

APPENDIX F

**CHEMICAL CONTAMINANT QUALITY
ASSURANCE PROCEDURES AND DATA, AND
ENVIRONMENTAL CONCERN RATINGS**

APPENDIX F

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APPENDIX F

CHEMICAL CONTAMINANT QUALITY ASSURANCE PROCEDURES AND DATA, AND ENVIRONMENTAL CONCERN RATINGS

1.0 INTRODUCTION

Each year, sediment samples are collected from selected stormwater flows to evaluate the associated level of environmental concern. Samples are collected from the following locations (in decreasing order of preference) to identify contaminants originating from the catchment area:

- a) from accumulated material within the discharge
- b) from accumulated material from the nearest upstream station containing sediment
- c) from an obvious "delta" outside the mouth of the discharge
- d) from material located between larger rocks within one meter of the mouth of the discharge

Each sample is analyzed for low and high molecular weight polycyclic aromatic hydrocarbons (LHPAH and HPAH respectively) and eight metals: arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), silver (Ag) and zinc (Zn). Detailed information on the methods used for laboratory analysis in 2007 is presented in Gormican (2008).

Quality assurance and quality control (QA/QC) programs are a set of protocols that are adopted to ensure that the results of any study are valid, internally consistent and comparable with other similar projects. These protocols are set out in writing and are based on the most current and relevant research on the related topics. This appendix discusses:

- field sampling and handling procedures
- quality assurance in the field
- quality assurance in the laboratory

2.0 FIELD SAMPLING AND HANDLING PROCEDURES

Sediment sampling is undertaken each year during the summer months when stormwater flows are generally at their lowest. This helps prevent resuspension of the sediments as samples are collected.

The top two to five centimetres of accumulated sediments are sampled using polyethylene and stainless steel scoops (for metals and PAH respectively). Sampling equipment is cleaned with metal and phosphate-free detergent and tap water, rinsed with distilled water and rinsed in the stormwater flow prior to sample collection. Sediments are placed in labeled, acid-washed glass jars with Teflon lined lids supplied by the analytical laboratory, frozen and delivered by courier over night to ALS Environmental in Vancouver.

2.1 Quality Assurance in the Field

Field duplicates are prepared by placing approximately 500 mL of sediment into a bowl made of appropriate material (stainless steel for PAHs, polyethylene for metals) and homogenizing with scoops of appropriate material. Sediments are then split by alternating placement into labelled acid-washed jars with Teflon lined lids.

Ten per cent of all samples collected each year are submitted blind to the laboratory as field replicates. There are no specific precision requirements for these replicates. Rather, the results represent the variation in real sampling conditions and are used to indicate whether modifications to sample collection procedures are required.

A full description of field sampling procedures for the 2007 sediment sampling program is presented in (2008).

2.1.2 Quality Assurance in the Laboratory

The QA program for sediment sampling includes laboratory triplicates, and Standard Reference Materials (SRM). Precision and accuracy of the laboratory analysis is estimated from the results of the duplicates and SRM recovery. A full description of the laboratory QA measures undertaken during the 2007 sediment sampling program is presented in Gormican (2008).

Table 1. Concentrations of Metals and PAH Compounds – District of Sooke Annual Report, 1998 to 2007

Shaded numbers indicate exceedence of 75% of Marine Sediment Quality Guideline (MSQG) (see Section 2.2)

CRD Discharge #	Date sampled	Arsenic µg/g	Cadmium µg/g	Chromium µg/g	Copper µg/g	Lead µg/g	Mercury µg/g	Silver µg/g	Zinc µg/g	LPAH µg/g	HPAH µg/g
	MSQG	57	5.1	260	390	450	0.41	6.1	410	5.2	12
2030	99-07-14	1	0.1	47	55	3	0.01	0.1	60	0.1	1
2030	00-07-17	1	0.1	50	59	3	0.01	0.1	60	0.1	0
2030	05-06-29	1	0.2	36	43	2	0.01	0.1	56	0.1	0
2035A	98-06-12	1	0.1	61	61	6	0.01	0.1	119	0.2	1
2036	98-06-11	1	0.1	50	81	3	0.01	0.1	63	0.1	0
2036	00-07-11	0	0.1	85	94	3	0.01	0.1	64	0.1	0
2036	01-07-19	1	0.1	62	78	5	0.01	0.1	55	0.1	0
2036	06-07-07	1	0.2	52	80	3	0.01	0.1	64	0.1	0
2038	04-09-26	4	0.2	40	46	13	0.09	0.1	162	0.1	0
2038	05-06-29	9	0.2	37	39	12	0.04	0.1	147	0.1	0
2039	98-06-11	3	0.1	65	43	7	0.02	0.1	93	0.1	0
2039	06-07-07	3	0.2	34	29	10	0.02	0.1	78	0.1	0
2042A	01-07-19	5	0.1	62	45	56	0.06	0.1	122	0.1	0
2042A	02-07-17	3	0.1	43	26	3	0.02	0.1	78	0.1	0
2042A	05-06-29	3	0.2	31	20	3	0.01	0.1	58	0.1	1
2043A	98-06-11	3	0.1	60	44	4	0.01	0.1	65	0.1	0
2043A	06-07-07	3	0.2	44	31	3	0.01	0.1	52	0.1	0
2043B	98-06-12	3	0.1	54	40	4	0.01	0.1	64	0.1	0
2046	99-07-14	2	0.1	34	30	6	0.01	0.1	58	0.2	1
2046	06-07-07	3	0.2	38	32	9	0.02	0.1	78	0.1	0
2048	98-06-12	3	0.2	67	72	140	0.03	0.1	226	0.3	2
2048	99-07-14	3	0.1	42	48	34	0.01	0.1	88	0.1	0
2048	00-07-17	2	0.2	58	73	55	0.02	0.1	163	0.1	0
2048	01-07-19	2	0.1	45	52	36	0.01	0.1	98	0.2	1
2048	02-06-21	2	0.2	53	57	69	0.02	0.1	126	0.2	1

continued

Table 1 continued

CRD Discharge #	Date sampled	Arsenic $\mu\text{g/g}$	Cadmium $\mu\text{g/g}$	Chromium $\mu\text{g/g}$	Copper $\mu\text{g/g}$	Lead $\mu\text{g/g}$	Mercury $\mu\text{g/g}$	Silver $\mu\text{g/g}$	Zinc $\mu\text{g/g}$	LPAH $\mu\text{g/g}$	HPAH $\mu\text{g/g}$
	MSQG	57	5.1	260	390	450	0.41	6.1	410	5.2	12
2048	03-07-10	1	0.2	42	58	39	0.01	0.1	90	0.1	0
2051	04-08-26	2	0.3	29	44	17	0.02	0.1	147	0.1	0
2051	06-07-07	2	0.2	29	58	20	0.01	0.1	147	0.1	0
2053	98-06-11	3	0.1	57	61	22	0.03	0.1	133	2.9	16
2053	99-07-14	2	0.1	39	35	5	0.01	0.1	56	0.8	5
2053	00-07-11	2	0.1	43	38	6	0.01	0.1	53	2.1	16
2053	01-07-19	2	0.1	39	51	14	0.01	0.1	157	0.4	2
2053	02-06-21	2	0.1	44	52	18	0.02	0.1	211	0.4	2
2053	03-07-10	5	0.1	69	52	6	0.03	0.1	97	0.2	1
2053	04-08-26	4	0.2	34	67	15	0.02	0.1	1150	6.7	26
2053	05-06-29	2	0.2	30	58	21	0.02	0.1	174	0.1	1
2053	07-08-02	2.3	0.1	65	48	19	0.02	0.1	81	0.9	2.6
2053-1	04-08-26	2	0.3	31	38	104	0.03	9.8	140	0.1	0
2053-1	05-06-29	4	0.2	51	54	54	0.04	2.9	122	0.0	0
2053-1	06-07-07	4	0.6	70	82	129	0.07	8.2	368	0.5	2
2053-1	07-08-02	2.7	0.3	56	62	100	0.06	5.9	180	0.7	2.2
2053-2	05-06-29	2	0.2	33	52	24	0.01	0.3	118	1.3	8
2053-3	06-07-07	3	1.0	42	83	127	0.06	0.1	247	1.0	1
2054	00-07-11	7	2.5	106	120	398	0.14	0.3	686	2.5	17
2054	01-07-19	4	1.7	61	75	188	0.15	0.2	362	0.1	1
2054	02-06-24	8	2.1	102	143	250	0.02	0.3	649	0.2	2
2054	03-07-10	3	0.1	53	38	10	0.04	0.1	64	0.1	0
2054	04-08-27	7	0.5	49	47	45	0.05	0.1	198	6.8	31
2054	07-08-02	4.8	0.3	47	56	25	0.04	0.1	185	4.4	18.9
2054-1	02-06-24	5	0.7	82	101	297	0.08	0.1	336	0.6	5
2054-1	03-07-10	5	0.8	89	110	260	0.09	0.2	385	0.4	3
2056	98-06-12	1	0.2	63	107	270	0.02	0.1	185	0.3	2

continued

Table 1 continued

CRD Discharge #	Date sampled	Arsenic $\mu\text{g/g}$	Cadmium $\mu\text{g/g}$	Chromium $\mu\text{g/g}$	Copper $\mu\text{g/g}$	Lead $\mu\text{g/g}$	Mercury $\mu\text{g/g}$	Silver $\mu\text{g/g}$	Zinc $\mu\text{g/g}$	LPAH $\mu\text{g/g}$	HPAH $\mu\text{g/g}$
	MSQG	57	5.1	260	390	450	0.41	6.1	410	5.2	12
2056	99-07-14	3	0.1	42	80	87	0.03	0.1	131	0.2	1
2056	02-06-21	2	0.2	38	62	40	0.02	0.1	135	0.2	1
2056	03-07-10	2	0.2	62	62	164	0.03	0.1	180	0.2	1
2056	04-08-26	2	0.2	34	51	60	0.02	0.1	109	0.1	0
2057	02-06-21	2	0.1	50	48	32	0.01	0.1	113	0.1	0
2057	03-07-10	2	0.1	35	42	38	0.01	0.1	95	0.0	0
2061	99-07-14	4	0.1	51	35	6	0.03	0.1	48	0.1	0
2061	01-07-19	6	0.1	39	28	4	0.02	0.1	43	0.1	0
2061	07-07-30	5.9	0.1	58	44	6	0.06	0.1	72	0.1	0.1
2064	98-06-12	3	0.1	26	17	11	0.01	0.1	110	0.1	0
2056	04-08-26	2	0.2	34	51	60	0.02	0.1	109	0.1	0
2065	98-06-12	6	0.1	49	31	15	0.04	0.1	145	0.4	1
2065	99-07-14	4	0.1	31	16	13	0.02	0.1	101	0.1	0
2065	00-07-11	3	0.1	28	14	5	0.01	0.1	63	0.1	0

Table 2. Calculation of Toxic Equivalent Units (TEU) for Metals and PAH Compounds – District of Sooke Annual Report, 1998 to 2007

Shading indicates an exceedence of the Marine Sediment Quality Guidelines (see Section 2.2 for rating details)

CRD Discharge #	Date	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Silver	Zinc	LPAH	HPAH	TEU ¹	Contaminant Rating
2030	99-07-14	0.02	0.01	0.18	0.14	0.01	0.02	0.02	0.15	0.01	0.05	0.60	Low
2030	00-07-17	0.02	0.01	0.19	0.15	0.01	0.01	0.02	0.15	0.01	0.01	0.57	Low
2030	05-06-29	0.02	0.04	0.14	0.11	0.00	0.02	0.02	0.14	0.01	0.00	0.50	Low
2035A	98-06-12	0.02	0.02	0.23	0.16	0.01	0.03	0.02	0.29	0.03	0.05	0.86	Low
2036	98-06-11	0.01	0.02	0.19	0.21	0.01	0.01	0.02	0.15	0.01	0.01	0.64	Low
2036	00-07-11	0.00	0.01	0.33	0.24	0.01	0.02	0.02	0.16	0.01	0.01	0.80	Low
2036	01-07-19	0.02	0.01	0.24	0.20	0.01	0.03	0.02	0.13	0.01	0.01	0.68	Low
2036	06-07-07	0.01	0.04	0.20	0.21	0.01	0.02	0.02	0.16	0.01	0.01	0.66	Low
2038	04-08-26	0.06	0.04	0.15	0.12	0.03	0.22	0.02	0.40	0.01	0.01	1.06	Moderate
2038	05-06-29	0.15	0.04	0.14	0.10	0.03	0.10	0.02	0.36	0.01	0.00	0.95	Low
2039	98-06-11	0.05	0.02	0.25	0.11	0.02	0.04	0.02	0.23	0.01	0.01	0.75	Low
2039	06-07-07	0.05	0.04	0.13	0.07	0.02	0.05	0.02	0.19	0.01	0.01	0.57	Low
2042A	01-07-19	0.09	0.02	0.24	0.12	0.12	0.13	0.02	0.30	0.01	0.01	1.05	Moderate
2042A	02-07-17	0.05	0.02	0.17	0.07	0.01	0.04	0.02	0.19	0.01	0.01	0.59	Low
2042A	05-06-29	0.05	0.04	0.12	0.05	0.01	0.02	0.02	0.14	0.01	0.06	0.52	Low
2043A	98-06-11	0.05	0.02	0.23	0.11	0.01	0.01	0.02	0.16	0.01	0.01	0.62	Low
2043A	06-07-07	0.05	0.04	0.17	0.08	0.01	0.02	0.02	0.13	0.01	0.01	0.51	Low
2043B	98-06-12	0.05	0.02	0.21	0.10	0.01	0.01	0.02	0.16	0.01	0.01	0.59	Low
2046	99-07-14	0.04	0.01	0.13	0.08	0.01	0.02	0.02	0.14	0.03	0.06	0.54	Low
2046	06-07-07	0.05	0.04	0.14	0.08	0.02	0.05	0.02	0.19	0.01	0.01	0.59	Low
2048	98-06-12	0.06	0.04	0.26	0.18	0.31	0.08	0.02	0.55	0.07	0.16	1.72	Moderate
2048	99-07-14	0.04	0.02	0.16	0.12	0.08	0.02	0.02	0.21	0.02	0.03	0.72	Low
2048	00-07-17	0.04	0.04	0.22	0.19	0.12	0.04	0.02	0.40	0.03	0.04	1.13	Moderate
2048	01-07-19	0.04	0.02	0.17	0.13	0.08	0.02	0.02	0.24	0.04	0.09	0.86	Low
2048	02-06-21	0.04	0.03	0.20	0.14	0.15	0.05	0.02	0.31	0.03	0.06	1.03	Moderate
2048	03-07-10	0.03	0.03	0.16	0.15	0.09	0.02	0.02	0.22	0.01	0.02	0.75	Low
2051	04-08-26	0.03	0.05	0.11	0.11	0.04	0.05	0.02	0.36	0.01	0.01	0.79	Low
2051	06-07-07	0.03	0.04	0.11	0.15	0.05	0.02	0.02	0.36	0.01	0.01	0.78	Low
2053	98-06-11	0.05	0.02	0.22	0.16	0.05	0.06	0.02	0.32	0.56	1.31	2.78	High
2053	99-07-14	0.04	0.01	0.15	0.09	0.01	0.02	0.02	0.14	0.15	0.44	1.06	Moderate

¹TEU = sum of ratios (concentration divided by MSQG) for all parameters

continued

Table 2 continued

CRD Discharge #	Date	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Silver	Zinc	LPAH	HPAH	TEU ¹	Contaminant Rating
2053	00-07-11	0.03	0.01	0.17	0.10	0.01	0.01	0.02	0.13	0.41	1.30	2.18	High
2053	01-07-19	0.04	0.03	0.15	0.13	0.03	0.03	0.02	0.38	0.08	0.14	1.02	Moderate
2053	02-06-21	0.04	0.02	0.17	0.13	0.04	0.04	0.02	0.51	0.07	0.15	1.19	Moderate
2053	03-07-10	0.09	0.02	0.26	0.13	0.01	0.07	0.02	0.24	0.04	0.07	0.95	Low
2053	04-08-26	0.06	0.04	0.13	0.17	0.03	0.05	0.02	2.80	1.28	2.20	6.78	High
2053	05-06-29	0.04	0.04	0.12	0.15	0.05	0.05	0.02	0.42	0.01	0.04	0.94	Low
2053	07-08-02	0.04	0.03	0.25	0.12	0.04	0.05	0.02	0.20	0.17	0.22	1.14	Moderate
2053-1	04-08-26	0.04	0.06	0.12	0.10	0.23	0.07	1.61	0.34	0.01	0.03	2.61	High
2053-1	05-06-29	0.07	0.04	0.20	0.14	0.12	0.10	0.48	0.30	0.01	0.02	1.48	Moderate
2053-1	06-07-07	0.08	0.12	0.27	0.21	0.29	0.17	1.34	0.90	0.10	0.15	3.37	High
2053-1	07-08-02	0.05	0.06	0.22	0.16	0.22	0.14	0.97	0.44	0.13	0.18	2.47	Moderate
2053-2	05-06-29	0.03	0.04	0.13	0.13	0.05	0.02	0.05	0.29	0.24	0.69	1.67	Moderate
2053-3	06-07-07	0.06	0.20	0.16	0.21	0.28	0.15	0.02	0.60	0.10	0.10	1.68	Moderate
2054	00-07-17	0.12	0.49	0.41	0.31	0.88	0.33	0.05	1.67	0.47	1.41	6.14	High
2054	01-07-19	0.07	0.33	0.23	0.19	0.42	0.36	0.03	0.88	0.03	0.08	2.63	High
2054	02-06-24	0.14	0.42	0.39	0.37	0.56	0.05	0.05	1.58	0.05	0.16	3.77	High
2054	03-07-10	0.06	0.03	0.20	0.10	0.02	0.10	0.02	0.16	0.01	0.04	0.74	Low
2054	04-08-27	0.12	0.10	0.19	0.12	0.10	0.12	0.02	0.48	1.30	2.58	5.13	High
2054	07-08-02	0.08	0.06	0.18	0.14	0.05	0.09	0.02	0.45	0.85	1.58	3.5	High
2054-1	02-06-24	0.09	0.15	0.32	0.26	0.66	0.19	0.02	0.82	0.12	0.42	3.05	High
2054-1	03-07-10	0.09	0.15	0.34	0.28	0.58	0.22	0.03	0.94	0.07	0.22	2.92	High
2056	98-06-12	0.02	0.04	0.24	0.27	0.60	0.05	0.02	0.45	0.06	0.16	1.92	Moderate
2056	99-07-14	0.05	0.02	0.16	0.21	0.19	0.06	0.02	0.32	0.05	0.10	1.16	Moderate
2056	02-06-21	0.03	0.03	0.15	0.16	0.09	0.05	0.02	0.33	0.03	0.05	0.94	Low
2056	03-07-10	0.03	0.04	0.24	0.16	0.36	0.06	0.02	0.44	0.03	0.07	1.40	Moderate
2056	04-08-26	0.04	0.04	0.13	0.13	0.13	0.05	0.02	0.27	0.01	0.01	0.83	Low
2057	02-06-21	0.03	0.02	0.19	0.12	0.07	0.03	0.02	0.28	0.02	0.00	0.78	Low
2057	03-07-10	0.04	0.03	0.14	0.11	0.08	0.02	0.02	0.23	0.01	0.01	0.69	Low
2061	99-07-14	0.07	0.01	0.20	0.09	0.01	0.08	0.02	0.12	0.01	0.01	0.62	Low
2061	01-07-19	0.11	0.01	0.15	0.07	0.01	0.06	0.02	0.11	0.01	0.01	0.55	Low
2061	07-07-30	0.10	0.03	0.22	0.11	0.01	0.15	0.02	0.17	0.01	0.01	0.83	Low

¹TEU = sum of ratios (concentration divided by MSQG) for all parameters

continued

Table 2 continued

CRD Discharge #	Date	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Silver	Zinc	LPAH	HPAH	TEU ¹	Contaminant Rating
2064	98-06-12	0.05	0.02	0.10	0.04	0.02	0.02	0.02	0.27	0.01	0.01	0.57	Low
2065	98-06-12	0.11	0.02	0.19	0.08	0.03	0.09	0.02	0.35	0.08	0.12	1.09	Moderate
2065	99-07-14	0.08	0.02	0.12	0.04	0.03	0.05	0.02	0.25	0.02	0.02	0.64	Low
2065	00-07-11	0.05	0.01	0.11	0.04	0.01	0.02	0.02	0.15	0.01	0.01	0.43	Low

¹TEU = sum of ratios (concentration divided by MSQG) for all parameters

Table 3. Summary of Ratings for Environmental Concern – District of Sooke Report, 2007

CRD Discharge Number	Figure Number Appendix B	Contaminant Rating ¹ 2003	Contaminant Rating ¹ 2004	Contaminant Rating ¹ 2005	Contaminant Rating ¹ 2006	Contaminant Rating ¹ 2007	2007 TEU	Comments and Recommendations
2030	2	Not Sampled	Not Sampled	Low	Not Sampled	Not Sampled	-	Sooke Basin, Veitch Creek. Rated low in 1999, 2000 and 2005. Resample in 2010 to monitor for change.
2035A	3	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	-	Sooke Basin, Cooper Cove, 5479 Sooke Road. Rated low in 1998. Resample as schedules and budgets allow to confirm rating.
2036	3	Not Sampled	Not Sampled	Not Sampled	Low	Not Sampled	-	Sooke Basin, Cooper Cove, Ayum Creek. Rated low in 1998, 2000, 2001 and 2006. Resample in 2011 to monitor for change.
2038	4	Not Sampled	Moderate	Low	Not Sampled	Not Sampled	-	Sooke Basin, foot of Saseenos Road. Rated low in 2005. Rated moderate in 2004 based on cumulative effects rather than any one parameter of concern. Resample in 2008 to confirm rating.
2039	5	Not Sampled	Not Sampled	Not Sampled	Low	Not Sampled	-	Sooke Basin, Lannon Creek. Rated low in 1998 and 2006. Resample in 2011 to monitor for change.
2042A	7	Not Sampled	Not Sampled	Low	Not Sampled	Not Sampled	-	Sooke Harbour, Alderbrook Creek. Rated low in 2002 and 2005. Rated moderate in 2001 due to slightly elevated chromium and zinc concentrations. Resample in 2010 to confirm rating.
2043	7	Not Sampled	Not Sampled	Not Sampled	Low	Not Sampled	-	Sooke Harbour, Sooke River. Rated low in 2006. Rated low in 1998 at two stations (2043A and 2043B). Resample in 2011 to monitor for change.
2046	7	Not Sampled	Not Sampled	Not Sampled	Low	Not Sampled	-	Sooke Harbour, 6377 Belvista Place. Rated low in 1999 and 2006. Resample in 2011 to monitor for change.
2048	8	Low	Not Sampled	Not Sampled	Not Sampled	Not Sampled	-	Sooke Harbour, Water Street. Rated low in 1999, 2001 and 2003. Rated moderate in 2000 and 2002 based on elevated zinc and in 1998 based on elevated zinc and lead. Resample in 2008 to confirm contaminant levels.

¹ Contaminant Rating is based on the TEU as discussed in Section 2.2.

continued

Table 3 continued

CRD Discharge Number	Figure Number Appendix B	Contaminant Rating ¹ 2003	Contaminant Rating ¹ 2004	Contaminant Rating ¹ 2005	Contaminant Rating ¹ 2006	Contaminant Rating ¹ 2007	2007 TEU	Comments and Recommendations
2051	8	Not Sampled	Low	Not Sampled	Low	Not Sampled	-	Sooke Harbour, east end of Horne Road. Rated low in 2004 and 2006. Resample in 2011 to confirm rating.
2053	8	Low	High	Low	Not Sampled	Moderate	1.14	Sooke Harbour, foot of Murray Road. Rated moderate in 2007. Rated low in 2005. Rated high in 2004 based on elevated Zn and PAH levels and in 2000 and 1998 based on elevated PAH levels. Rated low in 2003. Rated moderate in 2002 and 2001 based on slightly elevated Zn concentrations and in 1999 based on a slightly elevated HPAH concentration. Upstream samples were collected in 2004, 2005, 2006 and 2007. Station 2053-1 was rated high in 2004, 2006 and 2007 due to Ag but was rated moderate in 2005 due to cumulative effects rather than any one parameter of concern. Station 2053-3 was rated moderate based solely on cumulative effects. Resample in 2008 to confirm rating.
2054	8	Low	High	Not Sampled	Not Sampled	High	3.50	Sooke Harbour, southwest of Murray Road beach access. Rated high in 2007 based on high PAH concentrations, Rated low in 2003. Rated high in 2001 and 2002 based on high zinc and slightly elevated lead concentrations. Rated high in 2000 based on high lead, zinc and HPAH concentrations. Upstream samples were collected in 2002 and 2003 from station 2054-1 and high zinc and PAH concentrations were obtained. Resample in 2010 or after action taken.

¹ Contaminant Rating is based on the TEU as discussed in Section 2.2.

continued

Table 3 continued

CRD Discharge Number	Figure Number Appendix B	Contaminant Rating ¹ 2003	Contaminant Rating ¹ 2004	Contaminant Rating ¹ 2005	Contaminant Rating ¹ 2006	Contaminant Rating ¹ 2007	2007 TEU	Comments and Recommendations
2056	9	Moderate	Low	Not Sampled	Not Sampled	Not Sampled	-	Sooke Harbour, immediately south of the government wharf. Rated low in 2002 and 2004. Rated moderate in 2003 due to slightly elevated zinc and lead concentrations and in 1999 and 1998 based on slightly elevated copper and zinc concentrations. Resample in 2008 to monitor for change.
2057	9	Low	Not Sampled	Not Sampled	Not Sampled	Not Sampled	-	Sooke Harbour, south of the government wharf. Rated low in 2002 and 2003. Resample in 2008 to monitor for change.
2061	9	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Low	0.83	South of Sooke Harbour Marina. Rated low in 1999, 2001 and 2007. Resample in 2012 to monitor for change.
2064	9	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	-	Sooke Harbour, south of Wright Road. Rated low in 1998. Resample as schedules and budgets allow.
2065	9	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	-	Sooke Harbour, near 1655 Whiffin Spit Road. Low rating in 1999 and 2000. However moderate rating in 1998 based on slightly elevated zinc and chromium levels. Resample in 2008 to confirm rating.

¹ Contaminant Rating is based on the TEU and is discussed in Section 2.2.

Table 4. Habitat Ratings for Discharges Sampled from 1998 to 2007

CRD Discharge Number	Habitat Sensitivity Rating (a)	Flow Rating (b)	Flushing Rating (c)	Habitat Rating ¹ (a+b+c)
2030	3	1.5	1.0	High
2035A	3	1.5	1.5	High
2036	3	1.5	1.5	High
2038	3	0.5	1.0	Moderate
2039	3	0.5	1.0	Moderate
2042A	3	1.5	0.5	High
2043	3	1.5	0.5	High
2046	3	1.0	0.5	Moderate
2048	3	0.5	0.5	Moderate
2051	3	1.0	0.5	Moderate
2053	3	1.0	0.5	Moderate
2054	3	1.0	0.5	Moderate
2056	3	1.0	0.5	Moderate
2057	3	0.5	0.5	Moderate
2061	3	0.5	0.5	Moderate
2064	3	0.5	0.5	Moderate
2065	3	1.0	0.5	Moderate

¹ Habitat Rating: 2.0 - 3.0 = lower mitigative priority
 3.5 - 4.5 = moderate mitigative priority
 5.0 - 6.0 = higher mitigative priority