

Appendix 8.3 Detailed Assessment Results for Ecological Risk Assessment – Marine Mammals

Table 1a Contaminants of Concern Concentration at edge of ZID and Preys (Scenario 1)

Contaminant of Concern	C/D Effluent Conc. (mg/L)	Ambient Seawater Conc. (mg/L)	Conc. at edge of ZID (mg/L) – 10%tile dilution factor	Bioconc. Factor (water-to-fish) (L/kg)	Food Chain Multiplier (Trophic Level 4)	Conc. in Fish (mg/kg)	Bioconc. Factor (water-to-invertebrates) (L/kg)	Food Chain Multiplier (Trophic Level 3)	Conc. in Shellfish (mg/kg)
<i>Potential CBPs</i>									
Total Residual Chlorine	0.1	0	1.89E-03	-	-	-	-	-	-
Chloroform	0.007	0	1.32E-04	6.92	1	9.14E-04	2.82	1	3.72E-04
Chloroacetic acid	0.004	0	7.55E-05	0.26	1	1.96E-05	0.11	1	8.30E-06
Dibromoacetic acid	0.004	0	7.55E-05	0.82	1	6.19E-05	0.31	1	2.34E-05
Dichloroacetic acid	0.0459	0	8.66E-04	1.13	1	9.79E-04	0.41	1	3.55E-04
Trichloroacetic acid	0.022	0	4.15E-04	2.66	1	2.39E-03	0.88	1	3.65E-04
Tetrachloroethylene	0.0013	0	2.45E-05	82.80	1	2.03E-03	43.5	1.1	1.17E-03
Trichloroethylene	0.002	0	3.77E-05	14.10	1	5.32E-04	6.85	1	2.58E-04
2,4,6-trichlorophenol	0.002	0	3.77E-05	56.10	1	2.12E-03	76.6	1.1	3.18E-03
Hexachlorobenzene	0.00025	0	4.72E-06	2400	1	1.13E-02	2595	1	1.22E-02
b-BHC	0.0005	0	9.43E-06	168	1	1.58E-03	89.1	1.2	1.01E-03
g-BHC	0.0005	0	9.43E-06	168	1	1.58E-03	79.6	1.2	9.01E-04
<i>Contaminants present in CEPT Effluent</i>									
Aluminium	0.0159	0.0156	1.56E-02	2.7	1	4.21E-02	0.13	1	2.03E-03
Antimony	0.000721	0.000258	2.67E-04	40	1	1.07E-02	7	1	1.87E-03
Barium	0.0232	0.00665	6.96E-03	633	1	4.41E+00	200	1	1.39E+00
Chromium III	0.00958	0.00028	4.55E-04	19	1	8.65E-03	0.11	1	5.01E-05
Copper	0.00859	0.00002	1.82E-04	710	1	1.29E-01	3718	1	6.76E-01
Lead	0.000128	0.000055	5.64E-05	0.09	1	5.07E-06	5059	1	2.85E-01
Nickel	0.0262	0.00077	1.25E-03	78	1	9.75E-02	28	1	3.50E-02
Selenium	0.00031	0.00007	7.45E-05	129	1	9.61E-03	1262	1	9.41E-02
Silver	0.000182	0.000006	9.32E-06	87.7	1	8.17E-04	298	1	2.78E-03
Tin	0.000844	0.00014	1.53E-04	138	1	2.12E-02	138	1	2.12E-02
Vanadium	0.0295	0.00173	2.25E-03	-	-	-	-	-	-
Zinc	0.0141	0.00237	2.59E-03	2060	1	5.34E+00	4758	1	1.23E+01
Ammonia	22	0.23	6.41E-01	-	-	-	-	-	-
TCDD	1E-10	3.9E-11	4.02E-11	34400	27	3.73E-05	1560	14	8.77E-07
Toluene	0.012	0	2.26E-04	171	1	3.87E-02	11.6	1	2.63E-03
Diazinon	0.000048	0	9.06E-07	171	1	1.55E-04	94.3	1.2	1.02E-04
Malathion	0.000031	0	5.85E-07	13.1	1	7.66E-06	6.12	1	3.58E-06

Table 1b Contaminants of Concern Concentration at edge of ZID and Preys (Scenario 2)

Contaminant of Concern	C/D Effluent Conc. (mg/L)	Ambient Seawater Conc. (mg/L)	Conc. at edge of ZID (mg/L) – 10%tile dilution factor	Bioconc. Factor (water-to-fish) (L/kg)	Food Chain Multiplier (Trophic Level 4)	Conc. in Fish (mg/kg)	Bioconc. Factor (water-to-invertebrates) (L/kg)	Food Chain Multiplier (Trophic Level 3)	Conc. in Shellfish (mg/kg)
<i>Potential CBPs</i>									
Total Residual Chlorine	0.1	0	2.04E-03	-	-	-	-	-	-
Chloroform	0.007	0	1.43E-04	6.92	1	9.89E-04	2.82	1	4.03E-04
Chloroacetic acid	0.004	0	8.16E-05	0.26	1	2.12E-05	0.11	1	8.98E-06
Dibromoacetic acid	0.004	0	8.16E-05	0.82	1	6.69E-05	0.31	1	2.53E-05
Dichloroacetic acid	0.0459	0	9.37E-04	1.13	1	1.06E-03	0.41	1	3.84E-04
Trichloroacetic acid	0.022	0	4.49E-04	2.66	1	2.58E-03	0.88	1	3.95E-04
Tetrachloroethylene	0.0013	0	2.65E-05	82.80	1	2.20E-03	43.5	1.1	1.27E-03
Trichloroethylene	0.002	0	4.08E-05	14.10	1	5.76E-04	6.85	1	2.80E-04
2,4,6-trichlorophenol	0.002	0	4.08E-05	56.10	1	2.29E-03	76.6	1.1	3.44E-03
Hexachlorobenzene	0.00025	0	5.10E-06	2400	1	1.22E-02	2595	1	1.32E-02
b-BHC	0.0005	0	1.02E-05	168	1	1.71E-03	89.1	1.2	1.09E-03
g-BHC	0.0005	0	1.02E-05	168	1	1.71E-03	79.6	1.2	9.75E-04

Contaminant of Concern	C/D Effluent Conc. (mg/L)	Ambient Seawater Conc. (mg/L)	Conc. at edge of ZID (mg/L) – 10%tile dilution factor	Bioconc. Factor (water-to-fish) (L/kg)	Food Chain Multiplier (Trophic Level 4)	Conc. in Fish (mg/kg)	Bioconc. Factor (water-to-invertebrates) (L/kg)	Food Chain Multiplier (Trophic Level 3)	Conc. in Shellfish (mg/kg)
<i>Contaminants present in CEPT Effluent</i>									
Aluminium	0.0159	0.0156	1.56E-02	2.7	1	4.21E-02	0.13	1	2.03E-03
Antimony	0.000721	0.000258	2.67E-04	40	1	1.07E-02	7	1	1.87E-03
Barium	0.0232	0.00665	6.99E-03	633	1	4.42E+00	200	1	1.40E+00
Chromium III	0.00958	0.00028	4.70E-04	19	1	8.93E-03	0.11	1	5.17E-05
Copper	0.00859	0.00002	1.95E-04	710	1	1.38E-01	3718	1	7.25E-01
Lead	0.000128	0.000055	5.65E-05	0.09	1	5.08E-06	5059	1	2.86E-01
Nickel	0.0262	0.00077	1.29E-03	78	1	1.01E-01	28	1	3.61E-02
Selenium	0.00031	0.00007	7.49E-05	129	1	9.66E-03	1262	1	9.45E-02
Silver	0.000182	0.000006	9.59E-06	87.7	1	8.41E-04	298	1	2.86E-03
Tin	0.000844	0.00014	1.54E-04	138	1	2.13E-02	138	1	2.13E-02
Vanadium	0.0295	0.00173	2.30E-03	-	-	-	-	-	-
Zinc	0.0141	0.00237	2.61E-03	2060	1	5.38E+00	4758	1	1.24E+01
Ammonia	22	0.23	6.74E-01	-	-	-	-	-	-
TCDD	1E-10	3.9E-11	4.02E-11	34400	27	3.74E-05	1560	14	8.79E-07
Toluene	0.012	0	2.45E-04	171	1	4.19E-02	11.6	1	2.84E-03
Diazinon	0.000048	0	9.80E-07	171	1	1.68E-04	94.3	1.2	1.11E-04
Malathion	0.000031	0	6.33E-07	13.1	1	8.29E-06	6.12	1	3.87E-06

Table 1c Contaminants of Concern Concentration at Exposure Points and Seafood (Scenario 3)

Contaminant of Concern	C/D Effluent Conc. (mg/L)	Ambient Seawater Conc. (mg/L)	Conc. at edge of ZID (mg/L) – 10%tile dilution factor	Bioconc. Factor (water-to-fish) (L/kg)	Food Chain Multiplier (Trophic Level 4)	Conc. in Fish (mg/kg)	Bioconc. Factor (water-to-invertebrates) (L/kg)	Food Chain Multiplier (Trophic Level 3)	Conc. in Shellfish (mg/kg)
<i>Potential CBPs</i>									
TRC	0.01	0	2.04E-04	-	-	-	-	-	-
Bromoform	0.049	0	1.00E-03	13.3	1	1.33E-02	6.6	1	6.60E-03
Dibromochloromethane	0.008	0	1.63E-04	6.92	1	1.70E-03	2.82	1	7.82E-04
Dibromoacetic acid	0.01	0	2.04E-05	0.26	1	5.31E-06	0.11	1	2.24E-06
Dichloroacetic acid	0.003	0	2.04E-04	0.82	1	1.67E-04	0.31	1	6.33E-05
Trichloroacetic acid	0.007	0	6.12E-05	1.13	1	6.92E-05	0.41	1	2.51E-05
Hexachlorobenzene	0.00025	0	1.43E-04	2.66	1	8.21E-04	0.88	1	1.26E-04
b-BHC	0.0005	0	5.10E-06	2400	1	1.22E-02	2595	1	1.32E-02
g-BHC	0.0005	0	1.02E-05	168	1	1.71E-03	89.1	1.2	1.09E-03
<i>Contaminants present in Secondary Treated Effluent</i>									
Antimony	0.000721	0.000258	2.69E-04	40	1	1.07E-02	7	1	1.88E-03
Barium	0.0232	0.00665	7.00E-03	633	1	4.43E+00	200	1	1.40E+00
Chromium III	0.00958	0.00028	4.47E-04	19	1	8.48E-03	0.11	1	4.91E-05
Copper	0.00859	0.00002	1.55E-04	710	1	1.10E-01	3718	1	5.76E-01
Nickel	0.0262	0.00077	1.21E-03	78	1	9.43E-02	28	1	3.39E-02
Selenium	0.00031	0.00007	7.12E-05	129	1	9.19E-03	1262	1	8.99E-02
Silver	0.000182	0.000006	7.90E-06	87.7	1	6.93E-04	298	1	2.35E-03
Tin	0.000844	0.00014	1.46E-04	138	1	2.02E-02	138	1	2.02E-02
Vanadium	0.0295	0.00173	2.33E-03	-	-	-	-	-	-
Zinc	0.0141	0.00237	2.52E-03	2060	1	5.19E+00	4758	1	1.20E+01
Ammonia	4.2	0.23	3.11E-01	-	-	-	-	-	-
TCDD	1E-10	3.9E-11	3.95E-11	34400	27	3.67E-05	1560	14	8.62E-07
Diazinon	0.000048	0	1.18E-06	171	1	2.02E-04	94.3	1.2	1.34E-04
Malathion	0.000031	0	3.06E-07	13.1	1	4.01E-06	6.12	1	1.87E-06

Table 2a Exposure of Contaminants of Concern by Marine Mammals (Scenario 1)

Contaminant of Concern	Conc. at edge of ZID (mg/L)	Conc. in Fish (mg/kg)	Conc. in Shellfish (mg/kg)	Dolphins			Porpoises			Dolphins	Porpoises
				Daily Exposure via Ingestion of Fish (mg/kg-d)	Daily Exposure via Ingestion of Shellfish (mg/kg-d)	Daily Exposure via Ingestion of Seawater (mg/kg-d)	Total Daily Exposure (mg/kg-d)	Daily Exposure via Ingestion of Shellfish (mg/kg-d)	Daily Exposure via Ingestion of Seawater (mg/kg-d)	Total Daily Exposure (mg/kg-d)	Total Daily Exposure (mg/kg-d)
<i>Potential CBPs</i>											
Total Residual Chlorine	1.89E-03	-	-	-	-	5.90E-06	-	-	3.54E-06	5.90E-06	3.54E-06
Chloroform	1.32E-04	9.14E-04	3.72E-04	1.34E-05	6.05E-07	4.13E-07	5.14E-06	2.10E-06	2.48E-07	1.44E-05	7.48E-06
Chloroacetic acid	7.55E-05	1.96E-05	8.30E-06	2.87E-07	1.35E-08	2.36E-07	1.10E-07	4.67E-08	1.42E-07	5.36E-07	2.99E-07
Dibromoacetic acid	7.55E-05	6.19E-05	2.34E-05	9.05E-07	3.80E-08	2.36E-07	3.48E-07	1.32E-07	1.42E-07	1.18E-06	6.21E-07
Dichloroacetic acid	8.66E-04	9.79E-04	3.55E-04	1.43E-05	5.77E-07	2.71E-06	5.50E-06	2.00E-06	1.62E-06	1.76E-05	9.13E-06
Trichloroacetic acid	4.15E-04	2.39E-03	3.65E-04	3.49E-05	5.94E-07	1.30E-06	1.34E-05	2.05E-06	7.78E-07	3.68E-05	1.63E-05
Tetrachloroethylene	2.45E-05	2.03E-03	1.17E-03	2.97E-05	1.91E-06	7.67E-08	1.14E-05	6.60E-06	4.60E-08	3.17E-05	1.81E-05
Trichloroethylene	3.77E-05	5.32E-04	2.58E-04	7.78E-06	4.20E-07	1.18E-07	2.99E-06	1.45E-06	7.08E-08	8.32E-06	4.52E-06
2,4,6-trichlorophenol	3.77E-05	2.12E-03	3.18E-03	3.10E-05	5.17E-06	1.18E-07	1.19E-05	1.79E-05	7.08E-08	3.62E-05	2.99E-05
Hexachlorobenzene	4.72E-06	1.13E-02	1.22E-02	1.66E-04	1.99E-05	1.47E-08	6.37E-05	6.89E-05	8.84E-09	1.85E-04	1.33E-04
b-BHC	9.43E-06	1.58E-03	1.01E-03	2.32E-05	1.64E-06	2.95E-08	8.92E-06	5.67E-06	1.77E-08	2.48E-05	1.46E-05
g-BHC	9.43E-06	1.58E-03	9.01E-04	2.32E-05	1.46E-06	2.95E-08	8.92E-06	5.07E-06	1.77E-08	2.47E-05	1.40E-05
<i>Contaminants present in CEPT Effluent</i>											
Aluminium	1.56E-02	4.21E-02	2.03E-03	6.16E-04	3.30E-06	4.88E-05	2.37E-04	1.14E-05	2.93E-05	6.68E-04	2.78E-04
Antimony	2.67E-04	1.07E-02	1.87E-03	1.56E-04	3.03E-06	8.34E-07	6.00E-05	1.05E-05	5.00E-07	1.60E-04	7.10E-05
Barium	6.96E-03	4.41E+00	1.39E+00	6.45E-02	2.26E-03	2.18E-05	2.48E-02	7.83E-03	1.31E-05	6.67E-02	3.26E-02
Chromium III	4.55E-04	8.65E-03	5.01E-05	1.27E-04	8.14E-08	1.42E-06	4.87E-05	2.82E-07	8.54E-07	1.28E-04	4.98E-05
Copper	1.82E-04	1.29E-01	6.76E-01	1.89E-03	1.10E-03	5.68E-07	7.26E-04	3.80E-03	3.41E-07	2.99E-03	4.53E-03
Lead	5.64E-05	5.07E-06	2.85E-01	7.42E-08	4.63E-04	1.76E-07	2.85E-08	1.60E-03	1.06E-07	4.64E-04	1.60E-03
Nickel	1.25E-03	9.75E-02	3.50E-02	1.43E-03	5.69E-05	3.91E-06	5.48E-04	1.97E-04	2.34E-06	1.49E-03	7.48E-04
Selenium	7.45E-05	9.61E-03	9.41E-02	1.41E-04	1.53E-04	2.33E-07	5.41E-05	5.29E-04	1.40E-07	2.94E-04	5.83E-04
Silver	9.32E-06	8.17E-04	2.78E-03	1.20E-05	4.51E-06	2.91E-08	4.60E-06	1.56E-05	1.75E-08	1.65E-05	2.02E-05
Tin	1.53E-04	2.12E-02	2.12E-02	3.09E-04	3.44E-05	4.79E-07	1.19E-04	1.19E-04	2.87E-07	3.44E-04	2.38E-04
Vanadium	2.25E-03	-	-	-	-	7.04E-06	-	-	4.23E-06	7.04E-06	4.23E-06
Zinc	2.59E-03	5.34E+00	1.23E+01	7.81E-02	2.00E-02	8.10E-06	3.00E-02	6.94E-02	4.86E-06	9.81E-02	9.94E-02
Ammonia	6.41E-01	-	-	-	-	2.00E-03	-	-	1.20E-03	2.00E-03	1.20E-03
TCDD	4.02E-11	3.73E-05	8.77E-07	5.45E-07	1.42E-09	1.25E-13	2.10E-07	4.93E-09	7.53E-14	5.47E-07	2.15E-07
Toluene	2.26E-04	3.87E-02	2.63E-03	5.66E-04	4.27E-06	7.08E-07	2.18E-04	1.48E-05	4.25E-07	5.71E-04	2.33E-04
Diazinon	9.06E-07	1.55E-04	1.02E-04	2.26E-06	1.67E-07	2.83E-09	8.71E-07	5.76E-07	1.70E-09	2.43E-06	1.45E-06
Malathion	5.85E-07	7.66E-06	3.58E-06	1.12E-07	5.82E-09	1.83E-09	4.31E-08	2.01E-08	1.10E-09	1.20E-07	6.43E-08

Table 2b Exposure of Contaminants of Concern by Marine Mammals (Scenario 2)

Contaminant of Concern	Conc. at edge of ZID (mg/L)	Conc. in Fish (mg/kg)	Conc. in Shellfish (mg/kg)	Dolphins			Porpoises			Dolphins	Porpoises
				Daily Exposure via Ingestion of Fish (mg/kg-d)	Daily Exposure via Ingestion of Shellfish (mg/kg-d)	Daily Exposure via Ingestion of Seawater (mg/kg-d)	Total Daily Exposure (mg/kg-d)	Daily Exposure via Ingestion of Shellfish (mg/kg-d)	Daily Exposure via Ingestion of Seawater (mg/kg-d)	Total Daily Exposure (mg/kg-d)	Total Daily Exposure (mg/kg-d)
<i>Potential CBPs</i>											
Total Residual Chlorine	2.04E-03	-	-	-	-	6.38E-06	-	-	3.83E-06	6.38E-06	3.83E-06
Chloroform	1.43E-04	9.89E-04	4.03E-04	1.45E-05	6.55E-07	4.46E-07	5.56E-06	2.27E-06	2.68E-07	1.56E-05	8.09E-06
Chloroacetic acid	8.16E-05	2.12E-05	8.98E-06	3.10E-07	1.46E-08	2.55E-07	1.19E-07	5.05E-08	1.53E-07	5.80E-07	3.23E-07
Dibromoacetic acid	8.16E-05	6.69E-05	2.53E-05	9.79E-07	4.11E-08	2.55E-07	3.77E-07	1.42E-07	1.53E-07	1.28E-06	6.72E-07
Dichloroacetic acid	9.37E-04	1.06E-03	3.84E-04	1.55E-05	6.24E-07	2.93E-06	5.95E-06	2.16E-06	1.76E-06	1.90E-05	9.87E-06
Trichloroacetic acid	4.49E-04	2.58E-03	3.95E-04	3.78E-05	6.42E-07	1.40E-06	1.45E-05	2.22E-06	8.42E-07	3.98E-05	1.76E-05
Tetrachloroethylene	2.65E-05	2.20E-03	1.27E-03	3.21E-05	2.06E-06	8.29E-08	1.24E-05	7.14E-06	4.97E-08	3.43E-05	1.95E-05
Trichloroethylene	4.08E-05	5.76E-04	2.80E-04	8.42E-06	4.54E-07	1.28E-07	3.24E-06	1.57E-06	7.65E-08	9.00E-06	4.89E-06
2,4,6-trichlorophenol	4.08E-05	2.29E-03	3.44E-03	3.35E-05	5.59E-06	1.28E-07	1.29E-05	1.93E-05	7.65E-08	3.92E-05	3.23E-05
Hexachlorobenzene	5.10E-06	1.22E-02	1.32E-02	1.79E-04	2.15E-05	1.59E-08	6.89E-05	7.45E-05	9.57E-09	2.01E-04	1.43E-04
b-BHC	1.02E-05	1.71E-03	1.09E-03	2.51E-05	1.77E-06	3.19E-08	9.64E-06	6.14E-06	1.91E-08	2.69E-05	1.58E-05
g-BHC	1.02E-05	1.71E-03	9.75E-04	2.51E-05	1.58E-06	3.19E-08	9.64E-06	5.48E-06	1.91E-08	2.67E-05	1.51E-05

Contaminant of Concern	Conc. at edge of ZID (mg/L)	Conc. in Fish (mg/kg)	Conc. in Shellfish (mg/kg)	Dolphins			Porpoises			Dolphins	Porpoises
				Daily Exposure via Ingestion of Fish (mg/kg-d)	Daily Exposure via Ingestion of Shellfish (mg/kg-d)	Daily Exposure via Ingestion of Seawater (mg/kg-d)	Total Daily Exposure (mg/kg-d)	Daily Exposure via Ingestion of Shellfish (mg/kg-d)	Daily Exposure via Ingestion of Seawater (mg/kg-d)	Total Daily Exposure (mg/kg-d)	Total Daily Exposure (mg/kg-d)
<i>Contaminants present in CEPT Effluent</i>											
Aluminium	1.56E-02	4.21E-02	2.03E-03	6.16E-04	3.30E-06	4.88E-05	2.37E-04	1.14E-05	2.93E-05	6.68E-04	2.78E-04
Antimony	2.67E-04	1.07E-02	1.87E-03	1.56E-04	3.04E-06	8.36E-07	6.02E-05	1.05E-05	5.01E-07	1.60E-04	7.12E-05
Barium	6.99E-03	4.42E+00	1.40E+00	6.47E-02	2.27E-03	2.18E-05	2.49E-02	7.86E-03	1.31E-05	6.70E-02	3.28E-02
Chromium III	4.70E-04	8.93E-03	5.17E-05	1.31E-04	8.40E-08	1.47E-06	5.02E-05	2.91E-07	8.81E-07	1.32E-04	5.14E-05
Copper	1.95E-04	1.38E-01	7.25E-01	2.02E-03	1.18E-03	6.09E-07	7.78E-04	4.08E-03	3.65E-07	3.20E-03	4.85E-03
Lead	5.65E-05	5.08E-06	2.86E-01	7.44E-08	4.64E-04	1.77E-07	2.86E-08	1.61E-03	1.06E-07	4.65E-04	1.61E-03
Nickel	1.29E-03	1.01E-01	3.61E-02	1.47E-03	5.86E-05	4.03E-06	5.66E-04	2.03E-04	2.42E-06	1.53E-03	7.71E-04
Selenium	7.49E-05	9.66E-03	9.45E-02	1.41E-04	1.54E-04	2.34E-07	5.43E-05	5.32E-04	1.40E-07	2.95E-04	5.86E-04
Silver	9.59E-06	8.41E-04	2.86E-03	1.23E-05	4.64E-06	3.00E-08	4.73E-06	1.61E-05	1.80E-08	1.70E-05	2.08E-05
Tin	1.54E-04	2.13E-02	2.13E-02	3.12E-04	3.46E-05	4.82E-07	1.20E-04	1.20E-04	2.89E-07	3.47E-04	2.40E-04
Vanadium	2.30E-03	-	-	-	-	7.18E-06	-	-	4.31E-06	7.18E-06	4.31E-06
Zinc	2.61E-03	5.38E+00	1.24E+01	7.86E-02	2.02E-02	8.15E-06	3.02E-02	6.98E-02	4.89E-06	9.88E-02	1.00E-01
Ammonia	6.74E-01	-	-	-	-	2.11E-03	-	-	1.26E-03	2.11E-03	1.26E-03
TCDD	4.02E-11	3.74E-05	8.79E-07	5.47E-07	1.43E-09	1.26E-13	2.10E-07	4.94E-09	7.55E-14	5.48E-07	2.15E-07
Toluene	2.45E-04	4.19E-02	2.84E-03	6.12E-04	4.62E-06	7.65E-07	2.36E-04	1.60E-05	4.59E-07	6.18E-04	2.52E-04
Diazinon	9.80E-07	1.68E-04	1.11E-04	2.45E-06	1.80E-07	3.06E-09	9.42E-07	6.24E-07	1.84E-09	2.63E-06	1.57E-06
Malathion	6.33E-07	8.29E-06	3.87E-06	1.21E-07	6.29E-09	1.98E-09	4.66E-08	2.18E-08	1.19E-09	1.29E-07	6.96E-08

Table 2c Exposure of Contaminants of Concern by Marine Mammals (Scenario 3)

Contaminant of Concern	Conc. at edge of ZID (mg/L)	Conc. in Fish (mg/kg)	Conc. in Shellfish (mg/kg)	Dolphins			Porpoises			Dolphins	Porpoises
				Daily Exposure via Ingestion of Fish (mg/kg-d)	Daily Exposure via Ingestion of Shellfish (mg/kg-d)	Daily Exposure via Ingestion of Seawater (mg/kg-d)	Total Daily Exposure (mg/kg-d)	Daily Exposure via Ingestion of Shellfish (mg/kg-d)	Daily Exposure via Ingestion of Seawater (mg/kg-d)	Total Daily Exposure (mg/kg-d)	Total Daily Exposure (mg/kg-d)
<i>Potential CBPs</i>											
Total Residual Chlorine	2.04E-04	-	-	-	-	6.38E-07	-	-	3.83E-07	6.38E-07	3.83E-07
Bromoform	1.00E-03	1.33E-02	6.60E-03	1.95E-04	1.07E-05	3.13E-06	7.48E-05	3.71E-05	1.88E-06	2.08E-04	1.14E-04
Dibromochloromethane	1.63E-04	1.70E-03	7.82E-04	2.48E-05	1.27E-06	5.10E-07	9.55E-06	4.40E-06	3.06E-07	2.66E-05	1.43E-05
Dibromoacetic acid	2.04E-05	5.31E-06	2.24E-06	7.76E-08	3.65E-09	6.38E-08	2.98E-08	1.26E-08	3.83E-08	1.45E-07	8.07E-08
Dichloroacetic acid	2.04E-04	1.67E-04	6.33E-05	2.45E-06	1.03E-07	6.38E-07	9.41E-07	3.56E-07	3.83E-07	3.19E-06	1.68E-06
Trichloroacetic acid	6.12E-05	6.92E-05	2.51E-05	1.01E-06	4.08E-08	1.91E-07	3.89E-07	1.41E-07	1.15E-07	1.24E-06	6.45E-07
Hexachlorobenzene	1.43E-04	8.21E-04	1.26E-04	1.20E-05	2.04E-07	4.46E-07	4.62E-06	7.07E-07	2.68E-07	1.27E-05	5.60E-06
b-BHC	5.10E-06	1.22E-02	1.32E-02	1.79E-04	2.15E-05	1.59E-08	6.89E-05	7.45E-05	9.57E-09	2.01E-04	1.43E-04
g-BHC	1.02E-05	1.71E-03	1.09E-03	2.51E-05	1.77E-06	3.19E-08	9.64E-06	6.14E-06	1.91E-08	2.69E-05	1.58E-05
<i>Contaminants present in Secondary Treated Effluent</i>											
Antimony	2.69E-04	1.07E-02	1.88E-03	1.57E-04	3.06E-06	8.40E-07	6.05E-05	1.06E-05	5.04E-07	1.61E-04	7.15E-05
Barium	7.00E-03	4.43E+00	1.40E+00	6.48E-02	2.27E-03	2.19E-05	2.49E-02	7.87E-03	1.31E-05	6.71E-02	3.28E-02
Chromium III	4.47E-04	8.48E-03	4.91E-05	1.24E-04	7.98E-08	1.40E-06	4.77E-05	2.76E-07	8.37E-07	1.26E-04	4.88E-05
Copper	1.55E-04	1.10E-01	5.76E-01	1.61E-03	9.36E-04	4.84E-07	6.19E-04	3.24E-03	2.90E-07	2.54E-03	3.86E-03
Nickel	1.21E-03	9.43E-02	3.39E-02	1.38E-03	5.50E-05	3.78E-06	5.31E-04	1.90E-04	2.27E-06	1.44E-03	7.23E-04
Selenium	7.12E-05	9.19E-03	8.99E-02	1.34E-04	1.46E-04	2.23E-07	5.17E-05	5.06E-04	1.34E-07	2.81E-04	5.57E-04
Silver	7.90E-06	6.93E-04	2.35E-03	1.01E-05	3.82E-06	2.47E-08	3.90E-06	1.32E-05	1.48E-08	1.40E-05	1.71E-05
Tin	1.46E-04	2.02E-02	2.02E-02	2.96E-04	3.28E-05	4.58E-07	1.14E-04	1.14E-04	2.75E-07	3.29E-04	2.28E-04
Vanadium	2.33E-03	-	-	-	-	7.29E-06	-	-	4.38E-06	7.29E-06	4.38E-06
Zinc	2.52E-03	5.19E+00	1.20E+01	7.60E-02	1.95E-02	7.88E-06	2.92E-02	6.75E-02	4.73E-06	9.55E-02	9.67E-02
Ammonia	3.11E-01	-	-	-	-	9.72E-04	-	-	5.83E-04	9.72E-04	5.83E-04
TCDD	3.95E-11	3.67E-05	8.62E-07	5.36E-07	1.40E-09	1.23E-13	2.06E-07	4.85E-09	7.40E-14	5.38E-07	2.11E-07
Diazinon	1.18E-06	2.02E-04	1.34E-04	2.96E-06	2.18E-07	3.70E-09	1.14E-06	7.53E-07	2.22E-09	3.18E-06	1.89E-06
Malathion	3.06E-07	4.01E-06	1.87E-06	5.86E-08	3.04E-09	9.57E-10	2.26E-08	1.05E-08	5.74E-10	6.27E-08	3.37E-08

Table 3a Ecological Risk to Marine Mammals due to Contaminants of Concern (Scenario 1)

Contaminant of Concern	Toxicity Reference Dose (mg/kg/d)	Total Daily Exposure (mg/kg-d) - Dolphins	Total Daily Exposure (mg/kg-d) - Porpoises	Hazard Quotient – Dolphins	Hazard Quotient – Porpoises
<i>Potential CBPs</i>					
Total Residual Chlorine	1.875	5.90E-06	3.54E-06	3.14E-06	1.89E-06
Chloroform	3.75	1.44E-05	7.48E-06	3.84E-06	2.00E-06
Chloroacetic acid	0.1875	5.36E-07	2.99E-07	2.86E-06	1.59E-06
Dibromoacetic acid	0.025	1.18E-06	6.21E-07	4.72E-05	2.48E-05
Dichloroacetic acid	0.095	1.76E-05	9.13E-06	1.85E-04	9.61E-05
Trichloroacetic acid	0.45	3.68E-05	1.63E-05	8.18E-05	3.61E-05
Tetrachloroethylene	6.7	3.17E-05	1.81E-05	4.73E-06	2.70E-06
Trichloroethylene	13.7125	8.32E-06	4.52E-06	6.07E-07	3.29E-07
2,4,6-trichlorophenol	169.5	3.62E-05	2.99E-05	2.14E-07	1.76E-07
Hexachlorobenzene	0.3	1.85E-04	1.33E-04	6.18E-04	4.42E-04
b-BHC	0.1125	2.48E-05	1.46E-05	2.21E-04	1.30E-04
g-BHC	1	2.47E-05	1.40E-05	2.47E-05	1.40E-05
<i>Contaminants present in CEPT Effluent</i>					
Aluminium	6.125	6.68E-04	2.78E-04	1.09E-04	4.53E-05
Antimony	0.015625	1.60E-04	7.10E-05	1.02E-02	4.55E-03
Barium	1.875	6.67E-02	3.26E-02	3.56E-02	1.74E-02
Chromium III	342.125	1.28E-04	4.98E-05	3.74E-07	1.46E-07
Copper	1.5	2.99E-03	4.53E-03	1.99E-03	3.02E-03
Lead	1	4.64E-04	1.60E-03	4.64E-04	1.60E-03
Nickel	5	1.49E-03	7.48E-04	2.97E-04	1.50E-04
Selenium	0.02625	2.94E-04	5.83E-04	1.12E-02	2.22E-02
Silver	2.7775	1.65E-05	2.02E-05	5.94E-06	7.29E-06
Tin	2.925	3.44E-04	2.38E-04	1.18E-04	8.15E-05
Vanadium	0.02625	7.04E-06	4.23E-06	2.68E-04	1.61E-04
Zinc	20	9.81E-02	9.94E-02	4.91E-03	4.97E-03
Ammonia	5.15	2.00E-03	1.20E-03	3.89E-04	2.33E-04
TCDD	8.88E-06	5.47E-07	2.15E-07	6.16E-02	2.42E-02
Toluene	3.25	5.71E-04	2.33E-04	1.76E-04	7.17E-05
Diazinon	1.5	2.43E-06	1.45E-06	1.62E-06	9.66E-07
Malathion	4.4875	1.20E-07	6.43E-08	2.67E-08	1.43E-08
Hazard Index				1.29E-01	7.95E-02

Table 3b Ecological Risk to Marine Mammals due to Contaminants of Concern (Scenario 2)

Contaminant of Concern	Toxicity Reference Dose (mg/kg/d)	Total Daily Exposure (mg/kg-d) - Dolphins	Total Daily Exposure (mg/kg-d) - Porpoises	Hazard Quotient – Dolphins	Hazard Quotient – Porpoises
<i>Potential CBPs</i>					
Total Residual Chlorine	1.875	6.38E-06	3.83E-06	3.40E-06	2.04E-06
Chloroform	3.75	1.56E-05	8.09E-06	4.15E-06	2.16E-06
Chloroacetic acid	0.1875	5.80E-07	3.23E-07	3.09E-06	1.72E-06
Dibromoacetic acid	0.025	1.28E-06	6.72E-07	5.10E-05	2.69E-05
Dichloroacetic acid	0.095	1.90E-05	9.87E-06	2.00E-04	1.04E-04
Trichloroacetic acid	0.45	3.98E-05	1.76E-05	8.84E-05	3.91E-05
Tetrachloroethylene	6.7	3.43E-05	1.95E-05	5.12E-06	2.92E-06
Trichloroethylene	13.7125	9.00E-06	4.89E-06	6.56E-07	3.56E-07
2,4,6-trichlorophenol	169.5	3.92E-05	3.23E-05	2.31E-07	1.91E-07
Hexachlorobenzene	0.3	2.01E-04	1.43E-04	6.69E-04	4.78E-04
b-BHC	0.1125	2.69E-05	1.58E-05	2.39E-04	1.40E-04
g-BHC	1	2.67E-05	1.51E-05	2.67E-05	1.51E-05
<i>Contaminants present in CEPT Effluent</i>					

Contaminant of Concern	Toxicity Reference Dose (mg/kg/d)	Total Daily Exposure (mg/kg-d) - Dolphins	Total Daily Exposure (mg/kg-d) - Porpoises	Hazard Quotient – Dolphins	Hazard Quotient – Porpoises
Aluminium	6.125	6.68E-04	2.78E-04	1.09E-04	4.53E-05
Antimony	0.015625	1.60E-04	7.12E-05	1.03E-02	4.56E-03
Barium	1.875	6.70E-02	3.28E-02	3.57E-02	1.75E-02
Chromium III	342.125	1.32E-04	5.14E-05	3.86E-07	1.50E-07
Copper	1.5	3.20E-03	4.85E-03	2.13E-03	3.24E-03
Lead	1	4.65E-04	1.61E-03	4.65E-04	1.61E-03
Nickel	5	1.53E-03	7.71E-04	3.07E-04	1.54E-04
Selenium	0.02625	2.95E-04	5.86E-04	1.12E-02	2.23E-02
Silver	2.7775	1.70E-05	2.08E-05	6.11E-06	7.50E-06
Tin	2.925	3.47E-04	2.40E-04	1.19E-04	8.20E-05
Vanadium	0.02625	7.18E-06	4.31E-06	2.73E-04	1.64E-04
Zinc	20	9.88E-02	1.00E-01	4.94E-03	5.00E-03
Ammonia	5.15	2.11E-03	1.26E-03	4.09E-04	2.45E-04
TCDD	8.88E-06	5.48E-07	2.15E-07	6.18E-02	2.42E-02
Toluene	3.25	6.18E-04	2.52E-04	1.90E-04	7.75E-05
Diazinon	1.5	2.63E-06	1.57E-06	1.76E-06	1.05E-06
Malathion	4.4875	1.29E-07	6.96E-08	2.89E-08	1.55E-08
			Hazard Index	1.29E-01	8.00E-02

Table 3c Ecological Risk to Marine Mammals due to Contaminants of Concern (Scenario 3)

Contaminant of Concern	Toxicity Reference Dose (mg/kg/d)	Total Daily Exposure (mg/kg-d) - Dolphins	Total Daily Exposure (mg/kg-d) - Porpoises	Hazard Quotient – Dolphins	Hazard Quotient – Porpoises
<i>Potential CBPs</i>					
TRC	1.875	6.38E-07	3.83E-07	3.40E-07	2.04E-07
Bromoform	12.5	2.08E-04	1.14E-04	1.67E-05	9.11E-06
Dibromochloromethane	10	2.66E-05	1.43E-05	2.66E-06	1.43E-06
Dibromoacetic acid	0.025	1.45E-07	8.07E-08	1.28E-04	6.72E-05
Dichloroacetic acid	0.095	3.19E-06	1.68E-06	1.31E-05	6.79E-06
Trichloroacetic acid	0.45	1.24E-06	6.45E-07	2.81E-05	1.24E-05
Hexachlorobenzene	0.3	1.27E-05	5.60E-06	6.69E-04	4.78E-04
b-BHC	0.1125	2.01E-04	1.43E-04	2.39E-04	1.40E-04
g-BHC	1	2.69E-05	1.58E-05	2.67E-05	1.51E-05
<i>Contaminants present in Secondary Treated Effluent</i>					
Antimony	0.015625	1.61E-04	7.15E-05	1.03E-02	4.58E-03
Barium	1.875	6.71E-02	3.28E-02	3.58E-02	1.75E-02
Chromium III	342.125	1.26E-04	4.88E-05	3.67E-07	1.43E-07
Copper	1.5	2.54E-03	3.86E-03	1.70E-03	2.57E-03
Nickel	5	1.44E-03	7.23E-04	2.88E-04	1.45E-04
Selenium	0.02625	2.81E-04	5.57E-04	1.07E-02	2.12E-02
Silver	2.7775	1.40E-05	1.71E-05	5.03E-06	6.17E-06
Tin	2.925	3.29E-04	2.28E-04	1.12E-04	7.78E-05
Vanadium	0.02625	7.29E-06	4.38E-06	2.78E-04	1.67E-04
Zinc	20	9.55E-02	9.67E-02	4.77E-03	4.84E-03
Ammonia	5.15	9.72E-04	5.83E-04	1.89E-04	1.13E-04
TCDD	8.88E-06	5.38E-07	2.11E-07	6.06E-02	2.38E-02
Diazinon	1.5	3.18E-06	1.89E-06	2.12E-06	1.26E-06
Malathion	4.4875	6.27E-08	3.37E-08	1.40E-08	7.50E-09
			Hazard Index	1.26E-01	7.57E-02