Appendix E – Detailed Water Quality Screening Results

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E.1.0 INITIAL SCREENING

A total of 243 parameters from the total 964 in the SOE dataset were identified as either having one or more screening values (Appendix C). Of these 243 parameters, 39 only had regional specific triggers which are reported on in Sections 3.1.4 of the main text (Table E1). The remaining 203 parameters have screening guidelines. However, six (6) parameters (1 with no other guidelines and 5 overlapping with others) have narrative statements which are reported in Section 3.1.5 of the main text.

Table E1: Parameters with Non-Standard Guidelines

Parameter	Rationale	Region
Acenaphthylene	Regional only	MR-WQT
Antimony Dissolved	Regional only	LAR-WQT, SR-WQT
Barium Dissolved	Regional only	LAR-WQT, SR-WQT
Benzo(B,J,K)Fluoranthene	Regional only	MR-WQT
Benzo(G,H,I)Perylene	Regional only	MR-WQT
Benzo(J,K)Fluoranthene	Regional only	MR-WQT
Beryllium Dissolved	Regional only	SR-WQT
Bismuth Dissolved	Regional only	SR-WQT
Bismuth Total	Regional only	LAR-WQT, SR-WQT
Boron Dissolved	Regional only	LAR-WQT, UAR-WQT, SR-WQT
Carbon Dissolved Organic	Regional only	MR-WQT, UAR-WQT
Chemical Oxygen Demand	Regional only	MR-WQT
Chlorophyll A	Regional only	MR-WQT
Chromium Dissolved	Regional only	LAR-WQT, SR-WQT
Cobalt Dissolved	Regional only	LAR-WQT, UAR-WQT, SR-WQT
Colour True	Regional and narrative	MR-WQT, UAR-WQT
Hardness Total Caco3	Narrative only	
Lithium Dissolved	Regional only	LAR-WQT, SR-WQT
Magnesium Dissolved	Regional only	LAR-WQT
Molybdenum Dissolved	Regional only	LAR-WQT, SR-WQT
Nitrogen Total	Regional and narrative	LAR-WQT, UAR-WQT
Nitrogen Total Kjeldahl	Regional only	MR-WQT
Oil And Grease	Regional and narrative	MR-WQT
Oxygen Biochemical Demand	Regional only	MR-WQT
Phosphorus Dissolved	Regional only	LAR-WQT, UAR-WQT
Phosphorus Total	Regional and narrative	MR-WQT, LAR-WQT, UAR-WQT
Potassium Dissolved	Regional only	UAR-WQT
Selenium Dissolved	Regional only	LAR-WQT, SR-WQT
Silver Dissolved	Regional only	SR-WQT
Specific Conductance (Field)	Regional only	MR-WQT, UAR-WQT
Specific Conductance (Lab)	Regional only	MR-WQT

Parameter	Rationale	Region
Strontium Dissolved	Regional only	LAR-WQT, UAR-WQT, SR-WQT
Temperature Water (Field)	Regional and narrative	MR-WQT
Thallium Dissolved	Regional only	LAR-WQT, SR-WQT
Thorium Dissolved	Regional only	LAR-WQT
Thorium Total	Regional only	LAR-WQT
Titanium Dissolved	Regional only	LAR-WQT
Titanium Total	Regional only	LAR-WQT
Uranium Dissolved	Regional only	LAR-WQT, UAR-WQT, SR-WQT
Vanadium Dissolved	Regional only	LAR-WQT, UAR-WQT, SR-WQT
Total	40	39

An initial screening was then completed to identify which of the 203 parameters have, at any time or location in the SOE dataset, exceeded one or more screening values. All screening values were included in the initial assessment with the exception of USEPA-DW MCLG values of 0 (Appendix C) which were excluded from the analysis as these represent targets for drinking water purification and may not be appropriate for the analysis of surface water quality. Parameters which have exceeded a screening value were carried forward for further analysis.

Table E2 includes all 203 parameters with guidelines and indicates which parameters have all values below detection limits, those that have all values below guidelines and those that have screening guideline exceedances. Detection limits above guidelines are also noted in Table E2. Parameters for which all values are below guidelines, but detection limits exceed guidelines are shown in grey. These parameters are not carried forward in the analysis but are identified as a knowledge gap. Parameters which have exceedance of a screening value are shown in blue and carried forward in the analysis.

Of note, numerous parameters which have never reported exceedances have only been assessed at a fraction of the sites included in the SOE dataset and may have been sampled infrequently (Table E2). As such, the limited spatial and temporal distribution of sampling of these parameters may not allow for significant conclusions to be made with respect to these parameters for the OSR as a whole.

Numerous parameters were also identified which reported detection limits above guidelines. Detection limits above guidelines were not carried forward as exceedances due to the unknown associated with these values. Instead, these are identified as data gaps and discussed within the main body of the report as such. Further analysis may be required to address detection limits above guidelines but was not within the scope of the SOE report.

A total of 203 parameters with guidelines, 84 have reported values above screening guidelines and were carried forward in the assessment. A total of 33 parameters had detection limits above guidelines but no other exceedances and were not carried forward. The remaining 86 parameters did not have any exceedances.

Table E2: Initial Screening of Parameters with Screening Guidelines

Parameter	Percent of Sites Sampled	Mean Samples per Site	All Values Below Detection and Below Guidelines	All Detected Values Below Guidelines	Detected values exceed one or more guideline	Below Detection Limit(s) but Exceed Guidelines^
1,1,1-Trichloroethane	11.5	53.7	X			

Parameter	Percent of Sites Sampled	Mean Samples per Site	All Values Below Detection and Below Guidelines	All Detected Values Below Guidelines	Detected values exceed one or more guideline	Below Detection Limit(s) but Exceed Guidelines^
1,1,2,2-Tetrachloroethane	11.5	35.8				X
1,1,2-Trichloroethane	11.5	53.7	X			
1,1-Dichloroethylene	11.5	62.6	X			
1,2,3-Trichlorobenzene	11.5	23.8	X			
1,2,4-Trichlorobenzene	11.5	118.2				X
1,2-Dibromo-3-Chloropropane	7.6	33				X
1,2-Dibromoethane	11.5	15.9				X
1,2-Dichlorobenzene	11.5	71.6				X
1,2-Dichloroethane	11.5	107.3	X			
1,2-Dichloropropane	11.5	44.7	X			
1,2-Diphenylhydrazine	7.6	42				X
1,3-Dichlorobenzene	11.5	44.7	X			
1,4-Dichlorobenzene	11.5	80.5		X		
1,4-Dioxane	1.3	5	X			
2,3,4,6-Tetrachlorophenol	10.2	36.4		X		
2,3,6-Trichlorophenol	4.5	4.3	X			
2,4,5-Trichlorophenol	8.3	30	X			
2,4,6-Trichlorophenol	10.2	101.1		X		
2,4-D (Dichlorophenoxyacetic Acid)	8.9	511.7		X		
2,4-DB (2,4-Dichlorophenoxy)Butanoic Acid)	8.9	227.1		X		
2,4-Dichlorophenol	10.8	229.1			X	
2,4-Dimethylphenol	10.2	43.5	X			
2,4-Dinitrotoluene	7.6	42				X
2,6-Dichlorophenol	7	2.7	X			
2-Chloronaphthalene	18.5	169.6		X		
2-Chlorophenol	7.6	74.6				X
4-Chlorophenol	6.4	36.9				X
Acenaphthene	81.5	470.6		X		
Acridine	21	113.6		X		
Acrolein	1.3	8				X
Acrylonitrile	1.3	4				X
Alachlor	1.9	17	X			
Aldicarb	8.3	318.8	X			

Parameter	Percent of Sites Sampled	Mean Samples per Site	All Values Below Detection and Below Guidelines	All Detected Values Below Guidelines	Detected values exceed one or more guideline	Below Detection Limit(s) but Exceed Guidelines^
Aldrin	8.9	378.9			X	
Alkalinity Total CaCO3	96.2	281.7			X	
Alpha-Endosulfan	8.9	350.6		X		
Aluminum Dissolved	91.1	226.6			X	
Aluminum Total	96.2	1028.5			X	
Ammonia Total	72.6	181.6			X	
Ammonia Un-Ionized (Calcd.)	22.9	288.7			X	
Anthracene	81.5	337.3			X	
Antimony Total	95.5	898.7				X
Arsenic Dissolved	91.1	97.7		X		
Arsenic Total	96.2	1556.1			X	
Atrazine	8.9	499.3			X	
Azinphos Methyl (Guthion)	8.9	162			X	
Barium Total	96.2	568			X	
Benzene	80.3	631			X	
Benzidine	7.6	56				X
Benzo(A)Anthracene	81.5	406.1			X	
Benzo(A)Pyrene	81.5	745.9			X	
Benzo(B)Fluoranthene	66.9	264			X	
Benzo(K)Fluoranthene	23.6	245.5			X	
Beryllium Total	96.2	832.2			X	
Beta-Endosulfan	3.2	170.4		X		
Bis(2-Chloroethyl) Ether	7.6	56				X
Bis(2-Ethylhexyl) Phthalate	7.6	69.2			X	
Bisphenol A	1.3	4	X			
Boron Total	93	1113.6			X	
Bromacil	8.9	347.5	X			
Bromodichloromethane	1.9	4	X			
Bromoform	11.5	35.8	X			
Bromoxynil	8.9	386.3		X		
Butylbenzyl Phthalate	7.6	56			X	
Cadmium Dissolved	91.1	273			X	
Cadmium Total	96.2	1504.3			X	
Calcium Dissolved	95.5	365.8		X		
Captan	2.5	15.8	X			

Parameter	Percent of Sites Sampled	Mean Samples per Site	All Values Below Detection and Below Guidelines	All Detected Values Below Guidelines	Detected values exceed one or more guideline	Below Detection Limit(s) but Exceed Guidelines^
Carbamazepine	1.3	4.5	X			
Carbaryl	5.1	175.5	X			
Carbofuran	5.1	156	X			
Carbon Tetrachloride	11.5	89.4	X			
Chlorate	6.4	64.8			X	
Chloride Dissolved	96.2	942.2			X	
Chlorobenzene	11.5	53.7	X			
Chloroform	11.5	71.6		X		
Chlorothalonil	8.3	270.3		X		
Chlorpyrifos-Ethyl (Dursban)	8.9	546.1				X
Chromium Total	96.2	470.2			X	
Chrysene	81.5	270.9			X	
Cobalt Total	95.5	661.8			X	
Copper Dissolved	91.1	356			X	
Copper Total	96.2	1447.2			X	
Cresols, Total	5.1	1.2	X			
Cyanazine	8.9	397.1	X			
Cyanide Total	22.3	504.4			X	
DDT And Metabolites	3.2	454.4			X	
Deltamethrin	5.1	97.5				X
Demeton	1.9	19				X
Di-N-Butyl Phthalate	7.6	98			X	
Diazinon	8.9	268.6				X
Dibenzo(A,H) Anthracene	81.5	271.2			X	
Dibromochloromethane	11.5	44.7	X			
Dicamba (Banvel)	8.9	402.9				X
Dichlorobromomethane	11.5	43.9	X			
Dichloromethane	11.5	68.9			X	
Dichlorprop(2,4-DP)	8.9	113.6		X		
Diclofop-Methyl (Hoegrass)	8.9	349.5				X
Dieldrin	8.9	438.4			X	
Diethyl Phthalate	7.6	84		X		
Dimethoate (Cygon)	8.9	322.5	X			
Dimethyl Phthalate	42	41.8		X		
Dinitrophenols	10.2	64.1	X			

Parameter	Percent of Sites Sampled	Mean Samples per Site	All Values Below Detection and Below Guidelines	All Detected Values Below Guidelines	Detected values exceed one or more guideline	Below Detection Limit(s) but Exceed Guidelines^
Dinoseb	1.9	57				X
Diuron	8.9	48.3	X			
Endrin	3.2	364			X	
Escherichia Coli	8.9	323.4			X	
Ethanol	1.3	3	X			
F1 Hydrocarbons (C6-C10)	75.2	30.7		X		
F2 Hydrocarbons (C10-C16)	79.6	46.9			X	
Fenoprop(Silvex)(2,4,5-Tp)	2.5	90		X		
Fluoranthene	81.5	339			X	
Fluorene	81.5	338.9		X		
Fluoride Dissolved	71.3	736.4			X	
Formaldehyde Total	1.3	2	X			
Gamma-Benzenehexachloride (Lindane) (Gamma-BHC)	8.9	526.5		X		
Glyphosate (Roundup)	1.9	20	X			
Heptachlor	3.2	308			X	
Heptachlor Epoxide	3.2	224			X	
Hexachlorobenzene	8.3	166.9			X	
Hexachlorobutadiene	8.3	169.1				X
Hexachlorocyclopentadiene	7.6	98				X
Hexachloroethane	7.6	56				X
Hydrogen Sulphide	37.6	21.7			X	
Imidacloprid	5.1	58.5	X			
Indeno (1,2,3-C,D)Pyrene	81.5	271.2			X	
Iron Dissolved	93	685.1			X	
Iron Total	96.2	483.1			X	
Isophorone	7.6	56	X			
Lead Dissolved	91.1	362.6			X	
Lead Total	96.2	1057.9			X	
Linuron	8.3	193.1	X			
Lithium Total	96.2	182.5		X		
MCPA	8.9	398.5			X	
MCPP (Mecoprop)	8.9	193.1		X		
MTBE (Methyl Tertiary Butyl Ether)	11.5	23.1	X			
Malathion	8.9	216				X

Parameter	Percent of Sites Sampled	Mean Samples per Site	All Values Below Detection and Below Guidelines	All Detected Values Below Guidelines	Detected values exceed one or more guideline	Below Detection Limit(s) but Exceed Guidelines^
Manganese Dissolved	93	238.1			X	
Manganese Total	96.2	672.5			X	
Mercury Dissolved	75.2	138.9		X		
Mercury Total	93.6	773.7			X	
Methoxychlor (P,P'-Methoxychlor)	8.9	641.1			X	
Methyl Ethyl Ketone	1.3	2	X			
Methyl Mercury Dissolved	56.7	89.3		X		
Metolachlor	8.3	308.9	X			
Metribuzin	8.3	320.6	X			
Mirex	3.2	85.2			X	
Molybdenum Total	96.2	651.4			X	
N-Nitroso-Di-N-Propylamine	7.6	42				X
N-Nitrosodiphenylamine	7.6	42	X			
Naphthalene	81.5	206.3			X	
Nickel Dissolved	91.1	273.1			X	
Nickel Total	96.2	1330.8			X	
Nitrate and Nitrite as Nitrogen	96.2	281.7		X		
Nitrate as Nitrogen	82.2	638.8			X	
Nitrilotriacetic Acid - Nta	1.3	3	X			
Nitrite as Nitrogen	84.7	656.3			X	
Nitrobenzene	7.6	70	X			
Nonylphenol	1.3	6	X			
Oxygen Dissolved	89.2	437.9			X	
P,P'-DDD (TDP)	3.2	84			X	
P,P'-DDE	3.2	85.2			X	
Parathion	8.3	223.8				X
Pentachlorobenzene	0.6	168		X		
Pentachlorophenol	11.5	195.8				X
Perfluorooctanesulfonate (PFOS)	9.6	104.4				X
Perfluorooctanoic Acid (PFOA)	9.6	69.6		X		
Permethrin	5.1	58.5			X	
Phenanthrene	81.5	203.4			X	
Phenol	18.5	547.9			X	
Phorate (Thimet)	8.9	54		X		

Parameter	Percent of Sites Sampled	Mean Samples per Site	All Values Below Detection and Below Guidelines	All Detected Values Below Guidelines	Detected values exceed one or more guideline	Below Detection Limit(s) but Exceed Guidelines^
Picloram (Tordon)	8.9	367		X		
Pyrene	81.5	339			X	
Quinoline	5.7	4	X			
Selenium Total	96.2	1462.1			X	
Silver Total	96.2	274.8			X	
Simazine	8.3	443.8				X
Sodium Adsorption Ratio (Calcd.)	42	83.7			X	
Sodium Dissolved/Filtered	94.9	99.3			X	
Strontium Total	95.5	365.7			X	
Styrene	36.9	118.4	X			
Sulphate Dissolved	96.2	468.4			X	
Terbufos	8.9	48.3	X			
Tetrachloroethylene	11.5	80.5		X		
Thallium Total	95.5	898.4			X	
Toluene	81.5	715.9			X	
Total Dissolved Solids (Calcd.)	93	850.2			X	
Triallate (Avadex BW)	8.9	249.6				X
Trichloroethene	1.3	1	X			
Trichloroethylene	7.6	136.6	X			
Triclosan	1.3	3	X			
Trifluralin (Treflan)	8.9	299.6				X
Trihalomethanes	11.5	10.7		X		
Turbidity (Field)	49.7	231.3			X	
Uranium Total	96.2	1164.6			X	
Vanadium Total	96.2	573.3			X	
Vinyl Chloride	11.5	80.5				X
Xylene	36.9	126.2		X		
Xylenes (O,M,P)	5.1	11.9	X			
Zinc Dissolved	91.1	476.1			X	
Zinc Total	96.2	1157.8			X	
pH (Field)	84.1	605.9			X	
Total		**203**	**52**	**34**	**84**	**33**

*MCLG values of 0 were removed from the analysis

^Detection limits above guidelines were only flagged in Table E1 for parameters without any other exceedances

E.2.0 SCREENING GUIDELINE ASSESSMENT

Following the identification of parameters with values above screening guidelines, maximum values for each parameter were compared against all screening guidelines available in order to identify which specific screening guidelines have been exceeded. A summary of these results are presented in Table E3. Screening guidelines not included in Table E3 have not been exceeded at any location or point in time within the SOE dataset for that parameter.

The lowest screening value exceeded by the parameter is bolded and highlighted in blue to demonstrate the limiting receptor group. Where screening guidelines were adopted from another jurisdiction, and both are shown (i.e., EPA guidelines adoption from CCME or ICBM guidelines adopted from EPA), the adopted guideline is highlighted in grey.

Guideline values for variable guidelines are not included within Table E3 as these vary for each sample, however they are included in the table if a value for a parameter has ever exceeded one of these screening guidelines.

Table E4 also summarizes the number of parameters which have exceeded each type of guideline included in the SOE.

Table E3: Screening Guideline Assessment

Group	Parameter	Min Detected	Max Detected	Units	Guidelines	Guideline Value
Halogenated Organics	2,4-Dichlorophenol	0.008	0.307	ug/l	**EPA-SWQ-PAL-CHRONIC**	**0.2**
					ICBM-SWQ-IU	0.3
					USEPA-SWQ-RA	0.3
	Dichloromethane	0	10	ug/l	ICBM-SWQ-IU	5
					USEPA-DW-MCL	**5**
Ions	Alkalinity Total $CaCO_3$	0	3920	mg/l	EPA-SWQ-PAL-CHRONIC	20
					ICBM-SWQ-IU	20
					USEPA-SWQ-PAL-CHRONIC	**20**
	Chlorate	0.006	0.354	mg/l	**CCME-SWQ-PAL-CHRONIC**	**0.0005**
	Chloride Dissolved	0	1700	mg/l	**CCME-SWQ-AG-IRRIGATION**	**100**
					EPA-SWQ-AG-IRRIGATION	100
					CCME-SWQ-PAL-CHRONIC	120
					EPA-SWQ-PAL-CHRONIC	120
					ICBM-SWQ-IU	120
					USEPA-SWQ-PAL-CHRONIC	230
					HC-DW-AO	250
					CCME-SWQ-PAL-ACUTE	640
					EPA-SWQ-PAL-ACUTE	640
					USEPA-SWQ-PAL-ACUTE	860
	Fluoride Dissolved	0.02	2	mg/l	**CCME-SWQ-PAL-CHRONIC**	**0.12**
					ICBM-SWQ-IU	0.12
					CCME-SWQ-AG-IRRIGATION	1
					CCME-SWQ-AG-LIVESTOCK	1
					EPA-SWQ-AG-IRRIGATION	1

Group	Parameter	Min Detected	Max Detected	Units	Guidelines	Guideline Value
					EPA-SWQ-LIVESTOCK	1
					HC-DW-MAC	1.5
					WHO-DW	1.5
	Sodium Adsorption Ratio (Calcd.)	0.03	19.5	rel units	**EPA-SWQ-AG-IRRIGATION**	**5**
	Sodium Dissolved/Filtered	40	1200000	ug/l	**HC-DW-AO**	**200000**
	Sulphate Dissolved	0	1450	mg/l	**ICBM-SWQ-IU**	**250**
					HC-DW-AO	500
					CCME-SWQ-AG-LIVESTOCK	1000
					EPA-SWQ-LIVESTOCK	1000
					EPA-SWQ-PAL-CHRONIC	Variable
Metals, Dissolved	Aluminum Dissolved	0	1620	ug/l	ICBM-SWQ-IU	50
					EPA-SWQ-PAL-ACUTE	Variable
					EPA-SWQ-PAL-CHRONIC	Variable
	Cadmium Dissolved	0.001	6	ug/l	**ICBM-SWQ-IU**	**0.824**
					USEPA-SWQ-PAL-ACUTE	Variable
					USEPA-SWQ-PAL-CHRONIC	Variable
	Copper Dissolved	0	50	ug/l	**ICBM-SWQ-IU**	**0.53**
		0.02	46.9		ECCC-SWQ-FEQG	Variable
					USEPA-SWQ-PAL-ACUTE	Variable
					USEPA-SWQ-PAL-CHRONIC	Variable
	Iron Dissolved	1.3	9800	ug/l	**CCME-SWQ-PAL-CHRONIC**	**300**
					EPA-SWQ-PAL-CHRONIC	300
					ICBM-SWQ-IU	300
					USEPA-SWQ-PAL-CHRONIC	1000
					CCME-SWQ-AG-IRRIGATION	5000
	Lead Dissolved	0	121	ug/l	**ICBM-SWQ-IU**	**3.07**
					ECCC-SWQ-FEQG	Variable
					USEPA-SWQ-PAL-ACUTE	Variable
					USEPA-SWQ-PAL-CHRONIC	Variable
	Manganese Dissolved	0.05	10800	ug/l	CCME-SWQ-PAL-ACUTE	Variable
		0.06	6900		CCME-SWQ-PAL-CHRONIC	Variable
	Nickel Dissolved	0	99.6	ug/l	**ICBM-SWQ-IU**	**60.68**
		0.0063	99.6		USEPA-SWQ-PAL-ACUTE	Variable
					USEPA-SWQ-PAL-CHRONIC	Variable
	Zinc Dissolved	0	3320	ug/l	**ICBM-SWQ-IU(DW+O-Derived)**	**31.35**
		0.08	316		CCME-SWQ-PAL-ACUTE	Variable
		0.08	387		CCME-SWQ-PAL-CHRONIC	Variable
		0.08	3320		USEPA-SWQ-PAL-ACUTE	Variable
					USEPA-SWQ-PAL-CHRONIC	Variable
Metals, Total	Aluminum Total	0	150000	ug/l	ICBM-SWQ-IU	18

Group	Parameter	Min Detected	Max Detected	Units	Guidelines	Guideline Value
					USDOE-SWQ-WL-NOAEL	**18**
					HC-DW-MAC	2900
					USDOE-SWQ-WL-LOAEL	4776
					CCME-SWQ-AG-IRRIGATION	5000
					CCME-SWQ-AG-LIVESTOCK	5000
					EPA-SWQ-AG-IRRIGATION	5000
					EPA-SWQ-LIVESTOCK	5000
		0.6	150000		CCME-SWQ-PAL-CHRONIC	Variable
					ECCC-SWQ-FEQG	Variable
					USEPA-SWQ-PAL-ACUTE	Variable
					USEPA-SWQ-PAL-CHRONIC	Variable
	Arsenic Total	0	102	ug/l	**ICBM-SWQ-IU(DW+O-Derived)**	**0.03**
					USEPA-SWQ-DW+O	0.18
					USEPA-SWQ-O	1.4
					CCME-SWQ-PAL-CHRONIC	5
					EPA-SWQ-PAL-CHRONIC	5
					HC-DW-MAC	10
					USEPA-DW-MCL	10
					WHO-DW	10
					USDOE-SWQ-WL-NOAEL	16
					CCME-SWQ-AG-LIVESTOCK	25
					EPA-SWQ-LIVESTOCK	25
					CCME-SWQ-AG-IRRIGATION	100
	Barium Total	0.7	2630	ug/l	ICBM-SWQ-IU	1000
					USEPA-SWQ-DW+O	**1000**
					WHO-DW	1300
					HC-DW-MAC	2000
					USEPA-DW-MCL	2000
					USEPA-DW-MCLG	2000
	Beryllium Total	0	4.29	ug/l	**ICBM-SWQ-IU(DW+O-Derived)**	**3.27**
					USEPA-DW-MCL	4
					USEPA-DW-MCLG	4
	Boron Total	0	1720	ug/l	**CCME-SWQ-AG-IRRIGATION**	**500**
					EPA-SWQ-AG-IRRIGATION	500
					ICBM-SWQ-IU(DW+O-Derived)	1333.33
					CCME-SWQ-PAL-CHRONIC	1500
					EPA-SWQ-PAL-CHRONIC	1500
	Cadmium Total	0	112	ug/l	**ICBM-SWQ-IU(DW+O-Derived)**	**0.002**
					USDOE-SWQ-WL-NOAEL	0.2307
					WHO-DW	3

Group	Parameter	Min Detected	Max Detected	Units	Guidelines	Guideline Value
					USEPA-DW-MCL	5
					USEPA-DW-MCLG	5
					CCME-SWQ-AG-IRRIGATION	5.1
					HC-DW-MAC	7
					EPA-SWQ-AG-IRRIGATION	8.2
					CCME-SWQ-AG-LIVESTOCK	80
					EPA-SWQ-LIVESTOCK	80
					CCME-SWQ-PAL-ACUTE	Variable
					CCME-SWQ-PAL-CHRONIC	Variable
					EPA-SWQ-PAL-ACUTE	Variable
					EPA-SWQ-PAL-CHRONIC	Variable
	Chromium Total	0	109	ug/l	**HC-DW-MAC**	**50**
					ICBM-SWQ-IU	50
					WHO-DW	50
					USEPA-DW-MCL	100
					USEPA-DW-MCLG	100
	Cobalt Total	0.002	101	ug/l	**ICBM-SWQ-IU**	**1.1**
					CCME-SWQ-AG-IRRIGATION	50
					EPA-SWQ-AG-IRRIGATION	50
					ECCC-SWQ-FEQG	Variable
					EPA-SWQ-PAL-CHRONIC	Variable
	Copper Total	0	950	ug/l	**ICBM-SWQ-IU**	**2.76**
					EPA-SWQ-PAL-CHRONIC	7
					CCME-SWQ-AG-IRRIGATION	200
					EPA-SWQ-AG-IRRIGATION	200
					CCME-SWQ-AG-LIVESTOCK	500
					EPA-SWQ-LIVESTOCK	500
					CCME-SWQ-PAL-CHRONIC	Variable
					EPA-SWQ-PAL-ACUTE	Variable
	Iron Total	2	216000	ug/l	**HC-DW-AO**	**300**
					ICBM-SWQ-IU	300
					USEPA-SWQ-RA	300
					EPA-SWQ-AG-IRRIGATION	5000
					ECCC-SWQ-FEQG	Variable
	Lead Total	0	309	ug/l	**ICBM-SWQ-IU**	**4.01**
					HC-DW-MAC	5
					WHO-DW	10
					USEPA-DW-MCL	15
					CCME-SWQ-AG-LIVESTOCK	100
					EPA-SWQ-LIVESTOCK	100
					USDOE-SWQ-WL-NOAEL	168
					CCME-SWQ-AG-IRRIGATION	200

Group	Parameter	Min Detected	Max Detected	Units	Guidelines	Guideline Value
					EPA-SWQ-AG-IRRIGATION	200
					CCME-SWQ-PAL-CHRONIC	Variable
					EPA-SWQ-PAL-CHRONIC	Variable
	Manganese Total	0.04	12200	ug/l	**HC-DW-AO**	**20**
					ICBM-SWQ-IU	50
					USEPA-SWQ-DW+O	50
					USEPA-SWQ-O	100
					HC-DW-MAC	120
					CCME-SWQ-AG-IRRIGATION	200
					EPA-SWQ-AG-IRRIGATION	200
	Mercury Total	0	2370	ng/l	**ICBM-SWQ-IU**	**1.6**
					EPA-SWQ-PAL-CHRONIC	5
					EPA-SWQ-PAL-ACUTE	13
					CCME-SWQ-PAL-CHRONIC	26
					HC-DW-MAC	1000
					USEPA-DW-MCL	2000
					USEPA-DW-MCLG	2000
	Molybdenum Total	0	100	ug/l	**EPA-SWQ-AG-IRRIGATION**	**10**
					ICBM-SWQ-IU	33.33
					ICBM-SWQ-IU(DW+O-Derived)	33.33
					CCME-SWQ-PAL-CHRONIC	73
					EPA-SWQ-PAL-CHRONIC	73
	Nickel Total	0	334	ug/l	**ICBM-SWQ-IU(DW+O-Derived)**	**7.35**
					WHO-DW	70
					CCME-SWQ-AG-IRRIGATION	200
					EPA-SWQ-AG-IRRIGATION	200
					CCME-SWQ-PAL-CHRONIC	Variable
					EPA-SWQ-PAL-ACUTE	Variable
					EPA-SWQ-PAL-CHRONIC	Variable
	Selenium Total	0	25.2	ug/l	**USDOE-SWQ-WL-NOAEL**	**0.236**
					ICBM-SWQ-IU	0.24
					CCME-SWQ-PAL-CHRONIC	1
					USEPA-SWQ-PAL-CHRONIC	1.5
					EPA-SWQ-PAL-CHRONIC	2
					CCME-SWQ-AG-IRRIGATION	20
					EPA-SWQ-AG-IRRIGATION	20
	Silver Total	0	19600	ug/l	**CCME-SWQ-PAL-CHRONIC**	**0.25**
					EPA-SWQ-PAL-CHRONIC	0.25
					ICBM-SWQ-IU	0.25
	Strontium Total	0	4000	ug/l	**ECCC-SWQ-FEQG**	**2500**

Group	Parameter	Min Detected	Max Detected	Units	Guidelines	Guideline Value
	Thallium Total	0	119	ug/l	**ICBM-SWQ-IU(DW+O-Derived)**	**0.02**
					USEPA-SWQ-DW+O	0.24
					USEPA-SWQ-O	0.47
					USEPA-DW-MCLG	0.5
					CCME-SWQ-PAL-CHRONIC	0.8
					EPA-SWQ-PAL-CHRONIC	0.8
					USDOE-SWQ-WL-NOAEL	1
					USEPA-DW-MCL	2
					USDOE-SWQ-WL-LOAEL	34
	Uranium Total	0	266	ug/l	**CCME-SWQ-AG-IRRIGATION**	**10**
					EPA-SWQ-AG-IRRIGATION	10
					CCME-SWQ-PAL-CHRONIC	15
					EPA-SWQ-PAL-CHRONIC	15
					ICBM-SWQ-IU	15
					HC-DW-MAC	20
					USEPA-DW-MCL	30
					USEPA-DW-MCLG	30
					WHO-DW	30
					CCME-SWQ-PAL-ACUTE	33
					EPA-SWQ-PAL-ACUTE	33
					CCME-SWQ-AG-LIVESTOCK	200
					EPA-SWQ-LIVESTOCK	200
	Vanadium Total	0	201	ug/l	**CCME-SWQ-AG-IRRIGATION**	**100**
					CCME-SWQ-AG-LIVESTOCK	**100**
					EPA-SWQ-AG-IRRIGATION	100
					EPA-SWQ-LIVESTOCK	100
					ICBM-SWQ-IU	100
					ECCC-SWQ-FEQG	120
	Zinc Total	0	628000	ug/l	**ICBM-SWQ-IU**	**12.72**
					EPA-SWQ-PAL-CHRONIC	30
					USDOE-SWQ-WL-NOAEL	30
					CCME-SWQ-AG-IRRIGATION	1000
					EPA-SWQ-AG-IRRIGATION	1000
					HC-DW-AO	5000
					USEPA-SWQ-RA	5000
					USEPA-SWQ-DW+O	7400
					USEPA-SWQ-O	26000
					CCME-SWQ-AG-LIVESTOCK	50000
					EPA-SWQ-LIVESTOCK	50000
					USDOE-SWQ-WL-LOAEL	131000
Nutrients	Ammonia Total	0	5	mg/l	**ICBM-SWQ-IU(DW+O-Derived)**	**0.67**

Group	Parameter	Min Detected	Max Detected	Units	Guidelines	Guideline Value
		0.01	1.5		CCME-SWQ-PAL-CHRONIC	Variable
					EPA-SWQ-PAL-CHRONIC	Variable
	Ammonia Un-Ionized (Calcd.)	0	0.049	mg/l	**EPA-SWQ-PAL-CHRONIC**	**0.016**
					ICBM-SWQ-IU	0.016
					CCME-SWQ-PAL-CHRONIC	0.019
	Nitrate as Nitrogen	0	5.4	mg/l	**EPA-SWQ-PAL-CHRONIC**	**3**
					ICBM-SWQ-IU	3
	Nitrite as Nitrogen	0	1.28	mg/l	**CCME-SWQ-PAL-CHRONIC**	**0.06**
					ICBM-SWQ-IU	0.06
					HC-DW-MAC	1
					USEPA-DW-MCL	1
					USEPA-DW-MCLG	1
					EPA-SWQ-PAL-ACUTE	Variable
					EPA-SWQ-PAL-CHRONIC	Variable
Other Inorganics	Hydrogen Sulphide	0.002	0.059	mg/l	ICBM-SWQ-IU	0.002
					USEPA-SWQ-PAL-CHRONIC	**0.002**
Other Organics	Bis(2-Ethylhexyl) Phthalate	0	23.5	ug/l	**USDOE-SWQ-WL-NOAEL**	**0.0007593**
					ICBM-SWQ-IU(DW+O-Derived)	0.21
					USEPA-SWQ-DW+O	3.2
					USEPA-SWQ-O	3.7
	Butylbenzyl Phthalate	0	1	ug/l	**ICBM-SWQ-IU(DW+O-Derived)**	**0.06**
	Cyanide Total	0.002	0.06	mg/l	**USEPA-SWQ-DW+O**	**0.004**
					CCME-SWQ-PAL-CHRONIC	0.005
					USEPA-SWQ-PAL-CHRONIC	0.0052
					USEPA-SWQ-PAL-ACUTE	0.022
	Di-N-Butyl Phthalate	0	3	ug/l	ICBM-SWQ-IU	0.15
					USDOE-SWQ-WL-NOAEL	**0.15**
	Phenol	0	229	ug/l	**CCME-SWQ-AG-LIVESTOCK**	**2**
					EPA-SWQ-LIVESTOCK	2
					ICBM-SWQ-IU	2
					CCME-SWQ-PAL-CHRONIC	4
					EPA-SWQ-PAL-CHRONIC	4
Pest-Fung-Herb	Aldrin	0.00026	0.00027	ug/l	ICBM-SWQ-IU	0.0000077
					USEPA-SWQ-DW+O	**0.0000077**
					USEPA-SWQ-O	0.0000077
	Atrazine	0.003	0.022	ug/l	**HC-DW-MAC**	**0.005**
	Azinphos Methyl (Guthion)	200	200	ng/l	**EPA-SWQ-PAL-CHRONIC**	**10**
					ICBM-SWQ-IU	10
					USEPA-SWQ-PAL-CHRONIC	10
	DDT And Metabolites	0.00056	0.00127	ug/l	**ICBM-SWQ-IU**	**0.000004**
					USDOE-SWQ-WL-NOAEL	4.14E-06

Group	Parameter	Min Detected	Max Detected	Units	Guidelines	Guideline Value
					USEPA-SWQ-DW+O	0.0003
					USEPA-SWQ-O	0.0003
					EPA-SWQ-PAL-CHRONIC	0.001
					USEPA-SWQ-PAL-CHRONIC	0.001
	Dieldrin	0.00107	0.034	ug/l	**ICBM-SWQ-IU**	**0.00001**
					USEPA-SWQ-DW+O	0.000012
					USEPA-SWQ-O	0.000012
					USDOE-SWQ-WL-NOAEL	0.00136
					CCME-SWQ-PAL-CHRONIC	0.004
					EPA-SWQ-PAL-CHRONIC	0.004
	Endrin	0.00125	0.00125	ug/l	**ICBM-SWQ-IU**	**0.001**
	Heptachlor	0.00056	0.00056	ug/l	**ICBM-SWQ-IU(DW+O-Derived)**	**0.00004**
					USEPA-SWQ-DW+O	0.000059
					USEPA-SWQ-O	0.000059
	Heptachlor Epoxide	0.00033	0.00033	ug/l	**ICBM-SWQ-IU(DW+O-Derived)**	**0.0001**
					USEPA-SWQ-DW+O	0.00032
					USEPA-SWQ-O	0.00032
	Hexachlorobenzene	0.00046	0.00055	ug/l	**ICBM-SWQ-IU(DW+O-Derived)**	**0.0001**
	MCPA	0.004	0.17	ug/l	**CCME-SWQ-AG-IRRIGATION**	**0.025**
					EPA-SWQ-AG-IRRIGATION	0.04
	Methoxychlor (P,P'-Methoxychlor)	0.00512	0.04	ug/l	**ICBM-SWQ-IU(DW+O-Derived)**	**0.001**
					USEPA-SWQ-DW+O	0.02
					USEPA-SWQ-O	0.02
					EPA-SWQ-PAL-CHRONIC	0.03
					USEPA-SWQ-PAL-CHRONIC	0.03
	Mirex	0.00082	0.00139	ug/l	**EPA-SWQ-PAL-CHRONIC**	**0.001**
					ICBM-SWQ-IU	0.001
					USEPA-SWQ-PAL-CHRONIC	0.001
	P,P'-DDD (TDP)	0.00088	0.00088	ug/l	**ICBM-SWQ-IU**	**0.00018**
	P,P'-DDE	0.00065	0.00065	ug/l	**USEPA-SWQ-DW+O**	**0.00018**
					USEPA-SWQ-O	0.00018
	Permethrin	0.011	0.017	ug/l	**CCME-SWQ-PAL-CHRONIC**	**0.004**
					EPA-SWQ-PAL-CHRONIC	0.004
					ICBM-SWQ-IU	0.004
PHCs and PAHs	Anthracene	0.022	74.3	ng/l	**CCME-SWQ-PAL-CHRONIC**	**12**
					EPA-SWQ-PAL-CHRONIC	12
					ICBM-SWQ-IU	12
	Benzene	0.04	20.4	ug/l	**ICBM-SWQ-IU(DW+O-Derived)**	**2.11**
					HC-DW-MAC	5

Group	Parameter	Min Detected	Max Detected	Units	Guidelines	Guideline Value
					USEPA-DW-MCL	5
					USEPA-SWQ-DW+O	5.8
					WHO-DW	10
	Benzo(A)Anthracene	0.015	114	ng/l	**ICBM-SWQ-IU(DW+O-Derived)**	**1**
					USEPA-SWQ-DW+O	12
					USEPA-SWQ-O	13
					CCME-SWQ-PAL-CHRONIC	18
					EPA-SWQ-PAL-CHRONIC	18
	Benzo(A)Pyrene	0.02	155	ng/l	**ICBM-SWQ-IU(DW+O-Derived)**	**0.1**
					USEPA-SWQ-DW+O	1.2
					USEPA-SWQ-O	1.3
					USDOE-SWQ-WL-NOAEL	6.722
					CCME-SWQ-PAL-CHRONIC	15
					EPA-SWQ-PAL-CHRONIC	15
					HC-DW-MAC	40
	Benzo(B)Fluoranthene	0.018	204	ng/l	**ICBM-SWQ-IU(DW+O-Derived)**	**1**
					USEPA-SWQ-DW+O	12
					USEPA-SWQ-O	13
	Benzo(K)Fluoranthene	1.77	21	ng/l	**ICBM-SWQ-IU(DW+O-Derived)**	**10**
	Chrysene	0	336	ng/l	**ICBM-SWQ-IU(DW+O-Derived)**	**70**
	Dibenzo(A,H) Anthracene	0.025	50.7	ng/l	**ICBM-SWQ-IU(DW+O-Derived)**	**0.1**
					USEPA-SWQ-DW+O	1.2
					USEPA-SWQ-O	1.3
	F2 Hydrocarbons (C10-C16)	0	917	ug/l	**EPA-SWQ-PAL-ACUTE**	**110**
	Fluoranthene	0	138	ng/l	**CCME-SWQ-PAL-CHRONIC**	**40**
					EPA-SWQ-PAL-CHRONIC	40
					ICBM-SWQ-IU	40
	Indeno (1,2,3-C,D)Pyrene	0.031	67.3	ng/l	**ICBM-SWQ-IU(DW+O-Derived)**	**1**
					USEPA-SWQ-DW+O	12
					USEPA-SWQ-O	13
	Naphthalene	0	12800	ng/l	**EPA-SWQ-PAL-CHRONIC**	**1000**
					ICBM-SWQ-IU	1000
					CCME-SWQ-PAL-CHRONIC	1100
	Phenanthrene	0.13	772	ng/l	**CCME-SWQ-PAL-CHRONIC**	**400**
					EPA-SWQ-PAL-CHRONIC	400
					ICBM-SWQ-IU	400
	Pyrene	0	221	ng/l	**CCME-SWQ-PAL-CHRONIC**	**25**
					EPA-SWQ-PAL-CHRONIC	25

Group	Parameter	Min Detected	Max Detected	Units	Guidelines	Guideline Value
					ICBM-SWQ-IU	25
	Toluene	0.04	63.4	ug/l	**EPA-SWQ-PAL-CHRONIC**	**0.5**
					ICBM-SWQ-IU	0.5
					CCME-SWQ-PAL-CHRONIC	2
					CCME-SWQ-AG-LIVESTOCK	24
					EPA-SWQ-LIVESTOCK	24
					ECCC-SWQ-FEQG	30
					USEPA-SWQ-DW+O	57
					HC-DW-MAC	60
Physicals	Escherichia Coli	1	2500	No/100 ml	**EPA-SWQ-AG-IRRIGATION**	**100**
					EPA-SWQ-RA	**100**
	Oxygen Dissolved	0	81.3	mg/l	**USEPA-SWQ-PAL-CHRONIC**	**4**
					EPA-SWQ-PAL-ACUTE	5
					EPA-SWQ-PAL-CHRONIC	6.5
					USEPA-SWQ-PAL-ACUTE	6.5
					EPA-SWQ-PAL-CHRONIC	8.3
					CCME-SWQ-PAL-CHRONIC	9.5
	pH (Field)	4.46	10.21	pH units	CCME-SWQ-PAL-CHRONIC	NA
					EPA-SWQ-PAL-CHRONIC	NA
					EPA-SWQ-RA	NA
					HC-SWQ-RA	NA
					ICBM-SWQ-IU	NA
					USEPA-SWQ-DW+O	NA
					USEPA-SWQ-PAL-CHRONIC	NA
	Total Dissolved Solids (Calcd.)	17	7370	mg/l	**USEPA-SWQ-DW+O**	**250**
					CCME-SWQ-AG-IRRIGATION	500
					EPA-SWQ-AG-IRRIGATION	500
					HC-DW-AO	500
					CCME-SWQ-AG-LIVESTOCK	3000
					EPA-SWQ-LIVESTOCK	3000
					ICBM-SWQ-IU	3000
	Turbidity (Field)	-3.7	2045	NTU	EPA-SWQ-RA	50
					HC-SWQ-RA	**50**

Table E4: Guideline Exceedance Summary

Receptor Group	Parameters	Type	Parameters	Guidelines	Parameters
Ecological Health	63	Agricultural - Irrigation	22	CCME-SWQ-AG-IRRIGATION	18
				EPA-SWQ-AG-IRRIGATION	20
		Agricultural - Livestock	13	CCME-SWQ-AG-LIVESTOCK	13
				EPA-SWQ-LIVESTOCK	13
		Protection of Aquatic Life	56	CCME-SWQ-PAL-ACUTE	5
				CCME-SWQ-PAL-CHRONIC	36
				ECCC-SWQ-FEQG	8
				EPA-SWQ-PAL-ACUTE	10
				EPA-SWQ-PAL-CHRONIC	40
				USEPA-SWQ-PAL-ACUTE	9
				USEPA-SWQ-PAL-CHRONIC	18
		Wildlife - Food and Water Benchmarks for Piscivores	12	USDOE-SWQ-WL-LOAEL	3
				USDOE-SWQ-WL-NOAEL	12
Human Health	50	Aesthetics and Recreation	11	EPA-SWQ-RA	3
				HC-DW-AO	7
				HC-SWQ-RA	2
				USEPA-SWQ-RA	3
		Drinking Water	19	HC-DW-MAC	15
				USEPA-DW-MCL	12
				USEPA-DW-MCLG	8
				WHO-DW	9
		Drinking Water and Consumption of Organisms	34	ICBM-SWQ-IU(DW+O-Derived)	23
				USEPA-SWQ-DW+O	23
				USEPA-SWQ-O	17
Holistic	71	Protection of Indigenous Use	71	ICBM-SWQ-IU	71