Appendix 7

Fate and Transport

The fate and transport of representative stressors can be estimated by a first order decay model (Eqn. 20), which estimates the final concentration (C) of the representative stressors in correlation to vertical travel times estimated earlier. This first order decay model is appropriate for analysis of the organic constituents, because it takes into account natural attenuation processes such as biodegradation, hydrolysis and sorption (Suthersan, 2002).

$$C = C_O e^{-kt_C} \qquad \text{(Eqn. 20)}$$

where:

	C	= Final concentration of stressors
	C_O	= Initial concentration of stressors
	k	= Decay coefficient of stressors
	t_C	= Travel time of stressors

Half-life ($t_{1/2}$) is defined as the time it takes for stressors to reach half of the initial concentration. The decay coefficient (k) can be determined by rearranging Equation 20, substituting the half-life in place of the travel time of stressors (t_C) and equating the ratio of the final versus initial concentrations to 0.5 (Eqn. 21). The decay coefficient (Eqn. 22) is simplified by rearranging Equation 21. Published values for half-life are available and were identified for the selected representative stressors (Howard et al., 1991).

$$\frac{C}{C_O} = 0.5 = e^{-kt_{1/2}} \qquad \text{(Eqn. 21)}$$

$$k = \frac{0.693}{t_{1/2}} \qquad \text{(Eqn. 22)}$$

The travel time of representative stressors (t_C) are determined by multiplying the retardation coefficient (R) by the effluent travel time (t_E) (Eqn. 23). In this analysis, the effluent travel time is equivalent to the vertical travel time estimated earlier.

$$t_C = R \times t_E \qquad \text{(Eqn. 23)}$$

The retardation coefficient takes into account sorption, a natural attenuation process which increases the travel time of stressors. The greater the travel time of stressors, the more time there is for other natural attenuation process to occur, such as biodegradation and hydrolysis to a lesser extent. Biodegradation results in the degradation of organic material and may also mediate transformations in the state of inorganic material resulting in decreasing concentrations over time. Hydrolysis is the process whereby organic and inorganic solutes react with water resulting in degradation and transformation (Suthersan, 2002). Calculation for the retardation coefficient, for dissolved organic constituents, is shown below in Equation 24 (Suthersan, 2002).

$$R = 1 + \frac{\rho_b K_d}{n} \qquad \text{(Eqn. 24)}$$

where: ρ_b = Bulk density = $\rho_s(1-n)$ (Eqn. 25)

ρ_s = soil density

n = porosity

K_d = Distribution coefficient = $K_{oc} f_{oc}$ (Eqn. 26)

K_{oc} = Sorption coefficient

f_{oc} = fraction of total organic carbon

$$R = 1 + \frac{\rho_s (1-n) K_{oc} f_{oc}}{n} \qquad \text{(Eqn. 27)}$$

Sorption coefficients (K_{oc}) were obtained from published values for each representative stressor (Montgomery, 2000). For purposes of risk assessment, conservative values (indicating the least sorption) were selected to calculate the distribution coefficient and therefore the retardation coefficient. Ultimately, this produces conservative estimates of stressor concentrations at the receptors, since the data used relate to the lowest reasonably expected retardation and the shortest travel time. The calculations incorporated a typical value for sediment density of 2.63 g/cm^3 (Freeze and Cherry, 1979). Weighted mean porosity values (Appendix 3), based on unit thickness, were used in the calculations.

Appendix Table 7-1 Representative Stressors Concentrations at Receptor Wells

(Scenario 1: Porous Media Flow)

Dade County

Surrogate	Published Half-Life in Groundwater ($t_{1/2}$) (days)	Published Sorption Coefficient (K_{OC})	Fraction of Total Organic Carbon (f_{oc})	Distribution Coefficient (K_d)	Soil Density (ρ_s)	Porosity (n)	Bulk Density (ρ_b)	Retardation Coefficient (R)	Effluent Travel Time to Receptor Wells (t_E) (years)	Contaminant Travel Time (t_C) (years)	Effluent Travel Time to Receptor Wells (days)	Contaminant Travel Time (t_n) (days)	Decay Coefficient (k) (day^{-1})	Concentration at Injection Pt. (C_O)	Concentration at Supply Well (C)
Chloroform (µg/L)	1800	1.44	0.01	0.014	2.63	0.33	1.76	1.08	1188	1279	433620	466962	0.0004	61.58	0.00
Tetrachloroethylene (PCE) (µg/L)	720	2.25	0.01	0.023	2.63	0.33	1.76	1.12	1188	1331	433620	485716	0.0010	**4.66**	0.00
Chlordane (µg/L)	2772	4.72	0.01	0.047	2.63	0.33	1.76	1.25	1188	1487	433620	542907	0.0003	0.010	0.000
Arsenic (mg/L)	N/A	2.73	0.01	0.027	2.63	0.33	1.76	1.15	1188	1361	433620	496830	N/A	0.010	0.010
Di(2-ethylhexyl) Phthalate (DEHP) (µg/L)	389	4.48	0.01	0.045	2.63	0.33	1.76	1.24	1188	1472	433620	537350	0.0018	5.00	0.00
Ammonia (mg/L) (conservative behavior)	N/A	0.49	0.01	0.005	2.63	0.33	1.76	1.03	1188	1219.1	433620	444965	N/A	8.75	8.75
Nitrates (mg/L)(conservative behavior)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1188	N/A	433620	N/A	N/A	3.82	3.82

Pinellas County

Surrogate	Published Half-Life in Groundwater ($t_{1/2}$) (days)	Published Sorption Coefficient (K_{OC})	Fraction of Total Organic Carbon (f_{oc})	Distribution Coefficient (K_d)	Soil Density (ρ_s)	Porosity (n)	Bulk Density (ρ_b)	Retardation Coefficient (R)	Effluent Travel Time to Receptor Wells (t_E) (years)	Contaminant Travel Time (t_C) (years)	Effluent Travel Time to Receptor Wells (days)	Contaminant Travel Time (t_n) (days)	Decay Coefficient (k) (day^{-1})	Concentration at Injection Pt. (C_O)	Concentration at Supply Well (C)
Chloroform (µg/L)	1800	1.44	0.01	0.014	2.63	0.24	2.00	1.12	23.00	25.8	8395	9402	0.0004	6.70	0.18
Tetrachloroethylene (PCE) (µg/L)	720	2.25	0.01	0.023	2.63	0.24	2.00	1.19	23.00	27.3	8395	9968	0.0010	0.63	0.00
Chlordane (µg/L)	2772	4.72	0.01	0.047	2.63	0.24	2.00	1.39	23.00	32.0	8395	11695	0.0003	0.64	0.03
Arsenic (mg/L)	N/A	2.73	0.01	0.027	2.63	0.24	2.00	1.23	23.00	28.23	8395	10304	N/A	0.003	0.003
Di(2-ethylhexyl) Phthalate (DEHP) (µg/L)	389	4.48	0.01	0.045	2.63	0.24	2.00	1.37	23.00	31.6	8395	11527	0.0018	1.25	0.00
Ammonia (mg/L) (conservative behavior)	N/A	0.49	0.01	0.005	2.63	0.24	2.00	1.04	23.00	23.9	8395	8738	N/A	18.00	18.00
Nitrates (mg/L)(conservative behavior)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	23.00	N/A	8395	N/A	N/A	0.28	0.28

Brevard County

Surrogate	Published Half-Life in Groundwater ($t_{1/2}$) (days)	Published Sorption Coefficient (K_{OC})	Fraction of Total Organic Carbon (f_{oc})	Distribution Coefficient (K_d)	Soil Density (ρ_s)	Porosity (n)	Bulk Density (ρ_b)	Retardation Coefficient (R)	Effluent Travel Time to Receptor Wells (t_E) (years)	Contaminant Travel Time (t_C) (years)	Effluent Travel Time to Receptor Wells (days)	Contaminant Travel Time (t_n) (days)	Decay Coefficient (k) (day^{-1})	Concentration at Injection Pt. (C_O)	Concentration at Supply Well (C)
Chloroform (µg/L)	1800	1.44	0.01	0.014	2.63	0.36	1.68	1.07	1118	1193	408070	435545	0.0004	**230**	0.00
Tetrachloroethylene (PCE) (µg/L)	720	2.25	0.01	0.023	2.63	0.36	1.68	1.11	1118	1236	408070	450999	0.0010	1.00	0.00
Chlordane (µg/L)	2772	4.72	0.01	0.047	2.63	0.36	1.68	1.22	1118	1365	408070	498125	0.0003	0.010	0.000
Arsenic (mg/L)	N/A	2.73	0.01	0.027	2.63	0.36	1.68	1.13	1118	1261	408070	460157	N/A	0.005	0.005
Di(2-ethylhexyl) Phthalate (DEHP) (µg/L)	389	4.48	0.01	0.045	2.63	0.36	1.68	1.21	1118	1352	408070	493546	0.0018	5.00	0.00
Ammonia (mg/L) (conservative behavior)	N/A	0.49	0.01	0.005	2.63	0.36	1.68	1.02	1118	1144	408070	417419	N/A	8.75	8.75
Nitrates (mg/L)(conservative behavior)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1118	N/A	408070	N/A	N/A	9.60	9.60

N/A = not applicable

Appendix Table 7-2 Representative Stressors Concentrations at USDW

(Scenario 1: Porous Media Flow)

Dade County

Surrogate	Published Half-Life in Groundwater ($t_{1/2}$) (days)	Published Sorption Coefficient (K_{OC})	Fraction of Total Organic Carbon (f_{oc})	Distribution Coefficient (K_d)	Soil Density (ρ_s)	Porosity (n)	Bulk Density (ρ_b)	Retardation Coefficient (R)	Effluent Travel Time to USDW (t_E) (years)	Contaminant Travel Time (t_C) (years)	Decay Coefficient (k) (day $^{-1}$)	Concentration at Injection Pt. (C_O)	Concentration at USDW (C)
Chloroform (µg/L)	1800	1.44	0.01	0.014	2.63	0.33	1.76	1.08	421	453	0.0004	61.58	0.00
Tetrachloroethylene (PCE) (µg/L)	720	2.25	0.01	0.023	2.63	0.33	1.76	1.12	421	472	0.0010	**4.66**	0.00
Chlordane (µg/L)	2772	4.72	0.01	0.047	2.63	0.33	1.76	1.25	421	527	0.0003	0.010	0.00
Arsenic (mg/L)	N/A	2.73	0.01	0.027	2.63	0.33	1.76	1.15	421	482	N/A	0.010	0.010
Di(2-ethylhexyl) Phthalate (DEHP) (µg/L)	389	4.48	0.01	0.045	2.63	0.33	1.76	1.24	421	522	0.0018	5.00	0.00
Ammonia (mg/L) (conservative behavior)	N/A	0.49	0.01	0.005	2.63	0.33	1.76	1.03	421	432.0	N/A	8.75	8.75
Nitrates (mg/L)(conservative behavior)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	421	N/A	N/A	3.82	3.82

Pinellas County

Surrogate	Published Half-Life in Groundwater ($t_{1/2}$) (days)	Published Sorption Coefficient (K_{OC})	Fraction of Total Organic Carbon (f_{oc})	Distribution Coefficient (K_d)	Soil Density (ρ_s)	Porosity (n)	Bulk Density (ρ_b)	Retardation Coefficient (R)	Effluent Travel Time to USDW (t_E) (years)	Contaminant Travel Time (t_C) (years)	Decay Coefficient (k) (day $^{-1}$)	Concentration at Injection Pt. (C_O)	Concentration at USDW (C)
Chloroform (µg/L)	1800	1.44	0.01	0.014	2.63	0.24	2.00	1.12	2.00	2.2	0.0004	6.70	4.89
Tetrachloroethylene (PCE) (µg/L)	720	2.25	0.01	0.023	2.63	0.24	2.00	1.19	2.00	2.4	0.0010	0.63	0.27
Chlordane (µg/L)	2772	4.72	0.01	0.047	2.63	0.24	2.00	1.39	2.00	2.8	0.0003	0.64	0.50
Arsenic (mg/L)	N/A	2.73	0.01	0.027	2.63	0.24	2.00	1.23	2.00	2.45	N/A	0.003	0.003
Di(2-ethylhexyl) Phthalate (DEHP) (µg/L)	389	4.48	0.01	0.045	2.63	0.24	2.00	1.37	2.00	2.7	0.0018	1.25	0.21
Ammonia (mg/L) (conservative behavior)	N/A	0.49	0.01	0.005	2.63	0.24	2.00	1.04	2.00	2.1	N/A	18.00	18.00
Nitrates (mg/L)(conservative behavior)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.00	N/A	N/A	0.28	0.28

Brevard County

Surrogate	Published Half-Life in Groundwater ($t_{1/2}$) (days)	Published Sorption Coefficient (K_{OC})	Fraction of Total Organic Carbon (f_{oc})	Distribution Coefficient (K_d)	Soil Density (ρ_s)	Porosity (n)	Bulk Density (ρ_b)	Retardation Coefficient (R)	Effluent Travel Time to USDW (t_E) (years)	Contaminant Travel Time (t_C) (years)	Decay Coefficient (k) (day $^{-1}$)	Concentration at Injection Pt. (C_O)	Concentration at USDW (C)
Chloroform (µg/L)	1800	1.44	0.01	0.014	2.63	0.36	1.68	1.07	342	365	0.0004	**230**	0.0
Tetrachloroethylene (PCE) (µg/L)	720	2.25	0.01	0.023	2.63	0.36	1.68	1.11	342	378	0.0010	1.00	0.0
Chlordane (µg/L)	2772	4.72	0.01	0.047	2.63	0.36	1.68	1.22	342	417	0.0003	0.010	0.0
Arsenic (mg/L)	N/A	2.73	0.01	0.027	2.63	0.36	1.68	1.13	342	386	N/A	0.005	0.005
Di(2-ethylhexyl) Phthalate (DEHP) (µg/L)	389	4.48	0.01	0.045	2.63	0.36	1.68	1.21	342	414	0.0018	5.00	0.0
Ammonia (mg/L) (conservative behavior)	N/A	0.49	0.01	0.005	2.63	0.36	1.68	1.02	342	350	N/A	8.75	8.75
Nitrates (mg/L)(conservative behavior)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	342	N/A	N/A	9.60	9.60

N/A = not applicable

Appendix Table 7-3 Representative Stressors Concentrations at Receptor Wells

(Scenario 2: Preferential Flow Paths)

Dade County

Surrogate	Published Half-Life in Groundwater ($t_{1/2}$) (days)	Published Sorption Coefficient (K_{OC})	Fraction of Total Organic Carbon (f_{oc})	Distribution Coefficient (K_d)	Soil Density (ρ_s)	Porosity (n)	Bulk Density (ρ_b)	Retardation Coefficient (R)	Effluent Travel Time to Receptor Wells (t_E) (years)	Contaminant Travel Time (t_C) (years)	Decay Coefficient (k) (day $^{-1}$)	Concentration at Injection Pt. (C_O)	Concentration at Supply Well (C)
Chloroform (µg/L)	1800	1.44	0.01	0.014	2.63	0.3	1.84	1.09	30	33	0.0004	61.58	0.63
Tetrachloroethylene (PCE) (µg/L)	720	2.25	0.01	0.023	2.63	0.3	1.84	1.14	30	34	0.0010	**4.66**	0.00
Chlordane (µg/L)	2772	4.72	0.01	0.047	2.63	0.3	1.84	1.29	30	39	0.0003	0.010	0.000
Arsenic (mg/L)	N/A	2.73	0.01	0.027	2.63	0.3	1.84	1.17	30	35	N/A	0.010	0.010
Di(2-ethylhexyl) Phthalate (DEHP) (µg/L)	389	4.48	0.01	0.045	2.63	0.3	1.84	1.27	30	38	0.0018	5.00	0.00
Ammonia (mg/L) (conservative behavior)	N/A	0.49	0.01	0.005	2.63	0.3	1.84	1.03	30	30.9	N/A	8.75	8.75
Nitrates (mg/L)(conservative behavior)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	30	N/A	N/A	3.82	3.82

Pinellas County

Surrogate	Published Half-Life in Groundwater ($t_{1/2}$) (days)	Published Sorption Coefficient (K_{OC})	Fraction of Total Organic Carbon (f_{oc})	Distribution Coefficient (K_d)	Soil Density (ρ_s)	Porosity (n)	Bulk Density (ρ_b)	Retardation Coefficient (R)	Effluent Travel Time to Receptor Wells (t_E) (years)	Contaminant Travel Time (t_C) (years)	Decay Coefficient (k) (day $^{-1}$)	Concentration at Injection Pt. (C_O)	Concentration at Supply Well (C)
Chloroform (µg/L)	1800	1.44	0.01	0.014	2.63	0.25	1.97	1.11	6.40	7.1	0.0004	6.70	2.46
Tetrachloroethylene (PCE) (µg/L)	720	2.25	0.01	0.023	2.63	0.25	1.97	1.18	6.40	7.5	0.0010	0.63	0.04
Chlordane (µg/L)	2772	4.72	0.01	0.047	2.63	0.25	1.97	1.37	6.40	8.8	0.0003	0.64	0.29
Arsenic (mg/L)	N/A	2.73	0.01	0.027	2.63	0.25	1.97	1.22	6.40	7.78	N/A	0.003	0.003
Di(2-ethylhexyl) Phthalate (DEHP) (µg/L)	389	4.48	0.01	0.045	2.63	0.25	1.97	1.35	6.40	8.7	0.0018	1.25	0.00
Ammonia (mg/L) (conservative behavior)	N/A	0.49	0.01	0.005	2.63	0.25	1.97	1.04	6.40	6.6	N/A	18.00	18.00
Nitrates (mg/L)(conservative behavior)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.40	N/A	N/A	0.28	0.28

Brevard County

Surrogate	Published Half-Life in Groundwater ($t_{1/2}$) (days)	Published Sorption Coefficient (K_{OC})	Fraction of Total Organic Carbon (f_{oc})	Distribution Coefficient (K_d)	Soil Density (ρ_s)	Porosity (n)	Bulk Density (ρ_b)	Retardation Coefficient (R)	Effluent Travel Time to Receptor Wells (t_E) (years)	Contaminant Travel Time (t_C) (years)	Decay Coefficient (k) (day $^{-1}$)	Concentration at Injection Pt. (C_O)	Concentration at Supply Well (C)
Chloroform (µg/L)	1800	1.44	0.01	0.014	2.63	0.36	1.68	1.07	136	145	0.0004	**230**	0.00
Tetrachloroethylene (PCE) (µg/L)	720	2.25	0.01	0.023	2.63	0.36	1.68	1.11	136	150	0.0010	1.00	0.00
Chlordane (µg/L)	2772	4.72	0.01	0.047	2.63	0.36	1.68	1.22	136	166	0.0003	0.010	0.000
Arsenic (mg/L)	N/A	2.73	0.01	0.027	2.63	0.36	1.68	1.13	136	153	N/A	0.005	0.005
Di(2-ethylhexyl) Phthalate (DEHP) (µg/L)	389	4.48	0.01	0.045	2.63	0.36	1.68	1.21	136	164	0.0018	5.00	0.00
Ammonia (mg/L) (conservative behavior)	N/A	0.49	0.01	0.005	2.63	0.36	1.68	1.02	136	139	N/A	8.75	8.75
Nitrates (mg/L)(conservative behavior)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	136	N/A	N/A	9.60	9.60

N/A = not applicable

Appendix Table 7-4 Representative Stressors Concentrations at USDW

(Scenario 2: Preferential Flow Paths)

Dade County

Surrogate	Published Half-Life in Groundwater ($t_{1/2}$) (days)	Published Sorption Coefficient (K_{OC})	Fraction of Total Organic Carbon (f_{oc})	Distribution Coefficient (K_d)	Soil Density (ρ_s)	Porosity (n)	Bulk Density (ρ_b)	Retardation Coefficient (R)	Effluent Travel Time to USDW (t_E) (years)	Contaminant Travel Time (t_C) (years)	Decay Coefficient (k) (day $^{-1}$)	Concentration at Injection Pt. (C_O)	Concentration at USDW (C)
Chloroform (µg/L)	1800	1.44	0.01	0.014	2.63	0.3	1.84	1.09	14	15	0.0004	61.58	7.24
Tetrachloroethylene (PCE) (µg/L)	720	2.25	0.01	0.023	2.63	0.3	1.84	1.14	14	16	0.0010	**4.66**	0.02
Chlordane (µg/L)	2772	4.72	0.01	0.047	2.63	0.3	1.84	1.29	14	18	0.0003	0.010	0.00
Arsenic (mg/L)	N/A	2.73	0.01	0.027	2.63	0.3	1.84	1.17	14	16	N/A	0.010	0.010
Di(2-ethylhexyl) Phthalate (DEHP) (µg/L)	389	4.48	0.01	0.045	2.63	0.3	1.84	1.27	14	18	0.0018	5.00	0.00
Ammonia (mg/L) (conservative behavior)	N/A	0.49	0.01	0.005	2.63	0.3	1.84	1.03	14	14.4	N/A	8.75	8.75
Nitrates (mg/L)(conservative behavior)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14	N/A	N/A	3.82	3.82

Pinellas County

Surrogate	Published Half-Life in Groundwater ($t_{1/2}$) (days)	Published Sorption Coefficient (K_{OC})	Fraction of Total Organic Carbon (f_{oc})	Distribution Coefficient (K_d)	Soil Density (ρ_s)	Porosity (n)	Bulk Density (ρ_b)	Retardation Coefficient (R)	Effluent Travel Time to USDW (t_E) (years)	Contaminant Travel Time (t_C) (years)	Decay Coefficient (k) (day $^{-1}$)	Concentration at Injection Pt. (C_O)	Concentration at USDW (C)
Chloroform (µg/L)	1800	1.44	0.01	0.014	2.63	0.25	1.97	1.11	0.47	0.5	0.0004	6.70	6.23
Tetrachloroethylene (PCE) (µg/L)	720	2.25	0.01	0.023	2.63	0.25	1.97	1.18	0.47	0.5	0.0010	0.63	0.52
Chlordane (µg/L)	2772	4.72	0.01	0.047	2.63	0.25	1.97	1.37	0.47	0.6	0.0003	0.64	0.60
Arsenic (mg/L)	N/A	2.73	0.01	0.027	2.63	0.25	1.97	1.22	0.47	0.57	N/A	0.003	0.003
Di(2-ethylhexyl) Phthalate (DEHP) (µg/L)	389	4.48	0.01	0.045	2.63	0.25	1.97	1.35	0.47	0.6	0.0018	1.25	0.83
Ammonia (mg/L) (conservative behavior)	N/A	0.49	0.01	0.005	2.63	0.25	1.97	1.04	0.47	0.5	N/A	18.00	18.00
Nitrates (mg/L)(conservative behavior)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.47	N/A	N/A	0.28	0.28

Brevard County

Surrogate	Published Half-Life in Groundwater ($t_{1/2}$) (days)	Published Sorption Coefficient (K_{OC})	Fraction of Total Organic Carbon (f_{oc})	Distribution Coefficient (K_d)	Soil Density (ρ_s)	Porosity (n)	Bulk Density (ρ_b)	Retardation Coefficient (R)	Effluent Travel Time to USDW (t_E) (years)	Contaminant Travel Time (t_C) (years)	Decay Coefficient (k) (day $^{-1}$)	Concentration at Injection Pt. (C_O)	Concentration at USDW (C)
Chloroform (µg/L)	1800	1.44	0.01	0.014	2.63	0.36	1.68	1.07	86	92	0.0004	**230**	0.0
Tetrachloroethylene (PCE) (µg/L)	720	2.25	0.01	0.023	2.63	0.36	1.68	1.11	86	95	0.0010	1.00	0.0
Chlordane (µg/L)	2772	4.72	0.01	0.047	2.63	0.36	1.68	1.22	86	105	0.0003	0.010	0.0
Arsenic (mg/L)	N/A	2.73	0.01	0.027	2.63	0.36	1.68	1.13	86	97	N/A	0.005	0.005
Di(2-ethylhexyl) Phthalate (DEHP) (µg/L)	389	4.48	0.01	0.045	2.63	0.36	1.68	1.21	86	104	0.0018	5.00	0.0
Ammonia (mg/L) (conservative behavior)	N/A	0.49	0.01	0.005	2.63	0.36	1.68	1.02	86	88	N/A	8.75	8.75
Nitrates (mg/L)(conservative behavior)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	86	N/A	N/A	9.60	9.60

N/A = not applicable