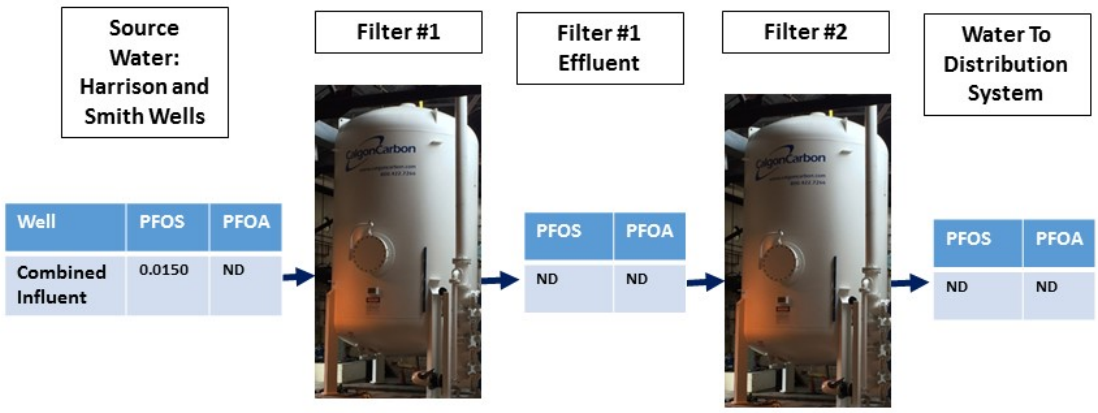
City of
Portsmouth
*Department of Public Works*

**May 25, 2017**

# PEASE TRADEPORT WATER SUPPLY UPDATE

## Pease Tradeport Water System Activated Carbon Treatment Demonstration Project Sampling: May 01, 2017 Results




Notes: All samples in parts-per-billion (ppb)
ND = Non Detect
All samples collected by Weston & Sampson and analyzed by Maxxam Laboratory

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The activated carbon demonstration filters for the Harrison and Smith wells have been on line since mid-September 2016. The City's engineering consultant continues to sample the performance of the filters based on the volume of flow going through the filters. The graphic above shows the most recent source water sampling and treated filter water quality results for the PFOS and PFOA. A summary of all of the sampling and laboratory results is attached.

To date, sixteen sample round results have been received. Results for all sample rounds have resulted in "non detect" (ND) for PFOS and PFOA with the exception of one round that had "J-flagged" estimates the following information was requested by our engineering consultant regarding these estimates:

> We also ordered a re-run of PV1-100, which came back with all ND results. The lab clarified how a single sample could be analyzed twice and have five J flags in the first analysis and none in the re-run:
>
> *The analysis for the rework was performed past sample holding time. As noted in the [Certificate of Analysis] this may increase the variability associated with these results. Both the originally reported trace results and subsequent re-analysis fall within the method's uncertainty for duplicates and are statistically equivalent.*

All samples collected are analyzed by Maxxam laboratories, the same laboratory that has been performing the Pease well PFC analysis since 2014. Data for the Pease Well sampling is uploaded to the City's website when it is validated by the Air Force's consultant and sent to the City. A summary of the data for the Pease Well Carbon Treatment Demonstration Project is attached. Analysis of the well water quality is also included. Approximately 75 million gallons of water has been treated through these filters since they went on line in September.

***PEASE TRADEPORT WATER SYSTEM AGREEMENT WITH THE UNITED STATES AIR FORCE***

The City of Portsmouth and the United States Air Force recently met to discuss the next phase of design for the treatment of all three Pease Tradeport Wells. The City's Engineering Consultant recently completed work to further determine the parameters and components of this proposed system. Additionally, the consultant researched treatment systems of other existing municipal water systems currently treating PFCs to better define operating parameters. Their research shows that the most common treatment method for public water systems is to utilize activated carbon to treat PFAS compounds, which is what we are currently utilizing for treating the Harrison and Smith Wells.

The City staff and engineering consultant provided a public update on this design effort and at the March 22, 2017 Pease Restoration Advisory Board (RAB) meeting held at the Pease DES offices.

***WATER TREATMENT PILOT TESTING REPORT***

The City's engineering consultant recently submitted the testing report for the carbon filtration pilot they performed in 2016. That document can be accessed on the City's website at:
http://www.cityofportsmouth.com/publicworks/PeaseTradeportWaterSystemWellTreatmentPilotReportFinal.pdf

***ONGOING WATER QUALITY MONITORING***

The Air Force's consultant continues to perform routine sampling of the water supply wells in the Pease water system. The Smith Well was originally sampled weekly for PFCs and the Harrison Well sampled every two weeks. In addition to these water supply wells, the Air Force's consultant samples other monitoring wells in the surrounding area to track the aquifer and monitor for any PFCs moving toward the supply wells. Currently, with the demonstration filters on line, the supply wells are sampled monthly and eleven monitoring wells are sampled quarterly. Sampling data is posted on the City's website once it has been validated by the Air Force's engineering consultant.

***EPA HEALTH ADVISORY***

In May 2016, the EPA issued new health advisories of 0.070 µg/L (micrograms per liter) for Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS). The Smith and Harrison wells that supply the Pease Tradeport Water System have combined levels PFOA and PFOS that have consistently been below this limit since sampling began in 2014.

The City will continue to work towards the appropriate water quality monitoring and treatment methods to assure that all drinking water is in compliance with current regulations.

**Additional information can be accessed at:**

http://www.cityofportsmouth.com/publicworks/phwn.html

Or by calling Al Pratt, Water Resources Manager, at: 603-520-0622 or Brian Goetz, Deputy Director of Public Works at: 603-766-1420

**Table 1**
**Summary of PFC Analytical Results**
**Demonstration Project**
**Former Pease Air Force Base, New Hampshire**

| Sample Location | Sample ID | Collection Date | 6:2 Fluorotelomer sulfonate (6:2 FTS) | 8:2 Fluorotelomer sulfonate (8:2 FTS) | N-Ethyl perfluorooctane sulfonamide (EtFOSA) | N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | N-Methyl Perfluorooctane Sulfonamide (MEFOSA) | N-Methyl Perfluorooctane Sulfonamidoethanol (MEFOSE) | Perfluorobutanesulfonic acid (PFBS) | Perfluorobutanoic acid (PFBA) | Perfluorodecane sulfonate (PFDS) | Perfluorodecanoic acid (PFDA) | Perfluorododecanoic acid (PFDoA) | Perfluoroheptane sulfonate (PFHpS) | Perfluoroheptanoic acid (PFHpA) | Perfluorohexanesulfonic acid (PFHxS) | Perfluorohexanoic acid (PFHxA) | Perfluorooctanoic acid (PFOA) | Perfluorononanoic acid (PFNA) | Perfluorooctane sulfonamide (PFOSA) | Perfluorooctanesulfonic acid (PFOS) | Perfluoropentanoic acid (PFPeA) | Perfluorotetradecanoic acid (PFTeDA) | Perfluorotridecanoic acid (PFTrDA) | Perfluoroundecanoic acid (PFUnA) | PFOS+PFOA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **USEPA Health Advisory (HA):** | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.07 | - | - | 0.07 | - | - | - | - | 0.07 |
| **Method Detection Limit (MDL)** | | | 0.0065 | 0.0055 | 0.0053 | 0.0049 | 0.0040 | 0.0061 | 0.0019 | 0.0066 | 0.0043 | 0.0066 | 0.0057 | 0.0036 | 0.0047 | 0.0040 | 0.0046 | 0.0053 | 0.0046 | 0.0058 | 0.0033 | 0.0036 | 0.0052 | 0.0032 | 0.0037 | |
| **Reported Detection Limit (RDL)** | | | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | |
| Harrison Well | | 13-Sep-16 | ND | ND | NA | NA | NA | NA | 0.0029 B | ND | NA | NA | NA | ND | ND | 0.0260 B | 0.0071 J | 0.006 J | ND | ND | 0.022 B | 0.008 B | NA | NA | NA | 0.028 |
| Smith Well | | 19-Sep-16 | ND | ND | NA | NA | NA | NA | 0.0072 J | 0.0067 J | NA | NA | NA | ND | ND | 0.0150 J | 0.0053 J | 0.006 J | ND | ND | 0.013 J | 0.007 J | NA | NA | NA | 0.019 J |
| Harrison Well | | 26-Sep-16 | ND | ND | NA | NA | NA | NA | 0.0040 J | ND | NA | NA | NA | 0.0042 J | ND | 0.0340 | 0.0100 J | ND | ND | ND | 0.024 | 0.014 J | NA | NA | NA | 0.024 |
| Smith Well | | 26-Sep-16 | ND | ND | NA | NA | NA | NA | 0.0029 J | ND | NA | NA | NA | 0.0036 J | ND | 0.0140 J | 0.0050 J | ND | ND | ND | 0.010 J | 0.008 J | NA | NA | NA | 0.010 J |
| Harrison Well | | 19-Oct-16 | ND | ND | NA | NA | NA | NA | 0.0038 J | 0.0069 J | NA | NA | NA | ND | 0.0057 J | 0.0320 | 0.0059 J | ND | ND | ND | 0.022 | 0.009 J | NA | NA | NA | 0.022 |
| Smith Well | | 19-Oct-16 | ND | ND | NA | NA | NA | NA | 0.0035 J | ND | NA | NA | NA | ND | ND | 0.0130 J | ND | ND | ND | ND | 0.010 J | 0.005 J | NA | NA | NA | 0.010 J |
| Harrison Well | | 17-Nov-16 | ND | ND | NA | NA | NA | NA | 0.0026 J | 0.0072 J | NA | NA | NA | ND | 0.0059 J | 0.0350 | 0.0085 J | 0.006 J | ND | ND | 0.026 | 0.013 J | NA | NA | NA | 0.032 |
| Smith Well | | 17-Nov-16 | ND | ND | NA | NA | NA | NA | 0.0020 J | ND | NA | NA | NA | ND | ND | 0.0140 J | ND | ND | ND | ND | 0.011 J | 0.008 J | NA | NA | NA | 0.011 J |
| Harrison Well | | 14-Dec-16 | ND | ND | NA | NA | NA | NA | 0.0062 J | 0.0068 J | NA | NA | NA | ND | ND | 0.0350 | 0.0120 J | 0.0078 J | ND | ND | 0.026 | 0.012 J | NA | NA | NA | 0.034 |
| Smith Well | | 14-Dec-16 | ND | ND | NA | NA | NA | NA | ND | ND | NA | NA | NA | ND | ND | 0.0150 J | 0.0065 J | ND | ND | ND | 0.012 J | 0.0059 J | NA | NA | NA | 0.012 J |
| Smith Well (Dup) | | 14-Dec-16 | ND | ND | NA | NA | NA | NA | 0.0055 J | ND | NA | NA | NA | ND | ND | 0.0150 J | 0.0057 J | ND | ND | ND | 0.012 J | 0.006 J | NA | NA | NA | 0.012 J |
| Harrison Well | | 11-Jan-17 | ND | ND | NA | NA | NA | NA | 0.0090 J | 0.008 J | NA | NA | NA | ND | 0.006 J | 0.0380 | 0.0180 J | 0.009 J | ND | ND | 0.024 | 0.0160 J | NA | NA | NA | 0.033 |
| Smith Well | | 11-Jan-17 | ND | ND | NA | NA | NA | NA | 0.0080 J | ND | NA | NA | NA | ND | ND | 0.0170 | 0.0100 J | ND | ND | ND | 0.012 J | 0.0080 J | NA | NA | NA | 0.012 J |
| Harrison Well | | 17-Feb-17 | ND | ND | NA | NA | NA | NA | 0.0020 J | ND | NA | NA | NA | ND | ND | 0.0360 | 0.0060 J | 0.009 J | ND | ND | 0.027 | 0.0130 J | NA | NA | NA | 0.036 |
| Smith Well | | 17-Feb-17 | ND | ND | NA | NA | NA | NA | ND | ND | NA | NA | NA | ND | ND | 0.0100 J | ND | ND | ND | ND | 0.013 J | 0.0070 J | NA | NA | NA | 0.013 J |
| Harrison Well | | 23-Mar-17 | ND | ND | NA | NA | NA | NA | ND | ND | NA | NA | NA | ND | ND | 0.0270 | 0.0052 J | ND | ND | ND | 0.0210 | 0.0095 J | NA | NA | NA | 0.021 |
| Smith Well | | 23-Mar-17 | ND | ND | NA | NA | NA | NA | ND | ND | NA | NA | NA | ND | ND | 0.0093 J | ND | ND | ND | ND | 0.0072 J | ND | NA | NA | NA | 0.007 J |
| Filter 2 Effluent | S1 | 22-Sep-16 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 - 25% | PV1-25 | 06-Oct-16 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 2 Effluent | PV2-100 | 06-Oct-16 | ND | ND | ND | ND | 0.0065 J | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 - 25% | PV1-25 | 14-Oct-16 | ND | ND | ND | ND | ND | ND | 0.0022 B | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 Effluent | PV1-100 | 14-Oct-16 | ND | ND | ND | ND | ND | ND | 0.0021 B | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 2 Effluent | PV2-100 | 14-Oct-16 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0053 J | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 - 25% | PV1-25 | 20-Oct-16 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 Effluent | PV1-100 | 20-Oct-16 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 2 Effluent | PV2-100 | 20-Oct-16 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 - 25% | PV1-25 | 28-Oct-16 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0082 J | ND | ND | ND | 0.0062 J | ND | 0.0052 J | ND | ND | ND | ND | 0.0082 J | 0.0084 J | ND |
| Filter 1 Effluent | PV1-100 | 28-Oct-16 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0049 J | ND | ND | ND | ND | 0.0078 J | 0.0081 J | ND |
| Filter 2 Effluent | PV2-100 | 28-Oct-16 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0040 J | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 - 25% | PV1-25 | 10-Nov-16 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 Effluent | PV1-100 | 10-Nov-16 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 - 25% | PV1-25 | 28-Nov-16 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 Effluent | PV1-100 | 28-Nov-16 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 - 25% | PV1-25 | 27-Dec-16 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 Effluent | PV1-100 | 27-Dec-16 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 - 25% | PV1-25 | 16-Jan-17 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 Effluent | PV1-100 | 16-Jan-17 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 - 25% | PV1-25 | 10-Feb-17 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

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**Former Pease Air Force Base, New Hampshire**

| Sample Location | Sample ID | Collection Date | 6:2 Fluorotelomer sulfonate (6:2 FTS) | 8:2 Fluorotelomer sulfonate (8:2 FTS) | N-Ethyl perfluorooctane sulfonamide (EtFOSA) | N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | N-Methyl Perfluorooctane Sulfonamide (MEFOSA) | N-Methyl Perfluorooctane Sulfonamidoethanol (MEFOSE) | Perfluorobutanesulfonic acid (PFBS) | Perfluorobutanoic acid (PFBA) | Perfluorodecane sulfonate (PFDS) | Perfluorodecanoic acid (PFDA) | Perfluorododecanoic acid (PFDoA) | Perfluoroheptane sulfonate (PFHpS) | Perfluoroheptanoic acid (PFHpA) | Perfluorohexanesulfonic acid (PFHxS) | Perfluorohexanoic acid (PFHxA) | Perfluorooctanoic acid (PFOA) | Perfluorononanoic acid (PFNA) | Perfluorooctane sulfonamide (PFOSA) | Perfluorooctanesulfonic acid (PFOS) | Perfluoropentanoic acid (PFPeA) | Perfluorotetradecanoic acid (PFTeDA) | Perfluorotridecanoic acid (PFTrDA) | Perfluoroundecanoic acid (PFUnA) | PFOS+PFOA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **USEPA Health Advisory (HA):** | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.07 | - | - | 0.07 | - | - | - | - | 0.07 |
| Filter 1 Effluent | PV1-100 | 10-Feb-17 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 - 25% | PV1-25 | 07-Mar-17 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 Effluent | PV1-100 | 07-Mar-17 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 - 25% | PV1-25 | 20-Mar-17 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 Effluent | PV1-100 | 20-Mar-17 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 - 25% | PV1-25 | 27-Mar-17 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 - 50% | PV1-50 | 27-Mar-17 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0056 J | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 Effluent | PV1-100 | 27-Mar-17 | ND | ND | 0.0097 J | ND | ND | 0.0052 J | ND | ND | ND | ND | ND | ND | ND | 0.0068 J | ND | ND | ND | ND | 0.0036 J | ND | ND | 0.0033 J | ND | ND |
| Filter 1 Effluent **Rerun** | PV1-100 | 27-Mar-17 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 - 25% | PV1-25 | 12-Apr-17 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 Effluent | PV1-100 | 12-Apr-17 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 - 25% | PV1-25 | 21-Apr-17 | ND | ND | ND | ND | ND | ND | ND | 0.0068 J | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0100 J | ND | ND | ND | ND |
| Filter 1 Effluent | PV1-100 | 21-Apr-17 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0052 J | ND | ND | ND | ND | ND |
| Combined Raw | RAW | 24-Apr-17 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0240 | 0.0064 J | 0.0049 J | ND | ND | 0.0150 J | 0.0053 J | ND | ND | ND | ND |
| Filter 1 - 25% | PV1-25 | 01-May-17 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 1 Effluent | PV1-100 | 01-May-17 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Filter 2 Effluent | PV2-100 | 01-May-17 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Combined Raw | RAW | 12-May-17 | Sample Taken, awating results | | | | | | | | | | | | | | | | | | | | | | | |
| Filter 1 - 25% | PV1-25 | 12-May-17 | Sample Taken, awating results | | | | | | | | | | | | | | | | | | | | | | | |
| Filter 1 Effluent | PV1-100 | 12-May-17 | Sample Taken, awating results | | | | | | | | | | | | | | | | | | | | | | | |
| Filter 2 Effluent | PV2-100 | 12-May-17 | Sample Taken, awating results | | | | | | | | | | | | | | | | | | | | | | | |
| Combined Raw | RAW | 22-May-17 | Sample Taken, awating results | | | | | | | | | | | | | | | | | | | | | | | |
| Filter 1 - 25% | PV1-25 | 22-May-17 | Sample Taken, awating results | | | | | | | | | | | | | | | | | | | | | | | |
| Filter 1 Effluent | PV1-100 | 22-May-17 | Sample Taken, awating results | | | | | | | | | | | | | | | | | | | | | | | |
| Filter 2 Effluent | PV2-100 | 22-May-17 | Sample Taken, awating results | | | | | | | | | | | | | | | | | | | | | | | |

Notes:
Grey text indicates the parameter was not analyzed or not detected.
All concentrations in µg/L - micrograms per liter (ppb)
J - The result is an estimated value.
B - Detected in Blank.

USEPA - Environmental Protection Agency
NA - Not Analysed or Not Applicable
ND - Not detected
— - No Health Advisory available

- Denotes 'B' value, detected in blank
- Denotes raw water influent sample
- Denotes short chain compound