

Surface Water Quality Verification Dataset - Summary

North Saskatchewan River Release

Sample Date	Sample Time	Location	Sample Type	ID	Substance	Result	Unit	SEQG PHC and PAH Objectives				CDWQG Guideline
								Potable	Aquatic Life	Livestock	Irrigation	
WSA Water Quality Sampling												

Point of Entry

05-Aug-16	11:15	Point of Entry South Bank	5 cm below Surface	23690	ND	--	--	--	--	--	--	--
08-Aug-16	14:40		5 cm below Surface	23928	Toluene	0.0002	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
11-Aug-16	12:00		5 cm below Surface	24342	ND	--	--	--	--	--	--	--
11-Aug-16	12:30		5 cm below Surface	24343 (Duplicate)	Toluene	0.0009	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
15-Aug-16	10:00		5 cm below Surface	24853	ND	--	--	--	--	--	--	--
05-Aug-16	12:35	Point of Entry Centre Channel	5 cm below Surface	23691	ND	--	--	--	--	--	--	--
08-Aug-16	16:15		5 cm below Surface	23929	ND	--	--	--	--	--	--	--
11-Aug-16	13:45		5 cm below Surface	24344	ND	--	--	--	--	--	--	--
15-Aug-16	10:30		5 cm below Surface	24854	Toluene	0.0007	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
05-Aug-16	12:55	Point of Entry Centre Channel	1.0 m below Surface	23692	ND	--	--	--	--	--	--	--
08-Aug-16	16:30		0.3 m below surface	23930	ND	--	--	--	--	--	--	--
11-Aug-16	14:00		1.0 m below Surface	24347	ND	--	--	--	--	--	--	--
15-Aug-16	10:45		1.8 m below Surface	24865	Toluene	0.0003	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
05-Aug-16	13:45	Point of Entry North Bank	5 cm below Surface	23693	ND	--	--	--	--	--	--	--
08-Aug-16	15:20		5 cm below Surface	23931	ND	--	--	--	--	--	--	--
11-Aug-16	14:45		5 cm below Surface	24345	Toluene	0.0008	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC

15-Aug-16	11:00	5 cm below Surface	24855	ND	--	--	--	--	--	--
15-Aug-16	11:15	5 cm below Surface	24856 (Duplicate)	ND	--	--	--	--	--	--

Highway #21

04-Aug-16	18:45	Highway #21 South Bank	5 cm below surface	23510	m+p-Xylene	0.4 ug/L	--	NS	NS	NS	90	
					o-Xylene	0.2 ug/L	--	NS	NS	NS	90	
					Total Xylene	0.6 ug/L	--	NS	NS	NS	0.020 AO / 0.090 MAC	
					Toluene	0.0006 mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC	
					2-Methylnaphthalene	0.05 ug/L	NS	NS	NS	NS	20	
					Naphthalene	0.07 ug/L	--	1.1	NS	NS	90	
04-Aug-16	19:15		Highway #21 South Bank	5 cm below Surface	23512 (Duplicate)	m+p-Xylene	0.4 ug/L	--	NS	NS	NS	90
						o-Xylene	0.2 ug/L	--	NS	NS	NS	90
						Total Xylene	0.6 ug/L	--	NS	NS	NS	0.020 AO / 0.090 MAC
						Toluene	0.0002 mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
						2-Methylnaphthalene	0.05 ug/L	NS	NS	NS	NS	20
						Naphthalene	0.07 ug/L	--	1.1	NS	NS	90
08-Aug-16	20:35	Highway #21 South Bank		5 cm below Surface	23932	ND	--	--	--	--	--	
12-Aug-16	9:10			5 cm below Surface	24418	ND	--	--	--	--	--	
15-Aug-16	13:45			5 cm below Surface	24859	ND	--	--	--	--	--	
04-Aug-16	19:45			Highway #21 Centre Channel	5 cm below Surface	23522	ND	--	--	--	--	--
08-Aug-16	18:55				5 cm below Surface	23933	ND	--	--	--	--	--
08-Aug-16	19:10				5 cm below Surface	23934 (Duplicate)	ND	--	--	--	--	--
12-Aug-16	8:10		5 cm below Surface		24417	Toluene	0.0005 mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
15-Aug-16	13:15		5 cm below Surface		24858	ND	--	--	--	--	--	--
04-Aug-16	19:50		Highway #21 Centre		1.5 m below Surface	23511	ND	--	--	--	--	--
08-Aug-16	19:20			1.0 m below Surface	23935	ND	--	--	--	--	--	

12-Aug-16	8:20	Channel	1.0 m below Surface	24421	Toluene	0.0004	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
15-Aug-16	13:30		1.5 m below Surface	24866	Toluene	0.0003	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
04-Aug-16	18:00	Highway #21 North Bank	5 cm below Surface	23509	ND	--	--	--	--	--	--	--
08-Aug-16	21:15		5 cm below Surface	23936	ND	--	--	--	--	--	--	--
12-Aug-16	8:40		5 cm below Surface	24419	Toluene	0.0005	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
15-Aug-16	12:45		5 cm below Surface	24857	ND	--	--	--	--	--	--	--

Paynton Ferry

05-Aug-16	17:00	Paynton Ferry Southwest Bank	5 cm below Surface	23694	ND	--	--	--	--	--	--	--
08-Aug-16	13:00		5 cm below Surface	23924	ND	--	--	--	--	--	--	--
11-Aug-16	16:15		5 cm below Surface	24341	ND	--	--	--	--	--	--	--
15-Aug-16	13:00		5 cm below Surface	24850	Toluene	0.0003	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
05-Aug-16	17:20	Paynton Ferry Centre Channel	5 cm below Surface	23695	ND	--	--	--	--	--	--	--
08-Aug-16	13:30		5 cm below Surface	23925	ND	--	--	--	--	--	--	--
12-Aug-16	11:50		5 cm below Surface	24415	Toluene	0.0002	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
15-Aug-16	13:15		5 cm below Surface	24851	Toluene	0.0027	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
05-Aug-16	17:35	Paynton Ferry Centre Channel	0.5 m below Surface	23696	ND	--	--	--	--	--	--	--
08-Aug-16	13:45		1 m below Surface	23926	ND	--	--	--	--	--	--	--
12-Aug-16	12:00		0.5 m below Surface	24420	Toluene	0.0006	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
15-Aug-16	13:25		1 m below Surface	24864	Toluene	0.0003	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
05-Aug-16	18:05	Paynton Ferry Northeast Bank	5 cm below Surface	23697	Toluene	0.0003	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
08-Aug-16	14:00		5 cm below Surface	23927	ND	--	--	--	--	--	--	--
12-Aug-16	12:35		5 cm below Surface	24416	Toluene	0.0004	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
15-Aug-16	13:45		5 cm below Surface	24852	Toluene	0.0003	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
					Fluoranthene	0.00006	mg/L	0.94267	0.00004	NS	NS	NS
				Pyrene	0.00017	mg/L	--	0.000025	NS	NS	0.12	

North Battleford near water intake

04-Aug-16	12:55	North Battleford Intake Southwest Bank	5 cm below Surface	23507	Toluene	0.0005	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
08-Aug-16	8:30		5 cm below Surface	23920	ND							
11-Aug-16	12:30		5 cm below Surface	24340	ND							
15-Aug-16	11:00		5 cm below Surface	24846	Toluene	0.0004	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
					Anthracene	0.01	ug/L					
					Benzo(a)anthracene	0.01	ug/L	NS	0.018	NS	NS	NS
					Benzo(a)pyrene	0.01	ug/L	0.01	0.015	NS	NS	0.01 MAC
04-Aug-16	10:55	North Battleford Intake Centre Channel	5 cm below Surface	23505	ND	--	--	--	--	--	--	--
08-Aug-16	10:00		5 cm below Surface	23921	Toluene	0.0005	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
11-Aug-16	11:15		5 cm below Surface	24339	Toluene	0.0006	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
15-Aug-16	10:20		5 cm below Surface	24847	Toluene	0.0002	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
04-Aug-16	11:15	North Battleford Intake Centre Channel	1.5 m below Surface	23506	ND	--	--	--	--	--	--	--
08-Aug-16	10:15		1.8 m below Surface	23922	ND	--	--	--	--	--	--	--
11-Aug-16	11:25		1.8 m below Surface	24346	ND	--	--	--	--	--	--	--
15-Aug-16	10:30		1.8 m below Surface	24863	Toluene	0.0033	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
04-Aug-16	14:15	North Battleford Northeast Bank	5 cm below Surface	23508	ND	--	--	--	--	--	--	--
08-Aug-16	10:30		5 cm below Surface	23923	ND	--	--	--	--	--	--	--
08-Aug-16	10:35		5 cm below Surface	23937	ND	--	--	--	--	--	--	--
11-Aug-16	9:30		5 cm below Surface	24337	Benzo(a)pyrene	0.01	ug/L	0.01	0.015	NS	NS	0.01 MAC
11-Aug-16	10:00		5 cm below Surface	24338 (Duplicate)	Benzo(a)anthracene	0.01	ug/L	NS	0.018	NS	NS	NS
					Benzo(a)pyrene	0.02	ug/L	0.01	0.015	NS	NS	0.01 MAC
15-Aug-16	9:00		5 cm below Surface	24848	ND	--	--	--	--	--	--	--
15-Aug-16	9:20		5 cm below Surface	24849 (Duplicate)	ND	--	--	--	--	--	--	--

Prince Albert near water intake

04-Aug-16	14:00	Prince Albert South Bank	5 cm below Surface	23513	Fluoranthene	0.00004	mg/L	0.94267	0.00004	NS	NS	NS	
					Pyrene	0.0001	mg/L	--	0.000025	NS	NS	0.12	
08-Aug-16	11:40		5 cm below Surface	23938	ND	--	--	--	--	--	--	--	
11-Aug-16	11:02		5 cm below Surface	24348	ND	--	--	--	--	--	--	--	
15-Aug-16	11:33		5 cm below Surface	24860	ND	--	--	--	--	--	--	--	
15-Aug-16	11:40		5 cm below Surface	24867 (Duplicate)	ND	--	--	--	--	--	--	--	
04-Aug-16	16:45		Prince Albert Centre Channel	5 cm below Surface	23515	ND	--	--	--	--	--	--	--
08-Aug-16	14:20			5 cm below Surface	23940	Benzo(a)pyrene	0.01	ug/L	0.01	0.015	NS	NS	0.01 MAC
08-Aug-16	14:20			5 cm below Surface	23940	Fluoranthene	0.00006	mg/L	0.94267	0.00004	NS	NS	NS
08-Aug-16	14:20			5 cm below Surface	23940	Pyrene	0.00016	mg/L	--	0.000025	NS	NS	0.12
08-Aug-16	14:55	5 cm below Surface		23942 (Duplicate)	ND	--	--	--	--	--	--	--	
11-Aug-16	13:20	5 cm below Surface		24350	ND	--	--	--	--	--	--	--	
15-Aug-16	13:57	5 cm below Surface		24862	ND	--	--	--	--	--	--	--	
04-Aug-16	17:00	Prince Albert Centre Channel	1.5 m below surface	23516	ND	--	--	--	--	--	--	--	
08-Aug-16	14:45		1.5 m below surface	23941	ND	--	--	--	--	--	--	--	
11-Aug-16	13:30		1.5 m below surface	24352	Toluene	0.0003	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC	
					Benzo(a)pyrene	0.01	ug/L	0.01	0.015	NS	NS	0.01 MAC	
15-Aug-16	14:10		1.5 m below Surface	24868	ND	--	--	--	--	--	--	--	
04-Aug-16	15:15	Prince Albert N Bank	5 cm below Surface	23514	ND	--	--	--	--	--	--	--	
08-Aug-16	13:05		5 cm below Surface	23939	ND	--	--	--	--	--	--	--	
11-Aug-16	12:04		5 cm below Surface	24349	ND	--	--	--	--	--	--	--	
11-Aug-16	12:12		5 cm below Surface	24351 (Duplicate)	ND	--	--	--	--	--	--	--	
15-Aug-16	12:57		5 cm below Surface	24861	ND	--	--	--	--	--	--	--	

Near Hwy#6 - Wapiti reach

03-Aug-16	10:30	Wapiti Resort Inlet	5 cm below surface	23321	ND	--	--	--	--	--	--	--
10-Aug-16	12:15	Hwy#6 S Bank	5 cm below surface	24130	Toluene	0.0003	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
17-Aug-16	10:30		5 cm below surface	25205	ND	--	--	--	--	--	--	--
03-Aug-16	11:15	Hwy#6 Centre Channel	5 cm below surface	23322	ND	--	--	--	--	--	--	--
10-Aug-16	13:40		5 cm below surface	24132	Toluene	0.0004	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
10-Aug-16	13:42		5 cm below surface	24133 (Duplicate)	Toluene	0.0002	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
17-Aug-16	11:00		5 cm below surface	25206	Toluene	0.0007	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
10-Aug-16	13:45	Hwy#6 Centre Channel	3.5 m below surface	24134	ND	--	--	--	--	--	--	--
17-Aug-16	11:10		3 m below surface	25212	Toluene	0.0003	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
03-Aug-16	12:20	Hwy#6 N Bank	5 cm below surface	23323	ND	--	--	--	--	--	--	--
10-Aug-16	10:05		5 cm below surface	24131	Toluene	0.0003	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
17-Aug-16	11:30		5 cm below surface	25207	Toluene	0.0007	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
17-Aug-16	11:40		5 cm below surface	25208 (Duplicate)	Toluene	0.0006	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC

Codette Reservoir

03-Aug-16	13:00	Codette R. N Bank	5 cm below surface	23324	ND	--	--	--	--	--	--	--
03-Aug-16	13:30	Codette R. N Bank	6 m below surface	23325	ND	--	--	--	--	--	--	--
03-Aug-16	14:00	Codette R. S Bank	5 cm below surface	23326	ND	--	--	--	--	--	--	--
03-Aug-16	14:15	Codette R. S Bank	6 m below surface	23327	ND	--	--	--	--	--	--	--

Nipawin

10-Aug-16	16:12	Hwy#55 E Bank	5 cm below surface	24135	Toluene	0.0003	mg/L	0.024	0.0005	4.91	NS	0.024 AO / 0.060 MAC
17-Aug-16	14:30		5 cm below surface	25209	ND	--	--	--	--	--	--	--
03-Aug-16	17:45	Hwy#55 Centre Channel	5 cm below surface	23328	ND	--	--	--	--	--	--	--
10-Aug-16	17:15		5 cm below surface	24137	ND	--	--	--	--	--	--	--
17-Aug-16	15:00		5 cm below surface	25210	ND	--	--	--	--	--	--	--

10-Aug-16	17:20	Hwy#55 Centre Channel	4 m below surface	24138	ND	--	--	--	--	--	--	--
17-Aug-16	15:10		3.5 m below surface	25213	ND	--	--	--	--	--	--	--
10-Aug-16	16:42	Hwy#55 W Bank	5 cm below surface	24136	ND	--	--	--	--	--	--	--
17-Aug-16	15:30		5 cm below surface	25211	ND	--	--	--	--	--	--	--

Upstream of Cumberland House

09-Aug-16	15:00		5 cm below surface	24598	ND	--	--	--	--	--	--	--
-----------	-------	--	--------------------	-------	----	----	----	----	----	----	----	----

Notes:

- ND Not Detected
- Exceeds guideline - Drinking Water
- Exceeds guideline - Aquatic Life, Livestock, or Irrigation pathway

AO Aesthetic Objective

MAC Maximum Acceptable Concentration

NS No Standard

For Information on Husky monitoring see: <http://www.huskyenergy.com/news/saskatchewan-updates.asp>

Saskatchewan Research Council - Environmental Analytics Laboratories

Legal sample continuity protocol followed.

Analysis	Contaminant	Detection Limit (ug/L)	
		SRC	Maxxam Range*
HC	Benzene	<0.2	<0.4-4
HC	Ethylbenzene	<0.2	<0.4-4
HC	m+p-Xylene	<0.2	--
HC	o-Xylene	<0.2	--
HC	Total Xylene	<0.2	<0.8-8
HC	Toluene	<0.2	<0.4-4
PAH	2-Methylnaphthalene	<0.05	<0.1
PAH	Acenaphthene	<0.05	<0.1
PAH	Acenaphthylene	<0.05	<0.1
PAH	Acridine	--	<0.2-1.4
PAH	Anthracene	<0.01	<0.01
PAH	Benzo(a)anthracene	<0.01	<0.0085
PAH	Benzo(a)pyrene	<0.01	<0.0075
PAH	Benzo(b)fluoranthene	<0.5	--
PAH	Benzo(b+j)fluoranthene	--	<0.0085
PAH	Benzo(e)pyrene	<0.5	--
PAH	Benzo(g,h,i)perylene	<0.5	<0.0085
PAH	Benzo(k)fluoranthene	<0.5	<0.0085
PAH	Chrysene	<0.1	<0.0085-0.029
PAH	Dibenzo(a,h)anthracene	<0.5	<0.0075-0.02
PAH	Fluoranthene	<0.02	<0.01
PAH	Fluorene	<0.05	<0.05-0.088
PAH	Indeno(1,2,3,-c,d)pyrene	<0.5	<0.0085
PAH	Naphthalene	<0.05	<0.1
PAH	Perylene	<0.5	--
PAH	Phenanthrene	<0.05	<0.05
PAH	Pyrene	<0.02	<0.02
PAH	Quinoline	<0.05	<0.2
HC	Hydrocarbons, F1	<5	<100-1000
HC	Hydrocarbons, F2	<50	<10-1300
HC	Hydrocarbons, F3	<50	<100-1200
HC	Hydrocarbons, F4 (C32-C50)	<50	<200-2300

* there is a limited number of samples without the lowest detection limit (DL). A DL range was included to account for the samples that did not have the lowest DL for a variety of reasons.