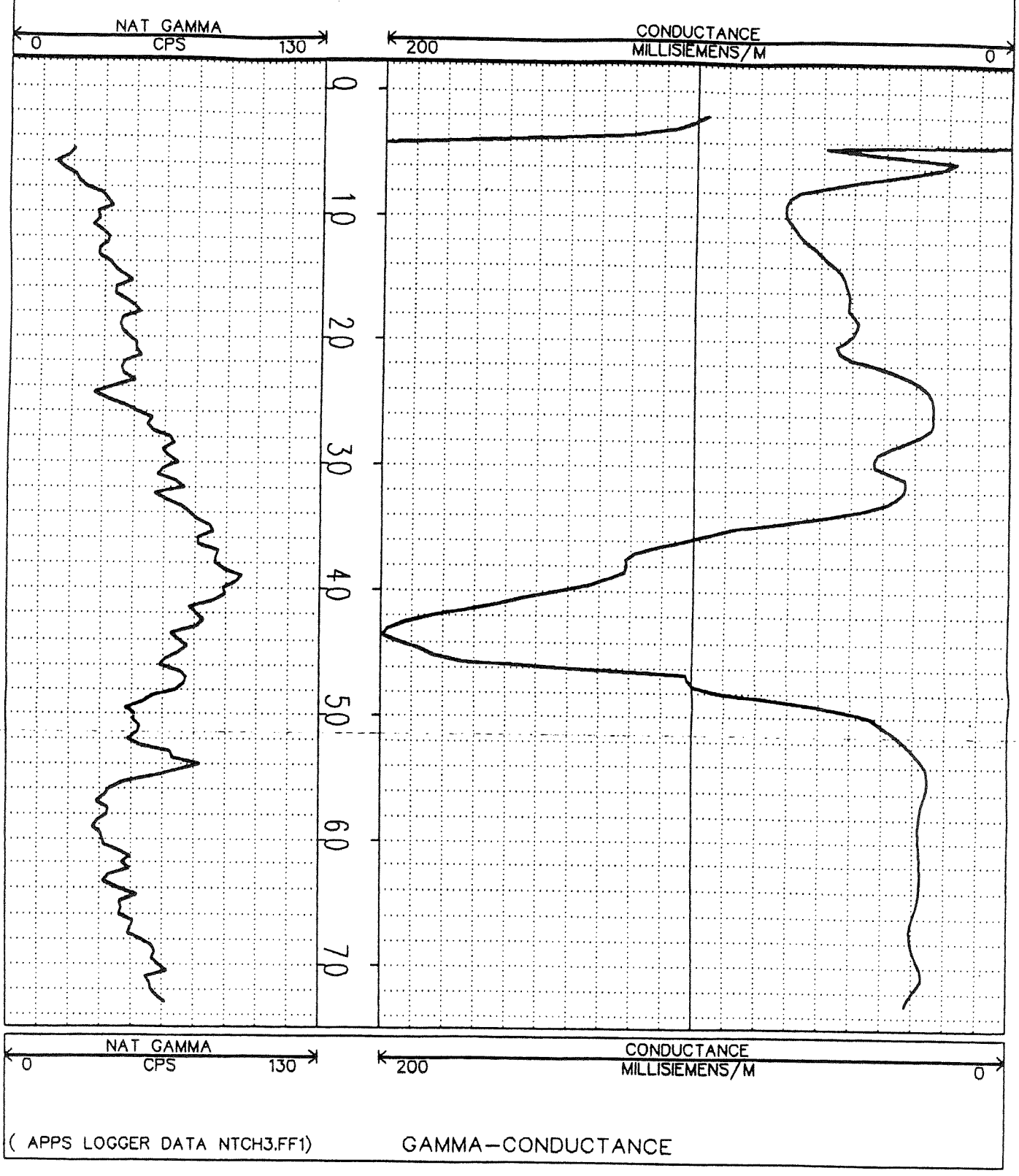
COORDINATES:
N:
E:
ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98–1
WELL: OLD–OU2–25C
LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06–25–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	73 FEET	Fluid Viscosity	
Footage Logged	73 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	

REMARKS:

(APPS LOGGER DATA NTCH3.FF1) GAMMA–CONDUCTANCE



(APPS LOGGER DATA NTCH3.FF1) GAMMA–CONDUCTANCE

Woodward–Clyde Consultants

3676 Hartsfield Rd, Tallahassee Florida

WCC NO: 98F439 98–1

GEOPHYSICAL WELL LOG:	PERMANENT DATUM: Mean Sea Level	OTHER SERVICES:
GAMMA INDUCTION RES	LOG MEASURED FROM: Land Surface ELEVATION Feet above MSL	

COMPANY: BROWN AND ROOT/TETRA TECH
NTC–ORL

WELL IDENTIFICATION: OLD–OU2–26C

COUNTY: ORANGE STATE: FL

COORDINATES:
N:
E:

ELEVATION: KB:
DF:
GL:

COMPANY NO: 98F439 98–1

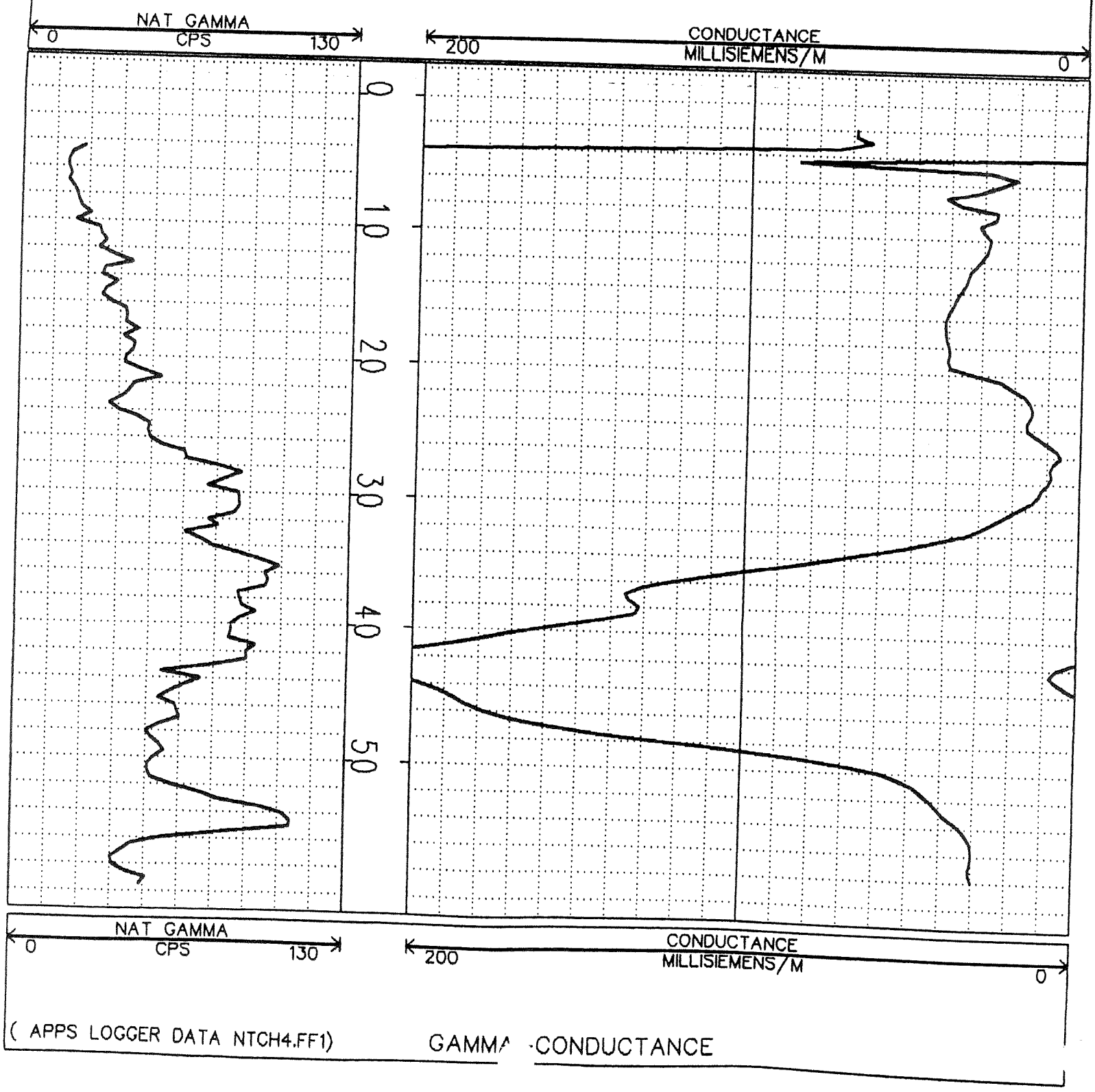
WELL: OLD–OU2–26C

LOCATION: NTC ORLANDO

	Run No. 1		Run No. 1
Date	06–25–98	Fluid Level	N/A
First Reading	SURFACE	Fluid Nature	WATER
Last Reading	59 FEET	Fluid Viscosity	
Footage Logged	59 FEET	Fl. Resistivity	
Bottom (Driller)	N/A	Fl. Res. at BHT	
Casing (from Log)	TO TD	Fluid pH	
Casing (Driller)	CASED WELL	Circulation Temp	
Casing Size	2 INCH PVC	Bottom Hole Temp	
Bit Size	N/A		
		LOGGED BY:	J.D. KEMP
		WITNESSED BY:	

REMARKS:

(APPS LOGGER DATA NTCH4.FF1) GAMMA–CONDUCTANCE



(APPS LOGGER DATA NTCH4.FF1) GAMMA–CONDUCTANCE