

Appendix 4E

Elutriate Test Results

Appendix 4E – Elutriate Test Results

Parameter	Unit	Assessment Criteria	Sampling Point / Depth of Sampling											
			S1B-1	S1B-2	S1B-3	S1B-4	S2-1	S2-2	S2-3	S2-4	S3-1	S3-2	S3-3	S3-4
			0.0-0.9M	1.0-1.9M	2.0-2.9M	3.0-3.9M	0.0-0.9M	1.0-1.9M	2.0-2.9M	3.0-3.9M	0.0-0.9M	1.0-1.9M	2.0-2.9M	3.0-3.9M
Silver (Ag)	µg/L	1.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic (As)	µg/L	10	8.2	29.2	60.5	72.7	102	90.2	95.2	21.1	25.9	46.9	98.9	52.7
Cadmium (Cd)	µg/L	2.5	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	0.3	0.3	<0.2	<0.2	0.3	<0.2
Chromium (Cr)	µg/L	15	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper (Cu)	µg/L	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Nickel (Ni)	µg/L	8.2	1.2	1.2	0.7	0.7	<0.5	<0.5	0.6	0.7	<0.5	0.6	0.6	0.6
Lead (Pb)	µg/L	8.1	0.9	0.8	0.7	0.7	0.7	0.6	<0.5	<0.5	<0.5	0.8	0.5	0.8
Zinc (Zn)	µg/L	40	2	<1	<1	<1	<1	<1	<1	<1	2	<1	<1	<1
Mercury (Hg)	µg/L	0.16	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Organochlorine Pesticides	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
TBT	µgTBT/L	0.01	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015

Parameter	Unit	Assessment Criteria	Sampling Point / Depth of Sampling																		
			S4-1	S4-2	S4-3	S4-4	S5-1	S5-2	S5-3	S5-4	S6-1	S6-2	S6-3	S6-4	S6-5	S7-1	S7-2	S7-3	S7-4	S7-5	S7-6
			0.0-0.9M	1.0-1.9M	2.0-2.9M	3.0-3.9M	0.0-0.9M	1.0-1.9M	2.0-2.9M	3.0-3.9M	0.0-0.9M	1.0-1.9M	2.0-2.9M	3.0-5.9M	6.0-8.9M	0.0-0.9M	1.0-1.9M	2.0-2.9M	3.0-5.9M	6.0-8.9M	9.0-12.0M
Silver (Ag)	µg/L	1.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Arsenic (As)	µg/L	10	32.7	7.9	10.6	11.8	7.8	8.6	5.6	8.2	7	9.8	38.9	5.1	55.6	41.5	33.7	28.8	39.7	30.6	21.1
Cadmium (Cd)	µg/L	2.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.2
Chromium (Cr)	µg/L	15	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper (Cu)	µg/L	5	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Nickel (Ni)	µg/L	8.2	1.1	0.7	1.7	0.5	0.9	1.7	1.1	1.4	1.1	0.7	1	<0.5	1.2	0.8	0.9	1.3	1.3	1.7	1.4
Lead (Pb)	µg/L	8.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	0.9	<0.5	<0.5	<0.5	0.6
Zinc (Zn)	µg/L	40	12	30	24	18	17	41	42	27	17	8	5	9	9	5	7	10	10	9	9
Mercury (Hg)	µg/L	0.16	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	<0.05
Organochlorine Pesticides	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
TBT	µgTBT/L	0.01	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015

Sampling Location	Sampling Depth	Assessment Criteria	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysenes	Benzo(b) & (k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
S1B-1	0.0-0.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S1B-2	1.0-1.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S1B-3	2.0-2.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S1B-4	3.0-3.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S2-1	0.0-0.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S2-2	1.0-1.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S2-3	2.0-2.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S2-4	3.0-3.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S3-1	0.0-0.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S3-2	1.0-1.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S3-3	2.0-2.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S3-4	3.0-3.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S4-1	0.0-0.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S4-2	1.0-1.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S4-3	2.0-2.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S4-4	3.0-3.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S5-1	0.0-0.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S5-2	1.0-1.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S5-3	2.0-2.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S5-4	3.0-3.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S6-1	0.0-0.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S6-2	1.0-1.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S6-3	2.0-2.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S6-4	3.0-5.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S6-5	6.0-8.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S7-1	0.0-0.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S7-2	1.0-1.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S7-3	2.0-2.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S7-4	3.0-5.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S7-5	6.0-8.9M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1
S7-6	9.0-12.0M	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1

Parameter	Sampling Location	Sampling Depth	Background Level (mg/L)	Laboratory Result (mg/L)
Ammonia as N	S1B-1	0.0-0.9M	0.06	3.84
	S1B-2	1.0-1.9M	0.06	2.42
	S1B-3	2.0-2.9M	0.06	0.82
	S1B-4	3.0-3.9M	0.06	0.87
	S2-1	0.0-0.9M	0.06	0.9
	S2-2	1.0-1.9M	0.06	0.72
	S2-3	2.0-2.9M	0.06	0.72
	S2-4	3.0-3.9M	0.06	2.15
	S3-1	0.0-0.9M	0.05	0.94
	S3-2	1.0-1.9M	0.05	1.08
	S3-3	2.0-2.9M	0.05	1.15
	S3-4	3.0-3.9M	0.05	1.41
	Nitrite as N	S1B-1	0.0-0.9M	0.02
S1B-2		1.0-1.9M	0.02	<0.01
S1B-3		2.0-2.9M	0.02	<0.01
S1B-4		3.0-3.9M	0.02	<0.01
S2-1		0.0-0.9M	0.02	<0.01
S2-2		1.0-1.9M	0.02	<0.01
S2-3		2.0-2.9M	0.02	<0.01
S2-4		3.0-3.9M	0.02	<0.01
S3-1		0.0-0.9M	0.01	<0.01
S3-2		1.0-1.9M	0.01	<0.01
S3-3		2.0-2.9M	0.01	<0.01
S3-4		3.0-3.9M	0.01	<0.01
Nitrate as N		S1B-1	0.0-0.9M	0.07
	S1B-2	1.0-1.9M	0.07	<0.01
	S1B-3	2.0-2.9M	0.07	<0.01
	S1B-4	3.0-3.9M	0.07	<0.01
	S2-1	0.0-0.9M	0.07	<0.01
	S2-2	1.0-1.9M	0.07	<0.01
	S2-3	2.0-2.9M	0.07	<0.01
	S2-4	3.0-3.9M	0.07	<0.01
	S3-1	0.0-0.9M	0.01	<0.01
	S3-2	1.0-1.9M	0.01	<0.01
	S3-3	2.0-2.9M	0.01	<0.01
	S3-4	3.0-3.9M	0.01	<0.01
	Organic Nitrogen as N	S1B-1	0.0-0.9M	0.1
S1B-2		1.0-1.9M	0.1	0.37
S1B-3		2.0-2.9M	0.1	0.84
S1B-4		3.0-3.9M	0.1	0.54
S2-1		0.0-0.9M	0.1	0.54
S2-2		1.0-1.9M	0.1	0.52
S2-3		2.0-2.9M	0.1	0.44
S2-4		3.0-3.9M	0.1	0.86
S3-1		0.0-0.9M	0.11	0.68
S3-2		1.0-1.9M	0.11	0.46

	S3-3	2.0-2.9M	0.11	0.57
	S3-4	3.0-3.9M	0.11	0.7
Total Kjeldahl Nitrogen as N	S1B-1	0.0-0.9M	0.17	4.53
	S1B-2	1.0-1.9M	0.17	2.79
	S1B-3	2.0-2.9M	0.17	1.66
	S1B-4	3.0-3.9M	0.17	1.41
	S2-1	0.0-0.9M	0.17	1.44
	S2-2	1.0-1.9M	0.17	1.24
	S2-3	2.0-2.9M	0.17	1.16
	S2-4	3.0-3.9M	0.17	3.01
	S3-1	0.0-0.9M	0.15	1.62
	S3-2	1.0-1.9M	0.15	1.54
	S3-3	2.0-2.9M	0.15	1.72
	S3-4	3.0-3.9M	0.15	2.11
	Total Inorganic Nitrogen	S1B-1	0.0-0.9M	0.16
S1B-2		1.0-1.9M	0.16	2.42
S1B-3		2.0-2.9M	0.16	0.96
S1B-4		3.0-3.9M	0.16	0.9
S2-1		0.0-0.9M	0.16	0.9
S2-2		1.0-1.9M	0.16	0.72
S2-3		2.0-2.9M	0.16	0.72
S2-4		3.0-3.9M	0.16	2.15
S3-1		0.0-0.9M	0.12	0.94
S3-2		1.0-1.9M	0.12	1.08
S3-3		2.0-2.9M	0.12	1.15
S3-4		3.0-3.9M	0.12	1.41
Biochemical Oxygen Demand		S1B-1	0.0-0.9M	0.56
	S1B-2	1.0-1.9M	0.56	6.0
	S1B-3	2.0-2.9M	0.56	6.0
	S1B-4	3.0-3.9M	0.56	6.0
	S2-1	0.0-0.9M	0.56	<2
	S2-2	1.0-1.9M	0.56	5.0
	S2-3	2.0-2.9M	0.56	2.0
	S2-4	3.0-3.9M	0.56	2.0
	S3-1	0.0-0.9M	0.54	5.0
	S3-2	1.0-1.9M	0.54	5.0
	S3-3	2.0-2.9M	0.54	7.0
	S3-4	3.0-3.9M	0.54	7.0

Note: 1. Water quality data from EPD Marine Water Sampling Stations nearest to the sediment sampling locations were used to represent the background levels.

Parameter	Sampling Location	Sampling Depth	Background Level (mg/L)	Laboratory Result (mg/L)
Ammonia as N	S4-1	0.0-0.9M	0.02	1.04
	S4-2	1.0-1.9M	0.02	3.82
	S4-3	2.0-2.9M	0.02	2.88
	S4-4	3.0-3.9M	0.02	4.5
	S5-1	0.0-0.9M	0.02	2.94
	S5-2	1.0-1.9M	0.02	3.32
	S5-3	2.0-2.9M	0.02	4.06
	S5-4	3.0-3.9M	0.02	3.47
	S6-1	0.0-0.9M	0.02	4.14
	S6-2	1.0-1.9M	0.02	4.74
	S6-3	2.0-2.9M	0.02	2.05
	S6-4	3.0-5.9M	0.02	4.04
	S6-5	6.0-8.9M	0.02	2.04
	S7-1	0.0-0.9M	0.02	1.01
	S7-2	1.0-1.9M	0.02	1.63
	S7-3	2.0-2.9M	0.02	2.03
	S7-4	3.0-5.9M	0.02	2.43
	S7-5	6.0-8.9M	0.02	2.01
S7-6	9.0-12.0M	0.02	1.92	
Nitrite as N	S4-1	0.0-0.9M	0.02	<0.01
	S4-2	1.0-1.9M	0.02	<0.01
	S4-3	2.0-2.9M	0.02	<0.01
	S4-4	3.0-3.9M	0.02	<0.01
	S5-1	0.0-0.9M	0.02	<0.01
	S5-2	1.0-1.9M	0.02	<0.01
	S5-3	2.0-2.9M	0.02	<0.01
	S5-4	3.0-3.9M	0.02	<0.01
	S6-1	0.0-0.9M	0.01	<0.01
	S6-2	1.0-1.9M	0.01	<0.01
	S6-3	2.0-2.9M	0.01	<0.01
	S6-4	3.0-5.9M	0.01	<0.01
	S6-5	6.0-8.9M	0.01	<0.01
	S7-1	0.0-0.9M	0.01	<0.01
	S7-2	1.0-1.9M	0.01	<0.01
	S7-3	2.0-2.9M	0.01	<0.01
	S7-4	3.0-5.9M	0.01	<0.01
	S7-5	6.0-8.9M	0.01	<0.01
S7-6	9.0-12.0M	0.01	<0.01	
Nitrate as N	S4-1	0.0-0.9M	0.06	<0.01
	S4-2	1.0-1.9M	0.06	0.01
	S4-3	2.0-2.9M	0.06	0.06
	S4-4	3.0-3.9M	0.06	<0.01
	S5-1	0.0-0.9M	0.06	0.02
	S5-2	1.0-1.9M	0.06	0.03
	S5-3	2.0-2.9M	0.06	0.03

Parameter	Sampling Location	Sampling Depth	Background Level (mg/L)	Laboratory Result (mg/L)
	S5-4	3.0-3.9M	0.06	0.02
	S6-1	0.0-0.9M	0.06	<0.01
	S6-2	1.0-1.9M	0.06	<0.01
	S6-3	2.0-2.9M	0.06	<0.01
	S6-4	3.0-5.9M	0.06	<0.01
	S6-5	6.0-8.9M	0.06	<0.01
	S7-1	0.0-0.9M	0.05	<0.01
	S7-2	1.0-1.9M	0.05	0.02
	S7-3	2.0-2.9M	0.05	<0.01
	S7-4	3.0-5.9M	0.05	<0.01
	S7-5	6.0-8.9M	0.05	<0.01
	S7-6	9.0-12.0M	0.05	<0.01
	Organic Nitrogen as N	S4-1	0.0-0.9M	0.09
S4-2		1.0-1.9M	0.09	0.44
S4-3		2.0-2.9M	0.09	0.23
S4-4		3.0-3.9M	0.09	0.06
S5-1		0.0-0.9M	0.09	0.24
S5-2		1.0-1.9M	0.09	0.31
S5-3		2.0-2.9M	0.09	0.69
S5-4		3.0-3.9M	0.09	0.25
S6-1		0.0-0.9M	0.08	1.33
S6-2		1.0-1.9M	0.08	0.68
S6-3		2.0-2.9M	0.08	0.03
S6-4		3.0-5.9M	0.08	0.15
S6-5		6.0-8.9M	0.08	1.31
S7-1		0.0-0.9M	0.09	0.52
S7-2		1.0-1.9M	0.09	0.42
S7-3		2.0-2.9M	0.09	0.26
S7-4		3.0-5.9M	0.09	0.82
S7-5		6.0-8.9M	0.09	0.61
S7-6	9.0-12.0M	0.09	1.27	
Total Kjeldahl Nitrogen as N	S4-1	0.0-0.9M	0.11	2.2
	S4-2	1.0-1.9M	0.11	4.26
	S4-3	2.0-2.9M	0.11	3.11
	S4-4	3.0-3.9M	0.11	4.56
	S5-1	0.0-0.9M	0.11	3.18
	S5-2	1.0-1.9M	0.11	3.63
	S5-3	2.0-2.9M	0.11	4.75
	S5-4	3.0-3.9M	0.11	3.72
	S6-1	0.0-0.9M	0.10	5.47
	S6-2	1.0-1.9M	0.10	5.42
	S6-3	2.0-2.9M	0.10	2.08
	S6-4	3.0-5.9M	0.10	4.19
	S6-5	6.0-8.9M	0.10	3.35
	S7-1	0.0-0.9M	0.10	1.53
S7-2	1.0-1.9M	0.10	2.05	

Parameter	Sampling Location	Sampling Depth	Background Level (mg/L)	Laboratory Result (mg/L)
	S7-3	2.0-2.9M	0.10	2.29
	S7-4	3.0-5.9M	0.10	3.25
	S7-5	6.0-8.9M	0.10	2.62
	S7-6	9.0-12.0M	0.10	3.19
Total Inorganic Nitrogen	S4-1	0.0-0.9M	0.09	1.04
	S4-2	1.0-1.9M	0.09	3.83
	S4-3	2.0-2.9M	0.09	2.94
	S4-4	3.0-3.9M	0.09	4.5
	S5-1	0.0-0.9M	0.09	2.96
	S5-2	1.0-1.9M	0.09	3.35
	S5-3	2.0-2.9M	0.09	4.09
	S5-4	3.0-3.9M	0.09	3.49
	S6-1	0.0-0.9M	0.08	4.14
	S6-2	1.0-1.9M	0.08	4.74
	S6-3	2.0-2.9M	0.08	2.05
	S6-4	3.0-5.9M	0.08	4.04
	S6-5	6.0-8.9M	0.08	2.04
	S7-1	0.0-0.9M	0.07	1.01
	S7-2	1.0-1.9M	0.07	1.65
	S7-3	2.0-2.9M	0.07	2.03
	S7-4	3.0-5.9M	0.07	2.43
	S7-5	6.0-8.9M	0.07	2.01
	S7-6	9.0-12.0M	0.07	1.92
	Biochemical Oxygen Demand	S4-1	0.0-0.9M	0.51
S4-2		1.0-1.9M	0.51	4.3
S4-3		2.0-2.9M	0.51	6.6
S4-4		3.0-3.9M	0.51	5.7
S5-1		0.0-0.9M	0.51	0.6
S5-2		1.0-1.9M	0.51	0.6
S5-3		2.0-2.9M	0.51	0.4
S5-4		3.0-3.9M	0.51	0.3
S6-1		0.0-0.9M	0.50	2.1
S6-2		1.0-1.9M	0.50	0.5
S6-3		2.0-2.9M	0.50	0.4
S6-4		3.0-5.9M	0.50	0.4
S6-5		6.0-8.9M	0.50	0.8
S7-1		0.0-0.9M	0.56	6.2
S7-2		1.0-1.9M	0.56	6.7
S7-3		2.0-2.9M	0.56	3
S7-4		3.0-5.9M	0.56	7.1
S7-5		6.0-8.9M	0.56	7.5
S7-6		9.0-12.0M	0.56	7

Note: 1. Water quality data from EPD Marine Water Sampling Stations nearest to the sediment sampling locations were used to represent the background levels.