Water Security Agency

**Data Current as of:**
**23-Aug-16**

**Sediment Quality Verification Dataset - Summary**
North Saskatchewan River Release

| Sample Date | Sample Time | Location | Sample Type | ID | Substance | Result | Unit | CCME ISQG Exceedance[1] | CCME PEL Exceedance[2] |
|---|---|---|---|---|---|---|---|---|---|
| ***WSA Sediment Sampling*** | | | | | | | | | |
| ***Point of Entry*** | | | | | | | | | |
| 05-Aug-16 | 11:15 | Point of Entry South Bank | Sediment | 23698 | 2-Methylnaphthalene | 0.1 | mg/kg | 0.0202 | 0.201 |
| | | | | | Phenanthrene | 0.2 | mg/kg | 0.0419 | 0.515 |
| | | | | | Ethylbenzene | 0.01 | mg/kg | NS | NS |
| | | | | | Toluene | 0.13 | mg/kg | NS | NS |
| | | | | | F2 hydrocarbons | 14 | mg/kg | NS | NS |
| | | | | | F3 hydrocarbons | 290 | mg/kg | NS | NS |
| | | | | | F4 hydrocarbons | 86 | mg/kg | NS | NS |
| 08-Aug-16 | 14:20 | | Sediment | L1811886-6 | Toluene | 1.64 | mg/kg | NS | NS |
| | | | | | F2 hydrocarbons | 48 | mg/kg | NS | NS |
| | | | | | F3 hydrocarbons | 310 | mg/kg | NS | NS |
| | | | | | TEH (C23-C60) | 460 | mg/kg | NS | NS |
| | | | | | F4 hydrocarbons | 163 | mg/kg | NS | NS |
| | | | | | Total Hydrocarbons | 520 | mg/kg | NS | NS |
| | | | | | Benzo(a)pyrene | 0.011 | mg/kg | 0.0319 | 0.782 |
| | | | | | Benzo(b&j)fluoranthene | 0.031 | mg/kg | NS | NS |
| | | | | | Benzo(g,h,i)perylene | 0.024 | mg/kg | NS | NS |
| | | | | | Fluoranthene | 0.018 | mg/kg | 0.111 | 2.355 |
| | | | | | Fluorene | 0.013 | mg/kg | 0.0212 | 0.144 |
| | | | | | 1-Methylnaphthalene | 0.052 | mg/kg | NS | NS |
| | | | | | 2-Methylnaphthalene | 0.075 | mg/kg | 0.0202 | 0.201 |
| | | | | | Naphthalene | 0.027 | mg/kg | 0.0346 | 0.391 |
| | | | | | Phenanthrene | 0.076 | mg/kg | 0.0419 | 0.515 |
| | | | | | Pyrene | 0.028 | mg/kg | 0.053 | 0.875 |
| 05-Aug-16 | 12:35 | Point of Entry Centre Channel | Sediment | 23699 | Toluene | 0.14 | mg/kg | NS | NS |
| 05-Aug-16 | 13:45 | Point of Entry North Bank | Sediment | 23700 | Toluene | 0.03 | mg/kg | NS | NS |
| 08-Aug-16 | 15:20 | | Sediment | L1811886-7 | Toluene | 0.116 | mg/kg | NS | NS |
| | | | | | 2-Methylnaphthalene | 0.01 | mg/kg | 0.0202 | 0.201 |
| | | | | | Phenanthrene | 0.013 | mg/kg | 0.0419 | 0.515 |

### *Highway #21*

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 04-Aug-16 | 18:45 | Highway #21 South Bank | Sediment | 23504 | 2-Methylnaphthalene | 0.2 | mg/kg | 0.0202 | 0.201 |
| | | | | | Phenanthrene | 0.3 | mg/kg | 0.0419 | 0.515 |
| | | | | | Toluene | 0.67 | mg/kg | NS | NS |
| | | | | | F2 hydrocarbons | 16 | mg/kg | NS | NS |
| | | | | | F3 hydrocarbons | 240 | mg/kg | NS | NS |
| | | | | | F4 hydrocarbons | 61 | mg/kg | NS | NS |
| 04-Aug-16 | 18:00 | Highway #21 North Bank | Sediment | 23503 | Toluene | 0.16 | mg/kg | NS | NS |
| | | | | | F3 hydrocarbons | 19 | mg/kg | NS | NS |

### *Paynton Ferry*

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 05-Aug-16 | 17:00 | Paynton Southwest Bank | Sediment | 23701 | Toluene | 0.06 | mg/kg | NS | NS |
| 05-Aug-16 | 17:20 | Paynton Centre Channel | Sediment | 23702 | ND | -- | -- | -- | -- |
| 05-Aug-16 | 18:05 | Paynton Northeast Bank | Sediment | 23703 | Toluene | 0.04 | mg/kg | NS | NS |
| | | | | | F3 hydrocarbons | 16 | mg/kg | NS | NS |
| 08-Aug-16 | 14:00 | | Sediment | L1811886-5 | Toluene | 0.066 | mg/kg | NS | NS |
| | | | | | TEH (C23-C60) | 140 | mg/L | NS | NS |

### *North Battleford near water intake*

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 04-Aug-16 | 12:55 | North Battleford intake Southwest Bank | Sediment | 23501 | Toluene | 0.02 | mg/kg | NS | NS |
| 04-Aug-16 | 14:15 | North Battleford intake Northeast Bank | Sediment | 23502 | Toluene | 0.04 | mg/kg | NS | NS |
| | | | | | F3 hydrocarbons | 10 | mg/kg | NS | NS |

### *Prince Albert near water intake*

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 04-Aug-16 | 15:30 | Prince Albert north bank | Sediment | 251311 | ND | -- | -- | -- | -- |
| 08-Aug-16 | 13:20 | | Sediment | L1811860-2 | ND | -- | -- | -- | -- |
| 04-Aug-16 | 14:18 | Prince Albert south bank | Sediment | 251308 | Toluene | 0.49 | mg/kg | NS | NS |
| | | | | | F3 hydrocarbons | 37 | mg/kg | NS | NS |
| | | | | | F4 hydrocarbons | 14 | mg/kg | NS | NS |
| 08-Aug-16 | 12:00 | | Sediment | L1811860-1 | Toluene | 0.122 | mg/kg | NS | NS |
| | | | | | Benzo(b&j)fluoranthene | 0.011 | mg/kg | NS | NS |
| | | | | | Fluoranthene | 0.014 | mg/kg | 0.111 | 2.355 |
| | | | | | 2-Methylnaphthalene | 0.01 | mg/kg | 0.0202 | 0.201 |
| | | | | | Phenanthrene | 0.017 | mg/kg | 0.0419 | 0.515 |
| | | | | | Pyrene | 0.014 | mg/kg | 0.053 | 0.875 |

Notes:

ND Not Detected

Exceeds guideline - CCME Sediment Quality Guidelines for Protection of Aquatic Life

NS No Standard

1 Interim Sediment Quality Guidelines

2 Probable Effect Level

Saskatchewan Research Council - Environmental Analytics Laboratories

Legal sample continuity protocol followed.

| Contaminant | Detection Limit (mg/kg) | | | CCME ISQC | CCME PEL |
|---|---|---|---|---|---|
| | SRC ug/g and mg/kg | ALS | Maxxam | | |
| Benzene | 0.005 | 0.005 | 0.005 | NS | NS |
| Ethylbenzene | 0.01 | 0.01 | 0.01 | NS | NS |
| m+p-Xylene | 0.04 | 0.05 | -- | NS | NS |
| o-Xylene | 0.04 | 0.05 | -- | NS | NS |
| Total Xylene | 0.04 | 0.1 | 0.04 | NS | NS |
| Toluene | 0.02 | 0.05 | 0.02 | NS | NS |
| 1-Methylnaphthalene | | 0.01 | 0.005 | NS | NS |
| 2-Methylnaphthalene | 0.1 | 0.01 | 0.005 | 0.0202 | 0.201 |
| Acenaphthene | 0.1 | 0.005 | 0.005 | 0.00671 | 0.0889 |
| Acenaphthylene | 0.1 | 0.005 | 0.005 | 0.00587 | 0.128 |
| Acridine | | 0.01 | 0.01 | NS | NS |
| Anthracene | 0.1 | 0.004 | 0.004 | 0.0469 | 0.245 |
| Benzo(a)anthracene | 0.2 | 0.01 | 0.005 | 0.0317 | 0.385 |
| Benzo(a)pyrene | 0.2 | 0.01 | 0.005 | 0.0319 | 0.782 |
| Benzo(b)fluoranthene | 0.2 | | -- | | |
| Benzo(b+j)fluoranthene | | 0.01 | 0.005 | NS | NS |
| Benzo(e)pyrene | 0.2 | | 0.005 | NS | NS |
| Benzo(g,h,i)perylene | 0.2 | 0.01 | 0.005 | NS | NS |
| Benzo(k)fluoranthene | 0.2 | 0.01 | 0.005 | NS | NS |
| Benzo[c]phenanthrene | | | 0.005 | NS | NS |
| Biphenyl | | | 0.005 | NS | NS |
| Chrysene | 0.2 | 0.01 | 0.005 | 0.0571 | 0.862 |
| Dibenzo(a,h)anthracene | 0.2 | 0.005 | 0.005 | 0.00622 | 0.135 |
| Dibenzothiophene | | | 0.005 | NS | NS |
| Fluoranthene | 0.1 | 0.01 | 0.005 | 0.111 | 2.355 |
| Fluorene | 0.1 | 0.01 | 0.005 | 0.0212 | 0.144 |
| Indeno(1,2,3,-c,d)pyrene | 0.2 | 0.01 | 0.005 | NS | NS |
| Indeno(1,2,3,-c,d)fluoranthene | | | 0.005 | NS | NS |
| Naphthalene | 0.1 | 0.01 | 0.005 | 0.0346 | 0.391 |
| Perylene | 0.2 | | 0.005 | NS | NS |
| Phenanthrene | 0.1 | 0.01 | 0.005 | 0.0419 | 0.515 |
| Pyrene | 0.1 | 0.01 | 0.005 | 0.053 | 0.875 |
| Quinoline | 0.1 | 0.01 | 0.01 | NS | NS |
| Retene | | | 0.005 | NS | NS |
| Styrene | | 0.05 | | NS | NS |
| Total PAHs | | | | NS | NS |
| Hydrocarbons, F1 (C6-C10) | | 10 | | | |
| Hydrocarbons, F1 (BTEX) | | 10 | | | |
| Hydrocarbons, F1 | 10 | | 12 | NS | NS |
| Hydrocarbons, F2 | 3.9 | 30 | 10 | NS | NS |
| TEH (C11-C22) | | 150 | | | |
| Hydrocarbons, F3 | 5 | 150 | 50 | NS | NS |
| TEH (C23-C60) | | 100 | | | |
| Hydrocarbons, F4 (C34-C50) | | 50 | | | |
| Hydrocarbons, F4 (C32-C50) | 5 | | 50 | NS | NS |
| Total Hydrocarbons | | 150 | | | |
| C1 Acenaphthene | | | 0.005 | NS | NS |
| C1 Benzo(a)pyrene | | | 0.005 | NS | NS |
| C1 Biphenyl | | | 0.005 | NS | NS |
| C1 Chrysene | | | 0.005 | NS | NS |
| C1 Dibenzothiophene | | | 0.005 | NS | NS |
| C1 Fluorene | | | 0.005 | NS | NS |
| C1 Naphthalene | | | 0.005 | NS | NS |
| C1 Phenanthrene | | | 0.005 | NS | NS |
| C1 Pyrene | | | 0.005 | NS | NS |
| C2 Benzo(a)pyrene | | | 0.005 | NS | NS |
| C2 Biphenyl | | | 0.005 | NS | NS |
| C2 Chrysene | | | 0.005 | NS | NS |
| C2 Dibenzothiophene | | | 0.005 | NS | NS |
| C2 Fluorene | | | 0.005 | NS | NS |
| C2 Naphthalene | | | 0.005 | NS | NS |
| C2 Phenanthrene | | | 0.005 | NS | NS |
| C2 Pyrene | | | 0.005 | NS | NS |
| C3 Chrysene | | | 0.005 | NS | NS |
| C3 Dibenzothiophene | | | 0.005 | NS | NS |
| C3 Fluorene | | | 0.005 | NS | NS |
| C3 Naphthalene | | | 0.005 | NS | NS |
| C3 Phenanthrene | | | 0.005 | NS | NS |
| C3 Pyrene | | | 0.005 | NS | NS |
| C4 Chrysene | | | 0.005 | NS | NS |
| C4 Dibenzothiophene | | | 0.005 | NS | NS |
| C4 Naphthalene | | | 0.005 | NS | NS |
| C4 Phenanthrene | | | 0.005 | NS | NS |
| C4 Pyrene | | | 0.005 | NS | NS |