

Summary statistics for bottom sediment quality in the Port Shelter and Mirs Bay WCZs, 2001 – 2005

Parameter	Inner Port Shelter	Outer Port Shelter		Starling Inlet	Crooked Island		Port Island	Mirs Bay (North)
	PS3	PS5	PS6	MS1	MS2	MS7	MS17	MS3
Number of samples	10	10	10	10	10	10	10	10
Particle Size Fractionation <63µm (%w/w)	86 (55 - 95)	42 (8 - 68)	81 (73 - 90)	86 (78 - 95)	92 (83 - 98)	93 (85 - 99)	91 (84 - 98)	89 (73 - 98)
Electrochemical Potential (mV)	-254 (-324) - (-110)	-155 (-249) - (-56)	-212 (-281) - (-160)	-331 (-379) - (-230)	-360 (-385) - (-341)	-362 (-388) - (-319)	-242 (-342) - (-152)	-239 (-346) - (-135)
Total Solids (%w/w)	38 (33 - 53)	56 (44 - 63)	47 (43 - 51)	40 (32 - 46)	32 (31 - 35)	30 (27 - 34)	36 (34 - 42)	38 (31 - 42)
Total Volatile Solids (%w/w)	12 (8.2 - 14.0)	7.9 (5.5 - 9.9)	9.3 (8.6 - 11.0)	8.3 (7.4 - 10.0)	10.2 (8.9 - 11.0)	11 (9.5 - 12.0)	9.7 (7.6 - 11.0)	9.7 (8.3 - 11.0)
Chemical Oxygen Demand (mg/kg)	19000 (15000 - 22000)	12000 (7200 - 17000)	14000 (12000 - 19000)	20000 (19000 - 22000)	19000 (17000 - 20000)	19000 (17000 - 21000)	18000 (16000 - 20000)	19000 (16000 - 20000)
Total Carbon (%w/w)	1.1 (0.6 - 1.2)	1.6 (0.4 - 2.2)	1.2 (0.8 - 1.3)	0.7 (0.6 - 0.8)	0.7 (0.6 - 0.9)	0.8 (0.7 - 0.9)	0.9 (0.7 - 1.2)	0.8 (0.7 - 0.9)
Ammonical Nitrogen (mg/kg)	8.3 (3.7 - 15.0)	8.2 (3.0 - 15.0)	6.7 (2.2 - 14.0)	14.7 (0.2 - 26.0)	15.6 (5.0 - 25.0)	11.9 (1.3 - 18.0)	8 (0.2 - 16.0)	4.6 (0.2 - 11.0)
Total Kjeldahl Nitrogen (mg/kg)	616 (420 - 710)	368 (270 - 510)	441 (270 - 590)	553 (270 - 760)	649 (510 - 720)	687 (630 - 780)	650 (420 - 770)	581 (380 - 700)
Total Phosphorus (mg/kg)	202 (170 - 230)	157 (120 - 210)	184 (110 - 240)	194 (150 - 250)	201 (170 - 240)	199 (170 - 240)	220 (190 - 270)	201 (170 - 230)
Total Sulphide (mg/kg)	87 (44 - 270)	15 (3 - 36)	36 (14 - 59)	173 (31 - 350)	174 (100 - 340)	89 (29 - 190)	68 (20 - 180)	26 (5 - 55)
Total Cyanide (mg/kg)	<0.1 (<0.1 - 0.1)	<0.1 (<0.1 - 0.1)	0.1 (<0.1 - 0.2)	0.2 (<0.1 - 0.2)	0.1 (<0.1 - 0.2)	0.1 (<0.1 - 0.2)	0.1 (<0.1 - 0.2)	<0.1 (<0.1 - 0.1)
Arsenic (mg/kg)	6.1 (4.7 - 8.7)	4 (2.3 - 6.5)	5.9 (5.1 - 7.7)	9.4 (7.5 - 12.0)	7.4 (5.8 - 9.4)	7.1 (5.7 - 10.0)	6.6 (4.4 - 8.8)	7.1 (5.1 - 9.6)
Cadmium (mg/kg)	<0.1 (<0.1 - <0.1)	<0.1 (<0.1 - <0.1)	<0.1 (<0.1 - <0.1)	0.3 (0.2 - 0.5)	0.2 (0.1 - 0.3)	0.2 (0.2 - 0.3)	<0.1 (<0.1 - 0.1)	<0.1 (<0.1 - 0.1)
Chromium (mg/kg)	26 (20 - 30)	21 (15 - 30)	28 (23 - 30)	30 (26 - 35)	35 (28 - 40)	34 (32 - 38)	34 (25 - 41)	33 (27 - 37)
Copper (mg/kg)	24 (18 - 31)	10 (7 - 17)	13 (11 - 14)	39 (32 - 45)	22 (19 - 26)	21 (18 - 25)	16 (12 - 20)	15 (12 - 19)
Lead (mg/kg)	38 (32 - 43)	25 (20 - 37)	33 (31 - 35)	50 (38 - 55)	47 (39 - 51)	43 (36 - 49)	42 (28 - 53)	38 (32 - 42)
Mercury (mg/kg)	0.09 (0.08 - 0.12)	<0.05 (<0.05 - 0.07)	<0.05 (<0.05 - 0.06)	0.09 (0.07 - 0.15)	0.07 (<0.05 - 0.08)	0.07 (0.06 - 0.10)	0.05 (<0.05 - 0.06)	0.05 (<0.05 - 0.08)
Nickel (mg/kg)	17 (9 - 22)	15 (10 - 24)	20 (17 - 23)	18 (15 - 21)	23 (20 - 26)	23 (21 - 26)	26 (18 - 31)	23 (19 - 28)
Silver (mg/kg)	0.6 (0.2 - 1.0)	0.5 (<0.2 - 1.0)	0.5 (<0.2 - 1.0)	1 (0.8 - 1.4)	0.6 (0.2 - 1.0)	0.5 (<0.2 - 1.0)	0.5 (<0.2 - 1.0)	0.5 (<0.2 - 1.0)
Zinc (mg/kg)	97 (85 - 110)	63 (43 - 98)	79 (67 - 88)	109 (80 - 130)	103 (77 - 110)	95 (78 - 100)	93 (66 - 120)	91 (60 - 160)
Total Polychlorinated Biphenyls (PCBs) (µg/kg) ^{(3) (4)}	18 (18 - 18)	18 (18 - 18)	18 (18 - 18)	18 (18 - 18)	18 (18 - 18)	18 (18 - 18)	18 (18 - 18)	18 (18 - 18)
Low Molecular Weight Polycyclic Aromatic Hydrocarbons (PAHs) (µg/kg) ^{(5) (6)}	90 (90 - 90)	90 (90 - 90)	90 (90 - 90)	90 (90 - 90)	91 (90 - 95)	90 (90 - 94)	90 (90 - 90)	90 (90 - 90)
High Molecular Weight Polycyclic Aromatic Hydrocarbons (PAHs) (µg/kg) ^{(7) (8)}	55 (29 - 62)	27 (19 - 37)	33 (21 - 49)	45 (29 - 66)	50 (24 - 75)	67 (28 - 200)	45 (29 - 74)	40 (21 - 64)

Note: 1. Data presented are arithmetic means ; data in brackets indicate ranges.

2. All data are based on the analyses of bulk (unsieved) sediment and are reported on a dry weight basis unless stated otherwise.

3. The Technical Circular 'ETWB (W) No. 34/2002 Management of Dredged / Excavated Sediment' issued in 2002 has revised the definition of 'Total PCBs' as the summation of 18 specific PCB congeners. Following the new definition, the monitoring of these 18 PCB congeners started in 2002 and the Total PCBs results only refer to 2002 – 2005.

4. Total PCBs results are derived from the summation of 18 congeners. If the concentration of a congener is below report limit (RL), the result will be taken as 0.5xRL in the calculation.

5. Low molecular weight polyaromatic hydrocarbons (PAHs) include 6 congeners of molecular weight below 200, namely : Acenaphthene, Acenaphthylene, Anthracene, Flourene, Naphthalene and Phenanthrene.

6. As the monitoring of Naphthalene only started in 2002, the Low Molecular Weight PAHs results are based on sediments samples collected in 2002 – 2005.

7. High molecular weight polyaromatic hydrocarbons (PAHs) include 10 congeners of molecular weight above 200, namely : Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Dibenzo(a,h)anthracene, Benzo(g,h,i)perylene and Indeno(1,2,3-cd)pyrene.

8. Low and high molecular weight PAHs results are derived from the summation of the corresponding congeners. If the concentration of a congener is below report limit (RL), the result will be taken as 0.5xRL in the calculation.