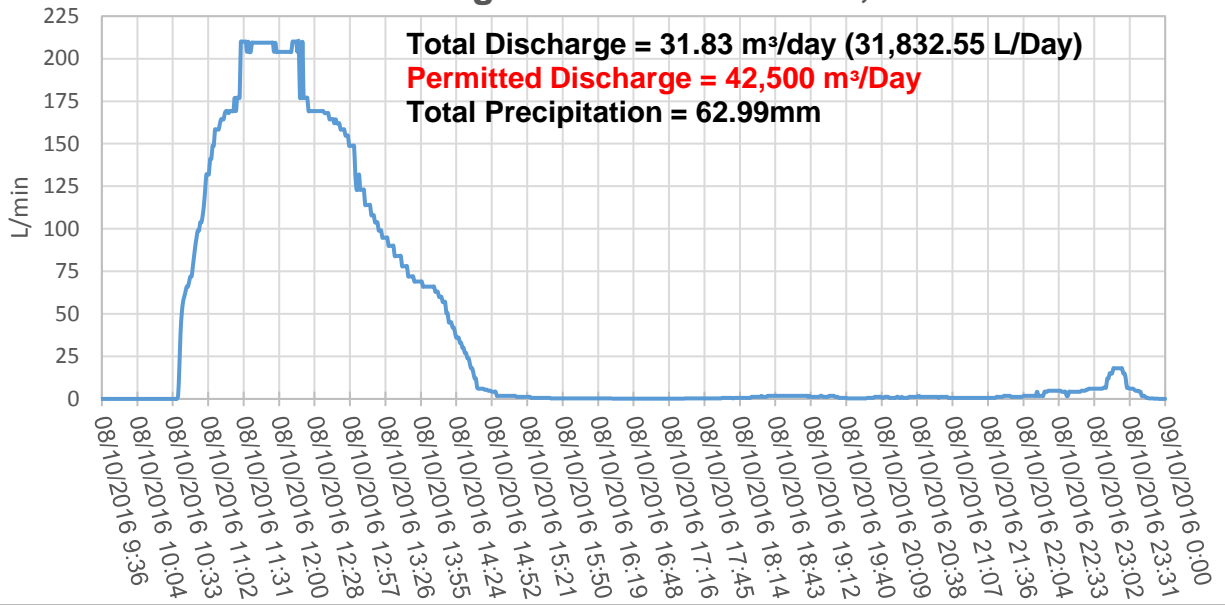


Weir Discharge E292898 October 8, 2016



| Table B1: Analytical Results for Nutrients in Surface Water | | CONTACT WATER | E292898 ANCILLARY DISCHARGE | E305365 SW-1 | | | Field Blank |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------------|-----------------|-----------------|----------------|-----------------|
| Laboratory ID | BCAWWQG ⁽²⁾ | 6100550-01 | 6100550-02 | 6100550-03 | 6100550-04 | 6100550-06 | 6100550-05 |
| Sample ID | | PEA | Weir | SW1 | SW1 | SW1 | FB |
| Date Sampled/Time | | 08-Oct-16/10:00 | 08-Oct-16/11:15 | 08-Oct-16/11:00 | 08-Oct-16/18:00 | 09-Oct-16/9:00 | 08-Oct-16/17:45 |
| Physical Tests | | | | | | | |
| Colour, True (Colour Units) | 15 ⁽⁴⁾ units absolute, or 5 units above background | | | | | | |
| Conductivity (uS/cm) | - | 1390 | 275 | 1360 | 861 | 1060 | 3 |
| Hardness (as CaCO3) | - | 651 | 98.6 | 479 | 345 | 413 | 0.59 |
| pH | - | 6.72 | 7.35 | 7.22 | 7.33 | 7.26 | 7.21 |
| Total Suspended Solids (mg/L) | 25 mg/L above background (24-hr during clear flow) | 25200 | 95 | 28 | 3 | <2 | <2 |
| Total Dissolved Solids (mg/L) | - | | | | | | |
| Turbidity (NTU) | 1 NTU above background when background is <50 NTU (raw drinking water without treatment) 5 NTU above background when background is <50 NTU (raw drinking water with treatment) | 8960 | 416 | 45.8 | 6.41 | 1.79 | 0.35 |
| Anions and Nutrients mg/L | | | | | | | |
| Alkalinity Total (as CaCO3) | <10 high sensitivity to acid inputs 10-20 moderate sensitivity to acid inputs | | | | | | |
| Acid Sensitivity | >20 low sensitivity to acid inputs | | | | | | |
| Chloride (Cl) | 600 (instant max) 150 (30-day average) | 44 | 13 | 228 | 94 | 129 | <2 |
| Fluoride (F) | 1.5 (instant max) 1.0 (30-day average) Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ | | | | | | |
| Nitrate (as N) | 32.8 (instant maximum) 3.0 (30-day average) | | | | | | |
| Nitrite (as N) ⁽³⁾ Cl <2 mg/L | 0.06 (max) 0.02 (30-day average) | | | | | | |
| Cl 2 - <4 mg/L | 0.12 (max) 0.04 (30-day average) | | | | | | |
| Cl 4 - <6 mg/L | 0.18 (max) 0.06 (30-day average) | | | | | | |
| Cl 6 - <8 mg/L | 0.24 (max) 0.08 (30-day average) | | | | | | |
| Cl 8 - <10 mg/L | 0.3 (max) 0.1 (30-day average) | | | | | | |
| Cl ≥ 10 mg/L | 0.6 (max) 0.2 (30-day average) | | | | | | |
| Sulfate (SO4) H 0-30 mg/L | 500 (instant max) | 128 (30-day average) | | | | | |
| H 31 - 75 mg/L | | 218 (30-day average) | | | | | |
| H 76 - 180 mg/L | | 309 (30-day average) | | | | | |
| H 181 - 250 mg/L | | 429 (30-day average) | | | | | |
| H > 250 mg/L | | TBD | | | | | |

Notes: Refer to Table Endnotes (attached)

Table B2: Analytical Results for Total and Dissolved Metals in Surface Water

| | | CONTACT WATER | E292898 ANCILLARY DISCHARGE | E305365 SW-1 | | | Field Blank |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------|--------------------------|--------------------------|------------------------------|--------------------------|
| Laboratory ID | BCAWWQG ⁽²⁾ | 6100550-01 | 6100550-02 | 6100550-03 | 6100550-04 | 6100550-06 | 6100550-05 |
| Sample ID | | PEA | Weir | SW1 | SW1 | SW1 | FB |
| Date Sampled/Time | | 08-Oct-16/10:00 | 08-Oct-16/11:15 | 08-Oct-16/11:00 | 08-Oct-16/18:00 | 09-Oct-16/9:00 | 08-Oct-16/17:45 |
| Physical Tests | | | | | | | |
| Hardness (as CaCO3) (mg/L) | - | 651 | 98.6 | 479 | 345 | 0.59 | 413 |
| pH | - | 6.72 | 7.35 | 7.22 | 7.33 | 7.21 | 7.26 |
| Total Metals (mg/L) | | | | | | | |
| Aluminum (Al)-Total | - | 492 | 13.7 | 1.06 | 0.193 | 0.064 | <0.005 |
| Antimony (Sb)-Total | 0.014 | 0.0016 | 0.0006 | 0.0003 | 0.0004 | 0.0005 | <0.0001 |
| Arsenic (As)-Total | 0.005 | 0.0516 | 0.0026 | 0.0007 | <0.0005 | <0.0005 | <0.0005 |
| Barium (Ba)-Total | 5 (instant max) 1 (30-d average) | 2.37 | 0.085 | 0.08 | 0.037 | 0.052 | <0.005 |
| Boron (B)-Total | 1.2 | 0.078 | 0.035 | 0.073 | 0.038 | 0.055 | <0.004 |
| Cadmium (Cd)-Total | - | 0.00346 | 0.0001 | 0.00003 | 0.00004 | 0.00005 | 0.00002 |
| Calcium (Ca)-Total | <10 high sensitivity to acid inputs 10-20 moderate sensitivity to acid inputs >20 low sensitivity to acid inputs | 313 | 36.2 | 164 | 113 | 149 | 0.2 |
| Chromium (Cr)-Total | 1 ⁽⁸⁾ | 0.743 | 0.0276 | 0.0025 | 0.0008 | 0.0007 | 0.0006 |
| Copper (Cu)-Total | Hardness-Dependent ⁽⁷⁾ | 0.877 | 0.0307 | 0.0052 | 0.0022 | 0.002 | 0.0006 |
| | Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ (instant max) | 0.0632 | 0.0113 | 0.0470 | 0.0344 | 0.0021 | 0.0408 |
| | Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ (30-d average) | 0.0260 | 0.0039 | 0.0192 | 0.0138 | 0.0020 | 0.0165 |
| Iron (Fe)-Total | 1 | 369 | 14.8 | 1.37 | 0.22 | 0.07 | 0.01 |
| Lead (Pb)-Total | Hardness-Dependent ⁽⁷⁾ | 0.266 | 0.0113 | 0.0013 | 0.0003 | <0.0001 | 0.0002 |
| | Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ (instant max) | 0.8864 | 0.0802 | 0.5998 | 0.3950 | 0.0030 | 0.4966 |
| | Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ (30-d average) | 0.0379 | 0.0064 | 0.0267 | 0.0187 | Hardness is less than 8 mg/l | 0.0227 |
| Magnesium (Mg)-Total | - | 105 | 10.5 | 29.8 | 18.8 | 24.7 | 0.02 |
| Manganese (Mn)-Total | Hardness Dependent ⁽⁷⁾ | 11.8 | 0.26 | 0.746 | 0.173 | 0.134 | 0.0011 |
| | Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ (instant max) | 7.7 | 1.6 | 5.8 | 4.3 | 0.5 | 5.1 |
| | Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ (30-d average) | 3.5 | 1.0 | 2.7 | 2.1 | 0.6 | 2.4 |
| Mercury (Hg)-Total | 0.001 | 0.00026 | <0.00002 | <0.00002 | <0.00002 | <0.00002 | <0.00002 |
| Molybdenum | <=1 (instant max) 2 (30-d average) | 0.0128 | 0.0018 | 0.0043 | 0.0028 | 0.003 | <0.0001 |
| Potassium (K)-Total | 373 | 17.5 | 4.35 | 5.04 | 2.63 | 3.62 | 0.07 |
| Selenium (Se)-Total | 0.002 | 0.0047 | <0.0005 | <0.0005 | 0.0005 | 0.0006 | <0.0005 |
| Sodium (Na)-Total | - | 70 | 13.5 | 100 | 40.4 | 62.1 | 0.05 |
| Uranium (U)-Total | 0.3 | 0.0148 | 0.00036 | 0.00285 | 0.00216 | 0.00176 | <0.00002 |
| Zinc (Zn)-Total | Hardness Dependent ⁽⁷⁾ | 2.05 | 0.043 | 0.006 | <0.004 | <0.004 | 0.006 |
| | Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ (instant max) | 0.454 | 0.039 | 0.325 | 0.224 | 0.033 | 0.275 |
| | Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ (30-d average) | 0.428 | 0.014 | 0.299 | 0.199 | 0.008 | 0.250 |
| Dissolved Metals (mg/L) | | | | | | | |
| Aluminum (Al)-Dissolved | 0.05 (30-day average where median pH > 6.5) 0.1 (maximum where instantaneous pH > 6.5) *** indicates pH-dependent maximum where instant pH < 6.5 | 0.009 | 0.022 | 0.02 | 0.007 | <0.005 | <0.005 |
| Antimony (Sb)-Dissolved | - | 0.0016 | 0.0004 | 0.0003 | 0.0004 | 0.0005 | <0.0001 |
| Arsenic (As)-Dissolved | - | 0.0008 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Barium (Ba)-Dissolved | - | 0.156 | 0.009 | 0.035 | 0.035 | 0.049 | <0.005 |
| Boron (B)-Dissolved | - | 0.042 | 0.026 | 0.061 | 0.035 | 0.042 | <0.004 |
| Cadmium (Cd)-Dissolved | Hardness-Dependent ⁽⁷⁾ | 0.00006 | 0.00003 | 0.00002 | 0.00004 | 0.00004 | 0.00002 |
| | Calculated Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ (short-term max) e[1.03 * ln(Hss) - 5.274] ug/L H<455mg/L | Hardness exceeds 455mg/L | 0.00058 | Hardness exceeds 455mg/L | 0.00211 | 0.000003 | 0.00253 |
| | Calculated Hardness-Dependent BCAWWQG to protect AW ⁽⁷⁾ (long-term max) e[0.736 * ln(Hss) - 4.943] ug/L H<285mg/L | Hardness exceeds 285mg/L | 0.00021 | Hardness exceeds 285mg/L | Hardness exceeds 285mg/L | 0.000005 | Hardness exceeds 285mg/L |
| Calcium (Ca)-Dissolved | up to 4, highly sensitive to acid inputs 4 to 8, moderately sensitive over 8 low sensitivity | 234 | 31.6 | 148 | 109 | 129 | 0.2 |
| Chromium (Cr)-Dissolved ⁽⁸⁾ | - | 0.0016 | 0.0006 | <0.0005 | 0.0006 | 0.0006 | 0.0006 |
| Copper (Cu)-Dissolved | - | 0.0041 | 0.0017 | 0.0014 | 0.0014 | 0.0014 | 0.0005 |
| Iron (Fe)-Dissolved | 0.35 | 0.011 | 0.024 | 0.136 | <0.010 | <0.010 | <0.010 |
| Lead (Pb)-Dissolved | - | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | 0.0001 |
| Magnesium (Mg)-Dissolved | - | 16.2 | 4.79 | 26.5 | 17.9 | 22.4 | 0.02 |
| Manganese (Mn)-Dissolved | - | 0.85 | 0.0154 | 0.435 | 0.155 | 0.117 | 0.001 |
| Mercury (Hg)-Dissolved | - | 0.00003 | <0.00002 | <0.00002 | <0.00002 | <0.00002 | <0.00002 |
| Molybdenum | - | 0.0125 | 0.0017 | 0.0039 | 0.0027 | 0.0027 | <0.0001 |
| Potassium (K)-Dissolved | - | 8 | 2.54 | 4.59 | 2.57 | 3.46 | 0.07 |
| Selenium (Se)-Dissolved | - | 0.0013 | <0.0005 | <0.0005 | 0.0005 | 0.0006 | <0.0005 |
| Sodium (Na)-Dissolved | - | 65.8 | 12.2 | 93.6 | 40.1 | 59.6 | 0.06 |
| Uranium (U)-Dissolved | - | <0.00002 | 0.00006 | 0.00268 | 0.00215 | 0.00159 | <0.00002 |
| Zinc (Zn)-Dissolved | - | 0.011 | <0.004 | <0.004 | <0.004 | <0.004 | 0.006 |

Notes: Refer to Table Endnotes (attached)

Table B3: Analytical Results for Volatile Organic Compounds (VOCs) in Surface Water

| Table B3: Analytical Results for Volatile Organic Compounds (VOCs) in Surface Water | | CONTACT WATER | E292898 ANCILLARY DISCHARGE | E305365 SW-1 | | | Field Blank |
|-------------------------------------------------------------------------------------|------------------------|-----------------|-----------------------------|-----------------|-----------------|----------------|-----------------|
| Laboratory ID | BCAWWQG ⁽²⁾ | 6100550-01 | 6100550-02 | 6100550-03 | 6100550-04 | 6100550-06 | 6100550-05 |
| Sample ID | | PEA | Weir | SW1 | SW1 | SW1 | FB |
| Date Sampled/Time | | 08-Oct-16/10:00 | 08-Oct-16/11:15 | 08-Oct-16/11:00 | 08-Oct-16/18:00 | 09-Oct-16/9:00 | 08-Oct-16/17:45 |
| Volatile Organic Compounds (ug/L) | | | | | | | |
| Benzene | 40 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Bromodichloromethane | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Bromoform | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Carbon Tetrachloride | 13.3 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Chlorobenzene | 25 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Chloroethane | - | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| Chloroform | 1.8 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 2.3 |
| Chloromethane | - | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| Dibromochloromethane | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| 1,2-Dichlorobenzene | 0.7 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 1,3-Dichlorobenzene | 150 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| 1,4-Dichlorobenzene | 26 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| 1,1-Dichloroethane | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| 1,2-Dichloroethane | 100 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| 1,1-Dichloroethene | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| cis-1,2-Dichloroethene | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| trans-1,2-Dichloroethene | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Methylene chloride | 98.1 | <3.0 | <3.0 | <3.0 | <3.0 | <3.0 | <3.0 |
| 1,2-Dichloropropane | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| cis-1,3-Dichloropropene | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| trans-1,3-Dichloropropene | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| 1,3-Dichloropropene (cis & trans) | - | - | - | - | - | - | - |
| Ethylbenzene | 200 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Methyl t-butyl ether (MTBE) | 3.4 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Styrene | 72 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| 1,1,1,2-Tetrachloroethane | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| 1,1,2,2-Tetrachloroethane | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Tetrachloroethene | 110 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Toluene | 0.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| 1,1,1-Trichloroethane | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| 1,1,2-Trichloroethane | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Trichloroethene | 21 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Trichlorofluoromethane | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Vinyl Chloride | - | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| Xylenes | 30 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |

Notes: Refer to Table Endnotes (attached)

Table B4: Analytical Results for Hydrocarbons, PAHs, and Glycols in Surface Water

| | | CONTACT WATER | E292898 ANCILLARY DISCHARGE | E305365 SW-1 | | | Field Blank |
|--------------------------|------------------------|-----------------|-----------------------------|-----------------|-----------------|----------------|-----------------|
| Laboratory ID | BCAWWQG ⁽²⁾ | 6100550-01 | 6100550-02 | 6100550-03 | 6100550-04 | 6100550-06 | 6100550-05 |
| Sample ID | | PEA | Weir | SW1 | SW1 | SW1 | FB |
| Date Sampled/ Time | | 08-Oct-16/10:00 | 08-Oct-16/11:15 | 08-Oct-16/11:00 | 08-Oct-16/18:00 | 09-Oct-16/9:00 | 08-Oct-16/17:45 |
| Hydrocarbons ug/L | | | | | | | |
| LEPH | - | <250 | <250 | <250 | <250 | <250 | <250 |
| HEPH | - | 899 | <250 | <250 | <250 | <250 | <250 |
| ug/l | | | | | | | |
| Acenaphthene | 6 | 0.08 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Acenaphthylene | - | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 |
| Acridine | 0.05 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| Anthracene | 0.1 | 0.12 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Benz(a)anthracene | 0.1 | 0.19 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Benzo(a)pyrene | 0.01 | 0.26 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Benzo(b)fluoranthene | - | 0.2 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Benzo(g,h,i)perylene | - | 0.36 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Benzo(k)fluoranthene | - | 0.13 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Chrysene | - | 0.21 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Dibenz(a,h)anthracene | - | 0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Fluoranthene | 0.2 | 0.86 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 |
| Fluorene | 12 | 0.06 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Indeno(1,2,3-c,d)pyrene | - | 0.27 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Naphthalene | 1 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 |
| Phenanthrene | 0.3 | 0.41 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| Pyrene | 0.02 | 0.45 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Quinoline | 3.4 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| Glycols mg/l | | | | | | | |
| Diethylene Glycol | - | <5 | <5 | <5 | <5 | <5 | <5 |
| Ethylene Glycol | 192 ⁽⁶⁾ | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,2-Propylene Glycol | 500 ⁽⁶⁾ | <5 | <5 | <5 | <5 | <5 | <5 |

Notes: Refer to Table Endnotes (attached)

Analytical Table Footnotes: Analytical Results for Surface Water

- All concentrations in mg/L, except pH or as indicated.
- "<" less than the laboratory detection limit indicated.
- "-" means not analyzed or no standard or guideline applies.
- * RPDs are not normally calculated where one or more concentrations are less than five times MDL.
- (2) A Compendium of Approved and Working Water Quality Guidelines for BC (updated January 2010). Applicable water uses include Drinking Water (for toxicity, not odour/taste), and Freshwater Aquatic Life.
- (3) Nitrite BCAWWQG Guideline is Chloride dependent. Nitrite AW Standard is dissolved Chloride-dependent. The most conservative standard has been applied.
- (4) Guideline of 15 mg/L Pt for Drinking Water. Once background levels are established, colour should also not exceed 5 mg/L above background, to protect for Aquatic Life. This is considered a clearwater system (background less than 20 mg/L Pt.)
- (6) Working Water Quality Guidelines for Glycols
- (7) Standard is calculated based on the hardness dependent BCAWWQG formula, and has been calculated and shown for each individual result
- (8) Standards exist for Trivalent (III) and Hexavalent (VI) Chromium. As chromium results were not speciated, the most stringent standard has been applied.
- (9) Standard applies to all sites irrespective of water use.
- (10) pH-dependent maximum where instant pH < 6.5
- ** No hardness value was reported for the WTP Outlet sample from March 10, 2014. The Hardness value from the previous sampling event (3 March 14) has been used for calculating hardness-dependend guidelines.

BOLD, UNDERLINE

Laboratory Detection Limit exceeds one or more applicable Standard

BOLD, BLUE SHADING

Concentration greater than BCAWWQG Guideline