Large Production Wells and Wells for Large Community Water Systems

Drinking Water and Groundwater Bureau

Rule: Env-Dw 302

REPORT COVER PAGE

PROJECT NAME	**Haven Well Reactivation**
PROJECT TOWN	**City of Portsmouth**
PWS ID	**1951020**

APPLICANT (Project/Water System Owner)

Name	**Brian Goetz/City of Portsmouth**
Mailing Address	**680 Peverly Hill Road, Portsmouth, NH 03801**
Daytime Phone Number	**(603) 766-1420**
Email Address	**bfgoetz@cityofportsmouth.com**

WELL SITE OWNER (Property Owner)

Name	**Brian Goetz/City of Portsmouth**
Mailing Address	**680 Peverly Hill Road, Portsmouth, NH 03801**
Daytime Phone Number	**(603) 766-1420**
Email Address	**bfgoetz@cityofportsmouth.com**

PROJECT CONTACT/REPORT PREPARER

Name	**Frank Getchell**
Company Name	**Weston & Sampson**
Mailing Address	**100 International Drive, Suite 152, Portsmouth, NH 03801**
Daytime Phone Number	**(603) 431-3937**
Email Address	**getchell.frank@wseinc.com**

PUMPING TEST PERFORMER/CONTACT

Name	**Frank Getchell**
Mailing Address	**100 International Drive, Suite 152, Portsmouth, NH 03801**
Daytime Phone Number	**(603) 431-3937**
Email Address	**getchell.frank@wseinc.com**

SUBMITTAL INFORMATION

1. Project Type:
   - a. ☐ New well(s) for New System.
   - b. ☐ New well(s) for Existing System.
   - c. ☐ Replacement well(s) for Existing System.
   - d. ☐ Hydrofractured or Deepened well(s) for Existing System.
   - e. ☒ **REACTIVATION OF AN INACTIVE WELL FOR AN EXISTING SYSTEM.**

2. Proposed permitted production volume in gallons per day: **768,960 (534 gpm)**

REPORT CERTIFICATION STATEMENT

By signing this report, the signer certifies that the information contained in or otherwise submitted with this report is true, complete and not misleading to the best of the signer's knowledge and belief.

By signing this report, the signer understands that submission of false, incomplete or misleading information is grounds for:

- Not approving the report;
- Revoking any approval that is granted based on the information;
- Suspending or revoking the professional license held by the signer if the department is the licensing authority or referring the matter to the appropriate licensing authority for potential action against the professional license held by the signer if other than the department; and
- If the signer is acting as or on behalf of a listed engineer as defined in Env-C 502.10, debarring the listed engineer from the roster.

By signing this report, the signer understands that they are subject to the penalties specified in New Hampshire law, currently RSA 641:3, for making unsworn false statements.

By signing this report, the signer and applicant agree to comply with all applicable rules and conditions of the approval, if one is issued.

SIGNATURES

APPLICANT	Brian Goetz	**DATE**	**7/12/2021**
PRINTED NAME	**Brian Goetz**		
***REPORT PREPARER**	Frank Getchell	**DATE**	**7/12/2021**
PRINTED NAME	**Frank Getchell**		
PROFESSIONAL LICENSE TYPE	**NH Professional Geologist**		
PROFESSIONAL LICENSE NUMBER	**00572**		

STATE OF NEW HAMPSHIRE
FRANK A. GETCHELL
No. 572
LICENSED PROFESSIONAL GEOLOGIST

**This cover page must bear the stamp or seal of the NH-licensed Professional Engineer (P.E.) or Professional Geologist (P.G.) who prepared the report.*

For additional information contact NHDES' Community Well Siting program manager at (603) 271-8866.

100 International Drive, Suite 152, Portsmouth, NH 03801
Tel: 603.431.3937

July 12, 2021

Mr. Andrew Koff, PG
Hydrogeologist
NHDES Drinking Water Groundwater Bureau
29 Hazen Drive
Concord, NH 03302-0095

Re: **Haven Well Reactivation Request**
Portsmouth Water Works EPAID 1951010

Dear Mr. Koff:

On behalf of the City of Portsmouth (the City), Weston & Sampson has completed a 5-day pumping test of the Haven Well (the Well) located at the former Pease Air Force Base (Pease) in Portsmouth, New Hampshire. The Haven Well was removed from service by the City in 2014 due to the detection of per- and poly-fluoroalkyl substances (PFAS) in the groundwater pumped from the local sand and gravel aquifer system underlying Pease. As per our previous communications with the New Hampshire Department of Environmental Services (NHDES), the pumping test was conducted in support of the City's intent to return to service the Haven Well in conjunction with the activation of the Pease Water Treatment Facility (PWTF) located on Grafton Drive. The testing and related data collection activities were conducted in accordance with the information that was emailed to the NHDES on April 6, 2021 [e.g., City correspondence and related Weston & Sampson memorandum describing the proposed testing plan (the Plan)], and subsequently acknowledged by you on April 7, 2021.

The testing efforts spanned from April 29 through May 8, 2021, with the actual pumping period spanning May 3 to May 8 [a total of five (5) days duration]. As indicated by the Plan, the pumping test was completed in order to collect data necessary to establish the current performance of the Well relative to its previously established safe yield, and relative to the design parameters of the City's PWTF. The collected data focused on groundwater-level and water-quality conditions and hydrogeologic responses representative of the currently prevailing conditions in the aquifer system and at the Well. In preparation of the pumping test effort, the City arranged with the Air Force Civil Engineer Center (AFCEC) to temporarily route water discharged during the test from the Haven Well to the Airfield Interim Mitigation System (AIMS) treatment facility at Pease.

Background

Based on previous hydrogeologic studies of the Pease area, including the study regarding the "safe yield test" of the Haven Well completed by Montgomery Watson Harza (MWH), with assistance from Weston & Sampson, for the AFCEC in April 2002, the aquifer system underlying Pease consists primarily of a sequence of unconsolidated geologic deposits ("overburden") associated with past glacial activity that occurred in the region about 10,000 to 12,000 years ago. The system can generally be separated into units of relatively uniform deposits of sand; mixtures of varying amounts of sand and gravel; layers of clay and silt (related to glacial ice influences on the local marine environment); and mixtures of clay through gravel deposited directly by glacial ice ("till"). The overburden is locally underlain by a layer of weathered bedrock developed in the shallow fractures of the underlying bedrock (considered to be hydraulicly differentiated from the generally linearly orientated vertical/subvertical fracture zones and faults which locally occur within the deeper bedrock).

Of the overburden units comprising the aquifer system, the relatively uniform deposits of sand, and the mixtures of sand and gravel, are considered the primary groundwater bearing units of the overburden and are typically referred to in the Pease area as the upper sand (US) and the lower sand and gravel (aka lower sand, or LS). Locally, and primarily to the east and south of the Haven Well, the upper and lower sand units may be separated by a low permeability or "confining" unit corresponding to significant thicknesses of clay and silt deposits related to past glacio-marine conditions in the area. Based on the information available from the 2002 MWH report, this

confining unit does not reportedly occur in the vicinity of the Haven Well, resulting in the upper sand and lower sand units being hydraulically in contact with each other and potentially acting as a single aquifer unit. In addition, the depth to bedrock decreases locally to the east and south. These conditions influence the naturally occurring local groundwater flow direction (generally from north/northwest to south/southwest/southeast), and recharge conditions influencing the safe yield and response to pumping of the aquifer system in the vicinity of the Haven Well.

The current Haven Well is located in an area of Pease that has been developed as a drinking water supply for the City since the late 1800's. The existing well consists of an 18-inch diameter steel casing and screen, extending to a depth of about 72 feet below grade (ft bg), or an elevation of about 7 feet below mean sea level (-7 ft msl), consistent with the reported approximate depth to the top of bedrock. The 15-feet length of screen, spans a depth interval from about 57 ft bg to 72 ft bg (or from about 8 ft msl to -7 ft msl). Based on this depth setting the screen is set in the lower sand unit (LS) of the aquifer system. The Haven Well is recognized by the NHDES as having a maximum design pumping rate of 534 gallons per minute (gpm), consistent with its minimum long-term safe yield and in consideration of remedial efforts previously being conducted by the AFCEC at Pease. The 2002 MWH study involved the pumping of the Haven Well continuously for about 14 days at varying rates from about 750 to 1,360 gpm (reported average of about 870 gpm based on the pumping of a total of about 17 million gallons over the test period), with the respective test results supporting the conclusion that the Haven Well is capable of supporting pumping at rates greater than 534 gpm.

Pumping Test Summary

As per the proposed Plan and based on related discussions with the NHDES, Weston & Sampson conducted the recent pumping test of the Haven Well following the applicable guidelines of NHDES ENV-DW 302, and related sampling of the Well in accordance with NHDES ENV-DW 700. To this end the Haven Well was pumped through the AIMS facility for five (5) days at a constant rate of 300 gpm, while collecting water-level data via an electric water level indicator (manually) and the City's dedicated SCADA system. The test rate of 300 gpm was selected since it corresponded to the maximum rate that could currently be accommodated by the AIMS facility. The AIMS-based limitation is the result of the PFAS-treatment design parameters of the facility which normally receives groundwater discharged from the AFCEC IMW Well. The pumping rate during the test was determined using the in-line flow meter (SCADA connected with direct readout at wellhouse), while "raw" water samples were collected either from the sampling tap at the wellhouse or from the discharge point at the AIMS facility (pre-treatment). The samples collected from the discharge point at the AIMS facility were submitted for laboratory analyses associated with ENV-DW 700 (e.g., PFAS), while those collected at the wellhouse were used for field parameter monitoring (e.g., temperature, pH, etc.).

Besides collecting water level data from the Haven Well during the test, Weston & Sampson collected water-level measurements and groundwater samples at existing nearby monitor wells (MWs) representative (based on reported screen interval settings) of the upper sand unit ("US"), lower sand unit ("LS"), fractured bedrock/upper weathered bedrock ("FBR"), and deeper bedrock ("BR") groundwater bearing formations comprising the aquifer system underlying Pease and tapped by the Haven Well (completed in the LS). The selected monitor wells (aka observation wells) and corresponding groundwater bearing formations, consistent with AFCEC identification and listed in order of distance from the Haven Well, are: 7530 (LS), 15-TH1AR (LS), PHA-4779 (US), 15-7533 (LS), 15-6144 (BR), 15-6522 (FBR), 15-7535 (US), and 15-7532 (LS). An attempt was made to utilize the Interim Mitigation Well (IMW) for water level monitoring, however, due to wellhead accessibility issues including the existence of a transducer installed and utilized by Wood, the AFCEC consultant, this effort was abandoned. The water level data collected by the transducer in the IMW Well during the test was subsequently downloaded by Wood and provided to Weston & Sampson. However, it was deemed to be of limited use relative to the Haven Well pumping test due to the reported measurements consisting of a single record per day without a designated collection time, corresponding to the daily average over the respective 24-hour period. A summary of the utilized monitor wells and a map of their locations relative to the Haven Well are provided as Table 1 and Figure 1, respectively.

The testing period occurred between April 29 and May 10, 2021, with the actual pumping of the Haven Well occurring from 9:46 on May 3 to 11:03 on May 8, 2021. The four (4) days prior to initiating pumping of the Haven

Well were used by Weston & Sampson staff to: collect an initial round of samples from the selected monitor wells for analyses by Alpha Analytical of "Secondary" parameters commonly used as groundwater quality indicators of well performance impact potential; and manually collect groundwater levels at the selected monitor wells and subsequently install dedicated pressure transducers and data-logger units (data loggers). A dedicated "barologger" was set up inside the casing of Monitor Well 15-6144 to collect barometric pressure data for subsequent use in correcting the data-logger collected water level data for the respective monitored wells. The utilized electric water level indicators and data loggers were decontaminated prior to deployment at the respective locations and selected based on their having been manufactured with no evidence of known PFAS containing materials. Data collected over the four days of water level monitoring prior to initiating pumping were used to establish background ("ambient") conditions and the pre-pumping static water level for use in determining the drawdown resulting from the pumping of the Haven Well at the respective observation wells. Short-term pump-performance testing, completed on April 28 by Weston & Sampson CMR personnel following their completion of the temporary hookup of the Haven Well discharge piping to the AIMS facility, indicated that the pump was operating consistent with its design curve. The collection of water level data by Weston & Sampson continued throughout the pumping period, and for the two (2) days following (recovery) the shutdown of the pump in the Haven Well on May 8. The piping for the Haven Well was subsequently disconnected from the AIMS facility and returned to its pre-test configuration.

Though proposed in the Plan, an extensive step-rate pumping test (utilization of three to four "steps") was not able to be conducted due to the design constraints of the pump in the Haven Well. As a result, the Haven Well was pumped at a rate of 200 gpm for the initial 60-minutes of the test (the initial step) from 9:47 a.m., to 10:51 a.m., following which the pumping rate was increased to 300 gpm (the second step) at which it was maintained for the remainder of the test (five days). The test consisted of initiating pumping of the Haven Well at 200 gallons per minute (gpm) at 9:47 a.m. on May 3rd for about 60 minutes, following which the pumping rate was increased to 300 gpm at 10:51 a.m. and continued pumping at that rate for five (5) days after which time pumping ceased (May 8th).

The adjustment and maintenance of the utilized pumping rate was controlled by City staff through the SCADA system. The water level and discharge rate were monitored and recorded by the available SCADA system throughout the test. The direct readout of the pumping rate from the inline meter in the wellhouse was periodically recorded manually by Weston & Sampson. Water levels at the Haven Well were also manually measured and recorded daily throughout the test by Weston & Sampson.

Groundwater samples were collected using PFAS-free equipment (peristaltic pump with HDPE tubing and removal of three volumes of standing water) from the respective monitor wells on the initial day of pumping and prior to pump shutdown for Secondaries analyses, and from the Haven Well for PFAS on the initial day of the pumping period (May 3), the mid-point of the pumping period (May 5), and immediately prior to pump shutdown (May 8). In addition, samples were collected from the Haven Well for the entire suite of NHDES Drinking Water parameters (including Secondaries) immediately prior to pump shutdown (May 8). The existing sampling port at the Haven Well wellhead was used to collect field parameter samples (temperature, pH, conductivity) during the pumping period of the test. The PFAS analyses and NHDES Drinking Water parameter samples were collected at the discharge location at the AIMS facility using the sampling port setup installed by City staff using PFAS-free components and materials.

Pumping Test Results

The water level in the Haven Well declined by a total of about 2.12 feet (i.e., total drawdown) in response to the 5-day test pumping period (Table 1, Figure 2). The water level at the Haven Well reached equilibrium rapidly within the initial hour of increasing the pumping rate to 300 gpm, continuing with a slightly declining rate of about 0.1 feet per day for the remainder of the pumping period. Based on the ratio of pumping rate to total drawdown, the corresponding specific capacity value for the Haven Well associated with the test is about 143 gallons per minute per foot of drawdown (gpm/ft). This value is consistent with that calculated from the corresponding MWH 14-day pumping test completed in 2002, which based on the average pumping rate of 870 gpm and total drawdown of about 6.3 feet, reflected a specific capacity for the Haven Well of 138 gpm/ft. A comparison between these two

values suggests that the Haven Well has not experienced any determinable reduction in performance (and efficiency) since 2002 (and 2014 when the well was removed from service). Furthermore, this consistency in efficiency combined with the very high specific capacity value, is further evidence of the capabilities of the Haven Well and tapped aquifer to support the pumping test rate of 300 gpm. Given this specific capacity value, less than 4 feet of drawdown would be required for the Haven Well to support a safe yield value of 534 gpm, which under the prevailing conditions, the Well would be more than capable of supporting.

The water levels in each of the monitored observation wells responded to the pumping of the Haven Well, indicating that the upper sand unit, lower sand unit, fractured (weathered) bedrock unit and the bedrock are locally hydraulically connected to the lower sand unit of the aquifer system tapped by the Well, with the overlying (upper sand) and underlying (fractured bedrock and bedrock) units acting as sources of groundwater recharge (see respective hydrographs in Attachment A). Generally, the degree of drawdown exhibited at each well was reflective of the respective distance and degree of hydraulic connectivity (equivalent to recharge potential) of the corresponding tapped aquifer unit with the lower sand (Table 1). In the instance of the observation wells located closest (within about 100 feet) to the Haven Well (e.g., MW 7530), the amount of total drawdown may have been slightly exacerbated by the setting and length of screen relative to the depth and thickness of the lower sand unit (Figure 3). Overall, the amount of exhibited drawdown was greatest for the observation wells completed in the lower sand and closest to the Haven Well. The water-level trends (corrected for barometric pressure influence) corresponding to the Haven Well and each of the observation wells in response to the pumping period exhibited an early time rapid rate of decline (drawdown), followed by a "flattening" with a subsequent slight increase in decline and subsequent consistency in the rate of decline for the remainder of the pumping period (equilibrium). The water-level data exhibited minimal influence from precipitation events occurring during the testing program, with the exception of that occurring on May 5 (see illustrative example Figure 4). Following pump shutdown, the water levels at the Haven Well and monitored observation wells exhibited recovery trends indicating a return to the corresponding pre-test static water levels generally within about two days. The drawdown and recovery conditions exhibited by each well are indicative of the recharge capacity of the tapped aquifer system to support long-term pumping well in excess of the test rate of 300 gpm and supportive of a safe yield value for the Haven Well of 534 gpm. A point further supported by the fact that the test was conducted at a time when the New Hampshire Seacoast region, including Portsmouth, was experiencing abnormally dry conditions, with the 12-month total precipitation amount at 24% below normal, with an approximately 11-inch deficit for the rolling 12-month period leading into the Haven Well test event. Hydrographs for each of the monitored wells are provided as Attachment A.

The water-level data collected from the Haven Well and respective observation wells during the 5-day pumping test were reviewed and evaluated relative to drawdown and the respective elapsed time since pumping started and with distance from the Haven Well in order to determine site-specific hydraulic characteristics of the lower sand aquifer unit (e.g., transmissivity). Each of the elapsed time versus drawdown plots for the respective Haven Well and observation wells exhibit a relatively slow though generally consistent rate of drawdown for the entirety of the five-days (or about 7,200 minutes) of pumping with minor and temporary rises and declines associated with rate adjustments (200 gpm to 300 gpm after the initial 60 minutes of pumping), pre-sample collection purging events (May 3 and May 7), and precipitation event influences (primarily the May 5th event). Using a straight line fitted to the corresponding elapsed time (logarithmic) since pumping started versus drawdown trends (Cooper-Jacob Method, 1946) for the data associated with the 300-gpm rate, the corresponding transmissivity (hydraulic conductivity distributed across the aquifer thickness) values for the tapped lower sand aquifer unit near the Haven Well range from approximately 121,900 (Haven Well) gallons per day per foot (gpd/ft) to 293,300 gpd/ft [Figures 5 and 6 (MW 7530 used for representative purposes)]. Besides the aquifer transmissivity, the storativity of the lower sand unit of the aquifer system (related to porosity and degree of confinement) was also determined from the same elapsed time versus drawdown graphs using the Cooper-Jacob Method. Based on the evaluation of the respective data, the average storativity values ranged between 0.013 and 0.16 which is reflective of unconfined/semi-confined aquifer conditions. The elapsed time versus drawdown graphs for each of the monitor wells completed in the lower sand aquifer unit are provided as Attachment B.

The Cooper-Jacob Method was also used to analyze the pumping test recovery response data to calculate transmissivity and assess the adequacy of the groundwater recharge to the lower sand aquifer unit to meet the

safe yield demand of the Haven Well. Using a straight line fitted to the corresponding ratio (logarithmic) of elapsed time since pumping started to elapsed time since pumping stopped (time ratio or "T/T'") versus recovering drawdown (residual drawdown), the corresponding transmissivity values for the tapped lower sand aquifer unit near the Haven Well range from approximately 102,900 gpd/ft to 247,500 gpd/ft (Figures 7 and 8). In addition to transmissivity values, the time ratio versus residual drawdown graphs were also used to determine the capability of the recharge available to the lower sand unit to support the long-term utilization of the 300-gpm pumping rate, based on the position of the fitted straight line relative to the T/T' value of 1.0. In each case, the straight line intercepted the T/T' axis at a value of 1.0 or greater indicating that the aquifer at that location received recharge commensurate with the 300-gpm pumping rate further substantiating this rate as a minimum safe yield value. The time ratio versus residual drawdown graphs for each of the monitor wells completed in the lower sand aquifer unit are provided as Attachment B.

Besides using the drawdown and residual drawdown data versus elapsed time and time ration for each well location to determine the location specific transmissibly, storativity, and recharge capacity adequacy for the lower sand, the relationship between the drawdown values for each well were evaluated relative to distance from the Haven Well to also determine these aquifer characteristics from an "areal" perspective, along with the radius of influence associated with the pumping of the Well (Figure 9). Based on a straight line fitted to the corresponding distance from the Haven Well (logarithmic) versus drawdown data values for the wells completed in the lower sand unit, the use of the Cooper-Jacob Method resulted in transmissivity and storativity values of 282,900 gpd/ft and 0.05, respectively. The corresponding calculated radius of influence (distance from the Haven Well to the location where the corresponding drawdown value would be close to 0 feet) is about 3,100 feet.

The overall range of transmissivity and storativity values for the lower sand aquifer unit ranged from 108,500 to 293,300 gpd/ft and 0.013 to 0.16, respectively, with corresponding average values of 182,500 gpd/ft and 0.06. The range in calculated transmissivity and storativity values and corresponding averages, as well as the radius of influence determined from the recent Haven Well test is consistent with those previously determined and reported in the 2002 MWH study which utilized a long-term average pumping rate of about 870 gpm.

Water Quality Analysis Results

Besides collecting water-level data for the Haven Well and the monitored observation wells, groundwater samples were also collected and either analyzed in the field (i.e., field parameters), or submitted to a NHDES certified laboratory for analyses. The respective samples were collected to establish the groundwater quality relative to possible future Haven Well performance impacts, as well as to confirm the quality of pumped water from the Haven Well relative to NHDES Drinking Water standards.

The analytical results for samples collected from the respective monitor wells were used to establish the current groundwater quality conditions (based on Secondary parameter analyses) for the respective aquifer units prior to pumping (background), and in response to pumping the Haven Well at 300 gpm. In addition, samples of the water pumped from the Haven Well during the test were collected and analyzed using a combination of field equipment and the City's water quality laboratory. The sampling of the respective monitor wells was conducted in three rounds on dates consisting of April 29, May 3, and May 7. The sampling of the Haven Well was conducted on May 3, May 5, and May 8 (just prior to pump shutdown). A summary of the results for the field parameters is provided as Table 2. A summary of the analytical results for the Secondary parameters completed by Alpha Analytical for the respective monitor wells, along with those completed for the Haven Well by Granite State Analytical Services is provided as Table 3. The corresponding laboratory reports are provided in Attachment C.

Based on the summary provided in Table 2, the quality of water pumped from the Haven Well during the test was relatively consistent with respect to the selected field parameters (pH, alkalinity/hardness, iron, manganese, and chloride). Based on the detected alkalinity and hardness concentrations, the groundwater pumped by the Haven Well can be characterized as being moderately "hard". Of special note is the dominance of manganese concentrations relative to iron, and the generally low iron concentrations. These two parameters are typically used as indicators of current and/or future potential for well performance impact due to their tendency under favorable geochemical and hydraulic conditions to plug the intake intervals of wells, with iron typically being the more

naturally occurring prevalent of the two. The analytical results for Secondary parameters determined for the respective monitor wells as summarized by Table 3, reflect generally similar geochemical conditions, to that influencing the water quality pumped from the Haven Well, with it being moderately hard (except for MW 4779 completed in the upper sand unit), and containing either elevated iron and/or manganese concentrations. Of significance relative to the future performance of the Haven Well is the observed general tendency for the concentrations of the respective parameters to remain relatively stable under pumping conditions. Given the field determined concentrations of the corresponding parameters for the water discharge over the course of 5 days, the respective analytical results for the tapped aquifer system as reflected in the monitor well sample results, and assuming that the prevailing geochemical and hydrogeologic conditions continue to prevail, the performance of the Haven Well is not anticipated to exhibit any rapid deterioration once it is reactivated.

In addition to the analyses for Secondary parameters, three rounds of water samples were also collected from the Haven Well for analyses of PFAS compounds during the pumping period beginning (May 3rd), at the approximate mid-point (May 5th), and just prior to pump shutdown (May 8th). The samples collected on May 3rd and 5th were submitted to Alpha Analytical for PFAS compound analysis using USEPA Method 533, while the samples collected on May 8th were submitted to Alpha Analytical for PFAS, and for all remaining parameters and compounds required by the NHDES for Drinking Water compliance (e.g., VOCs, SOCs, IOCs, pesticides, herbicides, PCBs, etc.) to Granite State Analytical Services. The corresponding laboratory reports are provided as Attachment C.

With the exception of manganese, a naturally occurring IOC, and several PFAS compounds, none of the targeted compounds or parameters exceeded the respective NHDES maximum contaminant level (MCL). The detected manganese concentration was 0.137 milligrams per liter (mg/L) which though slightly elevated, is not out of the norm or what is commonly anticipated for naturally occurring groundwater in other parts of New Hampshire and the northeast, including at the Pease site and other wells in the seacoast area (Table 2 and 3).

The concentrations [expressed in units of as nanograms per liter (ng/L)] of those PFAS compounds regulated by the NHDES and detected in the water pumped from the Haven Well during the test are summarized and compared to the respective NHDES MCLs and historical data in Table 4. Of special note is that the concentrations of the respective NHDES-regulated PFAS compounds detected in the water pumped from the Haven Well during the test are significantly less that those detected in 2016, which, prior to now, was the most recent sampling event following the well being removed from service in 2014. Furthermore, each of these respective PFAS compounds decreased in concentration over the course of the pumping test period. This condition is most likely reflective of the increasing influence of non-impacted groundwater being pumped from the well as the corresponding zone of influence expanded over the 5-day pumping period. As such, the samples collected early in the test period (May 3), reflect the water quality conditions proximal to the Haven Well, while the sample collected later on are more reflective of the currently prevailing long-term conditions, assuming no change in the local geochemical and/or hydrogeological conditions. Given the design parameters incorporated by the City and Weston & Sampson into the PWTF, these PFAS concentrations are considered to be well within the treatment capabilities of the plant for the Haven Well.

Closing

As part of the proposed reactivation of the Haven Well into the City of Portsmouth water supply system, Weston & Sampson has completed a pumping test evaluation of the Haven Well to determine its current performance and establish the current water quality conditions in the locally tapped aquifer system and at the well. Based on the test results, Weston & Sampson has concluded the following:

1. The collected pumping test data indicates that the safe yield of the Haven Well is capable of sustaining long-term pumping at its previously approved safe yield and current design rate of 534 gpm. Based on the calculated specific capacity value for the well compared with that determined from the testing completed in 2002, the performance (and related efficiency) is high, and has not experienced any readily distinguishable decline since that time. As such, the Haven Well is considered to be returnable to service without the need for intake interval rehabilitation at this time. As with all water supply wells, the performance of the Haven Well should be regularly monitored as part of its future use.

2. The prevailing, naturally occurring groundwater quality appears to be moderately hard, with locally elevated iron and manganese concentrations that vary with distance and by aquifer system unit. This combination of hardness and iron/manganese could in the long-term affect the performance of the Haven Well under continued pumping, though the potential rate of such impact is anticipated to be relatively slow given the relative stability of the concentrations of these parameters under pumping conditions.

3. With the exception of manganese (an IOC) and three of the four PFAS compounds currently regulated by the NHDES, the quality of water pumped from the Haven Well appears to currently be suitable for use as a public drinking water supply. The three PFAS compounds detected in excess of the respective NHDES MCL are Perfluorohexanesulfonic Acid (PFHxS) at 156 to 106 ng/L, Perfluorooctanoic Acid (PFOA) at 57.2 to 37.5 ng/L, and Perfluorooctanesulfonic Acid (PFOS) at 531 to 368 ng/L. Each of these PFAS compounds were previously detected in water collected from the Haven Well, but at much higher concentrations. Based on these recently detected concentrations and the observed reduction since the last sampling round, the PWTF is expected to be more than capable of treating PFAS impacted water pumped from the Haven Well as part of its return to service.

4. Weston & Sampson, on behalf of the City, requests that the NHDES reactivate the Haven Well as a water supply source well for the Pease Tradeport water system (PWSID #1951020). The City expects the approval of the reactivation of the Well to be contingent upon its connection to and approval of the PWTF.

If you have any questions or wish to discuss further, please do not hesitate to contact us.

Sincerely,

WESTON & SAMPSON ENGINEERS, INC.

Frank Getchell, PG
Sr. Technical Leader

Blake Martin
Vice President

Attachments

Distribution: B. Goetz; City of Portsmouth
A. Pratt; City of Portsmouth
M. McCarthy; Weston & Sampson

FIGURES

FIGURE 1
PUMPING MONITORED WELL LOCATIONS
HAVEN WELL PUMPING TEST MAY 3 - MAY 8, 2021
PORTSMOUTH WATERWORKS, PORTSMOUTH, NH

100 0 100
Scale In Feet

Weston & Sampson

Figure 2
Haven Well Hydrograph
Haven Well Pumping Test May 3 - May 8, 2021
Portsmouth Waterworks, Porstmouth, NH

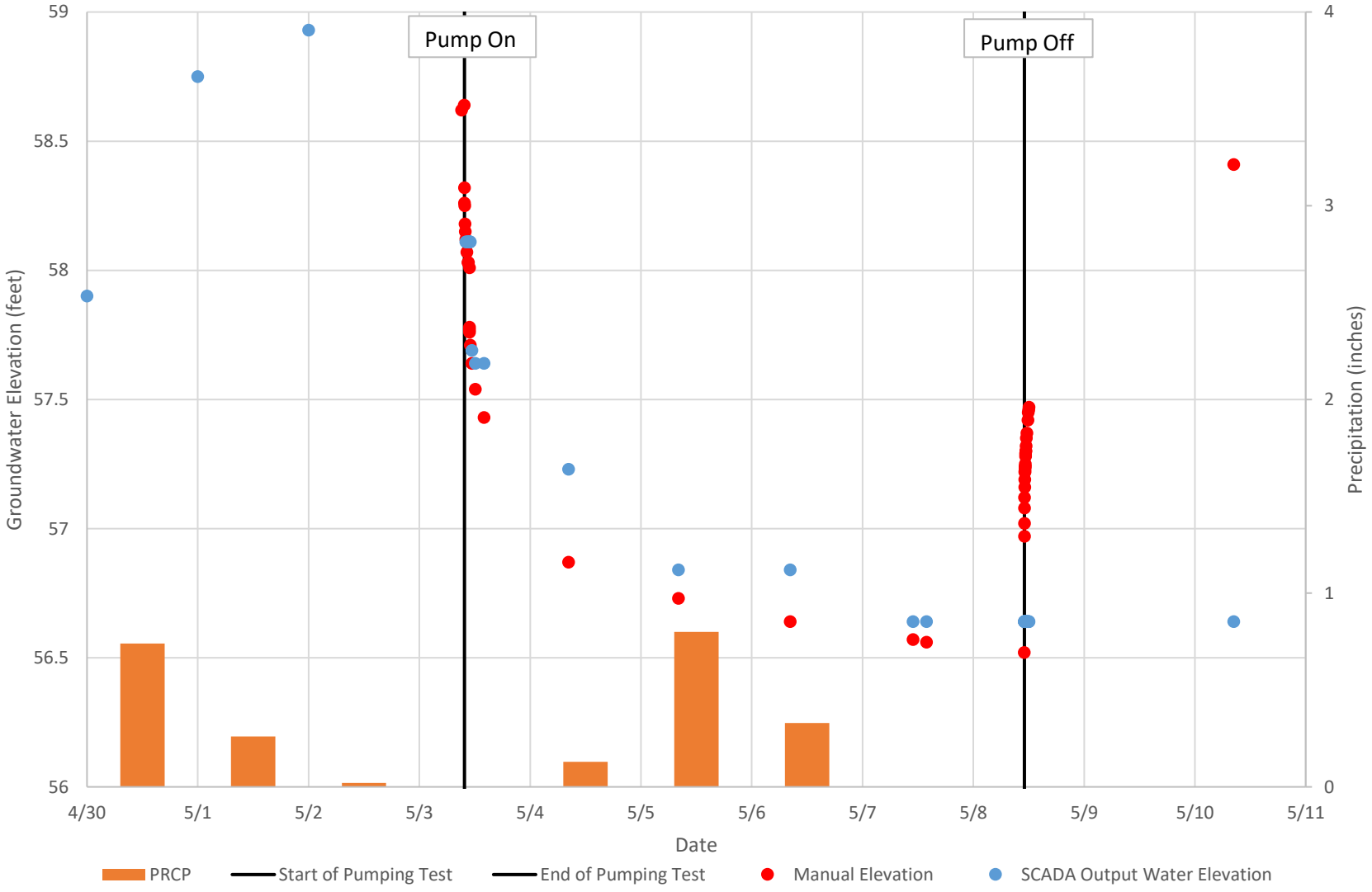


Figure 3

7530 Monitoring Well Hydrograph

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

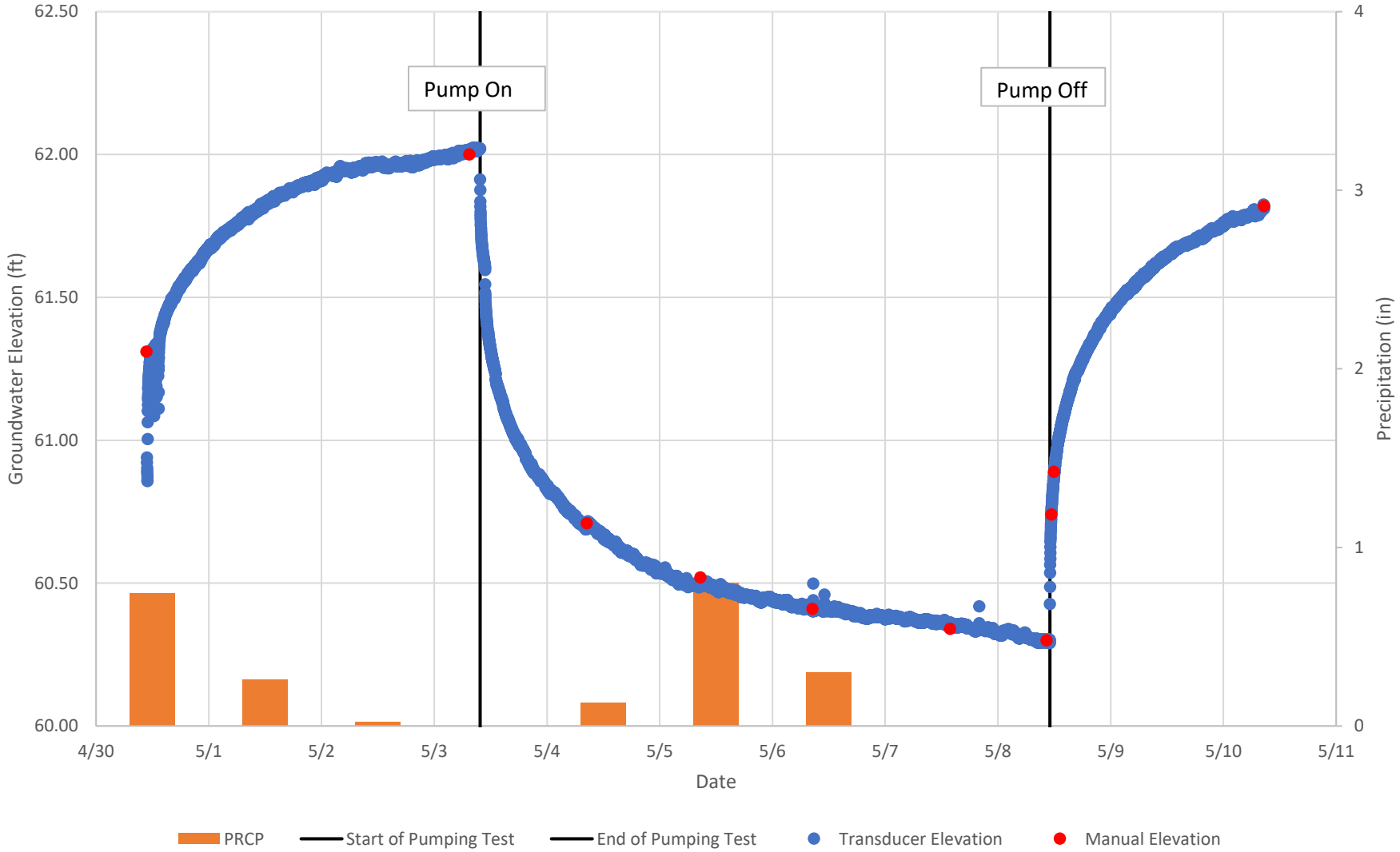


Figure 4

Haven and Monitoring Well Hydrograph

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Porstmouth, NH

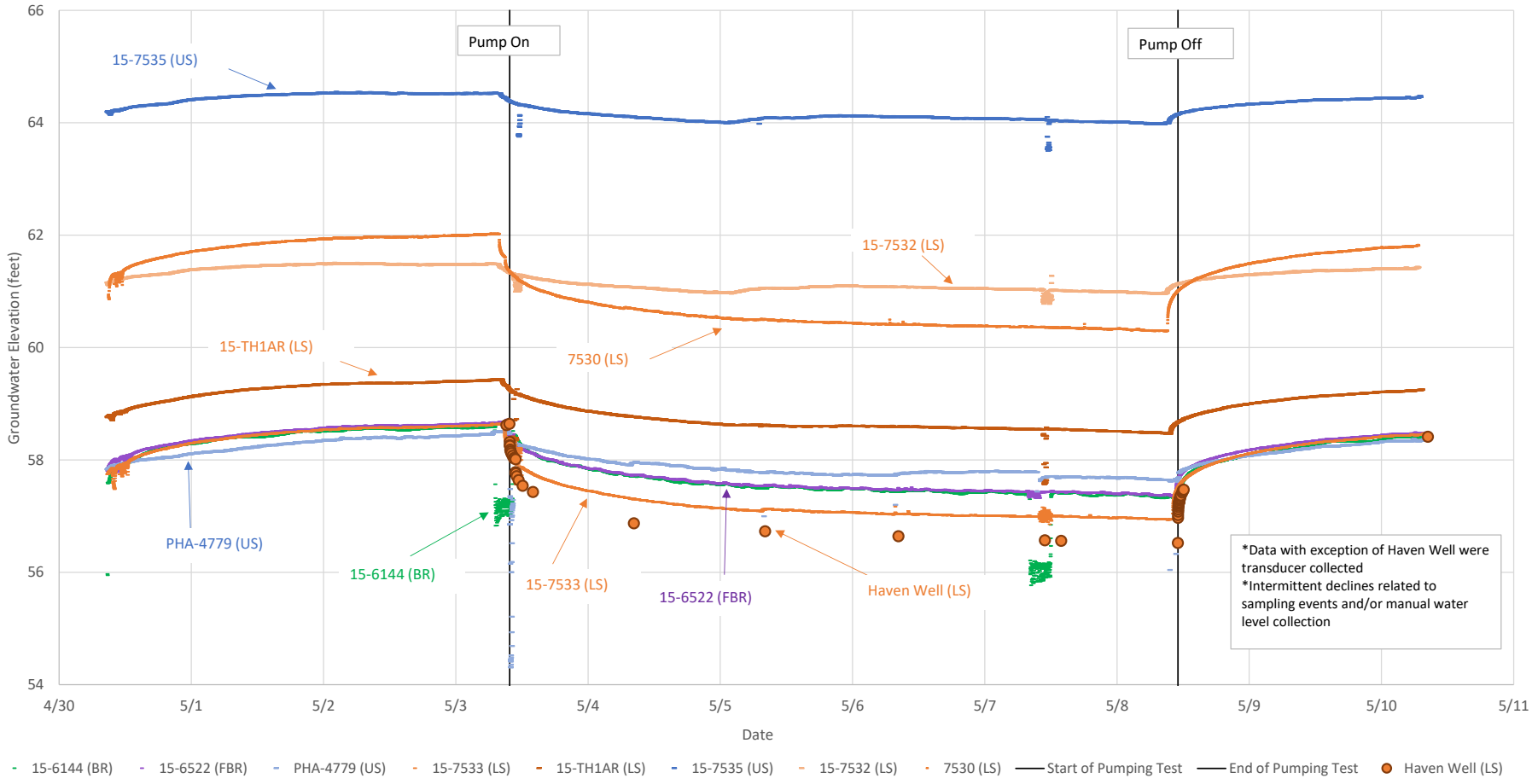


Figure 5

Haven Well Drawdown vs Elapsed Time Plot

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

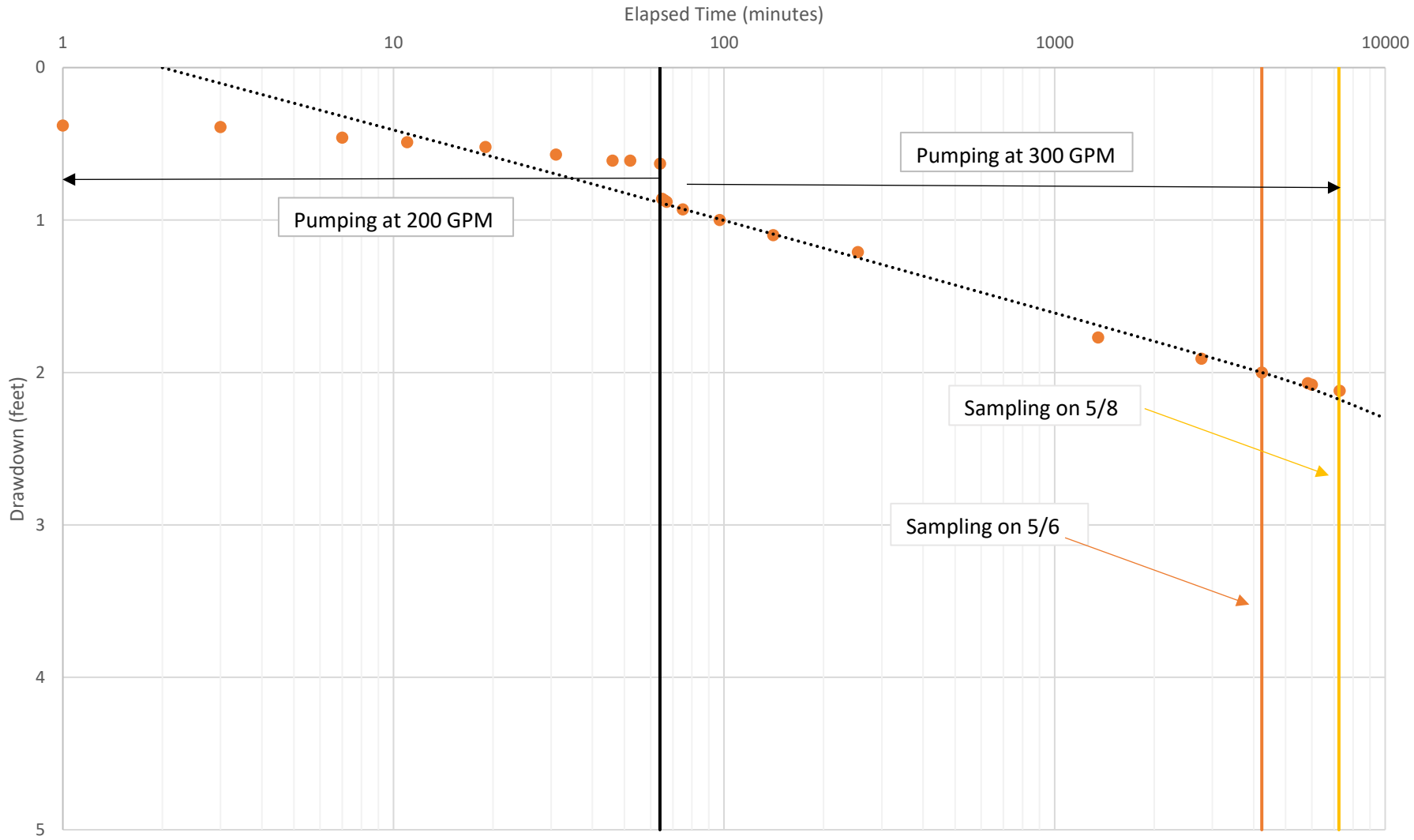


Figure 6

7530 Monitoring Well Drawdown vs Elapsed Time Plot

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

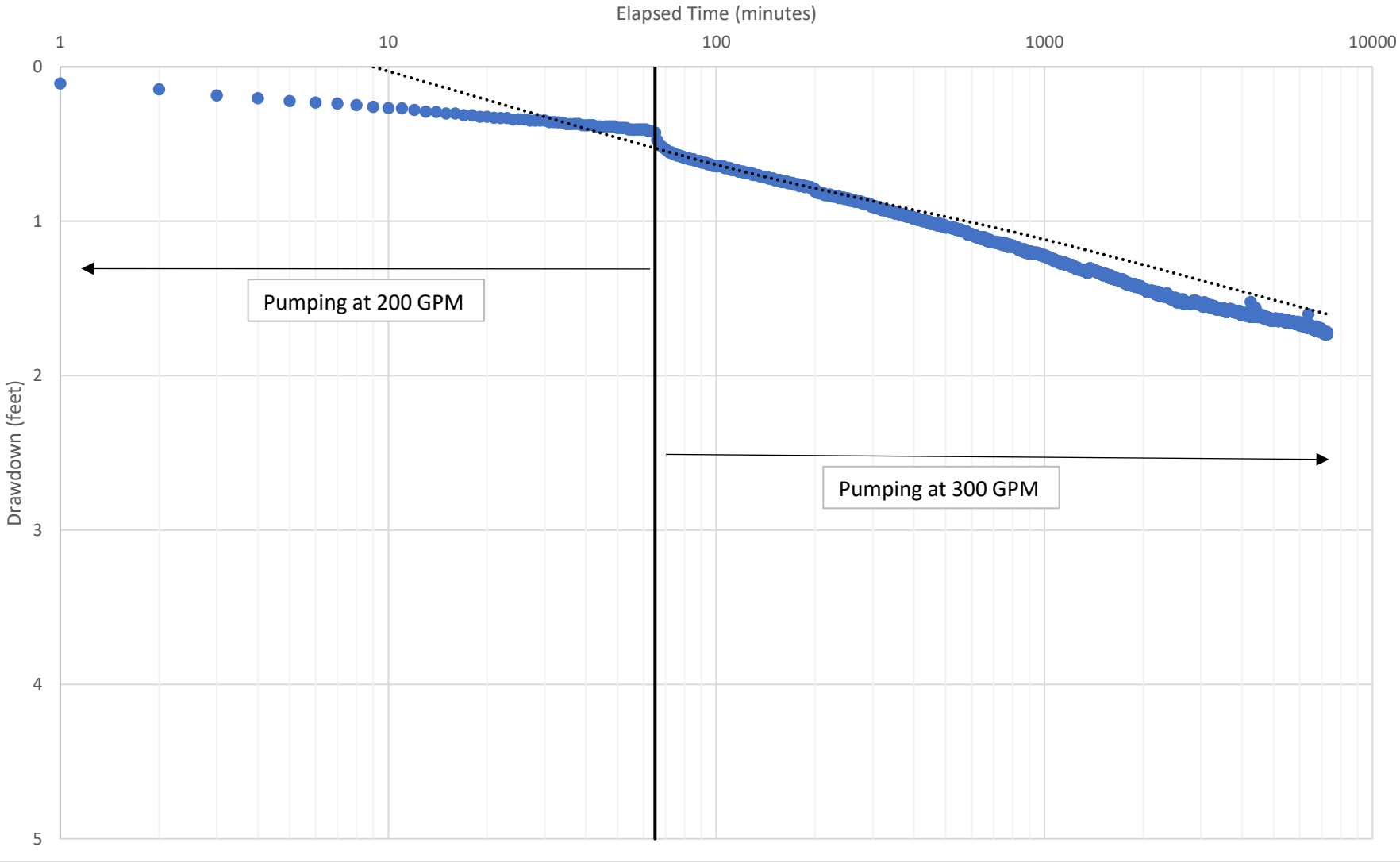


Figure 7

Haven Well Residual Drawdown vs t/t' Plot

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

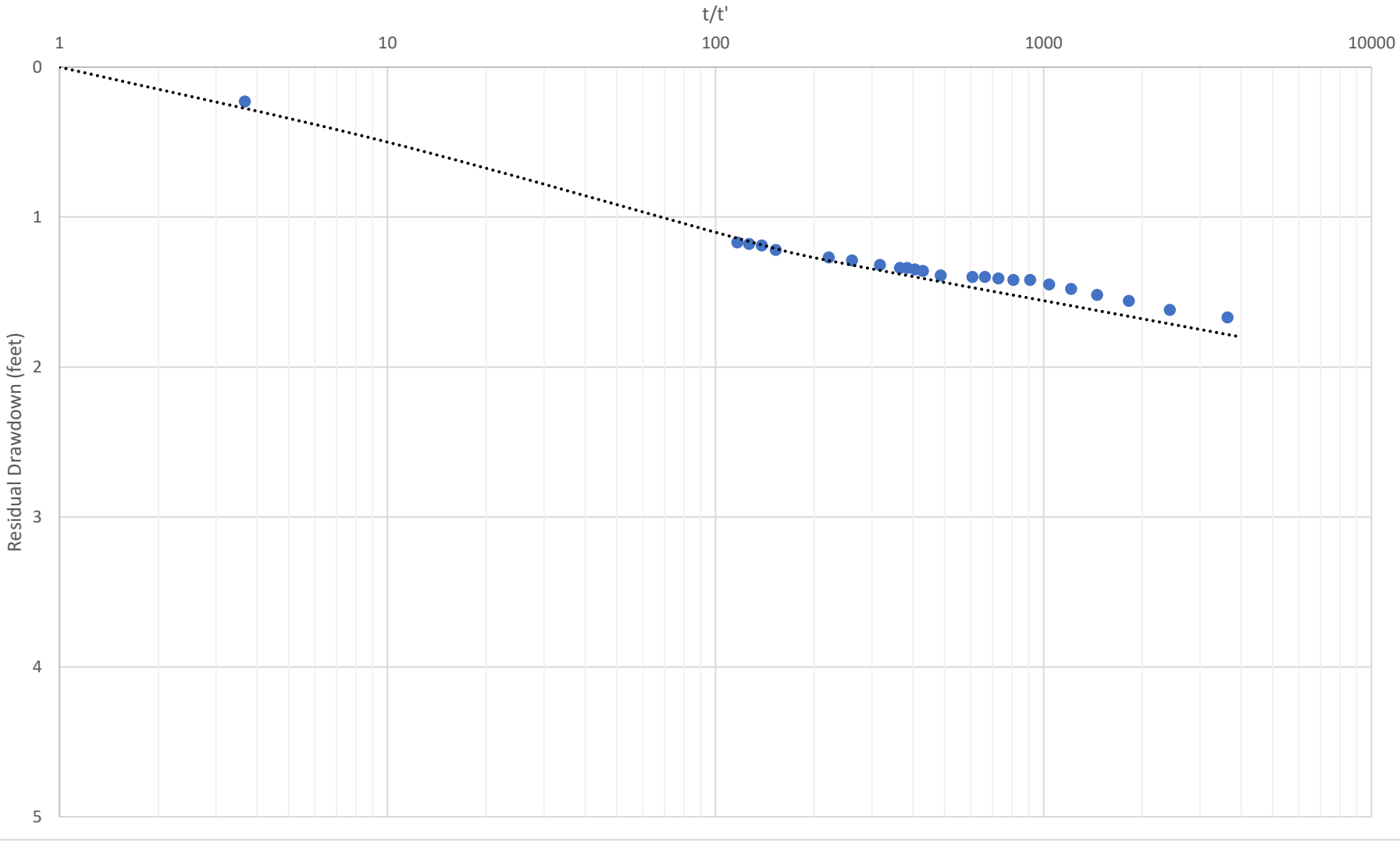


Figure 8

7530 Monitoring Well Residual Drawdown vs t/t' Plot

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

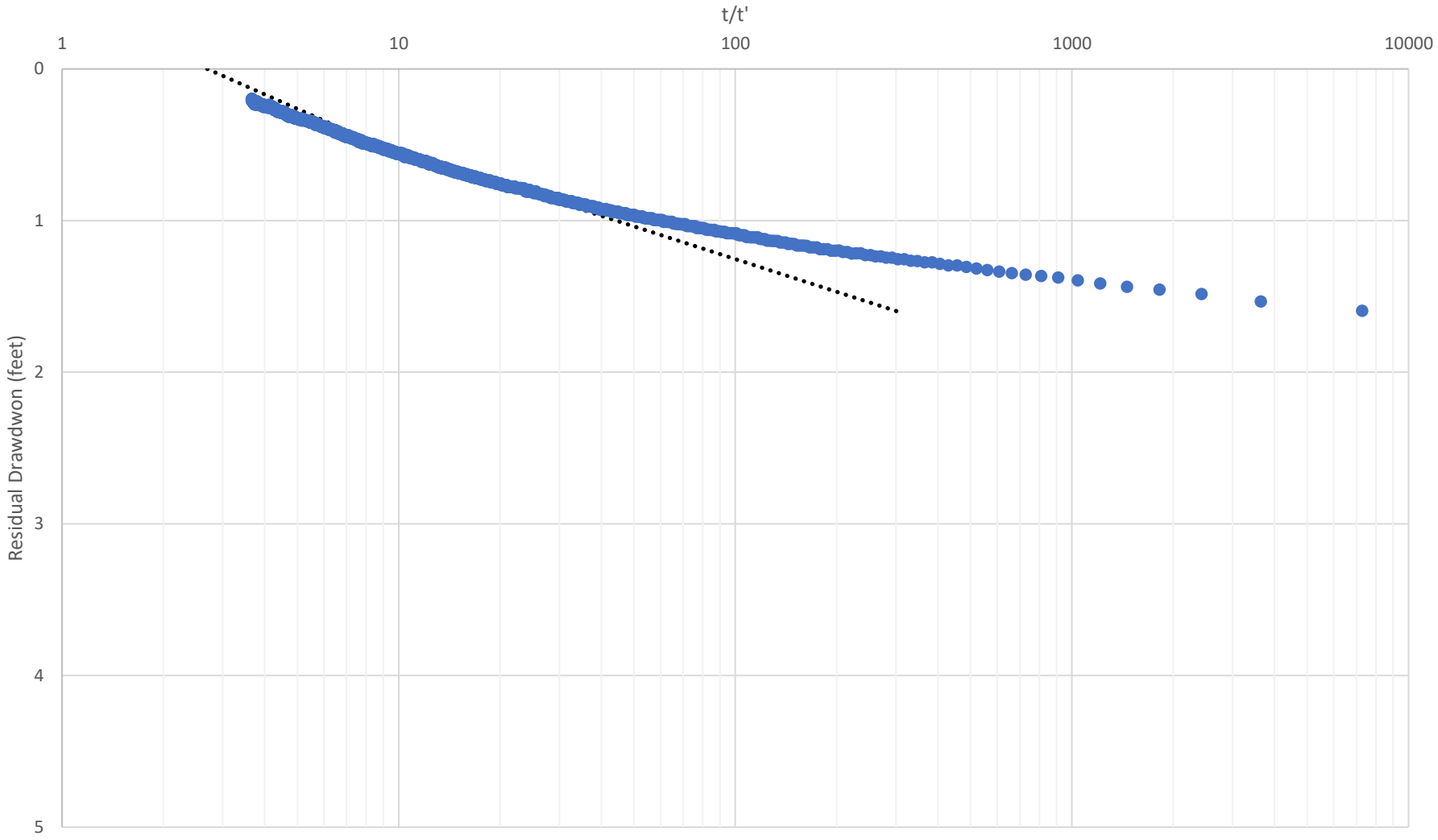
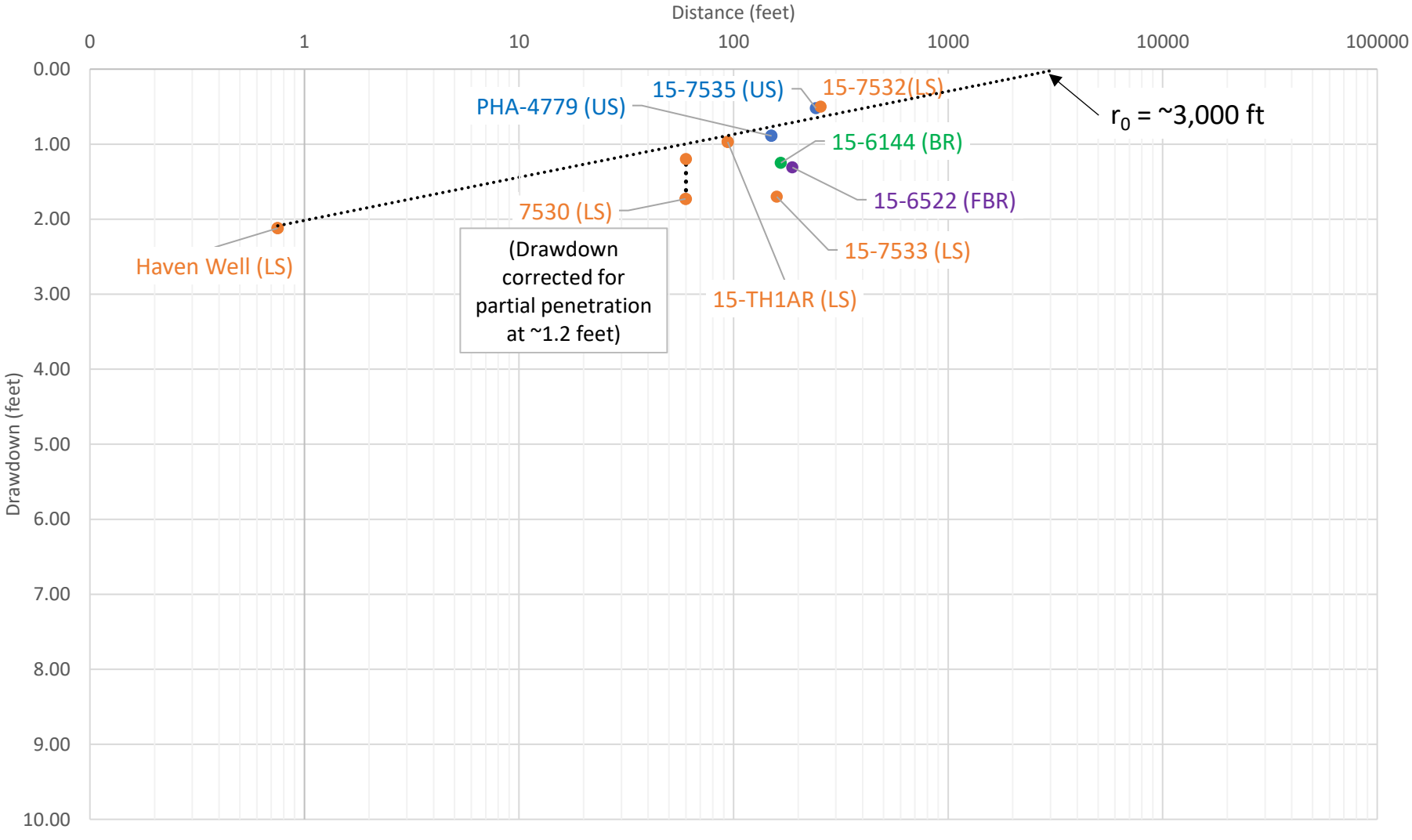


Figure 9

Haven and Monitoring Well Drawdown vs Distance Plot

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Porstmouth, NH



TABLES

Table 1
Haven Well Pumping Test Summary Table
Haven Well Pumping Test May 3 – May 8, 2021
Portsmouth Waterworks, Portsmouth, NH

Well ID[(1)]	Aquifer Unit[(2)]	Static DTW (ft)[(3)]	Static Groundwater Elevation (ft msl)[(4)]	Pumping DTW (ft)	Pumping Groundwater Elevation (ft msl)	Drawdown (ft)	Distance to Haven Well (ft)[(5)]
Haven Well	LS	8.23	58.64	10.35	56.52	2.12	-
7530	LS	3.85	62.02	5.58	60.29	1.73	60
15-TH1AR	LS	4.10	59.43	5.07	58.46	0.97	94
PHA-4779	US	7.96	58.51	8.85	57.62	0.89	150
15-7533	LS	4.59	58.64	6.29	57.06	1.70	159
15-6144	BR	6.84	58.59	8.09	57.34	1.25	166
15-6522	FBR	8.74	58.67	10.05	57.36	1.31	188
15-7535	US	4.25	64.52	4.77	64.00	0.52	242
15-7532	LS	4.32	61.47	4.82	60.97	0.50	255

Notes:

(1) See Figure 1.
(2) LS=Lower Sand Unit; US=Upper Sand Unit; BR=Deeper Bedrock Unit; FBR=Fractured Bedrock/Upper Weathered Bedrock Unit.
(3) Depth to water in feet below measuring point.
(4) Elevation indicated in feet above mean sea level. Based on measuring point elevations previously reported by Wood.
(5) Distances based on locations and scale provided on Figure 1.

Table 2
Haven Well Pumping Test - Water Quality Testing
Haven Well Pumping Test May 3 - May 8, 2021
Portsmouth Waterworks, Portsmouth, NH

Date[(1)]	Time of Sample	Location of Sample	pH	Alkalinity as $CaCo_3$ (ppm)[(2)]	Turbidity (ntu)[(3)]	Apparent Color	Iron (ppm)	Manganese (ppm)	Calcium Hardness (ppm)	Chloride (ppm)
5/3/2021	14:00	Haven	7.62	160	0.754	0	0.06	0.194	161	41
5/3/2021	14:20	AIMS	7.53	165	0.064	0	0.01	0.133	171	41
5/3/2021	21:09	AIMS	7.55	160	0.067	0	0.02	0.150	169	34
5/4/2021	14:20	AIMS	7.60	158	0.052	0	0.00	0.151	150	34
5/4/2021	21:05	AIMS	7.56	150	0.052	0	0.01	0.147	163	28
5/5/2021	9:00	Haven	7.91	190	0.419	0	0.04	0.243	168	34
5/5/2021	14:20	AIMS	7.51	156	0.083	18	0.01	0.158	148	28
5/5/2021	21:14	AIMS	7.53	160	0.078	1	0.01	0.153	155	28
5/6/2021	9:12	AIMS	7.57	148	0.086	0	0.01	0.152	158	28
5/6/2021	15:15	AIMS	7.53	144	0.066	10	0.01	0.166	145	28
5/6/2021	21:00	AIMS	7.80	150	0.107	0	0.02	0.150	145	28
5/7/2021	14:45	AIMS	7.52	150	0.106	2	<0.01	0.166	154	28
5/7/2021	20:59	AIMS	7.52	135	0.047	2	0.01	0.172	149	28
5/7/2021	9:00	Haven	not measured	not measured	not measured	not measured	0.05	0.244	167	41

Notes: (1) Samples analyzed by Portsmouth Waterworks staff.

(2) Reported in units of parts per million, equivalent to milligrams per liter (mg/l).

(3) reported in nephelometric turbidity units.

Table 3
Water Quality Secondaries Summary
Haven Well Pumping Test May 3 – May 8, 2021
Portsmouth Waterworks, Portsmouth, NH

Analytes[1]		WELL ID																					
		Haven Well (LS)[2]		4779 (US)[3]			7535 (US)[3]			7533 (LS)[3]			7532 (LS)[3]			TH1AR (LS)[3]			6522 (FBR)[3]			6144 (BR)[3]		
		2016[4]	5/8/21	4/29/21	5/3/21	5/7/21	4/29/21	5/3/21	5/7/21	4/29/21	5/3/21	5/7/21	4/29/21	5/3/21	5/7/21	4/29/21	5/3/21	5/7/21	4/29/21	5/3/21	5/7/21	4/29/21	5/3/21	5/7/21
Metals	Calcium	55	59.7	1.83	1.65	1.7	45.5	42.6	44.6	67.4	62.1	65.9	49.6	47.1	48.7	49.5	46.3	47.8	59.6	55	60.1	23.7	22.2	22.7
	Iron	0.16	<0.01	1.87	1.9	1.3	0.086	0.106	0.057	ND[5]	ND	ND	ND	ND	ND	0.427	0.17	1.09	ND	ND	ND	0.138	0.127	0.144
	Magnesium	11	9.4	-[6]	0.371	0.36	-	8.65	8.93	-	9.14	9.39	-	9.15	9.32	-	9.22	9.27	-	10.8	11.5	-	12.7	12.7
	Manganese	0.31[7]	0.137	0.016	0.015	0.015	0.588	0.558	0.605	0.022	0.022	0.021	0.419	0.386	0.418	0.226	0.216	0.223	0.185	0.178	0.187	0.093	0.091	0.094
	Sodium	-	16.2	2.65	2.59	3.35	24	22.8	24.2	17	16.3	17.5	23.4	22.7	23	22.8	22.2	22.6	26.2	24.8	26.9	33	32.3	32.3
	Hardness	180	188	6.08	5.66	5.71	149	142	148	206	193	203	161	155	160	161	154	157	193	182	197	112	108	109
Inorganics	Alkalinity	160	143	6.4	7.4	5.6	124	129	122	162	161	160	130	130	129	135	132	128	144	141	143	105	108	108
	Bicarbonate Alkalinity	-	-	6.9	7.4	5.6	143	129	122	149	161	160	122	130	129	124	132	128	138	141	143	102	108	108
	Specific Conductance	490	-	-	30	30	-	420	410	-	490	470	-	430	430	-	440	420	-	520	520	-	380	370
	TDS	260	237	-	39	54	-	230	240	-	270	310	-	250	240	-	240	250	-	280	300	-	220	210
	pH	7.5	7.6	6.5	6.4	6.2	7.4	7.3	7.1	7.9	7.8	7.6	7.6	7.6	7.2	7.6	7.4	7.2	7.9	7.7	7.7	8.2	8.1	8.1
	Nitrogen, Nitrate	ND	<0.2	0.378	0.373	0.433	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Bromide	-	-	ND	ND	ND	0.085	0.072	0.067	0.074	0.069	0.068	0.874	0.069	0.069	0.078	0.071	0.07	0.073	0.066	0.065	0.116	0.119	0.112
	Chloride	49	37	1.68	2.04	2.09	43.1	48.9	44	40.4	46	39.9	9.98	49.5	45.1	44.4	47.8	44.1	87	72.4	68.3	29.8	34.3	29.7
	Sulfate	14	19	3	3.3	2.97	18.8	19.6	19	30.7	30.2	30	19.8	23.4	22.3	22.2	22.7	20.7	21.7	22	21.2	45.5	45.9	44.3

Notes:

(1) See Attachment A for complete analytical reports for 2021 sampling.
(2) Analyses completed by Granite State Analytical Services using respective NHDES Drinking Water methodology unless indicated otherwise.
(3) Analyses completed by Alpha Analytical.
(4) Analytical laboratory and methodology not specified with provided results.
(5) Denotes parameter not detected by laboratory.
(6) Denotes parameter was not analyzed for by laboratory.
(7) Pink highlighted concentration indicates that compound exceeds respective NHDES Drinking Water MCL (relevant for Haven Well only).

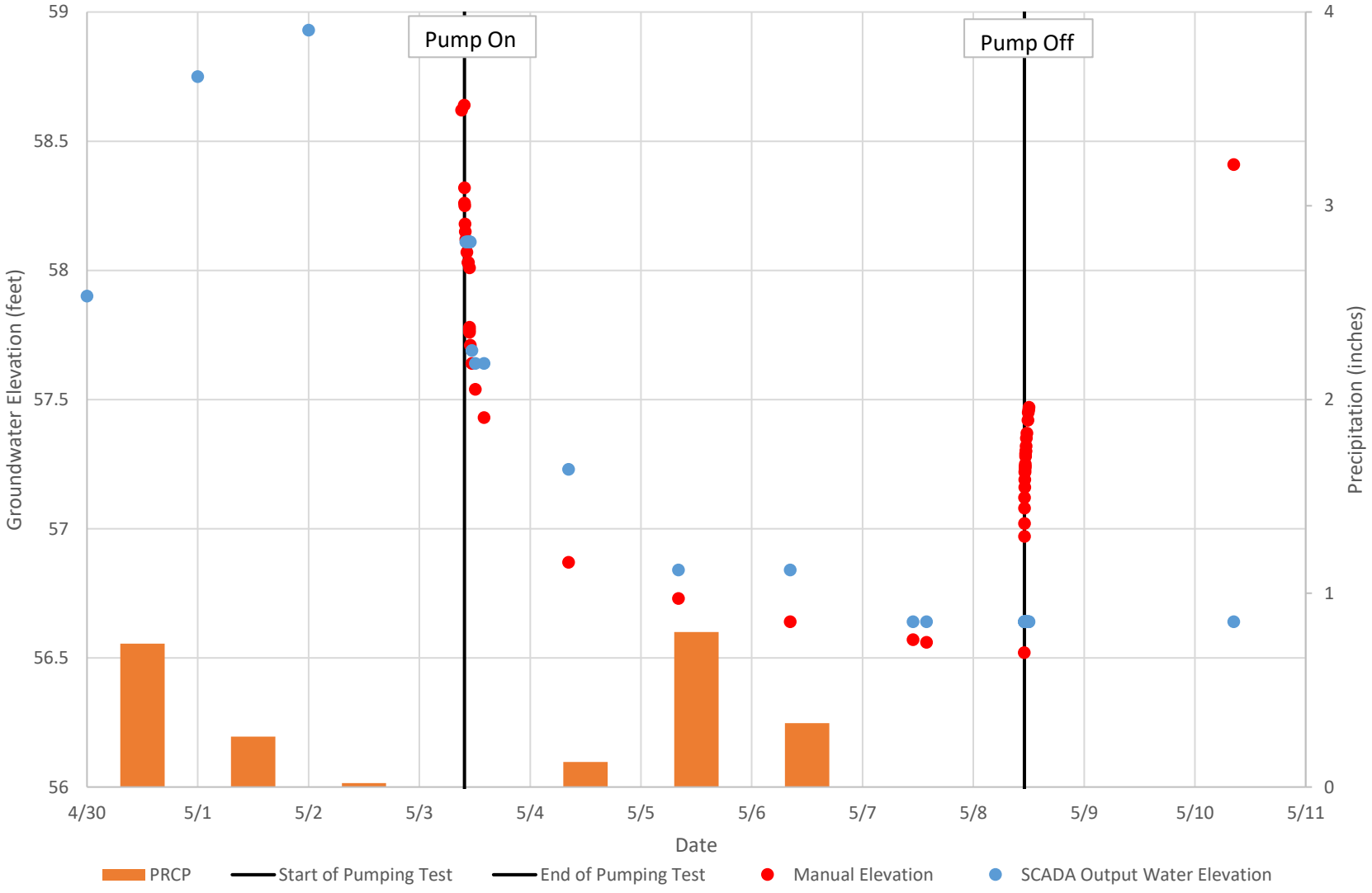
Table 4
Haven Well PFAS Comparisons
Haven Well Pumping Test May 3 – May 8, 2021
Portsmouth Waterworks, Portsmouth, NH

PFAS Compound[1][2]	NHDES MCL[3]	Sampling Date			
		2016[4]	5/3/2021	5/5/2021	5/8/2021
Perfluorohexanesulfonic Acid (PFHxS)	18	830[5]	156	126	106
Perfluorooctanoic Acid (PFOA)	12	270	57.2	45.4	37.5
Perfluorononanoic Acid (PFNA)	11	18	4.68	3.17	2.68
Perfluorooctanesulfonic Acid (PFOS)	15	1000	531	383	368
Perfluorobutanoic Acid (PFBA)	-[6]	75	40.3	45	36.9
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	-	-	ND[7]	ND	ND
Perfluoropentanoic Acid (PFPeA)	-	250	75.6	65.7	50.4
Perfluorobutanesulfonic Acid (PFBS)	-	43	12.4	9.89	7.88
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	-	-	ND	ND	ND
Perfluoro (2-Ethoxyethane) Sulfonic Acid (PFEESA)	-	-	ND	ND	ND
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	-	-	ND	ND	ND
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	-	-	ND	ND	ND
Perfluorohexanoic Acid (PFHxA)	-	290	67.4	55.2	40.1
Perfluoropentanesulfonic Acid (PFPeS)	-	-	12.8	10.7	9.84
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	-	-	ND	ND	ND
Perfluoroheptanoic Acid (PFHpA)	-	120	27.8	21.6	15.6
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	-	-	ND	ND	ND
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	-	220	75.2	40.6	41.2
Perfluoroheptanesulfonic Acid (PFHpS)	-	54	10.2	7.29	7.08
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	-	-	ND	ND	ND
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	-	37	18.4	13.3	10.6
Perfluorodecanoic Acid (PFDA)	-	ND	ND	ND	ND
Perfluoroundecanoic Acid (PFUnA)	-	ND	ND	ND	ND
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	-	-	ND	ND	ND
Perfluorododecanoic Acid (PFDoA)	-	ND	ND	ND	ND
Perfluorotridecanoic Acid (PFTrDA)	-	ND	-	-	-
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	-	-	-	-	-
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	-	-	-	-	-
Perfluorotetradecanoic Acid (PFTA)	-	-	-	-	-
TOTAL PFAS[8]	**56**	**2118**	**748.88**	**557.57**	**514.18**

Notes: (1) Except where noted, all samples analyzed using EPA Method 533. See Attachment A for complete analytical report.
(2) All concentrations reported in units of parts per trillion or nanograms per liter (ng/L).
(3) New Hampshire Drinking Water Maximum Contaminant Level for corresponding regulated PFAS compound indicated in **Bold**.
(4) Analytical methodology not specified with results.
(5) Pink highlighted concentration indicates that compound exceeds respective NHDES MCL
(6) Denotes no NHDES MCL exists for compound, or compound not targeted by analytical method.
(7) Denotes parameter not detected by laboratory at concentration above the respective method reportable limit.
(8) Total of NHDES regulated PFAS compounds.

ATTACHMENT A

Attachment A: Figure 1
Haven Well Hydrograph
Haven Well Pumping Test May 3 - May 8, 2021
Portsmouth Waterworks, Porstmouth, NH

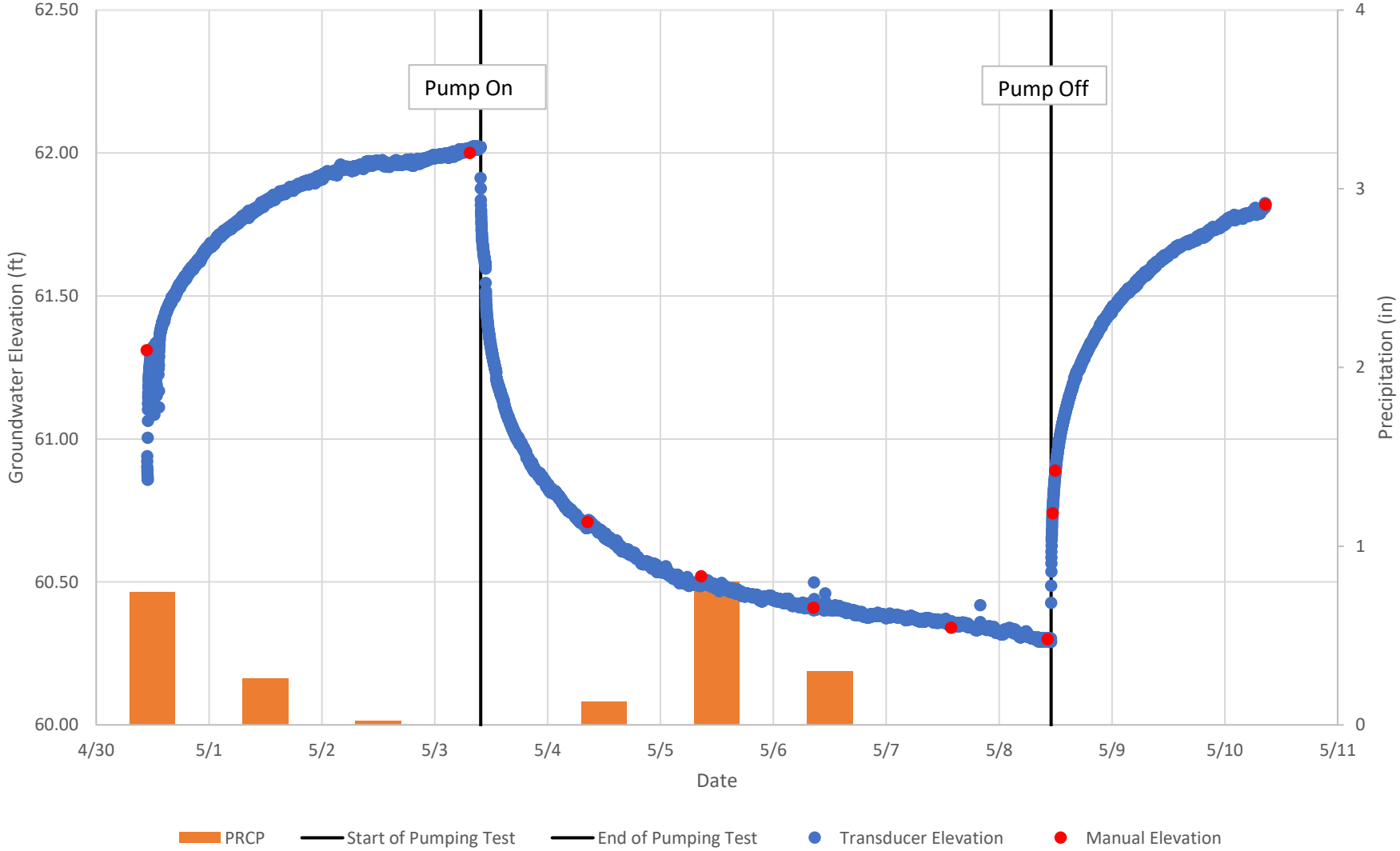


Attachment A: Figure 2

7530 Monitoring Well Hydrograph

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

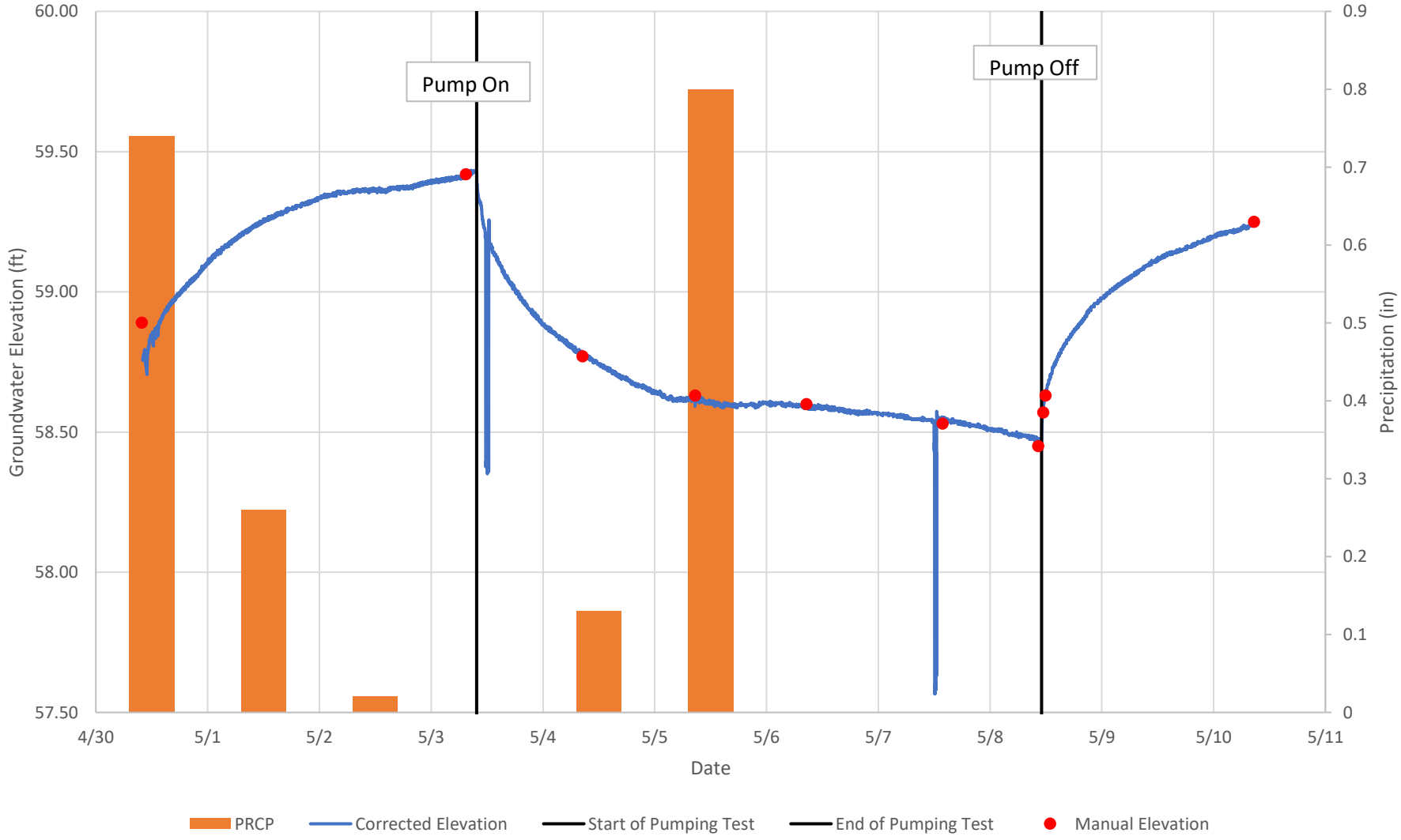


Attachment A: Figure 3

15-TH1AR Monitoring Well Hydrograph

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

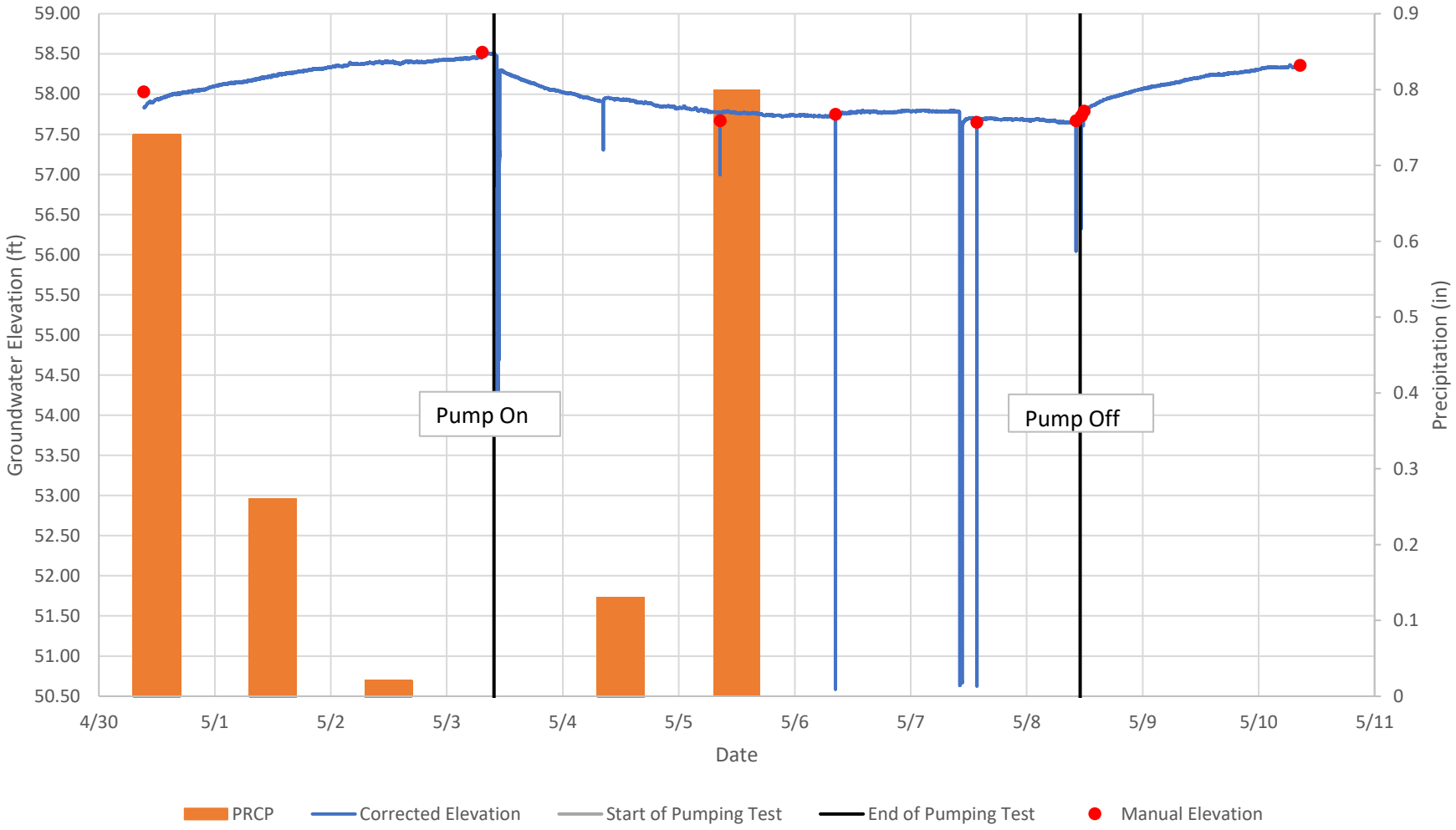


Attachment A: Figure 4

15-4779 Monitoring Well Hydrograph

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

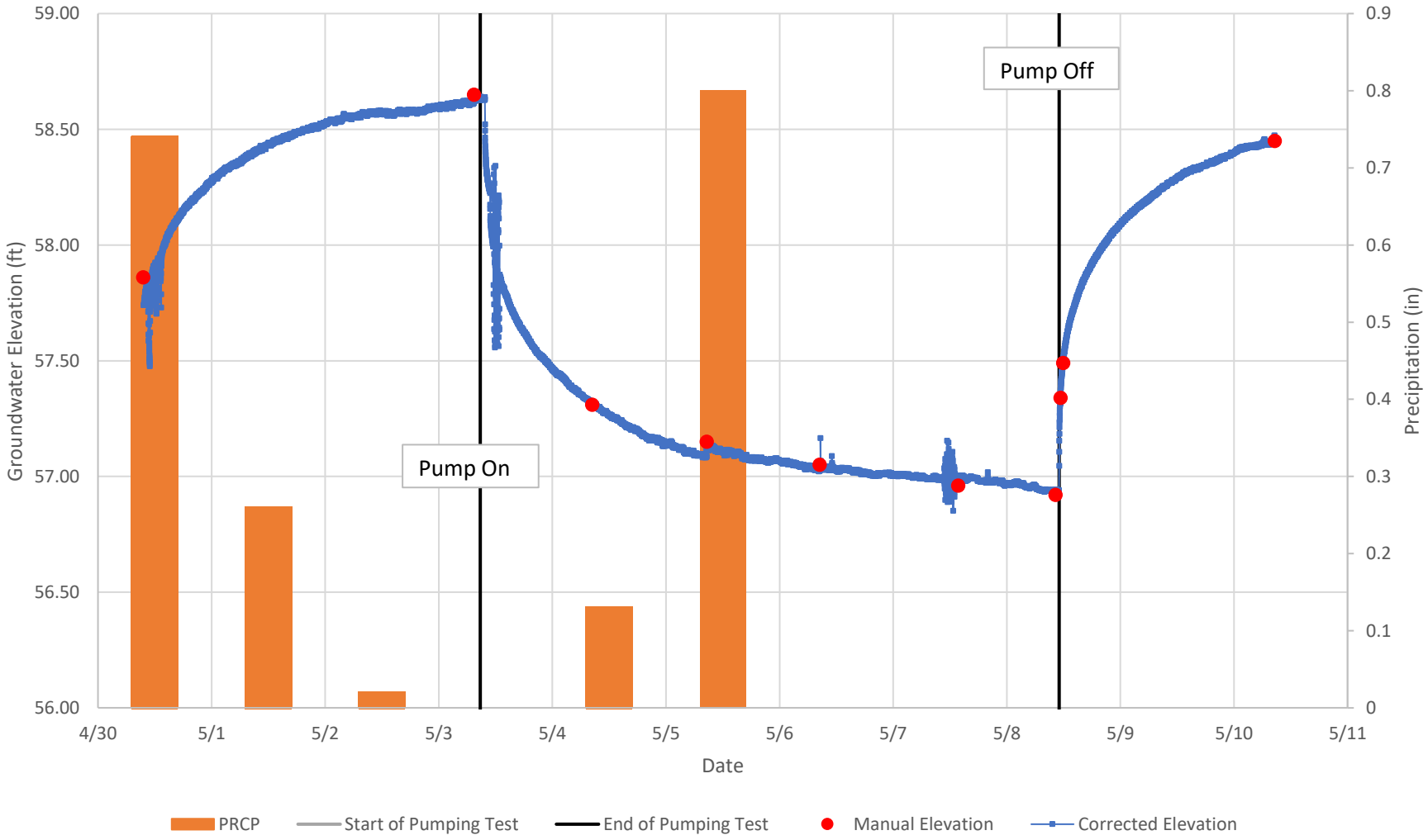


Attachment A: Figure 5

15-7533 Monitoring Well Hydrograph

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

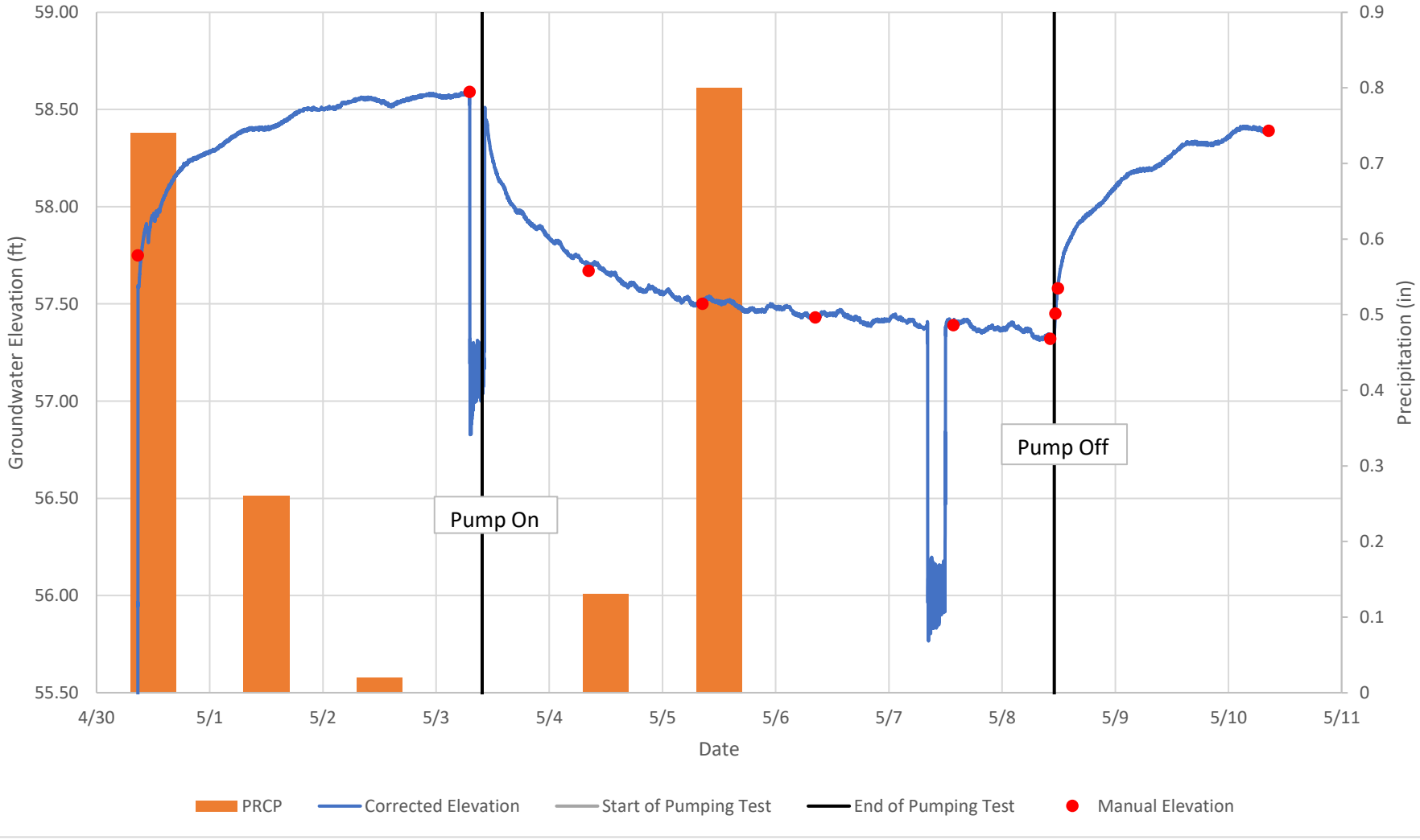


Attachment A: Figure 6

15-6144 Monitoring Well Hydrograph

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

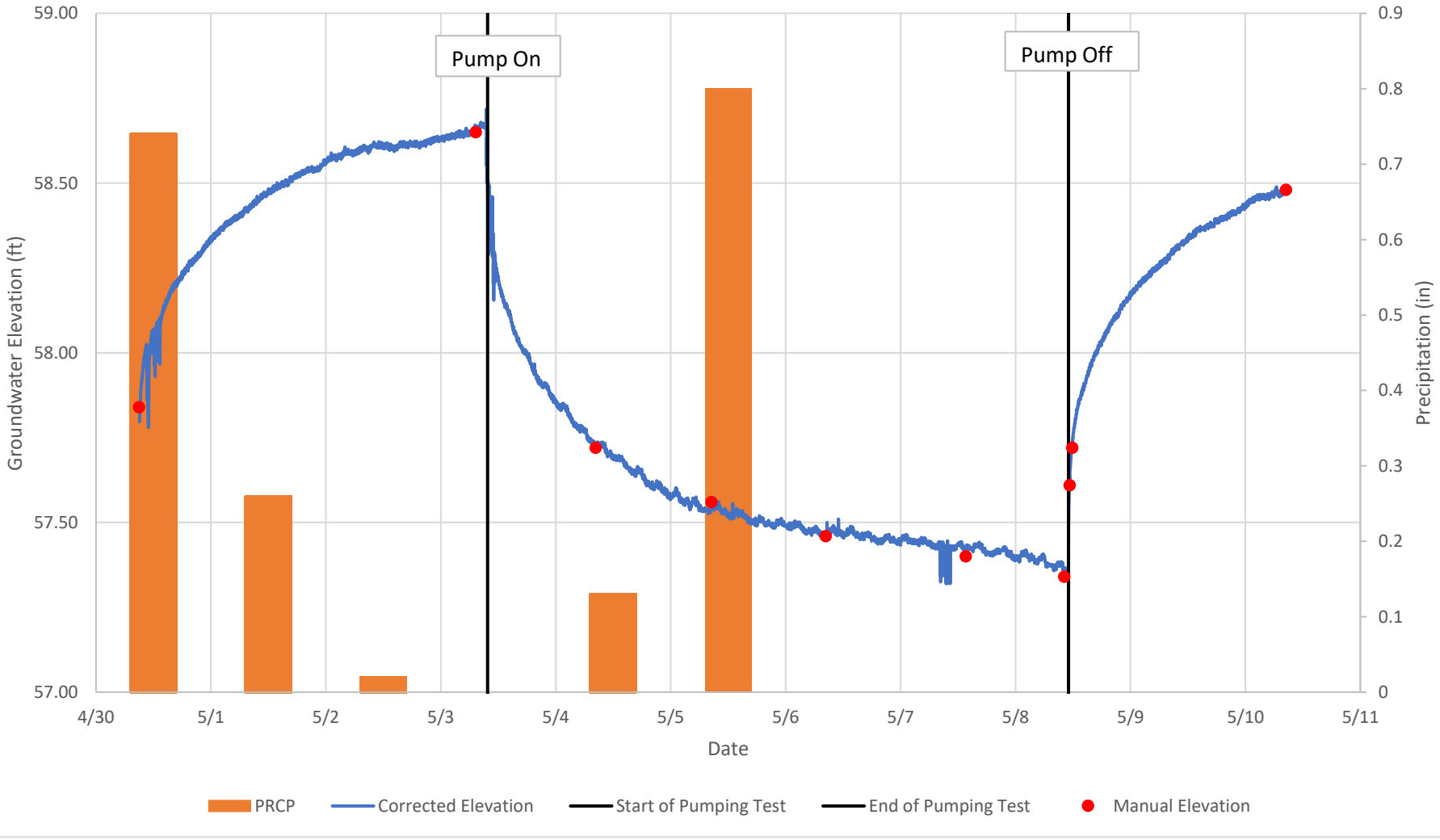


Attachment A: Figure 7

15-6522 Monitoring Well Hydrograph

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

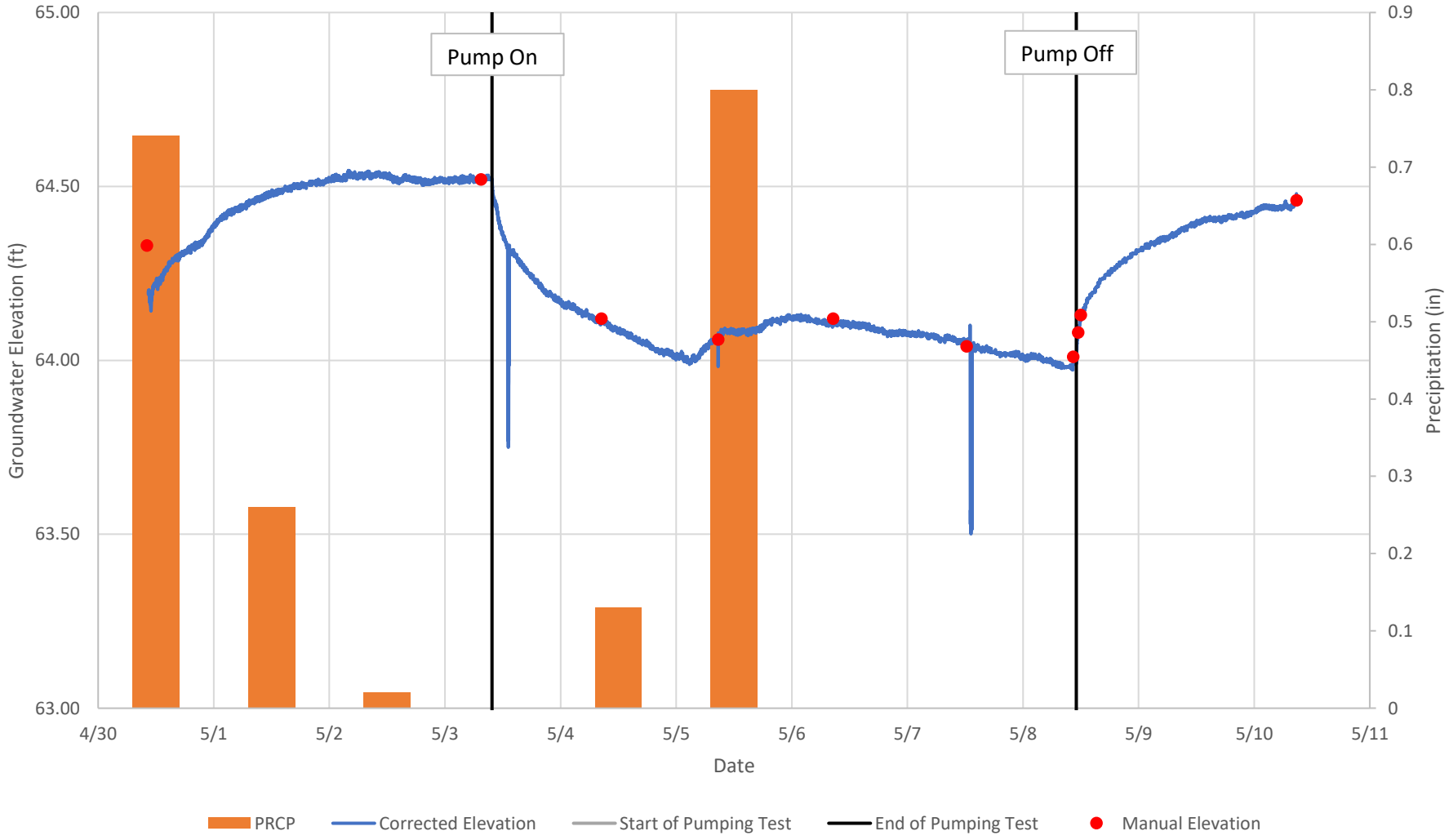


Attachment A: Figure 8

15-7535 Monitoring Well Hydrograph

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

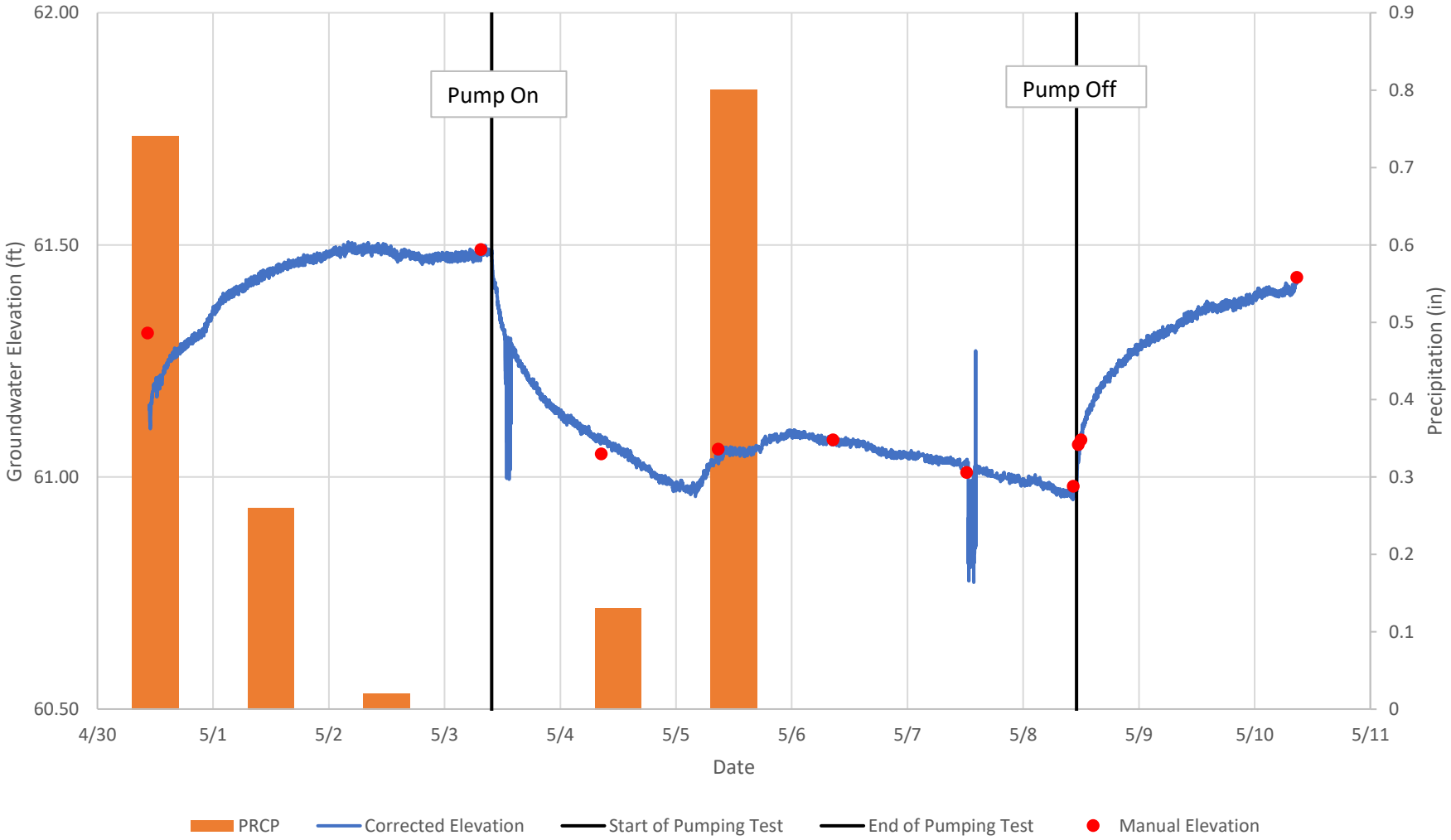


Attachment A: Figure 9

15-7532 Monitoring Well Hydrograph

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH



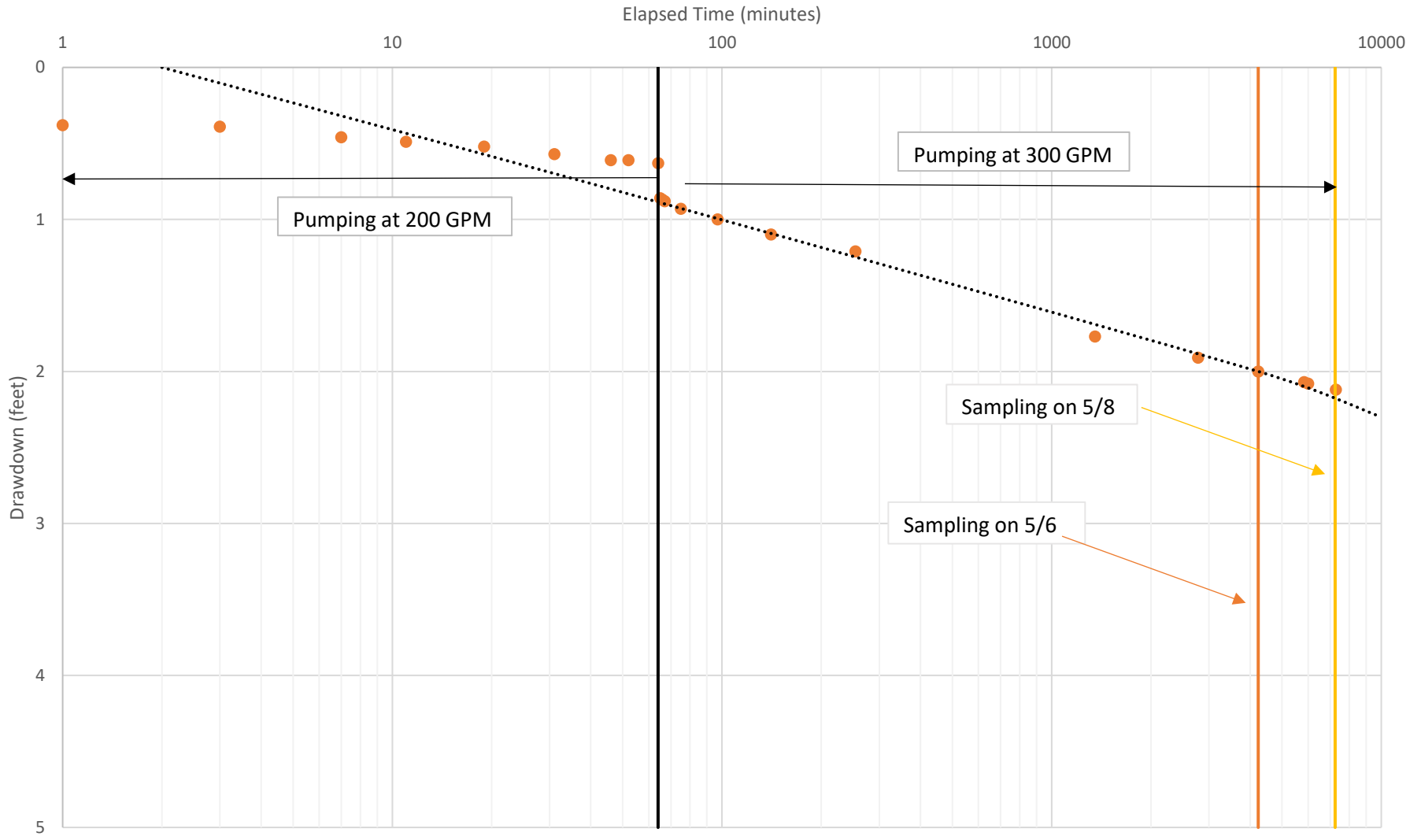
ATTACHMENT B

Attachment B: Figure 1

Haven Well Drawdown vs Elapsed Time Plot

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

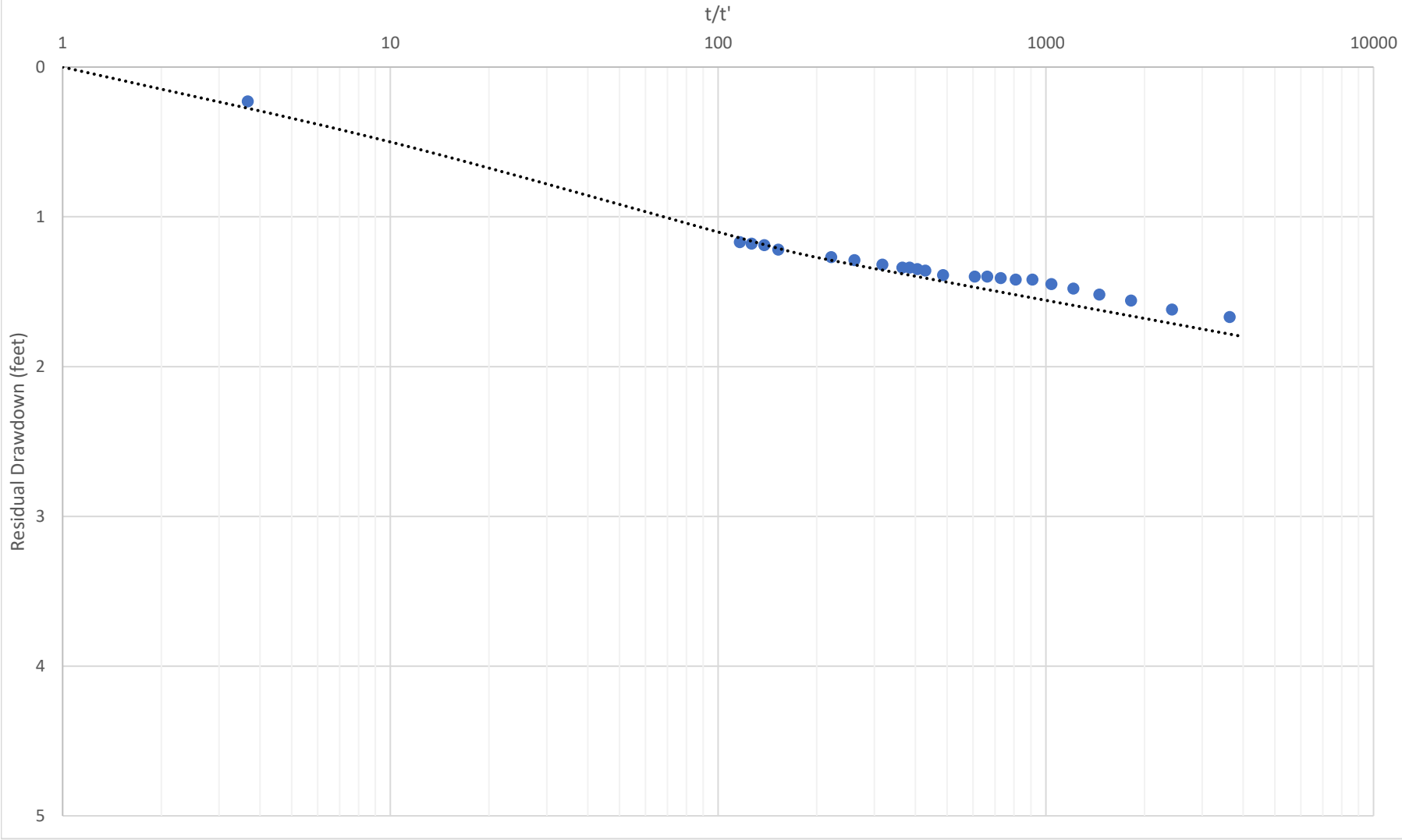


Attachment B: Figure 1A

Haven Well Residual Drawdown vs t/t' Plot

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

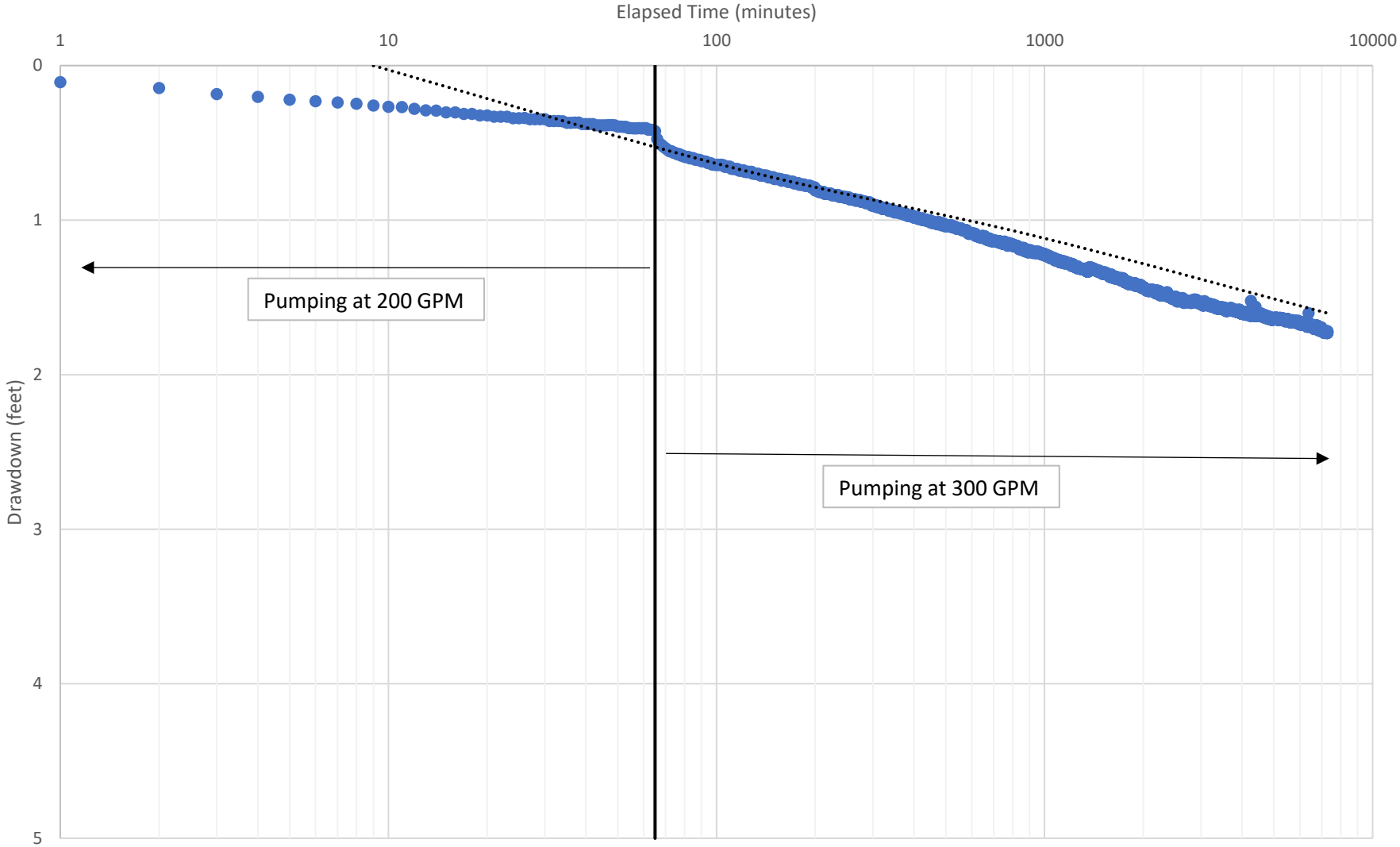


Attachment B: Figure 2

7530 Monitoring Well Drawdown vs Elapsed Time Plot

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

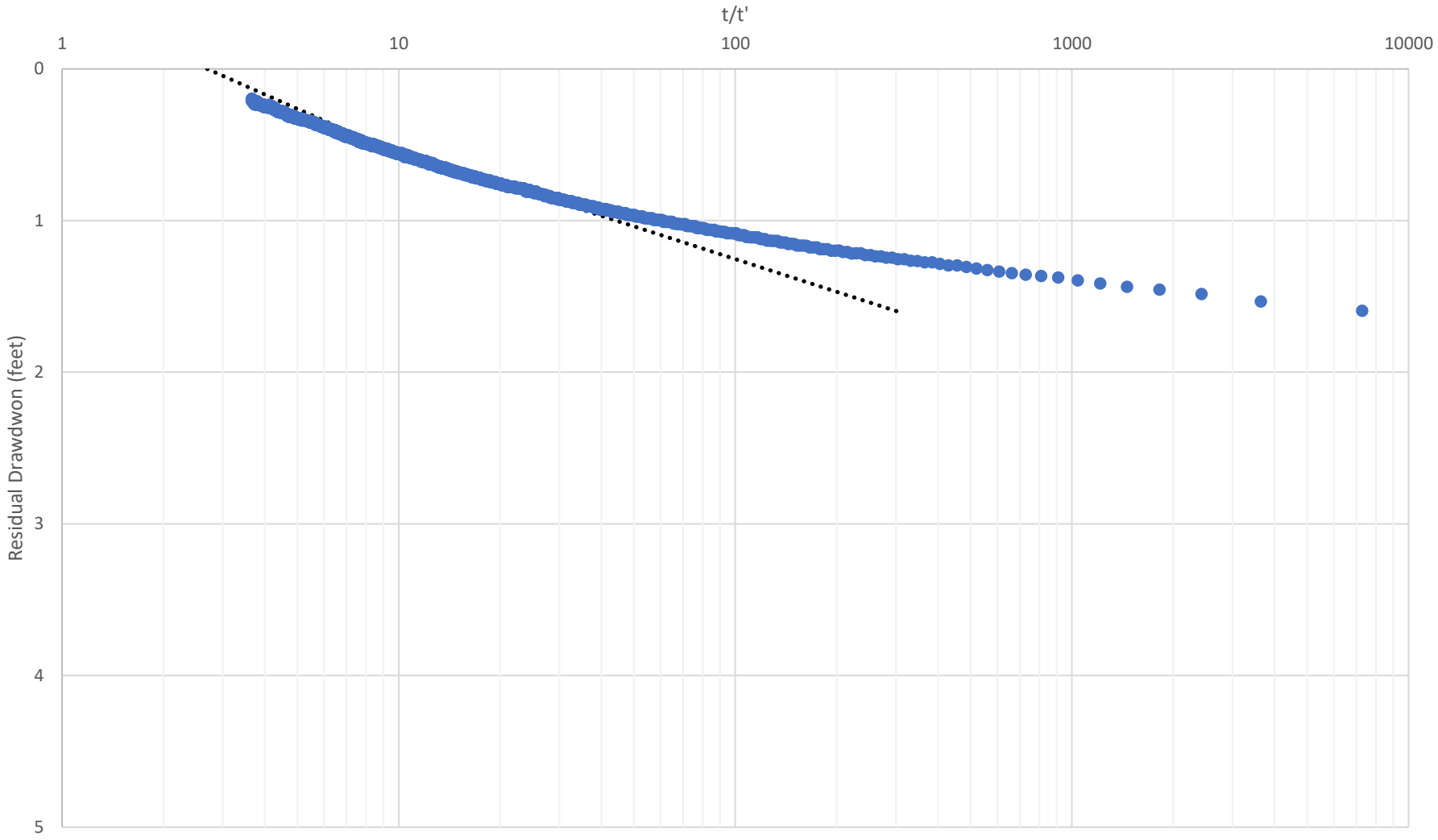


Attachment B: Figure 2A

7530 Monitoring Well Residual Drawdown vs t/t' Plot

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

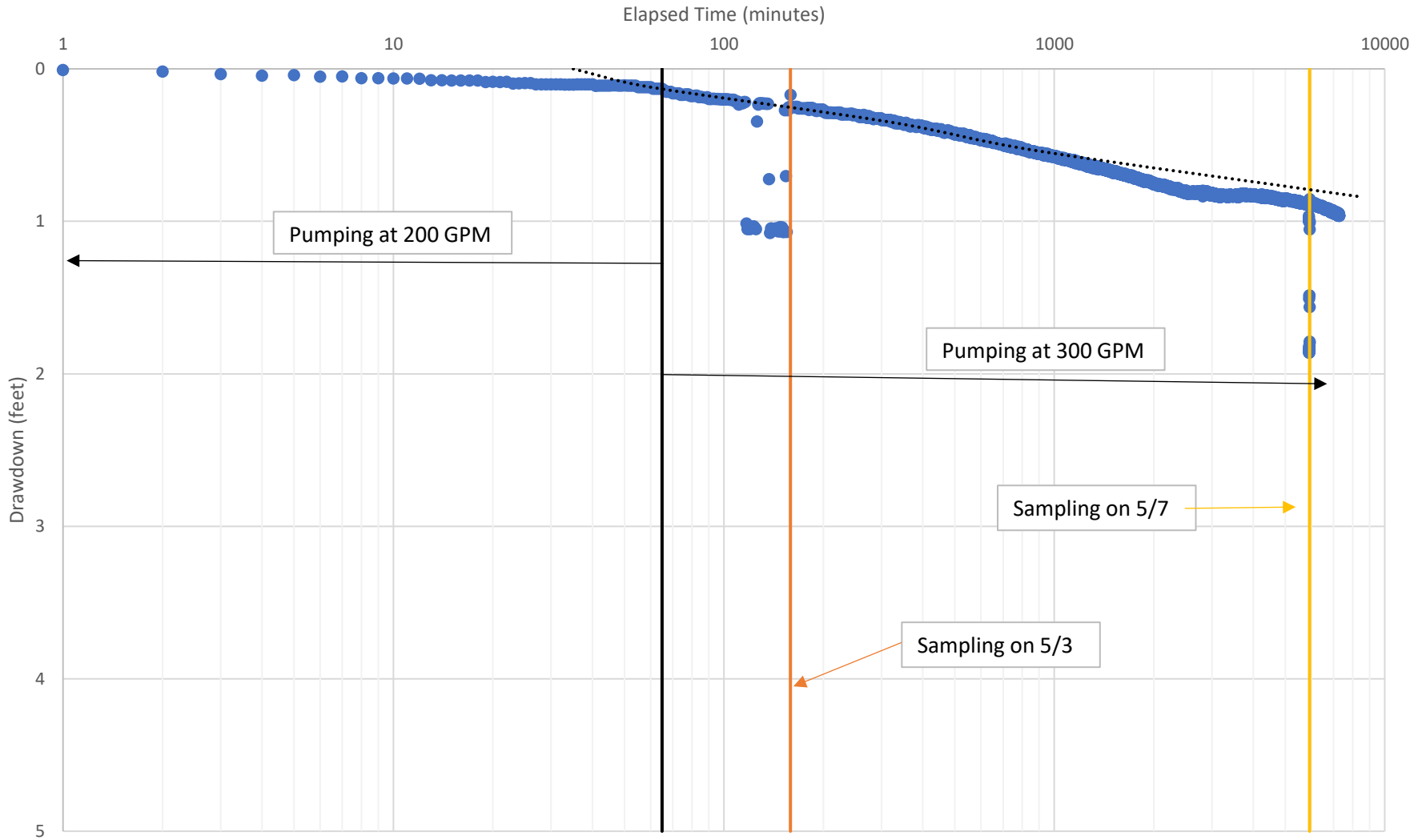


Attachment B: Figure 3

15-TH1AR Monitoring Well Drawdown vs Elapsed Time Plot

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

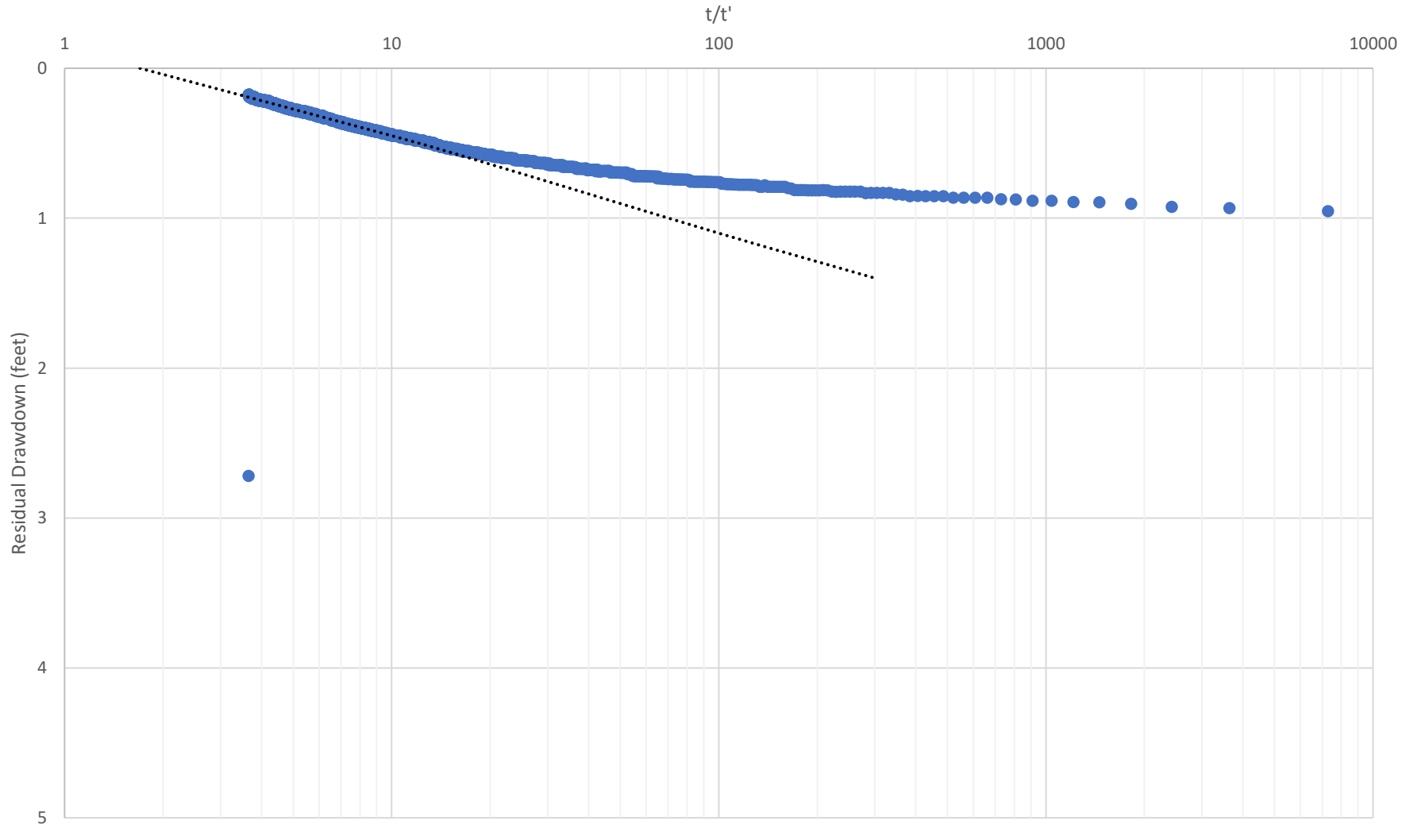


Attachment B: Figure 3A

15-TH1AR Monitoring Well Residual Drawdown vs t/t' Plot

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

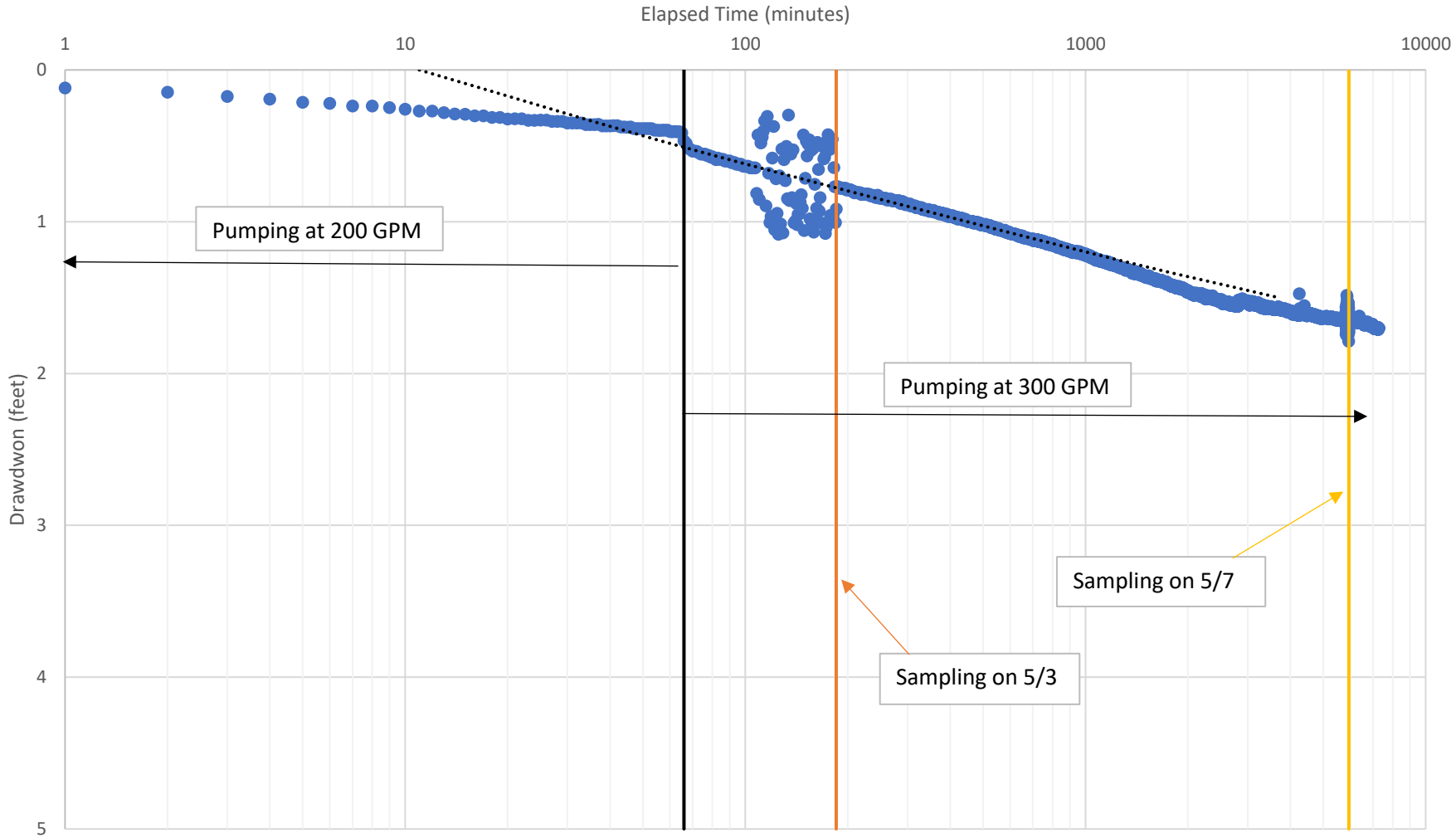


Attachment B: Figure 4

15-7533 Monitoring Well Drawdown vs Elapsed Time Plot

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

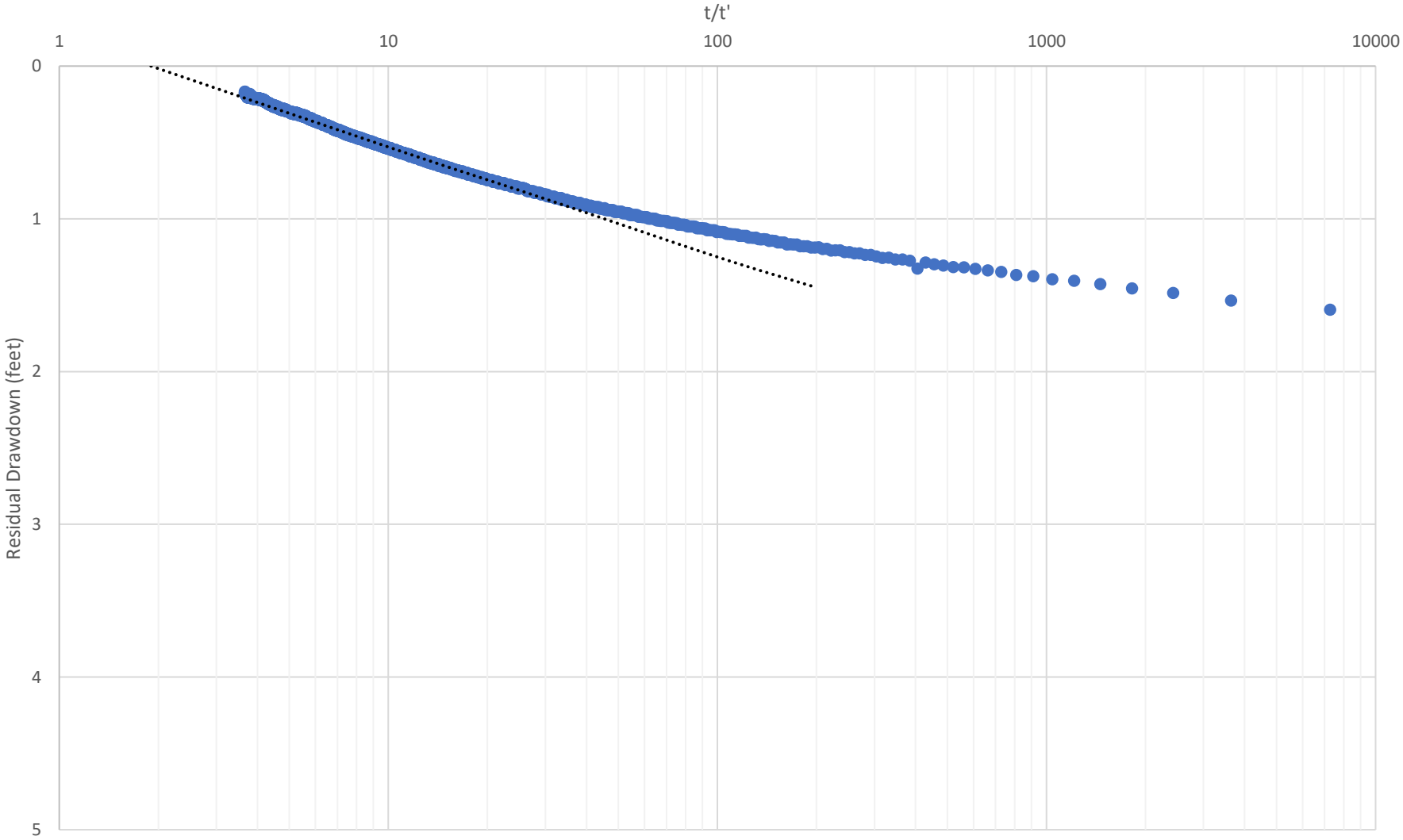


Attachment B: Figure 4A

15-7533 Monitoring Well Residual Drawdown vs t/t' Plot

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

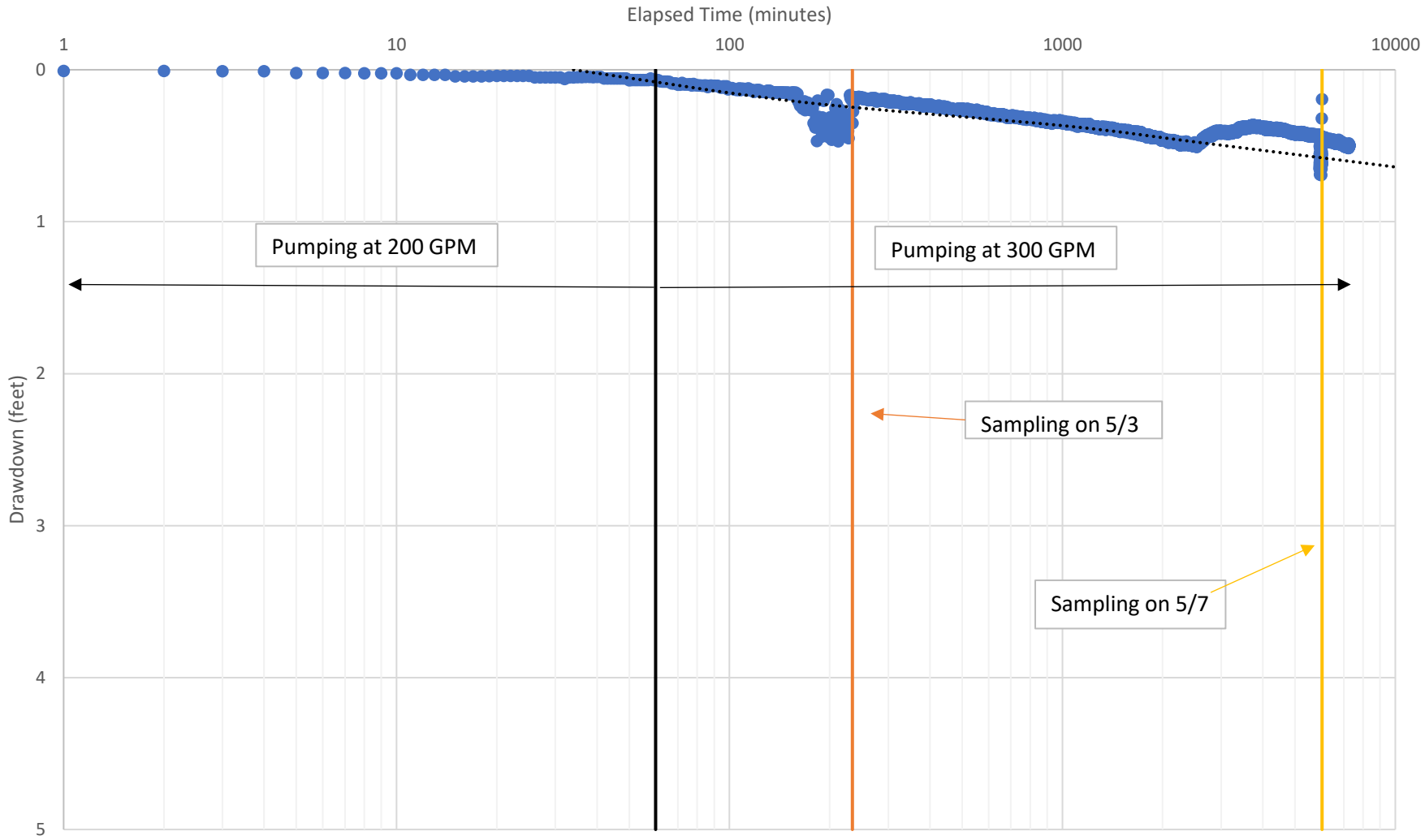


Attachment B: Figure 5

15-7532 Monitoring Well Drawdown vs Elapsed Time Plot

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH

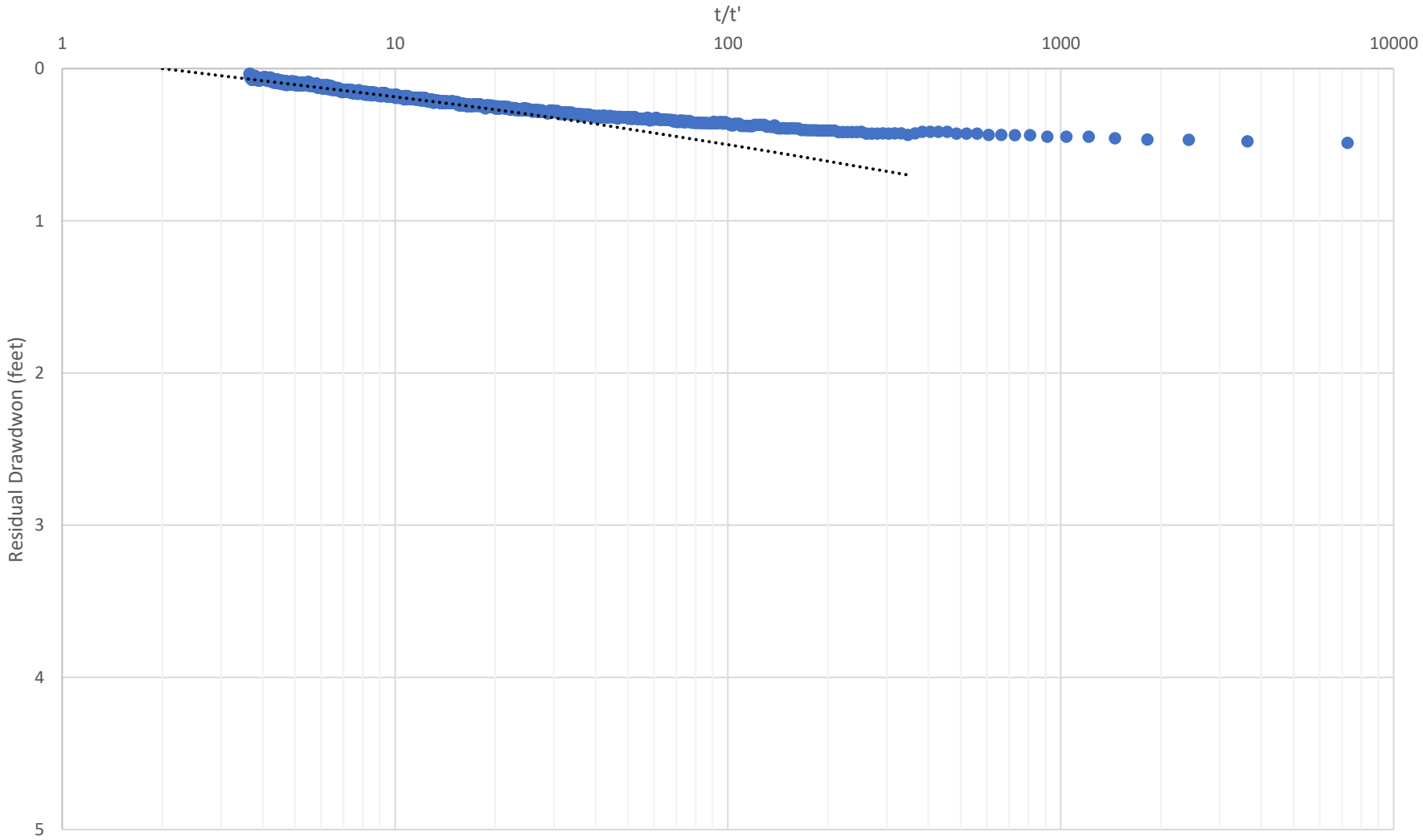


Attachment B: Figure 5A

15-7532 Monitoring Well Residual Drawdown vs t/t' Plot

Haven Well Pumping Test May 3 - May 8, 2021

Portsmouth Waterworks, Portsmouth, NH



ATTACHMENT C

ANALYTICAL REPORT

Lab Number:	L2122205
Client:	Weston & Sampson 100 International Drive Suite 152 Portsmouth, NH 03801
ATTN:	Frank Getchell
Phone:	(603) 570-6319
Project Name:	HAVEN WELL PT
Project Number:	2190120
Report Date:	05/14/21

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122205
Report Date: 05/14/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2122205-01	15-7535	WATER	PORTSMOUTH, NH	04/29/21 14:20	04/29/21
L2122205-02	15-7532	WATER	PORTSMOUTH, NH	04/29/21 16:00	04/29/21
L2122205-03	15-TH1AR	WATER	PORTSMOUTH, NH	04/29/21 13:00	04/29/21
L2122205-04	15-7533	WATER	PORTSMOUTH, NH	04/29/21 16:20	04/29/21
L2122205-05	15-6522	WATER	PORTSMOUTH, NH	04/29/21 11:10	04/29/21
L2122205-06	15-6144	WATER	PORTSMOUTH, NH	04/29/21 13:20	04/29/21
L2122205-07	PH4-4779	WATER	PORTSMOUTH, NH	04/29/21 12:00	04/29/21

Project Name:	HAVEN WELL PT	**Lab Number:**	L2122205
Project Number:	2190120	**Report Date:**	05/14/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122205
Report Date: 05/14/21

Case Narrative (continued)

Anions by Ion Chromatography

The WG1496983-3 MS recovery, performed on L2122205-01, is outside the acceptance criteria for bromide (59%); however, the associated LCS recovery is within criteria. No further action was taken.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Cristin Walker

Title: Technical Director/Representative Date: 05/14/21

METALS

Project Name: HAVEN WELL PT
Lab Number: L2122205
Project Number: 2190120
Report Date: 05/14/21

SAMPLE RESULTS

Lab ID: L2122205-01
Client ID: 15-7535
Sample Location: PORTSMOUTH, NH
Date Collected: 04/29/21 14:20
Date Received: 04/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	45.5		mg/l	0.100	--	1	05/08/21 06:08	05/11/21 21:03	EPA 3005A	1,6010D	BV
Iron, Total	0.086		mg/l	0.050	--	1	05/08/21 06:08	05/11/21 21:03	EPA 3005A	1,6010D	BV
Manganese, Total	0.588		mg/l	0.010	--	1	05/08/21 06:08	05/11/21 21:03	EPA 3005A	1,6010D	BV
Sodium, Total	24.0		mg/l	2.00	--	1	05/08/21 06:08	05/11/21 21:03	EPA 3005A	1,6010D	BV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	149		mg/l	0.660	NA	1	05/08/21 06:08	05/11/21 21:03	EPA 3005A	1,6010D	BV

Project Name: HAVEN WELL PT
Lab Number: L2122205
Project Number: 2190120
Report Date: 05/14/21

SAMPLE RESULTS

Lab ID: L2122205-02
Client ID: 15-7532
Sample Location: PORTSMOUTH, NH
Date Collected: 04/29/21 16:00
Date Received: 04/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	49.6		mg/l	0.100	--	1	05/08/21 06:08	05/11/21 21:08	EPA 3005A	1,6010D	BV
Iron, Total	ND		mg/l	0.050	--	1	05/08/21 06:08	05/11/21 21:08	EPA 3005A	1,6010D	BV
Manganese, Total	0.419		mg/l	0.010	--	1	05/08/21 06:08	05/11/21 21:08	EPA 3005A	1,6010D	BV
Sodium, Total	23.4		mg/l	2.00	--	1	05/08/21 06:08	05/11/21 21:08	EPA 3005A	1,6010D	BV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	161		mg/l	0.660	NA	1	05/08/21 06:08	05/11/21 21:08	EPA 3005A	1,6010D	BV

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122205
Report Date: 05/14/21

SAMPLE RESULTS

Lab ID: L2122205-03
Client ID: 15-TH1AR
Sample Location: PORTSMOUTH, NH
Sample Depth:
Matrix: Water

Date Collected: 04/29/21 13:00
Date Received: 04/29/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	49.5		mg/l	0.100	--	1	05/08/21 06:08	05/11/21 21:22	EPA 3005A	1,6010D	BV
Iron, Total	0.427		mg/l	0.050	--	1	05/08/21 06:08	05/11/21 21:22	EPA 3005A	1,6010D	BV
Manganese, Total	0.226		mg/l	0.010	--	1	05/08/21 06:08	05/11/21 21:22	EPA 3005A	1,6010D	BV
Sodium, Total	22.8		mg/l	2.00	--	1	05/08/21 06:08	05/11/21 21:22	EPA 3005A	1,6010D	BV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	161		mg/l	0.660	NA	1	05/08/21 06:08	05/11/21 21:22	EPA 3005A	1,6010D	BV

Project Name: HAVEN WELL PT
Lab Number: L2122205
Project Number: 2190120
Report Date: 05/14/21

SAMPLE RESULTS

Lab ID: L2122205-04
Client ID: 15-7533
Sample Location: PORTSMOUTH, NH
Date Collected: 04/29/21 16:20
Date Received: 04/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	67.4		mg/l	0.100	--	1	05/08/21 06:08	05/11/21 21:27	EPA 3005A	1,6010D	BV
Iron, Total	ND		mg/l	0.050	--	1	05/08/21 06:08	05/11/21 21:27	EPA 3005A	1,6010D	BV
Manganese, Total	0.022		mg/l	0.010	--	1	05/08/21 06:08	05/11/21 21:27	EPA 3005A	1,6010D	BV
Sodium, Total	17.0		mg/l	2.00	--	1	05/08/21 06:08	05/11/21 21:27	EPA 3005A	1,6010D	BV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	206		mg/l	0.660	NA	1	05/08/21 06:08	05/11/21 21:27	EPA 3005A	1,6010D	BV

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122205
Report Date: 05/14/21

SAMPLE RESULTS

Lab ID: L2122205-05
Client ID: 15-6522
Sample Location: PORTSMOUTH, NH
Sample Depth:
Matrix: Water

Date Collected: 04/29/21 11:10
Date Received: 04/29/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	59.6		mg/l	0.100	--	1	05/08/21 06:08	05/11/21 21:32	EPA 3005A	1,6010D	BV
Iron, Total	ND		mg/l	0.050	--	1	05/08/21 06:08	05/11/21 21:32	EPA 3005A	1,6010D	BV
Manganese, Total	0.185		mg/l	0.010	--	1	05/08/21 06:08	05/11/21 21:32	EPA 3005A	1,6010D	BV
Sodium, Total	26.2		mg/l	2.00	--	1	05/08/21 06:08	05/11/21 21:32	EPA 3005A	1,6010D	BV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	193		mg/l	0.660	NA	1	05/08/21 06:08	05/11/21 21:32	EPA 3005A	1,6010D	BV

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122205
Report Date: 05/14/21

SAMPLE RESULTS

Lab ID: L2122205-06
Client ID: 15-6144
Sample Location: PORTSMOUTH, NH
Date Collected: 04/29/21 13:20
Date Received: 04/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	23.7		mg/l	0.100	--	1	05/09/21 10:16	05/11/21 17:37	EPA 3005A	1,6010D	SV
Iron, Total	0.138		mg/l	0.050	--	1	05/09/21 10:16	05/11/21 17:37	EPA 3005A	1,6010D	SV
Manganese, Total	0.093		mg/l	0.010	--	1	05/09/21 10:16	05/11/21 17:37	EPA 3005A	1,6010D	SV
Sodium, Total	33.0		mg/l	2.00	--	1	05/09/21 10:16	05/11/21 17:37	EPA 3005A	1,6010D	SV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	112		mg/l	0.660	NA	1	05/09/21 10:16	05/11/21 17:37	EPA 3005A	1,6010D	SV

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122205
Report Date: 05/14/21

SAMPLE RESULTS

Lab ID: L2122205-07
Client ID: PH4-4779
Sample Location: PORTSMOUTH, NH
Date Collected: 04/29/21 12:00
Date Received: 04/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	1.83		mg/l	0.100	--	1	05/09/21 10:16	05/11/21 18:31	EPA 3005A	1,6010D	SV
Iron, Total	1.87		mg/l	0.050	--	1	05/09/21 10:16	05/11/21 18:31	EPA 3005A	1,6010D	SV
Manganese, Total	0.016		mg/l	0.010	--	1	05/09/21 10:16	05/11/21 18:31	EPA 3005A	1,6010D	SV
Sodium, Total	2.65		mg/l	2.00	--	1	05/09/21 10:16	05/11/21 18:31	EPA 3005A	1,6010D	SV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	6.08		mg/l	0.660	NA	1	05/09/21 10:16	05/11/21 18:31	EPA 3005A	1,6010D	SV

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122205
Report Date: 05/14/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-05 Batch: WG1495636-1										
Iron, Total	ND		mg/l	0.050	--	1	05/08/21 06:08	05/11/21 14:46	1,6010D	SV
Manganese, Total	ND		mg/l	0.010	--	1	05/08/21 06:08	05/11/21 14:46	1,6010D	SV
Sodium, Total	ND		mg/l	2.00	--	1	05/08/21 06:08	05/11/21 14:46	1,6010D	SV

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01-05 Batch: WG1495636-1										
Hardness	ND		mg/l	0.660	NA	1	05/08/21 06:08	05/11/21 14:46	1,6010D	SV

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 06-07 Batch: WG1496292-1										
Calcium, Total	ND		mg/l	0.100	--	1	05/09/21 10:16	05/11/21 17:53	1,6010D	SV
Iron, Total	ND		mg/l	0.050	--	1	05/09/21 10:16	05/11/21 17:53	1,6010D	SV
Manganese, Total	ND		mg/l	0.010	--	1	05/09/21 10:16	05/11/21 17:53	1,6010D	SV
Sodium, Total	ND		mg/l	2.00	--	1	05/09/21 10:16	05/11/21 17:53	1,6010D	SV

Prep Information

Digestion Method: EPA 3005A

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122205
Report Date: 05/14/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 06-07 Batch: WG1496292-1										
Hardness	ND		mg/l	0.660	NA	1	05/09/21 10:16	05/11/21 17:53	1,6010D	SV

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2122205

Report Date: 05/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-05 Batch: WG1495636-2								
Calcium, Total	106		-		80-120	-		
Iron, Total	96		-		80-120	-		
Manganese, Total	99		-		80-120	-		
Sodium, Total	107		-		80-120	-		
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-05 Batch: WG1495636-2								
Hardness	107		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 06-07 Batch: WG1496292-2								
Calcium, Total	101		-		80-120	-		
Iron, Total	99		-		80-120	-		
Manganese, Total	99		-		80-120	-		
Sodium, Total	106		-		80-120	-		
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 06-07 Batch: WG1496292-2								
Hardness	103		-		80-120	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122205
Report Date: 05/14/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1495636-3 QC Sample: L2121855-01 Client ID: MS Sample												
Calcium, Total	66.5	10	75.1	86		-	-		75-125	-		20
Iron, Total	6.22	1	7.00	78		-	-		75-125	-		20
Manganese, Total	0.187	0.5	0.663	95		-	-		75-125	-		20
Sodium, Total	80.0	10	88.0	80		-	-		75-125	-		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1495636-3 QC Sample: L2121855-01 Client ID: MS Sample												
Hardness	243	66.2	304	92		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 06-07 QC Batch ID: WG1496292-3 QC Sample: L2123599-21 Client ID: MS Sample												
Calcium, Total	ND	10	10.6	106		-	-		75-125	-		20
Iron, Total	0.102	1	1.08	98		-	-		75-125	-		20
Manganese, Total	ND	0.5	0.509	102		-	-		75-125	-		20
Sodium, Total	ND	10	10.8	108		-	-		75-125	-		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 06-07 QC Batch ID: WG1496292-3 QC Sample: L2123599-21 Client ID: MS Sample												
Hardness	ND	66.2	69.6	105		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122205
Report Date: 05/14/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1495636-4 QC Sample: L2121855-01 Client ID: DUP Sample						
Hardness	243	245	mg/l	1		20
Total Metals - Mansfield Lab Associated sample(s): 06-07 QC Batch ID: WG1496292-4 QC Sample: L2123599-21 Client ID: DUP Sample						
Calcium, Total	ND	ND	mg/l	NC		20
Iron, Total	0.102	ND	mg/l	NC		20
Manganese, Total	ND	ND	mg/l	NC		20
Sodium, Total	ND	ND	mg/l	NC		20

INORGANICS
&
MISCELLANEOUS

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122205
Report Date: 05/14/21

SAMPLE RESULTS

Lab ID: L2122205-01
Client ID: 15-7535
Sample Location: PORTSMOUTH, NH

Date Collected: 04/29/21 14:20
Date Received: 04/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	124.		mg CaCO3/L	2.00	NA	1	-	05/10/21 08:47	121,2320B	JB
Alkalinity, Bicarbonate	143.		mg CaCO3/L	2.00	NA	1	-	05/06/21 09:45	121,2320B	JB
pH (H)	7.4		SU	-	NA	1	-	05/04/21 18:22	121,4500H+-B	AS
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/01/21 04:58	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	0.085		mg/l	0.050	--	1	-	05/10/21 19:20	44,300.0	SH
Chloride	43.1		mg/l	0.500	--	1	-	05/10/21 19:20	44,300.0	SH
Sulfate	18.8		mg/l	1.00	--	1	-	05/10/21 19:20	44,300.0	SH

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122205
Report Date: 05/14/21

SAMPLE RESULTS

Lab ID: L2122205-02
Client ID: 15-7532
Sample Location: PORTSMOUTH, NH

Date Collected: 04/29/21 16:00
Date Received: 04/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	130.		mg CaCO3/L	2.00	NA	1	-	05/10/21 08:47	121,2320B	JB
Alkalinity, Bicarbonate	122.		mg CaCO3/L	2.00	NA	1	-	05/06/21 09:45	121,2320B	JB
pH (H)	7.6		SU	-	NA	1	-	05/04/21 18:22	121,4500H+-B	AS
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/01/21 05:00	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	0.874		mg/l	0.050	--	1	-	05/10/21 19:32	44,300.0	SH
Chloride	9.98		mg/l	0.500	--	1	-	05/10/21 19:32	44,300.0	SH
Sulfate	19.8		mg/l	1.00	--	1	-	05/10/21 19:32	44,300.0	SH

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122205
Report Date: 05/14/21

SAMPLE RESULTS

Lab ID: L2122205-03
Client ID: 15-TH1AR
Sample Location: PORTSMOUTH, NH

Date Collected: 04/29/21 13:00
Date Received: 04/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	135.		mg CaCO3/L	2.00	NA	1	-	05/10/21 08:47	121,2320B	JB
Alkalinity, Bicarbonate	124.		mg CaCO3/L	2.00	NA	1	-	05/06/21 09:45	121,2320B	JB
pH (H)	7.6		SU	-	NA	1	-	05/04/21 18:22	121,4500H+-B	AS
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/01/21 05:01	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	0.078		mg/l	0.050	--	1	-	05/10/21 23:34	44,300.0	SH
Chloride	44.4		mg/l	0.500	--	1	-	05/10/21 23:34	44,300.0	SH
Sulfate	22.2		mg/l	1.00	--	1	-	05/10/21 23:34	44,300.0	SH

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122205
Report Date: 05/14/21

SAMPLE RESULTS

Lab ID: L2122205-04
Client ID: 15-7533
Sample Location: PORTSMOUTH, NH

Date Collected: 04/29/21 16:20
Date Received: 04/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	162.		mg CaCO3/L	2.00	NA	1	-	05/10/21 08:47	121,2320B	JB
Alkalinity, Bicarbonate	149.		mg CaCO3/L	2.00	NA	1	-	05/06/21 09:45	121,2320B	JB
pH (H)	7.9		SU	-	NA	1	-	05/04/21 18:22	121,4500H+-B	AS
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/01/21 05:02	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	0.074		mg/l	0.050	--	1	-	05/10/21 23:46	44,300.0	SH
Chloride	40.4		mg/l	0.500	--	1	-	05/10/21 23:46	44,300.0	SH
Sulfate	30.7		mg/l	1.00	--	1	-	05/10/21 23:46	44,300.0	SH

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122205
Report Date: 05/14/21

SAMPLE RESULTS

Lab ID: L2122205-05
Client ID: 15-6522
Sample Location: PORTSMOUTH, NH

Date Collected: 04/29/21 11:10
Date Received: 04/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	144.		mg CaCO3/L	2.00	NA	1	-	05/10/21 08:47	121,2320B	JB
Alkalinity, Bicarbonate	138.		mg CaCO3/L	2.00	NA	1	-	05/06/21 09:45	121,2320B	JB
pH (H)	7.9		SU	-	NA	1	-	05/04/21 18:22	121,4500H+-B	AS
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/01/21 05:03	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	0.073		mg/l	0.050	--	1	-	05/10/21 23:58	44,300.0	SH
Chloride	87.0		mg/l	5.00	--	10	-	05/12/21 00:54	44,300.0	SH
Sulfate	21.7		mg/l	1.00	--	1	-	05/10/21 23:58	44,300.0	SH

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122205
Report Date: 05/14/21

SAMPLE RESULTS

Lab ID: L2122205-06
Client ID: 15-6144
Sample Location: PORTSMOUTH, NH

Date Collected: 04/29/21 13:20
Date Received: 04/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	105.		mg CaCO3/L	2.00	NA	1	-	05/10/21 08:47	121,2320B	JB
Alkalinity, Bicarbonate	102.		mg CaCO3/L	2.00	NA	1	-	05/06/21 09:45	121,2320B	JB
pH (H)	8.2		SU	-	NA	1	-	05/04/21 18:22	121,4500H+-B	AS
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/01/21 05:09	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	0.116		mg/l	0.050	--	1	-	05/11/21 00:10	44,300.0	SH
Chloride	29.8		mg/l	0.500	--	1	-	05/11/21 00:10	44,300.0	SH
Sulfate	45.5		mg/l	1.00	--	1	-	05/11/21 00:10	44,300.0	SH

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122205
Report Date: 05/14/21

SAMPLE RESULTS

Lab ID: L2122205-07
Client ID: PH4-4779
Sample Location: PORTSMOUTH, NH

Date Collected: 04/29/21 12:00
Date Received: 04/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	6.40		mg CaCO3/L	2.00	NA	1	-	05/10/21 08:47	121,2320B	JB
Alkalinity, Bicarbonate	6.90		mg CaCO3/L	2.00	NA	1	-	05/06/21 09:45	121,2320B	JB
pH (H)	6.5		SU	-	NA	1	-	05/04/21 18:22	121,4500H+-B	AS
Nitrogen, Nitrate	0.378		mg/l	0.100	--	1	-	05/01/21 05:10	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	ND		mg/l	0.050	--	1	-	05/11/21 00:22	44,300.0	SH
Chloride	1.68		mg/l	0.500	--	1	-	05/11/21 00:22	44,300.0	SH
Sulfate	3.00		mg/l	1.00	--	1	-	05/11/21 00:22	44,300.0	SH

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122205
Report Date: 05/14/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01-07 Batch: WG1493132-1										
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/01/21 05:54	121,4500NO3-F	MR
General Chemistry - Westborough Lab for sample(s): 01-07 Batch: WG1495179-1										
Alkalinity, Bicarbonate	ND		mg CaCO3/L	2.00	NA	1	-	05/06/21 09:45	121,2320B	JB
General Chemistry - Westborough Lab for sample(s): 01-07 Batch: WG1496632-1										
Alkalinity, Total	ND		mg CaCO3/L	2.00	NA	1	-	05/10/21 08:47	121,2320B	JB
Anions by Ion Chromatography - Westborough Lab for sample(s): 01-07 Batch: WG1496983-1										
Bromide	ND		mg/l	0.050	--	1	-	05/10/21 18:32	44,300.0	SH
Chloride	ND		mg/l	0.500	--	1	-	05/10/21 18:32	44,300.0	SH
Sulfate	ND		mg/l	1.00	--	1	-	05/10/21 18:32	44,300.0	SH
Anions by Ion Chromatography - Westborough Lab for sample(s): 05 Batch: WG1497556-1										
Chloride	ND		mg/l	0.500	--	1	-	05/11/21 18:51	44,300.0	SH

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2122205

Report Date: 05/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-07 Batch: WG1493132-2								
Nitrogen, Nitrate	96		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01-07 Batch: WG1494343-1								
pH	101		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01-07 Batch: WG1496632-2								
Alkalinity, Total	107		-		90-110	-		10
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01-07 Batch: WG1496983-2								
Bromide	92		-		90-110	-		
Chloride	97		-		90-110	-		
Sulfate	98		-		90-110	-		
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 05 Batch: WG1497556-2								
Chloride	108		-		90-110	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122205
Report Date: 05/14/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-07 QC Batch ID: WG1493132-4 QC Sample: L2122201-04 Client ID: MS Sample												
Nitrogen, Nitrate	ND	4	3.81	95		-	-		83-113	-		17
General Chemistry - Westborough Lab Associated sample(s): 01-07 QC Batch ID: WG1496632-4 QC Sample: L2122066-14 Client ID: MS Sample												
Alkalinity, Total	387	100	495	108		-	-		86-116	-		10
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01-07 QC Batch ID: WG1496983-3 QC Sample: L2122205-01 Client ID: 15-7535												
Bromide	0.085	0.4	0.322	**59**	Q	-	-		90-110	-		20
Chloride	43.1	4	47.5	108		-	-		90-110	-		18
Sulfate	18.8	8	27.5	109		-	-		90-110	-		20
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 05 QC Batch ID: WG1497556-3 WG1497556-4 QC Sample: L2122184-03 Client ID: MS Sample												
Chloride	34.6	4	37.7	**79**	Q	37.7	**77**	Q	90-110	1		18

Lab Duplicate Analysis

Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122205
Report Date: 05/14/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-07 QC Batch ID: WG1493132-3 QC Sample: L2122201-04 Client ID: DUP Sample						
Nitrogen, Nitrate	ND	ND	mg/l	NC		17
General Chemistry - Westborough Lab Associated sample(s): 01-07 QC Batch ID: WG1494343-2 QC Sample: L2122205-01 Client ID: 15-7535						
pH (H)	7.4	7.3	SU	1		5
General Chemistry - Westborough Lab Associated sample(s): 01-07 QC Batch ID: WG1495179-2 QC Sample: L2121953-08 Client ID: DUP Sample						
Alkalinity, Bicarbonate	1030	955	mg CaCO3/L	8		9
General Chemistry - Westborough Lab Associated sample(s): 01-07 QC Batch ID: WG1496632-3 QC Sample: L2122066-14 Client ID: DUP Sample						
Alkalinity, Total	387	388	mg CaCO3/L	0		10
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01-07 QC Batch ID: WG1496983-4 QC Sample: L2122205-02 Client ID: 15-7532						
Bromide	0.874	0.856	mg/l	2		20
Chloride	9.98	9.71	mg/l	3		18
Sulfate	19.8	19.6	mg/l	1		20

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122205
Report Date: 05/14/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2122205-01A	Plastic 250ml unpreserved/No Headspace	A	NA		5.8	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)
L2122205-01B	Plastic 250ml unpreserved	A	7	7	5.8	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),BR-300(28),PH-4500(.01)
L2122205-01C	Plastic 250ml HNO3 preserved	A	<2	<2	5.8	Y	Absent		FE-TI(180),MN-TI(180),NA-TI(180),HARDT(180),CA-TI(180)
L2122205-02A	Plastic 250ml unpreserved/No Headspace	A	NA		5.8	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)
L2122205-02B	Plastic 250ml unpreserved	A	7	7	5.8	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),BR-300(28),PH-4500(.01)
L2122205-02C	Plastic 250ml HNO3 preserved	A	<2	<2	5.8	Y	Absent		FE-TI(180),MN-TI(180),HARDT(180),NA-TI(180),CA-TI(180)
L2122205-03A	Plastic 250ml unpreserved/No Headspace	A	NA		5.8	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)
L2122205-03B	Plastic 250ml unpreserved	A	7	7	5.8	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),PH-4500(.01),BR-300(28)
L2122205-03C	Plastic 250ml HNO3 preserved	A	<2	<2	5.8	Y	Absent		MN-TI(180),FE-TI(180),CA-TI(180),NA-TI(180),HARDT(180)
L2122205-04A	Plastic 250ml unpreserved/No Headspace	A	NA		5.8	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)
L2122205-04B	Plastic 250ml unpreserved	A	7	7	5.8	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),PH-4500(.01),BR-300(28)
L2122205-04C	Plastic 250ml HNO3 preserved	A	<2	<2	5.8	Y	Absent		FE-TI(180),MN-TI(180),HARDT(180),NA-TI(180),CA-TI(180)
L2122205-05A	Plastic 250ml unpreserved/No Headspace	A	NA		5.8	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)
L2122205-05B	Plastic 250ml unpreserved	A	7	7	5.8	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),BR-300(28),PH-4500(.01)
L2122205-05C	Plastic 250ml HNO3 preserved	A	<2	<2	5.8	Y	Absent		MN-TI(180),FE-TI(180),HARDT(180),CA-TI(180),NA-TI(180)
L2122205-06A	Plastic 250ml unpreserved/No Headspace	A	NA		5.8	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)
L2122205-06B	Plastic 250ml unpreserved	A	7	7	5.8	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),BR-300(28),PH-4500(.01)
L2122205-06C	Plastic 250ml HNO3 preserved	A	<2	<2	5.8	Y	Absent		FE-TI(180),MN-TI(180),HARDT(180),NA-TI(180),CA-TI(180)
L2122205-07A	Plastic 250ml unpreserved/No Headspace	A	NA		5.8	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)

*Values in parentheses indicate holding time in days

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122205
Report Date: 05/14/21

Container Information

Container ID	*Container Type*	*Cooler*	*Initial pH*	*Final pH*	*Temp deg C*	*Pres*	*Seal*	*Frozen Date/Time*	*Analysis(*)*
L2122205-07B	Plastic 250ml unpreserved	A	7	7	5.8	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),BR-300(28),PH-4500(.01)
L2122205-07C	Plastic 250ml HNO3 preserved	A	<2	<2	5.8	Y	Absent		FE-TI(180),MN-TI(180),HARDT(180),NA-TI(180),CA-TI(180)

*Values in parentheses indicate holding time in days

Project Name:	HAVEN WELL PT	**Lab Number:**	L2122205
Project Number:	2190120	**Report Date:**	05/14/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	HAVEN WELL PT	**Lab Number:**	L2122205
Project Number:	2190120	**Report Date:**	05/14/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report

Project Name:	HAVEN WELL PT	**Lab Number:**	L2122205
Project Number:	2190120	**Report Date:**	05/14/21

Data Qualifiers

the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Report Format: Data Usability Report

Project Name:	HAVEN WELL PT	**Lab Number:**	L2122205
Project Number:	2190120	**Report Date:**	05/14/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Serial_No:05142111:36

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL

8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Date Rec'd in Lab: 4/29/21

ALPHA Job #: L2122205

Client Information

Client: Weston & Sampson
Address: 55 Walkers Brook Dr, Reading MA
Phone: 978-532-1900
Email: Getchell.Frank@wseinc.com

Additional Project Information:

Project Information

Project Name: Haven Well PT
Project Location: Portsmouth NH
Project #: 219 0120
Project Manager:
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Report Information - Data Deliverables

☐ ADEx ☒ EMAIL

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☐ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program ______ Criteria ______

ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☐ PCB ☐ PEST; TPH: ☐ Quant Only ☐ Fingerprint; Bicarbonate Alk. + Total Alk (SM2320); Bromide, sulfate, chloride, Nitrate Nitrogen (EPA300); pH-Hydrogen Ion (SM4500); Calcium, iron, Hardness, manganese, sodium (EPA 6010)

SAMPLE INFO — Filtration: ☐ Field ☐ Lab to do; Preservation: ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Bicarbonate Alk. + Total Alk (SM2320)	Bromide, sulfate	chloride	Nitrate Nitrogen (EPA300)	pH-Hydrogen Ion (SM4500)	Calcium, iron, Hardness, manganese, sodium (EPA 6010)	Sample Comments	Total # Bottles
22205-01	15-7535	4/29/21	1420	GW	JAG	X	X	X	X	X	X		
-02	15-7532	↓	1600	↓	↓	↓	↓	↓	↓	↓	↓		
-03	15-TH1AR	↓	1300	↓	↓	↓	↓	↓	↓	↓	↓		
-04	15-7533	↓	1620	↓	↓	↓	↓	↓	↓	↓	↓		
-05	15-6522	↓	1110	↓	↓	↓	↓	↓	↓	↓	↓		
-06	15-6144	↓	1320	↓	↓	↓	↓	↓	↓	↓	↓		
-07	PH4-4799	↓	1200	↓	↓	↓	↓	↓	↓	↓	↓		

Container Type
Preservative

Container Type: P= Plastic, A= Amber glass, V= Vial, G= Glass, B= Bacteria cup, C= Cube, O= Other, E= Encore, D= BOD Bottle

Preservative: A= None, B= HCl, C= HNO_3, D= H_2SO_4, E= NaOH, F= MeOH, G= $NaHSO_4$, H = $Na_2S_2O_3$, I= Ascorbic Acid, J = NH_4Cl, K= Zn Acetate, O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	4/29/21 1645	[signature] AAL	4/29/21 1645
[signature] AAL	4/29/21 1700	R Maesto	4/29/21 1700
Rob Maesto	4/29/21 1930	[signature]	4/29/21 1930

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L2122771
Client:	Weston & Sampson 100 International Drive Suite 152 Portsmouth, NH 03801
ATTN:	Frank Getchell
Phone:	(603) 570-6319
Project Name:	HAVEN WELL PT
Project Number:	2190120
Report Date:	05/20/21

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122771
Report Date: 05/20/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2122771-01	15-7535	WATER	PORTSMOUTH, NH	05/03/21 13:20	05/03/21
L2122771-02	15-7532	WATER	PORTSMOUTH, NH	05/03/21 13:45	05/03/21
L2122771-03	15-TH1AR	WATER	PORTSMOUTH, NH	05/03/21 12:25	05/03/21
L2122771-04	15-7533	WATER	PORTSMOUTH, NH	05/03/21 12:50	05/03/21
L2122771-05	15-6522	WATER	PORTSMOUTH, NH	05/03/21 11:10	05/03/21
L2122771-06	15-6144	WATER	PORTSMOUTH, NH	05/03/21 10:10	05/03/21
L2122771-07	PH4-4779	WATER	PORTSMOUTH, NH	05/03/21 10:45	05/03/21
L2122771-08	HAVEN WELL	WATER	PORTSMOUTH, NH	05/03/21 12:00	05/03/21
L2122771-09	TB-01	WATER	PORTSMOUTH, NH	05/03/21 00:00	05/03/21
L2122771-10	FB-01	WATER	PORTSMOUTH, NH	05/03/21 12:05	05/03/21

Project Name:	HAVEN WELL PT	**Lab Number:**	L2122771
Project Number:	2190120	**Report Date:**	05/20/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	HAVEN WELL PT	**Lab Number:**	L2122771
Project Number:	2190120	**Report Date:**	05/20/21

Case Narrative (continued)

Sample Receipt

The analyses performed were specified by the client.

L2122771-07: The sample identified as "PH4-4799" on the chain of custody was identified as "PH4-4779" on the container label. At the client's request, the sample is reported as "PH4-4779".

Perfluorinated Alkyl Acids by EPA 533

L2122771-08: The sample was re-analyzed on dilution in order to quantiitate the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range.

Alkalinity, Total

WG1498791: A Matrix Spike and Laboratory Duplicate were prepared with the sample batch, however, the native sample was not available for reporting; therefore, the results could not be reported.

Alkalinity, Bicarbonate

WG1498809: A Laboratory Duplicate was prepared with the sample batch, however, the native sample required re-analysis; therefore, the result could not be reported.

Anions by Ion Chromatography

The WG1498655-3 MS recovery, performed on L2122771-01, is outside the acceptance criteria for bromide (85%); however, the associated LCS recovery is within criteria. No further action was taken.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative Date: 05/20/21

ORGANICS

VOLATILES

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-08
Client ID: HAVEN WELL
Sample Location: PORTSMOUTH, NH
Date Collected: 05/03/21 12:00
Date Received: 05/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 05/12/21 02:09
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	--	1
1,1-Dichloroethane	ND		ug/l	0.75	--	1
Chloroform	ND		ug/l	0.75	--	1
Carbon tetrachloride	ND		ug/l	0.50	--	1
1,2-Dichloropropane	ND		ug/l	1.8	--	1
Dibromochloromethane	ND		ug/l	0.50	--	1
1,1,2-Trichloroethane	ND		ug/l	0.75	--	1
Tetrachloroethene	ND		ug/l	0.50	--	1
Chlorobenzene	ND		ug/l	0.50	--	1
Trichlorofluoromethane	ND		ug/l	2.5	--	1
1,2-Dichloroethane	ND		ug/l	0.50	--	1
1,1,1-Trichloroethane	ND		ug/l	0.50	--	1
Bromodichloromethane	ND		ug/l	0.50	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	2.5	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	0.75	--	1
Ethylbenzene	ND		ug/l	0.50	--	1
Chloromethane	ND		ug/l	2.5	--	1
Bromomethane	ND		ug/l	1.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	0.50	--	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	--	1

Project Name: HAVEN WELL PT **Lab Number:** L2122771

Project Number: 2190120 **Report Date:** 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-08 Date Collected: 05/03/21 12:00

Client ID: HAVEN WELL Date Received: 05/03/21

Sample Location: PORTSMOUTH, NH Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2-Dichloroethene, Total	ND		ug/l	0.50	--	1
Trichloroethene	ND		ug/l	0.50	--	1
1,2-Dichlorobenzene	ND		ug/l	2.5	--	1
1,3-Dichlorobenzene	ND		ug/l	2.5	--	1
1,4-Dichlorobenzene	ND		ug/l	2.5	--	1
Methyl tert butyl ether	ND		ug/l	1.0	--	1
p/m-Xylene	ND		ug/l	1.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	--	1
Dibromomethane	ND		ug/l	5.0	--	1
1,2,3-Trichloropropane	ND		ug/l	5.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	5.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	5.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.5	--	1
Tetrahydrofuran	ND		ug/l	5.0	--	1
2,2-Dichloropropane	ND		ug/l	2.5	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Bromobenzene	ND		ug/l	2.5	--	1
n-Butylbenzene	ND		ug/l	0.50	--	1
sec-Butylbenzene	ND		ug/l	0.50	--	1
tert-Butylbenzene	ND		ug/l	2.5	--	1
o-Chlorotoluene	ND		ug/l	2.5	--	1
p-Chlorotoluene	ND		ug/l	2.5	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1
Isopropylbenzene	ND		ug/l	0.50	--	1
p-Isopropyltoluene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	2.5	--	1
n-Propylbenzene	ND		ug/l	0.50	--	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	--	1

Project Name: HAVEN WELL PT **Lab Number:** L2122771

Project Number: 2190120 **Report Date:** 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-08 Date Collected: 05/03/21 12:00

Client ID: HAVEN WELL Date Received: 05/03/21

Sample Location: PORTSMOUTH, NH Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2,4-Trichlorobenzene	ND		ug/l	2.5	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	--	1
1,3,5-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	--	1
Ethyl ether	ND		ug/l	2.5	--	1
Isopropyl Ether	ND		ug/l	2.0	--	1
Tert-Butyl Alcohol	ND		ug/l	10	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	99		70-130

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-09
Client ID: TB-01
Sample Location: PORTSMOUTH, NH
Date Collected: 05/03/21 00:00
Date Received: 05/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 05/11/21 19:54
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	--	1
1,1-Dichloroethane	ND		ug/l	0.75	--	1
Chloroform	ND		ug/l	0.75	--	1
Carbon tetrachloride	ND		ug/l	0.50	--	1
1,2-Dichloropropane	ND		ug/l	1.8	--	1
Dibromochloromethane	ND		ug/l	0.50	--	1
1,1,2-Trichloroethane	ND		ug/l	0.75	--	1
Tetrachloroethene	ND		ug/l	0.50	--	1
Chlorobenzene	ND		ug/l	0.50	--	1
Trichlorofluoromethane	ND		ug/l	2.5	--	1
1,2-Dichloroethane	ND		ug/l	0.50	--	1
1,1,1-Trichloroethane	ND		ug/l	0.50	--	1
Bromodichloromethane	ND		ug/l	0.50	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	2.5	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	0.75	--	1
Ethylbenzene	ND		ug/l	0.50	--	1
Chloromethane	ND		ug/l	2.5	--	1
Bromomethane	ND		ug/l	1.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	0.50	--	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	--	1

Project Name: HAVEN WELL PT **Lab Number:** L2122771

Project Number: 2190120 **Report Date:** 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-09 Date Collected: 05/03/21 00:00

Client ID: TB-01 Date Received: 05/03/21

Sample Location: PORTSMOUTH, NH Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2-Dichloroethene, Total	ND		ug/l	0.50	--	1
Trichloroethene	ND		ug/l	0.50	--	1
1,2-Dichlorobenzene	ND		ug/l	2.5	--	1
1,3-Dichlorobenzene	ND		ug/l	2.5	--	1
1,4-Dichlorobenzene	ND		ug/l	2.5	--	1
Methyl tert butyl ether	ND		ug/l	1.0	--	1
p/m-Xylene	ND		ug/l	1.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	--	1
Dibromomethane	ND		ug/l	5.0	--	1
1,2,3-Trichloropropane	ND		ug/l	5.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	5.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	5.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.5	--	1
Tetrahydrofuran	ND		ug/l	5.0	--	1
2,2-Dichloropropane	ND		ug/l	2.5	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Bromobenzene	ND		ug/l	2.5	--	1
n-Butylbenzene	ND		ug/l	0.50	--	1
sec-Butylbenzene	ND		ug/l	0.50	--	1
tert-Butylbenzene	ND		ug/l	2.5	--	1
o-Chlorotoluene	ND		ug/l	2.5	--	1
p-Chlorotoluene	ND		ug/l	2.5	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1
Isopropylbenzene	ND		ug/l	0.50	--	1
p-Isopropyltoluene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	2.5	--	1
n-Propylbenzene	ND		ug/l	0.50	--	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	--	1

Project Name: HAVEN WELL PT
Lab Number: L2122771
Project Number: 2190120
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-09
Client ID: TB-01
Sample Location: PORTSMOUTH, NH

Date Collected: 05/03/21 00:00
Date Received: 05/03/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2,4-Trichlorobenzene	ND		ug/l	2.5	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	--	1
1,3,5-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	--	1
Ethyl ether	ND		ug/l	2.5	--	1
Isopropyl Ether	ND		ug/l	2.0	--	1
Tert-Butyl Alcohol	ND		ug/l	10	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	108		70-130

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/11/21 19:33
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 08-09 Batch: WG1498119-5					
Methylene chloride	ND		ug/l	3.0	--
1,1-Dichloroethane	ND		ug/l	0.75	--
Chloroform	ND		ug/l	0.75	--
Carbon tetrachloride	ND		ug/l	0.50	--
1,2-Dichloropropane	ND		ug/l	1.8	--
Dibromochloromethane	ND		ug/l	0.50	--
1,1,2-Trichloroethane	ND		ug/l	0.75	--
Tetrachloroethene	ND		ug/l	0.50	--
Chlorobenzene	ND		ug/l	0.50	--
Trichlorofluoromethane	ND		ug/l	2.5	--
1,2-Dichloroethane	ND		ug/l	0.50	--
1,1,1-Trichloroethane	ND		ug/l	0.50	--
Bromodichloromethane	ND		ug/l	0.50	--
trans-1,3-Dichloropropene	ND		ug/l	0.50	--
cis-1,3-Dichloropropene	ND		ug/l	0.50	--
1,3-Dichloropropene, Total	ND		ug/l	0.50	--
1,1-Dichloropropene	ND		ug/l	2.5	--
Bromoform	ND		ug/l	2.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	0.75	--
Ethylbenzene	ND		ug/l	0.50	--
Chloromethane	ND		ug/l	2.5	--
Bromomethane	ND		ug/l	1.0	--
Vinyl chloride	ND		ug/l	1.0	--
Chloroethane	ND		ug/l	1.0	--
1,1-Dichloroethene	ND		ug/l	0.50	--
trans-1,2-Dichloroethene	ND		ug/l	0.75	--
1,2-Dichloroethene, Total	ND		ug/l	0.50	--

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/11/21 19:33
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 08-09 Batch: WG1498119-5					
Trichloroethene	ND		ug/l	0.50	--
1,2-Dichlorobenzene	ND		ug/l	2.5	--
1,3-Dichlorobenzene	ND		ug/l	2.5	--
1,4-Dichlorobenzene	ND		ug/l	2.5	--
Methyl tert butyl ether	ND		ug/l	1.0	--
p/m-Xylene	ND		ug/l	1.0	--
o-Xylene	ND		ug/l	1.0	--
Xylenes, Total	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	0.50	--
Dibromomethane	ND		ug/l	5.0	--
1,2,3-Trichloropropane	ND		ug/l	5.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	5.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	5.0	--
2-Butanone	ND		ug/l	5.0	--
4-Methyl-2-pentanone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	2.5	--
Tetrahydrofuran	ND		ug/l	5.0	--
2,2-Dichloropropane	ND		ug/l	2.5	--
1,2-Dibromoethane	ND		ug/l	2.0	--
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--
Bromobenzene	ND		ug/l	2.5	--
n-Butylbenzene	ND		ug/l	0.50	--
sec-Butylbenzene	ND		ug/l	0.50	--
tert-Butylbenzene	ND		ug/l	2.5	--
o-Chlorotoluene	ND		ug/l	2.5	--
p-Chlorotoluene	ND		ug/l	2.5	--

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/11/21 19:33
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 08-09 Batch: WG1498119-5					
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Isopropylbenzene	ND		ug/l	0.50	--
p-Isopropyltoluene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	2.5	--
n-Propylbenzene	ND		ug/l	0.50	--
1,2,3-Trichlorobenzene	ND		ug/l	2.5	--
1,2,4-Trichlorobenzene	ND		ug/l	2.5	--
1,3,5-Trimethylbenzene	ND		ug/l	2.5	--
1,3,5-Trichlorobenzene	ND		ug/l	2.0	--
1,2,4-Trimethylbenzene	ND		ug/l	2.5	--
Ethyl ether	ND		ug/l	2.5	--
Isopropyl Ether	ND		ug/l	2.0	--
Tert-Butyl Alcohol	ND		ug/l	10	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--
1,4-Dioxane	ND		ug/l	250	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	105		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2122771

Report Date: 05/20/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-09 Batch: WG1498119-3 WG1498119-4								
Methylene chloride	93		95		70-130	2		20
1,1-Dichloroethane	95		97		70-130	2		20
Chloroform	97		98		70-130	1		20
Carbon tetrachloride	88		89		63-132	1		20
1,2-Dichloropropane	120		120		70-130	0		20
Dibromochloromethane	95		98		63-130	3		20
1,1,2-Trichloroethane	100		100		70-130	0		20
Tetrachloroethene	120		120		70-130	0		20
Chlorobenzene	110		110		75-130	0		25
Trichlorofluoromethane	79		78		62-150	1		20
1,2-Dichloroethane	100		100		70-130	0		20
1,1,1-Trichloroethane	94		96		67-130	2		20
Bromodichloromethane	84		90		67-130	7		20
trans-1,3-Dichloropropene	86		90		70-130	5		20
cis-1,3-Dichloropropene	85		89		70-130	5		20
1,1-Dichloropropene	94		94		70-130	0		20
Bromoform	82		85		54-136	4		20
1,1,2,2-Tetrachloroethane	88		88		67-130	0		20
Benzene	100		100		70-130	0		25
Toluene	110		110		70-130	0		25
Ethylbenzene	110		110		70-130	0		20
Chloromethane	77		76		64-130	1		20
Bromomethane	110		100		39-139	10		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2122771

Report Date: 05/20/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-09 Batch: WG1498119-3 WG1498119-4								
Vinyl chloride	110		110		55-140	0		20
Chloroethane	95		86		55-138	10		20
1,1-Dichloroethene	94		92		61-145	2		25
trans-1,2-Dichloroethene	98		100		70-130	2		20
Trichloroethene	100		100		70-130	0		25
1,2-Dichlorobenzene	100		99		70-130	1		20
1,3-Dichlorobenzene	100		99		70-130	1		20
1,4-Dichlorobenzene	100		98		70-130	2		20
Methyl tert butyl ether	81		84		63-130	4		20
p/m-Xylene	100		100		70-130	0		20
o-Xylene	100		100		70-130	0		20
cis-1,2-Dichloroethene	100		100		70-130	0		20
Dibromomethane	97		100		70-130	3		20
1,2,3-Trichloropropane	80		81		64-130	1		20
Styrene	100		100		70-130	0		20
Dichlorodifluoromethane	76		73		36-147	4		20
Acetone	69		72		58-148	4		20
Carbon disulfide	86		86		51-130	0		20
2-Butanone	99		100		63-138	1		20
4-Methyl-2-pentanone	120		130		59-130	8		20
2-Hexanone	96		100		57-130	4		20
Bromochloromethane	100		110		70-130	10		20
Tetrahydrofuran	110		95		58-130	15		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2122771

Report Date: 05/20/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-09 Batch: WG1498119-3 WG1498119-4								
2,2-Dichloropropane	90		88		63-133	2		20
1,2-Dibromoethane	97		99		70-130	2		20
1,1,1,2-Tetrachloroethane	99		100		64-130	1		20
Bromobenzene	100		100		70-130	0		20
n-Butylbenzene	98		96		53-136	2		20
sec-Butylbenzene	92		88		70-130	4		20
tert-Butylbenzene	93		91		70-130	2		20
o-Chlorotoluene	94		91		70-130	3		20
p-Chlorotoluene	92		90		70-130	2		20
1,2-Dibromo-3-chloropropane	79		89		41-144	12		20
Hexachlorobutadiene	120		110		63-130	9		20
Isopropylbenzene	90		88		70-130	2		20
p-Isopropyltoluene	95		92		70-130	3		20
Naphthalene	76		78		70-130	3		20
n-Propylbenzene	96		94		69-130	2		20
1,2,3-Trichlorobenzene	98		99		70-130	1		20
1,2,4-Trichlorobenzene	100		100		70-130	0		20
1,3,5-Trimethylbenzene	89		85		64-130	5		20
1,3,5-Trichlorobenzene	110		110		70-130	0		20
1,2,4-Trimethylbenzene	88		87		70-130	1		20
Ethyl ether	86		92		59-134	7		20
Isopropyl Ether	100		100		70-130	0		20
Tert-Butyl Alcohol	86		94		70-130	9		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2122771

Report Date: 05/20/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-09 Batch: WG1498119-3 WG1498119-4								
Ethyl-Tert-Butyl-Ether	100		110		70-130	10		20
Tertiary-Amyl Methyl Ether	85		89		66-130	5		20
1,4-Dioxane	88		86		56-162	2		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	91		96		70-130
Toluene-d8	109		107		70-130
4-Bromofluorobenzene	89		87		70-130
Dibromofluoromethane	102		103		70-130

SEMIVOLATILES

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-08
Client ID: HAVEN WELL
Sample Location: PORTSMOUTH, NH

Date Collected: 05/03/21 12:00
Date Received: 05/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 136,533
Analytical Date: 05/10/21 11:44
Analyst: LV

Extraction Method: EPA 533
Extraction Date: 05/09/21 11:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	40.3		ng/l	2.00	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--	1
Perfluoropentanoic Acid (PFPeA)	75.6		ng/l	2.00	--	1
Perfluorobutanesulfonic Acid (PFBS)	12.4		ng/l	2.00	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	2.00	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--	1
Perfluorohexanoic Acid (PFHxA)	67.4		ng/l	2.00	--	1
Perfluoropentanesulfonic Acid (PFPeS)	12.8		ng/l	2.00	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--	1
Perfluoroheptanoic Acid (PFHpA)	27.8		ng/l	2.00	--	1
Perfluorohexanesulfonic Acid (PFHxS)	156		ng/l	2.00	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	75.2		ng/l	2.00	--	1
Perfluorooctanoic Acid (PFOA)	57.2		ng/l	2.00	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	10.2		ng/l	2.00	--	1
Perfluorononanoic Acid (PFNA)	4.68		ng/l	2.00	--	1
Perfluorooctanesulfonic Acid (PFOS)	531	E	ng/l	2.00	--	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	18.4		ng/l	2.00	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--	1

Project Name: HAVEN WELL PT **Lab Number:** L2122771

Project Number: 2190120 **Report Date:** 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-08 Date Collected: 05/03/21 12:00

Client ID: HAVEN WELL Date Received: 05/03/21

Sample Location: PORTSMOUTH, NH Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	108		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	120		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	138		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	140		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	116		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	120		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	139		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	116		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	117		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	117		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	140		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	128		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	147		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	178		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	113		50-200

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-08 RE
Client ID: HAVEN WELL
Sample Location: PORTSMOUTH, NH

Sample Depth:
Matrix: Water
Analytical Method: 136,533
Analytical Date: 05/12/21 14:01
Analyst: LV

Date Collected: 05/03/21 12:00
Date Received: 05/03/21
Field Prep: Not Specified

Extraction Method: EPA 533
Extraction Date: 05/11/21 14:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorooctanesulfonic Acid (PFOS)	612		ng/l	10.0	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		50-200

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-10
Client ID: FB-01
Sample Location: PORTSMOUTH, NH

Date Collected: 05/03/21 12:05
Date Received: 05/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 136,533
Analytical Date: 05/10/21 12:11
Analyst: LV

Extraction Method: EPA 533
Extraction Date: 05/09/21 11:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	2.00	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--	1

Project Name: HAVEN WELL PT **Lab Number:** L2122771

Project Number: 2190120 **Report Date:** 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-10 Date Collected: 05/03/21 12:05

Client ID: FB-01 Date Received: 05/03/21

Sample Location: PORTSMOUTH, NH Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	115		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	126		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	112		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	114		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	120		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	126		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	90		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	124		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	139		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	137		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	181		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	106		50-200

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 05/10/21 09:50
Analyst: LV

Extraction Method: EPA 533
Extraction Date: 05/09/21 11:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 08,10 Batch: WG1496421-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	2.00	--
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 05/10/21 09:50
Analyst: LV

Extraction Method: EPA 533
Extraction Date: 05/09/21 11:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 08,10 Batch: WG1496421-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	105		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	100		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	99		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	139		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	90		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	115		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	126		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	99		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	121		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	153		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	101		50-200

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 05/12/21 13:26
Analyst: LV

Extraction Method: EPA 533
Extraction Date: 05/11/21 14:04

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 08 Batch: WG1497309-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	2.00	--
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 05/12/21 13:26
Analyst: LV

Extraction Method: EPA 533
Extraction Date: 05/11/21 14:04

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 08 Batch: WG1497309-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	85		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	108		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	83		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	111		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	110		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	83		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	117		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	103		50-200

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2122771

Report Date: 05/20/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 08,10 Batch: WG1496421-2								
Perfluorobutanoic Acid (PFBA)	100		-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	110		-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	116		-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	104		-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	98		-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	103		-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	114		-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	96		-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	124		-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	121		-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	74		-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	108		-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	88		-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	106		-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	97		-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	112		-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	111		-		70-130	-		30
Perfluorononanoic Acid (PFNA)	104		-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	106		-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	111		-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	96		-		70-130	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2122771

Report Date: 05/20/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 08,10 Batch: WG1496421-2								
Perfluorodecanoic Acid (PFDA)	108		-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	110		-		70-130	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	110		-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	106		-		70-130	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	106				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	105				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	90				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	118				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	122				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	101				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	120				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	150				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	113				50-200

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2122771

Report Date: 05/20/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 08 Batch: WG1497309-2 WG1497309-3								
Perfluorobutanoic Acid (PFBA)	88		87		70-130	1		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	95		90		70-130	5		30
Perfluoropentanoic Acid (PFPeA)	94		95		70-130	1		30
Perfluorobutanesulfonic Acid (PFBS)	89		86		70-130	3		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	87		89		70-130	2		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	90		93		70-130	3		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	105		110		70-130	5		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	102		101		70-130	1		30
Perfluorohexanoic Acid (PFHxA)	100		96		70-130	4		30
Perfluoropentanesulfonic Acid (PFPeS)	85		83		70-130	2		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	95		98		70-130	3		30
Perfluoroheptanoic Acid (PFHpA)	90		94		70-130	4		30
Perfluorohexanesulfonic Acid (PFHxS)	85		81		70-130	5		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	98		101		70-130	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	87		90		70-130	3		30
Perfluorooctanoic Acid (PFOA)	98		94		70-130	4		30
Perfluoroheptanesulfonic Acid (PFHpS)	89		83		70-130	7		30
Perfluorononanoic Acid (PFNA)	91		100		70-130	9		30
Perfluorooctanesulfonic Acid (PFOS)	90		86		70-130	5		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	89		94		70-130	5		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	93		92		70-130	1		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2122771

Report Date: 05/20/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 08 Batch: WG1497309-2 WG1497309-3								
Perfluorodecanoic Acid (PFDA)	96		94		70-130	2		30
Perfluoroundecanoic Acid (PFUnA)	97		94		70-130	3		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	98		104		70-130	6		30
Perfluorododecanoic Acid (PFDoA)	92		94		70-130	2		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		98		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		99		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		94		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	95		93		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		100		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		102		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		99		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		107		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	88		84		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108		113		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		99		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	108		117		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	94		95		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	113		121		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	122		127		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	91		96		50-200

Matrix Spike Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2122771

Report Date: 05/20/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab	Associated sample(s): 08,10			QC Batch ID: WG1496421-3				QC Sample: L2122271-01			Client ID: MS Sample	
Perfluorobutanoic Acid (PFBA)	38.7	2	40.2	75		-	-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	2	2.28	114		-	-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	51.9	2	56.2	**215**	Q	-	-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	7.88	1.77	10.2	**131**		-	-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	2	2.00	100		-	-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	1.78	ND	103		-	-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	2	2.00	100		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	1.87	2.92	**156**	Q	-	-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	49.7	2	52.8	**155**	Q	-	-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	9.21	1.88	11.7	**133**		-	-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	2	2.16	108		-	-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	16.1	2	19.1	**150**		-	-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	114	1.82	118	**220**	Q	-	-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	1.88	ND	98		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	33.9	1.9	40.0	**321**	Q	-	-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	39.7	2	42.6	**145**		-	-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	8.14	1.9	9.30	**61**		-	-		70-130	-		30
Perfluorononanoic Acid (PFNA)	3.16	2	4.71	78		-	-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	459E	1.85	424E	**0**	Q	-	-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	11.7	1.92	13.7	104		-	-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	ND	2	3.55	**178**	Q	-	-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	2	2.12	106		-	-		70-130	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2122771

Report Date: 05/20/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab	Associated sample(s): 08,10		QC Batch ID: WG1496421-3			QC Sample: L2122271-01			Client ID: MS Sample			
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	1.88	2.08	110		-	-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	ND	2	2.12	106		-	-		70-130	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	112				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	126				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	95				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	124				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	123				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	103				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	119				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	147				50-200
Perfluoro[13C4]Butanoic Acid (MPFBA)	101				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	109				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	128				50-200

Lab Duplicate Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122771
Report Date: 05/20/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Sample	Associated sample(s): 08,10	QC Batch ID: WG1496421-4		QC Sample: L2122271-02		Client ID: DUP
Perfluorobutanoic Acid (PFBA)	34.5	33.1	ng/l	4		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	31.1	30.7	ng/l	1		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	ND	ng/l	NC		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	ND	ng/l	NC		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	7.32	6.71	ng/l	9		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.13	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122771
Report Date: 05/20/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 08,10 QC Batch ID: WG1496421-4 QC Sample: L2122271-02 Client ID: DUP Sample						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	105		106		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		115		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		115		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	111		112		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		101		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	111		104		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110		120		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	117		114		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	96		99		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	120		115		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		113		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	118		121		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	101		98		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	126		126		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	151		151		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	104		100		50-200

Lab Duplicate Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122771
Report Date: 05/20/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 08 QC Batch ID: WG1497309-4 QC Sample: L2122771-08 Client ID: HAVEN WELL						
Perfluorooctanesulfonic Acid (PFOS)	612	695	ng/l	13		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		91		50-200

METALS

Project Name: HAVEN WELL PT
Lab Number: L2122771
Project Number: 2190120
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-01
Client ID: 15-7535
Sample Location: PORTSMOUTH, NH
Date Collected: 05/03/21 13:20
Date Received: 05/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	42.6		mg/l	0.100	--	1	05/14/21 00:54	05/19/21 20:38	EPA 3005A	1,6010D	BV
Iron, Total	0.106		mg/l	0.050	--	1	05/14/21 00:54	05/19/21 20:38	EPA 3005A	1,6010D	BV
Magnesium, Total	8.65		mg/l	0.100	--	1	05/14/21 00:54	05/19/21 20:38	EPA 3005A	1,6010D	BV
Manganese, Total	0.558		mg/l	0.010	--	1	05/14/21 00:54	05/19/21 20:38	EPA 3005A	1,6010D	BV
Sodium, Total	22.8		mg/l	2.00	--	1	05/14/21 00:54	05/19/21 20:38	EPA 3005A	1,6010D	BV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	142		mg/l	0.660	NA	1	05/14/21 00:54	05/19/21 20:38	EPA 3005A	1,6010D	BV

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-02
Client ID: 15-7532
Sample Location: PORTSMOUTH, NH
Sample Depth:
Matrix: Water

Date Collected: 05/03/21 13:45
Date Received: 05/03/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	47.1		mg/l	0.100	--	1	05/14/21 00:54	05/19/21 20:33	EPA 3005A	1,6010D	BV
Iron, Total	ND		mg/l	0.050	--	1	05/14/21 00:54	05/19/21 20:33	EPA 3005A	1,6010D	BV
Magnesium, Total	9.15		mg/l	0.100	--	1	05/14/21 00:54	05/19/21 20:33	EPA 3005A	1,6010D	BV
Manganese, Total	0.386		mg/l	0.010	--	1	05/14/21 00:54	05/19/21 20:33	EPA 3005A	1,6010D	BV
Sodium, Total	22.7		mg/l	2.00	--	1	05/14/21 00:54	05/19/21 20:33	EPA 3005A	1,6010D	BV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	155		mg/l	0.660	NA	1	05/14/21 00:54	05/19/21 20:33	EPA 3005A	1,6010D	BV

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-03
Client ID: 15-TH1AR
Sample Location: PORTSMOUTH, NH
Date Collected: 05/03/21 12:25
Date Received: 05/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	46.3		mg/l	0.100	--	1	05/14/21 00:54	05/19/21 21:12	EPA 3005A	1,6010D	BV
Iron, Total	0.170		mg/l	0.050	--	1	05/14/21 00:54	05/19/21 21:12	EPA 3005A	1,6010D	BV
Magnesium, Total	9.22		mg/l	0.100	--	1	05/14/21 00:54	05/19/21 21:12	EPA 3005A	1,6010D	BV
Manganese, Total	0.216		mg/l	0.010	--	1	05/14/21 00:54	05/19/21 22:36	EPA 3005A	1,6010D	BV
Sodium, Total	22.2		mg/l	2.00	--	1	05/14/21 00:54	05/19/21 21:12	EPA 3005A	1,6010D	BV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	154		mg/l	0.660	NA	1	05/14/21 00:54	05/19/21 21:12	EPA 3005A	1,6010D	BV

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-04
Client ID: 15-7533
Sample Location: PORTSMOUTH, NH
Sample Depth:
Matrix: Water

Date Collected: 05/03/21 12:50
Date Received: 05/03/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	62.1		mg/l	0.100	--	1	05/14/21 00:54	05/19/21 21:16	EPA 3005A	1,6010D	BV
Iron, Total	ND		mg/l	0.050	--	1	05/14/21 00:54	05/19/21 21:16	EPA 3005A	1,6010D	BV
Magnesium, Total	9.14		mg/l	0.100	--	1	05/14/21 00:54	05/19/21 21:16	EPA 3005A	1,6010D	BV
Manganese, Total	0.022		mg/l	0.010	--	1	05/14/21 00:54	05/19/21 22:41	EPA 3005A	1,6010D	BV
Sodium, Total	16.3		mg/l	2.00	--	1	05/14/21 00:54	05/19/21 21:16	EPA 3005A	1,6010D	BV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	193		mg/l	0.660	NA	1	05/14/21 00:54	05/19/21 21:16	EPA 3005A	1,6010D	BV

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-05
Client ID: 15-6522
Sample Location: PORTSMOUTH, NH
Sample Depth:
Matrix: Water

Date Collected: 05/03/21 11:10
Date Received: 05/03/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	55.0		mg/l	0.100	--	1	05/14/21 00:54	05/19/21 21:21	EPA 3005A	1,6010D	BV
Iron, Total	ND		mg/l	0.050	--	1	05/14/21 00:54	05/19/21 21:21	EPA 3005A	1,6010D	BV
Magnesium, Total	10.8		mg/l	0.100	--	1	05/14/21 00:54	05/19/21 21:21	EPA 3005A	1,6010D	BV
Manganese, Total	0.178		mg/l	0.010	--	1	05/14/21 00:54	05/19/21 22:46	EPA 3005A	1,6010D	BV
Sodium, Total	24.8		mg/l	2.00	--	1	05/14/21 00:54	05/19/21 21:21	EPA 3005A	1,6010D	BV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	182		mg/l	0.660	NA	1	05/14/21 00:54	05/19/21 21:21	EPA 3005A	1,6010D	BV

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-06
Client ID: 15-6144
Sample Location: PORTSMOUTH, NH
Sample Depth:
Matrix: Water

Date Collected: 05/03/21 10:10
Date Received: 05/03/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	22.2		mg/l	0.100	--	1	05/14/21 00:54	05/19/21 21:26	EPA 3005A	1,6010D	BV
Iron, Total	0.127		mg/l	0.050	--	1	05/14/21 00:54	05/19/21 21:26	EPA 3005A	1,6010D	BV
Magnesium, Total	12.7		mg/l	0.100	--	1	05/14/21 00:54	05/19/21 21:26	EPA 3005A	1,6010D	BV
Manganese, Total	0.091		mg/l	0.010	--	1	05/14/21 00:54	05/19/21 22:51	EPA 3005A	1,6010D	BV
Sodium, Total	32.3		mg/l	2.00	--	1	05/14/21 00:54	05/19/21 21:26	EPA 3005A	1,6010D	BV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	108		mg/l	0.660	NA	1	05/14/21 00:54	05/19/21 21:26	EPA 3005A	1,6010D	BV

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-07
Client ID: PH4-4779
Sample Location: PORTSMOUTH, NH
Sample Depth:
Matrix: Water

Date Collected: 05/03/21 10:45
Date Received: 05/03/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	1.65		mg/l	0.100	--	1	05/14/21 00:54	05/19/21 21:31	EPA 3005A	1,6010D	BV
Iron, Total	1.90		mg/l	0.050	--	1	05/14/21 00:54	05/19/21 21:31	EPA 3005A	1,6010D	BV
Magnesium, Total	0.371		mg/l	0.100	--	1	05/14/21 00:54	05/19/21 21:31	EPA 3005A	1,6010D	BV
Manganese, Total	0.015		mg/l	0.010	--	1	05/14/21 00:54	05/19/21 22:56	EPA 3005A	1,6010D	BV
Sodium, Total	2.59		mg/l	2.00	--	1	05/14/21 00:54	05/19/21 21:31	EPA 3005A	1,6010D	BV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	5.66		mg/l	0.660	NA	1	05/14/21 00:54	05/19/21 21:31	EPA 3005A	1,6010D	BV

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-08
Client ID: HAVEN WELL
Sample Location: PORTSMOUTH, NH
Date Collected: 05/03/21 12:00
Date Received: 05/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	59.4		mg/l	0.100	--	1	05/14/21 00:54	05/19/21 21:36	EPA 3005A	1,6010D	BV
Iron, Total	ND		mg/l	0.050	--	1	05/14/21 00:54	05/19/21 21:36	EPA 3005A	1,6010D	BV
Magnesium, Total	9.89		mg/l	0.100	--	1	05/14/21 00:54	05/19/21 21:36	EPA 3005A	1,6010D	BV
Manganese, Total	0.113		mg/l	0.010	--	1	05/14/21 00:54	05/19/21 23:01	EPA 3005A	1,6010D	BV
Sodium, Total	18.6		mg/l	2.00	--	1	05/14/21 00:54	05/19/21 21:36	EPA 3005A	1,6010D	BV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	189		mg/l	0.660	NA	1	05/14/21 00:54	05/19/21 21:36	EPA 3005A	1,6010D	BV

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-08 Batch: WG1498115-1										
Calcium, Total	ND		mg/l	0.100	--	1	05/14/21 00:54	05/19/21 20:19	1,6010D	BV
Iron, Total	ND		mg/l	0.050	--	1	05/14/21 00:54	05/19/21 20:19	1,6010D	BV
Magnesium, Total	ND		mg/l	0.100	--	1	05/14/21 00:54	05/19/21 20:19	1,6010D	BV
Manganese, Total	ND		mg/l	0.010	--	1	05/14/21 00:54	05/19/21 20:19	1,6010D	BV
Sodium, Total	ND		mg/l	2.00	--	1	05/14/21 00:54	05/19/21 20:19	1,6010D	BV

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01-08 Batch: WG1498115-1										
Hardness	ND		mg/l	0.660	NA	1	05/14/21 00:54	05/19/21 20:19	1,6010D	BV

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2122771

Report Date: 05/20/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-08 Batch: WG1498115-2								
Calcium, Total	102		-		80-120	-		
Iron, Total	98		-		80-120	-		
Magnesium, Total	106		-		80-120	-		
Manganese, Total	93		-		80-120	-		
Sodium, Total	109		-		80-120	-		
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-08 Batch: WG1498115-2								
Hardness	104		-		80-120	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122771
Report Date: 05/20/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1498115-3 QC Sample: L2122771-01 Client ID: 15-7535												
Calcium, Total	42.6	10	51.8	92		-	-		75-125	-		20
Iron, Total	0.106	1	1.08	97		-	-		75-125	-		20
Magnesium, Total	8.65	10	18.9	102		-	-		75-125	-		20
Manganese, Total	0.558	0.5	1.00	88		-	-		75-125	-		20
Sodium, Total	22.8	10	33.0	102		-	-		75-125	-		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1498115-3 QC Sample: L2122771-01 Client ID: 15-7535												
Hardness	142	66.2	207	98		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2122771

Report Date: 05/20/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1498115-4 QC Sample: L2122771-01 Client ID: 15-7535						
Calcium, Total	42.6	43.2	mg/l	1		20
Iron, Total	0.106	0.103	mg/l	3		20
Magnesium, Total	8.65	8.77	mg/l	1		20
Manganese, Total	0.558	0.564	mg/l	1		20
Sodium, Total	22.8	23.0	mg/l	1		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1498115-4 QC Sample: L2122771-01 Client ID: 15-7535						
Hardness	142	144	mg/l	1		20

INORGANICS
&
MISCELLANEOUS

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122771
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-01
Client ID: 15-7535
Sample Location: PORTSMOUTH, NH

Date Collected: 05/03/21 13:20
Date Received: 05/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	129.		mg CaCO3/L	2.00	NA	1	-	05/14/21 08:45	121,2320B	JB
Alkalinity, Bicarbonate	129.		mg CaCO3/L	2.00	NA	1	-	05/14/21 08:45	121,2320B	JB
Specific Conductance @ 25 C	420		umhos/cm	10	--	1	-	05/06/21 18:59	1,9050A	AS
Solids, Total Dissolved	230		mg/l	10	--	1	-	05/07/21 09:10	121,2540C	DW
pH (H)	7.3		SU	-	NA	1	-	05/10/21 21:44	121,4500H+-B	AS
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/04/21 06:54	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	0.072		mg/l	0.050	--	1	-	05/13/21 22:34	44,300.0	AT
Chloride	48.9		mg/l	0.500	--	1	-	05/13/21 22:34	44,300.0	AT
Sulfate	19.6		mg/l	1.00	--	1	-	05/13/21 22:34	44,300.0	AT

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122771
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-02
Client ID: 15-7532
Sample Location: PORTSMOUTH, NH

Date Collected: 05/03/21 13:45
Date Received: 05/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	130.		mg CaCO3/L	2.00	NA	1	-	05/14/21 08:45	121,2320B	JB
Alkalinity, Bicarbonate	130.		mg CaCO3/L	2.00	NA	1	-	05/14/21 08:45	121,2320B	JB
Specific Conductance @ 25 C	430		umhos/cm	10	--	1	-	05/06/21 18:59	1,9050A	AS
Solids, Total Dissolved	250		mg/l	10	--	1	-	05/07/21 09:10	121,2540C	DW
pH (H)	7.6		SU	-	NA	1	-	05/10/21 21:44	121,4500H+-B	AS
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/04/21 06:58	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	0.069		mg/l	0.050	--	1	-	05/13/21 22:46	44,300.0	AT
Chloride	49.5		mg/l	5.00	--	10	-	05/14/21 03:48	44,300.0	AT
Sulfate	23.4		mg/l	1.00	--	1	-	05/13/21 22:46	44,300.0	AT

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122771
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-03
Client ID: 15-TH1AR
Sample Location: PORTSMOUTH, NH

Date Collected: 05/03/21 12:25
Date Received: 05/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	132.		mg CaCO3/L	2.00	NA	1	-	05/14/21 08:45	121,2320B	JB
Alkalinity, Bicarbonate	132.		mg CaCO3/L	2.00	NA	1	-	05/14/21 08:45	121,2320B	JB
Specific Conductance @ 25 C	440		umhos/cm	10	--	1	-	05/06/21 18:59	1,9050A	AS
Solids, Total Dissolved	240		mg/l	10	--	1	-	05/07/21 09:10	121,2540C	DW
pH (H)	7.4		SU	-	NA	1	-	05/10/21 21:44	121,4500H+-B	AS
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/04/21 07:03	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	0.071		mg/l	0.050	--	1	-	05/13/21 22:58	44,300.0	AT
Chloride	47.8		mg/l	5.00	--	10	-	05/14/21 04:00	44,300.0	AT
Sulfate	22.7		mg/l	1.00	--	1	-	05/13/21 22:58	44,300.0	AT

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122771
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-04
Client ID: 15-7533
Sample Location: PORTSMOUTH, NH

Date Collected: 05/03/21 12:50
Date Received: 05/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	161.		mg CaCO3/L	2.00	NA	1	-	05/14/21 08:45	121,2320B	JB
Alkalinity, Bicarbonate	161.		mg CaCO3/L	2.00	NA	1	-	05/14/21 08:45	121,2320B	JB
Specific Conductance @ 25 C	490		umhos/cm	10	--	1	-	05/06/21 18:59	1,9050A	AS
Solids, Total Dissolved	270		mg/l	10	--	1	-	05/07/21 09:10	121,2540C	DW
pH (H)	7.8		SU	-	NA	1	-	05/10/21 21:44	121,4500H+-B	AS
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/04/21 07:05	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	0.069		mg/l	0.050	--	1	-	05/13/21 23:46	44,300.0	AT
Chloride	46.0		mg/l	0.500	--	1	-	05/13/21 23:46	44,300.0	AT
Sulfate	30.2		mg/l	1.00	--	1	-	05/13/21 23:46	44,300.0	AT

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122771
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-05
Client ID: 15-6522
Sample Location: PORTSMOUTH, NH

Date Collected: 05/03/21 11:10
Date Received: 05/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	141.		mg CaCO3/L	2.00	NA	1	-	05/14/21 08:45	121,2320B	JB
Alkalinity, Bicarbonate	141.		mg CaCO3/L	2.00	NA	1	-	05/14/21 08:45	121,2320B	JB
Specific Conductance @ 25 C	520		umhos/cm	10	--	1	-	05/06/21 18:59	1,9050A	AS
Solids, Total Dissolved	280		mg/l	10	--	1	-	05/07/21 09:10	121,2540C	DW
pH (H)	7.7		SU	-	NA	1	-	05/10/21 21:44	121,4500H+-B	AS
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/04/21 07:06	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	0.066		mg/l	0.050	--	1	-	05/13/21 23:58	44,300.0	AT
Chloride	72.4		mg/l	5.00	--	10	-	05/14/21 04:48	44,300.0	AT
Sulfate	22.0		mg/l	1.00	--	1	-	05/13/21 23:58	44,300.0	AT

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122771
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-06
Client ID: 15-6144
Sample Location: PORTSMOUTH, NH

Date Collected: 05/03/21 10:10
Date Received: 05/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	108.		mg CaCO3/L	2.00	NA	1	-	05/14/21 08:45	121,2320B	JB
Alkalinity, Bicarbonate	108.		mg CaCO3/L	2.00	NA	1	-	05/14/21 08:45	121,2320B	JB
Specific Conductance @ 25 C	380		umhos/cm	10	--	1	-	05/06/21 18:59	1,9050A	AS
Solids, Total Dissolved	220		mg/l	10	--	1	-	05/07/21 09:10	121,2540C	DW
pH (H)	8.1		SU	-	NA	1	-	05/10/21 21:44	121,4500H+-B	AS
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/04/21 07:07	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	0.119		mg/l	0.050	--	1	-	05/14/21 00:10	44,300.0	AT
Chloride	34.3		mg/l	0.500	--	1	-	05/14/21 00:10	44,300.0	AT
Sulfate	45.9		mg/l	1.00	--	1	-	05/14/21 00:10	44,300.0	AT

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122771
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-07
Client ID: PH4-4779
Sample Location: PORTSMOUTH, NH

Date Collected: 05/03/21 10:45
Date Received: 05/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	7.40		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB
Alkalinity, Bicarbonate	7.40		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB
Specific Conductance @ 25 C	30		umhos/cm	10	--	1	-	05/06/21 18:59	1,9050A	AS
Solids, Total Dissolved	39.		mg/l	10	--	1	-	05/07/21 09:10	121,2540C	DW
pH (H)	6.4		SU	-	NA	1	-	05/10/21 21:44	121,4500H+-B	AS
Nitrogen, Nitrate	0.373		mg/l	0.100	--	1	-	05/04/21 07:09	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	ND		mg/l	0.050	--	1	-	05/14/21 00:23	44,300.0	AT
Chloride	2.04		mg/l	0.500	--	1	-	05/14/21 00:23	44,300.0	AT
Sulfate	3.30		mg/l	1.00	--	1	-	05/14/21 00:23	44,300.0	AT

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2122771
Report Date: 05/20/21

SAMPLE RESULTS

Lab ID: L2122771-08
Client ID: HAVEN WELL
Sample Location: PORTSMOUTH, NH

Date Collected: 05/03/21 12:00
Date Received: 05/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	154.		mg CaCO3/L	2.00	NA	1	-	05/14/21 08:45	121,2320B	JB
Alkalinity, Bicarbonate	154.		mg CaCO3/L	2.00	NA	1	-	05/14/21 08:45	121,2320B	JB
Specific Conductance @ 25 C	490		umhos/cm	10	--	1	-	05/06/21 18:59	1,9050A	AS
Solids, Total Dissolved	270		mg/l	10	--	1	-	05/07/21 09:10	121,2540C	DW
pH (H)	7.8		SU	-	NA	1	-	05/10/21 21:44	121,4500H+-B	AS
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/04/21 07:10	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	0.069		mg/l	0.050	--	1	-	05/14/21 00:35	44,300.0	AT
Chloride	50.4		mg/l	5.00	--	10	-	05/14/21 05:25	44,300.0	AT
Sulfate	24.3		mg/l	1.00	--	1	-	05/14/21 00:35	44,300.0	AT

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
Report Date: 05/20/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01-08 Batch: WG1493954-1										
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/04/21 05:59	121,4500NO3-F	MR
General Chemistry - Westborough Lab for sample(s): 01-08 Batch: WG1495600-1										
Solids, Total Dissolved	ND		mg/l	10	--	1	-	05/07/21 09:10	121,2540C	DW
Anions by Ion Chromatography - Westborough Lab for sample(s): 01-08 Batch: WG1498655-1										
Bromide	ND		mg/l	0.050	--	1	-	05/13/21 17:07	44,300.0	AT
Chloride	ND		mg/l	0.500	--	1	-	05/13/21 17:07	44,300.0	AT
Sulfate	ND		mg/l	1.00	--	1	-	05/13/21 17:07	44,300.0	AT
General Chemistry - Westborough Lab for sample(s): 01-03 Batch: WG1498791-1										
Alkalinity, Total	ND		mg CaCO3/L	2.00	NA	1	-	05/14/21 08:45	121,2320B	JB
General Chemistry - Westborough Lab for sample(s): 04-06,08 Batch: WG1498796-1										
Alkalinity, Total	ND		mg CaCO3/L	2.00	NA	1	-	05/14/21 08:45	121,2320B	JB
General Chemistry - Westborough Lab for sample(s): 01-06,08 Batch: WG1498809-1										
Alkalinity, Bicarbonate	ND		mg CaCO3/L	2.00	NA	1	-	05/14/21 08:45	121,2320B	JB
General Chemistry - Westborough Lab for sample(s): 07 Batch: WG1499808-1										
Alkalinity, Bicarbonate	ND		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB
General Chemistry - Westborough Lab for sample(s): 07 Batch: WG1499812-1										
Alkalinity, Total	ND		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2122771

Report Date: 05/20/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-08 Batch: WG1493954-2								
Nitrogen, Nitrate	98		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01-08 Batch: WG1495508-1								
Specific Conductance	101		-		99-101	-		
General Chemistry - Westborough Lab Associated sample(s): 01-08 Batch: WG1495600-2								
Solids, Total Dissolved	93		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01-08 Batch: WG1496965-1								
pH	101		-		99-101	-		5
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01-08 Batch: WG1498655-2								
Bromide	106		-		90-110	-		
Chloride	108		-		90-110	-		
Sulfate	105		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01-03 Batch: WG1498791-2								
Alkalinity, Total	109		-		90-110	-		10

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2122771

Report Date: 05/20/21

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 04-06,08 Batch: WG1498796-2					
Alkalinity, Total	91	-	90-110	-	10
General Chemistry - Westborough Lab Associated sample(s): 07 Batch: WG1499812-2					
Alkalinity, Total	104	-	90-110	-	10

Matrix Spike Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2122771
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Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-08 QC Batch ID: WG1493954-4 QC Sample: L2122771-01 Client ID: 15-7535												
Nitrogen, Nitrate	ND	4	3.79	95		-	-		83-113	-		17
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01-08 QC Batch ID: WG1498655-3 QC Sample: L2122771-01 Client ID: 15-7535												
Bromide	0.072	2	1.76	**85**	Q	-	-		90-110	-		20
Chloride	48.9	40	68.1	96		-	-		90-110	-		18
Sulfate	19.6	80	60.3	102		-	-		90-110	-		20
General Chemistry - Westborough Lab Associated sample(s): 04-06,08 QC Batch ID: WG1498796-4 QC Sample: L2122771-04 Client ID: 15-7533												
Alkalinity, Total	161	100	272	111		-	-		86-116	-		10
General Chemistry - Westborough Lab Associated sample(s): 07 QC Batch ID: WG1499812-4 QC Sample: L2122939-01 Client ID: MS Sample												
Alkalinity, Total	7.10	100	119	112		-	-		86-116	-		10

Lab Duplicate Analysis

Batch Quality Control

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Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-08 QC Batch ID: WG1493954-3 QC Sample: L2122771-01 Client ID: 15-7535						
Nitrogen, Nitrate	ND	ND	mg/l	NC		17
General Chemistry - Westborough Lab Associated sample(s): 01-08 QC Batch ID: WG1495508-2 QC Sample: L2122771-01 Client ID: 15-7535						
Specific Conductance @ 25 C	420	420	umhos/cm	0		20
General Chemistry - Westborough Lab Associated sample(s): 01-08 QC Batch ID: WG1495600-3 QC Sample: L2122771-01 Client ID: 15-7535						
Solids, Total Dissolved	230	230	mg/l	0		10
General Chemistry - Westborough Lab Associated sample(s): 01-08 QC Batch ID: WG1496965-2 QC Sample: L2122771-01 Client ID: 15-7535						
pH (H)	7.3	7.2	SU	1		5
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01-08 QC Batch ID: WG1498655-4 QC Sample: L2122771-01 Client ID: 15-7535						
Bromide	0.072	0.075	mg/l	3		20
Chloride	48.9	48.8	mg/l	0		18
Sulfate	19.6	18.9	mg/l	4		20
General Chemistry - Westborough Lab Associated sample(s): 04-06,08 QC Batch ID: WG1498796-3 QC Sample: L2122771-04 Client ID: 15-7533						
Alkalinity, Total	161	162	mg CaCO3/L	1		10
General Chemistry - Westborough Lab Associated sample(s): 07 QC Batch ID: WG1499808-2 QC Sample: L2122939-01 Client ID: DUP Sample						
Alkalinity, Bicarbonate	7.10	5.30	mg CaCO3/L	**29**	Q	9
General Chemistry - Westborough Lab Associated sample(s): 07 QC Batch ID: WG1499812-3 QC Sample: L2122939-01 Client ID: DUP Sample						
Alkalinity, Total	7.10	5.30	mg CaCO3/L	**29**	Q	10

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Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2122771-01A	Plastic 250ml unpreserved/No Headspace	A	NA		4.5	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)
L2122771-01B	Plastic 250ml HNO3 preserved	A	<2	<2	4.5	Y	Absent		FE-TI(180),MG-TI(180),MN-TI(180),CA-TI(180),HARDT(180),NA-TI(180)
L2122771-01C	Plastic 500ml unpreserved	A	7	7	4.5	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),TDS-2540(7),BR-300(28),PH-4500(.01),COND-9050(28)
L2122771-02A	Plastic 250ml unpreserved/No Headspace	A	NA		4.5	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)
L2122771-02B	Plastic 250ml HNO3 preserved	A	<2	<2	4.5	Y	Absent		MG-TI(180),FE-TI(180),MN-TI(180),CA-TI(180),HARDT(180),NA-TI(180)
L2122771-02C	Plastic 500ml unpreserved	A	7	7	4.5	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),BR-300(28),PH-4500(.01),TDS-2540(7),COND-9050(28)
L2122771-03A	Plastic 250ml unpreserved/No Headspace	A	NA		4.5	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)
L2122771-03B	Plastic 250ml HNO3 preserved	A	<2	<2	4.5	Y	Absent		FE-TI(180),MG-TI(180),MN-TI(180),HARDT(180),NA-TI(180),CA-TI(180)
L2122771-03C	Plastic 500ml unpreserved	A	7	7	4.5	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),PH-4500(.01),TDS-2540(7),BR-300(28),COND-9050(28)
L2122771-04A	Plastic 250ml unpreserved/No Headspace	A	NA		4.5	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)
L2122771-04B	Plastic 250ml HNO3 preserved	A	<2	<2	4.5	Y	Absent		FE-TI(180),MG-TI(180),MN-TI(180),NA-TI(180),HARDT(180),CA-TI(180)
L2122771-04C	Plastic 500ml unpreserved	A	7	7	4.5	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),TDS-2540(7),PH-4500(.01),BR-300(28),COND-9050(28)
L2122771-05A	Plastic 250ml unpreserved/No Headspace	A	NA		4.5	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)
L2122771-05B	Plastic 250ml HNO3 preserved	A	<2	<2	4.5	Y	Absent		FE-TI(180),MG-TI(180),MN-TI(180),NA-TI(180),CA-TI(180),HARDT(180)
L2122771-05C	Plastic 500ml unpreserved	A	7	7	4.5	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),PH-4500(.01),BR-300(28),TDS-2540(7),COND-9050(28)
L2122771-06A	Plastic 250ml unpreserved/No Headspace	A	NA		4.5	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)

*Values in parentheses indicate holding time in days

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2122771-06B	Plastic 250ml HNO3 preserved	A	<2	<2	4.5	Y	Absent		MG-TI(180),FE-TI(180),MN-TI(180),HARDT(180),NA-TI(180),CA-TI(180)
L2122771-06C	Plastic 500ml unpreserved	A	7	7	4.5	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),BR-300(28),PH-4500(.01),TDS-2540(7),COND-9050(28)
L2122771-07A	Plastic 250ml unpreserved/No Headspace	A	NA		4.5	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)
L2122771-07B	Plastic 250ml HNO3 preserved	A	<2	<2	4.5	Y	Absent		MG-TI(180),MN-TI(180),FE-TI(180),CA-TI(180),HARDT(180),NA-TI(180)
L2122771-07C	Plastic 500ml unpreserved	A	6	6	4.5	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),PH-4500(.01),TDS-2540(7),BR-300(28),COND-9050(28)
L2122771-08A	Vial HCl preserved	A	NA		4.5	Y	Absent		8260-NH(14)
L2122771-08B	Vial HCl preserved	A	NA		4.5	Y	Absent		8260-NH(14)
L2122771-08C	Vial HCl preserved	A	NA		4.5	Y	Absent		8260-NH(14)
L2122771-08D	Plastic 250ml Ammonium Acetate preserved	B	NA		4.2	Y	Absent		A2-NH-533(28)
L2122771-08E	Plastic 250ml Ammonium Acetate preserved	B	NA		4.2	Y	Absent		A2-NH-533(28)
L2122771-08F	Plastic 250ml unpreserved/No Headspace	A	NA		4.5	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)
L2122771-08G	Plastic 250ml HNO3 preserved	A	<2	<2	4.5	Y	Absent		MN-TI(180),FE-TI(180),MG-TI(180),CA-TI(180),HARDT(180),NA-TI(180)
L2122771-08H	Plastic 500ml unpreserved	A	7	7	4.5	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),TDS-2540(7),BR-300(28),PH-4500(.01),COND-9050(28)
L2122771-09A	Vial HCl preserved	A	NA		4.5	Y	Absent		8260-NH(14)
L2122771-09B	Vial HCl preserved	A	NA		4.5	Y	Absent		8260-NH(14)
L2122771-10A	Plastic 250ml Ammonium Acetate preserved	B	NA		4.2	Y	Absent		A2-NH-533(28)

*Values in parentheses indicate holding time in days

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PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

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GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

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Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

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Data Qualifiers

the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

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REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

136 Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 533, EPA Document 815-B-19-020, November 2019.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 2

Date Rec'd in Lab: 5/3/21

ALPHA Job #: L2122771

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Project Information
Project Name: Haven Well PT
Project Location: Portsmouth NH
Project #: 2190120
Project Manager:
ALPHA Quote #:

Report Information - Data Deliverables
☐ ADEx ☒ EMAIL

Billing Information
☐ Same as Client info PO #:

Client Information
Client: Weston & Sampson Inc.
Address: 55 Walkers Brook Dr Reading MA
Phone: 978-532-1900
Email: Getchell.Frank@wseinc.com

Regulatory Requirements & Project Information Requirements
☐ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

Turn-Around Time
☐ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Additional Project Information:

ANALYSIS
VOC: ☐ 8260 ☐ 624 ☐ 524.2
SVOC: ☐ ABN ☐ PAH
METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15
METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13
EPH: ☐ Ranges & Targets ☐ Ranges Only
VPH: ☐ Ranges & Targets ☐ Ranges Only
☐ PCB ☐ PEST
TPH: ☐ Quant Only ☐ Fingerprint
Bicarbonate Alk + Total Alk (SM 2320)
Bromide, Chloride, & Sulfate (EPA 300)
Nitrate Nitrogen (SM4500)
PH - Hardness (SM2340) Ion Conc (SM4500)
Total Iron, Total Manganese, Total Hardness, Total Sodium, total calcium
TDS (SM 2540)
SAMPLE INFO
Filtration ☐ Field ☐ Lab to do
Preservation ☐ Lab to do
Sample Comments
TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Total # Bottles
2277l-01	15-7535	5/3/2021	1330	GW	JAG	6
02	15-7532		1345			6
03	15-TH1AR		1225			6
04	15-7533		1250			6
05	15-6522		1110			6
06	15-6144		1010			6
07	PH4-4799		1045			6
08	Haven well		1200			6
09	TB-01					
10	FB-01		1205			6

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Container Type										
Preservative										

Relinquished By:	Date/Time	Received By:	Date/Time
	5/3/21 1450		5/3/21 1450
	5/3/21	AAL	5/3/21 1700
	5/3/21 1850		5/3/21 1852

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

Serial_No:05202114:34

CHAIN OF CUSTODY

ALPHA ANALYTICAL — World Class Chemistry
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Date Rec'd in Lab: 5/3/21

ALPHA Job #: L2122771

Client Information

Client: Weston & Sampson Inc
Address: 55 Walkers Brook Dr, Reading MA
Phone: 978-532-1900
Email: Frank.Geichell@wseinc.com

Project Information

Project Name: Haven Well PT
Project Location: Portsmouth NH
Project #: 2190120
Project Manager:
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Additional Project Information:

Report Information - Data Deliverables

☐ ADEx ☐ EMAIL

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☐ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program ______ Criteria ______

ANALYSIS

SAMPLE INFO — Filtration: ☐ Field ☐ Lab to do; Preservation: ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC: ☒ 8260 ☐ 624 ☐ 524.2	SVOC: ☐ ABN ☐ PAH	METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15	METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13	EPH: ☐ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☐ Ranges Only	☐ PCB ☐ PEST	TPH: ☐ Quant Only ☐ Fingerprint	Specific Conductance (SM2510)	PFAS 533	Sample Comments	TOTAL # BOTTLES
22771-01	15-7535	5/3/2021	1300											X			
02	15-7532	↓	1345											↓			
03	15-TH7AR	↓	1225											↓			
04	15-7533	↓	1250											↓			
05	15-6522	↓	1110											↓			
06	15-6144	↓	1010											↓			
07	PH4-4799	↓	1045											↓			
08	Haven Well	↓	1200			X								↓	X		
09	TB-01	↓				X											
10	FB-01	↓	1205												X		
					Container Type												
					Preservative												

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	5/3/21 1450	[signature] AAL	5/3/21 1450
[signature] AAL	5/3/21	[signature] AAL	5/3/21 1700
[signature] AAL	5/3/21 1854	[signature]	5/3/21 1854

FORM NO: 01-01 (rev. 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L2123175
Client:	Weston & Sampson 100 International Drive Suite 152 Portsmouth, NH 03801
ATTN:	Frank Getchell
Phone:	(603) 570-6319
Project Name:	HAVEN WELL PT
Project Number:	2190120
Report Date:	05/19/21

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2123175
Report Date: 05/19/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2123175-01	HAVEN WELL	WATER	PORTSMOUTH, NH	05/05/21 08:15	05/05/21
L2123175-02	FB-01	WATER	PORTSMOUTH, NH	05/05/21 08:20	05/05/21

Project Name:	HAVEN WELL PT	**Lab Number:**	L2123175
Project Number:	2190120	**Report Date:**	05/19/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	HAVEN WELL PT	**Lab Number:**	L2123175
Project Number:	2190120	**Report Date:**	05/19/21

Case Narrative (continued)

Perfluorinated Alkyl Acids by EPA 537.1

L2123175-01: The sample was re-analyzed on dilution in order to quantiitate the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range.

WG1499270-3: The sample was re-analyzed on dilution in order to quantiitate the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range.

The WG1499270-3D MS recovery, performed on L2123175-01, is outside the acceptance criteria for perfluorooctanesulfonic acid (pfos) (54%). The unacceptable percent recovery is attributed to the elevated concentration of the target compound present in the native sample.

Perfluorinated Alkyl Acids by EPA 533

L2123175-01RE: The sample was not re-analyzed on dilution due to lack of additional sample. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. Only the results of the original analysis are reported.

L2123175-01RE: The sample was re-extracted within holding time due to QC failures in the original extraction. The results of the re-extraction are reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 05/19/21

ORGANICS

SEMIVOLATILES

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2123175
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123175-01
Client ID: HAVEN WELL
Sample Location: PORTSMOUTH, NH

Date Collected: 05/05/21 08:15
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 133,537.1
Analytical Date: 05/17/21 18:37
Analyst: LV

Extraction Method: EPA 537.1
Extraction Date: 05/15/21 07:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	12.2		ng/l	2.00	--	1
Perfluorohexanoic Acid (PFHxA)	56.8		ng/l	2.00	--	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	2.00	--	1
Perfluoroheptanoic Acid (PFHpA)	24.9		ng/l	2.00	--	1
Perfluorohexanesulfonic Acid (PFHxS)	157		ng/l	2.00	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--	1
Perfluorooctanoic Acid (PFOA)	43.6		ng/l	2.00	--	1
Perfluorononanoic Acid (PFNA)	3.29		ng/l	2.00	--	1
Perfluorooctanesulfonic Acid (PFOS)	441	E	ng/l	2.00	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	102		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	95		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	93		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	100		70-130

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2123175
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123175-01 RE
Client ID: HAVEN WELL
Sample Location: PORTSMOUTH, NH

Date Collected: 05/05/21 08:15
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 136,533
Analytical Date: 05/12/21 14:19
Analyst: LV

Extraction Method: EPA 533
Extraction Date: 05/11/21 14:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	45.0		ng/l	2.00	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--	1
Perfluoropentanoic Acid (PFPeA)	65.7		ng/l	2.00	--	1
Perfluorobutanesulfonic Acid (PFBS)	9.89		ng/l	2.00	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	2.00	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--	1
Perfluorohexanoic Acid (PFHxA)	55.2		ng/l	2.00	--	1
Perfluoropentanesulfonic Acid (PFPeS)	10.7		ng/l	2.00	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--	1
Perfluoroheptanoic Acid (PFHpA)	21.6		ng/l	2.00	--	1
Perfluorohexanesulfonic Acid (PFHxS)	126		ng/l	2.00	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	40.6		ng/l	2.00	--	1
Perfluorooctanoic Acid (PFOA)	45.4		ng/l	2.00	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	7.29		ng/l	2.00	--	1
Perfluorononanoic Acid (PFNA)	3.17		ng/l	2.00	--	1
Perfluorooctanesulfonic Acid (PFOS)	383	E	ng/l	2.00	--	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	13.3		ng/l	2.00	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--	1

Project Name: HAVEN WELL PT **Lab Number:** L2123175

Project Number: 2190120 **Report Date:** 05/19/21

SAMPLE RESULTS

Lab ID: L2123175-01 RE
Client ID: HAVEN WELL
Sample Location: PORTSMOUTH, NH

Date Collected: 05/05/21 08:15
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	107		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	123		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	116		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	123		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	96		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	87		50-200

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2123175
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123175-01 D
Client ID: HAVEN WELL
Sample Location: PORTSMOUTH, NH

Sample Depth:
Matrix: Water
Analytical Method: 133,537.1
Analytical Date: 05/18/21 15:07
Analyst: LV

Date Collected: 05/05/21 08:15
Date Received: 05/05/21
Field Prep: Not Specified

Extraction Method: EPA 537.1
Extraction Date: 05/15/21 07:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorooctanesulfonic Acid (PFOS)	310		ng/l	8.84	--	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	81		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	78		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	79		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81		70-130

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2123175
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123175-02
Client ID: FB-01
Sample Location: PORTSMOUTH, NH

Date Collected: 05/05/21 08:20
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 136,533
Analytical Date: 05/10/21 12:28
Analyst: LV

Extraction Method: EPA 533
Extraction Date: 05/09/21 11:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	2.00	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--	1

Project Name: HAVEN WELL PT **Lab Number:** L2123175

Project Number: 2190120 **Report Date:** 05/19/21

SAMPLE RESULTS

Lab ID: L2123175-02 Date Collected: 05/05/21 08:20

Client ID: FB-01 Date Received: 05/05/21

Sample Location: PORTSMOUTH, NH Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	114		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	134		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	111		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	103		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	110		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	108		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	96		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	113		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	118		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	123		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	104		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	127		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	153		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	104		50-200

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2123175
Report Date: 05/19/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 05/10/21 09:50
Analyst: LV

Extraction Method: EPA 533
Extraction Date: 05/09/21 11:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 02 Batch: WG1496421-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	2.00	--
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2123175
Report Date: 05/19/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 05/10/21 09:50
Analyst: LV

Extraction Method: EPA 533
Extraction Date: 05/09/21 11:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 02 Batch: WG1496421-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	105		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	100		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	99		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	139		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	90		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	115		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	126		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	99		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	121		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	153		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	101		50-200

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2123175
Report Date: 05/19/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 05/12/21 13:26
Analyst: LV

Extraction Method: EPA 533
Extraction Date: 05/11/21 14:04

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01 Batch: WG1497309-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	2.00	--
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2123175
Report Date: 05/19/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 05/12/21 13:26
Analyst: LV

Extraction Method: EPA 533
Extraction Date: 05/11/21 14:04

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01 Batch: WG1497309-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	85		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	108		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	83		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	111		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	110		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	83		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	117		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	103		50-200

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2123175
Report Date: 05/19/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 133,537.1
Analytical Date: 05/17/21 18:20
Analyst: LV

Extraction Method: EPA 537.1
Extraction Date: 05/15/21 07:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab for sample(s): 01 Batch: WG1499270-1					
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	102		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	92		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	98		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	99		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2123175
Report Date: 05/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 02 Batch: WG1496421-2								
Perfluorobutanoic Acid (PFBA)	100		-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	110		-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	116		-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	104		-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	98		-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	103		-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	114		-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	96		-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	124		-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	121		-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	74		-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	108		-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	88		-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	106		-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	97		-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	112		-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	111		-		70-130	-		30
Perfluorononanoic Acid (PFNA)	104		-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	106		-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	111		-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	96		-		70-130	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2123175

Report Date: 05/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 02 Batch: WG1496421-2								
Perfluorodecanoic Acid (PFDA)	108		-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	110		-		70-130	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	110		-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	106		-		70-130	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	106				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	105				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	90				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	118				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	122				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	101				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	120				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	150				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	113				50-200

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2123175

Report Date: 05/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 Batch: WG1497309-2 WG1497309-3								
Perfluorobutanoic Acid (PFBA)	88		87		70-130	1		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	95		90		70-130	5		30
Perfluoropentanoic Acid (PFPeA)	94		95		70-130	1		30
Perfluorobutanesulfonic Acid (PFBS)	89		86		70-130	3		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	87		89		70-130	2		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	90		93		70-130	3		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	105		110		70-130	5		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	102		101		70-130	1		30
Perfluorohexanoic Acid (PFHxA)	100		96		70-130	4		30
Perfluoropentanesulfonic Acid (PFPeS)	85		83		70-130	2		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	95		98		70-130	3		30
Perfluoroheptanoic Acid (PFHpA)	90		94		70-130	4		30
Perfluorohexanesulfonic Acid (PFHxS)	85		81		70-130	5		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	98		101		70-130	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	87		90		70-130	3		30
Perfluorooctanoic Acid (PFOA)	98		94		70-130	4		30
Perfluoroheptanesulfonic Acid (PFHpS)	89		83		70-130	7		30
Perfluorononanoic Acid (PFNA)	91		100		70-130	9		30
Perfluorooctanesulfonic Acid (PFOS)	90		86		70-130	5		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	89		94		70-130	5		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	93		92		70-130	1		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2123175

Report Date: 05/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 Batch: WG1497309-2 WG1497309-3								
Perfluorodecanoic Acid (PFDA)	96		94		70-130	2		30
Perfluoroundecanoic Acid (PFUnA)	97		94		70-130	3		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	98		104		70-130	6		30
Perfluorododecanoic Acid (PFDoA)	92		94		70-130	2		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		98		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		99		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		94		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	95		93		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		100		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		102		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		99		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		107		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	88		84		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108		113		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		99		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	108		117		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	94		95		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	113		121		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	122		127		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	91		96		50-200

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2123175

Report Date: 05/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01 Batch: WG1499270-2								
Perfluorobutanesulfonic Acid (PFBS)	107		-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	110		-		70-130	-		30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	106		-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	115		-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	125		-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	103		-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	117		-		70-130	-		30
Perfluorononanoic Acid (PFNA)	106		-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	106		-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	102		-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	112		-		70-130	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	108		-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	105		-		70-130	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	109		-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	106		-		70-130	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	107		-		70-130	-		30
Perfluorotridecanoic Acid (PFTrDA)	105		-		70-130	-		30
Perfluorotetradecanoic Acid (PFTA)	114		-		70-130	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2123175

Report Date: 05/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01 Batch: WG1499270-2

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	99				70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	95				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	99				70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	101				70-130

Matrix Spike Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2123175

Report Date: 05/19/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab	Associated sample(s): 02	QC Batch ID: WG1496421-3	QC Sample: L2122271-01	Client ID: MS Sample								
Perfluorobutanoic Acid (PFBA)	38.7	2	40.2	75		-	-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	2	2.28	114		-	-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	51.9	2	56.2	**215**	Q	-	-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	7.88	1.77	10.2	**131**		-	-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	2	2.00	100		-	-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	1.78	ND	103		-	-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	2	2.00	100		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	1.87	2.92	**156**	Q	-	-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	49.7	2	52.8	**155**	Q	-	-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	9.21	1.88	11.7	**133**		-	-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	2	2.16	108		-	-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	16.1	2	19.1	**150**		-	-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	114	1.82	118	**220**	Q	-	-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	1.88	ND	98		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	33.9	1.9	40.0	**321**	Q	-	-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	39.7	2	42.6	**145**		-	-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	8.14	1.9	9.30	**61**		-	-		70-130	-		30
Perfluorononanoic Acid (PFNA)	3.16	2	4.71	78		-	-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	459E	1.85	424E	**0**	Q	-	-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	11.7	1.92	13.7	104		-	-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	ND	2	3.55	**178**	Q	-	-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	2	2.12	106		-	-		70-130	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2123175

Report Date: 05/19/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab	Associated sample(s): 02	QC Batch ID: WG1496421-3	QC Sample: L2122271-01	Client ID: MS Sample								
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	1.88	2.08	110		-	-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	ND	2	2.12	106		-	-		70-130	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	112				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	126				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	95				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	124				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	123				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	103				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	119				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	147				50-200
Perfluoro[13C4]Butanoic Acid (MPFBA)	101				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	109				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	128				50-200

Matrix Spike Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2123175

Report Date: 05/19/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1499270-3 QC Sample: L2123175-01 Client ID: HAVEN WELL												
Perfluorobutanesulfonic Acid (PFBS)	12.2	126	169	125		-	-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	56.8	142	214	111		-	-		70-130	-		30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	142	150	106		-	-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	24.9	142	196	121		-	-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	157	129	302	112		-	-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	134	144	108		-	-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	43.6	142	207	115		-	-		70-130	-		30
Perfluorononanoic Acid (PFNA)	3.29	142	146	101		-	-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	310	131	381	**54**	Q	-	-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	ND	142	161	114		-	-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	132	146	111		-	-		70-130	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	142	154	109		-	-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	142	157	111		-	-		70-130	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	142	157	111		-	-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	ND	142	146	103		-	-		70-130	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	134	145	108		-	-		70-130	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	142	138	97		-	-		70-130	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	142	147	104		-	-		70-130	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2123175

Report Date: 05/19/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1499270-3 QC Sample: L2123175-01 Client ID: HAVEN WELL												

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	104				70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	101				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	79				70-130
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	104				70-130
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	79				70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	73				70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	97				70-130

Lab Duplicate Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2123175
Report Date: 05/19/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1496421-4 QC Sample: L2122271-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	34.5	33.1	ng/l	4		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	31.1	30.7	ng/l	1		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	ND	ng/l	NC		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	ND	ng/l	NC		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	7.32	6.71	ng/l	9		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.13	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2123175
Report Date: 05/19/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1496421-4 QC Sample: L2122271-02 Client ID: DUP Sample						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	105		106		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		115		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		115		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	111		112		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		101		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	111		104		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110		120		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	117		114		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	96		99		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	120		115		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		113		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	118		121		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	101		98		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	126		126		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	151		151		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	104		100		50-200

Lab Duplicate Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2123175
Report Date: 05/19/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1497309-4 QC Sample: L2122771-08 Client ID: DUP Sample						
Perfluorooctanesulfonic Acid (PFOS)	612	695	ng/l	13		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		91		50-200

Lab Duplicate Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2123175
Report Date: 05/19/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1499270-4 QC Sample: L2124864-01 Client ID: DUP Sample						
Perfluorobutanesulfonic Acid (PFBS)	2.46	2.33	ng/l	5		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	4.84	4.77	ng/l	1		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	3.67	3.49	ng/l	5		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2123175
Report Date: 05/19/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1499270-4 QC Sample: L2124864-01 Client ID: DUP Sample

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	109		107		70-130
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	92		93		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	88		92		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	93		94		70-130

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2123175
Report Date: 05/19/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2123175-01A	Plastic 250ml Trizma preserved	A	NA		3.3	Y	Absent		A2-NH-537.1(14)
L2123175-01B	Plastic 250ml Trizma preserved	A	NA		3.3	Y	Absent		A2-NH-537.1(14)
L2123175-01C	Plastic 250ml Ammonium Acetate preserved	A	NA		3.3	Y	Absent		A2-NH-533(28)
L2123175-01D	Plastic 250ml Ammonium Acetate preserved	A	NA		3.3	Y	Absent		A2-NH-533(28)
L2123175-02C	Plastic 250ml Ammonium Acetate preserved	A	NA		3.3	Y	Absent		A2-NH-533(28)

*Values in parentheses indicate holding time in days

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2123175
Report Date: 05/19/21

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	HAVEN WELL PT	**Lab Number:**	L2123175
Project Number:	2190120	**Report Date:**	05/19/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	HAVEN WELL PT	**Lab Number:**	L2123175
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Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report

Project Name:	HAVEN WELL PT	**Lab Number:**	L2123175
Project Number:	2190120	**Report Date:**	05/19/21

Data Qualifiers

the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Report Format: Data Usability Report

REFERENCES

133 Determination of Selected Per- and Polyfluorinated Alkyl Substances in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537.1, EPA/600/R-18/352. Version 1.0, November 2018.

136 Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 533, EPA Document 815-B-19-020, November 2019.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Date Rec'd in Lab: 5/5/21

ALPHA Job #: L2123175

Client Information
Client: Weston & Sampson
Address: 55 Walkers Brook Dr, Reading MA
Phone: 978-532-1900
Email: Frank.Getchell@wseinc.com

Project Information
Project Name: Haven well PT
Project Location: Portsmouth NH
Project #: 2190120
Project Manager:
ALPHA Quote #:

Report Information - Data Deliverables
☐ ADEx ☒ EMAIL

Billing Information
☐ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements
☐ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

Turn-Around Time
☒ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due:

Additional Project Information:

ANALYSIS
VOC: ☐ 8260 ☐ 624 ☐ 524.2
SVOC: ☐ ABN ☐ PAH
METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15
METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13
EPH: ☐ Ranges & Targets ☐ Ranges Only
VPH: ☐ Ranges & Targets ☐ Ranges Only
☐ PCB ☐ PEST
TPH: ☐ Quant Only ☐ Fingerprint
PFAS 533
PFAS 537.1

SAMPLE INFO
Filtration ☐ Field ☐ Lab to do
Preservation ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Sample Comments	TOTAL # BOTTLES
23175-01	Haven Well	5/5/21	815	GW	JAG		X X
-02	FB-01	✓	820	GW	JAG		X

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H= $Na_2S_2O_3$
I= Ascorbic Acid
J= NH_4Cl
K= Zn Acetate
O= Other

	Container Type									
	Preservative									
Relinquished By:		Date/Time		Received By:		Date/Time				
		5/5/21 9:00				5/5/21 9:00				
		5/5/21 1740				5/5/21 1740				
		5/5/21 1930				5/5/21 1930				
		5/5/21 2000								

waiving Rush 5/6/21 21:20
Kwilbach 5/5/21 21:20

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L2123943
Client:	Weston & Sampson 100 International Drive Suite 152 Portsmouth, NH 03801
ATTN:	Frank Getchell
Phone:	(603) 570-6319
Project Name:	HAVEN WELL PT
Project Number:	2190120
Report Date:	05/24/21

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2123943
Report Date: 05/24/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2123943-01	15-7535	WATER	PORTSMOUTH, NH	05/07/21 13:20	05/07/21
L2123943-02	15-7532	WATER	PORTSMOUTH, NH	05/07/21 14:15	05/07/21
L2123943-03	15-TH1AR	WATER	PORTSMOUTH, NH	05/07/21 12:30	05/07/21
L2123943-04	15-7533	WATER	PORTSMOUTH, NH	05/07/21 12:50	05/07/21
L2123943-05	15-6522	WATER	PORTSMOUTH, NH	05/07/21 10:15	05/07/21
L2123943-06	15-6144	WATER	PORTSMOUTH, NH	05/07/21 11:50	05/07/21
L2123943-07	PH4-4779	WATER	PORTSMOUTH, NH	05/07/21 10:40	05/07/21
L2123943-08	TRIP BLANK	WATER	PORTSMOUTH, NH	05/07/21 00:00	05/07/21

Project Name:	HAVEN WELL PT	**Lab Number:**	L2123943
Project Number:	2190120	**Report Date:**	05/24/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	HAVEN WELL PT	**Lab Number:**	L2123943
Project Number:	2190120	**Report Date:**	05/24/21

Case Narrative (continued)

Sample Receipt

L2123943-08: A sample identified as "TRIP BLANK" was received, but not listed on the Chain of Custody. This sample was not analyzed.

Anions by Ion Chromatography

The WG1499901-3 MS recoveries, performed on L2123943-02, are outside the acceptance criteria for sulfate (28%) and bromide (69%); however, the associated LCS recoveries is within criteria. No further action was taken.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative Date: 05/24/21

METALS

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2123943
Report Date: 05/24/21

SAMPLE RESULTS

Lab ID: L2123943-01
Client ID: 15-7535
Sample Location: PORTSMOUTH, NH
Date Collected: 05/07/21 13:20
Date Received: 05/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	44.6		mg/l	0.100	--	1	05/14/21 09:31	05/22/21 00:41	EPA 3005A	1,6010D	SV
Iron, Total	0.057		mg/l	0.050	--	1	05/14/21 09:31	05/22/21 00:41	EPA 3005A	1,6010D	SV
Magnesium, Total	8.93		mg/l	0.100	--	1	05/14/21 09:31	05/22/21 00:41	EPA 3005A	1,6010D	SV
Manganese, Total	0.605		mg/l	0.010	--	1	05/14/21 09:31	05/22/21 00:41	EPA 3005A	1,6010D	SV
Sodium, Total	24.2		mg/l	2.00	--	1	05/14/21 09:31	05/22/21 00:41	EPA 3005A	1,6010D	SV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	148		mg/l	0.660	NA	1	05/14/21 09:31	05/22/21 00:41	EPA 3005A	1,6010D	SV

Project Name: HAVEN WELL PT
Lab Number: L2123943
Project Number: 2190120
Report Date: 05/24/21

SAMPLE RESULTS

Lab ID: L2123943-02
Client ID: 15-7532
Sample Location: PORTSMOUTH, NH
Date Collected: 05/07/21 14:15
Date Received: 05/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	48.7		mg/l	0.100	--	1	05/14/21 09:31	05/22/21 00:55	EPA 3005A	1,6010D	SV
Iron, Total	ND		mg/l	0.050	--	1	05/14/21 09:31	05/22/21 00:55	EPA 3005A	1,6010D	SV
Magnesium, Total	9.32		mg/l	0.100	--	1	05/14/21 09:31	05/22/21 00:55	EPA 3005A	1,6010D	SV
Manganese, Total	0.418		mg/l	0.010	--	1	05/14/21 09:31	05/22/21 00:55	EPA 3005A	1,6010D	SV
Sodium, Total	23.0		mg/l	2.00	--	1	05/14/21 09:31	05/22/21 00:55	EPA 3005A	1,6010D	SV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	160		mg/l	0.660	NA	1	05/14/21 09:31	05/22/21 00:55	EPA 3005A	1,6010D	SV

Project Name: HAVEN WELL PT
Lab Number: L2123943
Project Number: 2190120
Report Date: 05/24/21

SAMPLE RESULTS

Lab ID: L2123943-03
Client ID: 15-TH1AR
Sample Location: PORTSMOUTH, NH
Date Collected: 05/07/21 12:30
Date Received: 05/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	47.8		mg/l	0.100	--	1	05/14/21 09:31	05/22/21 01:00	EPA 3005A	1,6010D	SV
Iron, Total	1.09		mg/l	0.050	--	1	05/14/21 09:31	05/22/21 01:00	EPA 3005A	1,6010D	SV
Magnesium, Total	9.27		mg/l	0.100	--	1	05/14/21 09:31	05/22/21 01:00	EPA 3005A	1,6010D	SV
Manganese, Total	0.223		mg/l	0.010	--	1	05/14/21 09:31	05/22/21 01:00	EPA 3005A	1,6010D	SV
Sodium, Total	22.6		mg/l	2.00	--	1	05/14/21 09:31	05/22/21 01:00	EPA 3005A	1,6010D	SV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	157		mg/l	0.660	NA	1	05/14/21 09:31	05/22/21 01:00	EPA 3005A	1,6010D	SV

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2123943
Report Date: 05/24/21

SAMPLE RESULTS

Lab ID: L2123943-04
Client ID: 15-7533
Sample Location: PORTSMOUTH, NH
Sample Depth:
Matrix: Water

Date Collected: 05/07/21 12:50
Date Received: 05/07/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	65.9		mg/l	0.100	--	1	05/14/21 09:31	05/22/21 01:04	EPA 3005A	1,6010D	SV
Iron, Total	ND		mg/l	0.050	--	1	05/14/21 09:31	05/22/21 01:04	EPA 3005A	1,6010D	SV
Magnesium, Total	9.39		mg/l	0.100	--	1	05/14/21 09:31	05/22/21 01:04	EPA 3005A	1,6010D	SV
Manganese, Total	0.021		mg/l	0.010	--	1	05/14/21 09:31	05/22/21 01:04	EPA 3005A	1,6010D	SV
Sodium, Total	17.5		mg/l	2.00	--	1	05/14/21 09:31	05/22/21 01:04	EPA 3005A	1,6010D	SV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	203		mg/l	0.660	NA	1	05/14/21 09:31	05/22/21 01:04	EPA 3005A	1,6010D	SV

Project Name: HAVEN WELL PT
Lab Number: L2123943
Project Number: 2190120
Report Date: 05/24/21

SAMPLE RESULTS

Lab ID: L2123943-05
Client ID: 15-6522
Sample Location: PORTSMOUTH, NH
Date Collected: 05/07/21 10:15
Date Received: 05/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	60.1		mg/l	0.100	--	1	05/14/21 09:31	05/22/21 01:09	EPA 3005A	1,6010D	SV
Iron, Total	ND		mg/l	0.050	--	1	05/14/21 09:31	05/22/21 01:09	EPA 3005A	1,6010D	SV
Magnesium, Total	11.5		mg/l	0.100	--	1	05/14/21 09:31	05/22/21 01:09	EPA 3005A	1,6010D	SV
Manganese, Total	0.187		mg/l	0.010	--	1	05/14/21 09:31	05/22/21 01:09	EPA 3005A	1,6010D	SV
Sodium, Total	26.9		mg/l	2.00	--	1	05/14/21 09:31	05/22/21 01:09	EPA 3005A	1,6010D	SV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	197		mg/l	0.660	NA	1	05/14/21 09:31	05/22/21 01:09	EPA 3005A	1,6010D	SV

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2123943
Report Date: 05/24/21

SAMPLE RESULTS

Lab ID: L2123943-06
Client ID: 15-6144
Sample Location: PORTSMOUTH, NH
Date Collected: 05/07/21 11:50
Date Received: 05/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	22.7		mg/l	0.100	--	1	05/14/21 09:31	05/22/21 01:14	EPA 3005A	1,6010D	SV
Iron, Total	0.144		mg/l	0.050	--	1	05/14/21 09:31	05/22/21 01:14	EPA 3005A	1,6010D	SV
Magnesium, Total	12.7		mg/l	0.100	--	1	05/14/21 09:31	05/22/21 01:14	EPA 3005A	1,6010D	SV
Manganese, Total	0.094		mg/l	0.010	--	1	05/14/21 09:31	05/22/21 01:14	EPA 3005A	1,6010D	SV
Sodium, Total	32.3		mg/l	2.00	--	1	05/14/21 09:31	05/22/21 01:14	EPA 3005A	1,6010D	SV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	109		mg/l	0.660	NA	1	05/14/21 09:31	05/22/21 01:14	EPA 3005A	1,6010D	SV

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2123943
Report Date: 05/24/21

SAMPLE RESULTS

Lab ID: L2123943-07
Client ID: PH4-4779
Sample Location: PORTSMOUTH, NH
Date Collected: 05/07/21 10:40
Date Received: 05/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Calcium, Total	1.70		mg/l	0.100	--	1	05/14/21 09:31	05/22/21 01:18	EPA 3005A	1,6010D	SV
Iron, Total	1.93		mg/l	0.050	--	1	05/14/21 09:31	05/22/21 01:18	EPA 3005A	1,6010D	SV
Magnesium, Total	0.360		mg/l	0.100	--	1	05/14/21 09:31	05/22/21 01:18	EPA 3005A	1,6010D	SV
Manganese, Total	0.015		mg/l	0.010	--	1	05/14/21 09:31	05/22/21 01:18	EPA 3005A	1,6010D	SV
Sodium, Total	3.35		mg/l	2.00	--	1	05/14/21 09:31	05/22/21 01:18	EPA 3005A	1,6010D	SV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	5.71		mg/l	0.660	NA	1	05/14/21 09:31	05/22/21 01:18	EPA 3005A	1,6010D	SV

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2123943
Report Date: 05/24/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-07 Batch: WG1498485-1										
Calcium, Total	ND		mg/l	0.100	--	1	05/14/21 09:31	05/21/21 23:59	1,6010D	SV
Iron, Total	ND		mg/l	0.050	--	1	05/14/21 09:31	05/21/21 23:59	1,6010D	SV
Magnesium, Total	ND		mg/l	0.100	--	1	05/14/21 09:31	05/21/21 23:59	1,6010D	SV
Manganese, Total	ND		mg/l	0.010	--	1	05/14/21 09:31	05/21/21 23:59	1,6010D	SV
Sodium, Total	ND		mg/l	2.00	--	1	05/14/21 09:31	05/21/21 23:59	1,6010D	SV

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01-07 Batch: WG1498485-1										
Hardness	ND		mg/l	0.660	NA	1	05/14/21 09:31	05/21/21 23:59	1,6010D	SV

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2123943

Report Date: 05/24/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-07 Batch: WG1498485-2								
Calcium, Total	98		-		80-120	-		
Iron, Total	81		-		80-120	-		
Magnesium, Total	100		-		80-120	-		
Manganese, Total	83		-		80-120	-		
Sodium, Total	102		-		80-120	-		
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-07 Batch: WG1498485-2								
Hardness	99		-		80-120	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2123943
Report Date: 05/24/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-07 QC Batch ID: WG1498485-3 QC Sample: L2100009-270 Client ID: MS Sample												
Calcium, Total	28.4	10	38.9	105		-	-		75-125	-		20
Iron, Total	0.290	1	1.12	83		-	-		75-125	-		20
Magnesium, Total	0.158	10	9.01	88		-	-		75-125	-		20
Manganese, Total	ND	0.5	0.428	86		-	-		75-125	-		20
Sodium, Total	1810	10	1800	**0**	Q	-	-		75-125	-		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-07 QC Batch ID: WG1498485-3 QC Sample: L2100009-270 Client ID: MS Sample												
Hardness	71.6	66.2	134	94		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2123943

Report Date: 05/24/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-07 QC Batch ID: WG1498485-4 QC Sample: L2100009-270 Client ID: DUP Sample						
Calcium, Total	28.4	28.7	mg/l	1		20
Iron, Total	0.290	0.289	mg/l	0		20
Magnesium, Total	0.158	0.156	mg/l	1		20
Manganese, Total	ND	ND	mg/l	NC		20
Sodium, Total	1810	1740	mg/l	4		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-07 QC Batch ID: WG1498485-4 QC Sample: L2100009-270 Client ID: DUP Sample						
Hardness	71.6	72.2	mg/l	1		20

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Serial Dilution Analysis
Batch Quality Control

Lab Number: L2123943
Report Date: 05/24/21

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-07 QC Batch ID: WG1498485-6 QC Sample: L2100009-270 Client ID: DUP Sample						
Calcium, Total	28.4	29.5	mg/l	4		20
Sodium, Total	1810	2000	mg/l	10		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-07 QC Batch ID: WG1498485-6 QC Sample: L2100009-270 Client ID: DUP Sample						
Hardness	71.6	74.5	mg/l	4		20

INORGANICS
&
MISCELLANEOUS

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2123943
Report Date: 05/24/21

SAMPLE RESULTS

Lab ID: L2123943-01
Client ID: 15-7535
Sample Location: PORTSMOUTH, NH
Sample Depth:
Matrix: Water

Date Collected: 05/07/21 13:20
Date Received: 05/07/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	122.		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB
Alkalinity, Bicarbonate	122.		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB
Specific Conductance @ 25 C	410		umhos/cm	10	--	1	-	05/13/21 00:58	1,9050A	KA
Solids, Total Dissolved	240		mg/l	10	--	1	-	05/13/21 10:30	121,2540C	AC
pH (H)	7.1		SU	-	NA	1	-	05/10/21 20:50	121,4500H+-B	AS
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/08/21 06:19	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	0.067		mg/l	0.050	--	1	-	05/16/21 18:07	44,300.0	SH
Chloride	44.0		mg/l	0.500	--	1	-	05/16/21 18:07	44,300.0	SH
Sulfate	19.0		mg/l	1.00	--	1	-	05/16/21 18:07	44,300.0	SH

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2123943
Report Date: 05/24/21

SAMPLE RESULTS

Lab ID: L2123943-02
Client ID: 15-7532
Sample Location: PORTSMOUTH, NH

Date Collected: 05/07/21 14:15
Date Received: 05/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	129.		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB
Alkalinity, Bicarbonate	129.		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB
Specific Conductance @ 25 C	430		umhos/cm	10	--	1	-	05/13/21 00:58	1,9050A	KA
Solids, Total Dissolved	240		mg/l	10	--	1	-	05/13/21 10:30	121,2540C	AC
pH (H)	7.2		SU	-	NA	1	-	05/10/21 20:50	121,4500H+-B	AS
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/08/21 06:20	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	0.069		mg/l	0.050	--	1	-	05/16/21 21:57	44,300.0	SH
Chloride	45.1		mg/l	0.500	--	1	-	05/16/21 21:57	44,300.0	SH
Sulfate	22.3		mg/l	1.00	--	1	-	05/16/21 21:57	44,300.0	SH

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2123943
Report Date: 05/24/21

SAMPLE RESULTS

Lab ID: L2123943-03
Client ID: 15-TH1AR
Sample Location: PORTSMOUTH, NH

Date Collected: 05/07/21 12:30
Date Received: 05/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	128.		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB
Alkalinity, Bicarbonate	128.		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB
Specific Conductance @ 25 C	420		umhos/cm	10	--	1	-	05/13/21 00:58	1,9050A	KA
Solids, Total Dissolved	250		mg/l	10	--	1	-	05/13/21 10:30	121,2540C	AC
pH (H)	7.2		SU	-	NA	1	-	05/10/21 20:50	121,4500H+-B	AS
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/08/21 06:22	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	0.070		mg/l	0.050	--	1	-	05/16/21 22:09	44,300.0	SH
Chloride	44.1		mg/l	0.500	--	1	-	05/16/21 22:09	44,300.0	SH
Sulfate	20.7		mg/l	1.00	--	1	-	05/16/21 22:09	44,300.0	SH

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2123943
Report Date: 05/24/21

SAMPLE RESULTS

Lab ID: L2123943-04
Client ID: 15-7533
Sample Location: PORTSMOUTH, NH

Date Collected: 05/07/21 12:50
Date Received: 05/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	160.		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB
Alkalinity, Bicarbonate	160.		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB
Specific Conductance @ 25 C	470		umhos/cm	10	--	1	-	05/13/21 00:58	1,9050A	KA
Solids, Total Dissolved	310		mg/l	10	--	1	-	05/13/21 10:30	121,2540C	AC
pH (H)	7.6		SU	-	NA	1	-	05/10/21 20:50	121,4500H+-B	AS
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/08/21 06:23	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	0.068		mg/l	0.050	--	1	-	05/16/21 22:21	44,300.0	SH
Chloride	39.9		mg/l	0.500	--	1	-	05/16/21 22:21	44,300.0	SH
Sulfate	30.0		mg/l	1.00	--	1	-	05/16/21 22:21	44,300.0	SH

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2123943
Report Date: 05/24/21

SAMPLE RESULTS

Lab ID: L2123943-05
Client ID: 15-6522
Sample Location: PORTSMOUTH, NH

Date Collected: 05/07/21 10:15
Date Received: 05/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	143.		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB
Alkalinity, Bicarbonate	143.		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB
Specific Conductance @ 25 C	520		umhos/cm	10	--	1	-	05/13/21 00:58	1,9050A	KA
Solids, Total Dissolved	300		mg/l	10	--	1	-	05/13/21 10:30	121,2540C	AC
pH (H)	7.7		SU	-	NA	1	-	05/10/21 20:50	121,4500H+-B	AS
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/08/21 06:24	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	0.065		mg/l	0.050	--	1	-	05/16/21 22:33	44,300.0	SH
Chloride	68.3		mg/l	5.00	--	10	-	05/17/21 17:32	44,300.0	SH
Sulfate	21.2		mg/l	1.00	--	1	-	05/16/21 22:33	44,300.0	SH

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2123943
Report Date: 05/24/21

SAMPLE RESULTS

Lab ID: L2123943-06
Client ID: 15-6144
Sample Location: PORTSMOUTH, NH
Sample Depth:
Matrix: Water

Date Collected: 05/07/21 11:50
Date Received: 05/07/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	108.		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB
Alkalinity, Bicarbonate	108.		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB
Specific Conductance @ 25 C	370		umhos/cm	10	--	1	-	05/13/21 00:58	1,9050A	KA
Solids, Total Dissolved	210		mg/l	10	--	1	-	05/13/21 10:30	121,2540C	AC
pH (H)	8.1		SU	-	NA	1	-	05/10/21 20:50	121,4500H+-B	AS
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/08/21 06:26	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	0.112		mg/l	0.050	--	1	-	05/16/21 22:45	44,300.0	SH
Chloride	29.7		mg/l	0.500	--	1	-	05/16/21 22:45	44,300.0	SH
Sulfate	44.3		mg/l	1.00	--	1	-	05/16/21 22:45	44,300.0	SH

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2123943
Report Date: 05/24/21

SAMPLE RESULTS

Lab ID: L2123943-07
Client ID: PH4-4779
Sample Location: PORTSMOUTH, NH

Date Collected: 05/07/21 10:40
Date Received: 05/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	5.60		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB
Alkalinity, Bicarbonate	5.60		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB
Specific Conductance @ 25 C	30		umhos/cm	10	--	1	-	05/13/21 00:58	1,9050A	KA
Solids, Total Dissolved	54.		mg/l	10	--	1	-	05/13/21 10:30	121,2540C	AC
pH (H)	6.2		SU	-	NA	1	-	05/10/21 20:50	121,4500H+-B	AS
Nitrogen, Nitrate	0.433		mg/l	0.100	--	1	-	05/08/21 06:27	121,4500NO3-F	MR
Anions by Ion Chromatography - Westborough Lab										
Bromide	ND		mg/l	0.050	--	1	-	05/16/21 23:21	44,300.0	SH
Chloride	2.09		mg/l	0.500	--	1	-	05/16/21 23:21	44,300.0	SH
Sulfate	2.97		mg/l	1.00	--	1	-	05/16/21 23:21	44,300.0	SH

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2123943
Report Date: 05/24/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01-07 Batch: WG1496088-1										
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	05/08/21 06:00	121,4500NO3-F	MR
General Chemistry - Westborough Lab for sample(s): 01-07 Batch: WG1498351-1										
Solids, Total Dissolved	ND		mg/l	10	--	1	-	05/13/21 10:30	121,2540C	AC
General Chemistry - Westborough Lab for sample(s): 01-03 Batch: WG1499727-1										
Alkalinity, Total	ND		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB
General Chemistry - Westborough Lab for sample(s): 01-07 Batch: WG1499733-1										
Alkalinity, Bicarbonate	ND		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB
General Chemistry - Westborough Lab for sample(s): 04-07 Batch: WG1499734-1										
Alkalinity, Total	ND		mg CaCO3/L	2.00	NA	1	-	05/17/21 09:57	121,2320B	JB
Anions by Ion Chromatography - Westborough Lab for sample(s): 01-07 Batch: WG1499901-1										
Bromide	ND		mg/l	0.050	--	1	-	05/16/21 17:07	44,300.0	SH
Chloride	ND		mg/l	0.500	--	1	-	05/16/21 17:07	44,300.0	SH
Sulfate	ND		mg/l	1.00	--	1	-	05/16/21 17:07	44,300.0	SH
Anions by Ion Chromatography - Westborough Lab for sample(s): 05 Batch: WG1500090-1										
Chloride	ND		mg/l	0.500	--	1	-	05/17/21 17:07	44,300.0	SH

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2123943

Report Date: 05/24/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-07 Batch: WG1496088-2								
Nitrogen, Nitrate	94		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01-07 Batch: WG1496948-1								
pH	100		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01-07 Batch: WG1498143-1								
Specific Conductance	100		-		99-101	-		
General Chemistry - Westborough Lab Associated sample(s): 01-07 Batch: WG1498351-2								
Solids, Total Dissolved	98		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01-03 Batch: WG1499727-2								
Alkalinity, Total	103		-		90-110	-		10
General Chemistry - Westborough Lab Associated sample(s): 04-07 Batch: WG1499734-2								
Alkalinity, Total	103		-		90-110	-		10

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2123943

Report Date: 05/24/21

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01-07 Batch: WG1499901-2					
Bromide	95	-	90-110	-	
Chloride	97	-	90-110	-	
Sulfate	94	-	90-110	-	
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 05 Batch: WG1500090-2					
Chloride	96	-	90-110	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2123943
Report Date: 05/24/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-07 QC Batch ID: WG1496088-4 QC Sample: L2123507-01 Client ID: MS Sample												
Nitrogen, Nitrate	0.628	4	4.65	101		-	-		83-113	-		17
General Chemistry - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1499727-4 QC Sample: L2124310-01 Client ID: MS Sample												
Alkalinity, Total	507	200	694	94		-	-		86-116	-		10
General Chemistry - Westborough Lab Associated sample(s): 04-07 QC Batch ID: WG1499734-4 QC Sample: L2123943-04 Client ID: 15-7533												
Alkalinity, Total	160	100	269	109		-	-		86-116	-		10
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01-07 QC Batch ID: WG1499901-3 QC Sample: L2123943-02 Client ID: 15-7532												
Bromide	0.069	0.4	0.345	**69**	Q	-	-		90-110	-		20
Chloride	45.1	4	49.0	97		-	-		90-110	-		18
Sulfate	22.3	8	24.5	**28**	Q	-	-		90-110	-		20
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 05 QC Batch ID: WG1500090-3 QC Sample: L2124016-05 Client ID: MS Sample												
Chloride	169	40	207	94		-	-		90-110	-		18

Lab Duplicate Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2123943
Report Date: 05/24/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-07 QC Batch ID: WG1496088-3 QC Sample: L2123507-01 Client ID: DUP Sample						
Nitrogen, Nitrate	0.628	0.636	mg/l	2		17
General Chemistry - Westborough Lab Associated sample(s): 01-07 QC Batch ID: WG1496948-2 QC Sample: L2123677-01 Client ID: DUP Sample						
pH	8.0	8.0	SU	0		5
General Chemistry - Westborough Lab Associated sample(s): 01-07 QC Batch ID: WG1498143-2 QC Sample: L2123876-01 Client ID: DUP Sample						
Specific Conductance	550	550	umhos/cm	0		20
General Chemistry - Westborough Lab Associated sample(s): 01-07 QC Batch ID: WG1498351-3 QC Sample: L2123943-01 Client ID: 15-7535						
Solids, Total Dissolved	240	240	mg/l	0		10
General Chemistry - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1499727-3 QC Sample: L2124310-01 Client ID: DUP Sample						
Alkalinity, Total	507	493	mg CaCO3/L	3		10
General Chemistry - Westborough Lab Associated sample(s): 01-07 QC Batch ID: WG1499733-2 QC Sample: L2123834-01 Client ID: DUP Sample						
Alkalinity, Bicarbonate	27.3	27.3	mg CaCO3/L	0		9
General Chemistry - Westborough Lab Associated sample(s): 04-07 QC Batch ID: WG1499734-3 QC Sample: L2123943-04 Client ID: 15-7533						
Alkalinity, Total	160	160	mg CaCO3/L	0		10
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01-07 QC Batch ID: WG1499901-4 QC Sample: L2123943-02 Client ID: 15-7532						
Bromide	0.069	0.069	mg/l	0		20
Chloride	45.1	45.0	mg/l	0		18
Sulfate	22.3	22.3	mg/l	0		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2123943

Report Date: 05/24/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 05 QC Batch ID: WG1500090-4 QC Sample: L2124016-05 Client ID: DUP Sample					
Chloride	169	169	mg/l	0	18

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2123943
Report Date: 05/24/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2123943-01A	Plastic 250ml unpreserved/No Headspace	A	NA		4.1	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)
L2123943-01B	Plastic 250ml HNO3 preserved	A	<2	<2	4.1	Y	Absent		MG-TI(180),MN-TI(180),FE-TI(180),CA-TI(180),NA-TI(180),HARDT(180)
L2123943-01C	Plastic 500ml unpreserved	A	6	6	4.1	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),BR-300(28),PH-4500(.01),TDS-2540(7),COND-9050(28)
L2123943-02A	Plastic 250ml unpreserved/No Headspace	A	NA		4.1	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)
L2123943-02B	Plastic 250ml HNO3 preserved	A	<2	<2	4.1	Y	Absent		FE-TI(180),MG-TI(180),MN-TI(180),HARDT(180),CA-TI(180),NA-TI(180)
L2123943-02C	Plastic 500ml unpreserved	A	6	6	4.1	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),BR-300(28),PH-4500(.01),TDS-2540(7),COND-9050(28)
L2123943-03A	Plastic 250ml unpreserved/No Headspace	A	NA		4.1	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)
L2123943-03B	Plastic 250ml HNO3 preserved	A	<2	<2	4.1	Y	Absent		FE-TI(180),MN-TI(180),MG-TI(180),NA-TI(180),CA-TI(180),HARDT(180)
L2123943-03C	Plastic 500ml unpreserved	A	7	7	4.1	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),BR-300(28),TDS-2540(7),PH-4500(.01),COND-9050(28)
L2123943-04A	Plastic 250ml unpreserved/No Headspace	A	NA		4.1	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)
L2123943-04B	Plastic 250ml HNO3 preserved	A	<2	<2	4.1	Y	Absent		FE-TI(180),MG-TI(180),MN-TI(180),CA-TI(180),NA-TI(180),HARDT(180)
L2123943-04C	Plastic 500ml unpreserved	A	7	7	4.1	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),PH-4500(.01),BR-300(28),TDS-2540(7),COND-9050(28)
L2123943-05A	Plastic 250ml unpreserved/No Headspace	A	NA		4.1	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)
L2123943-05B	Plastic 250ml HNO3 preserved	A	<2	<2	4.1	Y	Absent		MG-TI(180),MN-TI(180),FE-TI(180),CA-TI(180),HARDT(180),NA-TI(180)
L2123943-05C	Plastic 500ml unpreserved	A	7	7	4.1	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),BR-300(28),TDS-2540(7),PH-4500(.01),COND-9050(28)
L2123943-06A	Plastic 250ml unpreserved/No Headspace	A	NA		4.1	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)
L2123943-06B	Plastic 250ml HNO3 preserved	A	<2	<2	4.1	Y	Absent		MN-TI(180),FE-TI(180),MG-TI(180),CA-TI(180),HARDT(180),NA-TI(180)

*Values in parentheses indicate holding time in days

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2123943
Report Date: 05/24/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2123943-06C	Plastic 500ml unpreserved	A	7	7	4.1	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),TDS-2540(7),PH-4500(.01),BR-300(28),COND-9050(28)
L2123943-07A	Plastic 250ml unpreserved/No Headspace	A	NA		4.1	Y	Absent		ALK-T-2320(14),ALK-HCO3-2320(14)
L2123943-07B	Plastic 250ml HNO3 preserved	A	<2	<2	4.1	Y	Absent		MN-TI(180),MG-TI(180),FE-TI(180),NA-TI(180),CA-TI(180),HARDT(180)
L2123943-07C	Plastic 500ml unpreserved	A	6	6	4.1	Y	Absent		SO4-300(28),CL-300(28),NO3-4500(2),PH-4500(.01),TDS-2540(7),BR-300(28),COND-9050(28)
L2123943-08A	Vial HCl preserved	A	N/A	N/A	4.1	Y	Absent		ARCHIVE()
L2123943-08B	Vial HCl preserved	A	N/A	N/A	4.1	Y	Absent		ARCHIVE()

*Values in parentheses indicate holding time in days

Project Name:	HAVEN WELL PT	**Lab Number:**	L2123943
Project Number:	2190120	**Report Date:**	05/24/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	HAVEN WELL PT	**Lab Number:**	L2123943
Project Number:	2190120	**Report Date:**	05/24/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report

Project Name:	HAVEN WELL PT	**Lab Number:**	L2123943
Project Number:	2190120	**Report Date:**	05/24/21

Data Qualifiers

the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Report Format: Data Usability Report

Project Name:	HAVEN WELL PT	**Lab Number:**	L2123943
Project Number:	2190120	**Report Date:**	05/24/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 5/7/21

ALPHA Job #: L2123943

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Project Information
- Project Name: Haven Well PT
- Project Location: Portsmouth NH
- Project #: 2190120
- Project Manager:
- ALPHA Quote #:

Report Information - Data Deliverables
- ☐ ADEx
- ☒ EMAIL

Billing Information
- ☐ Same as Client info
- PO #:

Client Information
- Client: Weston & Sampson Inc.
- Address: 55 Walkers Brook Drive, Reading MA
- Phone: 978-532-1900
- Email: Getchell.Frank@wseinc.com

Turn-Around Time
- ☐ Standard
- ☐ RUSH (only confirmed if pre-approved!)
- Date Due:

Additional Project Information:

Regulatory Requirements & Project Information Requirements
- ☐ Yes ☐ No MA MCP Analytical Methods
- ☐ Yes ☐ No CT RCP Analytical Methods
- ☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
- ☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
- ☐ Yes ☐ No NPDES RGP
- ☐ Other State /Fed Program _____ Criteria _____

ANALYSIS: ☐ VOC: ☐ 8260 ☐ 624 ☐ 524.2 | ☐ SVOC: ☐ ABN ☐ PAH | ☐ METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15 | ☐ METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13 | ☐ EPH: ☐ Ranges & Targets ☐ Ranges Only | ☐ VPH: ☐ Ranges & Targets ☐ Ranges Only | ☐ PCB ☐ PEST | ~~THC - Quant Only - Fingerprint~~ | Specific Conductance (SM2510B) | Bromide, Chloride, Sulfate (EPA 300) | Nitrate-N, Nitrite-N (SM4500) | Total Iron, Total Sodium, Total Manganese, Total Calcium, total magnesium | pH - Hydrogen Ion (SM4500) | TDS (SM2540)

SAMPLE INFO
- Filtration: ☐ Field ☐ Lab to do
- Preservation: ☐ Lab to do

Sample Comments

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials															Sample Comments	TOTAL # BOTTLES
23943-01	15-7535	5/7/21	1320	GW	JAG								X	X	X	X	X	X	X		
02	15-7532		1415																		
03	15-TH1AR		1230																		
04	15-7533		1250																		
05	15-6522		1015																		
06	15-6144		1150																		
07	PH4-4779	↓	1040	↓	↓								↓	↓	↓	↓	↓	↓	↓		

Container Type
P= Plastic, A= Amber glass, V= Vial, G= Glass, B= Bacteria cup, C= Cube, O= Other, E= Encore, D= BOD Bottle

Preservative
A= None, B= HCl, C= HNO_3, D= H_2SO_4, E= NaOH, F= MeOH, G= $NaHSO_4$, H= $Na_2S_2O_3$, I= Ascorbic Acid, J= NH_4Cl, K= Zn Acetate, O= Other

Container Type	
Preservative	

Relinquished By:	Date/Time	Received By:	Date/Time
	5/7/21 1445		5/7/21 1445
	5/7/21 1700		5/7/21 1700
	5/7/21 1845		5/7/21 1845

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L2124240
Client:	Weston & Sampson 100 International Drive Suite 152 Portsmouth, NH 03801
ATTN:	Frank Getchell
Phone:	(603) 570-6319
Project Name:	HAVEN WELL PT
Project Number:	2190120
Report Date:	05/26/21

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2124240
Report Date: 05/26/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2124240-01	HAVEN WELL	DW	PORTSMOUTH, NH	05/08/21 10:50	05/10/21
L2124240-02	FIELD BLANK	DW	PORTSMOUTH, NH	05/08/21 10:55	05/10/21

Project Name:	HAVEN WELL PT	**Lab Number:**	L2124240
Project Number:	2190120	**Report Date:**	05/26/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	HAVEN WELL PT	**Lab Number:**	L2124240
Project Number:	2190120	**Report Date:**	05/26/21

Case Narrative (continued)

Perfluorinated Alkyl Acids by EPA 537.1

L2124240-01: The sample was re-analyzed on dilution in order to quantiitate the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range.

WG1499513-4: The sample was re-analyzed on dilution in order to quantiitate the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range.

Perfluorinated Alkyl Acids by EPA 533

L2124240-01: Perfluorooctanesulfonic Acid (PFOS) exceeded the calibration range; however, re-extraction could not be performed due to lack of additional sample.The result should be considered estimated and is qualified with an E flag.

L2124240-02R: The sample was re-analyzed due to QC failures in the original analysis. The results of the re-analysis are reported.

WG1499735-1R: The sample was re-analyzed due to QC failures in the original analysis. The results of the re-analysis are reported.

WG1499735-2R: The LCS recoveries, associated with L2124240-02R, are within the 50-150% acceptance criteria for low level Perfluorinated Alkyl Acids.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 05/26/21

ORGANICS

SEMIVOLATILES

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2124240
Report Date: 05/26/21

SAMPLE RESULTS

Lab ID: L2124240-01
Client ID: HAVEN WELL
Sample Location: PORTSMOUTH, NH

Date Collected: 05/08/21 10:50
Date Received: 05/10/21
Field Prep: Not Specified

Sample Depth:
Matrix: Dw
Analytical Method: 133,537.1
Analytical Date: 05/18/21 12:35
Analyst: LV

Extraction Method: EPA 537.1
Extraction Date: 05/16/21 10:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	11.0		ng/l	2.00	--	1
Perfluorohexanoic Acid (PFHxA)	51.4		ng/l	2.00	--	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	2.00	--	1
Perfluoroheptanoic Acid (PFHpA)	23.5		ng/l	2.00	--	1
Perfluorohexanesulfonic Acid (PFHxS)	157		ng/l	2.00	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--	1
Perfluorooctanoic Acid (PFOA)	45.2		ng/l	2.00	--	1
Perfluorononanoic Acid (PFNA)	3.30		ng/l	2.00	--	1
Perfluorooctanesulfonic Acid (PFOS)	456	E	ng/l	2.00	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	92		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	91		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	95		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89		70-130

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2124240
Report Date: 05/26/21

SAMPLE RESULTS

Lab ID: L2124240-01
Client ID: HAVEN WELL
Sample Location: PORTSMOUTH, NH

Date Collected: 05/08/21 10:50
Date Received: 05/10/21
Field Prep: Not Specified

Sample Depth:
Matrix: Dw
Analytical Method: 136,533
Analytical Date: 05/19/21 23:40
Analyst: JW

Extraction Method: EPA 533
Extraction Date: 05/17/21 11:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	36.9		ng/l	2.00	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--	1
Perfluoropentanoic Acid (PFPeA)	50.4		ng/l	2.00	--	1
Perfluorobutanesulfonic Acid (PFBS)	7.88		ng/l	2.00	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	2.00	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--	1
Perfluorohexanoic Acid (PFHxA)	40.1		ng/l	2.00	--	1
Perfluoropentanesulfonic Acid (PFPeS)	9.84		ng/l	2.00	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--	1
Perfluoroheptanoic Acid (PFHpA)	15.6		ng/l	2.00	--	1
Perfluorohexanesulfonic Acid (PFHxS)	106		ng/l	2.00	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	41.2		ng/l	2.00	--	1
Perfluorooctanoic Acid (PFOA)	37.5		ng/l	2.00	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	7.08		ng/l	2.00	--	1
Perfluorononanoic Acid (PFNA)	2.68		ng/l	2.00	--	1
Perfluorooctanesulfonic Acid (PFOS)	368	E	ng/l	2.00	--	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	10.6		ng/l	2.00	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--	1

Project Name: HAVEN WELL PT
Lab Number: L2124240
Project Number: 2190120
Report Date: 05/26/21

SAMPLE RESULTS

Lab ID: L2124240-01
Client ID: HAVEN WELL
Sample Location: PORTSMOUTH, NH
Date Collected: 05/08/21 10:50
Date Received: 05/10/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	115		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	128		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	160		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	128		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	128		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	119		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	139		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	111		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	122		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	120		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	115		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	119		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	119		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	112		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	113		50-200

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2124240
Report Date: 05/26/21

SAMPLE RESULTS

Lab ID: L2124240-01 D
Client ID: HAVEN WELL
Sample Location: PORTSMOUTH, NH

Sample Depth:
Matrix: Dw
Analytical Method: 133,537.1
Analytical Date: 05/19/21 02:48
Analyst: LV

Date Collected: 05/08/21 10:50
Date Received: 05/10/21
Field Prep: Not Specified

Extraction Method: EPA 537.1
Extraction Date: 05/16/21 10:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorooctanesulfonic Acid (PFOS)	345		ng/l	9.27	--	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	80		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	75		70-130

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2124240
Report Date: 05/26/21

SAMPLE RESULTS

Lab ID: L2124240-02 R
Client ID: FIELD BLANK
Sample Location: PORTSMOUTH, NH

Date Collected: 05/08/21 10:55
Date Received: 05/10/21
Field Prep: Not Specified

Sample Depth:
Matrix: Dw
Analytical Method: 136,533
Analytical Date: 05/19/21 23:49
Analyst: JW

Extraction Method: EPA 533
Extraction Date: 05/17/21 11:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	2.00	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--	1

Project Name: HAVEN WELL PT **Lab Number:** L2124240

Project Number: 2190120 **Report Date:** 05/26/21

SAMPLE RESULTS

Lab ID: L2124240-02 R
Client ID: FIELD BLANK
Sample Location: PORTSMOUTH, NH

Date Collected: 05/08/21 10:55
Date Received: 05/10/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	125		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	125		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	152		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	104		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	135		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	120		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	134		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	131		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	116		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	132		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	122		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	127		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	100		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	123		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	120		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	118		50-200

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2124240
Report Date: 05/26/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 133,537.1
Analytical Date: 05/18/21 11:00
Analyst: LV

Extraction Method: EPA 537.1
Extraction Date: 05/16/21 10:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab for sample(s): 01 Batch: WG1499513-1					
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	81		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	77		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	79		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	93		70-130

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2124240
Report Date: 05/26/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 05/19/21 23:05
Analyst: JW

Extraction Method: EPA 533
Extraction Date: 05/17/21 11:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-02 Batch: WG1499735-1 R					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	2.00	--
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2124240
Report Date: 05/26/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 05/19/21 23:05
Analyst: JW

Extraction Method: EPA 533
Extraction Date: 05/17/21 11:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-02 Batch: WG1499735-1 R					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	132		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	131		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	160		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	119		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	130		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	131		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	147		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	137		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	119		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	125		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	131		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	134		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	113		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	131		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	121		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	132		50-200

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2124240

Report Date: 05/26/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01 Batch: WG1499513-2								
Perfluorobutanesulfonic Acid (PFBS)	91		-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	88		-		70-130	-		30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	89		-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	98		-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	104		-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	88		-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	103		-		70-130	-		30
Perfluorononanoic Acid (PFNA)	91		-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	91		-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	86		-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	92		-		70-130	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	90		-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	94		-		70-130	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	93		-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	93		-		70-130	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	86		-		70-130	-		30
Perfluorotridecanoic Acid (PFTrDA)	93		-		70-130	-		30
Perfluorotetradecanoic Acid (PFTA)	96		-		70-130	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2124240

Report Date: 05/26/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01 Batch: WG1499513-2

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	85				70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	83				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	83				70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89				70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2124240

Report Date: 05/26/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-02 Batch: WG1499735-2								
Perfluorobutanoic Acid (PFBA)	104		-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	110		-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	124		-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	115		-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	114		-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	94		-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	118		-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	92		-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	**144**		-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	108		-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	**136**		-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	108		-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	105		-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	112		-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	**139**		-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	**134**		-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	94		-		70-130	-		30
Perfluorononanoic Acid (PFNA)	112		-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	101		-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	101		-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	123		-		70-130	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2124240

Report Date: 05/26/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-02 Batch: WG1499735-2								
Perfluorodecanoic Acid (PFDA)	108		-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	112		-		70-130	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	93		-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	114		-		70-130	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	130				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	128				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	153				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	106				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	117				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	124				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	130				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	120				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	108				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	128				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	123				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	129				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	118				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	123				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	123				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	117				50-200

Matrix Spike Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2124240
Report Date: 05/26/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab	Associated sample(s): 01	QC Batch ID: WG1499513-3	QC Sample: L2123865-01	Client ID: MS Sample								
Perfluorobutanesulfonic Acid (PFBS)	164	127	319	122		-	-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	29.4	143	206	124		-	-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	143	156	109		-	-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	19.1	143	208	**132**	Q	-	-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	4.71	130	175	130		-	-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	135	143	106		-	-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	15.1	143	188	121		-	-		70-130	-		30
Perfluorononanoic Acid (PFNA)	ND	143	163	114		-	-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	4.53	132	149	109		-	-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	ND	143	143	100		-	-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	133	140	105		-	-		70-130	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	143	142	100		-	-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	143	149	104		-	-		70-130	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	143	150	105		-	-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	ND	143	154	108		-	-		70-130	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	135	124	92		-	-		70-130	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	143	147	103		-	-		70-130	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	143	162	113		-	-		70-130	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2124240

Report Date: 05/26/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab	Associated sample(s): 01	QC Batch ID: WG1499513-3	QC Sample: L2123865-01	Client ID: MS Sample								

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	85				70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	82				70-130
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	95				70-130

Matrix Spike Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2124240
Report Date: 05/26/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab	Associated sample(s): 01-02		QC Batch ID: WG1499735-3			QC Sample: L2124595-01			Client ID: MS Sample			
Perfluorobutanoic Acid (PFBA)	ND	1.83	3.08	**168**	Q	-	-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	1.83	1.94	106		-	-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	2.99	1.83	5.21	121		-	-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	1.63	2.72	**167**	Q	-	-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	1.83	1.94	106		-	-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	1.64	ND	94		-	-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	1.83	ND	**68**		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	1.72	ND	100		-	-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	4.72	1.83	5.87	**63**		-	-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	1.72	2.38	**138**		-	-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	1.83	2.13	116		-	-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	1.83	3.34	**182**	Q	-	-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	2.32	1.67	4.15	109		-	-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	1.73	ND	91		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.75	1.94	111		-	-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	6.68	1.83	8.84	118		-	-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.75	1.87	107		-	-		70-130	-		30
Perfluorononanoic Acid (PFNA)	ND	1.83	2.13	116		-	-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	1.7	2.35	**138**		-	-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	1.71	ND	84		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.76	1.91	108		-	-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	ND	1.83	2.02	110		-	-		70-130	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: HAVEN WELL PT

Project Number: 2190120

Lab Number: L2124240

Report Date: 05/26/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab	Associated sample(s): 01-02		QC Batch ID: WG1499735-3			QC Sample: L2124595-01			Client ID: MS Sample			
Perfluoroundecanoic Acid (PFUnA)	ND	1.83	2.13	116		-	-		70-130	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	1.73	ND	78		-	-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	ND	1.83	1.94	106		-	-		70-130	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	115				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	117				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	113				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	75				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	141				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104				50-200
Perfluoro[13C4]Butanoic Acid (MPFBA)	88				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	118				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	158				50-200

Lab Duplicate Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2124240
Report Date: 05/26/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1499513-4 QC Sample: L2124240-01 Client ID: HAVEN WELL						
Perfluorobutanesulfonic Acid (PFBS)	11.0	11.4	ng/l	4		30
Perfluorohexanoic Acid (PFHxA)	51.4	51.7	ng/l	1		30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	23.5	23.7	ng/l	1		30
Perfluorohexanesulfonic Acid (PFHxS)	157	146	ng/l	7		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	45.2	44.8	ng/l	1		30
Perfluorononanoic Acid (PFNA)	3.30	3.30	ng/l	0		30
Perfluorooctanesulfonic Acid (PFOS)	456E	478E	ng/l	5		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2124240
Report Date: 05/26/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1499513-4 QC Sample: L2124240-01 Client ID: HAVEN WELL

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	92		91		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	91		86		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	95		91		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89		88		70-130

Lab Duplicate Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2124240
Report Date: 05/26/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1499513-4 QC Sample: L2124240-01 Client ID: HAVEN WELL						
Perfluorooctanesulfonic Acid (PFOS)	345	386	ng/l	11		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	80		83		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	75		79		70-130

Lab Duplicate Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2124240
Report Date: 05/26/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1499735-4 QC Sample: L2124596-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	ND	ng/l	NC		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	ND	ng/l	NC		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	3.12	2.95	ng/l	6		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2124240
Report Date: 05/26/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1499735-4 QC Sample: L2124596-01 Client ID: DUP Sample						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	123		127		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	137		145		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	157		156		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	120		119		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	137		131		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	120		131		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	144		139		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	128		134		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	102		119		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	124		116		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	120		119		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	127		115		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	106		101		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		115		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	107		109		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	133		127		50-200

Project Name: HAVEN WELL PT
Project Number: 2190120

Lab Number: L2124240
Report Date: 05/26/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2124240-01A	Plastic 250ml Trizma preserved	A	NA		2.8	Y	Present/Intact		A2-NH-537.1(14)
L2124240-01B	Plastic 250ml Trizma preserved	A	NA		2.8	Y	Present/Intact		A2-NH-537.1(14)
L2124240-01C	Plastic 250ml Ammonium Acetate preserved	A	NA		2.8	Y	Present/Intact		A2-NH-533(28)
L2124240-01D	Plastic 250ml Ammonium Acetate preserved	A	NA		2.8	Y	Present/Intact		A2-NH-533(28)
L2124240-02A	Plastic 250ml Ammonium Acetate preserved	A	NA		2.8	Y	Present/Intact		A2-NH-533(28)

*Values in parentheses indicate holding time in days

Project Name: HAVEN WELL PT
Project Number: 2190120
Lab Number: L2124240
Report Date: 05/26/21

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	HAVEN WELL PT	**Lab Number:**	L2124240
Project Number:	2190120	**Report Date:**	05/26/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	HAVEN WELL PT	**Lab Number:**	L2124240
Project Number:	2190120	**Report Date:**	05/26/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report

Project Name:	HAVEN WELL PT	**Lab Number:**	L2124240
Project Number:	2190120	**Report Date:**	05/26/21

Data Qualifiers

the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Report Format: Data Usability Report

Project Name:	HAVEN WELL PT	**Lab Number:**	L2124240
Project Number:	2190120	**Report Date:**	05/26/21

REFERENCES

133 Determination of Selected Per- and Polyfluorinated Alkyl Substances in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537.1, EPA/600/R-18/352. Version 1.0, November 2018.

136 Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 533, EPA Document 815-B-19-020, November 2019.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 5/10/

ALPHA Job #: L2124240

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Client Information

Client: Weston & Sampson
Address: 55 Walkers Brook Dr, Reading MA
Phone: 978-532-1900
Email: Betchell.Frank@wseinc.com

Additional Project Information:

Project Information

Project Name: Haven Well PT
Project Location: Portsmouth NH
Project #: 2190120
Project Manager:
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due:

Report Information - Data Deliverables

☐ ADEx ☒ EMAIL

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☐ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC: ☐ 8260 ☐ 624 ☐ 524.2	SVOC: ☐ ABN ☐ PAH	METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15	METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13	EPH: ☐ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☐ Ranges Only	☐ PCB ☐ PEST	TPH: ☐ Quant Only ☐ Fingerprint	PFAS 533	PFAS 537.1	Sample Comments	TOTAL # BOTTLES
L2124-01	Haven Well	5/8/21	1050	DW	JAG									X	X		
-02	Field Blank	5/8/21	1055		JAG									X			

SAMPLE INFO
Filtration ☐ Field ☐ Lab to do
Preservation ☐ Lab to do

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

	Container Type	Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
	5/10/21 0725		5/10/21 0725
	5/10/21 1705		5/10/21 1705
Catherine Gardner	5/10/21 1910		5/10/21 1910
Catherine Gardner	5/10/21 2000	Joseph C. Bizzotto	5/10/21 2000

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

5/10/21 2110

GRANITE STATE
ANALYTICAL SERVICES, LLC.
22 Manchester Road, Unit 2, Derry, NH 03038
Phone (800) 699-9920 | (603) 432-3044 website www.granitestateanalytical.com

Laboratory Report

Portsmouth Water Works
680 Peverly Hill Road
Portsmouth, NH 03801

Date Printed: 05/28/2021
Work Order #: 2105-01204
Client Job #:
Date Received: 05/10/2021
Sample collected in: New Hampshire

Attached please find results for the analysis of the samples received on the date referenced above.

Unless otherwise noted in the attached report, the analyses performed met the requirements of the analyzing laboratory's Quality Assurance Plan, Standard Operating Procedures and State Accreditation. This certificate shall not be reproduced, except in full, without the written approval of the analyzing laboratory. The results presented in this report relate to the samples listed on the following pages in the condition in which they were received. Accreditation for each analyte is identified by the * symbol following the analyte name. Location of our analyzing laboratory is identified by the code in the Analyst Column.

A & L Laboratory:
Identified by ME in Analyst Column
155 Center Street, Auburn, Maine 04210
www.allaboratory.com

Granite State Analytical Services LLC:
Identified by NH in Analyst Column
22 Manchester Road, Derry, NH 03038
www.granitestateanalytical.com

ANALYSIS RELATED NOTES:

- RL: "Reporting limit" means the lowest level of an analyte that can be accurately recovered from the matrix of interest.
- A & L Laboratory / Granite State Analytical Services LLC. accreditation lists can be found on our websites listed above.
- Subcontracted samples will be identified by the Accreditation number of the subcontract laboratory in the analyst field for each analyte and the appropriate laboratory will be listed here.This report contains data that were produced by a subcontracted laboratory accredited for the fields of testing performed, if available. Accreditation for each analyte is identified by the * symbol following the analyte name.
  Alpha Analytical-Westborough, 8 Walkup Dr., Westborough, MA 01581 Accreditation # 2064
  ChemServe, 317 Elm St., Milford, NH 03055 Accreditation # 1008
  KNL Laboratory Services, 3202 North Florida Avenue, Tampa, FL 33603 Accreditation # 2530
- Data Qualifiers (DQ) Flags provide additional information in regards to the receipt, analysis or quality control of a sample. These are indicated under the DQ Flags Column on your report and listed here if necessary: Data Qualifier (DQ) Flags: H = Hold time non-compliant., L = Laboratory control sample outside control limits.

SAMPLE STATE SPECIFIC NOTES:

- The State of New Hampshire has set an Advisory Limit of 10,000 pCi/L for Radon in Water.

Additional Narrative or Comments: None

We appreciate the opportunity to provide you with laboratory services. If you have any questions regarding the enclosed report, please contact the laboratory and we will be happy to assist you.

NELAP ACCREDITED TNI LABORATORY

Donald A. D'Anjou, Ph. D.
Laboratory Director

A & L Laboratory: Accreditations: Maine ME00021, New Hampshire 2501, Maine Radon Registration ID # SPC20
Granite State Analytical Services, LLC: Accreditations: New Hampshire 1015; Maine NH00003; Massachusetts M-NH0003; Rhode Island 101513; Vermont VT-101507

GRANITE STATE
ANALYTICAL SERVICES, LLC.
22 Manchester Road, Unit 2, Derry, NH 03038
Phone (800) 699-9920 | (603) 432-3044 website www.granitestateanalytical.com

CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 05/28/2021
CLIENT NAME: Portsmouth Water Works
CLIENT ADDRESS: 680 Peverly Hill Road
Portsmouth, NH 03801

SAMPLE ID #: 2105-01204-001
SAMPLED BY: Pratt, Al
SAMPLE ADDRESS: Haven Well
NH

MORE LOC INFO:

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	▼
Fails State Guideline	✕
Attention	⚠

DATE AND TIME COLLECTED: 05/08/2021 10:30AM
DATE AND TIME RECEIVED: 05/10/2021 08:27AM
ANALYSIS PACKAGE: SOC GSA 2019
RECEIPT TEMPERATURE: ON ICE 1.8° CELSIUS
CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
1,2-Dibromo-3-chloropropane (DBCP)*	<0.02	ug/L	✓		0.02	0.2 ug/L	EPA 504.1	KV-NH	05/20/2021 01:35PM
Date Extracted	-					No Limit	EPA 504.1	GQ-NH	05/19/2021 11:55AM
Ethylene Dibromide (EDB)*	<0.02	ug/L	✓		0.02	0.05 ug/L	EPA 504.1	KV-NH	05/20/2021 01:35PM
Aroclor 1016 Screen*	<0.2	ug/L			0.2	No Limit	EPA 505	KV-NH	05/20/2021 12:06AM
Aroclor 1221 Screen*	<0.2	ug/L			0.2	No Limit	EPA 505	KV-NH	05/20/2021 12:06AM
Aroclor 1232 Screen*	<0.2	ug/L			0.2	No Limit	EPA 505	KV-NH	05/20/2021 12:06AM
Aroclor 1242 Screen*	<0.2	ug/L			0.2	No Limit	EPA 505	KV-NH	05/20/2021 12:06AM
Aroclor 1248 Screen*	<0.2	ug/L			0.2	No Limit	EPA 505	KV-NH	05/20/2021 12:06AM
Aroclor 1254 Screen*	<0.2	ug/L			0.2	No Limit	EPA 505	KV-NH	05/20/2021 12:06AM
Aroclor 1260 Screen*	<0.2	ug/L			0.2	No Limit	EPA 505	KV-NH	05/20/2021 12:06AM
Chlordane*	<0.4	ug/L	✓		0.4	2.0 ug/L	EPA 505	KV-NH	05/20/2021 12:06AM
Date Extracted	-					No Limit	EPA 505	GQ-NH	05/19/2021 11:55AM
Toxaphene*	<2	ug/L	✓		2.0	3 ug/L	EPA 505	KV-NH	05/20/2021 12:06AM
2,4,5-TP (Silvex)*	<0.25	ug/L	✓		0.25	50 ug/L	EPA 515.3	KV-NH	05/13/2021 04:51AM
2,4-D*	<1	ug/L	✓		1	70 ug/L	EPA 515.3	KV-NH	05/13/2021 04:51AM
Dalapon*	<1	ug/L	✓		1	200 ug/L	EPA 515.3	KV-NH	05/13/2021 04:51AM
Date Extracted	-					No Limit	EPA 515.3	GQ-NH	05/12/2021 09:17AM
Dicamba*	<0.5	ug/L			0.5	No Limit	EPA 515.3	KV-NH	05/13/2021 04:51AM
Dinoseb*	<1	ug/L	✓		1	7 ug/L	EPA 515.3	KV-NH	05/13/2021 04:51AM
Pentachlorophenol*	<0.1	ug/L	✓		0.1	1 ug/L	EPA 515.3	KV-NH	05/13/2021 04:51AM
Picloram*	<2	ug/L	✓		2	500 ug/L	EPA 515.3	KV-NH	05/13/2021 04:51AM
2,4-Dichlorophenylacetic acid	104	%	✓			70-130%	EPA 515.3 - SS	KV-NH	05/13/2021 04:51AM
Alachlor*	<0.1	ug/L	✓		0.1	2 ug/L	EPA 525.2	DD-NH	05/18/2021 04:49PM

NELAP ACCREDITED TNI LABORATORY

Donald A. D'Anjou, Ph. D.
Laboratory Director

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CERTIFICATE OF ANALYSIS FOR DRINKING WATER

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CLIENT NAME: Portsmouth Water Works
CLIENT ADDRESS: 680 Peverly Hill Road
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SAMPLE ID #: 2105-01204-001
SAMPLED BY: Pratt, Al
SAMPLE ADDRESS: Haven Well
NH
MORE LOC INFO:

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	▽
Fails State Guideline	✕
Attention	⚠

DATE AND TIME COLLECTED: 05/08/2021 10:30AM
DATE AND TIME RECEIVED: 05/10/2021 08:27AM
ANALYSIS PACKAGE: SOC GSA 2019
RECEIPT TEMPERATURE: ON ICE 1.8° CELSIUS
CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
Aldrin*	<0.1	ug/L			0.1	No Limit	EPA 525.2	DD-NH	05/18/2021 04:49PM
Atrazine*	<0.1	ug/L	✓		0.1	3 ug/L	EPA 525.2	DD-NH	05/18/2021 04:49PM
Benzo(a)pyrene*	<0.1	ug/L	✓		0.1	0.2 ug/L	EPA 525.2	DD-NH	05/18/2021 04:49PM
Butachlor*	<0.1	ug/L			0.1	No Limit	EPA 525.2	DD-NH	05/18/2021 04:49PM
Date Extracted	-					No Limit	EPA 525.2	KV-NH	05/17/2021 11:00AM
Di(2-ethylhexyl)adipate*	<1	ug/L	✓		1	400 ug/L	EPA 525.2	DD-NH	05/18/2021 04:49PM
Di(2-ethylhexyl)phthalate*	<1	ug/L	✓		1	6 ug/L	EPA 525.2	DD-NH	05/18/2021 04:49PM
Dieldrin*	<0.1	ug/L			0.1	No Limit	EPA 525.2	DD-NH	05/18/2021 04:49PM
Endrin*	<0.1	ug/L	✓		0.1	2 ug/L	EPA 525.2	DD-NH	05/18/2021 04:49PM
Heptachlor Epoxide*	<0.1	ug/L	✓		0.1	0.2 ug/L	EPA 525.2	DD-NH	05/18/2021 04:49PM
Heptachlor*	<0.1	ug/L	✓		0.1	0.4 ug/L	EPA 525.2	DD-NH	05/18/2021 04:49PM
Hexachlorobenzene*	<0.1	ug/L	✓		0.1	1 ug/L	EPA 525.2	DD-NH	05/18/2021 04:49PM
Hexachlorocyclopentadiene*	<0.1	ug/L	✓		0.1	50 ug/L	EPA 525.2	DD-NH	05/18/2021 04:49PM
Lindane*	<0.1	ug/L	✓		0.1	0.2 ug/L	EPA 525.2	DD-NH	05/18/2021 04:49PM
Methoxychlor*	<0.1	ug/L	✓		0.1	40 ug/L	EPA 525.2	DD-NH	05/18/2021 04:49PM
Metolachlor*	<0.1	ug/L			0.1	No Limit	EPA 525.2	DD-NH	05/18/2021 04:49PM
Metribuzin*	<0.1	ug/L	✓		0.1	70 ug/L	EPA 525.2	DD-NH	05/18/2021 04:49PM
Propachlor*	<0.1	ug/L			0.1	No Limit	EPA 525.2	DD-NH	05/18/2021 04:49PM
Simazine*	<0.1	ug/L	✓		0.1	4 ug/L	EPA 525.2	DD-NH	05/18/2021 04:49PM
1,3-Dimethyl-2-nitrobenzene	107	%	✓			70-130%	EPA 525.2 - SS	DD-NH	05/18/2021 04:49PM
Perylene-d12	102	%	✓			70-130%	EPA 525.2 - SS	DD-NH	05/18/2021 04:49PM
Pyrene-d10	106	%	✓			70-130%	EPA 525.2 - SS	DD-NH	05/18/2021 04:49PM
Triphenylphosphate	108	%	✓			70-130%	EPA 525.2 - SS	DD-NH	05/18/2021 04:49PM
3-Hydroxycarbofuran*	<1	ug/L			1	No Limit	EPA 531.1	KV-NH	05/21/2021 05:13AM

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Laboratory Director

GRANITE STATE
ANALYTICAL SERVICES, LLC.
22 Manchester Road, Unit 2, Derry, NH 03038
Phone (800) 699-9920 | (603) 432-3044 website www.granitestateanalytical.com

CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 05/28/2021
CLIENT NAME: Portsmouth Water Works
CLIENT ADDRESS: 680 Peverly Hill Road
Portsmouth, NH 03801

SAMPLE ID #: 2105-01204-001
SAMPLED BY: Pratt, Al
SAMPLE ADDRESS: Haven Well
NH

MORE LOC INFO:

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	▼
Fails State Guideline	✕
Attention	⚠

DATE AND TIME COLLECTED: 05/08/2021 10:30AM
DATE AND TIME RECEIVED: 05/10/2021 08:27AM
ANALYSIS PACKAGE: SOC GSA 2019
RECEIPT TEMPERATURE: ON ICE 1.8° CELSIUS
CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
Aldicarb Sulfone*	<1	ug/L			1	No Limit	EPA 531.1	KV-NH	05/21/2021 05:13AM
Aldicarb Sulfoxide*	<1	ug/L			1	No Limit	EPA 531.1	KV-NH	05/21/2021 05:13AM
Aldicarb*	<1	ug/L			1	No Limit	EPA 531.1	KV-NH	05/21/2021 05:13AM
Carbaryl*	<1	ug/L			1	No Limit	EPA 531.1	KV-NH	05/21/2021 05:13AM
Carbofuran*	<1	ug/L	✓		1	40 ug/L	EPA 531.1	KV-NH	05/21/2021 05:13AM
Date Extracted	-					No Limit	EPA 531.1	KV-NH	05/20/2021 05:17PM
Methiocarb*	<1	ug/L			1	No Limit	EPA 531.1	KV-NH	05/21/2021 05:13AM
Methomyl*	<1	ug/L			1	No Limit	EPA 531.1	KV-NH	05/21/2021 05:13AM
Oxamyl (Vydate)*	<1	ug/L	✓		1	200 ug/L	EPA 531.1	KV-NH	05/21/2021 05:13AM
Propoxur (Baygon)*	<1	ug/L			1	No Limit	EPA 531.1	KV-NH	05/21/2021 05:13AM
Date Extracted	-					No Limit	EPA 547	KV-NH	05/10/2021 04:10PM
Glyphosate*	<10	ug/L	✓		10	700 ug/L	EPA 547	KV-NH	05/10/2021 11:37PM
Date Extracted	-					No Limit	EPA 549.2	GQ-NH	05/13/2021 12:40PM
Diquat*	<1	ug/L	✓		1	20 ug/L	EPA 549.2	KV-NH	05/14/2021 04:42PM

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CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 05/28/2021
CLIENT NAME: Portsmouth Water Works
CLIENT ADDRESS: 680 Peverly Hill Road
Portsmouth, NH 03801

SAMPLE ID #: 2105-01204-002
SAMPLED BY: Pratt, Al
SAMPLE ADDRESS: Haven Well
NH

MORE LOC INFO:

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	▼
Fails State Guideline	✕
Attention	⚠

DATE AND TIME COLLECTED: 05/08/2021 10:30AM
DATE AND TIME RECEIVED: 05/10/2021 08:27AM
ANALYSIS PACKAGE: VOC524.3-DW
RECEIPT TEMPERATURE: ON ICE 1.8° CELSIUS
CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
1,1,1,2-Tetrachloroethane*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
1,1,1-Trichloroethane*	<0.5	ug/L	✓		0.5	200 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
1,1,2,2-Tetrachloroethane*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
1,1,2-Trichloroethane*	<0.5	ug/L	✓		0.5	5 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
1,1-Dichloroethane*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
1,1-Dichloroethylene*	<0.5	ug/L	✓		0.5	7 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
1,1-Dichloropropylene*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
1,2,3-Trichlorobenzene*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
1,2,3-Trichloropropane*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
1,2,4-Trichlorobenzene*	<0.5	ug/L	✓		0.5	70 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
1,2,4-Trimethylbenzene*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
1,2-Dibromo-3-chloropropane	<0.5	ug/L		L	0.5	0.2 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
1,2-Dibromoethane	<0.5	ug/L			0.5	0.05 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
1,2-Dichlorobenzene*	<0.5	ug/L	✓		0.5	600 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
1,2-Dichloroethane*	<0.5	ug/L	✓		0.5	5 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
1,2-Dichloropropane*	<0.5	ug/L	✓		0.5	5 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
1,3,5-Trimethylbenzene*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
1,3-Dichlorobenzene*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
1,3-Dichloropropane*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
1,4-Dichlorobenzene*	<0.5	ug/L	✓		0.5	75 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
2-Chlorotoluene*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
4-Chlorotoluene*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
4-Isopropyltoluene*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Benzene*	<0.5	ug/L	✓		0.5	5 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM

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CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 05/28/2021
CLIENT NAME: Portsmouth Water Works
CLIENT ADDRESS: 680 Peverly Hill Road
Portsmouth, NH 03801

SAMPLE ID #: 2105-01204-002
SAMPLED BY: Pratt, Al
SAMPLE ADDRESS: Haven Well
NH

MORE LOC INFO:

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	▼
Fails State Guideline	✕
Attention	⚠

DATE AND TIME COLLECTED: 05/08/2021 10:30AM
DATE AND TIME RECEIVED: 05/10/2021 08:27AM
ANALYSIS PACKAGE: VOC524.3-DW
RECEIPT TEMPERATURE: ON ICE 1.8° CELSIUS
CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
Bromobenzene*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Bromochloromethane*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Bromodichloromethane*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Bromoform*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Bromomethane*	<0.5	ug/L		L	0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Carbon disulfide*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Carbon tetrachloride*	<0.5	ug/L	✓		0.5	5 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
Chlorobenzene*	<0.5	ug/L	✓		0.5	100 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
Chloroform*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Chloromethane*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
cis-1,2-Dichloroethylene*	<0.5	ug/L	✓		0.5	70 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
cis-1,3-Dichloropropylene*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Dibromochloromethane*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Dibromomethane*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Dichlorodifluoromethane*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Diethyl ether*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Diisopropyl ether (DIPE)*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Ethyl tert-butyl ether (ETBE)*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Ethylbenzene*	<0.5	ug/L	✓		0.5	700 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
Hexachlorobutadiene*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Hexachloroethane*	<0.5	ug/L		L	0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Isopropylbenzene*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
m&p-Xylenes	<1	ug/L			1	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Methyl tert-butyl ether (MTBE)*	<0.5	ug/L	✓		0.5	13 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM

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CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 05/28/2021
CLIENT NAME: Portsmouth Water Works
CLIENT ADDRESS: 680 Peverly Hill Road
Portsmouth, NH 03801

SAMPLE ID #: 2105-01204-002
SAMPLED BY: Pratt, Al
SAMPLE ADDRESS: Haven Well
NH
MORE LOC INFO:

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	▼
Fails State Guideline	✕
Attention	⚠

DATE AND TIME COLLECTED: 05/08/2021 10:30AM
DATE AND TIME RECEIVED: 05/10/2021 08:27AM
ANALYSIS PACKAGE: VOC524.3-DW
RECEIPT TEMPERATURE: ON ICE 1.8° CELSIUS
CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
Methylene chloride*	<0.5	ug/L	✓		0.5	5 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
Naphthalene*	<0.5	ug/L	✓		0.5	100 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
n-Butylbenzene*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
n-Propylbenzene*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
o-Xylene	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
sec-Butylbenzene*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Styrene*	<0.5	ug/L	✓		0.5	100 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
tert-Amyl methyl ether (TAME)*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
tert-Butyl alcohol (TBA)*	<10	ug/L			10	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
tert-Butylbenzene*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Tetrachloroethylene*	<0.5	ug/L	✓		0.5	5 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
Tetrahydrofuran (THF)	<10	ug/L			10	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Toluene*	<0.5	ug/L	✓		0.5	1000 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
Total THMs*	<0.5	ug/L	✓		0.5	80 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
Total Xylenes*	<0.5	ug/L	✓		0.5	10000 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
trans-1,2-Dichloroethylene*	<0.5	ug/L	✓		0.5	100 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
trans-1,3-Dichloropropylene*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Trichloroethylene*	<0.5	ug/L	✓		0.5	5 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
Trichlorofluoromethane*	<0.5	ug/L			0.5	No Limit	EPA 524.3	DD-NH	05/14/2021 09:10PM
Vinyl chloride*	<0.5	ug/L	✓		0.5	2 ug/L	EPA 524.3	DD-NH	05/14/2021 09:10PM
1,2-Dichlorobenzene-d4	109	%	✓		0.5	70-130%	EPA 524.3 - SS	DD-NH	05/14/2021 09:10PM
4-Bromofluorobenzene	98	%	✓		0.5	70-130%	EPA 524.3 - SS	DD-NH	05/14/2021 09:10PM
Methyl tert-Butyl Ether-d3	89	%	✓		0.5	70-130%	EPA 524.3 - SS	DD-NH	05/14/2021 09:10PM

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CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 05/28/2021
CLIENT NAME: Portsmouth Water Works
CLIENT ADDRESS: 680 Peverly Hill Road
Portsmouth, NH 03801

SAMPLE ID #: 2105-01204-003
SAMPLED BY: Pratt, Al
SAMPLE ADDRESS: Haven Well
NH

MORE LOC INFO:

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	▽
Fails State Guideline	✕
Attention	⚠

DATE AND TIME COLLECTED: 05/08/2021 10:30AM
DATE AND TIME RECEIVED: 05/10/2021 08:27AM
ANALYSIS PACKAGE: IOC-MS-Compliance-2019
RECEIPT TEMPERATURE: ON ICE 1.8° CELSIUS
CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
Turbidity*	<0.5	NTU	✓	H	0.5	5 NTU	EPA 180.1	DG-NH	05/10/2021 11:58AM
Calcium*	59.7	mg/L			1	No Limit	EPA 200.7	JLR-NH	05/13/2021 02:55PM
Hardness (calc.)*	188	mg CaCO3/L			2	No Limit	EPA 200.7	JLR-NH	05/13/2021 02:55PM
Iron*	<0.01	mg/L	✓		0.01	0.3 mg/L	EPA 200.7	JLR-NH	05/13/2021 02:55PM
Magnesium*	9.4	mg/L			1	No Limit	EPA 200.7	JLR-NH	05/13/2021 02:55PM
Potassium*	3.2	mg/L			1	No Limit	EPA 200.7	JLR-NH	05/13/2021 02:55PM
Sodium*	16.2	mg/L			1	No Limit	EPA 200.7	JLR-NH	05/13/2021 02:55PM
Aluminum*	0.0012	mg/L	✓		0.001	0.2 mg/L	EPA 200.8	JLR-NH	05/11/2021 04:07PM
Antimony*	<0.001	mg/L	✓		0.001	0.006 mg/L	EPA 200.8	DR-NH	05/19/2021 11:56AM
Arsenic*	<0.001	mg/L	✓		0.001	0.010 mg/L	EPA 200.8	JLR-NH	05/11/2021 04:07PM
Barium*	0.0129	mg/L	✓		0.001	2.00 mg/L	EPA 200.8	JLR-NH	05/11/2021 04:07PM
Beryllium*	<0.001	mg/L	✓		0.001	0.004 mg/L	EPA 200.8	JLR-NH	05/11/2021 04:07PM
Cadmium*	<0.001	mg/L	✓		0.001	0.005 mg/L	EPA 200.8	JLR-NH	05/11/2021 04:07PM
Copper*	0.0158	mg/L	✓		0.001	1.3 mg/L	EPA 200.8	JLR-NH	05/11/2021 04:07PM
Manganese*	0.137	mg/L	▽		0.001	0.05 mg/L	EPA 200.8	JLR-NH	05/11/2021 04:07PM
Mercury*	<0.0001	mg/L	✓		0.0001	0.002 mg/L	EPA 200.8	JLR-NH	05/21/2021 12:10PM
Nickel*	0.0028	mg/L			0.001	No limit	EPA 200.8	JLR-NH	05/11/2021 04:07PM
Selenium*	<0.001	mg/L	✓		0.001	0.05 mg/L	EPA 200.8	DR-NH	05/19/2021 11:56AM
Silver*	<0.001	mg/L	✓		0.001	0.1 mg/L	EPA 200.8	DR-NH	05/19/2021 11:56AM
Thallium*	<0.001	mg/L	✓		0.001	0.002 mg/L	EPA 200.8	DR-NH	05/19/2021 11:56AM
Zinc*	0.0118	mg/L	✓		0.001	5 mg/L	EPA 200.8	JLR-NH	05/11/2021 04:07PM
Chloride*	37	mg/L	✓		2	250 mg/L	EPA 300.0	DG-NH	05/10/2021 02:28PM
Fluoride*	<0.2	mg/L	✓		0.2	4.0 mg/L	EPA 300.0	DG-NH	05/10/2021 02:28PM
Sulfate*	19	mg/L	✓		2	250 mg/L	EPA 300.0	DG-NH	05/10/2021 02:28PM

NELAP ACCREDITED TNI LABORATORY

Donald A. D'Anjou, Ph. D.
Laboratory Director

GRANITE STATE
ANALYTICAL SERVICES, LLC.
22 Manchester Road, Unit 2, Derry, NH 03038
Phone (800) 699-9920 | (603) 432-3044 website www.granitestateanalytical.com

CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 05/28/2021
CLIENT NAME: Portsmouth Water Works
CLIENT ADDRESS: 680 Peverly Hill Road
Portsmouth, NH 03801

SAMPLE ID #: 2105-01204-003
SAMPLED BY: Pratt, Al
SAMPLE ADDRESS: Haven Well
NH

MORE LOC INFO:

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	▼
Fails State Guideline	✕
Attention	⚠

DATE AND TIME COLLECTED: 05/08/2021 10:30AM
DATE AND TIME RECEIVED: 05/10/2021 08:27AM
ANALYSIS PACKAGE: IOC-MS-Compliance-2019
RECEIPT TEMPERATURE: ON ICE 1.8° CELSIUS
CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
Perchlorate*	<0.050	ug/L	✓		0.050	2 ug/L	EPA 332	2064	05/14/2021 02:53PM
Color, Apparent	<5	CPU	✓	H	5	15 CPU	SM 2120B	DG-NH	05/10/2021 11:58AM
Odor	ND	T.O.N.	✓	H	1	3 T.O.N.	SM 2150B	DG-NH	05/10/2021 12:00PM
Total Alkalinity*	143	mg CaCO3/L			20	No Limit	SM 2320B	DG-NH	05/10/2021 01:34PM
Total Dissolved Solids*	237	mg/L	✓		50	500 mg/L	SM 2540C	1008	05/14/2021
Cyanide, Total*	<0.02	mg/L	✓		0.02	0.2 mg/L	SM 4500 CN E	1008	05/14/2021
pH*	7.60	SU	✓	H	N/A	6.5 - 8.5 SU	SM 4500 H B	DG-NH	05/10/2021 12:00PM

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CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 05/28/2021
CLIENT NAME: Portsmouth Water Works
CLIENT ADDRESS: 680 Peverly Hill Road
Portsmouth, NH 03801

SAMPLE ID #: 2105-01204-004
SAMPLED BY: Pratt, Al
SAMPLE ADDRESS: Haven Well
NH

MORE LOC INFO:

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	▽
Fails State Guideline	✕
Attention	⚠

DATE AND TIME COLLECTED: 05/08/2021 10:30AM
DATE AND TIME RECEIVED: 05/10/2021 08:27AM
ANALYSIS PACKAGE: 1,4-Dioxane-522
RECEIPT TEMPERATURE: ON ICE 1.8° CELSIUS
CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
1,4-Dioxane*	<0.1	ug/L	✓		0.1	0.32 ug/L	EPA 522	DD-NH	05/17/2021 09:05PM
1,4-Dioxane-d8	90	%	✓			70-130%	EPA 522	DD-NH	05/17/2021 09:05PM
Date Extracted	Completed						EPA 522	GQ-NH	05/14/2021 10:08AM

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CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 05/28/2021
CLIENT NAME: Portsmouth Water Works
CLIENT ADDRESS: 680 Peverly Hill Road
Portsmouth, NH 03801

SAMPLE ID #: 2105-01204-005
SAMPLED BY: Pratt, Al
SAMPLE ADDRESS: Haven Well
NH

MORE LOC INFO:

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	▽
Fails State Guideline	✕
Attention	⚠

DATE AND TIME COLLECTED: 05/08/2021 10:30AM
DATE AND TIME RECEIVED: 05/10/2021 08:27AM
ANALYSIS PACKAGE: Rads Full-MS
RECEIPT TEMPERATURE: ON ICE 1.8° CELSIUS
CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
Uranium*	<1	ug/L	✓		1	30 ug/L	EPA 200.8	JLR-NH	05/11/2021 04:14PM
Uranium	<0.67	pCi/L	✓		0.67	20 pCi/L	EPA 200.8 Calc.	JLR-NH	05/11/2021 04:14PM
Analytical Gross Alpha*	<3	pCi/L			3	No Limit	EPA 900	2530	05/20/2021 08:02AM
Radium 226*	<1	pCi/L			1	No Limit	EPA 903.0	2530	05/24/2021 12:46PM
Radium 228*	<1	pCi/L			1	No Limit	EPA Ra-05	2530	05/26/2021 12:41PM
Combined Radium	<1	pCi/L	✓		1	5 pCi/L	N/A Calculation	2530	05/26/2021 12:41PM
Compliance Gross Alpha*	<3	pCi/L	✓		3	15 pCi/L	N/A Calculation	ES-NH	05/20/2021 08:02AM
Radon	615	pCi/L	✓		100	10000 pCi/L	SM 7500 Rn B	TT-ME	05/11/2021 08:16PM

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