

# SAINT PAUL REGIONAL WATER SERVICES

## PHYSICAL AND CHEMICAL ANALYSIS OF WATER

### Dec. '14

All results are in parts per million & Samples Measured are Dissolved Ions

#### PHYSICAL WATER QUALITY

|                              | Reporting Limit | EFFLUENT |
|------------------------------|-----------------|----------|
| Color (Color Units)          | 4               | <4       |
| Loss Ignition (ppm)          | 84              | <84      |
| Non-Volatile Salts (ppm)     | 84              | 89       |
| Temperature (°C)             | 0.02            | 6        |
| Total Dissolved Solids (ppm) | 75              | 173      |
| Turbidity (NTU)              | 0.030           | <0.030   |

#### CHEMICAL WATER QUALITY

|  | Reporting Limit | EFFLUENT |
|--|-----------------|----------|
| Alkalinity-Total (ppm as CaCO <sub>3</sub> )           | 0.40            | 57       |
| Carbonate Hardness (ppm as CaCO <sub>3</sub> )         | 0.40            | 57       |
| Dissolved Oxygen (ppm)                                 | 1.2             | 8.8      |
| Hydrogen Ion-pH  | 0.04            | 9.02     |
| Non-Carbonate Hardness (ppm)                           | 0.40            | 36       |
| Total Hardness (ppm as CaCO <sub>3</sub> )-EDTA method | 0.40            | 92       |
| Total Organic Carbon (ppm as C)                        | 0.40            | 4.13     |

*Total Hardness (grains/Gal as CaCO<sub>3</sub>)-EDTA method is 5.38 grains/Gal*

#### CHEMICAL WATER QUALITY - INORGANIC NONMETALS

|   | Reporting Limit | EFFLUENT |
|---|-----------------|----------|
| Ammonia Nitrogen (ppm as N)                       | 0.030           | 0.973    |
| Chloride-Cl (ppm as Cl <sup>-1</sup> )            | 8               | 41       |
| Chlorine Residual (ppm Cl as Cl <sub>2</sub> )    | 0.090           | 3.27     |
| Fluoride-F (ppm as F <sup>-1</sup> )              | 0.08            | 0.89     |
| Nitrate, Nitrite Nitrogen (ppm as N)              | 0.202           | 0.391    |
| Sulfur-S (ppm as S)                               | 2.7             | <2.7     |
| Sulfide-S <sup>2-</sup> (ppm as S <sup>2-</sup> ) | 0.020           | <0.020   |
| Total Phosphorus-P (ppm as P)                     | 0.025           | <0.025   |
| Total Nitrogen-N (ppm as N)                       | 0.008           | 1.20     |

#### CHEMICAL WATER QUALITY - METALS

|  | Reporting Limit | EFFLUENT |
|--|-----------------|----------|
| Aluminum-Al (ppm as Al)                        | 0.006           | 0.013    |
| Arsenic-As (ppm as As)                         | 0.006           | <0.006   |
| Cadmium-Cd (ppm as Cd)                         | 0.003           | <0.003   |
| Calcium-Ca (ppm as Ca)                         | 0.40            | 22       |
| Copper-Cu (ppm as Cu)                          | 0.050           | <0.050   |
| Hexavalent Chromium (ppm as Cr <sup>6+</sup> ) | 0.040           | <0.040   |
| Iron-Fe (ppm as Fe)                            | 0.050           | <0.050   |
| Lead-Pb (ppm as Pb)                            | 0.006           | <0.006   |
| Magnesium-Mg (ppm as Mg)                       | 0.40            | 9        |
| Manganese-Mn (ppm as Mn)                       | 0.090           | <0.090   |
| Silicon-Si (ppm as Si)                         | 0.84            | 3.07     |
| Sodium-Na (ppm as Na)                          | 0.079           | 20.80    |
| Zinc-Zn (ppm as Zn)                            | 0.050           | <0.050   |