****Supplementary Information****

****for****

**Effectiveness of Point-of-Use/Point-of-Entry Systems to Remove Select Per- and Poly- fluoroalkyl Substances from Drinking Water**

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# **EPA Assessments and Response Actions**

Readiness reviews and technical system audits were conducted to ensure that all personnel, training, equipment, supplies, and procedures were available and acceptable for environmental data to be collected and to identify and correct of issues that affected data quality. Audits of data quality were conducted on a representative sample of data for the critical target analytes. During data validation, qualifiers were applied to alert the data end user to quality problems that could impact the usability of the data. QA/QC checks for PFAS, definitions of data qualifiers, established MDL and estimated QL for PFAS and RO system and GAC media analytical results with data qualifiers are provided in supplementary information.

The synthetic test water in the stainless steel 55-gallon drum for the GAC media had characteristics based on worst case (maximum) Widefield Aquifer water quality concentrations and/or the requirements of NSF Standard P473: 1) turbidity < 1 NTU, 2) free available chlorine < 0.2 mg/L, 3) pH of 8.2 ± 0.5, 4) temperature of 20 ± 2.5°C, 5) TOC > 1.0 mg/L, and 6) TDS of 500 mg/L.

The synthetic test water in the 5000-gallon stainless steel tank for the RO systems had characteristics based on worst case (maximum) Widefield Aquifer water quality concentrations and/or the requirements of NSF Standard P473: 1) turbidity < 1 Nephelometric Turbidity Unit (NTU), 2) hardness of 300 mg/L (added as potassium chloride [KCl], magnesium sulfate [MgSO4], sodium bicarbonate [NaHCO3] and calcium sulfate [CaSO4·2H2O]), 3) pH of 8.2 ± 0.5, 4) temperature of 25 ± 1 °C (the water temperature was controlled with a chiller and heat exchanger), and 5) TDS of 750 mg/L.

# **Table 1. Summary of QA/QC checks for PFAS**

| **Parameter** | **QC Type** | **Purpose QC** | **Method** | **Frequency** | **Acceptance Criteria** |
| --- | --- | --- | --- | --- | --- |
| Per-and poly-fluoroalkyl substances (PFAS)  (Draft Expanded Region 5 PFC SOP) | Initial calibration | Standardization of instrument | 5 to 6 points calibration | Daily | Weighted linear regression curve should have r2 ≥ 0.98 and quadratic regression curve should have r2 ≥ 0.99 before proceeding with analysis |
| Second Source Standard | Assess Calibration curve | An independent standard obtained from different source of calibration standards | Analyzed immediately after the calibration curve | ±30% of the true value |
| Method Blank (MB) | Assess system/laboratory contamination | Same source reagent water | 2 per every 30 samples | ≤0.5 of QL |
| Continuing calibration checks (CCC) and/or end Calibration check | Assess whether the instrument is within acceptable calibration throughout period in which samples were analyzed | A same source calibration standard | Analysis of mid-level CCC at the end of the analytical sequence | ±30% of the true value |
| Field duplicate | Assess field sampling precision and homogeneity | Two separate samples collected at the same time | One per every batch of 20 field samples | ±30% RPD for samples |
| Matrix spike / matrix spike duplicate | Assess the accuracy in a given matrix | A separate aliquot of the sample spiked with known concentrations of analytes | One per every batch of 20 field sample | Recovery ±30 % of the analytes true value |
| Field blank | Assess contamination introduced from containers, environment and reagents | Nanopure water with preservatives | One blank per each test matrix | ≤0.5 of QL  . |

# **Table 2. Data qualifiers**

|  |  |
| --- | --- |
| **Qualifier** | **Definitions** |
| U | The analyte was analyzed for, but not detected above the reported sample quantitation limit. |
| J | The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample. The RL may be increased due to contamination in the blank, or holding times may be exceeded. |
| K | The result is an estimated quantity, but the result may be biased high. |
| L | For both detected and non-detected results, the result is estimated but may be biased low. |
| Q | Used whenever a QC parameter is outside the acceptable limits. |
| R | The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria. The presence or absence of the analyte cannot be confirmed. |

# **Table 3.** **Established MDL and estimated QL for PFAS**

|  |  |  |
| --- | --- | --- |
| **Contaminants** | **MDL ng/L** | **QL ng/L** |
| Per-and poly-fluoroalkyl substances (PFAS) | | |
| Perfluorooctanoic Acid (PFOA) | 1.7 | 10 |
| Perfluorooctane Sulfonate (PFOS) | 2.2 | 10 |
| Perfluoroheptanoic Acid (PFHpA) | 1.0 | 10 |
| Perfluorobutane Sulfonate (PFBS) | 0.8 | 10 |
| Perfluorohexane Sulfonate (PFHxS) | 1.2 | 10 |
| Perfluorononanoic Acid (PFNA) | 1.1 | 10 |

Note: For each analyte, the lowest calibration standard concentration served as the QL. Actual MDLs and QLs were included with the analytical reports for PFAS analyses. If required, data were reported less than the lowest calibration standard with a “J” qualifier.

# **Table 4. List of analytical methods**

| **Parameter** | **Laboratory** | **Analytical Method / Instrument** |
| --- | --- | --- |
| Per-and poly-fluoroalkyl substances (PFAS) | EPA Region 5 | Region 5 PFC SOP / Waters Acquity H-Class, Waters Xevo TQ-S (LC/MS/MS) |
| Temperature | T&E Facility | NIST Thermometer |
| pH | T&E Facility | Standard Method 4500B / Thermo Scientific Orion 5 Star or equivalent, temperature compensated |
| Turbidity | T&E Facility | HACH® Turbidimeter |
| Free Chlorine | T&E Facility | HACH® Method 8021 / HACH® Spectrophotometer |
| Total Organic Carbon (TOC) | T&E Facility | EPA Method 415.3 / Total Organic Carbon (TOC) Analyzer Persulfate-UV Oxidation |
| Total Dissolved Solids (TDS) | T&E Facility | Wet Chemistry (filtration and evaporation) |
| Hardness | T&E Facility | EDTA Titrimetric Method / Manual Titration |

# **Table 5. Sample containers, preservation and holding times**

| **Parameter** | **Sample Containers** | **Quantity of Influent and Effluent Samples** | **Preservation** | **Max. Holding Time** |
| --- | --- | --- | --- | --- |
| Total Organic Carbon (TOC) (mg/L) | 100 mL Amber Glass | 1 x 100 mL Influent  1 x 100 mL Effluent | No headspace H3PO4, pH<2;  Cool <6°C | 28 days |
| Total Dissolved Solids (TDS) (mg/L) | 1 L HDPE Amber | 1 x 1 L Influent  1 x 1 L Effluent | Cool <6°C | 7 days |
| Turbidity (NTU) | 100 mL HDPE or glass jar or beaker | 1 x 100 mL Influent  1 x 100 mL Effluent | Cool <6°C | 48 hours |
| Hardness (mg/L) | 250 mL HDPE or glass jar | 1 x 250 mL Influent  1 x 250 mL Effluent | pH <2, HNO3 | 6 months |
| Free Chlorine\* (mg/L) | 40-50 mL / Glass beaker | 1 x 50 mL Influent  1 x 50 mL Effluent | None | Analyze Immediately |
| pH (pH Units) | 40-50 mL / Glass beaker | 1 x 50 mL Influent  1 x 50 mL Effluent | None | Analyze Immediately |
| Temperature (ºC) | 40-50 mL / Glass beaker | 1 x 50 mL Influent  1 x 50 mL Effluent | None | Analyze Immediately |
| Per-and poly-fluoroalkyl substances (PFAS) (ng/L) | 15 mL Polypropylene Container | 3 x 5 mL Influent  3 x 5 mL Effluent | Cool <6°C | 28 days |
| Temperature blank  (EPA Region 5) | One 40 mL Vial | 1 x 40 mL per cooler | Cool <6°C | Measure temperature upon receipt |

# **Table 6. PFAS Concentrations in 5000-gallon tank during stability study**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Day** | **Time (hr)** | **PFOA (ng/L)** | **PFOS (ng/L)** | **PFHpA (ng/L)** | **PFBS (ng/L)** | **PFHxS (ng/L)** | **PFNA (ng/L)** |
| 1 | 0 | 938 J | 130 J | 233 J | 9.08 JU | 938 J | 214 J |
| 1 | 8 | 919 J | 141 J | 242 J | 9.56 JU | 936 J | 217 J |
| 2 | 0 | 899 J | 137 J | 247 J | 9.85 JU | 889 J | 211 J |
| 2 | 8 | 941 J | 139 J | 242 J | 9.79 JU | 952 J | 217 J |
| 3 | 0 | 940 J | 139 J | 233 J | 9.68 JU | 942 J | 207 J |
| 3 | 8 | 967 J | 152 J | 244 J | 9.38 JU | 992 J | 227 J |
| 4 | 0 | 921 J | 147 J | 251 J | 9.83 JU | 958 J | 224 J |
| 4 | 8 | 963 J | 163 J | 256 J | 9.25 JU | 986 J | 240 J |
| 5 | 0 | 947 J | 143 J | 253 J | 9.41 JU | 970 J | 221 J |
| 5 | 8 | 960 J | 155 J | 277 J | 9.31 JU | 1070 J | 242 J |
| 8 | 0 | 963 J | 139 J | 252 J | 9.82 JU | 997 J | 220 J |
| 8 | 8 | 964 J | 141 J | 246 J | 9.17 JU | 964 J | 210 J |

J – Estimated value; samples received at CRL above 4°C.

U - Below reporting limit.

# **Table 7. PFAS Concentrations in 55-gallon drum during stability study**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Day** | **Time (hr)** | **PFOA (ng/L)** | **PFOS (ng/L)** | **PFHpA (ng/L)** | **PFBS (ng/L)** | **PFHxS (ng/L)** | **PFNA (ng/L)** |
| 1 | 0 | 1010 J | 172 J | 273 J | 9.69 JU | 1180 J | 234 J |
| 1 | 8 | 977 J | 139 J | 240 J | 9.42 JU | 1020 J | 213 J |
| 2 | 0 | 1040 J | 178 J | 256 J | 9.64 JU | 1050 J | 263 J |
| 2 | 8 | 1020 J | 161 J | 261 J | 9.56 JU | 1030 J | 232 J |
| 3 | 0 | 1110 J | 197 J | 259 J | 9.98 JU | 1030 J | 275 J |
| 3 | 8 | 1080 J | 187 J | 277 J | 9.28 JU | 1060 J | 272 J |
| 4 | 0 | 1030 J | 288 J | 257 J | 9.45 JU | 1060 J | 304 J |
| 4 | 8 | 870 J | 143 J | 247 J | 9.28 JU | 974 J | 208 J |
| 5 | 0 | 1100 J | 173 J | 296 J | 9.94 JU | 1060 J | 275 J |
| 5 | 8 | 1150 J | 191 J | 255 J | 9.33 JU | 1050 J | 278 J |
| 8 | 0 | 1030 J | 247 J | 275 J | 9.93 JU | 1050 J | 288 J |
| 8 | 8 | 944 J | 158 J | 280 J | 9.52 JU | 1040 J | 232 J |

J – Estimated value; samples received at CRL above 4°C.

U - Below reporting limit.

# **Table 8. Water quality parameters in 5000-gallon tank during stability study**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Day** | **Time (hr)** | **Temp (°C)** | **pH** | **Turbidity (NTU)** | **Free Chlorine (mg/L)** | **TOC (mg/L)** | **TDS (mg/L)** | **Hardness (mg CaCO3/L)** |
| 1 | 0 | 26.6 | 8.56 | 0.58 | 0.01 | 1.0056 | 528 | 266.4 |
| 1 | 8 | 28.4 | 8.56 | 0.34 | NA | 0.9215 | 523 | 262.8 |
| 2 | 0 | 25.6 | 8.58 | 0.38 | NA | 0.6509 | 529 | 262.8 |
| 2 | 8 | 28.8 | 8.55 | 0.31 | NA | 0.671 | 528 | 266.4 |
| 3 | 0 | 26.6 | 8.58 | 0.33 | NA | 0.6487 | 549 | 270.0 |
| 3 | 8 | 29.1 | 8.54 | 0.26 | NA | 0.6604 | 544 | 288.8 |
| 4 | 0 | 25.0 | 8.61 | 0.27 | NA | 0.7716 | 538 | 285.0 |
| 4 | 8 | 24.9 | 8.64 | 0.25 | NA | 0.6475 | 541 | 296.4 |
| 5 | 0 | 25.3 | 8.60 | 0.32 | NA | 0.649 | 539 | 281.2 |
| 5 | 8 | 25.4 | 8.64 | 0.28 | NA | 0.6462 | 539 | 285.0 |
| 8 | 0 | 27.0 | 8.61 | 0.62 | NA | 0.6977 | 549 | 296.4 |
| 8 | 8 | 26.2 | 8.63 | 0.32 | NA | 0.6619 | 548 | 292.6 |

NA - Not Analyzed

# **Table 9. Water quality parameters in 55-gallon drum during stability study**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Day** | **Time (hr)** | **Temp (°C)** | **pH** | **Turbidity (NTU)** | **Free Chlorine (mg/L)** | **TOC (mg/L)** | **TDS (mg/L)** | **Hardness (mg CaCO3/L)** |
| 1 | 0 | 26.5 | 8.56 | 0.57 | 0.01 | 1.5149 | 530 | 277.2 |
| 1 | 8 | 24.4 | 8.58 | 0.57 | NA | 1.4847 | 528 | 259.2 |
| 2 | 0 | 22.8 | 8.58 | 0.46 | NA | 1.4713 | 536 | 270.0 |
| 2 | 8 | 22.8 | 8.58 | 0.39 | NA | 1.4599 | 529 | 273.6 |
| 3 | 0 | 22.0 | 8.58 | 0.44 | NA | 1.4347 | 544 | 270.0 |
| 3 | 8 | 22.3 | 8.56 | 0.37 | NA | 1.4516 | 551 | 273.6 |
| 4 | 0 | 21.9 | 8.60 | 0.35 | NA | 1.4696 | 548 | 285.0 |
| 4 | 8 | 21.4 | 8.59 | 0.43 | NA | 1.5247 | 543 | 292.6 |
| 5 | 0 | 21.0 | 8.58 | 0.36 | NA | 1.4095 | 548 | 292.6 |
| 5 | 8 | 21.2 | 8.60 | 0.39 | NA | 1.4134 | 553 | 300.2 |
| 8 | 0 | 21.2 | 8.61 | 0.44 | NA | 1.4402 | 563 | 292.6 |
| 8 | 8 | 20.9 | 8.63 | 0.33 | NA | 1.5439 | 560 | 292.6 |

NA - Not Analyzed

# **Table 10. Influent PFAS concentrations for iSpring RO Test 1**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Day** | **Time (hr)** | **PFOA (ng/L)** | **PFOS (ng/L)** | **PFHpA (ng/L)** | **PFBS (ng/L)** | **PFHxS (ng/L)** | **PFNA (ng/L)** |
| 1 | 4 | 878 | 1570 | 377 | 373 | 1030 | 280 |
| 1 | 8 | 1080 | 2580 | 375 | 362 | 1110 | 381 |
| 2 | 0 | 886 | 2210 | 343 | 316 | 964 | 326 |
| 2 | 6 | 907 | 1690 | 374 | 355 | 1010 | 314 |
| 2 | 12 | 1010 | 2680 | 384 | 380 L | 1090 | 365 J |
| 3 | 0 | 978 | 1610 | 361 | 353 | 1140 | 259 |
| 3 | 6 | 955 | 1530 | 348 | 348 | 1030 | 244 |
| 3 | 12 | 1080 | 2230 | 347 | 348 | 1090 | 352 |
| 4 | 0 | 881 | 1370 | 338 | 341 | 977 | 234 |
| 4 | 6 | 941 | 1510 | 339 | 338 | 1060 | 244 |
| 4 | 12 | 899 | 1490 | 330 | 324 | 1030 | 226 |
| 7 | 0 | 916 | 1450 | 331 | 332 | 1020 | 219 |
| 7 | 4 | 1040 | 1690 | 348 | 334 | 1150 | 258 J |

L – Value may be biased low.

J – Value estimated because closing continuing calibration check failed.

# **Table 11. Effluent PFAS concentrations for iSpring RO Test 1**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Day** | **Time (hr)** | **PFOA (ng/L)** | **PFOS (ng/L)** | **PFHpA (ng/L)** | **PFBS (ng/L)** | **PFHxS (ng/L)** | **PFNA (ng/L)** |
| 1 | 4 | 9.94 U | 9.94 U | 9.94 U | 9.94 U | 9.94 U | 9.94 U |
| 1 | 8 | 9.65 U | 9.65 U | 9.65 U | 9.65 U | 9.65 U | 9.65 U |
| 2 | 0 | 10.0 U | 10.0 U | 10.0 U | 10.0 U | 10.0 U | 10.0 U |
| 2 | 6 | 9.82 U | 9.82 U | 9.82 U | 9.82 U | 9.82 U | 9.82 U |
| 2 | 12 | 9.69 U | 9.69 U | 9.69 U | 9.69 U | 9.69 U | 9.69 U |
| 3 | 0 | 8.15 U | 8.15 U | 8.15 U | 8.15 U | 8.15 U | 8.15 U |
| 3 | 6 | 9.81 U | 9.81 U | 9.81 U | 9.81 U | 9.81 U | 9.81 U |
| 3 | 12 | 9.47 U | 9.47 U | 9.47 U | 9.47 U | 9.47 U | 9.47 U |
| 4 | 0 | 10.0 U | 10.0 U | 10.0 U | 10.0 U | 10.0 U | 10.0 U |
| 4 | 6 | 9.91 U | 9.91 U | 9.91 U | 9.91 U | 9.91 U | 9.91 U |
| 4 | 12 | 10.1 U | 10.1 U | 10.1 U | 10.1 U | 10.1 U | 10.1 U |
| 7 | 0 | 9.96 U | 9.96 U | 9.96 U | 9.96 U | 9.96 U | 9.96 U |
| 7 | 4 | 9.39 U | 9.39 U | 9.39 U | 9.39 U | 9.39 U | 9.39 U |

U - Below reporting limit.

# **Table 12. Influent water quality parameters for iSpring RO Test 1**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Day** | **Time (hr)** | **Temp (°C)** | **pH** | **Turbidity (NTU)** | **Free Chlorine (mg/L)** | **TOC (mg/L)** | **TDS (mg/L)** | **Hardness (mg CaCO3/L)** |
| 1 | 4 | 22.8 | 8.47 | 0.37 | 0.02 | 0.7168 | 573 | 323.0 |
| 1 | 8 | 22.0 | 8.50 | 0.39 | NA | 0.7004 | 564 | 304.0 |
| 2 | 0 | 23.0 | 8.47 | 0.52 | NA | 0.6948 | 566 | 288.8 |
| 2 | 6 | 23.0 | 8.50 | 0.39 | NA | 0.7092 | 544 | 296.4 |
| 2 | 12 | 22.8 | 8.49 | 0.45 | NA | 0.6950 | 571 | 315.4 |
| 3 | 0 | 22.5 | 8.46 | 0.52 | NA | 0.8432 | 576 | 300.2 |
| 3 | 6 | 22.5 | 8.44 | 0.44 | NA | 0.7320 | 568 | 296.4 |
| 3 | 12 | 22.4 | 8.54 | 0.45 | NA | 0.7359 | 554 | 296.4 |
| 4 | 0 | 22.3 | 8.50 | 0.44 | NA | 0.7383 | 564 | 296.4 |
| 4 | 6 | 22.2 | 8.45 | 0.38 | NA | 0.6799 | 514 | 296.4 |
| 4 | 12 | 22.1 | 8.53 | 0.40 | NA | 0.6074 | 555 | 285.0 |
| 7 | 0 | 22.4 | 8.53 | 0.30 | NA | 0.4595 LQ | 574 | 285.0 |
| 7 | 4 | 23.1 | 8.61 | 0.34 | NA | 0.4028 LQ | 567 | 311.6 |

NA - Not Analyzed

L - For both detected and non-detected results, the result is estimated but may be biased low.

Q - Final check standard recovery was low.

# **Table 13. Effluent water quality parameters for iSpring RO Test 1**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Day** | **Time (hr)** | **Temp (°C)** | **pH** | **Turbidity (NTU)** | **Free Chlorine (mg/L)** | **TOC (mg/L)** | **TDS (mg/L)** | **Hardness (mg CaCO3/L)** |
| 1 | 4 | 23.2 | 7.20 | 0.24 | 0 | 0.0875 U | 7 | 3.8 |
| 1 | 8 | 22.2 | 7.61 | 0.13 | NA | 0.1353 U | 3 | 3.8 |
| 2 | 0 | 22.6 | 8.10 | 0.23 | NA | 0.1463 U | 10 | 1.9 |
| 2 | 6 | 22.9 | 7.47 | 0.13 | NA | 0.0892 U | 8 | 3.8 |
| 2 | 12 | 22.6 | 7.54 | 0.10 | NA | 0.1077 U | 12 | 3.8 |
| 3 | 0 | 22.5 | 8.45 | 0.55 | NA | 0.1005 U | 7 | 1.9 |
| 3 | 6 | 22.5 | 7.17 | 0.34 | NA | 0.0968 U | 4 | 3.8 |
| 3 | 12 | 22.5 | 7.37 | 0.12 | NA | 0.2788 U | 3 | 3.8 |
| 4 | 0 | 22.3 | 7.69 | 0.36 | NA | 0.1012 U | 7 | 3.8 |
| 4 | 6 | 22.3 | 7.53 | 0.17 | NA | 0.0713 U | 6 | 5.7 |
| 4 | 12 | 22.5 | 7.92 | 0.31 | NA | 0.1090 LQU | 6 | 3.8 |
| 7 | 0 | 22.4 | 7.08 | 0.16 | NA | 0.0576 LQU | 4 | 1.9 |
| 7 | 4 | 22.9 | 7.38 | 0.14 | NA | 0.1671 LQU | 3 | 3.8 |

NA - Not Analyzed

L - For both detected and non-detected results, the result is estimated but may be biased low.

Q - Final check standard recovery was low.

U - Below detection limit.

# **Table 14. Influent PFAS Concentrations for HydroLogic RO Test 2**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Day** | **Time (hr)** | **PFOA (ng/L)** | **PFOS (ng/L)** | **PFHpA (ng/L)** | **PFBS (ng/L)** | **PFHxS (ng/L)** | **PFNA (ng/L)** |
| 1 | 4 | 1190 | 2810 | 364 | 361 | 1170 | 413 |
| 1 | 8 | 806 | 1100 | 342 | 371 | 881 | 193 |
| 2 | 0 | 941 | 1440 | 352 | 382 | 981 | 238 |
| 2 | 6 | 2580 | 6770 | 470 | 377 | 1930 | 967 |
| 2 | 12 | 846 | 1390 | 342 | 372 | 942 | 225 |
| 7 | 0 | 799 | 1360 | 325 | 363 | 844 | 210 |
| 7 | 4 | 805 | 1330 | 315 | 366 | 910 | 192 |

# **Table 15. Effluent PFAS Concentrations for HydroLogic RO Test 2**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Day** | **Time (hr)** | **PFOA (ng/L)** | **PFOS (ng/L)** | **PFHpA (ng/L)** | **PFBS (ng/L)** | **PFHxS (ng/L)** | **PFNA (ng/L)** |
| 1 | 4 | 9.49 U | 9.49 U | 9.49 U | 9.49 U | 9.49 U | 9.49 U |
| 1 | 8 | 9.27 U | 21.5 | 9.27 U | 9.27 U | 9.27 U | 9.27 U |
| 2 | 0 | 9.72 U | 9.72 U | 9.72 U | 9.72 U | 9.72 U | 9.72 U |
| 2 | 6 | 9.50 U | 9.50 U | 9.50 U | 9.50 U | 9.50 U | 9.50 U |
| 2 | 12 | 9.75 U | 9.75 U | 9.75 U | 9.75 U | 9.75 U | 9.75 U |
| 7 | 0 | 21.4 | 77.2 | 10.2 U | 10.2 U | 10.6 | 49 |
| 7 | 4 | 9.88 U | 20.2 | 9.88 U | 9.88 U | 9.88 U | 9.88 U |

U - Below reporting limit.

# **Table 16. Influent water quality parameters for HydroLogic RO Test 2**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Day** | **Time (hr)** | **Temp (°C)** | **pH** | **Turbidity (NTU)** | **Free Chlorine (mg/L)** | **TOC (mg/L)** | **TDS (mg/L)** | **Hardness (mg CaCO3/L)** |
| 1 | 4 | 22.1 | 8.34 | 0.34 | 0.02 | 1.1628 | 525 | 292.6 |
| 1 | 8 | 21.8 | 8.36 | 0.30 | NA | 1.2914 | 540 | 296.4 |
| 2 | 0 | 22.1 | 8.45 | 0.33 | NA | 1.0734 | 539 | 292.6 |
| 2 | 6 | 22.5 | 8.58 | 0.38 | NA | 1.09 | 531 | 296.4 |
| 2 | 12 | 23.1 | 8.53 | 0.41 | NA | 1.1002 | 524 | 277.4 |
| 7 | 0 | 22.2 | 8.49 | 0.33 | NA | 1.1016 | 514 | 300.2 |
| 7 | 4 | 22.8 | 8.50 | 0.33 | NA | 1.1428 | 507 | 285.0 |

NA - Not Analyzed

# **Table 17. Effluent water quality parameters for HydroLogic RO Test 2**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Day** | **Time (hr)** | **Temp (°C)** | **pH** | **Turbidity (NTU)** | **Free Chlorine (mg/L)** | **TOC (mg/L)** | **TDS (mg/L)** | **Hardness (mg CaCO3/L)** |
| 1 | 4 | 22.1 | 7.77 | 0.12 | 0 | 0.1937 U | 18 | 1.9 |
| 1 | 8 | 22.3 | 7.50 | 0.13 | NA | 0.1459 U | 18 | 1.9 |
| 2 | 0 | 22.5 | 7.16 | 0.12 | NA | 0.1245 U | 18 | 1.9 |
| 2 | 6 | 22.6 | 7.12 | 0.16 | NA | 0.1336 U | 12 | 1.9 |
| 2 | 12 | 23.4 | 7.27 | 0.18 | NA | 0.1367 U | 5 | 1.9 |
| 7 | 0 | 22.3 | 7.55 | 0.22 | NA | 0.1510 U | 29 | 1.9 |
| 7 | 4 | 22.9 | 7.26 | 0.24 | NA | 0.2646 U | 7 | 3.8 |

NA - Not Analyzed

U - Below detection limit.

# **Table 18. Influent PFAS Concentrations for Flexeon RO Test 3**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Day** | **Time (hr)** | **PFOA (ng/L)** | **PFOS (ng/L)** | **PFHpA (ng/L)** | **PFBS (ng/L)** | **PFHxS (ng/L)** | **PFNA (ng/L)** |
| 1 | 4 | 839 J | 1400 J | 258 J | 361 J | 976 J | 210 J |
| 1 | 8 | 1020 J | 2920 J | 260 J | 354 J | 1040 J | 360 J |
| 2 | 0 | 866 J | 1620 J | 255 J | 362 J | 983 J | 220 J |
| 2 | 6 | 1030 J | 1810 J | 271 J | 351 J | 1130 J | 275 J |
| 2 | 12 | 872 J | 1660 J | 255 J | 355 J | 927 J | 237 J |
| 7 | 0 | 800 J | 1290 J | 240 J | 333 J | 932 J | 192 J |
| 7 | 4 | 838 J | 1380 J | 241 J | 336 J | 963 J | 199 J |

J – Estimated value; samples received at CRL above 4°C.

# **Table 19. Effluent PFAS Concentrations for Flexeon RO Test 3**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Day** | **Time (hr)** | **PFOA (ng/L)** | **PFOS (ng/L)** | **PFHpA (ng/L)** | **PFBS (ng/L)** | **PFHxS (ng/L)** | **PFNA (ng/L)** |
| 1 | 4 | 9.48 JU | 9.48 JU | 9.48 JU | 9.48 JU | 9.48 JU | 9.48 JU |
| 1 | 8 | 10.3 JU | 10.3 JU | 10.3 JU | 10.3 JU | 10.3 JU | 10.3 JU |
| 2 | 0 | 9.84 JU | 9.84 JU | 9.84 JU | 9.84 JU | 9.84 JU | 9.84 JU |
| 2 | 6 | 9.94 JU | 9.94 JU | 9.94 JU | 9.94 JU | 9.94 JU | 9.94 JU |
| 2 | 12 | 9.56 JU | 9.56 JU | 9.56 JU | 9.56 JU | 9.56 JU | 9.56 JU |
| 7 | 0 | 9.93 JU | 9.93 JU | 9.93 JU | 9.93 JU | 9.93 JU | 9.93 JU |
| 7 | 4 | 10.0 JU | 10.0 JU | 10.0 JU | 10.0 JU | 10.0 JU | 10.0 JU |

J – Estimated value; samples received at CRL above 4°C.

U - Below reporting limit.

# **Table 20. Influent water quality parameters for Flexeon RO Test 3**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Day** | **Time (hr)** | **Temp (°C)** | **pH** | **Turbidity (NTU)** | **Free Chlorine (mg/L)** | **TOC (mg/L)** | **TDS (mg/L)** | **Hardness (mg CaCO3/L)** |
| 1 | 4 | 24.2 | 8.57 | 0.38 | 0.01 | 1.1895 | 454 | 297.7 |
| 1 | 8 | 22.7 | 8.53 | 0.40 | NA | 1.1729 | 456 | 247.0 |
| 2 | 0 | 22.0 | 8.58 | 0.31 | NA | 1.1834 | 455 | 247.0 |
| 2 | 6 | 22.0 | 8.61 | 0.33 | NA | 1.2248 | 448 | 247.0 |
| 2 | 12 | 22.5 | 8.58 | 0.28 | NA | 1.2074 | 452 | 259.7 |
| 7 | 0 | 24.4 | 8.48 | 0.34 | NA | 1.2755 | 450 | 252.0 |
| 7 | 4 | 23.1 | 8.48 | 0.39 | NA | 1.2984 | 446 | 240.0 |

NA - Not Analyzed

# **Table 21. Effluent water quality parameters for Flexeon RO Test 3**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Day** | **Time (hr)** | **Temp (°C)** | **pH** | **Turbidity (NTU)** | **Free Chlorine (mg/L)** | **TOC (mg/L)** | **TDS (mg/L)** | **Hardness (mg CaCO3/L)** |
| 1 | 4 | 24.2 | 9.18 | 0.12 | 0 | 0.4828 | 10 | 5.7 |
| 1 | 8 | 23.0 | 9.01 | 0.19 | NA | 0.183 | 6 | 5.7 |
| 2 | 0 | 22.5 | 8.29 | 0.17 | NA | 0.214 | 24 | 3.8 |
| 2 | 6 | 22.4 | 8.19 | 0.11 | NA | 0.1602 | 2 | 5.7 |
| 2 | 12 | 22.6 | 8.21 | 0.12 | NA | 0.1593 | 3 | 5.7 |
| 7 | 0 | 24.7 | 7.39 | 0.54 | NA | 0.1911 | 16 | 3.6 |
| 7 | 4 | 23.5 | 8.07 | 0.12 | NA | 0.1166 | 6 | 3.6 |

NA - Not Analyzed

# **Table 22. Influent PFAS concentrations for Evoqua RSSCT Test 1**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Time (hr)** | **PFOA (ng/L)** | **PFOS (ng/L)** | **PFHpA (ng/L)** | **PFBS (ng/L)** | **PFHxS (ng/L)** | **PFNA (ng/L)** |
| 0 | 989 J | 2030 J | 296 J | 380 J | 1140 J | 274 J |
| 0.5 | 1000 J | 2740 J | 281 J | 374 J | 1100 J | 310 JL |
| 1 | 989 J | 2230 J | 279 J | 364 J | 1100 J | 272 J |
| 1.5 | 984 J | 2290 J | 278 J | 372 J | 1090 J | 280 J |
| 2 | 991 J | 2490 J | 285 J | 372 J | 1110 J | 306 J |
| 2.5 | 926 J | 1740 J | 282 J | 369 J | 1100 J | 246 J |
| 3 | 963 J | 1800 J | 280 J | 372 J | 1090 J | 249 J |
| 3.5 | 954 J | 2020 J | 277 J | 375 J | 1070 J | 266 J |
| 4 | 982 J | 2120 J | 287 J | 374 J | 1070 J | 269 J |
| 4.5 | 971 J | 1810 J | 281 J | 368 J | 1080 J | 253 J |
| 5 | 943 J | 1940 J | 288 J | 371 J | 1050 J | 274 J |
| 5.5 | 948 J | 1750 J | 285 J | 367 J | 999 J | 245 J |
| 6 | 965 J | 1670 J | 283 J | 376 J | 1030 J | 245 J |
| 6.5 | 966 J | 2370 J | 285 J | 360 J | 1060 J | 274 J |
| 7 | 986 J | 1830 J | 332 J | 405 J | 1080 J | 264 J |
| 7.5 | 932 J | 1970 J | 290 J | 369 J | 1070 J | 264 J |
| 8 | 1030 J | 1870 J | 291 J | 367 J | 1090 J | 261 J |

J – Estimated value; samples received at CRL above 4°C.

L – Sample result may be biased low.

# **Table 23. Effluent PFAS concentrations for Evoqua RSSCT Test 1**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Time (hr)** | **PFOA (ng/L)** | **PFOS (ng/L)** | **PFHpA (ng/L)** | **PFBS (ng/L)** | **PFHxS (ng/L)** | **PFNA (ng/L)** |
| 0 | 10.3 JU | 10.3 JU | 10.3 JU | 10.3 JU | 10.3 JU | 10.3 JU |
| 0.5 | 10.1 JU | 10.1 JU | 10.1 JU | 10.1 JU | 10.1 JU | 10.1 JU |
| 1 | 9.98 JU | 9.98 JU | 9.98 JU | 9.98 JU | 9.98 JU | 9.98 JU |
| 1.5 | 10.0 JU | 10.0 JU | 10.0 JU | 10.0 JU | 10.0 JU | 10.0 JU |
| 2 | 10.9 JK | 12.9 J | 10.0 JU | 10.0 JU | 10.0 JU | 10.0 JU |
| 2.5 | 14.7 JK | 16.5 J | 10.0 JU | 10.0 JU | 10.0 JU | 10.0 JU |
| 3 | 21.8 J | 25.2 J | 10.1 JU | 13.4 J | 13.4 J | 10.1 JU |
| 3.5 | 29.9 J | 29.9 J | 11.9 JK | 20.6 J | 21.3 J | 10.3 JU |
| 4 | 33.5 J | 33.2 J | 13.3 JK | 28.5 J | 25.1 J | 10.1 JU |
| 4.5 | 39.4 J | 42.2 J | 15.7 JK | 34.7 J | 29.7 J | 9.87 JU |
| 5 | 49.5 J | 50.5 J | 18.9 JK | 45.4 J | 36.6 J | 10.1 JU |
| 5.5 | 58.7 J | 59.2 J | 23.0 JK | 56.4 J | 48.6 J | 11.4 J |
| 6 | 67.0 J | 66.5 J | 25.6 JK | 63.9 J | 51.6 J | 13.8 J |
| 6.5 | 77.1 J | 82.1 J | 28.6 JK | 74.0 J | 62.3 J | 14.7 J |
| 7 | 85.1 J | 93.9 J | 34.1 J | 77.8 J | 72.2 J | 16.5 J |
| 7.5 | 92.1 J | 108 J | 38.1 J | 91.7 J | 75.9 J | 18.6 J |
| 8 | 98.1 J | 109 J | 40.1 J | 104 J | 87.1 J | 18.3 J |

J – Estimated value; samples received at CRL above 4°C.

K – Sample result may be biased high.

U – Below reporting limit.

# **Table 24. Influent water quality parameters for Evoqua RSSCT Test 1**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Time (hr)** | **Temp (°C)** | **pH** | **Turbidity (NTU)** | **Free Chlorine (mg/L)** | **TOC (mg/L)** | **TDS (mg/L)** | **Hardness (mg CaCO3/L)** |
| 0 | NA | NA | NA | NA | 2.5172 | NA | NA |
| 0.5 | NA | NA | NA | NA | NA | NA | 264.0 |
| 1 | NA | NA | NA | NA | 2.4557 | NA | NA |
| 1.5 | NA | NA | NA | NA | NA | NA | 264.0 |
| 2 | NA | NA | NA | NA | 2.4359 | NA | NA |
| 2.5 | NA | NA | NA | NA | NA | NA | 252.0 |
| 3 | NA | NA | NA | NA | 2.4327 | NA | NA |
| 3.5 | NA | NA | NA | NA | NA | NA | 258.0 |
| 4 | 22.3 | 8.58 | 0.27 | 0.02 | 2.3868 | NA | NA |
| 4.5 | NA | NA | NA | NA | NA | NA | 246.0 |
| 5 | NA | NA | NA | NA | 2.3745 | NA | NA |
| 5.5 | NA | NA | NA | NA | NA | NA | 278.7 |
| 6 | NA | NA | NA | NA | 2.3479 | NA | NA |
| 6.5 | NA | NA | NA | NA | NA | NA | 259.7 |
| 7 | NA | NA | NA | NA | 2.4124 | NA | NA |
| 7.5 | NA | NA | NA | NA | NA | NA | 253.3 |
| 8 | 20.7 | 8.61 | 0.38 | NA | NA | 466 | NA |

NA - Not Analyzed

# **Table 25. Effluent water quality parameters for Evoqua RSSCT Test 1**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Time (hr)** | **Temp (°C)** | **pH** | **Turbidity (NTU)** | **Free Chlorine (mg/L)** | **TOC (mg/L)** | **TDS (mg/L)** | **Hardness (mg CaCO3/L)** |
| 0 | NA | NA | NA | NA | 6.0650 | NA | NA |
| 0.5 | NA | NA | NA | NA | NA | NA | 264.0 |
| 1 | NA | NA | NA | NA | 1.4955 | NA | NA |
| 1.5 | NA | NA | NA | NA | NA | NA | 234.0 |
| 2 | NA | NA | NA | NA | 1.521 | NA | NA |
| 2.5 | NA | NA | NA | NA | NA | NA | 240.0 |
| 3 | NA | NA | NA | NA | 1.5571 | NA | NA |
| 3.5 | NA | NA | NA | NA | NA | NA | 258.0 |
| 4 | 22.3 | 8.60 | 0.18 | 0.04 | 1.6714 | NA | NA |
| 4.5 | NA | NA | NA | NA | NA | NA | 264.0 |
| 5 | NA | NA | NA | NA | 1.7536 | NA | NA |
| 5.5 | NA | NA | NA | NA | NA | NA | 259.7 |
| 6 | NA | NA | NA | NA | 1.8444 | NA | NA |
| 6.5 | NA | NA | NA | NA | NA | NA | 266.0 |
| 7 | NA | NA | NA | NA | 1.8813 | NA | NA |
| 7.5 | NA | NA | NA | NA | NA | NA | 272.3 |
| 8 | 21.8 | 8.61 | 0.31 | NA | NA | 470 | NA |

NA - Not Analyzed

# **Table 26. Influent PFAS concentrations for Calgon RSSCT Test 2**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Time (hr)** | **PFOA (ng/L)** | **PFOS (ng/L)** | **PFHpA (ng/L)** | **PFBS (ng/L)** | **PFHxS (ng/L)** | **PFNA (ng/L)** |
| 0 | 918 J | 1500 J | 286 J | 377 J | 1030 J | 246 J |
| 0.5 | 968 J | 2770 J | 287 J | 370 J | 1110 J | 324 J |
| 1 | 941 J | 1600 J | 287 J | 379 J | 1060 J | 255 J |
| 1.5 | 1070 J | 5210 J | 286 J | 370 J | 1020 J | 448 J |
| 2 | 895 J | 1920 J | 277 J | 361 J | 1120 J | 253 J |
| 2.5 | 859 J | 1950 J | 270 J | 359 JL | 1080 J | 249 J |
| 3 | 882 J | 1680 J | 272 J | 351 J | 1080 J | 238 J |
| 3.5 | 941 J | 3630 J | 275 J | 354 J | 1100 J | 342 J |
| 4 | 897 J | 1640 J | 272 J | 347 J | 1050 J | 232 J |
| 4.5 | 922 J | 1830 J | 267 J | 348 J | 1050 J | 248 J |
| 5 | 904 J | 1650 J | 272 J | 349 J | 1110 J | 231 J |
| 5.5 | 891 J | 1770 J | 270 J | 347 J | 1080 J | 236 J |
| 6 | 948 J | 1700 J | 274 J | 351 J | 1100 J | 236 J |
| 6.5 | 990 J | 2050 J | 277 J | 352 J | 1060 J | 263 J |
| 7 | 922 J | 1610 J | 269 J | 348 J | 1060 J | 235 J |
| 7.5 | 969 J | 2060 J | 271 J | 348 J | 1080 J | 272 J |
| 8 | 959 J | 1590 J | 267 J | 352 J | 1090 J | 235 J |

J – Estimated value; samples received at CRL above 4°C.

L – Sample result may be biased low.

# **Table 27. Effluent PFAS concentrations for Calgon RSSCT Test 2**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Time (hr)** | **PFOA (ng/L)** | **PFOS (ng/L)** | **PFHpA (ng/L)** | **PFBS (ng/L)** | **PFHxS (ng/L)** | **PFNA (ng/L)** |
| 0 | 10.2 JU | 10.2 JU | 10.2 JU | 10.2 JU | 10.2 JU | 10.2 JU |
| 0.5 | 10.1 JU | 10.1 JU | 10.1 JU | 10.1 JU | 10.1 JU | 10.1 JU |
| 1 | 9.87 JU | 9.87 JU | 9.87 JU | 9.87 JU | 9.87 JU | 9.87 JU |
| 1.5 | 10.1 JU | 12.0 J | 10.1 JU | 10.1 JU | 10.1 JU | 10.1 JU |
| 2 | 13.3 J | 17.8 J | 10.3 JU | 10.3 JU | 10.3 JU | 10.3 JU |
| 2.5 | 22.2 J | 27.8 J | 10.1 JU | 10.1 JU | 17.3 J | 10.1 JU |
| 3 | 35.0 J | 41.0 J | 12.2 J | 13.8 J | 28.2 J | 10.2 JU |
| 3.5 | 50.7 J | 58.5 J | 15.8 J | 18.2 J | 41.2 J | 10.0 J |
| 4 | 61.8 J | 74.2 J | 21.1 J | 25.3 J | 52.2 J | 12.0 J |
| 4.5 | 71.0 J | 76.3 J | 24.8 J | 28.6 J | 61.7 J | 14.1 J |
| 5 | 79.7 J | 90.4 J | 26.9 J | 30.6 J | 73.8 J | 16.2 J |
| 5.5 | 93.8 J | 108 J | 31.7 J | 39.2 J | 89.9 J | 18.4 J |
| 6 | 98.2 J | 117 J | 34.2 J | 42.5 J | 96.0 J | 19.8 J |
| 6.5 | 117 J | 148 J | 40.9 J | 49.3 J | 110 J | 23.6 J |
| 7 | 132 J | 153 J | 42.3 J | 51.1 J | 124 J | 25.5 J |
| 7.5 | 165 J | 196 J | 53.7 J | 67.6 J | 149 J | 32.9 J |
| 8 | 182 J | 221 J | 58.0 J | 68.1 J | 165 J | 36.7 J |

J – Estimated value; samples received at CRL above 4°C.

U – Below reporting limit.

# **Table 28. Influent water quality parameters for Calgon RSSCT Test 2**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Time (hr)** | **Temp (°C)** | **pH** | **Turbidity (NTU)** | **Free Chlorine (mg/L)** | **TOC (mg/L)** | **TDS (mg/L)** | **Hardness (mg CaCO3/L)** |
| 0 | NA | NA | NA | NA | 2.3748 | NA | NA |
| 0.5 | NA | NA | NA | NA | NA | NA | 247.0 |
| 1 | NA | NA | NA | NA | 2.5465 | NA | NA |
| 1.5 | NA | NA | NA | NA | NA | NA | 278.7 |
| 2 | NA | NA | NA | NA | 2.5008 | NA | NA |
| 2.5 | NA | NA | NA | NA | NA | NA | 234.0 |
| 3 | NA | NA | NA | NA | 2.4558 | NA | NA |
| 3.5 | NA | NA | NA | NA | NA | NA | 246.0 |
| 4 | 20.3 | 8.61 | 0.29 | 0.01 | 2.4489 | NA | NA |
| 4.5 | NA | NA | NA | NA | NA | NA | 246.0 |
| 5 | NA | NA | NA | NA | 2.4586 | NA | NA |
| 5.5 | NA | NA | NA | NA | NA | NA | 282.0 |
| 6 | NA | NA | NA | NA | 2.4719 | NA | NA |
| 6.5 | NA | NA | NA | NA | NA | NA | 234.0 |
| 7 | NA | NA | NA | NA | 2.4406 | NA | NA |
| 7.5 | NA | NA | NA | NA | NA | NA | 270.0 |
| 8 | 19.6 | 8.63 | 0.32 | NA | NA | 471 | NA |

NA - Not Analyzed

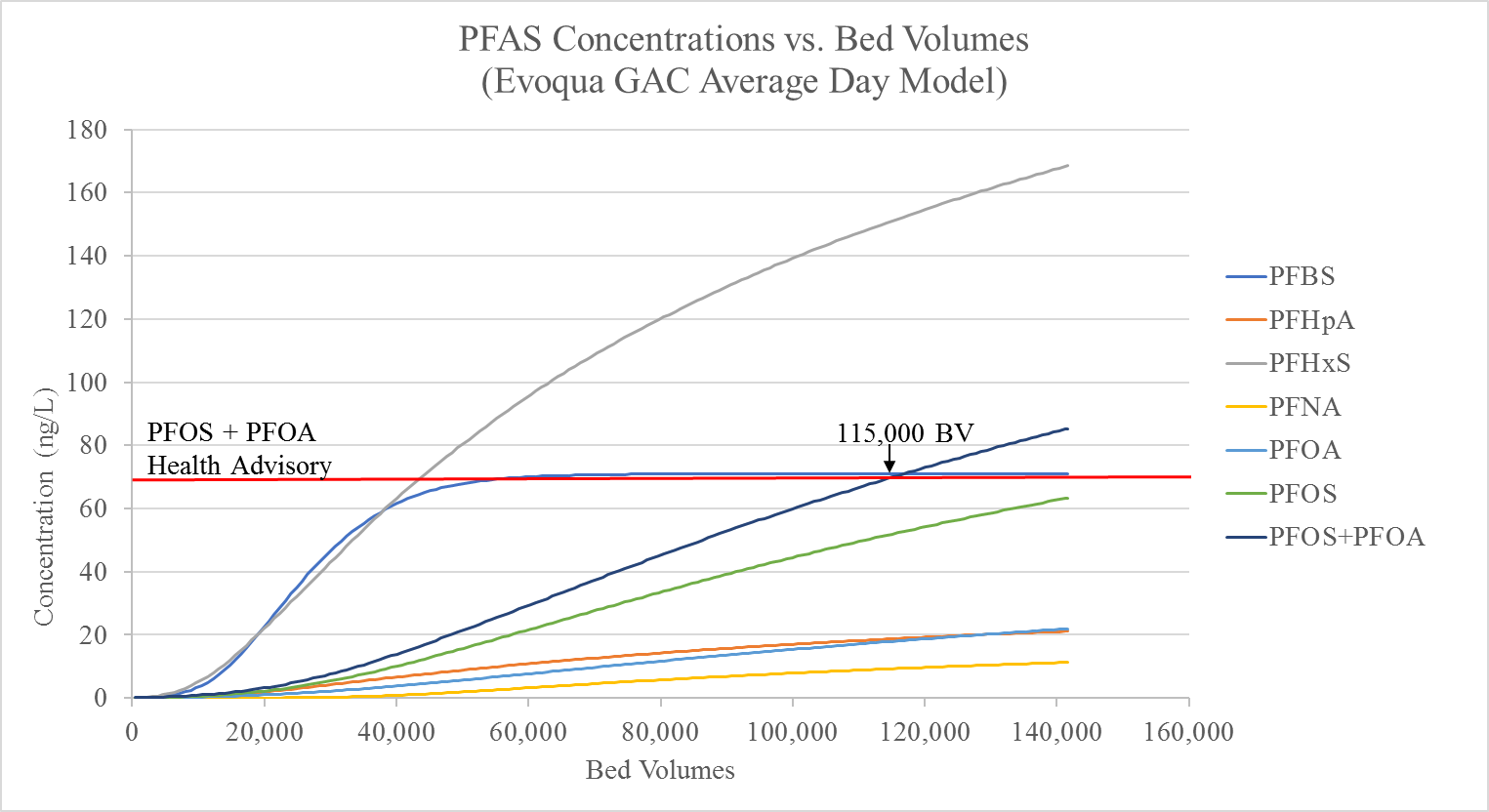
# **Table 29. Effluent water quality parameters for Calgon RSSCT Test 2**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Time (hr)** | **Temp (°C)** | **pH** | **Turbidity (NTU)** | **Free Chlorine (mg/L)** | **TOC (mg/L)** | **TDS (mg/L)** | **Hardness (mg CaCO3/L)** |
| 0 | NA | NA | NA | NA | 0.7078 | NA | NA |
| 0.5 | NA | NA | NA | NA | NA | NA | 266.0 |
| 1 | NA | NA | NA | NA | 0.6413 | NA | NA |
| 1.5 | NA | NA | NA | NA | NA | NA | 285.0 |
| 2 | NA | NA | NA | NA | 0.9649 | NA | NA |
| 2.5 | NA | NA | NA | NA | NA | NA | 246.0 |
| 3 | NA | NA | NA | NA | 1.1623 | NA | NA |
| 3.5 | NA | NA | NA | NA | NA | NA | 234.0 |
| 4 | 21.3 | 8.71 | 0.19 | -0.03 | 1.3938 | NA | NA |
| 4.5 | NA | NA | NA | NA | NA | NA | 246.0 |
| 5 | NA | NA | NA | NA | 1.5212 | NA | NA |
| 5.5 | NA | NA | NA | NA | NA | NA | 240.0 |
| 6 | NA | NA | NA | NA | 1.6364 | NA | NA |
| 6.5 | NA | NA | NA | NA | NA | NA | 240.0 |
| 7 | NA | NA | NA | NA | 1.6634 | NA | NA |
| 7.5 | NA | NA | NA | NA | NA | NA | 246.0 |
| 8 | 20.9 | 8.71 | 0.20 | NA | NA | 478 | NA |

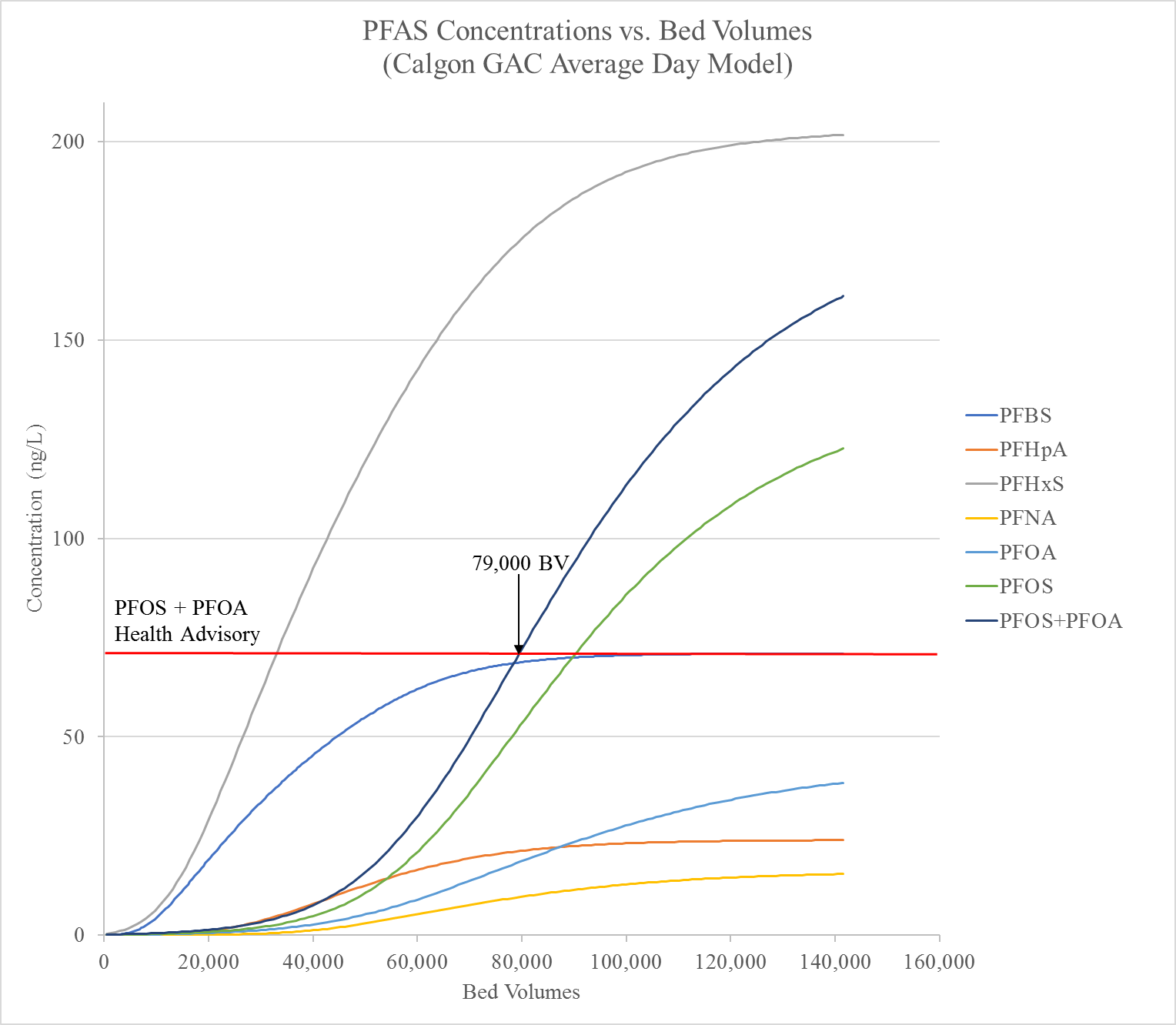
NA - Not Analyzed

# **Table 30. PFAS AdDesignS™ Model Input Parameters**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **GAC** | **PFAS** | **Kf** | **K** | **1/n** | **dp** | **ds** |
| Evoqua 1230CX | PFBS | 0.00613 | 19.354317 | 0.45 | 8.43E-06 | 1.31E-10 |
| PFHpA | 0.00808 | 30.826032 | 0.45 | 7.94E-06 | 1.92E-12 |
| PFHxS | 0.00797 | 105.445498 | 0.45 | 6.26E-06 | 1.16E-12 |
| PFNA | 0.01077 | 36.955921 | 0.45 | 6.43E-06 | 1.07E-11 |
| PFOA | 0.00634 | 91.528488 | 0.45 | 6.74E-06 | 2.34E-12 |
| PFOS | 0.00726 | 207.547312 | 0.45 | 5.6E-06 | 1.41E-12 |
| Calgon Filtrasorb 600 AR+ | PFBS | 0.00701 | 15.680191 | 0.45 | 9.25E-06 | 1.19E-11 |
| PFHpA | 0.0052 | 12.703420 | 0.45 | 7.23E-06 | 8.68E-11 |
| PFHxS | 0.00513 | 38.212900 | 0.45 | 7.51E-06 | 2.86E-11 |
| PFNA | 0.00695 | 15.030018 | 0.45 | 6.93E-06 | 5.89E-11 |
| PFOA | 0.00495 | 30.815503 | 0.45 | 5.28E-06 | 6.33E-11 |
| PFOS | 0.00567 | 60.178352 | 0.45 | 3.65E-06 | 7.83E-11 |



# **Figure 1. Model Results of PFAS Concentrations vs. Bed Volumes for GAC RSSCT 1**



# **Figure 2. Model Results of PFAS Concentrations vs. Bed Volumes for GAC RSSCT 2**

# **Analytical Methods and SOPs**

|  |  |
| --- | --- |
| EPA Method 415.3 (total organic carbon) |  |
| STANDARD METHOD 4500-H+ B (pH DETERMINATION USING pH PROBE) |  |
| APTIM T&E SOP 510 (TDS DETERMINATION) |  |
| APTIM T&E SOP 507 (Turbidity DETERMINATION) |  |
| APTIM T&E SOP 503 (Hardness DETERMINATION) |  |
| APTIM T&E SOP 504 (Free Chlorine determination) |  |
| Draft Expanded Region 5 PFC SOP (PFAS DETERMINATION) |  |