APPENDIX 8.2
Statistical Summary Tables

TABLE 8.2.1
STATISTICAL SUMMARY TABLE - SOIL - 0- 5 FEET DEPTH INTERVAL
MISSION BAY LANDFILL
SEA WORLD DRIVE
SAN DIEGO, CALIFORNIA

Constituent	# of Detections	# of Samples	Frequency of Detection (FOD)	Range of Detected Concentrations (mg/kg)			Average Concentration[1] (mg/kg)	Standard Deviation[1] (mg/kg)	95% Upper Confidence Limit on the Arithmetic Mean (UCLM)[1,2]	EPC_S (mg/kg)[3]
				Minimum	-	Maximum				
Organics										
Anthracene	1	9	11%	0.0043	-	0.0043	0.0013	0.0010	1.98E-03	**1.98E-03**
Benzo(a)anthracene	1	9	11%	0.02	-	0.02	0.0043	0.0055	7.68E-03	**7.68E-03**
Benzo(a)pyrene	1	9	11%	0.027	-	0.027	0.0050	0.0077	9.75E-03	**9.75E-03**
Benzo(a)pyrene Equivalent	10	10	100%	0.0032		0.033	0.0062	0.0093	1.16E-02	**1.16E-02**
Benzo(b)fluoranthene	2	9	22%	0.003	-	0.024	0.0037	0.0072	8.15E-03	**8.15E-03**
Benzo(ghi)perylene	1	9	11%	0.037	-	0.037	0.0069	0.0106	1.34E-02	**1.34E-02**
Benzo(k)fluoranthene	1	9	11%	0.009	-	0.009	0.0018	0.0025	3.37E-03	**3.37E-03**
Chrysene	1	9	11%	0.02	-	0.02	0.0043	0.0055	7.68E-03	**7.68E-03**
Dibenzo(a,h)anthracene	1	9	11%	0.018	-	0.018	0.0095	0.0030	1.13E-02	**1.13E-02**
Fluoranthene	1	9	11%	0.035	-	0.035	0.0058	0.0103	1.21E-02	**1.21E-02**
Phenanthrene	1	9	11%	0.014	-	0.014	0.0032	0.0038	5.55E-03	**5.55E-03**
Pyrene	1	9	11%	0.039	-	0.039	0.0084	0.0108	1.51E-02	**1.51E-02**
Inorganics										
Antimony	6	14	43%	0.6	-	1.5	0.57	0.42	7.64E-01	**7.64E-01**
Arsenic	12	14	86%	0.4	-	7.7	2.13	2.27	3.21E+00	**3.21E+00**
Barium	14	14	100%	12.1	-	417.0	96.69	101.91	1.45E+02	**1.45E+02**
Chromium	14	14	100%	3.7	-	34.4	15.83	9.02	2.01E+01	**2.01E+01**
Hexavalent Chromium	10	10	100%	0.2	-	0.8	0.34	0.16	4.30E-01	**4.30E-01**
Cobalt	14	14	100%	1.2	-	13.0	6.71	3.45	8.34E+00	**8.34E+00**
Copper	14	14	100%	0.8	-	47.7	13.41	12.51	1.93E+01	**1.93E+01**
Lead	14	14	100%	0.5	-	17.9	8.03	4.95	1.04E+01	**1.04E+01**
Molybdenum	5	14	36%	0.5	-	1.6	0.51	0.46	7.28E-01	**7.28E-01**
Nickel	14	14	100%	1.5	-	13.4	7.84	3.63	9.56E+00	**9.56E+00**
Vanadium	14	14	100%	6.6	-	76.6	36.61	21.67	4.69E+01	**4.69E+01**
Zinc	14	14	100%	6.0	-	193.0	45.86	45.73	6.75E+01	**6.75E+01**

Abbreviations:

BGS = Below ground surface

EPC_s = Exposure point concentration in soil

mg/kg = Milligrams per kilogram

NA = Not applicable, number of samples not adequate to determine UCLM

UCLM = Upper confidence limit of the arithmetic mean

"--" = Not available

Notes:

[1] 1/2 PQL values used for analytical results PQL.

[2] Data assumed normal. 95% UCLM calculated as follows: $UCL_{1-\alpha} = Average\ Concentration + t_{\alpha, n-1}\ S / sqrt\ n$ (USEPA, 2002)

[3] EPC is lesser of maximum concentration and 95% UCLM.

TABLE 8.2.2
STATISTICAL SUMMARY TABLE - SOIL - 0-10 FEET DEPTH INTERVAL
MISSION BAY LANDFILL
SEA WORLD DRIVE
SAN DIEGO, CALIFORNIA

Constituent	# of Detections	# of Samples	Frequency of Detection (FOD)	Range of Detected Concentrations (mg/kg)			Average Concentration[1] (mg/kg)	Standard Deviation[1] (mg/kg)	95% Upper Confidence Limit on the Arithmetic Mean (UCLM)[1,2]	EPC_S (mg/kg)[3]
				Minimum	-	Maximum				
Organics										
1,4-Dichlorobenzene	2	6	33%	0.101	-	0.56	0.1440	0.2070	3.14E-01	**3.14E-01**
2-Methylnaphthalene	1	6	17%	0.327	-	0.327	0.0966	0.1168	1.93E-01	**1.93E-01**
Anthracene	1	15	7%	0.0043	-	0.0043	0.0249	0.0408	4.34E-02	**4.30E-03**
Benzo(a)anthracene	3	15	20%	0.02	-	0.411	0.0532	0.1086	1.03E-01	**1.03E-01**
Benzo(a)pyrene	2	15	13%	0.027	-	0.037	0.0240	0.0291	3.72E-02	**3.70E-02**
Benzo(a)pyrene Equivalent	16	16	100%	0.00323	-	0.204	0.0434	0.0607	7.00E-02	**7.00E-02**
Benzo(b)fluoranthene	4	15	27%	0.003	-	0.345	0.0506	0.0979	9.51E-02	**9.51E-02**
Benzo(ghi)perylene	1	15	7%	0.037	-	0.037	0.0232	0.0291	3.64E-02	**3.64E-02**
Benzo(k)fluoranthene	2	15	13%	0.009	-	0.645	0.0572	0.1594	1.30E-01	**1.30E-01**
Bis(2-ethylhexyl)phthalate	2	6	33%	0.16	-	0.827	0.1986	0.3124	4.56E-01	**4.56E-01**
Butyl Benzyl Phthalate	3	6	50%	0.021	-	3.579	0.9512	1.4860	2.17E+00	**2.17E+00**
Chrysene	4	15	27%	0.02	-	0.891	0.0958	0.2251	1.98E-01	**1.98E-01**
Dibenzo(a,h)anthracene	1	9	11%	0.018	-	0.018	0.0095	0.0030	1.13E-02	**1.13E-02**
Dibutylphthalate	1	6	17%	0.154	-	0.154	0.0681	0.0518	1.11E-01	**1.11E-01**
Dioctylphthalate	2	6	33%	0.008	-	0.195	0.0751	0.0656	1.29E-01	**1.29E-01**
Diphenylamine	6	6	100%	0.012	-	1.96	0.6537	0.7126	1.24E+00	**1.24E+00**
Fluorene	2	6	33%	0.232	-	0.578	0.1604	0.2195	3.41E-01	**3.41E-01**
Fluoranthene	2	15	13%	0.035	-	0.352	0.0414	0.0876	8.12E-02	**8.12E-02**
Phenanthrene	3	14	21%	0.014	-	1.158	0.1378	0.3444	3.01E-01	**3.01E-01**
Pyrene	2	15	13%	0.039	-	0.352	0.0399	0.0856	7.88E-02	**7.88E-02**
4,4-DDD	2	6	33%	0.0086		0.0152	0.0063	0.0048	1.03E-02	**1.03E-02**
4,4-DDE	2	6	33%	0.0184		0.0195	0.0087	0.0080	1.52E-02	**1.52E-02**
Aldrin	1	6	17%	0.0623		0.0623	0.0129	0.0242	3.28E-02	**3.28E-02**
alpha-BHC	2	6	33%	0.0113		0.0172	0.0068	0.0061	1.18E-02	**1.18E-02**
alpha-Endosulfan I	2	6	33%	0.009		0.0596	0.0138	0.0226	3.23E-02	**3.23E-02**
Beta-Endosulfan	1	6	17%	0.01		0.01	0.0050	0.0024	7.02E-03	**7.02E-03**
Dieldrin	1	6	17%	0.0666		0.0666	0.0140	0.0258	3.52E-02	**3.52E-02**
Heptachlor	1	6	17%	0.0523		0.0523	0.0112	0.0201	2.78E-02	**2.78E-02**

TABLE 8.2.2
STATISTICAL SUMMARY TABLE - SOIL - 0-10 FEET DEPTH INTERVAL
MISSION BAY LANDFILL
SEA WORLD DRIVE
SAN DIEGO, CALIFORNIA

Constituent	# of Detections	# of Samples	Frequency of Detection (FOD)	Range of Detected Concentrations (mg/kg)			Average Concentration[1] (mg/kg)	Standard Deviation[1] (mg/kg)	95% Upper Confidence Limit on the Arithmetic Mean (UCLM)[1,2]	EPC_S (mg/kg)[3]
				Minimum	-	Maximum				
Inorganics										
Antimony	12	34	35%	0.6	-	6.2	0.78	1.13	1.11E+00	**1.11E+00**
Arsenic	29	34	85%	0.4	-	60.4	6.33	12.53	9.97E+00	**9.97E+00**
Barium	34	34	100%	12.1	-	417.0	114.46	90.62	1.41E+02	**1.41E+02**
Beryllium	3	34	9%	0.1	-	1.0	0.28	0.15	3.21E-01	**3.21E-01**
Cadmium	5	34	15%	0.1	-	2.4	0.34	0.38	4.55E-01	**4.55E-01**
Chromium	34	34	100%	3.7	-	140.0	27.16	25.76	3.46E+01	**3.46E+01**
Hexavalent Chromium	10	12	83%	0.2	-	0.8	0.29	0.18	3.85E-01	**3.85E-01**
Cobalt	34	34	100%	1.2	-	36.0	10.35	7.38	1.25E+01	**1.25E+01**
Copper	34	34	100%	0.8	-	377.0	28.49	62.83	4.67E+01	**4.67E+01**
Lead	34	34	100%	0.5	-	132.0	13.68	24.52	2.08E+01	**2.08E+01**
Mercury	3	34	9%	18.0	-	2917.0	147.50	605.11	3.23E+02	**3.23E+02**
Molybdenum	13	34	38%	0.5	-	2.8	0.83	0.80	1.06E+00	**1.06E+00**
Nickel	34	34	100%	1.5	-	72.8	13.36	13.57	1.73E+01	**1.73E+01**
Silver	3	34	9%	0.1	-	1.6	0.30	0.24	3.70E-01	**3.70E-01**
Vanadium	34	34	100%	6.6	-	146.0	51.46	32.98	6.10E+01	**6.10E+01**
Zinc	34	34	100%	6.0	-	1387.0	124.77	305.59	2.13E+02	**2.13E+02**

Abbreviations:

BGS = Below ground surface
mg/kg = Milligrams per kilogram
UCLM = Upper confidence limit of the arithmetic mean
EPC_s = Exposure point concentration in soil
NA = Not applicable, number of samples no
"--" = Not available

Notes:

[1] 1/2 PQL values used for analytical results. Statistical calculations utilized sample statistics rather than population statistics.

[2] Data assumed normal. 95% UCLM calculated as follows: $UCL_{1-\alpha} = Average\ Concentration + t_{\alpha, n-1}\ S / sqrt\ n$ (USEPA, 2002)

[3] EPC is lesser of maximum concentration and 95% UCLM.

TABLE 8.2.3
STATISTICAL SUMMARY TABLE - NEAR-SURFACE SOIL VAPOR SAMPLES
MISSION BAY LANDFILL
SEA WORLD DRIVE
SAN DIEGO, CALIFORNIA

Constituent	# of Detections	# of Samples	Frequency of Detection (FOD)	Range of Detected Concentrations (µg/m³)			Average Detected Concentration[1] (µg/m³)	Standard Deviation of Detected Concentrations[1] (µg/m³)	95% Upper Confidence Limit on the Arithmetic Mean (UCLM)[1,2]	EPC_S (µg/m³)[3]
				Minimum	-	Maximum				
Organics										
1,2-Dichlorobenzene	8	10	80%	80	-	236	171	82	2.19E+02	**2.19E+02**
1,4-Dichlorobenzene	7	10	70%	50	-	2,787	782	944	1.33E+03	**1.33E+03**
2-Butanone (MEK)	1	10	10%	150	-	421	248	105	3.09E+02	**3.09E+02**
Acetone	10	10	100%	329	-	1,695	790	437	1.04E+03	**1.04E+03**
Bromodichloromethane	1	10	10%	89	-	89	89	--	NA	**8.87E+01**
Chlorobenzene	4	10	40%	84	-	258	141	79	1.87E+02	**1.87E+02**
Chlorodifluoromethane	6	10	60%	28	-	1,240	355	503	6.46E+02	**6.46E+02**
Chloroform	2	10	20%	274	-	448	361	123	4.32E+02	**4.32E+02**
Dichlorodifluoromethane	3	10	30%	73	-	2,217	1,175	1,073	1.80E+03	**1.80E+03**
Dichlorofluoromethane	1	10	10%	4,433	-	4,433	4,433	--	NA	**4.43E+03**
Ethylbenzene	3	10	30%	115	-	3,363	1,039	1,499	1.91E+03	**1.91E+03**
Trichloroethene	7	10	70%	83	-	83	83	--	NA	**8.32E+01**
Vinyl chloride	10	10	100%	63	-	169	118	47	1.46E+02	**1.46E+02**
Total Xylenes	9	10	90%	279	-	10,245	3,703	4,338	6.22E+03	**6.22E+03**

Abbreviations:

ppmv = parts per million volume

EPC_{sv} = Exposure point concentration in soil vapor

UCLM = Upper confidence limit of the arithmetic mean

Notes:

[1] 1/2 PQL values used for analytical results.

[2] Data assumed normal. 95% UCLM calculated as follows: $UCL_{1-\alpha} = Average\ Concentration + t_{\alpha, n-1}\ S / sqrt\ n$ (USEPA, 2002)

[3] EPC is lesser of maximum concentration and 95% UCLM. Based on OEHHA comments (May 14, 2005), detected concentrations of each contaminant multiplied by number of composite samples.

TABLE 8.2.4
STATISTICAL SUMMARY TABLE- GROUNDWATER
MISSION BAY LANDFILL
SEA WORLD DRIVE
SAN DIEGO, CALIFORNIA

Constituent	# of Detections	# of Samples	Frequency of Detection (FOD)	Range of Detected Concentrations (mg/kg)			Average Concentration[1] (mg/L)	Standard Deviation[1] (mg/L)	95% Upper Confidence Limit on the Arithmetic Mean (UCLM)[1,2]	EPC_{GW} (mg/L)[3]
				Minimum	-	Maximum				
Organics										
1,2-Dichloropropane	6	74	8%	3.40E-07	-	5.10E-07	2.03E-07	1.46E-07	2.32E-07	**2.32E-07**
1,4-Dichlorobenzene	7	74	9%	4.60E-07	-	4.60E-06	2.89E-07	5.81E-07	4.02E-07	**4.02E-07**
Benzene	3	74	4%	2.00E-07	-	2.70E-07	1.71E-07	1.42E-07	1.98E-07	**1.98E-07**
cis-1,2-Dichloroethene	6	74	8%	2.00E-06	-	6.41E-06	5.58E-07	1.14E-06	7.79E-07	**7.79E-07**
Diethyl Ether	29	63	46%	4.10E-07	-	2.16E-06	6.12E-07	5.52E-07	7.28E-07	**7.28E-07**
Methylene Chloride	20	74	27%	3.10E-07	-	1.36E-06	6.31E-07	8.19E-07	7.90E-07	**7.90E-07**
Toluene	7	74	9%	3.30E-07	-	1.45E-06	3.00E-07	3.31E-07	3.64E-07	**3.64E-07**
Methyl Tert-Butyl Ether	1	74	1%	1.26E-05	-	1.26E-05	5.47E-07	1.44E-06	8.26E-07	**8.26E-07**
Vinyl Chloride	4	74	5%	4.20E-07	-	9.60E-07	4.21E-07	4.69E-07	5.12E-07	**5.12E-07**

Abbreviations:

EPC_{GW} = Exposure point concentration in groundwater

NA = Not applicable, number of samples not adequate to determine UCLM

µg/L = Micrograms per liter

UCLM = Upper confidence limit of the arithmetic mean

"--" = Not applicable

Notes:

[1] 1/2 PQL values used for analytical results below PQL. Statistical calculations utilized sample statistics rather than population statistics.

[2] Data assumed normal. 95% UCLM calculated as follows: $UCL_{1-\alpha} = Average\ Concentration + t_{\alpha, n-1}\ S / sqrt\ n$ (USEPA, 2002).

[3] EPC determined to be lesser of maximum concentration and 95% UCLM.

TABLE 8.2.4
STATISTICAL SUMMARY TABLE- GROUNDWATER
MISSION BAY LANDFILL
SEA WORLD DRIVE
SAN DIEGO, CALIFORNIA

Constituent	# of Detections	# of Samples	Frequency of Detection (FOD)	Range of Detected Concentrations (mg/kg)			Average Concentration[1] (mg/L)	Standard Deviation[1] (mg/L)	95% Upper Confidence Limit on the Arithmetic Mean (UCLM)[1,2]	EPC_{GW} (mg/L)[3]
				Minimum	-	Maximum				
Inorganics										
Antimony	17	19	89%	0.0001	-	0.01	6.67E-03	1.55E-02	1.28E-02	**1.00E-02**
Arsenic	60	75	80%	0.00007		0.0196	5.19E-03	4.74E-03	6.10E-03	**6.10E-03**
Barium	19	19	100%	0.050	-	4.9	6.03E-01	1.15E+00	1.06E+00	**1.06E+00**
Beryllium	10	12	83%	0.00000	-	0.00006	1.01E-05	1.72E-05	1.90E-05	**1.90E-05**
Cadmium	12	12	100%	0.00001	-	0.00035	1.01E-04	1.12E-04	1.59E-04	**1.59E-04**
Hexavalent Chromium	0	10	0%	0.00000	-	0.00000	5.00E-04	0.00E+00	5.00E-04	**0.00E+00**
Chromium	29	75	39%	0.00013	-	0.164	9.80E-03	2.49E-02	1.46E-02	**1.46E-02**
Cobalt	12	12	100%	0.00075	-	0.019	5.88E-03	5.48E-03	8.72E-03	**8.72E-03**
Copper	12	12	100%	0.00012	-	0.022	3.27E-03	6.50E-03	6.64E-03	**6.64E-03**
Iron	5	7	71%	0.59	-	1.38	6.14E-01	4.75E-01	9.63E-01	**9.63E-01**
Lead	14	19	74%	0.00001	-	0.07	4.64E-03	1.61E-02	1.10E-02	**1.10E-02**
Mercury	12	12	100%	0.00000	-	0.00011	1.18E-05	3.11E-05	2.80E-05	**2.80E-05**
Molybdenum	19	19	100%	0.00056	-	1.04	1.05E-01	2.33E-01	1.98E-01	**1.98E-01**
Nickel	19	19	100%	0.00038	-	0.067	1.13E-02	1.58E-02	1.76E-02	**1.76E-02**
Selenium	14	19	74%	0.00009	-	0.02	3.80E-03	6.62E-03	6.44E-03	**6.44E-03**
Silver	3	17	18%	0.00003	-	0.00227	4.32E-04	8.66E-04	7.98E-04	**7.98E-04**
Thallium	0	52	0%	0.00000	-	0.00000	3.37E-04	4.17E-04	4.33E-04	**0.00E+00**
Vanadium	11	19	58%	0.00683	-	0.08	2.63E-02	2.86E-02	3.77E-02	**3.77E-02**
Zinc	18	19	95%	0.00212	-	13.6	7.58E-01	3.11E+00	2.00E+00	**2.00E+00**

Abbreviations:

EPC_{GW} = Exposure point concentration in groundwater

NA = Not applicable, number of samples not adequate to determine UCLM

µg/L = Micrograms per liter

UCLM = Upper confidence limit of the arithmetic mean

"--" = Not applicable

Notes:

[1] 1/2 PQL values used for analytical results below PQL. Statistical calculations utilized sample statistics rather than population statistics.

[2] Data assumed normal. 95% UCLM calculated as follows: $UCL_{1-\alpha} = Average\ Concentration + t_{\alpha, n-1}\ S / sqrt\ n$ (USEPA, 2002).

[3] EPC determined to be lesser of maximum concentration and 95% UCLM.