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**Remedial Investigation Report**  
**Cedar Springs Former Wastewater Treatment Lagoons Site**  
**730 West Court Street**  
**Cedar Springs, Michigan**

**Prepared For:**  
**City of Cedar Springs**

**September 2, 2021**  
**Project No. 201460**

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**List of Abbreviations/Acronyms**

- CSM Conceptual Site Model  
DRC Declaration of Restrictive Covenant  
EGLE Michigan Department of Environment, Great Lakes, and Energy (formerly the MDEQ)  
MDEQ Michigan Department of Environmental Quality  
PFAS per-and polyfluoroalkyl substances  
PFOA perfluorooctanoic acid  
PFOS perfluorooctanesulfonic acid

## 1.0 Introduction

This Remedial Investigation Report (RI Report) has been prepared by Fishbeck on behalf of the City of Cedar Springs (City). A draft Remedial Investigation/Feasibility Study Work Plan (Work Plan) was submitted to EGLE on February 15, 2021 and was the subject of discussion during a virtual meeting with EGLE held on March 2, 2021. Fishbeck has completed the scope of work outlined in the Work Plan. This RI Report describes the activities completed with respect to the former Cedar Springs wastewater lagoon area as described in the Work Plan and some additional evaluation as described below. The former wastewater treatment lagoons site (Site) and associated monitoring well locations are shown on Figure 1.

### 1.1 Background

In January 2020, in response to EGLE's request, the City collected groundwater samples from select monitoring wells (MW-2A, MW-3A, MW-4A, MW-5A, and MW-7A) located in the former wastewater lagoon area for analysis of Per- and Polyfluoroalkyl Substances (PFAS). These wells are all installed in the shallow unconfined aquifer at the Site. The results of the January 2020 groundwater sampling event identified certain PFAS compounds in four monitoring wells (MW-3A, MW-4A, MW-5A, and MW-7A). The location of these wells and associated PFAS concentrations are shown on Figure 1. PFAS detected at the wells were in concentrations below applicable drinking water cleanup criteria contained in the administrative rules of Part 201, effective in January 2020. On August 2, 2020, EGLE promulgated new Part 201 drinking water cleanup criteria for two PFAS compounds (PFOA and PFOS). On December 21, 2020 EGLE promulgated new Part 201 drinking water criteria for five (5) additional PFAS compounds (PFNA, PFHxA, PFHxS, PFBS, and Gen X). PFOA was detected in the January 2020 sampling event in the four referenced monitoring wells at concentrations slightly exceeding the August 2, 2020 cleanup criterion for PFOA. Due to these exceedances, EGLE issued a Violation Notice No. VN-011095 (Violation Notice) dated October 2, 2020 to the City.

### 1.2 Former Wastewater Lagoon History

The City's wastewater treatment lagoon system was constructed in 1965, expanded in the 1970's, and removed from service in 1999. The system consisted of three lagoons (two oxidation lagoons with clay-lined bottoms and one infiltration lagoon) and a standby infiltration area. The wastewater lagoons were closed in place in 2002. Closure of the lagoon system consisted of several steps, including lime stabilization of biosolids associated with the operation of the lagoon system, removal of the lagoon infrastructure (piping and control structures), and construction of a cap above the biosolids. The cap consisted of sand and clay that was removed from the earthen berms surrounding the lagoons and placed above the biosolids, additional clean sand and gravel was added to bring the closed lagoons up to grade. A minimum of 1 foot of cover was placed over the stabilized biosolids remaining on the bottom of the former lagoons. The closure of the lagoons was performed pursuant to a Designation of Inertness issued by EGLE in January 2002 and a Declaration of Restrictive Covenant (DRC) approved by EGLE that the City executed and recorded against the Site.

### 1.3 Hydrogeological Conceptual Site Model

The February 15, 2021 Work Plan included a hydrogeological conceptual site model (CSM) that Fishbeck prepared for the Site and surrounding area. Fishbeck generated six cross-sections using soil boring and drinking water well log information to aid in the visualization and understanding of the near surface geology at the Site. The geological cross-sections are included in the February 15, 2021 Work Plan. Based on these cross-sections, three (3) hydrostratigraphic units have been identified beneath the Site. Laterally continuous sand deposits form an upper unconfined aquifer across the Site. The unconfined aquifer is approximately 20 feet thick. The water table surface is located approximately 10 feet below ground surface (bgs). Groundwater in the upper aquifer near the Site flows in a westerly direction. The upper unconfined aquifer extends to a depth of approximately 30 feet bgs.

The upper unconfined aquifer is underlain by a 40 to 70 thick clay unit beneath the Site. Based on the cross-sections, the clay unit may be thinner north and east of the Site. This underlying clay unit acts as an aquitard/confining layer and extends to a depth of approximately 100 feet bgs. A lower confined aquifer is present at depths below 100 feet bgs and extends to a depth of at least 120 feet bgs. The confined aquifer appears to be hydraulically separated from the upper unconfined aquifer due to the overlying clay aquitard.

A potential upgradient source of PFAS (former Robinson Bulk Terminal, which is a documented site of contamination by EGLE) has been identified but has not yet been evaluated for the presence of PFAS.

## **1.4 Surface Water Features**

The nearest major surface water features include Cedar Creek, located approximately 800 feet west of the Site, and Little Cedar Creek, located approximately 5000 feet south of the Site. Other surface water features include an onsite stormwater retention basin and a small lake located approximately 1000 feet northwest of the Site (approximately 200 feet west of Cedar Creek). An unnamed drain is also located on the south and west sides of the Site, and a stream exists east of the Site south of MW8A.

## **2.0 Remedial Investigation Activities**

The investigative activities described in the February 15, 2021 Work Plan were completed from March 2021 through August 2021. The City and Fishbeck provided interim updates to EGLE during the course of the investigation. The primary tasks completed as part of this investigation included:

- Installation of one new monitoring well (MW-8A) in the shallow aquifer upgradient of the Site.
- Collection and analysis of groundwater samples for PFAS from the new monitoring well (MW-8A) and three existing monitoring wells on the Site (MW-6A, GSI-1D, and GSI-2D).
- Collection and analysis of one surface water sample for PFAS from an unnamed creek flowing from the east onto the Site.
- Collection and analysis of water samples from fourteen drinking water wells located west/southwest of the Site.

The investigation activities were completed in accordance with the methodologies and procedures described in the February 15, 2021 Work Plan.

### **2.1 Monitoring Well Installation**

One new monitoring well (MW-8A) was installed at the upgradient location shown on Figure 1 to evaluate a potential upgradient PFAS source. The monitoring well was installed by Job Site Services of Cedar Springs, Michigan on March 9, 2021 using hollow-stem auger drilling techniques. Soil samples were collected continuously for geological description from ground surface to the total depth of the boring using a macro-core sampler. The samples were described by a geologist from Fishbeck who prepared a log to document the findings. The well log for MW-8A is included in Attachment 1. The monitoring well was constructed using 2-inch diameter, PVC casing with a 5-foot long, 0.010-inch slot, PVC screen installed from 25 to 30 feet bgs. An appropriately sized sand filter pack was placed in the annulus surrounding the screen, from the base of the screen to approximately 5 feet above the top of the screen. A bentonite slurry was placed into the remaining annulus by tremie grouting from the top of the sand pack to ground surface. The well was equipped with an aboveground locking protective casing and a vented cap. The monitoring well was developed using pumping/surging techniques. Investigation derived wastes were placed on the ground adjacent to the monitoring well.

## **2.2 Groundwater Flow Mapping**

Following installation of the additional monitoring well, a survey to establish the top-of-casing elevation of the new well was completed. Static water levels were collected from all existing onsite monitoring wells and the newly-installed upgradient monitoring well on March 17, 2021, using an electric tape and recorded to the nearest 0.01 foot. The March 17, 2021 static water level data was converted to groundwater elevation data and used to generate a groundwater contour map (Figure 1) to confirm groundwater flow direction and hydraulic gradient. The groundwater elevation data collected on March 17, 2021 is summarized in Table 1. The data documents a westerly groundwater flow.

## **2.3 Groundwater and Surface Water Sampling**

Groundwater samples were collected from the newly installed monitoring well (MW-8A) and downgradient existing monitoring wells MW-6A, GSI-1D, and GSI-2D (shown on Figure 1) on March 12, 2021. Logs for these monitoring wells are included in Appendix 1. Groundwater samples were collected with a peristaltic pump using low-flow/minimal drawdown methods. All materials used for groundwater sampling were Teflon and PFAS free. One duplicate sample and one field blank were collected.

Dissolved oxygen, pH, Eh, specific conductivity, and temperature were measured in the field using a calibrated flow-through cell. Sample turbidity was also be field monitored. These parameters were used to verify stabilization of the purged groundwater in accordance with low-flow/minimal drawdown sampling procedures.

A surface water sample (SW-1) was also collected from a creek located approximately 50 feet south of MW-8A. The creek was flowing from the east to the west onto the Site.

A summary of groundwater and surface water PFAS results is included in Table 2.

## **2.4 Drinking Water Well Sampling**

The City identified nineteen drinking water wells for sampling. The City provided the list of drinking water wells to EGLE in advance of collecting samples. To obtain permission to sample the proposed drinking water wells, the City mailed access permission letters to the nineteen drinking water well owners via U.S. Mail. Fourteen of the drinking water well owners responded with authorization to collect a sample from their wells. The City mailed a second letter to the five locations that did not respond to the initial request, followed-up by an attempt to contact these residences in person. As of the date of this RI Report, the City has not received any additional replies from the five residences.

The fourteen drinking water wells that Fishbeck sampled for PFAS are located west/southwest of the Site (see locations on Figure 2). Eleven of the drinking water wells were sampled on May 26, 2021, and three of the drinking water wells were sampled on July 28, 2021. Drinking water well samples were collected from an outdoor spigot. Well logs were located for eleven of the fourteen wells. Based on the well logs, these eleven drinking water wells are screened in the lower confined aquifer below the approximately 40-70 feet thick clay layer separating these wells from the upper aquifer. The well logs for these eleven drinking water wells are included in Appendix 2.

The owner of one well for which no log was located reported to Fishbeck that his well is screened at a shallow depth. According to the owner of the well at 13485 White Creek Avenue, the owner installed the well to a depth of approximately 35 feet below grade. This is the only drinking water well sampled that is known to have been installed in the shallow unconfined aquifer. As described below, this well is also the only drinking water well with a concentration of PFOA exceeding its EGLE Part 201 Drinking Water Criteria. To confirm the PFAS concentrations detected from the May 26, 2021 sample collected at 13485 White Creek Avenue, this location was resampled on July 28, 2021.

## **2.5        Laboratory Analysis**

Monitoring well groundwater samples were submitted for laboratory analysis of PFAS (28 compound list) using USEPA Method 537M. One duplicate sample and one field blank were collected during the groundwater sampling for quality assurance/quality control (QA/QC) purposes. Drinking water well drinking water samples were submitted for laboratory analysis of PFAS using USEPA Method 537.1 for analysis of drinking water for 18 PFAS compounds. Three duplicate samples and two field blank sample were collected during drinking water well sampling for QA/QC purposes. Part 201 drinking water criteria exist for seven PFAS compounds.

### **3.0 Groundwater and Surface Water Analytical Results**

The March 12, 2021 PFAS analytical results for groundwater samples were collected from GSI-1D, GSI2D, MW-6A, and MW-8A and the surface water sample was collected from the upgradient creek are summarized in Table 2. The laboratory reports are included in Appendix 3. Perfluorooctanoic acid (PFOA) was detected at a concentration exceeding its current Part 201 Residential Drinking Water Criterion at monitoring wells GSI-2D and MW-6A. Perfluorooctane sulfonic acid (PFOS) was detected at a concentration exceeding its Part 201 Residential Drinking Water Criterion at monitoring well MW-6A and exceeding its GSI Criterion at GSI-2D and MW-6A. All other detectable PFAS concentrations were below applicable Part 201 cleanup criteria. The surface water sample (SW-1) collected from the creek flowing onto the eastern side of the Site contained 22.8 ng/L total PFAS compounds including 2.7 ng/L PFOA and 2.2 ng/L PFOS. Even though the PFAS concentrations at SW-1 did not exceed applicable Part 201 concentrations, the fact that PFAS was present in the upgradient creek flowing onto the Site is an indication that a source for PFAS exists east of the Site.

### **4.0 Drinking Water Well Analytical Results**

The May 26, 2021 and July 28, 2021 drinking water well analytical results are summarized in Table 3. Well depths are also included on Table 3. The laboratory reports are included in Appendix 4. A total of fourteen wells were sampled. With one exception, none of the samples for the drinking water wells contained any concentrations of PFAS above drinking water criteria under Part 201. The location at 13485 White Creek Avenue (from the shallow water table aquifer) had a concentration of PFOA that exceeded its current Drinking Water maximum contaminant limit (MCL)/Part 201 drinking water criterion. A filtration system was installed by the City at the residence to eliminate the exposure risk to PFOA.

Eleven of these locations have well logs that indicated that these wells are installed in the lower confined aquifer. The well logs for these eleven drinking water wells are included in Appendix 2. Of these eleven wells, eight were non-detect for any PFAS compounds. The other three wells known to be installed in the lower aquifer contained low estimated concentrations of PFNA below the laboratory reporting limit. The field blank collected during the sampling of these three wells also contained a low estimated concentration of PFNA, indicating that low concentrations of PFNA at these three well locations are lab-related artifacts and not actually in the groundwater sampled at these wells. PFOA was identified at one of the known deep wells at a low estimated concentration of PFOA (0.65 ng/L) below the laboratory reporting limit, but since PFOA was not identified in any other known deep well, this PFOA concentration is likely a lab artifact or some other type of cross contamination of the sample.

### **5.0 Nature and Extent of PFAS Contamination**

The lateral extent of PFAS contamination exceeding applicable Part 201 Cleanup Criteria in the shallow unconfined aquifer at the Site and surrounding area has been determined and is illustrated on Figure 1. Groundwater flow in the shallow unconfined aquifer is shown on Figure 1. The groundwater flow direction in the shallow unconfined aquifer is toward the west.

The groundwater sample collected at GSI-2D, located adjacent to Cedar Creek, indicates that PFOA and PFOS are present at concentrations exceeding applicable Part 201 criteria. Based on groundwater elevation data collected at GSI-1S&D and GSI-2S&D and the adjacent staff gages (SG-1 and SG-2) installed in Cedar Creek, it is apparent that Cedar Creek acts as a converging groundwater discharge boundary and prevents groundwater in the shallow unconfined aquifer from flowing west of Cedar Creek, thus establishing a westerly delineation boundary. Based on the PFAS results from the EGLE 2020 sampling of shallow drinking water wells along 16-mile road, the southern extent of PFAS exceeding applicable Part 201 Cleanup Criteria has also been determined. The sampling results from upgradient wells MW-2A and MW-8A at the Site indicated that PFAS was not present at these locations above applicable Part 201 Cleanup Criteria, and therefore the eastern extent of PFAS contaminated groundwater exceeding applicable Part 201 Cleanup Criteria has also been determined. (As noted above, a PFAS source exists to the east of the Site, as evidenced by the surface water sample from the creek). Based on the groundwater flow direction in the shallow aquifer, there does not appear to be a northern flow component at the Site and groundwater impacted with PFAS exceeding Part 201 Cleanup Criteria would not be expected to migrate in a northerly direction. Therefore, the horizontal extent of PFAS contamination in the shallow aquifer has been defined in all directions.

The vertical extent of PFAS contaminated groundwater at the Site is the base of the upper unconfined aquifer, due to the presence of an approximate 40-70-foot-thick clay unit that underlies the upper aquifer and acts as an aquitard/confining layer to the lower confined aquifer. As is evident in Fishbeck's CSM, the confined aquifer in the vicinity of the Site provides hydraulic separation from the upper unconfined aquifer due to the overlying clay aquitard. This interpretation is further substantiated by the drinking water well boring logs and sampling results. Well logs of eleven of the drinking water wells sampled by the City west and southwest of the Site indicate that these wells are installed in the lower confined aquifer. An additional well installed in the lower confined aquifer (13466 White Creek Avenue) was sampled by EGLE. The PFAS results indicate that the wells installed in the lower aquifer have not been impacted by PFAS.

The lateral and vertical extent of PFAS contaminated groundwater in the shallow unconfined aquifer has been determined and there are no current unacceptable exposure risks. A deed restriction is in place at the Site which prevents the installation of wells in the shallow unconfined aquifer. Drinking water well sampling conducted west of the Site indicated two drinking water wells exceeding the PFOA Drinking Water MCL (one sampled by the City; the other sampled by EGLE). Both of these wells are screened in the shallow aquifer. Both of these residences have been provided filtration systems to eliminate the drinking water exposure risk (one provided by the City; the other provided by EGLE). The City has contacted nineteen drinking water well owners located downgradient of the Site. Currently, five of the homeowners have not responded regarding the City's multiple requests to sample their wells. The City will make an additional attempt to elicit a response from these five residences.

There is no evidence that the lower confined aquifer in the vicinity of the Site has been impacted. Currently none of the drinking water wells sampled and installed in the lower confined aquifer have indications of being impacted by PFAS. The geology and hydrogeology at the Site explain the lack of impact in the lower confined aquifer. Hydrogeological conditions at the Site are such that vertical migration of the PFAS impacted groundwater found in the shallow unconfined aquifer, through the 40-70-foot clay aquitard and into the lower confined aquifer, would not occur.

In addition to the tasks identified in the Work Plan, Fishbeck has reviewed the City of Cedar Springs Wellfield Wellhead Protection Area Delineation Report (Fishbeck, 2002). The City wellfield (Wells 3, 4, and 5) are located approximately 1 mile northeast of the Site. Based on the information in the Cedar Springs Wellfield WHPA Delineation Report, static water levels were measured at 17 observation and drinking water wells covering approximately 22 sections in Nelson and Solon Townships. This information is summarized in Table 3 attached to the WHPA report (which table is included in Appendix 5 to this RI Report). Figure 7 from the WHPA report shows a potentiometric surface using the observed static water level elevations (Figure 7 is included in Appendix 5 to this RI Report). The observed groundwater elevation contour map indicates that the groundwater flow direction is to the southwest the Rogue River (Section 3 text from the WHPA report is included in Appendix 5).

Several Wellhead Protection Areas in the vicinity of the Site were identified on the state database (Geowebface.com). Figure 3 shows the location of several of the WHPAs in the vicinity of the Site. All WHPAs indicate a southwesterly flow direction in the lower confined aquifer. Based on that review of the City WHPA Delineation Report and WHPAs on the State database, Fishbeck finds that the groundwater movement in the lower confined aquifer is to the southwest. The flow pattern is southwesterly, not southerly. Therefore, based on the WHPA information, even if PFAS had encountered the lower confined aquifer (and there is no geological explanation for such a conclusion), the PFAS would flow to the west/southwest, not south to the neighborhood that is approximately one mile south of the Site.

Also, Fishbeck has identified a well log for a 12' diameter irrigation well for a large farm located approximately 3000 feet west of the Site. This irrigation well log is included in Appendix 5. The location of the irrigation well is shown on Figure 3. Based on information included on the irrigation well log, the well is installed in the lower confined aquifer and is capable of yielding 1000 gpm. This large irrigation well would influence groundwater flow conditions when it is operated in the summer months and would cause groundwater to flow from the Site towards the irrigation well in a westerly direction.

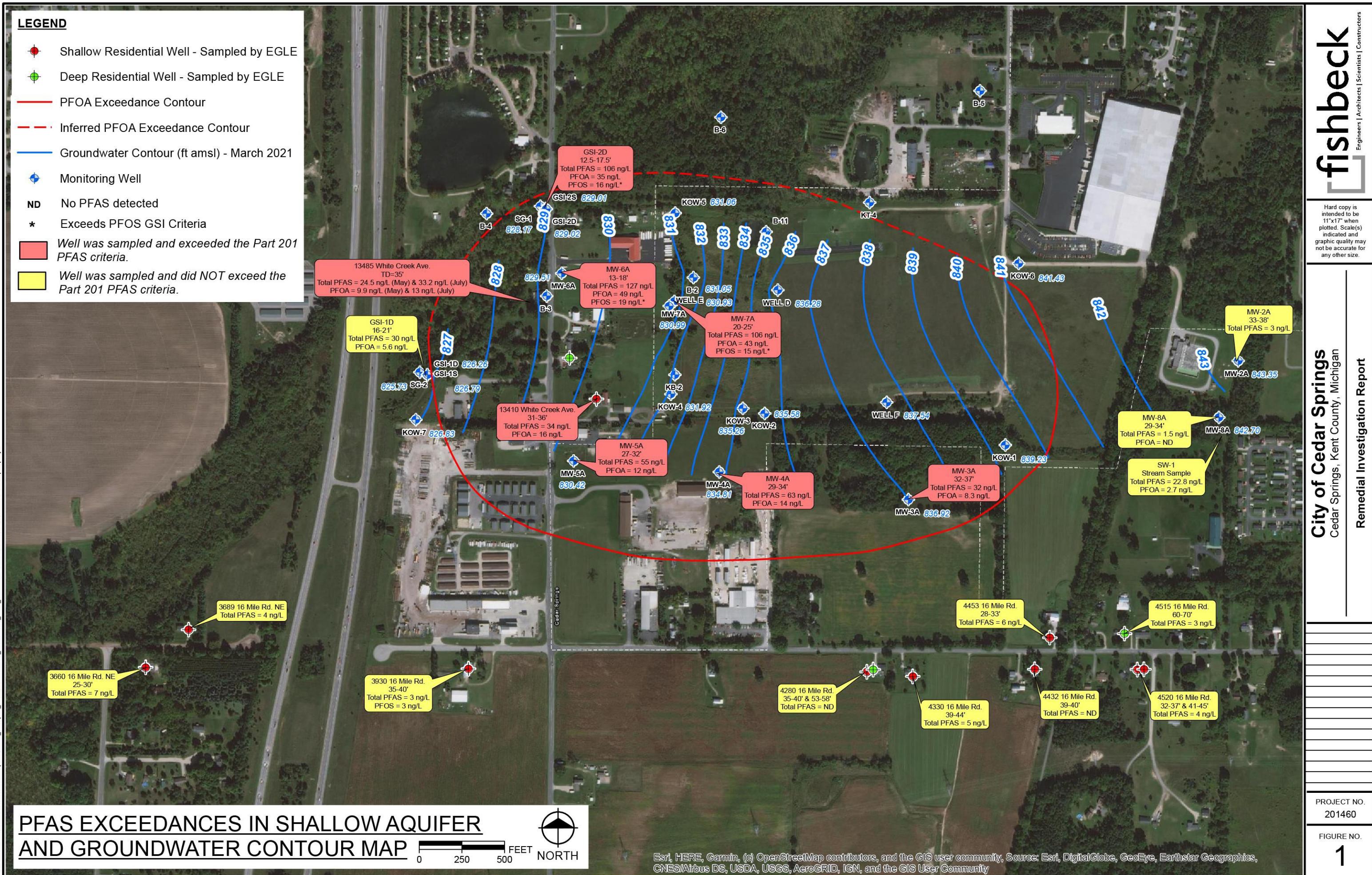
Finally, in the virtual meeting on March 2, 2021 with EGLE, EGLE representatives advised that they would share X-sections from areas near the Site that suggest a connection between the upper and lower aquifers. EGLE provided those X-section to Fishbeck on March 10, 2021. Fishbeck has reviewed those X-sections and does not find any content suggesting a connection between the two aquifers in the vicinity of the Site. The geological information from the one well in the vicinity of the Site on the cross sections indicates that this well is installed in the shallow unconfined aquifer and the well did not extend deep enough to encounter the clay aquitard at the base of the aquifer.

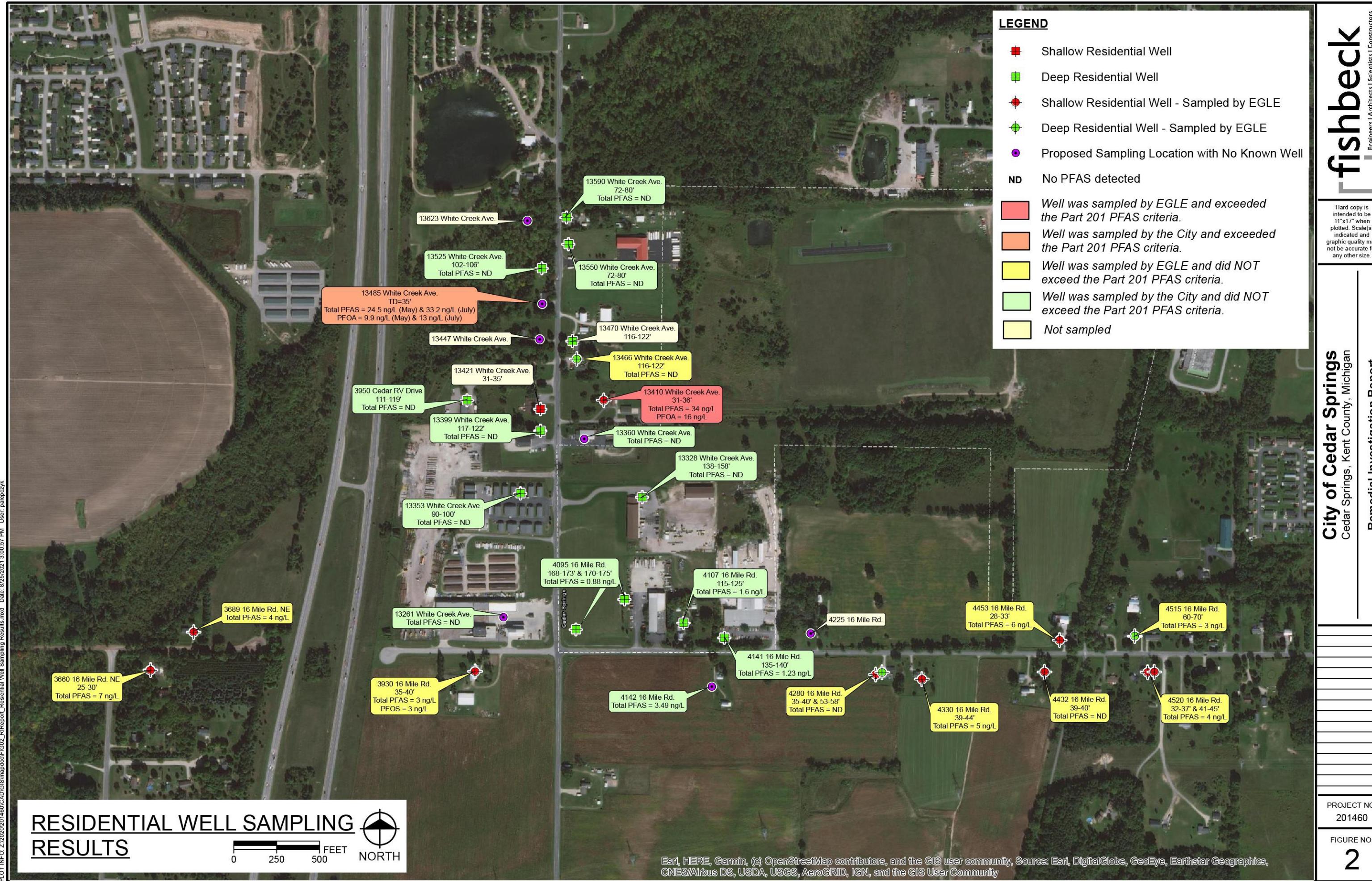
## 6.0 Conclusion

Fishbeck has completed the RI investigation described in the Work Plan, as discussed with EGLE. Fishbeck has completed certain evaluations in supplement to the Work Plan, as described above. As a result, the lateral and vertical extent of PFAS in the shallow aquifer has been delineated. Based on multiple lines of evidence, there is no basis to believe that there is a connection between the shallow and lower aquifers at the Site, and no basis to expect that PFAS detected in the shallow aquifer would be present in the lower aquifer at or in the proximity of the Site. Therefore, investigation of the lower aquifer is not warranted.

# Figures

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# RESIDENTIAL WELL SAMPLING

## RESULTS

 FEET

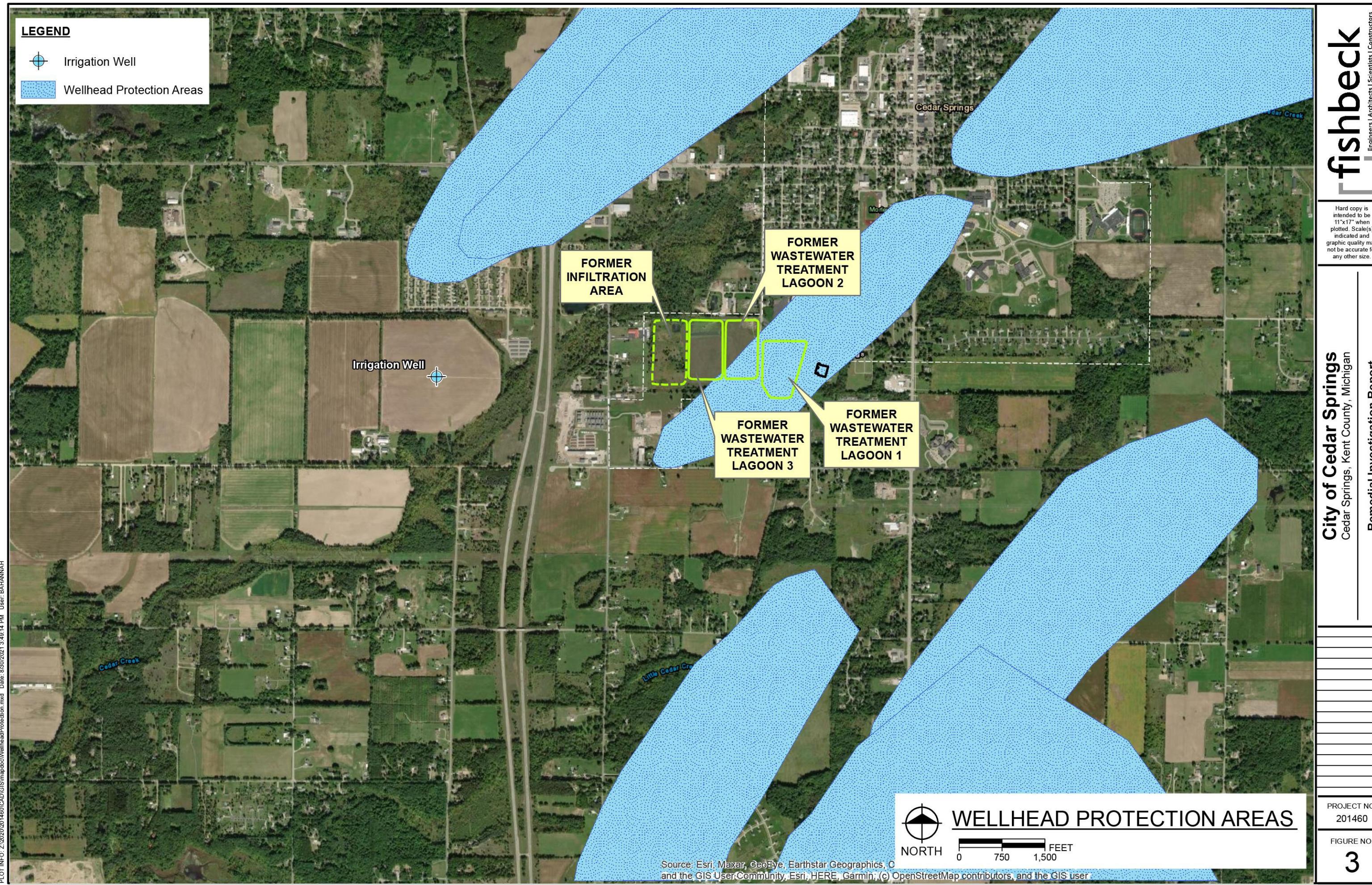


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**FIGURE NO.**

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# Tables

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**Table 1 - Summary of Monitoring Well Construction and Groundwater Elevations**

2021 RI Report

Cedar Springs Former Wastewater Treatment Lagoons Site - Cedar Springs, Michigan

Monitoring Well	Screened Interval (ft bgs)	TOC Elevation (ft msl)	DTW	Groundwater Elevation (ft msl)
			(ft btoc) 03/17/21	03/17/21
GSI-1s	5.5-10.5	833.80	7.54	826.26
GSI-1d	16-21	833.51	6.72	826.79
GSI-2s	2-7	833.38	4.37	829.01
GSI-2d	11.5-16.5	832.51	3.49	829.02
MW-2A	33-38	856.38	13.03	843.35
MW-3A	33-38	850.64	13.72	836.92
MW-4A	29.5-34.5	844.91	10.10	834.81
MW-5A	27-32	843.79	13.37	830.42
MW-6A	13-18	839.03	9.52	829.51
MW-7A	20-25	842.57	11.58	830.99
MW-8A	25-30	852.21	*9.51	842.70
KOW-1	28.5-31.5	852.00	12.77	839.23
KOW-2	13-16	845.51	9.93	835.58
KOW-3	11-14	844.41	9.15	835.26
KOW-4	15-18	844.21	12.29	831.92
KOW-5	14-17	840.56	9.50	831.06
KOW-6	11.5-14.5	849.06	7.63	841.43
KOW-7	13-16	835.97	9.14	826.83
Well D	NA	843.39	7.11	836.28
Well E	NA	841.79	10.86	830.93
Well F	NA	846.94	9.40	837.54
B-2	NA	841.64	10.59	831.05
SG-1	NA	829.21	1.04	828.17
SG-2	NA	828.10	2.37	825.73

*Footnotes:*

\*SWL collected 3/12/21

bgs - Below ground surface

btoc - Below top of casing

SWL - Static water level

NA - Not available

DTW - Depth to Water

ft msl - Feet above mean sea level

Table 2 - Groundwater Data Summary - Poly- and Perfluoroalkyl Substances (PFAS)

2021 Remedial Investigation

City of Cedar Springs, Kent County, Michigan

Monitoring Location:		GSI-1D	GSI-2D	MW-6A	MW-8A	MW-8A Duplicate	SW-01	Field Blank	Residential DW C <sup>(1)</sup>	Nonresidential DW C <sup>(1)</sup>	GSI Criteria <sup>(1)</sup>	Residential Groundwater VIAIC <sup>(1)</sup>	Nonresidential Groundwater VIAIC <sup>(1)</sup>	Water Solubility <sup>(1)</sup>	Flammability and Explosivity SL <sup>(1)</sup>	Residential GW-Shallow VIAP SL <sup>(2)</sup>	Residential GW-Not in Contact VIAP SL <sup>(2)</sup>	Nonresidential GW-Shallow VIAP SL <sup>(2)</sup>	Nonresidential GW-Not in Contact VIAP SL <sup>(2)</sup>
Field Duplicate:		21031444-04 03/12/21	21031444-05 03/12/21	21031444-01 03/12/21	21031444-02 03/12/21	21031444-03 03/12/21	21031444-06 03/12/21	21031444-07 03/12/21											
Laboratory ID:																			
Collection Date:																			
<b>Compound</b>	<b>CAS Number</b>																		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	4.6 U	4.7 U	4.7 U	4.6 U	4.7 U	4.7 U	4.8 U	--	--	--	--	--	--	--	--	--	--	
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	4.6 U	4.7 U	4.7 U	4.6 U	4.7 U	4.7 U	4.8 U	--	--	--	--	--	--	--	--	--	--	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	4.6 U	4.7 U	4.7 U	4.6 U	4.7 U	4.7 U	4.8 U	--	--	--	--	--	--	--	--	--	--	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	4.6 U	4.7 U	4.7 U	4.6 U	4.7 U	4.7 U	4.8 U	--	--	--	--	--	--	--	--	--	--	
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	4.6 U	4.7 U	4.7 U	4.6 U	4.7 U	4.7 U	4.8 U	--	--	--	--	--	--	--	--	--	--	
11-Chloroeicosfluoro-3-oxadecane-1-sulfonic acid (11Cl-PF3OUDs)	763051-92-9	4.6 U	4.7 U	4.7 U	4.6 U	4.7 U	4.7 U	4.8 U	--	--	--	--	--	--	--	--	--	--	
Hexafluoropropylene oxide dimer acid (HFPO-DA)(GenX)	13252-13-6	4.6 U	4.7 U	4.7 U	4.6 U	4.7 U	4.7 U	4.8 U	370 (A)	370 (A)	NA	ID	ID	NA	NA	--	--	--	
N-Ethyl perfluoroctane sulfonamide (EtFOSA)	4151-50-2	4.6 U	5.2	2.4 J	4.6 U	4.7 U	4.7 U	4.8 U	--	--	--	--	--	--	--	--	--	--	
N-Methyl perfluoroctane sulfonamido acetic acid (N-MeFOSAA)	2355-31-9	4.6 U	0.69 J	4.7 U	4.6 U	4.7 U	4.7 U	4.8 U	--	--	--	--	--	--	--	--	--	--	
Perfluorobutane sulfonic acid (PFBS)	375-73-5	2.3 J	3.0 J	2.6 J	0.65 J	0.57 J	3.5 J	4.8 U	420 (A)	420 (A)	NA	ID	ID	NA	NA	--	--	--	
Perfluorobutanoic acid (PFBA)	375-22-4	4.7	9.5	9.0	4.6 U	4.7 U	5.5	4.8 U	--	--	--	--	--	--	--	--	--	--	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	4.6 U	4.7 U	4.7 U	4.6 U	4.7 U	4.7 U	4.8 U	--	--	--	--	--	--	--	--	--	--	
Perfluorodecanoic acid (PFDA)	335-76-2	4.6 U	4.7 U	4.7 U	4.6 U	4.7 U	4.7 U	4.8 U	--	--	--	--	--	--	--	--	--	--	
Perfluorododecanoic acid (PFDoDA)	307-55-1	4.6 U	4.7 U	4.7 U	4.6 U	4.7 U	4.7 U	4.8 U	--	--	--	--	--	--	--	--	--	--	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.59 J	1.8 J	1.9 J	4.6 U	4.7 U	4.7 U	4.8 U	--	--	--	--	--	--	--	--	--	--	
Perfluoroheptanoic acid (PFHpA)	375-85-9	1.5 J	8.1	9.4	4.6 U	4.7 U	1.4 J	4.8 U	--	--	--	--	--	--	--	--	--	--	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	3.6 J	9.1	12	0.88 J	0.42 J	1.7 J	0.66 J	51 (A)	51 (A)	NA	ID	ID	NA	NA	--	--	--	
Perfluorohexanoic acid (PFHxA)	307-24-4	2.3 J	8.4	11	4.6 U	4.7 U	2.3 J	4.8 U	4.00E+05 (A)	4.00E+05 (A)	NA	ID	ID	NA	NA	--	--	--	
Perfluorononane sulfonic acid (PFNS)	68259-12-1	4.6 U	4.7 U	4.7 U	4.6 U	4.7 U	4.7 U	4.8 U	--	--	--	--	--	--	--	--	--	--	
Perfluorononanoic acid (PFNA)	375-95-1	4.6 U	1.6 J	2.0 J	4.6 U	4.7 U	4.7 U	4.8 U	6.0 (A)	6.0 (A)	NA	ID	ID	NA	NA	--	--	--	
Perfluoroctane sulfonamide (PFOSA)	754-91-6	4.6 U	0.76 J	4.7 U	4.6 U	4.7 U	4.7 U	4.8 U	--	--	--	--	--	--	--	--	--	--	
Perfluoroctane sulfonic acid (PFOS) (DD)	1763-23-1	5.7	16	19	1.9 U	1.9 U	2.2	1.9 U	16 (A)	16 (A)	12 (X)	NLV	NLV	3,100	NA	NA	NA	NA	
Perfluoroctanoic acid (PFOA) (DD)	335-67-1	5.6	35	49	1.9 U	1.9 U	2.7	1.9 U	8.0 (A)	8.0 (A)	12,000 (X)	ID	ID	9.50E+09	NA	TX	TX	TX	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1.3 J	1.1 J	1.3 J	4.6 U	4.7 U	4.7 U	4.8 U	--	--	--	--	--	--	--	--	--	--	
Perfluoropentanoic acid (PFPeA)	2706-90-3	2.0 J	5.8	7.8	4.6 U	4.7 U	3.5 J	4.8 U	--	--	--	--	--	--	--	--	--	--	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	4.6 U	4.7 U	4.7 U	4.6 U	4.7 U	4.7 U	4.8 U	--	--	--	--	--	--	--	--	--	--	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	4.6 U	4.7 U	4.7 U	4.6 U	4.7 U	4.7 U	4.8 U	--	--	--	--	--	--	--	--	--	--	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	4.6 U	4.7 U	4.7 U	4.6 U	4.6 U	4.7 U	4.8 U	--	--	--	--	--	--	--	--	--	--	

Results expressed in ng/L.

Bolded values exceed an applicable criterion.

**Data Qualifiers:**

J Estimated value

U Not detected

**Footnotes/Abbreviations:**

(1) Part 201 Groundwater Generic Cleanup Criteria and Screening Levels, December 21, 2020.

(2) EGLE Volatilization to Indoor Air Pathway Screening Levels, September 4, 2020.

(A) State of Michigan drinking water (DW) standard.

(X) Criterion is not protective for surface water used as a DW source.

(DD) Hazardous substance causes developmental effects. Residential direct contact criteria are protective of both prenatal and postnatal exposure. Nonresidential direct contact criteria are protective for a pregnant adult receptor.

DWC drinking water criterion

GSI groundwater surface water interface

ID Insufficient data to develop criterion.

NA not available

NLV Not likely to volatilize under most conditions.

SL screening level

TX The Remediation and Redevelopment Division Toxicology Unit has not identified an inhalation toxicity value for the hazardous substance at the date of publication of these values.

VIAIC volatilization to indoor air inhalation criteria

VIAP volatilization to indoor air pathway

Table 3 - Residential Well Sample Data Summary - Poly- and Perfluoroalkyl Substances (PFAS)

2021 Remedial Investigation

City of Cedar Springs, Kent County, Michigan

July 2021

Monitoring Location:	MCL / Residential DWC <sup>(1)</sup>	GSI Criteria <sup>(1)</sup>	Residential Groundwater VIAIC <sup>(1)</sup>	Water Solubility <sup>(1)</sup>	Flammability and Explosivity SL <sup>(1)</sup>	Residential GW-Shallow VIAP SL <sup>(2)</sup>	Residential GW-Not in Contact VIAP SL <sup>(2)</sup>	13261 White Creek Avenue 141 21060077-02 05/26/21	13328 White Creek Avenue 158 21072346-02 07/28/21	13353 White Creek Avenue 100 21060077-03 05/26/21	13360 White Creek Avenue Unknown 21060077-01 05/26/21	13360 White Creek Avenue Duplicate Unknown 21060077-12 05/26/21	13399 White Creek Avenue 122 21060077-04 05/26/21	13485 White Creek Avenue 35 21060077-05 05/26/21
Compound	CAS Number													
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	763051-92-9	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)(GenX)	13252-13-6	370 (A)	NA	ID	NA	NA	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
N-Ethyl perfluoroctane sulfonamido acetic acid (N-EtFOSAA)	2991-50-6	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	0.41 J
N-Methyl perfluoroctane sulfonamido acetic acid (N-MeFOSAA)	2355-31-9	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluorobutane sulfonic acid (PFBS)	375-73-5	420 (A)	NA	ID	NA	NA	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	1.9 J
Perfluorodecanoic acid (PFDA)	335-76-2	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluorododecanoic acid (PFDODA)	307-55-1	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluoroheptanoic acid (PFHpA)	375-85-9	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	1.4 J
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	51 (A)	NA	ID	NA	NA	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.8
Perfluorohexanoic acid (PFHxA)	307-24-4	4.00E+05 (A)	NA	ID	NA	NA	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	1.1 J
Perfluorononanoic acid (PFNA)	375-95-1	6.0 (A)	NA	ID	NA	NA	--	2.0 U	2.0 U	2.0 U	2.0 U	0.55 J	2.0 U	2.0 U
Perfluoroctane sulfonic acid (PFOS) (DD)	1763-23-1	16 (A)	12 (X)	NLV	3,100	NA	NA	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	7.0
Perfluoroctanoic acid (PFOA) (DD)	335-67-1	8.0 (A)	12,000 (X)	ID	9.50E+09	NA	TX	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	9.9
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

Results expressed in ng/L.

Bolted values exceed an applicable criterion.

**Data Qualifiers:**

J Estimated value

U Not detected above the given limit.

**Footnotes/Abbreviations:**<sup>(1)</sup> Part 201 Groundwater Generic Cleanup Criteria and Screening Levels, December 21, 2020.<sup>(2)</sup> EGLE Volatilization to Indoor Air Pathway Screening Levels, September 4, 2020.

(A) State of Michigan drinking water (DW) standard.

(X) Criterion is not protective for surface water used as a DW source.

(DD) Hazardous substance causes developmental effects. Residential direct contact criteria are protective of both prenatal and postnatal exposure.

DWC drinking water criterion

GSI groundwater surface water interface

ID Insufficient data to develop criterion.

MCL maximum contaminant limit

NA not available

NLV Not likely to volatilize under most conditions.

SL screening level

TX The Remediation and Redevelopment Division Toxicology Unit has not identified an inhalation toxicity value for the hazardous substance at the date of publication of these values.

VIAIC volatilization to indoor air inhalation criteria

VIAP volatilization to indoor air pathway

Table 3 - Residential Well Sample Data Summary - Poly- and Perfluoroalkyl Substances (PFAS)

2021 Remedial Investigation

City of Cedar Springs, Kent County, Michigan

July 2021

Monitoring Location:	MCL / Residential DWC <sup>(1)</sup>	GSI Criteria <sup>(1)</sup>	Residential Groundwater VIAIC <sup>(1)</sup>	Water Solubility <sup>(1)</sup>	Flammability and Explosivity SL <sup>(1)</sup>	Residential GW-Shallow VIAP SL <sup>(2)</sup>	Residential GW-Not in Contact VIAP SL <sup>(2)</sup>	13485 White Creek Avenue 35 21072346-04 07/28/21	13485 White Creek Avenue Duplicate 35 21072346-05 07/28/21	13525 White Creek Avenue 106 21060077-06 05/26/21	13550 White Creek Avenue 82 21072346-03 07/28/21	13590 White Creek Avenue 80 21060077-07 05/26/21	3950 Cedar Rv Drive 119 21072346-06 07/28/21	4095 16 Mile Rd 173 21060077-08 05/26/21
Compound	CAS Number													
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	763051-92-9	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)(GenX)	13252-13-6	370 (A)	NA	ID	NA	NA	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
N-Ethyl perfluoroctane sulfonamido acetic acid (N-EtFOSAA)	2991-50-6	--	--	--	--	--	--	1.0 J	1.2 J	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
N-Methyl perfluoroctane sulfonamido acetic acid (N-MeFOSAA)	2355-31-9	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluorobutane sulfonic acid (PFBS)	375-73-5	420 (A)	NA	ID	NA	NA	--	2.6	2.5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluorodecanoic acid (PFDA)	335-76-2	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluorododecanoic acid (PFDODA)	307-55-1	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluoroheptanoic acid (PFHpA)	375-85-9	--	--	--	--	--	--	1.7 J	1.8 J	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	51 (A)	NA	ID	NA	NA	--	3.7	3.9	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluorohexanoic acid (PFHxA)	307-24-4	4.00E+05 (A)	NA	ID	NA	NA	--	1.2 J	1.4 J	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluorononanoic acid (PFNA)	375-95-1	6.0 (A)	NA	ID	NA	NA	--	2.0 U	0.5 J	2.0 U	2.0 U	2.0 U	2.0 U	0.88 J
Perfluoroctane sulfonic acid (PFOS) (DD)	1763-23-1	16 (A)	12 (X)	NLV	3,100	NA	NA	10	9.4	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluoroctanoic acid (PFOA) (DD)	335-67-1	8.0 (A)	12,000 (X)	ID	9.50E+09	NA	TX	13	13	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

Results expressed in ng/L.

Bolded values exceed an applicable criterion.

**Data Qualifiers:**

J Estimated value

U Not detected above the given limit.

**Footnotes/Abbreviations:**<sup>(1)</sup> Part 201 Groundwater Generic Cleanup Criteria and Screening Levels, December 21, 2020.<sup>(2)</sup> EGLE Volatilization to Indoor Air Pathway Screening Levels, September 4, 2020.

(A) State of Michigan drinking water (DW) standard.

(X) Criterion is not protective for surface water used as a DW source.

(DD) Hazardous substance causes developmental effects. Residential direct contact criteria are protective of both prenatal and postnatal exposure.

DWC drinking water criterion

GSI groundwater surface water interface

ID Insufficient data to develop criterion.

MCL maximum contaminant limit

NA not available

NLV Not likely to volatilize under most conditions.

SL screening level

TX The Remediation and Redevelopment Division Toxicology Unit has not identified an inhalation toxicity value for the hazardous substance at the date of publication of these values.

VIAIC volatilization to indoor air inhalation criteria

VIAP volatilization to indoor air pathway

Table 3 - Residential Well Sample Data Summary - Poly- and Perfluoroalkyl Substances (PFAS)

2021 Remedial Investigation

City of Cedar Springs, Kent County, Michigan

July 2021

Monitoring Location:	MCL / Residential DWC <sup>(1)</sup>	GSI Criteria <sup>(1)</sup>	Residential Groundwater VIAIC <sup>(1)</sup>	Water Solubility <sup>(1)</sup>	Flammability and Explosivity SL <sup>(1)</sup>	Residential GW-Shallow VIAP SL <sup>(2)</sup>	Residential GW-Not in Contact VIAP SL <sup>(2)</sup>	4095 16 Mile Rd Duplicate 173 21060077-14 05/26/21	4107 16 Mile Rd 125 21060077-09 05/26/21	4141 16 Mile Rd 140 21060077-10 05/26/21	4142 16 Mile Rd Unknown 21060077-11 05/26/21	Field Blank 21060077-13 05/26/21	Field Blank 21072346-01 07/28/21
Compound	CAS Number												
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	763051-92-9	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)(GenX)	13252-13-6	370 (A)	NA	ID	NA	NA	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
N-Ethyl perfluoroctane sulfonamido acetic acid (N-EtFOSAA)	2991-50-6	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
N-Methyl perfluoroctane sulfonamido acetic acid (N-MeFOSAA)	2355-31-9	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluorobutane sulfonic acid (PFBS)	375-73-5	420 (A)	NA	ID	NA	NA	--	2.0 U	2.0 U	2.0 U	0.85 J	2.0 U	2.0 U
Perfluorodecanoic acid (PFDA)	335-76-2	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluorododecanoic acid (PFDODA)	307-55-1	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluoroheptanoic acid (PFHpA)	375-85-9	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	51 (A)	NA	ID	NA	NA	--	2.0 U	2.0 U	2.0 U	0.49 J	2.0 U	2.0 U
Perfluorohexanoic acid (PFHxA)	307-24-4	4.00E+05 (A)	NA	ID	NA	NA	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluorononanoic acid (PFNA)	375-95-1	6.0 (A)	NA	ID	NA	NA	--	0.65 J	1.6 J	0.58 J	2.0 U	0.69 J	2.0 U
Perfluoroctane sulfonic acid (PFOS) (DD)	1763-23-1	16 (A)	12 (X)	NLV	3,100	NA	NA	2.0 U	2.0 U	2.0 U	1.4 J	2.0 U	2.0 U
Perfluoroctanoic acid (PFOA) (DD)	335-67-1	8.0 (A)	12,000 (X)	ID	9.50E+09	NA	TX	2.0 U	2.0 U	0.65 J	0.75 J	2.0 U	2.0 U
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	--	--	--	--	--	--	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

Results expressed in ng/L.

Bolded values exceed an applicable criterion.

**Data Qualifiers:**

J Estimated value

U Not detected above the given limit.

**Footnotes/Abbreviations:**<sup>(1)</sup> Part 201 Groundwater Generic Cleanup Criteria and Screening Levels, December 21, 2020.<sup>(2)</sup> EGLE Volatilization to Indoor Air Pathway Screening Levels, September 4, 2020.

(A) State of Michigan drinking water (DW) standard.

(X) Criterion is not protective for surface water used as a DW source.

(DD) Hazardous substance causes developmental effects. Residential direct contact criteria are protective of both prenatal and postnatal exposure.

DWC drinking water criterion

GSI groundwater surface water interface

ID Insufficient data to develop criterion.

MCL maximum contaminant limit

NA not available

NLV Not likely to volatilize under most conditions.

SL screening level

TX The Remediation and Redevelopment Division Toxicology Unit has not identified an inhalation toxicity value for the hazardous substance at the date of publication of these values.

VIAIC volatilization to indoor air inhalation criteria

VIAP volatilization to indoor air pathway

# **Appendix 1**

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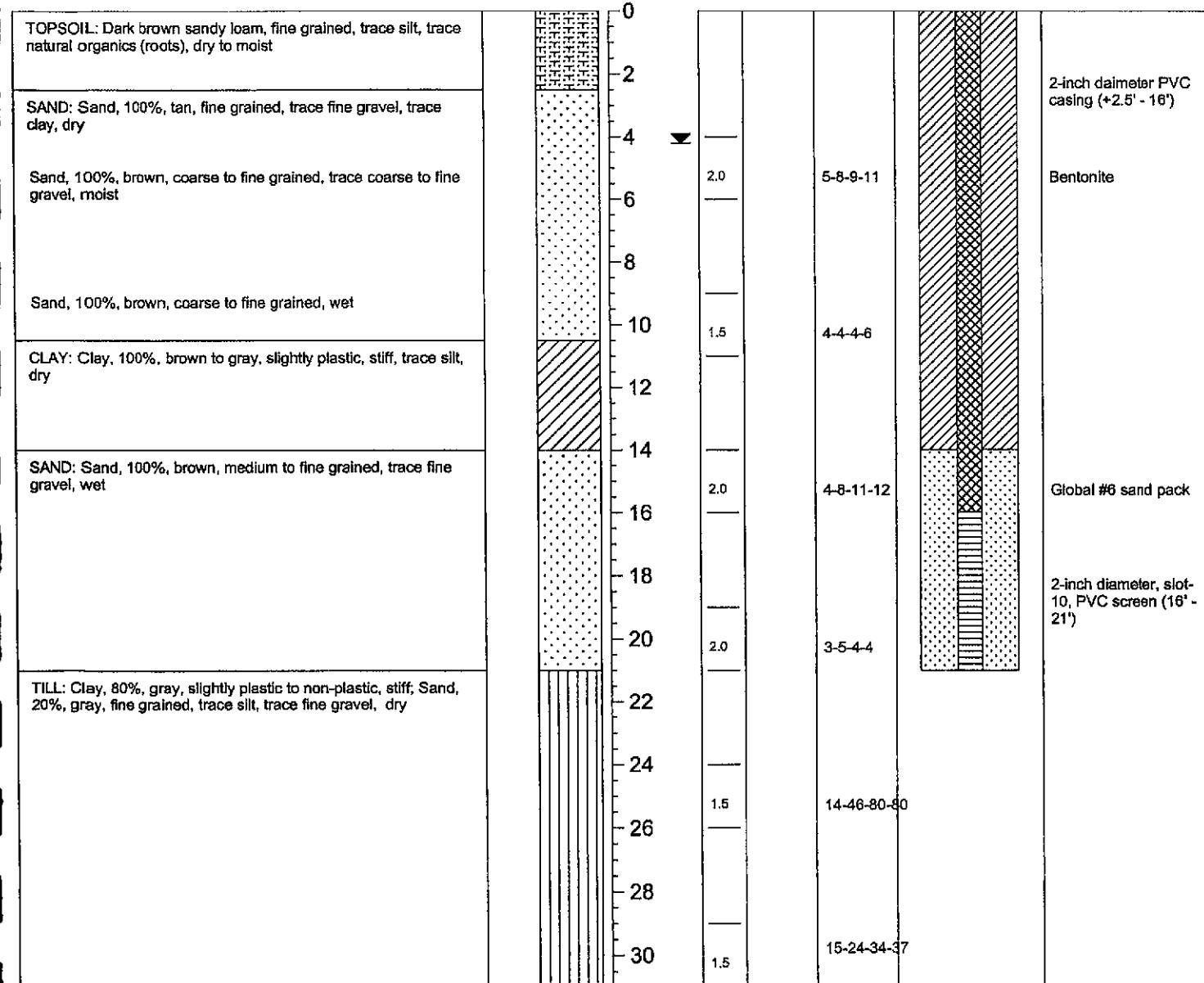


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Lansing (517) 627-1141  
Kalamazoo (616) 349-3717  
Farmington Hills (248) 324-2090

**BOREHOLE LOG**  
**BORING/WELL ID: GSI - 1d**  
**TOTAL DEPTH (ft.): 31'**

<b>PROJECT:</b> Cedar Springs Former Lagoon Closure	<b>START DATE:</b> 11/24/03	<b>DRILLING CO.:</b> Stearns Drilling		
<b>SITE LOCATION:</b> Cedar Springs, MI	<b>END DATE:</b> 11/24/03	<b>DRILLER:</b> John Verett		
<b>PROJECT NO.:</b> G02126D	<b>TOC ELEV.:</b> 833.52	<b>RIG TYPE:</b> CME 1050		
<b>PROJECT MANAGER:</b> Tim K. Patterson	<b>GROUND ELEV.:</b> 830.88	<b>METHOD OF DRILLING:</b> 4 1/4" HSA		
<b>LOGGED BY:</b> Tim K. Patterson	<b>STATIC WATER LVL.:</b> 826.69	<b>SAMPLING METHODS:</b> Split barrel sampler		
<b>NOTES:</b> GSI-1d is located 9' north of GSI-1soil boring, between 13421 and 13447 White Creek Ave, 18 ft. east of Cedar Creek.		▼ Static Water Level Page 1 of 1		
DESCRIPTION	PID ppm GRAPHIC LOG	DEPTH (ft. bgl) Static Water Level Sample Recovery	Sample ID Blows Counts	WELL CONSTRUCTION DETAIL





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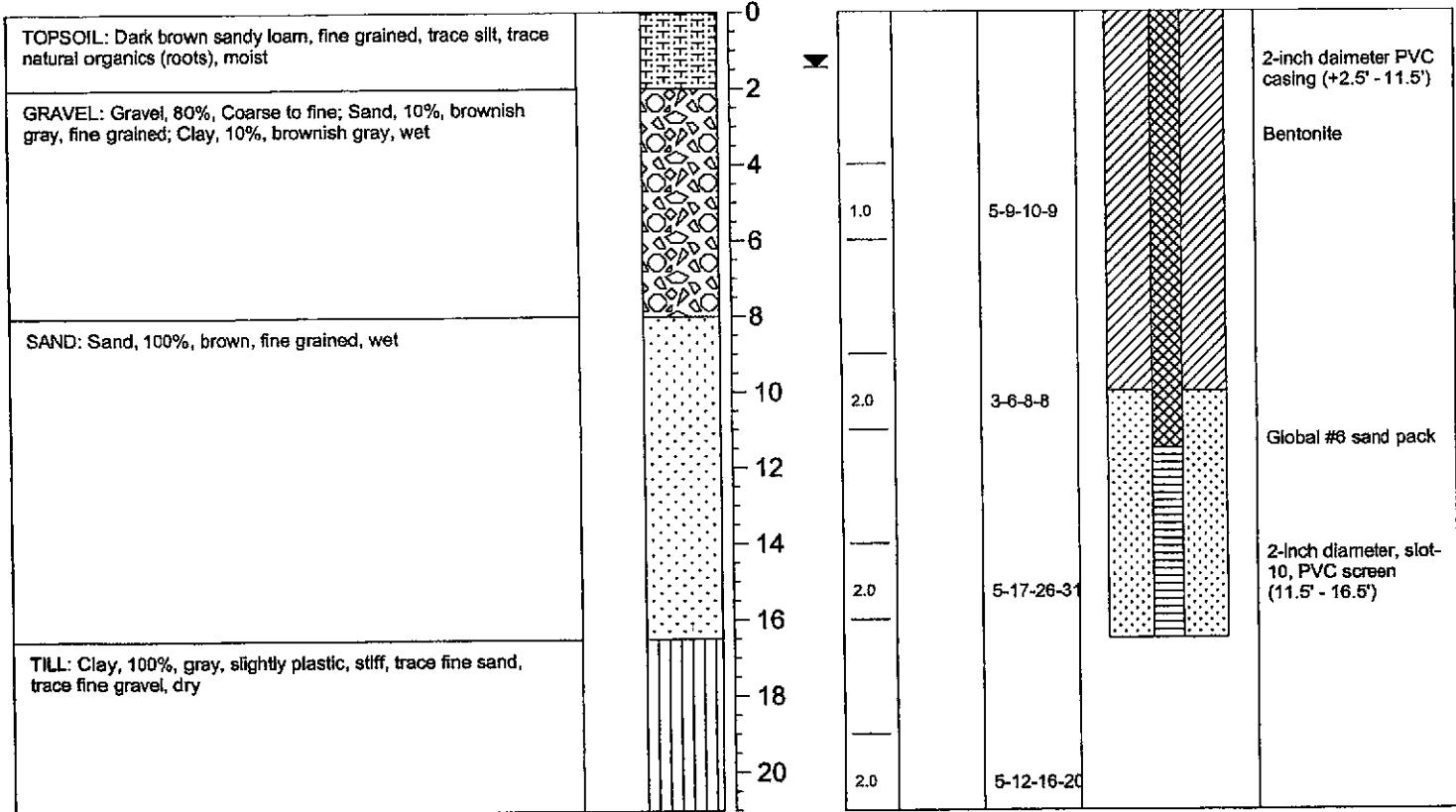
Grand Rapids (616) 575-3824  
Lansing (517) 627-1141  
Kalamazoo (616) 349-3717  
Farmington Hills (248) 324-2090

# BOREHOLE LOG

## BORING/WELL ID: GSI-2d

### TOTAL DEPTH (ft.): 21'

<b>PROJECT:</b> Cedar Springs Former Lagoon Closure	<b>START DATE:</b> 11/25/03	<b>DRILLING CO.:</b> Stearns Drilling						
<b>SITE LOCATION:</b> Cedar Springs, MI	<b>END DATE:</b> 11/25/03	<b>DRILLER:</b> John Verett						
<b>PROJECT NO.:</b> G02126D	<b>TOC ELEV.:</b> 832.51	<b>RIG TYPE:</b> CME 1050						
<b>PROJECT MANAGER:</b> Tim K. Patterson	<b>GROUND ELEV.:</b> 830.28	<b>METHOD OF DRILLING:</b> 4 1/4" HSA						
<b>LOGGED BY:</b> Tim K. Patterson	<b>STATIC WATER LVL.:</b> 828.83	<b>SAMPLING METHODS:</b> Split barrel sampler						
<b>NOTES:</b> GSI-2d is located 10' east of Cedar Creek and 25' west of White Creek Ave., 10' south of drain.		▼ Static Water Level      Page 1 of 1						
DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample Recovery	Sample ID	Blows Counts	WELL CONSTRUCTION DETAIL



**BOREHOLE LOG****BORING/WELL ID: MW-6A****TOTAL DEPTH (ft.): 20'**

**PROJECT:** Cedar Springs/Lagoon Closure  
**SITE LOCATION:** Cedar Springs, Michigan  
**PROJECT NO.:** F95342m  
**PROJECT MANAGER:** Ron C. Waybrant  
**LOGGED BY:** Bruce E. Gillett

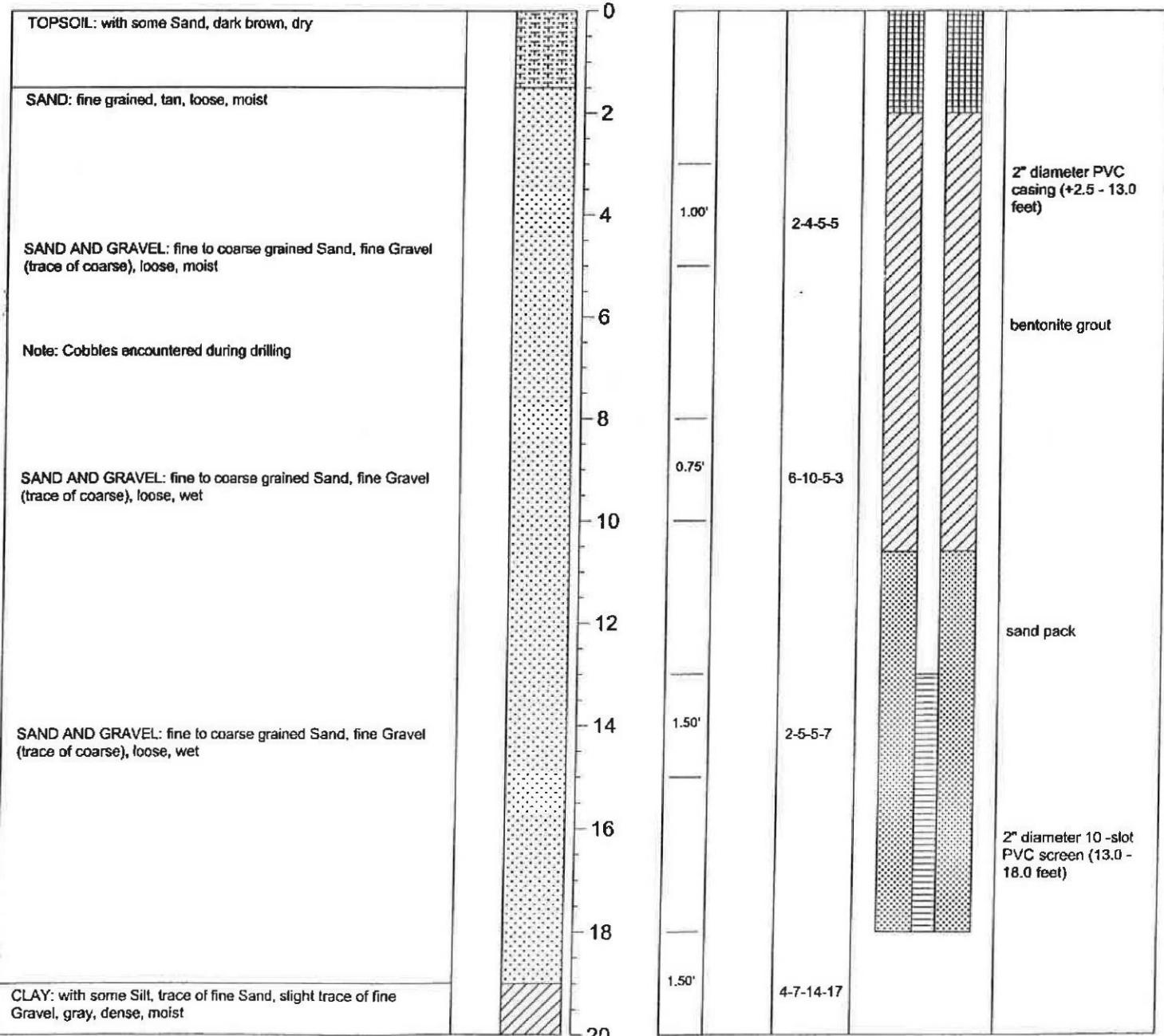
**START DATE:** 12/8/99  
**END DATE:** 12/8/99  
**TOC ELEV.:** --  
**GROUND ELEV.:** --  
**STATIC WATER LVL.:** --

**DRILLING CO.:** Stearns Drilling Co.  
**DRILLER:** Duane / Bob  
**RIG TYPE:** CMB 850  
**METHOD OF DRILLING:** 4.25" I.D. Hollow Stem Auger  
**SAMPLING METHODS:** Split Spoon

**NOTES:** --  
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▼ Static Water Level      Page 1 of 1

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/ Recovery	Sample ID	Blows Counts	WELL CONSTRUCTION DETAIL
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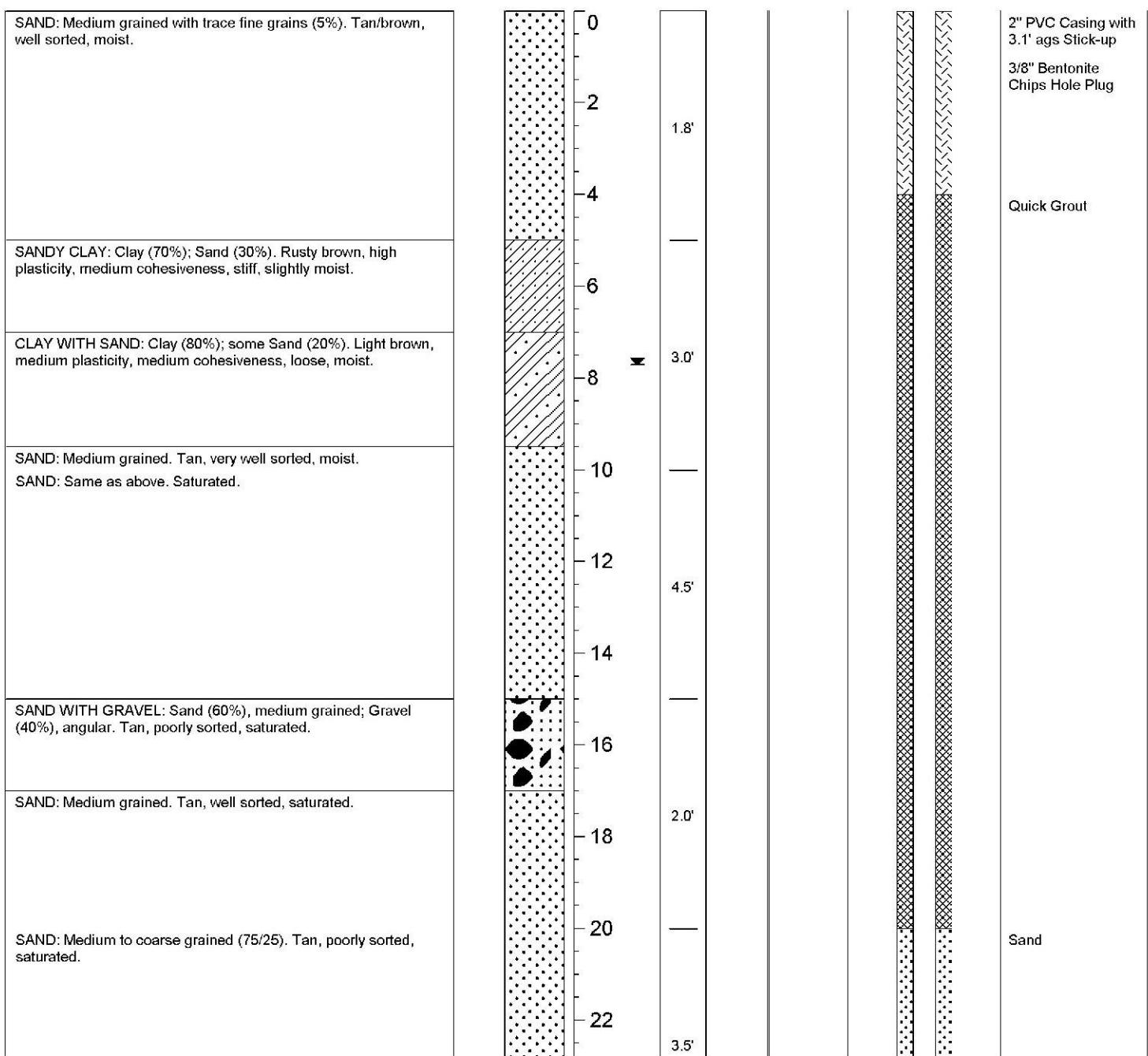


## **BOREHOLE LOG**

**BORING/WELL ID: MW-08A**

TOTAL DEPTH (ft.): 45

<b>PROJECT:</b> Former Wastewater Treatment Lagoon	<b>START DATE:</b> 03/09/21	<b>DRILLING CO.:</b> Job Site Services						
<b>SITE LOCATION:</b> Cedar Springs, MI	<b>END DATE:</b> 03/09/21	<b>DRILLER:</b> Bob						
<b>PROJECT NO.:</b> 201460	<b>TOC ELEV.:</b>	<b>RIG TYPE:</b> Mobile Drill EQ0022						
<b>PROJECT MANAGER:</b> T. Patterson	<b>GROUND ELEV.:</b>	<b>METHOD OF DRILLING:</b> Hollow Stem Auger						
<b>LOGGED BY:</b> L. Chwojnicki	<b>STATIC WATER LVL.:</b> ~7.7 bgs	<b>SAMPLING METHODS:</b> 5' Macrocore						
<b>NOTES:</b> NR - no recovery	Static Water Level	Page 1 of 2						
DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/ Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL





# BOREHOLE LOG

BORING/WELL ID: MW-08A

TOTAL DEPTH (ft.): 45

PROJECT: Former Wastewater Treatment Lagoon

SITE LOCATION: Cedar Springs, MI

PROJECT NO.: 201460

PROJECT MANAGER: T. Patterson

LOGGED BY: L. Chwojnicki

START DATE: 03/09/21

END DATE: 03/09/21

TOC ELEV.:

GROUND ELEV.:

STATIC WATER LVL.: ~7.7 bgs

DRILLING CO.: Job Site Services

DRILLER: Bob

RIG TYPE: Mobile Drill EQ0022

METHOD OF DRILLING: Hollow Stem Auger

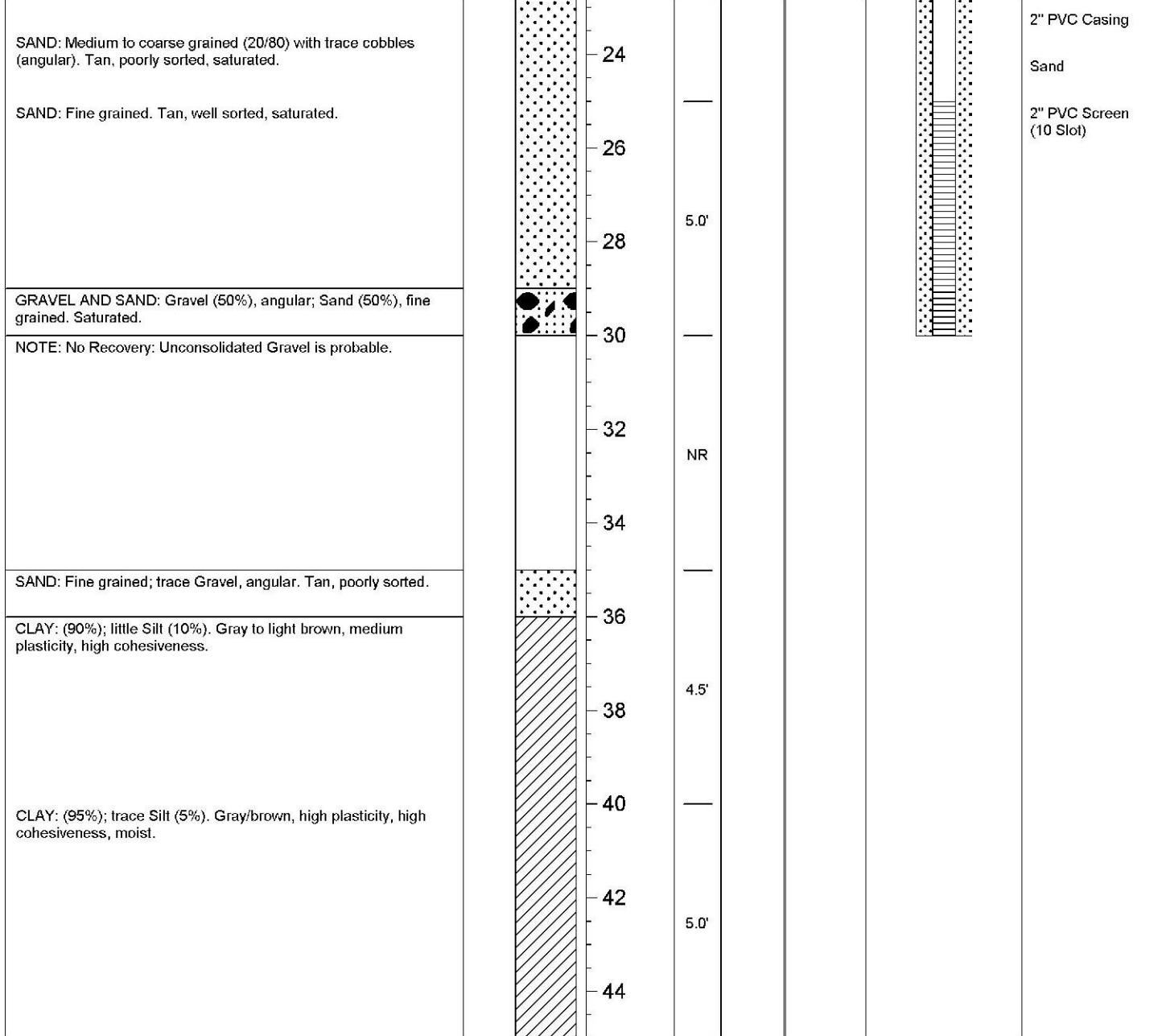
SAMPLING METHODS: 3' Macrocore

NOTES: NR - no recovery

Static Water Level

Page 2 of 2

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgs)	Static Water Level	Sample/ Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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## **Appendix 2**

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# Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.



Failure to comply is a misdemeanor.

Import ID:

Tax No:	Permit No:	County: Kent	Township: Solon		
		Town/Range: 10N 11W	Section: 35	Well Status: Active	WSSN:
Source ID/Well No:					
Well ID: 41000016625					
Distance and Direction from Road Intersection: 0.25 MILE NORTH OF 16 MILE ROAD; 600 FEET WEST OF WHITE CREEK AVENUE ON THE SOUTH OF R.V. DRIVE CUL-DE-SAC.					
Elevation:					
Latitude: 43.209328					
Longitude: -85.573034					
Method of Collection: Interpolation-Map					
Well Owner: MARK HUGHEY					
Well Address: 13437 WHITE CREEK Cedar Springs, MI 49319				Owner Address: 5250 D-10 CEDAR SPRINGS, MI 49319	

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No		
Well Depth: 119.00 ft.	Pump Installation Date:	HP: 1.50		
Well Type: New	Manufacturer: Aermotor	Pump Type: Submersible		
Casing Type: Steel - unknown	Model Number: A+20-150	Pump Capacity: 20 GPM		
Casing Joint: Threaded & coupled	Drop Pipe Length: 80.00 ft.	Pump Voltage:		
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:		
Diameter: 4.00 in. to 111.00 ft. depth 3.00 in. to 119.00 ft. depth	Draw Down Seal Used: No			
Borehole:	Pressure Tank Installed: Yes			
	Pressure Tank Type: Unknown			
	Manufacturer: Well-X-Trol			
	Model Number: WX-103	Tank Capacity:		
	Pressure Relief Valve Installed: No			
Static Water Level: 2.00 ft. Below Grade	Formation Description		Thickness	
Well Yield Test: Yield Test Method: Plunger			Depth to Bottom	
Pumping level 4.00 ft. after 2.00 hrs. at 70 GPM	Topsoil	4.00	4.00	
	Brown Clay W/Stones Hard	5.00	9.00	
	Gravel W/Cobbles	14.00	23.00	
Screen Installed: Yes	Filter Packed: No	Gray Clay Hard	64.00	87.00
Screen Diameter: 3.00 in.	Blank: 2.00 ft. Above	Sand Clay Silt Fine	17.00	104.00
Screen Material Type: Stainless steel-wire wrapped		Gray Clay W/Stones Hard	4.00	108.00
Screen Installation Type: Telescoped		Brown Sand & Gravel Coarse	11.00	119.00
Slot Length	Set Between			
10.00 8.00 ft.	111.00 ft. and 119.00 ft.			
Fittings: Neoprene packer				
Well Grouted: Yes	Grouting Method: Unknown	Geology Remarks:		
Grouting Material Bags Additives	Depth			
Bentonite dry granular 8.00 None	0.00 ft. to 65.00 ft.			
Wellhead Completion: Pitless adapter, 12 inches above grade	Drilling Machine Operator Name: MIKE WAHLFIELD			
Nearest Source of Possible Contamination:	Employment: Employee			
Type Distance Direction				
Septic tank 75 ft. Southwest				
Contractor Type: Water Well Drilling Contractor Reg No: 41-0395				
Business Name: WAHLFIELD DRILLING COMPANY INC				
Business Address:				
<b>Water Well Contractor's Certification</b>				
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.				
Signature of Registered Contractor				Date

General Remarks:

Other Remarks:



# Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.



Failure to comply is a misdemeanor.

Import ID:

Tax No:	Permit No:	County: Kent	Township: Solon		
		Town/Range: 10N 11W	Section: 36	Well Status: Active	WSSN:
Source ID/Well No:					
Distance and Direction from Road Intersection: 155' NROHT OF 16 MILE RD. - EAST OF WHITE CREEK					
Well Owner: PLYMOUTH TANK CO.					
Well Address: 16 MILE RD. & WHITE CREEK CEDAR SPRINGS, MI			Owner Address: 16 MILE RD. & WHITE CREEK CEDAR SPRINGS, MI		
Method of Collection: Interpolation-Map					

Drilling Method: Rotary	Pump Installed: No		
Well Depth: 180.00 ft.	Pressure Tank Installed: No		
Well Type: New	Pressure Relief Valve Installed:		
Casing Type: Steel - unknown			
Casing Joint: Threaded & coupled			
Casing Fitting:			
Diameter: 4.00 in. to 168.00 ft. depth			
Borehole:			
Static Water Level: 8.75 ft.	Formation Description		
Well Yield Test: 8.00 hrs. at 25 GPM	Thickness		
Yield Test Method: Unknown	Depth to Bottom		
Unrestricted Flow Rate:	Topsoil Sandy	1.00	1.00
Screen Installed: Yes	Sand	31.00	150.00
Screen Diameter: 4.00 in.	Gravel	30.00	180.00
Screen Material Type: Stainless steel-wire wrapped			
Screen Installation Type: Unknown			
Slot Length	Set Between		
15.00 5.00 ft.	168.00 ft. and 173.00 ft.		
Fittings: Other	Geology Remarks:		
Grouting Material Bags Additives Depth			
Neat cement Unknown 0.00 ft. to 160.00 ft.			
Wellhead Completion: 12 inches above grade			
Nearest Source of Possible Contamination: Type Distance Direction	Drilling Machine Operator Name: Employment: Unknown		
None	Contractor Type: Water Well Drilling Contractor Reg No: Business Name: RAYMER COMPANY INC. Business Address: 3311 THREE MILE RD N.W., GRAND RAPIDS, MI		
	<b>Water Well Contractor's Certification</b> This well and/or pump installation was performed under my registration.		
	Signature of Registered Contractor Date		

General Remarks: WELL DRILLER REGISTRATION NUMBER ENDING IN 0384

Other Remarks: Screen Fittings:SCREWED



# Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.



Failure to comply is a misdemeanor.

Import ID:

Tax No:	Permit No:	County: Kent	Township: Ada		
		Town/Range: 10N 11W	Section: 36	Well Status: Active	WSSN:
Well ID: 41000015750					
Distance and Direction from Road Intersection: .25 MILE EAST OF WHITE CREEK ON NORTH SIDE OF 16 MILE ROAD					
Well Owner: BOB & JOYCE KELLEY			Well Address: 4107 16 MILE RD CEDAR SPRINGS, MI 49319		
Method of Collection: Interpolation-Map			Owner Address: 4107 16 MILE RD CEDAR SPRINGS, MI 49319		

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No	
Well Depth: 125.00 ft.	Pump Installation Date:	HP: 0.50	
Well Type: Replacement	Manufacturer: Berkeley	Pump Type: Submersible	
Casing Type: PVC plastic	Model Number: 10KT051215	Pump Capacity: 10 GPM	
Casing Joint: Unknown	Drop Pipe Length: 65.00 ft.	Pump Voltage:	
Casing Fitting: None	Drop Pipe Diameter:	Drilling Record ID:	
Diameter: 5.00 in. to 125.00 ft. depth	Draw Down Seal Used: No		
Borehole: 8.50 in. to 125.00 ft. depth	Pressure Tank Installed: Yes		
	Pressure Tank Type: Unknown		
	Manufacturer: Well-Rite-Flexcon		
	Model Number: WR-120	Tank Capacity: 33.0 Gallons	
	Pressure Relief Valve Installed: No		
Static Water Level: 12.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test: Yield Test Method: Air	Sand	21.00	21.00
Pumping level 80.00 ft. after 2.00 hrs. at 50 GPM	Sand Water Bearing	6.00	27.00
	Gray Clay	68.00	95.00
Screen Installed: Yes	Gray Sand & Clay	16.00	111.00
Screen Diameter: 5.00 in.	Sand Water Bearing	14.00	125.00
Screen Material Type: PVC-slotted			
Screen Installation Type: Attached			
Slot Length	Set Between		
15.00 10.00 ft.	115.00 ft. and 125.00 ft.		
Fittings: None			
Well Grouted: Yes	Geology Remarks:		
Grouting Material	Grouting Method: Unknown		
Bags	Additives		
Bentonite slurry	14.00 None	0.00 ft. to 115.00 ft.	
Wellhead Completion: Pitless adapter	Drilling Machine Operator Name: JOHN SCHMID		
Nearest Source of Possible Contamination:	Employment: Employee		
Type	Distance	Direction	
Septic tank	100 ft.	West	
Abandoned Well Plugged: Yes	Contractor Type: Water Well Drilling Contractor	Reg No: 41-1561	
Casing Diameter: 1.25 in.	Business Name: TRI NORTHERN WELL DRILLING		
Plugging Material: Bentonite chips/pellets	Business Address:		
No. of Bags: 0.50	Water Well Contractor's Certification		
Well Depth: 25 ft.	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.		
	Signature of Registered Contractor	Date	
General Remarks: GROUT TO BOTTOM OF WATER LINE; GROUT WEIGHT 9.5			
Other Remarks:			



# Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.



Import ID:

Failure to comply is a misdemeanor.

Tax No:	Permit No: W-12-41-0005	County: Kent		Township: Solon	
Well ID: 41000023662		Town/Range: 10N 11W	Section: 36	Well Status: Active	WSSN: 2097341
		Distance and Direction from Road Intersection:			
		Well Owner: TRUSS TECHNOLOGIES			
		Well Address: 4141 16 MILE RD NE CEDAR SPRINGS, MI 49319		Owner Address: P.O. BOX A CEDAR SPRINGS, MI 49319	

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No	
Well Depth: 140.00 ft.	Pump Installation Date: 8/2/2012	HP: 1.50	
Well Type: Replacement	Manufacturer: Grundfos	Pump Type: Submersible	
Casing Type: PVC plastic	Model Number: 22SQE15	Pump Capacity: 25 GPM	
Casing Joint: Solvent welded/glued	Drop Pipe Length: 80.00 ft.	Pump Voltage: 230	
Casing Fitting: None	Drop Pipe Diameter: 1.25 in.	Drilling Record ID:	
Diameter: 5.00 in. to 135.00 ft. depth SDR: 17.00	Draw Down Seal Used: No		
Borehole: 8.50 in. to 140.00 ft. depth	Pressure Tank Installed: Yes		
	Pressure Tank Type: Diaphragm/bladder		
	Manufacturer: Well-X-Trol		
	Model Number: WX 105	Tank Capacity: 5.0 Gallons	
	Pressure Relief Valve Installed: Yes		
Static Water Level: 22.00 ft. Below Grade	Formation Description		Thickness
Well Yield Test: Yield Test Method: Air			Depth to Bottom
Pumping level 120.00 ft. after 4.00 hrs. at 40 GPM	Clay	9.00	9.00
	Sand & Gravel	25.00	34.00
	Clay	62.00	96.00
Screen Installed: Yes	Filter Packed: Yes		
Screen Diameter: 3.00 in.	Blank:		
Screen Material Type: Stainless steel-wire wrapped			
Screen Installation Type: Attached			
Slot Length	Set Between		
15.00 5.00 ft.	135.00 ft. and 140.00 ft.		
Fittings: Other			
Well Grouted: Yes	Grouting Method: Grout pipe outside casing	Geology Remarks:	
Grouting Material Bags	Additives Depth		
Neat cement 28.00	None 0.00 ft. to 125.00 ft.		
Wellhead Completion: Pitless adapter, 12 inches above grade	Drilling Machine Operator Name: CURT SILLIMAN		
Nearest Source of Possible Contamination:	Employment: Employee		
Type Distance	Direction	Pump Installer: ED ROBINSON	
Storm sewer 45 ft.	North-Northeast		
Abandoned Well Plugged: Yes	Contractor Type: Water Well Drilling Contractor Reg No: 41-2351		
Latitude: 43.20564	Longitude: -85.56712	Business Name: NORTH KENT WELL & PUMP	
Casing Diameter: 4 in.	Casing Removed: No	Business Address: 6085 17 MILE RD NE, CEDAR SPRINGS, MI, 49319	
Plugging Material: Neat cement		Water Well Contractor's Certification	
No. of Bags: 16.00	Well Depth: 220 ft.	This well/pump was constructed under my supervision and I hereby certify that the work complies with Part 127 Act 368 PA 1978 and the well code.	
General Remarks: TWO WELL DRILLER'S ATTEMPTS TO REMOVE PUMP WERE UNSUCCESSFUL. PUMP DRIVEN TO TOP OF SCREEN AND WELL GROUTED BACK UP TO SURFACE	Signature of Registered Contractor Date		
Other Remarks: Screen Fittings:BUSHING			



# Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.



Failure to comply is a misdemeanor.

Import ID:

Tax No: 41-02-35-400-030-031

Permit No:

County: Kent

Township: Solon

Town/Range:

Section:

Well Status:

WSSN:

Source ID/Well No:

10N 11W

35

Distance and Direction from Road Intersection:

NW CORNER OF WHITE CREEK AVE. & 16 MILE

Well Owner: STERK BRO. REDI-MIX

Well Address:

13261 WHITE CREEK

Owner Address:

584 50TH ST., SW

**Well ID: 41000008016**

Elevation:

Latitude: 43.20604597

Longitude: -85.571897

Method of Collection: Address Matching-Nearest Intersection

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No	
Well Depth: 141.00 ft.	Pump Installation Date:	HP: 7.50	
Well Type: New	Manufacturer: Webtrol	Pump Type: Submersible	
Casing Type: Unknown	Model Number: 3 PHASE	Pump Capacity: 150 GPM	
Casing Joint: Unknown	Drop Pipe Length: 126.00 ft.	Pump Voltage:	
Casing Fitting: None	Drop Pipe Diameter:	Drilling Record ID:	
Diameter: 6.00 in. to 138.00 ft. depth	Draw Down Seal Used: No		
Borehole: 11.75 in. to 141.00 ft. depth	Pressure Tank Installed: Yes		
	Pressure Tank Type: Galvanized steel		
	Manufacturer: Unknown		
	Model Number:	Tank Capacity: 100.0 Gallons	
	Pressure Relief Valve Installed: No		
Static Water Level: 20.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test: at 150 GPM	Sand & Gravel	40.00	40.00
	Gray Clay	78.00	118.00
	Gravel & Clay Gray	3.00	121.00
Screen Installed: Yes	Sand Coarse	20.00	141.00
Screen Diameter: 6.00 in.			
Screen Material Type:			
Screen Installation Type: Unknown			
Slot Length	Set Between		
15.00 15.00 ft.	138.00 ft. and 141.00 ft.		
Fittings: Unknown			
Well Grouted: Yes	Geology Remarks:		
Grouting Material Other	Bags 32.00	Additives None	Depth 0.00 ft. to 128.00 ft.
Wellhead Completion: Pitless adapter, 12 inches above grade	Drilling Machine Operator Name: DAVE POORE		
Nearest Source of Possible Contamination: Type Unknown	Employment: Employee		
	Contractor Type: Water Well Drilling Contractor	Reg No: 41-1987	
	Business Name: BRASS-MAR WATER WELLS, INC.		
	Business Address: 13427 FRUIT RIDGE AVE, Kent City		
	<b>Water Well Contractor's Certification</b>		
	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.		
	Signature of Registered Contractor	Date	

General Remarks: AS OF 5/17/00, SEPTIC SYSTEM NOT INSTALLED; SCREEN TYPE: STAINLESS;

Other Remarks: Well Use:PRODUCTION, Grouting Material 1:QUICK GROUT



# Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.



Failure to comply is a misdemeanor.

Import ID:

Tax No:	Permit No:	County: Kent	Township: Solon		
		Town/Range: 10N 11W	Section: 36	Well Status: Active	WSSN:
Source ID/Well No:					
Well ID: 41000027759					
Distance and Direction from Road Intersection: 891' NORTH AND 505' WEST FROM INTERSECTION OF 16 MILE RD NE AND WHITE CREEK AVE					
Well Owner: MATT BAILEY					
Well Address: 13328 WHITE CREEK AVE CEDAR SPRINGS, MI 49319			Owner Address: 13328 WHITE CREEK AVE CEDAR SPRINGS, MI 49319		

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No			
Well Depth: 158.00 ft.	Pump Installation Date: 1/19/2017	HP: 5.00			
Well Type: New	Manufacturer: Grundfos	Pump Type: Submersible			
Casing Type: PVC plastic	Model Number: 77S50-10	Pump Capacity: 77 GPM			
Casing Joint: Solvent welded/glued	Drop Pipe Length: 102.00 ft.	Pump Voltage: 230			
Casing Fitting: Centralizer	Drop Pipe Diameter: 2.00 in.	Drilling Record ID:			
Diameter: 5.00 in. to 138.00 ft. depth SDR: 21.00	Draw Down Seal Used: No				
Borehole: 8.50 in. to 162.00 ft. depth	Pressure Tank Installed: Yes				
Static Water Level: 13.00 ft. Below Grade	Pressure Tank Type: Diaphragm/bladder				
Well Yield Test: Yield Test Method: Air	Manufacturer: Challenger				
Pumping level 156.00 ft. after 1.00 hrs. at 300 GPM	Model Number: PC66	Tank Capacity: 20.0 Gallons			
Screen Installed: Yes	Pressure Relief Valve Installed: Yes				
Screen Diameter: 5.00 in.					
Screen Material Type: PVC-slotted					
Screen Installation Type: Attached					
Slot Length	Set Between				
0.15 20.00 ft.	138.00 ft. and 158.00 ft.				
Fittings: Coupling					
Well Grouted: Yes	Grouting Method: Grout pipe outside casing	Formation Description		Thickness	Depth to Bottom
Grouting Material Bentonite slurry	Bags 12.00	Additives None	Depth 0.00 ft. to 132.00 ft.	Topsoil	2.00
				Sand & Gravel	31.00
				Gray Clay	92.00
				Sand W/Clay Gray	133.00
				Gray Clay	138.00
				Sand W/Gravel Coarse	162.00
Wellhead Completion: Pitless adapter	Geology Remarks:				
Nearest Source of Possible Contamination: Septic tank	Distance 98 ft.	Direction West	Drilling Machine Operator Name: JASON BROWN		
Type			Employment: Employee		
			Pump Installer: BRENT WINGER		
			Contractor Type: Water Well Drilling Contractor Reg No: 41-2028		
			Business Name: Buer Well Drilling Inc		
			Business Address: 239 E Main St, Caledonia, MI, 49316		
			Water Well Contractor's Certification		
			This well and/or pump installation was performed under my registration.		
General Remarks:	Signature of Registered Contractor		Date		
Other Remarks:					



# Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.



Failure to comply is a misdemeanor.

Import ID:

Tax No:	Permit No:	County: Kent	Township: Solon		
Well ID: 41000016727		Town/Range: 10N 11W	Section: 35	Well Status: Active	WSSN:
Distance and Direction from Road Intersection: 2/10 MI NORTH OF 16 MI RD; 50 YDS WEST OF WHITE CREEK					
Well Owner: TAILORED BLDG SYS					
Well Address: 13353 WHITE CREEK AVE Cedar Springs, MI 49319		Owner Address: 550 KIRTLAND ST SW GRAND RAPIDS, MI 49507			

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No		
Well Depth: 100.00 ft.	Pump Installation Date:	HP: 0.50		
Well Type: New	Manufacturer: Goulds	Pump Type: Submersible		
Casing Type: PVC plastic	Model Number:	Pump Capacity: 12 GPM		
Casing Joint: Unknown	Drop Pipe Length: 65.00 ft.	Pump Voltage:		
Casing Fitting: None	Drop Pipe Diameter:	Drilling Record ID:		
Diameter: 5.00 in. to 100.00 ft. depth	Draw Down Seal Used: No			
Borehole: 8.50 in. to 100.00 ft. depth	Pressure Tank Installed: Yes			
Static Water Level: 11.00 ft. Below Grade	Pressure Tank Type: Unknown (Buried)			
Well Yield Test: Yield Test Method: Air	Manufacturer: Well-X-Trol			
Pumping level 65.00 ft. after 2.00 hrs. at 45 GPM	Model Number: 202UG	Tank Capacity: 40.0 Gallons		
Screen Installed: Yes	Formation Description	Thickness		
Screen Diameter: 5.00 in.	Sand & Gravel	34.00		
Screen Material Type: PVC-slotted	Gray Clay	55.00		
Screen Installation Type: Attached	Sand Water Bearing	11.00		
Slot Length		Depth to Bottom		
15.00 10.00 ft.	Set Between 90.00 ft. and 100.00 ft.			
Fittings: Unknown				
Well Grouted: Yes	Geology Remarks:			
Grouting Material Bentonite slurry	Bags 13.00	Additives None	Depth 0.00 ft. to 90.00 ft.	
Wellhead Completion: Pitless adapter, 12 inches above grade				
Nearest Source of Possible Contamination: Septic tank	Type Distance 100 ft.	Direction Southeast	Drilling Machine Operator Name: JOHN SCHMID	Employment: Employee
			Contractor Type: Water Well Drilling Contractor	Reg No: 41-1561
			Business Name: TRI NORTHERN WELL DRLG	Business Address:
			<b>Water Well Contractor's Certification</b>	
			This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
General Remarks: GROUT TO BOTTOM OF WATER LINE GROUT WEIGHT 9.5	Signature of Registered Contractor	Date		
Other Remarks:				



# Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.



Import ID:

Failure to comply is a misdemeanor.

Tax No:	Permit No:	County: Kent	Township: Solon		
		Town/Range: 10N 11W	Section: 35	Well Status: Active	WSSN:
Source ID/Well No:					
Well ID: 41000029746					
Distance and Direction from Road Intersection: west of white creek					
Elevation:					
Latitude: 43.20889					
Longitude: -85.57142					
Method of Collection: GPS Std Positioning Svc SA Off					
Well Use: Household		Well Owner: car care center	Owner Address: 13399 white creek cedar springs, MI 49307		
Date Completed: 6/15/2018					

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No	
Well Depth: 122.00 ft.	Pump Installation Date: 7/5/2018	HP: 0.50	
Well Type: Replacement	Manufacturer: AquaDuty	Pump Type: Submersible	
Casing Type: PVC plastic	Model Number: 10fb05	Pump Capacity: 10 GPM	
Casing Joint: Solvent welded/glued	Drop Pipe Length: 20.00 ft.	Pump Voltage: 230	
Casing Fitting:	Drop Pipe Diameter: 1.00 in.	Drilling Record ID:	
Diameter: 5.00 in. to 117.00 ft. depth SDR: 21.00	Draw Down Seal Used: No		
Borehole: 8.50 in. to 122.00 ft. depth	Pressure Tank Installed: Yes		
Static Water Level: 6.00 ft. Below Grade	Pressure Tank Type: Diaphragm/bladder		
Well Yield Test: Yield Test Method: Air	Manufacturer: Flex-Lite-Flexcon		
Pumping level 100.00 ft. after 2.00 hrs. at 50 GPM	Model Number: fl-7	Tank Capacity: 22.0 Gallons	
Screen Installed: Yes	Formation Description	Thickness	Depth to Bottom
Screen Diameter: 3.00 in.	Sand	36.00	36.00
Screen Material Type: Stainless steel-well point	Clay	78.00	114.00
Screen Installation Type: Attached	Sand	14.00	128.00
Slot Length Set Between			
18.00 5.00 ft. 117.00 ft. and 122.00 ft.			
Fittings: Coupling			
Well Grouted: Yes	Geology Remarks:		
Grouting Material Bags Additives Depth			
Bentonite slurry 11.00 None 0.00 ft. to 107.00 ft.			
Wellhead Completion: Pitless adapter, 12 inches above grade	Drilling Machine Operator Name: glenn merlington		
Nearest Source of Possible Contamination:	Employment: Employee		
Type Distance Direction	Pump Installer: ed robinson		
Sanitary sewer 98 ft. West			
Abandoned Well Plugged: Yes	Contractor Type: Water Well Drilling Contractor Reg No: 41-2351		
Latitude: 43.20895	Business Name: North Kent Well and Pump Inc		
Casing Diameter: 4 in.	Business Address: 6085 17 Mile Road, Cedar Springs, MI, 49319		
Plugging Material: Bentonite chips/pellets	Water Well Contractor's Certification		
No. of Bags: 4.00	This well and/or pump installation was performed under my registration.		
Well Depth: 31 ft.	Signature of Registered Contractor	Date	
General Remarks:			
Other Remarks:			



# Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.



Failure to comply is a misdemeanor.

Import ID:

Tax No:	Permit No:	County: Kent	Township: Solon			
Well ID: 41000019123		Town/Range: 10N 11W	Section: 36	Well Status: Active	WSSN:	
		Distance and Direction from Road Intersection: 100 FT EAST OF WHITE CREEK, 1/2 MILE NORTH OF 16 MILE RD.				
		Well Owner: TRENT STANGE/CO. DAVE BARNETT		Well Address: 13500 WHITE CREEK CEDAR SPRINGS, MI 49319		
Method of Collection: GPS Std Positioning Svc SA Off		Owner Address: 12505 NORTHLAND DR. CEDAR SPRINGS, MI 49319				

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 82.00 ft.	Pump Installation Date: 5/26/2006	HP: 1.50
Well Type: New	Manufacturer: Grundfos	Pump Type: Submersible
Casing Type: PVC plastic	Model Number: 25S07-5	Pump Capacity: 25 GPM
Casing Joint: Solvent welded/glued	Drop Pipe Length: 60.00 ft.	Pump Voltage:
Casing Fitting: Centralizer	Drop Pipe Diameter: 1.25 in.	Drilling Record ID:
Diameter: 5.00 in. to 72.00 ft. depth	Draw Down Seal Used: No	
Borehole: 8.75 in. to 82.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Diaphragm/bladder	
	Manufacturer: Amtrol	
	Model Number: WX-105-PS	Tank Capacity: 5.3 Gallons
	Pressure Relief Valve Installed: Yes	

Static Water Level: 4.00 ft. Above Grade (Flowing)	Formation Description	Thickness	Depth to Bottom
Well Yield Test: Yield Test Method: Air	Sand & Gravel W/Stones	17.00	17.00
Pumping level 40.00 ft. after 4.00 hrs. at 100 GPM	Gray Clay	44.00	61.00
	Sand & Gravel	21.00	82.00

Unrestricted Flow Rate:	Formation Description	Thickness	Depth to Bottom
Screen Installed: Yes	Sand & Gravel W/Stones	17.00	17.00
Screen Diameter: 4.50 in.	Gray Clay	44.00	61.00
Screen Material Type: PVC-slotted	Sand & Gravel	21.00	82.00
Screen Installation Type: Attached			
Slot Length Set Between			
12.00 10.00 ft.	72.00 ft. and 82.00 ft.		
Fittings: Coupling			

Grouting Material Bentonite slurry	Bags 6.00	Additives Other	Depth 0.00 ft. to 68.00 ft.	Geology Remarks:
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Wellhead Completion: Pitless adapter, 12 inches above grade	Geology Remarks:
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Nearest Source of Possible Contamination: Type Septic tank	Distance 600 ft.	Direction East	Drilling Machine Operator Name: JAKE WARNER
			Employment: Employee
			Pump Installer: CURT VISSER
			Contractor Type: Water Well Drilling Contractor Reg No: 70-2055
			Business Name: Raymer Company
			Business Address: 1357 Comstock Street, Marne, MI, 49435
			<b>Water Well Contractor's Certification</b>
			This well was drilled under my supervision and this report is true to the best of my knowledge and belief.
			Signature of Registered Contractor
			Date

General Remarks:	
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Other Remarks: Well Use:COMMERCIAL, Grouting Additive 1:EZ-MUD	
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# Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.



Failure to comply is a misdemeanor.

Import ID: 41101135007

Tax No:	Permit No:	County: Kent	Township: Solon		
		Town/Range: 10N 11W	Section: 35	Well Status:	WSSN:
Source ID/Well No:					
Distance and Direction from Road Intersection: 0.25 MI N OF 16 MILE RD ON W SIDE OF WHTIE CREEK RD					
Well Owner: BISHOP, CLARA					
Well Address: 13525 WHITE CREEK RD CEDAR SPRINGS, MI 49319			Owner Address: 13525 WHITE CREEK RD CEDAR SPRINGS, MI 49319		
Method of Collection: Interpolation-Map					

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No	
Well Depth: 106.00 ft.	Pump Installation Date:	HP:	
Well Type: Replacement	Manufacturer: Flint & Walling	Pump Type: Submersible	
Casing Type: Steel - black	Model Number:	Pump Capacity: 0 GPM	
Casing Joint: Welded	Drop Pipe Length: 65.00 ft.	Pump Voltage:	
Casing Fitting: None	Drop Pipe Diameter:	Drilling Record ID:	
Diameter: 4.00 in. to 102.00 ft. depth	Draw Down Seal Used: No		
Borehole:	Pressure Tank Installed: No		
Static Water Level: 3.00 ft. Below Grade	Pressure Relief Valve Installed: No		
Well Yield Test: Unknown	Formation Description	Thickness	Depth to Bottom
	Topsoil	3.00	3.00
	Sand Coarse	15.00	18.00
	Gravel	10.00	28.00
Screen Installed: Yes	Sand Coarse	30.00	58.00
Screen Diameter: 3.00 in.	Gravel	12.00	70.00
Screen Material Type:	Sand Medium To Coarse	25.00	95.00
Screen Installation Type: Unknown	Sand Coarse Wet/Moist	11.00	106.00
Slot 10.00	Length 4.00 ft.	Set Between 102.00 ft. and 106.00 ft.	
Fittings: Neoprene packer			
Well Grouted: No	Geology Remarks:		
Wellhead Completion: Pitless adapter	Drilling Machine Operator Name:		
Nearest Source of Possible Contamination: Type Septic tank	Employment: Unknown		
Distance 50 ft.	Contractor Type: Unknown	Reg No:	
Direction West	Business Name:		
Abandoned Well Plugged: Yes	Business Address:		
Casing Removed:	Water Well Contractor's Certification		
	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.		
	Signature of Registered Contractor	Date	
General Remarks:			
Other Remarks:			



## **Water Well And Pump Record**

Completion is required under authority of Part 127 Act 368 PA 1978.

**Welloptic**

**Import ID:**

Tax No:	Permit No:	County: Kent		Township: Solon	
Well ID: 41000013951	Elevation:	Town/Range: 10N 11W	Section: 36	Well Status: Active	WSSN:
<b>Distance and Direction from Road Intersection:</b> 1/2 MILE S OF 17 MILE RD APPROX 150 FT E OF WHITE CREEK AVE					
<b>Well Owner:</b> JIM AND VICKI COVELL					
Latitude: 43.212312	Longitude: -85.570921	<b>Well Address:</b> 13590 WHITE CREEK AVE CEDAR SPRINGS, MI 49319		<b>Owner Address:</b> 13590 WHITE CREEK AVE CEDAR SPRINGS, MI 49319	
<b>Method of Collection:</b> Address Matching-House Number					

Drilling Method: Cable Tool Well Depth: 80.00 ft. Well Type: Replacement		Well Use: Household Date Completed: 6/12/2003		Pump Installed: Yes Pump Installation Date: Manufacturer: A.Y. McDonald Model Number: Drop Pipe Length: 40.00 ft. Drop Pipe Diameter: Draw Down Seal Used: No	Pump Installation Only: No HP: 0.50 Pump Type: Submersible Pump Capacity: 12 GPM Pump Voltage: Drilling Record ID:	
Casing Type: Steel - unknown Casing Joint: Threaded & coupled Casing Fitting: Drive shoe  Diameter: 6.00 in. to 47.00 ft. depth 4.00 in. to 80.00 ft. depth		Height:  Borehole:		Pressure Tank Installed: Yes Pressure Tank Type: Unknown Manufacturer: Well-X-Trol Model Number: WX202 Pressure Relief Valve Installed: No	Tank Capacity:	
Static Water Level: 0.50 ft. Below Grade Well Yield Test: Yield Test Method: Plunger Pumping level 0.50 ft. after 1.50 hrs. at 50 GPM				Formation Description	Thickness	Depth to Bottom
Screen Installed: Yes Screen Diameter: 3.00 in. Screen Material Type: Stainless steel-wire wrapped Screen Installation Type: Telescoped  Slot Length Set Between 12.00 8.00 ft. 72.00 ft. and 80.00 ft.				Topsoil	2.00	2.00
Fittings: Neoprene packer				Sand & Gravel Silty	19.00	21.00
				Hardpan W/Clay W/Gravel	4.00	25.00
				Gray Clay Hard	33.00	58.00
				Sand	9.00	67.00
				Brown Clay Soft	1.00	68.00
				Sand Coarse	8.00	76.00
				Gravel Coarse	4.00	80.00
Well Grouted: Yes Grouting Material Bentonite dry granular		Grouting Method: Unknown Bags 10.00 Additives None		Geology Remarks:		
Wellhead Completion: Pitless adapter				Drilling Machine Operator Name: MIKE WAHLFIELD Employment: Employee		
Nearest Source of Possible Contamination: Type Septic tank		Distance 50 ft.		Contractor Type: Water Well Drilling Contractor Reg No: 41-0395 Business Name: WAHLFIELD DRILLING CO Business Address:		
Abandoned Well Plugged: Yes		Casing Removed:		Water Well Contractor's Certification This well was drilled under my supervision and this report is true to the best of my knowledge and belief.		
				Signature of Registered Contractor _____ Date _____		

**General Remarks:** DOUBLE CASED WELL BOTH CASINGS WERE GROUTED ACCORDING TO MDEQ SPECS

**Other Remarks:**

# **Appendix 3**

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22-Mar-2021

Penni Mahler  
Fishbeck, Inc.  
1515 Arboretum Dr SE  
Grand Rapids, MI 49546

Re: **Cedar Springs /PFAS (201460)**

Work Order: **21031444**

Dear Penni,

ALS Environmental received 7 samples on 15-Mar-2021 03:00 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 28.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA  
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

*Ehrland Bosworth*

Electronically approved by: Ehrland Bosworth

Ehrland Bosworth  
Project Manager

### Report of Laboratory Analysis

Certificate No: MN 026-999-449

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental

[www.alsglobal.com](http://www.alsglobal.com)

RIGHT SOLUTIONS RIGHT PARTNER

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs /PFAS (201460)  
**Work Order:** 21031444

**Work Order Sample Summary**

<b>Lab Samp ID</b>	<b>Client Sample ID</b>	<b>Matrix</b>	<b>Tag Number</b>	<b>Collection Date</b>	<b>Date Received</b>	<b>Hold</b>
21031444-01	CS-21-03-MW-6A(I)	Water		3/12/2021 12:15	3/15/2021 15:00	<input type="checkbox"/>
21031444-02	CS-21-03-MW-8A(I)	Water		3/12/2021 10:00	3/15/2021 15:00	<input type="checkbox"/>
21031444-03	CS-21-03-MW-8A(D)	Water		3/12/2021 10:00	3/15/2021 15:00	<input type="checkbox"/>
21031444-04	CS-21-03-GSI-1D(I)	Water		3/12/2021 13:02	3/15/2021 15:00	<input type="checkbox"/>
21031444-05	CS-21-03-GSI-2D(I)	Water		3/12/2021 11:30	3/15/2021 15:00	<input type="checkbox"/>
21031444-06	CS-21-03-SW-01(I)	Water		3/12/2021 10:20	3/15/2021 15:00	<input type="checkbox"/>
21031444-07	CS-21-03-QCFB	Water		3/12/2021 09:30	3/15/2021 15:00	<input type="checkbox"/>

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs /PFAS (201460)  
**WorkOrder:** 21031444

**QUALIFIERS,  
ACRONYMS, UNITS**

<b>Qualifier</b>	<b>Description</b>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

<b>Acronym</b>	<b>Description</b>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<b>Units Reported</b>	<b>Description</b>
ng/L	Nanograms per Liter

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs /PFAS (201460)  
**Work Order:** 21031444

**Case Narrative**

Samples for the above noted Work Order were received on 03/15/2021. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

**Extractable Organics:**

Batch 173579, Method E537 Mod, Sample CS-21-03-MW-6A(I) (21031444-01A): One or more surrogate recoveries were above the upper control limits. The sample was non-detect, therefore, no qualification is needed. (13C2-FtS 4:2, 13C2-FtS 6:2)

Batch 173579, Method E537 Mod, Sample CS-21-03-GSI-1D(I) (21031444-04A): One or more surrogate recoveries were above the upper control limits. The sample was non-detect, therefore, no qualification is needed. (13C2-FtS 4:2, 13C2-FtS 6:2)

Batch 173579, Method E537 Mod, Sample CS-21-03-GSI-2D(I) (21031444-05A): One or more surrogate recoveries were above the upper control limits. The sample was non-detect, therefore, no qualification is needed. (13C2-FtS 4:2, 13C2-FtS 6:2)

Batch 173579, Method E537 Mod, Sample CS-21-03-SW-01(I) (21031444-06A): One or more surrogate recoveries were above the upper control limits. The sample was non-detect, therefore, no qualification is needed. (13C2-FtS 4:2, 13C2-FtS 6:2)

Batch 173579, Method E537 Mod, Sample CS-21-03-QCFB (21031444-07A): One or more surrogate recoveries were above the upper control limits. The sample was non-detect, therefore, no qualification is needed. (13C2-PFTeA)

No other deviations or anomalies were noted.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs /PFAS (201460)  
**Sample ID:** CS-21-03-MW-6A(I)  
**Collection Date:** 3/12/2021 12:15 PM

**Work Order:** 21031444  
**Lab ID:** 21031444-01  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537 MODIFIED</b>			Method: E537 MOD		Prep: E537 Mod / 3/17/21		Analyst: SK
Fluorotelomer Sulphonic Acid 4:2 (FtS 4:2)	U		0.88	4.7	ng/L	1	3/17/2021 15:51
Fluorotelomer Sulphonic Acid 6:2 (FtS 6:2)	U		0.62	4.7	ng/L	1	3/17/2021 15:51
Fluorotelomer Sulphonic Acid 8:2 (FtS 8:2)	U		1.1	4.7	ng/L	1	3/17/2021 15:51
<b>Perfluorobutanesulfonic Acid (PFBS)</b>	2.6	J	0.33	4.7	ng/L	1	3/17/2021 15:51
<b>Perfluorobutanoic Acid (PFBA)</b>	9.0		2.4	4.7	ng/L	1	3/17/2021 15:51
Perfluorodecanesulfonic Acid (PFDS)	U		1.3	4.7	ng/L	1	3/17/2021 15:51
Perfluorodecanoic Acid (PFDA)	U		1.2	4.7	ng/L	1	3/17/2021 15:51
Perfluorododecanoic Acid (PFDoA)	U		1.3	4.7	ng/L	1	3/17/2021 15:51
<b>Perfluoroheptanesulfonic Acid (PFHpS)</b>	1.9	J	0.53	4.7	ng/L	1	3/17/2021 15:51
<b>Perfluoroheptanoic Acid (PFHpA)</b>	9.4		0.41	4.7	ng/L	1	3/17/2021 15:51
<b>Perfluorohexanesulfonic Acid (PFHxS)</b>	12		0.35	4.7	ng/L	1	3/17/2021 15:51
<b>Perfluorohexanoic Acid (PFHxA)</b>	11		1.1	4.7	ng/L	1	3/17/2021 15:51
Perfluoronananesulfonic Acid (PFNS)	U		0.46	4.7	ng/L	1	3/17/2021 15:51
<b>Perfluorononanoic Acid (PFNA)</b>	2.0	J	0.81	4.7	ng/L	1	3/17/2021 15:51
Perfluorooctanesulfonamide (PFOSA)	U		0.67	4.7	ng/L	1	3/17/2021 15:51
<b>Perfluorooctanesulfonic Acid (PFOS)</b>	19		0.84	1.9	ng/L	1	3/17/2021 15:51
<b>Perfluorooctanoic Acid (PFOA)</b>	49		0.66	1.9	ng/L	1	3/17/2021 15:51
<b>Perfluoropentanesulfonic Acid (PFPeS)</b>	1.3	J	0.52	4.7	ng/L	1	3/17/2021 15:51
<b>Perfluoropentanoic Acid (PFPeA)</b>	7.8		1.2	4.7	ng/L	1	3/17/2021 15:51
Perfluorotetradecanoic Acid (PFTeA)	U		2.5	4.7	ng/L	1	3/17/2021 15:51
Perfluorotridecanoic Acid (PFTriA)	U		0.72	4.7	ng/L	1	3/17/2021 15:51
Perfluoroundecanoic Acid (PFUnA)	U		0.91	4.7	ng/L	1	3/17/2021 15:51
<b>N-Ethylperfluorooctanesulfonamidoacetic Acid</b>	2.4	J	0.59	4.7	ng/L	1	3/17/2021 15:51
<b>N-Methylperfluorooctanesulfonamidoacetic Acid</b>	U		0.60	4.7	ng/L	1	3/17/2021 15:51
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		1.1	4.7	ng/L	1	3/17/2021 15:51
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.53	4.7	ng/L	1	3/17/2021 15:51
11CI-Pf3OuS	U		0.44	4.7	ng/L	1	3/17/2021 15:51
9CI-PF3ONS	U		0.42	4.7	ng/L	1	3/17/2021 15:51
Surr: 13C2-FtS 4:2	293	S		50-150	%REC	1	3/17/2021 15:51
Surr: 13C2-FtS 6:2	171	S		50-150	%REC	1	3/17/2021 15:51

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group, USA****Date:** 22-Mar-21

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs /PFAS (201460)  
**Sample ID:** CS-21-03-MW-6A(I)  
**Collection Date:** 3/12/2021 12:15 PM

**Work Order:** 21031444  
**Lab ID:** 21031444-01  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 13C2-FtS 8:2	120			50-150	%REC	1	3/17/2021 15:51
Surr: 13C2-PFDA	89.2			50-150	%REC	1	3/17/2021 15:51
Surr: 13C2-PFDoA	106			50-150	%REC	1	3/17/2021 15:51
Surr: 13C2-PFHxA	113			50-150	%REC	1	3/17/2021 15:51
Surr: 13C2-PFTeA	120			50-150	%REC	1	3/17/2021 15:51
Surr: 13C2-PFUuA	101			50-150	%REC	1	3/17/2021 15:51
Surr: 13C3-HFPO-DA	142			50-150	%REC	1	3/17/2021 15:51
Surr: 13C3-PFBS	110			50-150	%REC	1	3/17/2021 15:51
Surr: 13C4-PFBA	121			50-150	%REC	1	3/17/2021 15:51
Surr: 13C4-PFHpA	113			50-150	%REC	1	3/17/2021 15:51
Surr: 13C4-PFOA	111			50-150	%REC	1	3/17/2021 15:51
Surr: 13C4-PFOS	121			50-150	%REC	1	3/17/2021 15:51
Surr: 13C5-PFNA	109			50-150	%REC	1	3/17/2021 15:51
Surr: 13C5-PFPeA	115			50-150	%REC	1	3/17/2021 15:51
Surr: 13C8-FOSA	124			50-150	%REC	1	3/17/2021 15:51
Surr: 18O2-PFHxS	128			50-150	%REC	1	3/17/2021 15:51
Surr: d5-N-EtFOSAA	114			50-150	%REC	1	3/17/2021 15:51
Surr: d3-N-MeFOSAA	108			50-150	%REC	1	3/17/2021 15:51

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs /PFAS (201460)  
**Sample ID:** CS-21-03-MW-8A(I)  
**Collection Date:** 3/12/2021 10:00 AM

**Work Order:** 21031444  
**Lab ID:** 21031444-02  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537 MODIFIED</b>			Method: E537 MOD		Prep: E537 Mod / 3/17/21		Analyst: SK
Fluorotelomer Sulphonic Acid 4:2 (FtS 4:2)	U		0.87	4.6	ng/L	1	3/17/2021 16:01
Fluorotelomer Sulphonic Acid 6:2 (FtS 6:2)	U		0.61	4.6	ng/L	1	3/17/2021 16:01
Fluorotelomer Sulphonic Acid 8:2 (FtS 8:2)	U		1.0	4.6	ng/L	1	3/17/2021 16:01
<b>Perfluorobutanesulfonic Acid (PFBS)</b>	0.65	J	0.32	4.6	ng/L	1	3/17/2021 16:01
Perfluorobutanoic Acid (PFBA)	U		2.4	4.6	ng/L	1	3/17/2021 16:01
Perfluorodecanesulfonic Acid (PFDS)	U		1.3	4.6	ng/L	1	3/17/2021 16:01
Perfluorodecanoic Acid (PFDA)	U		1.1	4.6	ng/L	1	3/17/2021 16:01
Perfluorododecanoic Acid (PFDoA)	U		1.3	4.6	ng/L	1	3/17/2021 16:01
Perfluoroheptanesulfonic Acid (PFHpS)	U		0.52	4.6	ng/L	1	3/17/2021 16:01
Perfluoroheptanoic Acid (PFHpA)	U		0.41	4.6	ng/L	1	3/17/2021 16:01
<b>Perfluorohexanesulfonic Acid (PFHxS)</b>	0.88	J	0.34	4.6	ng/L	1	3/17/2021 16:01
Perfluorohexanoic Acid (PFHxA)	U		1.1	4.6	ng/L	1	3/17/2021 16:01
Perfluorononanesulfonic Acid (PFNS)	U		0.46	4.6	ng/L	1	3/17/2021 16:01
Perfluorononanoic Acid (PFNA)	U		0.81	4.6	ng/L	1	3/17/2021 16:01
Perfluorooctanesulfonamide (PFOSA)	U		0.66	4.6	ng/L	1	3/17/2021 16:01
Perfluorooctanesulfonic Acid (PFOS)	U		0.83	1.9	ng/L	1	3/17/2021 16:01
Perfluorooctanoic Acid (PFOA)	U		0.65	1.9	ng/L	1	3/17/2021 16:01
Perfluoropentanesulfonic Acid (PFPeS)	U		0.51	4.6	ng/L	1	3/17/2021 16:01
Perfluoropentanoic Acid (PFPeA)	U		1.2	4.6	ng/L	1	3/17/2021 16:01
Perfluorotetradecanoic Acid (PFTeA)	U		2.4	4.6	ng/L	1	3/17/2021 16:01
Perfluorotridecanoic Acid (PFTriA)	U		0.71	4.6	ng/L	1	3/17/2021 16:01
Perfluoroundecanoic Acid (PFUnA)	U		0.90	4.6	ng/L	1	3/17/2021 16:01
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.58	4.6	ng/L	1	3/17/2021 16:01
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.60	4.6	ng/L	1	3/17/2021 16:01
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		1.1	4.6	ng/L	1	3/17/2021 16:01
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.52	4.6	ng/L	1	3/17/2021 16:01
11CI-Pf3OUDS	U		0.43	4.6	ng/L	1	3/17/2021 16:01
9CI-PF3ONS	U		0.41	4.6	ng/L	1	3/17/2021 16:01
Surr: 13C2-FtS 4:2	122			50-150	%REC	1	3/17/2021 16:01
Surr: 13C2-FtS 6:2	108			50-150	%REC	1	3/17/2021 16:01
Surr: 13C2-FtS 8:2	120			50-150	%REC	1	3/17/2021 16:01

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group, USA****Date:** 22-Mar-21

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs /PFAS (201460)  
**Sample ID:** CS-21-03-MW-8A(I)  
**Collection Date:** 3/12/2021 10:00 AM

**Work Order:** 21031444  
**Lab ID:** 21031444-02  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 13C2-PFDA	110			50-150	%REC	1	3/17/2021 16:01
Surr: 13C2-PFDoA	86.4			50-150	%REC	1	3/17/2021 16:01
Surr: 13C2-PFHxA	117			50-150	%REC	1	3/17/2021 16:01
Surr: 13C2-PFTeA	102			50-150	%REC	1	3/17/2021 16:01
Surr: 13C2-PFUuA	94.0			50-150	%REC	1	3/17/2021 16:01
Surr: 13C3-HFPO-DA	131			50-150	%REC	1	3/17/2021 16:01
Surr: 13C3-PFBS	95.9			50-150	%REC	1	3/17/2021 16:01
Surr: 13C4-PFBA	118			50-150	%REC	1	3/17/2021 16:01
Surr: 13C4-PFH <sub>p</sub> A	99.8			50-150	%REC	1	3/17/2021 16:01
Surr: 13C4-PFOA	138			50-150	%REC	1	3/17/2021 16:01
Surr: 13C4-PFOS	105			50-150	%REC	1	3/17/2021 16:01
Surr: 13C5-PFNA	94.3			50-150	%REC	1	3/17/2021 16:01
Surr: 13C5-PFPeA	95.2			50-150	%REC	1	3/17/2021 16:01
Surr: 13C8-FOSA	101			50-150	%REC	1	3/17/2021 16:01
Surr: 18O2-PFHxS	95.5			50-150	%REC	1	3/17/2021 16:01
Surr: d5-N-EtFOSAA	85.0			50-150	%REC	1	3/17/2021 16:01
Surr: d3-N-MeFOSAA	99.5			50-150	%REC	1	3/17/2021 16:01

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs /PFAS (201460)  
**Sample ID:** CS-21-03-MW-8A(D)  
**Collection Date:** 3/12/2021 10:00 AM

**Work Order:** 21031444  
**Lab ID:** 21031444-03  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537 MODIFIED</b>			Method: E537 MOD		Prep: E537 Mod / 3/17/21		Analyst: SK
Fluorotelomer Sulphonic Acid 4:2 (FtS 4:2)	U		0.88	4.7	ng/L	1	3/17/2021 16:12
Fluorotelomer Sulphonic Acid 6:2 (FtS 6:2)	U		0.63	4.7	ng/L	1	3/17/2021 16:12
Fluorotelomer Sulphonic Acid 8:2 (FtS 8:2)	U		1.1	4.7	ng/L	1	3/17/2021 16:12
<b>Perfluorobutanesulfonic Acid (PFBS)</b>	0.57	J	0.33	4.7	ng/L	1	3/17/2021 16:12
Perfluorobutanoic Acid (PFBA)	U		2.5	4.7	ng/L	1	3/17/2021 16:12
Perfluorodecanesulfonic Acid (PFDS)	U		1.3	4.7	ng/L	1	3/17/2021 16:12
Perfluorodecanoic Acid (PFDA)	U		1.2	4.7	ng/L	1	3/17/2021 16:12
Perfluorododecanoic Acid (PFDoA)	U		1.3	4.7	ng/L	1	3/17/2021 16:12
Perfluoroheptanesulfonic Acid (PFHpS)	U		0.53	4.7	ng/L	1	3/17/2021 16:12
Perfluoroheptanoic Acid (PFHpA)	U		0.42	4.7	ng/L	1	3/17/2021 16:12
<b>Perfluorohexanesulfonic Acid (PFHxS)</b>	0.42	J	0.35	4.7	ng/L	1	3/17/2021 16:12
Perfluorohexanoic Acid (PFHxA)	U		1.1	4.7	ng/L	1	3/17/2021 16:12
Perfluorononanesulfonic Acid (PFNS)	U		0.47	4.7	ng/L	1	3/17/2021 16:12
Perfluorononanoic Acid (PFNA)	U		0.82	4.7	ng/L	1	3/17/2021 16:12
Perfluorooctanesulfonamide (PFOSA)	U		0.67	4.7	ng/L	1	3/17/2021 16:12
Perfluorooctanesulfonic Acid (PFOS)	U		0.84	1.9	ng/L	1	3/17/2021 16:12
Perfluorooctanoic Acid (PFOA)	U		0.67	1.9	ng/L	1	3/17/2021 16:12
Perfluoropentanesulfonic Acid (PFPeS)	U		0.52	4.7	ng/L	1	3/17/2021 16:12
Perfluoropentanoic Acid (PFPeA)	U		1.2	4.7	ng/L	1	3/17/2021 16:12
Perfluorotetradecanoic Acid (PFTeA)	U		2.5	4.7	ng/L	1	3/17/2021 16:12
Perfluorotridecanoic Acid (PFTriA)	U		0.73	4.7	ng/L	1	3/17/2021 16:12
Perfluoroundecanoic Acid (PFUnA)	U		0.92	4.7	ng/L	1	3/17/2021 16:12
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.59	4.7	ng/L	1	3/17/2021 16:12
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.61	4.7	ng/L	1	3/17/2021 16:12
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		1.1	4.7	ng/L	1	3/17/2021 16:12
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.53	4.7	ng/L	1	3/17/2021 16:12
11CI-Pf3OUDS	U		0.44	4.7	ng/L	1	3/17/2021 16:12
9CI-PF3ONS	U		0.42	4.7	ng/L	1	3/17/2021 16:12
Surr: 13C2-FtS 4:2	146			50-150	%REC	1	3/17/2021 16:12
Surr: 13C2-FtS 6:2	144			50-150	%REC	1	3/17/2021 16:12
Surr: 13C2-FtS 8:2	108			50-150	%REC	1	3/17/2021 16:12

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group, USA****Date:** 22-Mar-21

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs /PFAS (201460)  
**Sample ID:** CS-21-03-MW-8A(D)  
**Collection Date:** 3/12/2021 10:00 AM

**Work Order:** 21031444  
**Lab ID:** 21031444-03  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 13C2-PFDA	87.6			50-150	%REC	1	3/17/2021 16:12
Surr: 13C2-PFDoA	101			50-150	%REC	1	3/17/2021 16:12
Surr: 13C2-PFHxA	96.6			50-150	%REC	1	3/17/2021 16:12
Surr: 13C2-PFTeA	126			50-150	%REC	1	3/17/2021 16:12
Surr: 13C2-PFUuA	102			50-150	%REC	1	3/17/2021 16:12
Surr: 13C3-HFPO-DA	118			50-150	%REC	1	3/17/2021 16:12
Surr: 13C3-PFBS	107			50-150	%REC	1	3/17/2021 16:12
Surr: 13C4-PFBA	108			50-150	%REC	1	3/17/2021 16:12
Surr: 13C4-PFHxA	89.6			50-150	%REC	1	3/17/2021 16:12
Surr: 13C4-PFOA	104			50-150	%REC	1	3/17/2021 16:12
Surr: 13C4-PFOS	121			50-150	%REC	1	3/17/2021 16:12
Surr: 13C5-PFNA	84.5			50-150	%REC	1	3/17/2021 16:12
Surr: 13C5-PFPeA	108			50-150	%REC	1	3/17/2021 16:12
Surr: 13C8-FOSA	114			50-150	%REC	1	3/17/2021 16:12
Surr: 18O2-PFHxA	104			50-150	%REC	1	3/17/2021 16:12
Surr: d5-N-EtFOSAA	112			50-150	%REC	1	3/17/2021 16:12
Surr: d3-N-MeFOSAA	101			50-150	%REC	1	3/17/2021 16:12

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs /PFAS (201460)  
**Sample ID:** CS-21-03-GSI-1D(I)  
**Collection Date:** 3/12/2021 01:02 PM

**Work Order:** 21031444  
**Lab ID:** 21031444-04  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537 MODIFIED</b>							
Fluorotelomer Sulphonic Acid 4:2 (FtS 4:2)	U		0.87	4.6	ng/L	1	3/17/2021 16:22
Fluorotelomer Sulphonic Acid 6:2 (FtS 6:2)	U		0.62	4.6	ng/L	1	3/17/2021 16:22
Fluorotelomer Sulphonic Acid 8:2 (FtS 8:2)	U		1.1	4.6	ng/L	1	3/17/2021 16:22
<b>Perfluorobutanesulfonic Acid (PFBS)</b>	2.3	J	0.33	4.6	ng/L	1	3/17/2021 16:22
<b>Perfluorobutanoic Acid (PFBA)</b>	4.7		2.4	4.6	ng/L	1	3/17/2021 16:22
Perfluorodecanesulfonic Acid (PFDS)	U		1.3	4.6	ng/L	1	3/17/2021 16:22
Perfluorodecanoic Acid (PFDA)	U		1.2	4.6	ng/L	1	3/17/2021 16:22
Perfluorododecanoic Acid (PFDoA)	U		1.3	4.6	ng/L	1	3/17/2021 16:22
Perfluoroheptanesulfonic Acid (PFHpS)	0.59	J	0.53	4.6	ng/L	1	3/17/2021 16:22
Perfluoroheptanoic Acid (PFHpA)	1.5	J	0.41	4.6	ng/L	1	3/17/2021 16:22
Perfluorohexanesulfonic Acid (PFHxS)	3.6	J	0.34	4.6	ng/L	1	3/17/2021 16:22
Perfluorohexanoic Acid (PFHxA)	2.3	J	1.1	4.6	ng/L	1	3/17/2021 16:22
Perfluoronananesulfonic Acid (PFNS)	U		0.46	4.6	ng/L	1	3/17/2021 16:22
Perfluoronanoic Acid (PFNA)	U		0.81	4.6	ng/L	1	3/17/2021 16:22
Perfluorooctanesulfonamide (PFOSA)	U		0.66	4.6	ng/L	1	3/17/2021 16:22
<b>Perfluorooctanesulfonic Acid (PFOS)</b>	5.7		0.83	1.9	ng/L	1	3/17/2021 16:22
<b>Perfluorooctanoic Acid (PFOA)</b>	5.6		0.66	1.9	ng/L	1	3/17/2021 16:22
Perfluoropentanesulfonic Acid (PFPeS)	1.3	J	0.52	4.6	ng/L	1	3/17/2021 16:22
Perfluoropentanoic Acid (PFPeA)	2.0	J	1.2	4.6	ng/L	1	3/17/2021 16:22
Perfluorotetradecanoic Acid (PFTeA)	U		2.5	4.6	ng/L	1	3/17/2021 16:22
Perfluorotridecanoic Acid (PFTriA)	U		0.72	4.6	ng/L	1	3/17/2021 16:22
Perfluoroundecanoic Acid (PFUnA)	U		0.91	4.6	ng/L	1	3/17/2021 16:22
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.58	4.6	ng/L	1	3/17/2021 16:22
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.60	4.6	ng/L	1	3/17/2021 16:22
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		1.1	4.6	ng/L	1	3/17/2021 16:22
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.52	4.6	ng/L	1	3/17/2021 16:22
11CI-Pf3OUdS	U		0.43	4.6	ng/L	1	3/17/2021 16:22
9CI-PF3ONS	U		0.42	4.6	ng/L	1	3/17/2021 16:22
Surr: 13C2-FtS 4:2	180	S		50-150	%REC	1	3/17/2021 16:22
Surr: 13C2-FtS 6:2	163	S		50-150	%REC	1	3/17/2021 16:22

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group, USA****Date:** 22-Mar-21

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs /PFAS (201460)  
**Sample ID:** CS-21-03-GSI-1D(I)  
**Collection Date:** 3/12/2021 01:02 PM

**Work Order:** 21031444  
**Lab ID:** 21031444-04  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 13C2-FtS 8:2	116			50-150	%REC	1	3/17/2021 16:22
Surr: 13C2-PFDA	97.1			50-150	%REC	1	3/17/2021 16:22
Surr: 13C2-PFDoA	98.9			50-150	%REC	1	3/17/2021 16:22
Surr: 13C2-PFHxA	91.6			50-150	%REC	1	3/17/2021 16:22
Surr: 13C2-PFTeA	138			50-150	%REC	1	3/17/2021 16:22
Surr: 13C2-PFUuA	109			50-150	%REC	1	3/17/2021 16:22
Surr: 13C3-HFPO-DA	120			50-150	%REC	1	3/17/2021 16:22
Surr: 13C3-PFBS	99.2			50-150	%REC	1	3/17/2021 16:22
Surr: 13C4-PFBA	109			50-150	%REC	1	3/17/2021 16:22
Surr: 13C4-PFHpA	90.8			50-150	%REC	1	3/17/2021 16:22
Surr: 13C4-PFOA	115			50-150	%REC	1	3/17/2021 16:22
Surr: 13C4-PFOS	125			50-150	%REC	1	3/17/2021 16:22
Surr: 13C5-PFNA	77.4			50-150	%REC	1	3/17/2021 16:22
Surr: 13C5-PFPeA	104			50-150	%REC	1	3/17/2021 16:22
Surr: 13C8-FOSA	111			50-150	%REC	1	3/17/2021 16:22
Surr: 18O2-PFHxS	96.9			50-150	%REC	1	3/17/2021 16:22
Surr: d5-N-EtFOSAA	112			50-150	%REC	1	3/17/2021 16:22
Surr: d3-N-MeFOSAA	109			50-150	%REC	1	3/17/2021 16:22

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs /PFAS (201460)  
**Sample ID:** CS-21-03-GSI-2D(I)  
**Collection Date:** 3/12/2021 11:30 AM

**Work Order:** 21031444  
**Lab ID:** 21031444-05  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537 MODIFIED</b>							
Fluorotelomer Sulphonic Acid 4:2 (FtS 4:2)	U		0.87	4.7	ng/L	1	3/17/2021 16:33
Fluorotelomer Sulphonic Acid 6:2 (FtS 6:2)	U		0.62	4.7	ng/L	1	3/17/2021 16:33
Fluorotelomer Sulphonic Acid 8:2 (FtS 8:2)	U		1.1	4.7	ng/L	1	3/17/2021 16:33
Perfluorobutanesulfonic Acid (PFBS)	3.0	J	0.33	4.7	ng/L	1	3/17/2021 16:33
Perfluorobutanoic Acid (PFBA)	9.5		2.4	4.7	ng/L	1	3/17/2021 16:33
Perfluorodecanesulfonic Acid (PFDS)	U		1.3	4.7	ng/L	1	3/17/2021 16:33
Perfluorodecanoic Acid (PFDA)	U		1.2	4.7	ng/L	1	3/17/2021 16:33
Perfluorododecanoic Acid (PFDoA)	U		1.3	4.7	ng/L	1	3/17/2021 16:33
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	J	0.53	4.7	ng/L	1	3/17/2021 16:33
Perfluoroheptanoic Acid (PFHpA)	8.1		0.41	4.7	ng/L	1	3/17/2021 16:33
Perfluorohexanesulfonic Acid (PFHxS)	9.1		0.34	4.7	ng/L	1	3/17/2021 16:33
Perfluorohexanoic Acid (PFHxA)	8.4		1.1	4.7	ng/L	1	3/17/2021 16:33
Perfluoronananesulfonic Acid (PFNS)	U		0.46	4.7	ng/L	1	3/17/2021 16:33
Perfluorononanoic Acid (PFNA)	1.6	J	0.81	4.7	ng/L	1	3/17/2021 16:33
Perfluoroctanesulfonamide (PFOSA)	0.76	J	0.66	4.7	ng/L	1	3/17/2021 16:33
Perfluoroctanesulfonic Acid (PFOS)	16		0.83	1.9	ng/L	1	3/17/2021 16:33
Perfluoroctanoic Acid (PFOA)	35		0.66	1.9	ng/L	1	3/17/2021 16:33
Perfluoropentanesulfonic Acid (PPPeS)	1.1	J	0.52	4.7	ng/L	1	3/17/2021 16:33
Perfluoropentanoic Acid (PPPeA)	5.8		1.2	4.7	ng/L	1	3/17/2021 16:33
Perfluorotetradecanoic Acid (PFTeA)	U		2.5	4.7	ng/L	1	3/17/2021 16:33
Perfluorotridecanoic Acid (PFTriA)	U		0.72	4.7	ng/L	1	3/17/2021 16:33
Perfluoroundecanoic Acid (PFUnA)	U		0.91	4.7	ng/L	1	3/17/2021 16:33
N-Ethylperfluoroctanesulfonamidoacetic Acid	5.2		0.58	4.7	ng/L	1	3/17/2021 16:33
N-Methylperfluoroctanesulfonamidoacetic Acid	0.69	J	0.60	4.7	ng/L	1	3/17/2021 16:33
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		1.1	4.7	ng/L	1	3/17/2021 16:33
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.52	4.7	ng/L	1	3/17/2021 16:33
11CI-Pf3OUDs	U		0.44	4.7	ng/L	1	3/17/2021 16:33
9CI-PF3ONS	U		0.42	4.7	ng/L	1	3/17/2021 16:33
Surr: 13C2-FtS 4:2	327	S		50-150	%REC	1	3/17/2021 16:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs /PFAS (201460)  
**Sample ID:** CS-21-03-GSI-2D(I)  
**Collection Date:** 3/12/2021 11:30 AM

**Work Order:** 21031444  
**Lab ID:** 21031444-05  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 13C2-FtS 6:2	237	S		50-150	%REC	1	3/17/2021 16:33
Surr: 13C2-FtS 8:2	129			50-150	%REC	1	3/17/2021 16:33
Surr: 13C2-PFDA	103			50-150	%REC	1	3/17/2021 16:33
Surr: 13C2-PFDoA	106			50-150	%REC	1	3/17/2021 16:33
Surr: 13C2-PFHxA	104			50-150	%REC	1	3/17/2021 16:33
Surr: 13C2-PFTeA	147			50-150	%REC	1	3/17/2021 16:33
Surr: 13C2-PFUnA	117			50-150	%REC	1	3/17/2021 16:33
Surr: 13C3-HFPO-DA	126			50-150	%REC	1	3/17/2021 16:33
Surr: 13C3-PFBS	105			50-150	%REC	1	3/17/2021 16:33
Surr: 13C4-PFBA	120			50-150	%REC	1	3/17/2021 16:33
Surr: 13C4-PFHxA	93.3			50-150	%REC	1	3/17/2021 16:33
Surr: 13C4-PFOA	131			50-150	%REC	1	3/17/2021 16:33
Surr: 13C4-PFOS	136			50-150	%REC	1	3/17/2021 16:33
Surr: 13C5-PFNA	96.1			50-150	%REC	1	3/17/2021 16:33
Surr: 13C5-PFPeA	110			50-150	%REC	1	3/17/2021 16:33
Surr: 13C8-FOSA	115			50-150	%REC	1	3/17/2021 16:33
Surr: 18O2-PFHxA	113			50-150	%REC	1	3/17/2021 16:33
Surr: d5-N-EtFOSAA	125			50-150	%REC	1	3/17/2021 16:33
Surr: d3-N-MeFOSAA	117			50-150	%REC	1	3/17/2021 16:33

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs /PFAS (201460)  
**Sample ID:** CS-21-03-SW-01(I)  
**Collection Date:** 3/12/2021 10:20 AM

**Work Order:** 21031444  
**Lab ID:** 21031444-06  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537 MODIFIED</b>			Method: E537 MOD		Prep: E537 Mod / 3/17/21		Analyst: SK
Fluorotelomer Sulphonic Acid 4:2 (FtS 4:2)	U		0.88	4.7	ng/L	1	3/17/2021 16:43
Fluorotelomer Sulphonic Acid 6:2 (FtS 6:2)	U		0.62	4.7	ng/L	1	3/17/2021 16:43
Fluorotelomer Sulphonic Acid 8:2 (FtS 8:2)	U		1.1	4.7	ng/L	1	3/17/2021 16:43
<b>Perfluorobutanesulfonic Acid (PFBS)</b>	3.5	J	0.33	4.7	ng/L	1	3/17/2021 16:43
<b>Perfluorobutanoic Acid (PFBA)</b>	5.5		2.4	4.7	ng/L	1	3/17/2021 16:43
Perfluorodecanesulfonic Acid (PFDS)	U		1.3	4.7	ng/L	1	3/17/2021 16:43
Perfluorodecanoic Acid (PFDA)	U		1.2	4.7	ng/L	1	3/17/2021 16:43
Perfluorododecanoic Acid (PFDoA)	U		1.3	4.7	ng/L	1	3/17/2021 16:43
Perfluoroheptanesulfonic Acid (PFHpS)	U		0.53	4.7	ng/L	1	3/17/2021 16:43
<b>Perfluoroheptanoic Acid (PFHpA)</b>	1.4	J	0.41	4.7	ng/L	1	3/17/2021 16:43
<b>Perfluorohexanesulfonic Acid (PFHxS)</b>	1.7	J	0.35	4.7	ng/L	1	3/17/2021 16:43
<b>Perfluorohexanoic Acid (PFHxA)</b>	2.3	J	1.1	4.7	ng/L	1	3/17/2021 16:43
Perfluorononanesulfonic Acid (PFNS)	U		0.47	4.7	ng/L	1	3/17/2021 16:43
Perfluorononanoic Acid (PFNA)	U		0.82	4.7	ng/L	1	3/17/2021 16:43
Perfluoroctanesulfonamide (PFOSA)	U		0.67	4.7	ng/L	1	3/17/2021 16:43
<b>Perfluoroctanesulfonic Acid (PFOS)</b>	2.2		0.84	1.9	ng/L	1	3/17/2021 16:43
<b>Perfluoroctanoic Acid (PFOA)</b>	2.7		0.66	1.9	ng/L	1	3/17/2021 16:43
Perfluoropentanesulfonic Acid (PPeS)	U		0.52	4.7	ng/L	1	3/17/2021 16:43
<b>Perfluoropentanoic Acid (PPeA)</b>	3.5	J	1.2	4.7	ng/L	1	3/17/2021 16:43
Perfluorotetradecanoic Acid (PFTeA)	U		2.5	4.7	ng/L	1	3/17/2021 16:43
Perfluorotridecanoic Acid (PFTriA)	U		0.72	4.7	ng/L	1	3/17/2021 16:43
Perfluoroundecanoic Acid (PFUnA)	U		0.92	4.7	ng/L	1	3/17/2021 16:43
N-Ethylperfluoroctanesulfonamidoacetic Acid	U		0.59	4.7	ng/L	1	3/17/2021 16:43
N-Methylperfluoroctanesulfonamidoacetic Acid	U		0.61	4.7	ng/L	1	3/17/2021 16:43
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		1.1	4.7	ng/L	1	3/17/2021 16:43
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.53	4.7	ng/L	1	3/17/2021 16:43
11CI-Pf3OUDS	U		0.44	4.7	ng/L	1	3/17/2021 16:43
9CI-PF3ONS	U		0.42	4.7	ng/L	1	3/17/2021 16:43
Surr: 13C2-FtS 4:2	320	S		50-150	%REC	1	3/17/2021 16:43
Surr: 13C2-FtS 6:2	281	S		50-150	%REC	1	3/17/2021 16:43
Surr: 13C2-FtS 8:2	143			50-150	%REC	1	3/17/2021 16:43

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs /PFAS (201460)  
**Sample ID:** CS-21-03-SW-01(I)  
**Collection Date:** 3/12/2021 10:20 AM

**Work Order:** 21031444  
**Lab ID:** 21031444-06  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 13C2-PFDA	90.6			50-150	%REC	1	3/17/2021 16:43
Surr: 13C2-PFDoA	95.8			50-150	%REC	1	3/17/2021 16:43
Surr: 13C2-PFHxA	94.6			50-150	%REC	1	3/17/2021 16:43
Surr: 13C2-PFTeA	87.1			50-150	%REC	1	3/17/2021 16:43
Surr: 13C2-PFUuA	108			50-150	%REC	1	3/17/2021 16:43
Surr: 13C3-HFPO-DA	108			50-150	%REC	1	3/17/2021 16:43
Surr: 13C3-PFBS	89.7			50-150	%REC	1	3/17/2021 16:43
Surr: 13C4-PFBA	97.7			50-150	%REC	1	3/17/2021 16:43
Surr: 13C4-PFHpA	87.3			50-150	%REC	1	3/17/2021 16:43
Surr: 13C4-PFOA	103			50-150	%REC	1	3/17/2021 16:43
Surr: 13C4-PFOS	112			50-150	%REC	1	3/17/2021 16:43
Surr: 13C5-PFNA	83.3			50-150	%REC	1	3/17/2021 16:43
Surr: 13C5-PFPeA	93.3			50-150	%REC	1	3/17/2021 16:43
Surr: 13C8-FOSA	103			50-150	%REC	1	3/17/2021 16:43
Surr: 18O2-PFHxS	103			50-150	%REC	1	3/17/2021 16:43
Surr: d5-N-EtFOSAA	145			50-150	%REC	1	3/17/2021 16:43
Surr: d3-N-MeFOSAA	116			50-150	%REC	1	3/17/2021 16:43

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs /PFAS (201460)  
**Sample ID:** CS-21-03-QCFB  
**Collection Date:** 3/12/2021 09:30 AM

**Work Order:** 21031444  
**Lab ID:** 21031444-07  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537 MODIFIED</b>			Method: E537 MOD		Prep: E537 Mod / 3/17/21		Analyst: SK
Fluorotelomer Sulphonic Acid 4:2 (FtS 4:2)	U		0.90	4.8	ng/L	1	3/17/2021 16:53
Fluorotelomer Sulphonic Acid 6:2 (FtS 6:2)	U		0.64	4.8	ng/L	1	3/17/2021 16:53
Fluorotelomer Sulphonic Acid 8:2 (FtS 8:2)	U		1.1	4.8	ng/L	1	3/17/2021 16:53
Perfluorobutanesulfonic Acid (PFBS)	U		0.34	4.8	ng/L	1	3/17/2021 16:53
Perfluorobutanoic Acid (PFBA)	U		2.5	4.8	ng/L	1	3/17/2021 16:53
Perfluorodecanesulfonic Acid (PFDS)	U		1.3	4.8	ng/L	1	3/17/2021 16:53
Perfluorodecanoic Acid (PFDA)	U		1.2	4.8	ng/L	1	3/17/2021 16:53
Perfluorododecanoic Acid (PFDoA)	U		1.4	4.8	ng/L	1	3/17/2021 16:53
Perfluoroheptanesulfonic Acid (PFHpS)	U		0.54	4.8	ng/L	1	3/17/2021 16:53
Perfluoroheptanoic Acid (PFHpA)	U		0.42	4.8	ng/L	1	3/17/2021 16:53
<b>Perfluorohexanesulfonic Acid (PFHxS)</b>	<b>0.66</b>	<b>J</b>	<b>0.35</b>	<b>4.8</b>	<b>ng/L</b>	<b>1</b>	<b>3/17/2021 16:53</b>
Perfluorohexanoic Acid (PFHxA)	U		1.2	4.8	ng/L	1	3/17/2021 16:53
Perfluorononanesulfonic Acid (PFNS)	U		0.48	4.8	ng/L	1	3/17/2021 16:53
Perfluorononanoic Acid (PFNA)	U		0.84	4.8	ng/L	1	3/17/2021 16:53
Perfluorooctanesulfonamide (PFOSA)	U		0.68	4.8	ng/L	1	3/17/2021 16:53
Perfluorooctanesulfonic Acid (PFOS)	U		0.86	1.9	ng/L	1	3/17/2021 16:53
Perfluorooctanoic Acid (PFOA)	U		0.68	1.9	ng/L	1	3/17/2021 16:53
Perfluoropentanesulfonic Acid (PFPeS)	U		0.53	4.8	ng/L	1	3/17/2021 16:53
Perfluoropentanoic Acid (PFPeA)	U		1.2	4.8	ng/L	1	3/17/2021 16:53
Perfluorotetradecanoic Acid (PFTeA)	U		2.5	4.8	ng/L	1	3/17/2021 16:53
Perfluorotridecanoic Acid (PFTriA)	U		0.74	4.8	ng/L	1	3/17/2021 16:53
Perfluoroundecanoic Acid (PFUnA)	U		0.94	4.8	ng/L	1	3/17/2021 16:53
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.60	4.8	ng/L	1	3/17/2021 16:53
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.62	4.8	ng/L	1	3/17/2021 16:53
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		1.1	4.8	ng/L	1	3/17/2021 16:53
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.54	4.8	ng/L	1	3/17/2021 16:53
11CI-Pf3OUDS	U		0.45	4.8	ng/L	1	3/17/2021 16:53
9CI-PF3ONS	U		0.43	4.8	ng/L	1	3/17/2021 16:53
Surr: 13C2-FtS 4:2	135			50-150	%REC	1	3/17/2021 16:53
Surr: 13C2-FtS 6:2	135			50-150	%REC	1	3/17/2021 16:53
Surr: 13C2-FtS 8:2	143			50-150	%REC	1	3/17/2021 16:53

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group, USA****Date:** 22-Mar-21

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs /PFAS (201460)  
**Sample ID:** CS-21-03-QCFB  
**Collection Date:** 3/12/2021 09:30 AM

**Work Order:** 21031444  
**Lab ID:** 21031444-07  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 13C2-PFDA	111			50-150	%REC	1	3/17/2021 16:53
Surr: 13C2-PFDoA	86.1			50-150	%REC	1	3/17/2021 16:53
Surr: 13C2-PFHxA	101			50-150	%REC	1	3/17/2021 16:53
Surr: 13C2-PFTeA	158	S		50-150	%REC	1	3/17/2021 16:53
Surr: 13C2-PFUuA	96.6			50-150	%REC	1	3/17/2021 16:53
Surr: 13C3-HFPO-DA	146			50-150	%REC	1	3/17/2021 16:53
Surr: 13C3-PFBS	114			50-150	%REC	1	3/17/2021 16:53
Surr: 13C4-PFBA	113			50-150	%REC	1	3/17/2021 16:53
Surr: 13C4-PFHxA	113			50-150	%REC	1	3/17/2021 16:53
Surr: 13C4-PFOA	138			50-150	%REC	1	3/17/2021 16:53
Surr: 13C4-PFOS	103			50-150	%REC	1	3/17/2021 16:53
Surr: 13C5-PFNA	92.6			50-150	%REC	1	3/17/2021 16:53
Surr: 13C5-PFPeA	118			50-150	%REC	1	3/17/2021 16:53
Surr: 13C8-FOSA	116			50-150	%REC	1	3/17/2021 16:53
Surr: 18O2-PFHxA	87.5			50-150	%REC	1	3/17/2021 16:53
Surr: d5-N-EtFOSAA	111			50-150	%REC	1	3/17/2021 16:53
Surr: d3-N-MeFOSAA	131			50-150	%REC	1	3/17/2021 16:53

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

Client: Fishbeck, Inc.

Work Order: 21031444

Project: Cedar Springs /PFAS (201460)

**QC BATCH REPORT**

Batch ID: 173579		Instrument ID LCMS1		Method: E537 Mod							
MBLK		Sample ID: MBLK-173579-173579				Units: ng/L		Analysis Date: 3/18/2021 12:32 PM			
Client ID:		Run ID: LCMS1_210318A				SeqNo: 7224697		Prep Date: 3/17/2021		DF: 1	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fluorotelomer Sulphonic Acid	U	0.94	5.0								
Fluorotelomer Sulphonic Acid	U	0.66	5.0								
Fluorotelomer Sulphonic Acid	U	1.1	5.0								
Perfluorobutanesulfonic Acid (	U	0.35	5.0								
Perfluorobutanoic Acid (PFBA)	U	2.6	5.0								
Perfluorodecanesulfonic Acid (	U	1.4	5.0								
Perfluorodecanoic Acid (PFDA)	U	1.2	5.0								
Perfluorododecanoic Acid (PFD)	U	1.4	5.0								
Perfluoroheptanesulfonic Acid	U	0.57	5.0								
Perfluoroheptanoic Acid (PFH)	U	0.44	5.0								
Perfluorohexanesulfonic Acid (	0.6816	0.37	5.0								J
Perfluorohexanoic Acid (PFHx)	U	1.2	5.0								
Perfluorononanesulfonic Acid (	U	0.5	5.0								
Perfluorononanoic Acid (PFNA)	U	0.87	5.0								
Perfluoroctanesulfonamide (F	U	0.71	5.0								
Perfluoroctanesulfonic Acid (I	U	0.89	2.0								
Perfluoroctanoic Acid (PFOA)	U	0.7	2.0								
Perfluoropentanesulfonic Acid	U	0.56	5.0								
Perfluoropentanoic Acid (PFP)	U	1.3	5.0								
Perfluorotetradecanoic Acid (F	U	2.6	5.0								
Perfluorotridecanoic Acid (PF1	U	0.77	5.0								
Perfluoroundecanoic Acid (PF1	U	0.97	5.0								
N-Ethylperfluoroctanesulfona	U	0.63	5.0								
N-Methylperfluoroctanesulfon	Ui	0.64	5.0								
Hexafluoropropylene oxide din	Ui	1.2	5.0								
4,8-Dioxa-3H-perfluorononano	U	0.56	5.0								
11CI-Pf3OUDs	U	0.47	5.0								
9CI-PF3ONS	U	0.45	5.0								
Surr: 13C2-FtS 4:2	185.8	0	0	149.4	0	124	50-150				0
Surr: 13C2-FtS 6:2	190.5	0	0	152	0	125	50-150				0
Surr: 13C2-FtS 8:2	154.2	0	0	153.3	0	101	50-150				0
Surr: 13C2-PFDA	139.7	0	0	160	0	87.3	50-150				0
Surr: 13C2-PFDoA	145.2	0	0	160	0	90.8	50-150				0
Surr: 13C2-PFHxA	154.1	0	0	160	0	96.3	50-150				0
Surr: 13C2-PFTeA	164	0	0	160	0	102	50-150				0
Surr: 13C2-PFUuA	150.4	0	0	160	0	94	50-150				0
Surr: 13C3-HFPO-DA	188.8	0	0	160	0	118	50-150				0
Surr: 13C3-PFBS	160.9	0	0	148.8	0	108	50-150				0
Surr: 13C4-PFBA	176.7	0	0	160	0	110	50-150				0
Surr: 13C4-PFHxA	145.8	0	0	160	0	91.2	50-150				0
Surr: 13C4-PFOA	158.7	0	0	160	0	99.2	50-150				0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Fishbeck, Inc.  
**Work Order:** 21031444  
**Project:** Cedar Springs /PFAS (201460)

## QC BATCH REPORT

Batch ID: 173579	Instrument ID	LCMS1	Method: E537 Mod						
Surr: 13C4-PFOS	188.8	0	0	152.8	0	124	50-150	0	
Surr: 13C5-PFNA	142.9	0	0	160	0	89.3	50-150	0	
Surr: 13C5-PFPeA	178.5	0	0	160	0	112	50-150	0	
Surr: 13C8-FOSA	166.3	0	0	160	0	104	50-150	0	
Surr: 18O2-PFHxS	166.1	0	0	151.2	0	110	50-150	0	
Surr: d5-N-EtFOSAA	176.9	0	0	160	0	111	50-150	0	
Surr: d3-N-MeFOSAA	159.7	0	0	160	0	99.8	50-150	0	

LCS	Sample ID: LCS-173579-173579			Units: ng/L			Analysis Date: 3/18/2021 10:46 AM		
Client ID:	Run ID: LCMS1_210318A			SeqNo: 7224693		Prep Date: 3/17/2021		DF: 1	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit Qual
Perfluorotridecanoic Acid (PF1)	41.6	0.77	5.0	32	0	130	65-144	0	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Fishbeck, Inc.  
**Work Order:** 21031444  
**Project:** Cedar Springs /PFAS (201460)

## QC BATCH REPORT

Batch ID: 173579      Instrument ID LCMS1      Method: E537 Mod

LCS	Sample ID: LCS-173579-173579				Units: ng/L		Analysis Date: 3/17/2021 03:19 PM			
Client ID:	Run ID: LCMS1_210317A			SeqNo: 7224701		Prep Date: 3/17/2021		DF: 1		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit	Qual
Fluorotelomer Sulphonic Acid	28.86	0.94	5.0	29.9	0	96.5	63-143	0	0	
Fluorotelomer Sulphonic Acid	31.24	0.66	5.0	30.3	0	103	64-140	0	0	
Fluorotelomer Sulphonic Acid	32.63	1.1	5.0	30.7	0	106	67-138	0	0	
Perfluorobutanesulfonic Acid (	26.03	0.35	5.0	28.3	0	92	72-130	0	0	
Perfluorobutanoic Acid (PFBA)	34.48	2.6	5.0	32	0	108	73-129	0	0	
Perfluorodecanesulfonic Acid (	27.43	1.4	5.0	30.8	0	89	53-142	0	0	
Perfluorodecanoic Acid (PFDA)	33.13	1.2	5.0	32	0	104	71-129	0	0	
Perfluorododecanoic Acid (PFD	39.48	1.4	5.0	32	0	123	72-134	0	0	
Perfluoroheptanesulfonic Acid	29.68	0.57	5.0	30.5	0	97.3	69-134	0	0	
Perfluoroheptanoic Acid (PFH)	29.94	0.44	5.0	32	0	93.6	72-130	0	0	
Perfluorohexanesulfonic Acid (	28.03	0.37	5.0	29.1	0	96.3	68-131	0	0	
Perfluorohexanoic Acid (PFHx	32.53	1.2	5.0	32	0	102	72-129	0	0	
Perfluorononanesulfonic Acid	27.17	0.5	5.0	30.7	0	88.5	69-127	0	0	
Perfluorononanoic Acid (PFNA	39.79	0.87	5.0	32	0	124	69-130	0	0	
Perfluorooctanesulfonamide (F	30.61	0.71	5.0	32	0	95.7	67-137	0	0	
Perfluoroctanesulfonic Acid (	32.48	0.89	2.0	29.7	0	109	65-140	0	0	
Perfluoroctanoic Acid (PFOA)	28.61	0.7	2.0	32	0	89.4	71-133	0	0	
Perfluoropentanesulfonic Acid	28	0.56	5.0	30	0	93.3	71-127	0	0	
Perfluoropentanoic Acid (PPPe	29.42	1.3	5.0	32	0	91.9	72-129	0	0	
Perfluorotetradecanoic Acid (F	40.14	2.6	5.0	32	0	125	71-132	0	0	
Perfluoroundecanoic Acid (PF	25.68	0.97	5.0	32	0	80.2	69-133	0	0	
N-Ethylperfluoroctanesulfona	29.34	0.63	5.0	32	0	91.7	61-135	0	0	
N-Methylperfluoroctanesulfur	32.46	0.64	5.0	32	0	101	65-136	0	0	
Hexafluoropropylene oxide din	33.43	1.2	5.0	32	0	104	70-130	0	0	
4,8-Dioxa-3H-perfluorononano	33.39	0.56	5.0	30.1	0	111	70-130	0	0	
11CI-Pf3OUDS	27.21	0.47	5.0	30.1	0	90.4	70-130	0	0	
9CI-PF3ONS	35.78	0.45	5.0	29.8	0	120	70-130	0	0	
Surr: 13C2-FtS 4:2	214.3	0	0	149.4	0	143	50-150	0	0	
Surr: 13C2-FtS 6:2	215.5	0	0	152	0	142	50-150	0	0	
Surr: 13C2-FtS 8:2	167.5	0	0	153.3	0	109	50-150	0	0	
Surr: 13C2-PFDA	151.3	0	0	160	0	94.6	50-150	0	0	
Surr: 13C2-PFDoA	181.1	0	0	160	0	113	50-150	0	0	
Surr: 13C2-PFHxA	174.6	0	0	160	0	109	50-150	0	0	
Surr: 13C2-PFTeA	186.2	0	0	160	0	116	50-150	0	0	
Surr: 13C2-PFUuA	173	0	0	160	0	108	50-150	0	0	
Surr: 13C3-HFPO-DA	209.9	0	0	160	0	131	50-150	0	0	
Surr: 13C3-PFBS	176	0	0	148.8	0	118	50-150	0	0	
Surr: 13C4-PFBA	197.9	0	0	160	0	124	50-150	0	0	
Surr: 13C4-PFHxA	171.5	0	0	160	0	107	50-150	0	0	
Surr: 13C4-PFOA	175.7	0	0	160	0	110	50-150	0	0	
Surr: 13C4-PFOS	201.7	0	0	152.8	0	132	50-150	0	0	
Surr: 13C5-PFNA	154.9	0	0	160	0	96.8	50-150	0	0	
Surr: 13C5-PFPeA	197	0	0	160	0	123	50-150	0	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Fishbeck, Inc.  
**Work Order:** 21031444  
**Project:** Cedar Springs /PFAS (201460)

## QC BATCH REPORT

Batch ID: 173579	Instrument ID LCMS1	Method: E537 Mod						
<i>Surr: 13C8-FOSA</i>	193.7	0	0	160	0	121	50-150	0
<i>Surr: 18O2-PFHxS</i>	193.9	0	0	151.2	0	128	50-150	0
<i>Surr: d5-N-EtFOSAA</i>	183.8	0	0	160	0	115	50-150	0
<i>Surr: d3-N-MeFOSAA</i>	170.5	0	0	160	0	107	50-150	0

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**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Fishbeck, Inc.  
**Work Order:** 21031444  
**Project:** Cedar Springs /PFAS (201460)

# QC BATCH REPORT

Batch ID: 173579      Instrument ID LCMS1      Method: E537 Mod

MS	Sample ID: 21031538-01A MS				Units: ng/L		Analysis Date: 3/17/2021 03:30 PM			
Client ID:	Run ID: LCMS1_210317A			SeqNo: 7224702		Prep Date: 3/17/2021		DF: 1		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD Limit	Qual
Fluorotelomer Sulphonic Acid	25.42	0.89	4.7	28.31	0	89.8	63-143	0		
Fluorotelomer Sulphonic Acid	29.18	0.63	4.7	28.69	0	102	64-140	0		
Fluorotelomer Sulphonic Acid	32.92	1.1	4.7	29.07	0	113	67-138	0		
Perfluorobutanesulfonic Acid	26.23	0.33	4.7	26.8	2.585	88.2	72-130	0		
Perfluorobutanoic Acid (PFBA)	57.69	2.5	4.7	30.3	22.35	117	73-129	0		
Perfluorodecanesulfonic Acid	22.33	1.3	4.7	29.17	0	76.6	53-142	0		
Perfluorodecanoic Acid (PFDA)	29.3	1.2	4.7	30.3	0.3576	95.5	71-129	0		
Perfluorododecanoic Acid (PFD)	35.07	1.4	4.7	30.3	0.2697	115	72-134	0		
Perfluoroheptanesulfonic Acid	26.25	0.54	4.7	28.88	0.3091	89.8	69-134	0		
Perfluoroheptanoic Acid (PFH)	60.24	0.42	4.7	30.3	37.91	73.7	72-130	0		
Perfluorohexanesulfonic Acid	27.5	0.35	4.7	27.56	1.336	94.9	68-131	0		
Perfluorohexanoic Acid (PFHx)	60.51	1.1	4.7	30.3	29.56	102	72-129	0		
Perfluorononanesulfonic Acid	25.65	0.47	4.7	29.07	0	88.2	69-127	0		
Perfluorononanoic Acid (PFNA)	35.97	0.82	4.7	30.3	0.2788	118	69-130	0		
Perfluoroctanesulfonamide (F)	30.07	0.67	4.7	30.3	0.1303	98.8	67-137	0		
Perfluoroctanesulfonic Acid	34.23	0.84	1.9	28.12	4.206	107	65-140	0		
Perfluoroctanoic Acid (PFOA)	95.43	0.67	1.9	30.3	68.92	87.5	71-133	0		
Perfluoropentanesulfonic Acid	24.62	0.53	4.7	28.41	0.2939	85.6	71-127	0		
Perfluoropentanoic Acid (PFPt)	32.28	1.2	4.7	30.3	6.997	83.4	72-129	0		
Perfluorotetradecanoic Acid (F)	33.07	2.5	4.7	30.3	0	109	71-132	0		
Perfluorotridecanoic Acid (PF1)	37.73	0.73	4.7	30.3	0.00303	125	65-144	0		
Perfluoroundecanoic Acid (PF1)	23.5	0.92	4.7	30.3	0.1242	77.1	69-133	0		
N-Ethylperfluoroctanesulfona	26.93	0.59	4.7	30.3	0	88.9	61-135	0		
N-Methylperfluoroctanesulfur	30.31	0.61	4.7	30.3	0	100	65-136	0		
Hexafluoropropylene oxide din	281	1.1	4.7	30.3	0	92.4	70-130	0		
4,8-Dioxa-3H-perfluorononano	27.35	0.53	4.7	28.5	0	96	70-130	0		
11CI-Pf3OUDs	24.83	0.44	4.7	28.5	0	87.1	70-130	0		
9CI-PF3ONS	32.74	0.42	4.7	28.22	0	116	70-130	0		
Surr: 13C2-FtS 4:2	240	0	0	141.5	0	170	50-150	0		S
Surr: 13C2-FtS 6:2	211.6	0	0	143.9	0	147	50-150	0		
Surr: 13C2-FtS 8:2	176.4	0	0	145.2	0	122	50-150	0		
Surr: 13C2-PFDA	154.9	0	0	151.5	0	102	50-150	0		
Surr: 13C2-PFDaA	173.3	0	0	151.5	0	114	50-150	0		
Surr: 13C2-PFHxA	198.7	0	0	151.5	0	131	50-150	0		
Surr: 13C2-PFTeA	209.8	0	0	151.5	0	138	50-150	0		
Surr: 13C2-PFUaA	172.8	0	0	151.5	0	114	50-150	0		
Surr: 13C3-HFPO-DA	250.2	0	0	151.5	0	165	50-150	0		S
Surr: 13C3-PFBS	185.7	0	0	140.9	0	132	50-150	0		
Surr: 13C4-PFBA	207.5	0	0	151.5	0	137	50-150	0		
Surr: 13C4-PFHxA	213	0	0	151.5	0	141	50-150	0		
Surr: 13C4-PFOA	180.1	0	0	151.5	0	119	50-150	0		
Surr: 13C4-PFOS	202.2	0	0	144.7	0	140	50-150	0		
Surr: 13C5-PFNA	172.9	0	0	151.5	0	114	50-150	0		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Fishbeck, Inc.  
**Work Order:** 21031444  
**Project:** Cedar Springs /PFAS (201460)

## QC BATCH REPORT

Batch ID: 173579	Instrument ID LCMS1	Method: E537 Mod						
Surr: 13C5-PFPeA	208.2	0	0	151.5	0	137	50-150	0
Surr: 13C8-FOSA	220	0	0	151.5	0	145	50-150	0
Surr: 18O2-PFHxS	192	0	0	143.2	0	134	50-150	0
Surr: d5-N-EtFOSAA	207.3	0	0	151.5	0	137	50-150	0
Surr: d3-N-MeFOSAA	199	0	0	151.5	0	131	50-150	0

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**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Fishbeck, Inc.  
**Work Order:** 21031444  
**Project:** Cedar Springs /PFAS (201460)

## QC BATCH REPORT

Batch ID: 173579      Instrument ID LCMS1      Method: E537 Mod

DUP	Sample ID: 21031530-02A DUP				Units: ng/L			Analysis Date: 3/17/2021 05:25 PM			
Client ID:	Run ID: LCMS1_210317A			SeqNo: 7224713		Prep Date: 3/17/2021		DF: 1			
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fluorotelomer Sulphonic Acid	U	0.9	4.8	0	0	0	0-0	0	0	30	
Fluorotelomer Sulphonic Acid	U	0.64	4.8	0	0	0	0-0	0	0	30	
Fluorotelomer Sulphonic Acid	U	1.1	4.8	0	0	0	0-0	0	0	30	
Perfluorobutanesulfonic Acid (	2.105	0.34	4.8	0	0	0	0-0	2.354	0	30	J
Perfluorobutanoic Acid (PFBA)	18.76	2.5	4.8	0	0	0	0-0	18.78	0.0996	30	
Perfluorodecanesulfonic Acid (	U	1.3	4.8	0	0	0	0-0	0	0	30	
Perfluorodecanoic Acid (PFDA)	U	1.2	4.8	0	0	0	0-0	0	0	30	
Perfluorododecanoic Acid (PFD	U	1.4	4.8	0	0	0	0-0	0.1405	0	30	
Perfluoroheptanesulfonic Acid	4.462	0.54	4.8	0	0	0	0-0	4.394	0	30	J
Perfluoroheptanoic Acid (PFH)	57.41	0.42	4.8	0	0	0	0-0	50.39	13	30	
Perfluorohexanesulfonic Acid (	5.551	0.35	4.8	0	0	0	0-0	6.55	16.5	30	
Perfluorohexanoic Acid (PFHx)	24.29	1.2	4.8	0	0	0	0-0	25.33	4.21	30	
Perfluorononanesulfonic Acid	U	0.48	4.8	0	0	0	0-0	0	0	30	
Perfluorononanoic Acid (PFNA)	1.342	0.84	4.8	0	0	0	0-0	1.676	0	30	J
Perfluorooctanesulfonamide (F	0.7138	0.68	4.8	0	0	0	0-0	0.7359	0	30	J
Perfluoroctanesulfonic Acid (I	76.98	0.86	1.9	0	0	0	0-0	78.44	1.88	30	
Perfluoroctanoic Acid (PFOA)	158.9	0.68	1.9	0	0	0	0-0	166.7	4.82	30	
Perfluoropentanesulfonic Acid	0.9692	0.53	4.8	0	0	0	0-0	0.974	0	30	J
Perfluoropentanoic Acid (PPPe)	7.886	1.2	4.8	0	0	0	0-0	7.075	10.8	30	
Perfluorotetradecanoic Acid (F	U	2.5	4.8	0	0	0	0-0	0	0	30	
Perfluorotridecanoic Acid (PF1)	U	0.74	4.8	0	0	0	0-0	0	0	30	
Perfluoroundecanoic Acid (PF1)	U	0.94	4.8	0	0	0	0-0	0.09466	0	30	
N-Ethylperfluoroctanesulfona	3.031	0.6	4.8	0	0	0	0-0	3.615	0	30	J
N-Methylperfluoroctanesulfur	Ui	0.62	4.8	0	0	0	0-0	0	0	30	
Hexafluoropropylene oxide din	Ui	1.1	4.8	0	0	0	0-0	0	0	30	
4,8-Dioxa-3H-perfluorononanc	U	0.54	4.8	0	0	0	0-0	0	0	30	
11CI-Pf3OUdS	U	0.45	4.8	0	0	0	0-0	0	0	30	
9CI-PF3ONS	U	0.43	4.8	0	0	0	0-0	0	0	30	
Surr: 13C2-FtS 4:2	573.6	0	0	143.7	0	399	50-150	581	1.29	30	S
Surr: 13C2-FtS 6:2	392.1	0	0	146.2	0	268	50-150	437.4	10.9	30	S
Surr: 13C2-FtS 8:2	180.7	0	0	147.4	0	123	50-150	205.1	12.6	30	
Surr: 13C2-PFDA	165.7	0	0	153.8	0	108	50-150	165	0.418	30	
Surr: 13C2-PFDoA	125.6	0	0	153.8	0	81.6	50-150	118.2	6.02	30	
Surr: 13C2-PFHxA	137	0	0	153.8	0	89.1	50-150	131.8	3.92	30	
Surr: 13C2-PFTeA	192.7	0	0	153.8	0	125	50-150	195.1	1.23	30	
Surr: 13C2-PFUuA	155.1	0	0	153.8	0	101	50-150	142.4	8.57	30	
Surr: 13C3-HFPO-DA	170.6	0	0	153.8	0	111	50-150	187.5	9.46	30	
Surr: 13C3-PFBS	126.3	0	0	143.1	0	88.3	50-150	133.9	5.79	30	
Surr: 13C4-PFBA	157.9	0	0	153.8	0	103	50-150	150.4	4.86	30	
Surr: 13C4-PFHxA	131.5	0	0	153.8	0	85.5	50-150	140.2	6.36	30	
Surr: 13C4-PFOA	195.7	0	0	153.8	0	127	50-150	183.2	6.57	30	
Surr: 13C4-PFOS	166.5	0	0	146.9	0	113	50-150	156.9	5.94	30	
Surr: 13C5-PFNA	124.3	0	0	153.8	0	80.8	50-150	119.8	3.71	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Fishbeck, Inc.  
**Work Order:** 21031444  
**Project:** Cedar Springs /PFAS (201460)

## QC BATCH REPORT

Batch ID: 173579	Instrument ID LCMS1	Method: E537 Mod								
Surr: 13C5-PFPeA	141.7	0	0	153.8	0	92.1	50-150	149.2	5.18	30
Surr: 13C8-FOSA	139.2	0	0	153.8	0	90.5	50-150	152.7	9.28	30
Surr: 18O2-PFHxS	130.6	0	0	145.4	0	89.8	50-150	130.3	0.225	30
Surr: d5-N-EtFOSAA	149.7	0	0	153.8	0	97.3	50-150	164.7	9.57	30
Surr: d3-N-MeFOSAA	165.3	0	0	153.8	0	107	50-150	200.2	19.1	30

The following samples were analyzed in this batch:

21031444-01A	21031444-02A	21031444-03A
21031444-04A	21031444-05A	21031444-06A
21031444-07A		

**CHAIN OF  
CUSTODY RECORD**

**fishbeck**  
Address: 1515 Arboretum Dr. SE  
Grand Rapids, MI 49546  
Phone: 616.575.3824

Report to: Penni Mahler  
Email: [pdmahler@fishbeck.com](mailto:pdmahler@fishbeck.com)  
Copy to:  
Email:

Invoice to: Accounts Payable  
Email: acpay@fishbeck.com  
Lab Quote  
Reference:

RELINQUISHED BY	DATE	TIME	RELINQUISHED BY	DATE	TIME	RELINQUISHED BY	DATE	TIME	METHOD OF SHIPMENT/TRACKING NUMBER
L. Chappie: Fishbeck Storage	3/12/21	1415	J. Salato	3/15/21	09:30				CosSealed/ALS PickUp
From Storage	3/15/21	09:30							Received 3/15/21 0900

6-031260

3.8 °C IR

## Sample Receipt Checklist

Client Name: FTCH - GRDate/Time Received: 15-Mar-21 15:00Work Order: 21031444Received by: KRWChecklist completed by Kurt Wierenga  
eSignature

16-Mar-21

Reviewed by: Erlind Bosworth

16-Mar-21

Date

eSignature

Date

Matrices: WaterCarrier name: ALSHNShipping container/cooler in good condition? Yes  No  Not Present Custody seals intact on shipping container/cooler? Yes  No  Not Present Custody seals intact on sample bottles? Yes  No  Not Present Chain of custody present? Yes  No Chain of custody signed when relinquished and received? Yes  No Chain of custody agrees with sample labels? Yes  No Samples in proper container/bottle? Yes  No Sample containers intact? Yes  No Sufficient sample volume for indicated test? Yes  No All samples received within holding time? Yes  No Container/Temp Blank temperature in compliance? Yes  No Sample(s) received on ice? Yes  No Temperature(s)/Thermometer(s): 3.8/4.8 C IR3

Cooler(s)/Kit(s):

Date/Time sample(s) sent to storage: 3/16/2021 9:29:17 AMWater - VOA vials have zero headspace? Yes  No  No VOA vials submitted Water - pH acceptable upon receipt? Yes  No  N/A 

pH adjusted?

pH adjusted by:

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:


CorrectiveAction:


# **Appendix 4**

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08-Jun-2021

Penni Mahler  
Fishbeck, Inc.  
1515 Arboretum Dr SE  
Grand Rapids, MI 49546

Re: **Cedar Springs (201460)**

Work Order: **21060077**

Dear Penni,

ALS Environmental received 14 samples on 28-May-2021 03:30 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 29.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA  
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

*Ehrland Bosworth*

Electronically approved by: Ehrland Bosworth

Ehrland Bosworth  
Project Manager

### Report of Laboratory Analysis

Certificate No: MN 026-999-449

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs (201460)  
**Work Order:** 21060077

**Work Order Sample Summary**

<b>Lab Samp ID</b>	<b>Client Sample ID</b>	<b>Matrix</b>	<b>Tag Number</b>	<b>Collection Date</b>	<b>Date Received</b>	<b>Hold</b>
21060077-01	CS-21-05-DW-13360 White Creek Avenue (I)	Water		5/26/2021 09:40	5/28/2021 15:30	<input type="checkbox"/>
21060077-02	CS-21-05-DW-13261 White Creek Avenue (I)	Water		5/26/2021 12:05	5/28/2021 15:30	<input type="checkbox"/>
21060077-03	CS-21-05-DW-13353 White Creek Avenue (I)	Water		5/26/2021 11:46	5/28/2021 15:30	<input type="checkbox"/>
21060077-04	CS-21-05-DW-13399 White Creek Avenue (I)	Water		5/26/2021 11:05	5/28/2021 15:30	<input type="checkbox"/>
21060077-05	CS-21-05-DW-13485 White Creek Avenue (I)	Water		5/26/2021 10:45	5/28/2021 15:30	<input type="checkbox"/>
21060077-06	CS-21-05-DW-13525 White Creek Avenue (I)	Water		5/26/2021 10:27	5/28/2021 15:30	<input type="checkbox"/>
21060077-07	CS-21-05-DW-13590 White Creek Avenue (I)	Water		5/26/2021 10:06	5/28/2021 15:30	<input type="checkbox"/>
21060077-08	CS-21-05-DW-4095 16 Mile Rd (I)	Water		5/26/2021 13:40	5/28/2021 15:30	<input type="checkbox"/>
21060077-09	CS-21-05-DW-4107 16 Mile Rd (I)	Water		5/26/2021 13:06	5/28/2021 15:30	<input type="checkbox"/>
21060077-10	CS-21-05-DW-4141 16 Mile Rd (I)	Water		5/26/2021 12:48	5/28/2021 15:30	<input type="checkbox"/>
21060077-11	CS-21-05-DW-4142 16 Mile Rd (I)	Water		5/26/2021 12:32	5/28/2021 15:30	<input type="checkbox"/>
21060077-12	CS-21-05-DW-13360 White Creek Avenue (D)	Water		5/26/2021 09:40	5/28/2021 15:30	<input type="checkbox"/>
21060077-13	CS-21-05-QCFB-01	Water		5/26/2021 14:05	5/28/2021 15:30	<input type="checkbox"/>
21060077-14	CS-21-05-DW-4095 16 Mile Rd (D)	Water		5/26/2021 13:40	5/28/2021 15:30	<input type="checkbox"/>

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs (201460)  
**WorkOrder:** 21060077

**QUALIFIERS,  
ACRONYMS, UNITS**

<b><u>Qualifier</u></b>	<b><u>Description</u></b>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

<b><u>Acronym</u></b>	<b><u>Description</u></b>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<b><u>Units Reported</u></b>	<b><u>Description</u></b>
ng/L	Nanograms per Liter

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs (201460)  
**Work Order:** 21060077

**Case Narrative**

---

Samples for the above noted Work Order were received on 05/28/2021. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

**Extractable Organics:**

No deviations or anomalies were noted.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs (201460)  
**Sample ID:** CS-21-05-DW-13360 White Creek Avenue (I)  
**Collection Date:** 5/26/2021 09:40 AM

**Work Order:** 21060077  
**Lab ID:** 21060077-01  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537.1</b>			Method: E537.1		Prep: E537.1 / 6/2/21		Analyst: SK
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		0.6	2	ng/L	1	6/3/2021 17:03
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.3	2	ng/L	1	6/3/2021 17:03
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.4	2	ng/L	1	6/3/2021 17:03
Perfluorobutanesulfonic Acid (PFBS)	U		0.3	2	ng/L	1	6/3/2021 17:03
Perfluorodecanoic Acid (PFDA)	U		0.6	2	ng/L	1	6/3/2021 17:03
Perfluorododecanoic Acid (PFDoA)	U		0.3	2	ng/L	1	6/3/2021 17:03
Perfluoroheptanoic Acid (PFHpA)	U		0.5	2	ng/L	1	6/3/2021 17:03
Perfluorohexanesulfonic Acid (PFHxS)	U		0.3	2	ng/L	1	6/3/2021 17:03
Perfluorohexanoic Acid (PFHxA)	U		0.6	2	ng/L	1	6/3/2021 17:03
Perfluorononanoic Acid (PFNA)	U		0.5	2	ng/L	1	6/3/2021 17:03
Perfluorooctanesulfonic Acid (PFOS)	U		0.2	2	ng/L	1	6/3/2021 17:03
Perfluorooctanoic Acid (PFOA)	U		0.5	2	ng/L	1	6/3/2021 17:03
Perfluorotetradecanoic Acid (PFTeA)	U		0.4	2	ng/L	1	6/3/2021 17:03
Perfluorotridecanoic Acid (PFTriA)	U		0.3	2	ng/L	1	6/3/2021 17:03
Perfluoroundecanoic Acid (PFUnA)	U		0.4	2	ng/L	1	6/3/2021 17:03
11Cl-Pf3OuDS	U		0.3	2	ng/L	1	6/3/2021 17:03
9Cl-PF3ONS	U		0.1	2	ng/L	1	6/3/2021 17:03
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.3	2	ng/L	1	6/3/2021 17:03
Surr: 13C2-PFHxA	102			70-130	%REC	1	6/3/2021 17:03
Surr: 13C2-PFDA	100			70-130	%REC	1	6/3/2021 17:03
Surr: d5-N-EtFOSAA	88.7			70-130	%REC	1	6/3/2021 17:03
Surr: 13C3-HFPO-DA	96.6			70-130	%REC	1	6/3/2021 17:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs (201460)  
**Sample ID:** CS-21-05-DW-13261 White Creek Avenue (I)  
**Collection Date:** 5/26/2021 12:05 PM

**Work Order:** 21060077  
**Lab ID:** 21060077-02  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537.1</b>			Method: E537.1		Prep: E537.1 / 6/2/21		Analyst: SK
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		0.5	2	ng/L	1	6/3/2021 19:08
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.2	2	ng/L	1	6/3/2021 19:08
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.4	2	ng/L	1	6/3/2021 19:08
Perfluorobutanesulfonic Acid (PFBS)	U		0.3	2	ng/L	1	6/3/2021 19:08
Perfluorodecanoic Acid (PFDA)	U		0.6	2	ng/L	1	6/3/2021 19:08
Perfluorododecanoic Acid (PFDoA)	U		0.3	2	ng/L	1	6/3/2021 19:08
Perfluoroheptanoic Acid (PFHpA)	U		0.5	2	ng/L	1	6/3/2021 19:08
Perfluorohexanesulfonic Acid (PFHxS)	U		0.3	2	ng/L	1	6/3/2021 19:08
Perfluorohexanoic Acid (PFHxA)	U		0.6	2	ng/L	1	6/3/2021 19:08
Perfluorononanoic Acid (PFNA)	U		0.5	2	ng/L	1	6/3/2021 19:08
Perfluorooctanesulfonic Acid (PFOS)	U		0.2	2	ng/L	1	6/3/2021 19:08
Perfluorooctanoic Acid (PFOA)	U		0.4	2	ng/L	1	6/3/2021 19:08
Perfluorotetradecanoic Acid (PFTeA)	U		0.4	2	ng/L	1	6/3/2021 19:08
Perfluorotridecanoic Acid (PFTriA)	U		0.3	2	ng/L	1	6/3/2021 19:08
Perfluoroundecanoic Acid (PFUnA)	U		0.4	2	ng/L	1	6/3/2021 19:08
11CI-Pf3OuDS	U		0.3	2	ng/L	1	6/3/2021 19:08
9CI-PF3ONS	U		0.1	2	ng/L	1	6/3/2021 19:08
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.3	2	ng/L	1	6/3/2021 19:08
Surr: 13C2-PFHxA	100			70-130	%REC	1	6/3/2021 19:08
Surr: 13C2-PFDA	96.9			70-130	%REC	1	6/3/2021 19:08
Surr: d5-N-EtFOSAA	74.6			70-130	%REC	1	6/3/2021 19:08
Surr: 13C3-HFPO-DA	92.1			70-130	%REC	1	6/3/2021 19:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs (201460)  
**Sample ID:** CS-21-05-DW-13353 White Creek Avenue (I)  
**Collection Date:** 5/26/2021 11:46 AM

**Work Order:** 21060077  
**Lab ID:** 21060077-03  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537.1</b>			Method: E537.1		Prep: E537.1 / 6/2/21		Analyst: SK
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		0.6	2	ng/L	1	6/3/2021 19:29
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.3	2	ng/L	1	6/4/2021 11:57
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.4	2	ng/L	1	6/4/2021 11:57
Perfluorobutanesulfonic Acid (PFBS)	U		0.3	2	ng/L	1	6/3/2021 19:29
Perfluorodecanoic Acid (PFDA)	U		0.6	2	ng/L	1	6/3/2021 19:29
Perfluorododecanoic Acid (PFDoA)	U		0.3	2	ng/L	1	6/3/2021 19:29
Perfluoroheptanoic Acid (PFHpA)	U		0.5	2	ng/L	1	6/3/2021 19:29
Perfluorohexanesulfonic Acid (PFHxS)	U		0.3	2	ng/L	1	6/3/2021 19:29
Perfluorohexanoic Acid (PFHxA)	U		0.6	2	ng/L	1	6/3/2021 19:29
Perfluorononanoic Acid (PFNA)	U		0.5	2	ng/L	1	6/3/2021 19:29
Perfluorooctanesulfonic Acid (PFOS)	U		0.2	2	ng/L	1	6/3/2021 19:29
Perfluorooctanoic Acid (PFOA)	U		0.5	2	ng/L	1	6/3/2021 19:29
Perfluorotetradecanoic Acid (PFTeA)	U		0.4	2	ng/L	1	6/3/2021 19:29
Perfluorotridecanoic Acid (PFTriA)	U		0.3	2	ng/L	1	6/3/2021 19:29
Perfluoroundecanoic Acid (PFUnA)	U		0.4	2	ng/L	1	6/3/2021 19:29
11Cl-Pf3OuDS	U		0.3	2	ng/L	1	6/3/2021 19:29
9Cl-PF3ONS	U		0.1	2	ng/L	1	6/3/2021 19:29
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.3	2	ng/L	1	6/3/2021 19:29
Surr: 13C2-PFHxA	115			70-130	%REC	1	6/3/2021 19:29
Surr: 13C2-PFDA	111			70-130	%REC	1	6/3/2021 19:29
Surr: d5-N-EtFOSAA	83.0			70-130	%REC	1	6/4/2021 11:57
Surr: 13C3-HFPO-DA	108			70-130	%REC	1	6/3/2021 19:29

Note: See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs (201460)  
**Sample ID:** CS-21-05-DW-13399 White Creek Avenue (I)  
**Collection Date:** 5/26/2021 11:05 AM

**Work Order:** 21060077  
**Lab ID:** 21060077-04  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537.1</b>			Method: E537.1		Prep: E537.1 / 6/2/21		Analyst: SK
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		0.6	2	ng/L	1	6/3/2021 19:40
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.3	2	ng/L	1	6/3/2021 19:40
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.4	2	ng/L	1	6/3/2021 19:40
Perfluorobutanesulfonic Acid (PFBS)	U		0.3	2	ng/L	1	6/3/2021 19:40
Perfluorodecanoic Acid (PFDA)	U		0.6	2	ng/L	1	6/3/2021 19:40
Perfluorododecanoic Acid (PFDoA)	U		0.3	2	ng/L	1	6/3/2021 19:40
Perfluoroheptanoic Acid (PFHpA)	U		0.5	2	ng/L	1	6/3/2021 19:40
Perfluorohexanesulfonic Acid (PFHxS)	U		0.3	2	ng/L	1	6/3/2021 19:40
Perfluorohexanoic Acid (PFHxA)	U		0.6	2	ng/L	1	6/3/2021 19:40
Perfluorononanoic Acid (PFNA)	U		0.5	2	ng/L	1	6/3/2021 19:40
Perfluorooctanesulfonic Acid (PFOS)	U		0.2	2	ng/L	1	6/3/2021 19:40
Perfluorooctanoic Acid (PFOA)	U		0.5	2	ng/L	1	6/3/2021 19:40
Perfluorotetradecanoic Acid (PFTeA)	U		0.4	2	ng/L	1	6/3/2021 19:40
Perfluorotridecanoic Acid (PFTriA)	U		0.3	2	ng/L	1	6/3/2021 19:40
Perfluoroundecanoic Acid (PFUnA)	U		0.4	2	ng/L	1	6/3/2021 19:40
11Cl-Pf3OuDS	U		0.3	2	ng/L	1	6/3/2021 19:40
9Cl-PF3ONS	U		0.1	2	ng/L	1	6/3/2021 19:40
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.3	2	ng/L	1	6/3/2021 19:40
Surr: 13C2-PFHxA	104			70-130	%REC	1	6/3/2021 19:40
Surr: 13C2-PFDA	98.4			70-130	%REC	1	6/3/2021 19:40
Surr: d5-N-EtFOSAA	77.0			70-130	%REC	1	6/3/2021 19:40
Surr: 13C3-HFPO-DA	98.4			70-130	%REC	1	6/3/2021 19:40

Note: See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs (201460)  
**Sample ID:** CS-21-05-DW-13485 White Creek Avenue (I)  
**Collection Date:** 5/26/2021 10:45 AM

**Work Order:** 21060077  
**Lab ID:** 21060077-05  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537.1</b>			Method: E537.1		Prep: E537.1 / 6/2/21		Analyst: SK
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		0.6	2	ng/L	1	6/3/2021 19:50
N-Ethylperfluorooctanesulfonamidoacetic Acid	0.41	J	0.3	2	ng/L	1	6/3/2021 19:50
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.4	2	ng/L	1	6/3/2021 19:50
Perfluorobutanesulfonic Acid (PFBS)	1.9	J	0.3	2	ng/L	1	6/3/2021 19:50
Perfluorodecanoic Acid (PFDA)	U		0.6	2	ng/L	1	6/3/2021 19:50
Perfluorododecanoic Acid (PFDoA)	U		0.3	2	ng/L	1	6/3/2021 19:50
Perfluoroheptanoic Acid (PFHpA)	1.4	J	0.5	2	ng/L	1	6/3/2021 19:50
Perfluorohexanesulfonic Acid (PFHxS)	2.8		0.3	2	ng/L	1	6/3/2021 19:50
Perfluorohexanoic Acid (PFHxA)	1.1	J	0.6	2	ng/L	1	6/3/2021 19:50
Perfluorononanoic Acid (PFNA)	U		0.5	2	ng/L	1	6/3/2021 19:50
Perfluorooctanesulfonic Acid (PFOS)	7.0		0.2	2	ng/L	1	6/3/2021 19:50
Perfluorooctanoic Acid (PFOA)	9.9		0.5	2	ng/L	1	6/3/2021 19:50
Perfluorotetradecanoic Acid (PFTeA)	U		0.4	2	ng/L	1	6/3/2021 19:50
Perfluorotridecanoic Acid (PFTriA)	U		0.3	2	ng/L	1	6/3/2021 19:50
Perfluoroundecanoic Acid (PFUnA)	U		0.4	2	ng/L	1	6/3/2021 19:50
11Cl-Pf3OuDS	U		0.3	2	ng/L	1	6/3/2021 19:50
9Cl-PF3ONS	U		0.1	2	ng/L	1	6/3/2021 19:50
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.3	2	ng/L	1	6/3/2021 19:50
Surr: 13C2-PFHxA	107			70-130	%REC	1	6/3/2021 19:50
Surr: 13C2-PFDA	103			70-130	%REC	1	6/3/2021 19:50
Surr: d5-N-EtFOSAA	73.3			70-130	%REC	1	6/3/2021 19:50
Surr: 13C3-HFPO-DA	98.9			70-130	%REC	1	6/3/2021 19:50

Note: See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs (201460)  
**Sample ID:** CS-21-05-DW-13525 White Creek Avenue (I)  
**Collection Date:** 5/26/2021 10:27 AM

**Work Order:** 21060077  
**Lab ID:** 21060077-06  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537.1</b>							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		0.5	2	ng/L	1	6/3/2021 20:01
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.2	2	ng/L	1	6/4/2021 12:07
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.4	2	ng/L	1	6/4/2021 12:07
Perfluorobutanesulfonic Acid (PFBS)	U		0.3	2	ng/L	1	6/3/2021 20:01
Perfluorodecanoic Acid (PFDA)	U		0.6	2	ng/L	1	6/3/2021 20:01
Perfluorododecanoic Acid (PFDoA)	U		0.3	2	ng/L	1	6/3/2021 20:01
Perfluoroheptanoic Acid (PFHpA)	U		0.5	2	ng/L	1	6/3/2021 20:01
Perfluorohexanesulfonic Acid (PFHxS)	U		0.3	2	ng/L	1	6/3/2021 20:01
Perfluorohexanoic Acid (PFHxA)	U		0.6	2	ng/L	1	6/3/2021 20:01
Perfluorononanoic Acid (PFNA)	U		0.5	2	ng/L	1	6/3/2021 20:01
Perfluorooctanesulfonic Acid (PFOS)	U		0.2	2	ng/L	1	6/3/2021 20:01
Perfluorooctanoic Acid (PFOA)	U		0.4	2	ng/L	1	6/3/2021 20:01
Perfluorotetradecanoic Acid (PFTeA)	U		0.4	2	ng/L	1	6/3/2021 20:01
Perfluorotridecanoic Acid (PFTriA)	U		0.3	2	ng/L	1	6/3/2021 20:01
Perfluoroundecanoic Acid (PFUnA)	U		0.4	2	ng/L	1	6/3/2021 20:01
11CI-Pf3OuDS	U		0.3	2	ng/L	1	6/3/2021 20:01
9CI-PF3ONS	U		0.1	2	ng/L	1	6/3/2021 20:01
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.3	2	ng/L	1	6/3/2021 20:01
Surr: 13C2-PFHxA	108			70-130	%REC	1	6/3/2021 20:01
Surr: 13C2-PFDA	98.0			70-130	%REC	1	6/3/2021 20:01
Surr: d5-N-EtFOSAA	71.5			70-130	%REC	1	6/4/2021 12:07
Surr: 13C3-HFPO-DA	103			70-130	%REC	1	6/3/2021 20:01

Note: See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs (201460)  
**Sample ID:** CS-21-05-DW-13590 White Creek Avenue (I)  
**Collection Date:** 5/26/2021 10:06 AM

**Work Order:** 21060077  
**Lab ID:** 21060077-07  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537.1</b>			Method: E537.1		Prep: E537.1 / 6/2/21		Analyst: SK
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		0.6	2	ng/L	1	6/3/2021 20:21
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.3	2	ng/L	1	6/3/2021 20:21
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.4	2	ng/L	1	6/3/2021 20:21
Perfluorobutanesulfonic Acid (PFBS)	U		0.3	2	ng/L	1	6/3/2021 20:21
Perfluorodecanoic Acid (PFDA)	U		0.6	2	ng/L	1	6/3/2021 20:21
Perfluorododecanoic Acid (PFDoA)	U		0.3	2	ng/L	1	6/3/2021 20:21
Perfluoroheptanoic Acid (PFHpA)	U		0.5	2	ng/L	1	6/3/2021 20:21
Perfluorohexanesulfonic Acid (PFHxS)	U		0.3	2	ng/L	1	6/3/2021 20:21
Perfluorohexanoic Acid (PFHxA)	U		0.6	2	ng/L	1	6/3/2021 20:21
Perfluorononanoic Acid (PFNA)	U		0.5	2	ng/L	1	6/3/2021 20:21
Perfluorooctanesulfonic Acid (PFOS)	U		0.2	2	ng/L	1	6/3/2021 20:21
Perfluorooctanoic Acid (PFOA)	U		0.4	2	ng/L	1	6/3/2021 20:21
Perfluorotetradecanoic Acid (PFTeA)	U		0.4	2	ng/L	1	6/3/2021 20:21
Perfluorotridecanoic Acid (PFTriA)	U		0.3	2	ng/L	1	6/3/2021 20:21
Perfluoroundecanoic Acid (PFUnA)	U		0.4	2	ng/L	1	6/3/2021 20:21
11Cl-Pf3OuDS	U		0.3	2	ng/L	1	6/3/2021 20:21
9Cl-PF3ONS	U		0.1	2	ng/L	1	6/3/2021 20:21
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.3	2	ng/L	1	6/3/2021 20:21
Surr: 13C2-PFHxA	107			70-130	%REC	1	6/3/2021 20:21
Surr: 13C2-PFDA	101			70-130	%REC	1	6/3/2021 20:21
Surr: d5-N-EtFOSAA	73.0			70-130	%REC	1	6/3/2021 20:21
Surr: 13C3-HFPO-DA	101			70-130	%REC	1	6/3/2021 20:21

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fishbeck, Inc.

Project: Cedar Springs (201460)

Sample ID: CS-21-05-DW-4095 16 Mile Rd (I)

Collection Date: 5/26/2021 01:40 PM

Work Order: 21060077

Lab ID: 21060077-08

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537.1</b>			Method: E537.1		Prep: E537.1 / 6/3/21		Analyst: SK
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		0.6	2	ng/L	1	6/4/2021 15:53
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.3	2	ng/L	1	6/4/2021 15:53
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.4	2	ng/L	1	6/4/2021 15:53
Perfluorobutanesulfonic Acid (PFBS)	U		0.3	2	ng/L	1	6/4/2021 15:53
Perfluorodecanoic Acid (PFDA)	U		0.6	2	ng/L	1	6/4/2021 15:53
Perfluorododecanoic Acid (PFDoA)	U		0.3	2	ng/L	1	6/4/2021 15:53
Perfluoroheptanoic Acid (PFHpA)	U		0.5	2	ng/L	1	6/4/2021 15:53
Perfluorohexanesulfonic Acid (PFHxS)	U		0.3	2	ng/L	1	6/4/2021 15:53
Perfluorohexanoic Acid (PFHxA)	U		0.6	2	ng/L	1	6/4/2021 15:53
<b>Perfluorononanoic Acid (PFNA)</b>	<b>0.88</b>	J	<b>0.5</b>	<b>2</b>	<b>ng/L</b>	<b>1</b>	<b>6/4/2021 15:53</b>
Perfluorooctanesulfonic Acid (PFOS)	U		0.2	2	ng/L	1	6/4/2021 15:53
Perfluorooctanoic Acid (PFOA)	U		0.4	2	ng/L	1	6/4/2021 15:53
Perfluorotetradecanoic Acid (PFTeA)	U		0.4	2	ng/L	1	6/4/2021 15:53
Perfluorotridecanoic Acid (PFTriA)	U		0.3	2	ng/L	1	6/4/2021 15:53
Perfluoroundecanoic Acid (PFUnA)	U		0.4	2	ng/L	1	6/4/2021 15:53
11CI-Pf3OuDS	U		0.3	2	ng/L	1	6/4/2021 15:53
9CI-PF3ONS	U		0.1	2	ng/L	1	6/4/2021 15:53
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.3	2	ng/L	1	6/4/2021 15:53
Surr: 13C2-PFHxA	114			70-130	%REC	1	6/4/2021 15:53
Surr: 13C2-PFDA	103			70-130	%REC	1	6/4/2021 15:53
Surr: d5-N-EtFOSAA	87.3			70-130	%REC	1	6/4/2021 15:53
Surr: 13C3-HFPO-DA	109			70-130	%REC	1	6/4/2021 15:53

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fishbeck, Inc.

Project: Cedar Springs (201460)

Sample ID: CS-21-05-DW-4107 16 Mile Rd (I)

Collection Date: 5/26/2021 01:06 PM

Work Order: 21060077

Lab ID: 21060077-09

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537.1</b>			Method: E537.1		Prep: E537.1 / 6/3/21		Analyst: SK
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		0.6	2	ng/L	1	6/4/2021 16:45
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.3	2	ng/L	1	6/4/2021 16:45
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.4	2	ng/L	1	6/4/2021 16:45
Perfluorobutanesulfonic Acid (PFBS)	U		0.3	2	ng/L	1	6/4/2021 16:45
Perfluorodecanoic Acid (PFDA)	U		0.6	2	ng/L	1	6/4/2021 16:45
Perfluorododecanoic Acid (PFDoA)	U		0.3	2	ng/L	1	6/4/2021 16:45
Perfluoroheptanoic Acid (PFHpA)	U		0.5	2	ng/L	1	6/4/2021 16:45
Perfluorohexanesulfonic Acid (PFHxS)	U		0.3	2	ng/L	1	6/4/2021 16:45
Perfluorohexanoic Acid (PFHxA)	U		0.6	2	ng/L	1	6/4/2021 16:45
<b>Perfluorononanoic Acid (PFNA)</b>	<b>1.6</b>	J	<b>0.5</b>	<b>2</b>	<b>ng/L</b>	<b>1</b>	<b>6/4/2021 16:45</b>
Perfluorooctanesulfonic Acid (PFOS)	U		0.2	2	ng/L	1	6/4/2021 16:45
Perfluorooctanoic Acid (PFOA)	U		0.4	2	ng/L	1	6/4/2021 16:45
Perfluorotetradecanoic Acid (PFTeA)	U		0.4	2	ng/L	1	6/4/2021 16:45
Perfluorotridecanoic Acid (PFTriA)	U		0.3	2	ng/L	1	6/4/2021 16:45
Perfluoroundecanoic Acid (PFUnA)	U		0.4	2	ng/L	1	6/4/2021 16:45
11CI-Pf3OuDS	U		0.3	2	ng/L	1	6/4/2021 16:45
9CI-PF3ONS	U		0.1	2	ng/L	1	6/4/2021 16:45
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.3	2	ng/L	1	6/4/2021 16:45
Surr: 13C2-PFHxA	114			70-130	%REC	1	6/4/2021 16:45
Surr: 13C2-PFDA	104			70-130	%REC	1	6/4/2021 16:45
Surr: d5-N-EtFOSAA	85.5			70-130	%REC	1	6/4/2021 16:45
Surr: 13C3-HFPO-DA	109			70-130	%REC	1	6/4/2021 16:45

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fishbeck, Inc.

Project: Cedar Springs (201460)

Sample ID: CS-21-05-DW-4141 16 Mile Rd (I)

Collection Date: 5/26/2021 12:48 PM

Work Order: 21060077

Lab ID: 21060077-10

Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537.1</b>			Method: E537.1		Prep: E537.1 / 6/3/21		Analyst: SK
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		0.6	2	ng/L	1	6/4/2021 17:16
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.3	2	ng/L	1	6/4/2021 17:16
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.4	2	ng/L	1	6/4/2021 17:16
Perfluorobutanesulfonic Acid (PFBS)	U		0.3	2	ng/L	1	6/4/2021 17:16
Perfluorodecanoic Acid (PFDA)	U		0.6	2	ng/L	1	6/4/2021 17:16
Perfluorododecanoic Acid (PFDoA)	U		0.3	2	ng/L	1	6/4/2021 17:16
Perfluoroheptanoic Acid (PFHpA)	U		0.5	2	ng/L	1	6/4/2021 17:16
Perfluorohexanesulfonic Acid (PFHxS)	U		0.3	2	ng/L	1	6/4/2021 17:16
Perfluorohexanoic Acid (PFHxA)	U		0.6	2	ng/L	1	6/4/2021 17:16
<b>Perfluorononanoic Acid (PFNA)</b>	<b>0.58</b>	J	<b>0.5</b>	<b>2</b>	<b>ng/L</b>	<b>1</b>	<b>6/4/2021 17:16</b>
Perfluorooctanesulfonic Acid (PFOS)	U		0.2	2	ng/L	1	6/4/2021 17:16
<b>Perfluorooctanoic Acid (PFOA)</b>	<b>0.65</b>	J	<b>0.4</b>	<b>2</b>	<b>ng/L</b>	<b>1</b>	<b>6/4/2021 17:16</b>
Perfluorotetradecanoic Acid (PFTeA)	U		0.4	2	ng/L	1	6/4/2021 17:16
Perfluorotridecanoic Acid (PFTriA)	U		0.3	2	ng/L	1	6/4/2021 17:16
Perfluoroundecanoic Acid (PFUnA)	U		0.4	2	ng/L	1	6/4/2021 17:16
11CI-Pf3OuDS	U		0.3	2	ng/L	1	6/4/2021 17:16
9CI-PF3ONS	U		0.1	2	ng/L	1	6/4/2021 17:16
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.3	2	ng/L	1	6/4/2021 17:16
Surr: 13C2-PFHxA	111			70-130	%REC	1	6/4/2021 17:16
Surr: 13C2-PFDA	97.6			70-130	%REC	1	6/4/2021 17:16
Surr: d5-N-EtFOSAA	83.8			70-130	%REC	1	6/4/2021 17:16
Surr: 13C3-HFPO-DA	102			70-130	%REC	1	6/4/2021 17:16

Note: See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs (201460)  
**Sample ID:** CS-21-05-DW-4142 16 Mile Rd (I)  
**Collection Date:** 5/26/2021 12:32 PM

**Work Order:** 21060077  
**Lab ID:** 21060077-11  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537.1</b>			Method: E537.1		Prep: E537.1 / 6/3/21		Analyst: SK
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		0.6	2	ng/L	1	6/4/2021 17:27
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.3	2	ng/L	1	6/4/2021 17:27
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.4	2	ng/L	1	6/4/2021 17:27
<b>Perfluorobutanesulfonic Acid (PFBS)</b>	0.85	J	0.3	2	ng/L	1	6/4/2021 17:27
Perfluorodecanoic Acid (PFDA)	U		0.6	2	ng/L	1	6/4/2021 17:27
Perfluorododecanoic Acid (PFDoA)	U		0.3	2	ng/L	1	6/4/2021 17:27
Perfluoroheptanoic Acid (PFHpA)	U		0.5	2	ng/L	1	6/4/2021 17:27
<b>Perfluorohexanesulfonic Acid (PFHxS)</b>	0.49	J	0.3	2	ng/L	1	6/4/2021 17:27
Perfluorohexanoic Acid (PFHxA)	U		0.6	2	ng/L	1	6/4/2021 17:27
Perfluorononanoic Acid (PFNA)	U		0.5	2	ng/L	1	6/4/2021 17:27
<b>Perfluorooctanesulfonic Acid (PFOS)</b>	1.4	J	0.2	2	ng/L	1	6/4/2021 17:27
<b>Perfluorooctanoic Acid (PFOA)</b>	0.75	J	0.4	2	ng/L	1	6/4/2021 17:27
Perfluorotetradecanoic Acid (PFTeA)	U		0.4	2	ng/L	1	6/4/2021 17:27
Perfluorotridecanoic Acid (PFTriA)	U		0.3	2	ng/L	1	6/4/2021 17:27
Perfluoroundecanoic Acid (PFUnA)	U		0.4	2	ng/L	1	6/4/2021 17:27
11CI-Pf3OUdS	U		0.3	2	ng/L	1	6/4/2021 17:27
9CI-PF3ONS	U		0.1	2	ng/L	1	6/4/2021 17:27
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.3	2	ng/L	1	6/4/2021 17:27
Surr: 13C2-PFHxA	109			70-130	%REC	1	6/4/2021 17:27
Surr: 13C2-PFDA	98.7			70-130	%REC	1	6/4/2021 17:27
Surr: d5-N-EtFOSAA	76.8			70-130	%REC	1	6/4/2021 17:27
Surr: 13C3-HFPO-DA	107			70-130	%REC	1	6/4/2021 17:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs (201460)  
**Sample ID:** CS-21-05-DW-13360 White Creek Avenue (D)  
**Collection Date:** 5/26/2021 09:40 AM

**Work Order:** 21060077  
**Lab ID:** 21060077-12  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537.1</b>			Method: E537.1		Prep: E537.1 / 6/3/21		Analyst: SK
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		0.6	2	ng/L	1	6/4/2021 17:37
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.3	2	ng/L	1	6/4/2021 17:37
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.4	2	ng/L	1	6/4/2021 17:37
Perfluorobutanesulfonic Acid (PFBS)	U		0.3	2	ng/L	1	6/4/2021 17:37
Perfluorodecanoic Acid (PFDA)	U		0.6	2	ng/L	1	6/4/2021 17:37
Perfluorododecanoic Acid (PFDoA)	U		0.3	2	ng/L	1	6/4/2021 17:37
Perfluoroheptanoic Acid (PFHpA)	U		0.5	2	ng/L	1	6/4/2021 17:37
Perfluorohexanesulfonic Acid (PFHxS)	U		0.3	2	ng/L	1	6/4/2021 17:37
Perfluorohexanoic Acid (PFHxA)	U		0.6	2	ng/L	1	6/4/2021 17:37
<b>Perfluorononanoic Acid (PFNA)</b>	<b>0.55</b>	J	<b>0.5</b>	<b>2</b>	<b>ng/L</b>	<b>1</b>	<b>6/4/2021 17:37</b>
Perfluorooctanesulfonic Acid (PFOS)	U		0.2	2	ng/L	1	6/4/2021 17:37
Perfluorooctanoic Acid (PFOA)	U		0.5	2	ng/L	1	6/4/2021 17:37
Perfluorotetradecanoic Acid (PFTeA)	U		0.4	2	ng/L	1	6/4/2021 17:37
Perfluorotridecanoic Acid (PFTriA)	U		0.3	2	ng/L	1	6/4/2021 17:37
Perfluoroundecanoic Acid (PFUnA)	U		0.4	2	ng/L	1	6/4/2021 17:37
11CI-Pf3OuDS	U		0.3	2	ng/L	1	6/4/2021 17:37
9CI-PF3ONS	U		0.1	2	ng/L	1	6/4/2021 17:37
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.3	2	ng/L	1	6/4/2021 17:37
Surr: 13C2-PFHxA	113			70-130	%REC	1	6/4/2021 17:37
Surr: 13C2-PFDA	112			70-130	%REC	1	6/4/2021 17:37
Surr: d5-N-EtFOSAA	99.6			70-130	%REC	1	6/4/2021 17:37
Surr: 13C3-HFPO-DA	109			70-130	%REC	1	6/4/2021 17:37

Note: See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs (201460)  
**Sample ID:** CS-21-05-QCFB-01  
**Collection Date:** 5/26/2021 02:05 PM

**Work Order:** 21060077  
**Lab ID:** 21060077-13  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537.1</b>			Method: E537.1		Prep: E537.1 / 6/3/21		Analyst: SK
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		0.6	2	ng/L	1	6/7/2021 11:10
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.3	2	ng/L	1	6/7/2021 11:10
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.4	2	ng/L	1	6/7/2021 11:10
Perfluorobutanesulfonic Acid (PFBS)	U		0.3	2	ng/L	1	6/7/2021 11:10
Perfluorodecanoic Acid (PFDA)	U		0.6	2	ng/L	1	6/7/2021 11:10
Perfluorododecanoic Acid (PFDoA)	U		0.3	2	ng/L	1	6/7/2021 11:10
Perfluoroheptanoic Acid (PFHpA)	U		0.5	2	ng/L	1	6/7/2021 11:10
Perfluorohexanesulfonic Acid (PFHxS)	U		0.3	2	ng/L	1	6/7/2021 11:10
Perfluorohexanoic Acid (PFHxA)	U		0.6	2	ng/L	1	6/7/2021 11:10
<b>Perfluorononanoic Acid (PFNA)</b>	<b>0.69</b>	J	<b>0.5</b>	<b>2</b>	<b>ng/L</b>	<b>1</b>	<b>6/7/2021 11:10</b>
Perfluorooctanesulfonic Acid (PFOS)	U		0.2	2	ng/L	1	6/7/2021 11:10
Perfluorooctanoic Acid (PFOA)	U		0.5	2	ng/L	1	6/7/2021 11:10
Perfluorotetradecanoic Acid (PFTeA)	U		0.4	2	ng/L	1	6/7/2021 11:10
Perfluorotridecanoic Acid (PFTriA)	U		0.3	2	ng/L	1	6/7/2021 11:10
Perfluoroundecanoic Acid (PFUnA)	U		0.4	2	ng/L	1	6/7/2021 11:10
11Cl-Pf3OuDS	U		0.3	2	ng/L	1	6/7/2021 11:10
9Cl-PF3ONS	U		0.1	2	ng/L	1	6/7/2021 11:10
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.3	2	ng/L	1	6/7/2021 11:10
Surr: 13C2-PFHxA	98.1			70-130	%REC	1	6/7/2021 11:10
Surr: 13C2-PFDA	95.7			70-130	%REC	1	6/7/2021 11:10
Surr: d5-N-EtFOSAA	84.4			70-130	%REC	1	6/7/2021 11:10
Surr: 13C3-HFPO-DA	93.5			70-130	%REC	1	6/7/2021 11:10

Note: See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs (201460)  
**Sample ID:** CS-21-05-DW-4095 16 Mile Rd (D)  
**Collection Date:** 5/26/2021 01:40 PM

**Work Order:** 21060077  
**Lab ID:** 21060077-14  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537.1</b>			Method: E537.1		Prep: E537.1 / 6/3/21		Analyst: SK
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		0.6	2	ng/L	1	6/7/2021 11:20
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.3	2	ng/L	1	6/7/2021 11:20
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.4	2	ng/L	1	6/7/2021 11:20
Perfluorobutanesulfonic Acid (PFBS)	U		0.3	2	ng/L	1	6/7/2021 11:20
Perfluorodecanoic Acid (PFDA)	U		0.6	2	ng/L	1	6/7/2021 11:20
Perfluorododecanoic Acid (PFDoA)	U		0.3	2	ng/L	1	6/7/2021 11:20
Perfluoroheptanoic Acid (PFHpA)	U		0.5	2	ng/L	1	6/7/2021 11:20
Perfluorohexanesulfonic Acid (PFHxS)	U		0.3	2	ng/L	1	6/7/2021 11:20
Perfluorohexanoic Acid (PFHxA)	U		0.6	2	ng/L	1	6/7/2021 11:20
<b>Perfluorononanoic Acid (PFNA)</b>	<b>0.65</b>	J	<b>0.5</b>	<b>2</b>	<b>ng/L</b>	<b>1</b>	<b>6/7/2021 11:20</b>
Perfluorooctanesulfonic Acid (PFOS)	U		0.2	2	ng/L	1	6/7/2021 11:20
Perfluorooctanoic Acid (PFOA)	U		0.4	2	ng/L	1	6/7/2021 11:20
Perfluorotetradecanoic Acid (PFTeA)	U		0.4	2	ng/L	1	6/7/2021 11:20
Perfluorotridecanoic Acid (PFTriA)	U		0.3	2	ng/L	1	6/7/2021 11:20
Perfluoroundecanoic Acid (PFUnA)	U		0.4	2	ng/L	1	6/7/2021 11:20
11Cl-Pf3OuDS	U		0.3	2	ng/L	1	6/7/2021 11:20
9Cl-PF3ONS	U		0.1	2	ng/L	1	6/7/2021 11:20
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.3	2	ng/L	1	6/7/2021 11:20
Surr: 13C2-PFHxA	127			70-130	%REC	1	6/7/2021 11:20
Surr: 13C2-PFDA	107			70-130	%REC	1	6/7/2021 11:20
Surr: d5-N-EtFOSAA	80.8			70-130	%REC	1	6/7/2021 11:20
Surr: 13C3-HFPO-DA	124			70-130	%REC	1	6/7/2021 11:20

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fishbeck, Inc.

Work Order: 21060077

Project: Cedar Springs (201460)

**QC BATCH REPORT**

Batch ID: 177808		Instrument ID LCMS1		Method: E537.1							
MBLK		Sample ID: MBLK-177808-177808				Units: ng/L		Analysis Date: 6/3/2021 04:32 PM			
Client ID:		Run ID: LCMS1_210603A				SeqNo: 7455683		Prep Date: 6/2/2021		DF: 1	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hexafluoropropylene oxide din	U <small>I</small>	0.7	2.0								
N-Ethylperfluoroctanesulfona	U	0.3	2.0								
N-Methylperfluoroctanesulfor	Ui	0.5	2.0								
Perfluorobutanesulfonic Acid (	U	0.4	2.0								
Perfluorodecanoic Acid (PFDA	U	0.7	2.0								
Perfluorododecanoic Acid (PFI	U	0.4	2.0								
Perfluoroheptanoic Acid (PFH)	U	0.6	2.0								
Perfluorohexanesulfonic Acid (	U	0.3	2.0								
Perfluorohexanoic Acid (PFHx	U	0.7	2.0								
Perfluorononanoic Acid (PFNA	U	0.6	2.0								
Perfluorooctanesulfonic Acid (I	U	0.2	2.0								
Perfluorooctanoic Acid (PFOA	U	0.5	2.0								
Perfluorotetradecanoic Acid (F	U	0.5	2.0								
Perfluorotridecanoic Acid (PF1	U	0.3	2.0								
Perfluoroundecanoic Acid (PF1	U	0.4	2.0								
11CI-Pf3OUdS	U	0.4	2.0								
9CI-PF3ONS	U	0.2	2.0								
4,8-Dioxa-3H-perfluorononanc	U	0.3	2.0								
Surr: 13C2-PFHxA	43.38	0	0	40	0	108	70-130	0	0		
Surr: 13C2-PFDA	42.25	0	0	40	0	106	70-130	0	0		
Surr: d5-N-EtFOSAA	159.6	0	0	160	0	99.8	70-130	0	0		
Surr: 13C3-HFPO-DA	39.02	0	0	40	0	97.5	70-130	0	0		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Fishbeck, Inc.  
**Work Order:** 21060077  
**Project:** Cedar Springs (201460)

## QC BATCH REPORT

Batch ID: 177808      Instrument ID LCMS1      Method: E537.1

MS2      Sample ID: 21060077-01A MS2				Units: ng/L		Analysis Date: 6/3/2021 04:53 PM					
Client ID: CS-21-05-DW-13360 White Creek Avenue (I)		Run ID: LCMS1_210603A		SeqNo: 7455688		Prep Date: 6/2/2021		DF: 1			
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hexafluoropropylene oxide din	16.25 <sup>I</sup>	0.6	2.0	17.61	0	92.3	70-130	0	0		
N-Ethylperfluoroctanesulfona	16.82	0.3	2.0	17.61	0	95.5	70-130	0	0		
N-Methylperfluoroctanesulfor	15.98 <sup>i</sup>	0.4	2.0	17.61	0.02632	90.6	70-130	0	0		
Perfluorobutanesulfonic Acid (	13.14	0.3	2.0	15.56	0	84.4	70-130	0	0		
Perfluorodecanoic Acid (PFDA	17.07	0.6	2.0	17.61	0	97	70-130	0	0		
Perfluorododecanoic Acid (PF	16.64	0.3	2.0	17.61	0	94.5	70-130	0	0		
Perfluoroheptanoic Acid (PFH <sub>1</sub>	19.92	0.5	2.0	17.61	0	113	70-130	0	0		
Perfluorohexanesulfonic Acid (	16.37	0.3	2.0	16.02	0	102	70-130	0	0		
Perfluorohexanoic Acid (PFHx	17.56	0.6	2.0	17.61	0	99.8	70-130	0	0		
Perfluorononanoic Acid (PFNA	18.44	0.5	2.0	17.61	0.08211	104	70-130	0	0		
Perfluoroctanesulfonic Acid (I	16.78	0.2	2.0	16.34	0.1077	102	70-130	0	0		
Perfluorooctanoic Acid (PFOA	18.03	0.5	2.0	17.61	0	102	70-130	0	0		
Perfluorotetradecanoic Acid (F	14.31	0.4	2.0	17.61	0.01684	81.2	70-130	0	0		
Perfluorotridecanoic Acid (PF1	16.41	0.3	2.0	17.61	0	93.2	70-130	0	0		
Perfluoroundecanoic Acid (PF	17.6	0.4	2.0	17.61	0	100	70-130	0	0		
11CI-Pf3OUdS	14.54	0.3	2.0	16.58	0	87.7	70-130	0	0		
9CI-PF3ONS	15.26	0.1	2.0	16.41	0	93	70-130	0	0		
4,8-Dioxa-3H-perfluorononano	16.55	0.3	2.0	16.58	0	99.8	70-130	0	0		
Surr: 13C2-PFHxA	36.32	0	0	35.21	0	103	70-130	0	0		
Surr: 13C2-PFDA	35.97	0	0	35.21	0	102	70-130	0	0		
Surr: d5-N-EtFOSAA	132.9	0	0	140.8	0	94.4	70-130	0	0		
Surr: 13C3-HFPO-DA	34.01	0	0	35.21	0	96.6	70-130	0	0		

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Fishbeck, Inc.  
**Work Order:** 21060077  
**Project:** Cedar Springs (201460)

## QC BATCH REPORT

Batch ID: 177808      Instrument ID LCMS1      Method: E537.1

DUP	Sample ID: 21060077-02A DUP				Units: ng/L		Analysis Date: 6/3/2021 07:19 PM				
Client ID:	CS-21-05-DW-13261 White Creek Avenue (I)		Run ID:	LCMS1_210603A		SeqNo:	7455702	Prep Date:	6/2/2021	DF:	1
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hexafluoropropylene oxide din	U/I	0.6	2.0	0	0	0		0	0	0	30
N-Ethylperfluoroctanesulfona	U	0.3	2.0	0	0	0		0	0	0	30
N-Methylperfluoroctanesulfonfor	Ui	0.4	2.0	0	0	0		0.02709	0	0	30
Perfluorobutanesulfonic Acid (	U	0.3	2.0	0	0	0		0	0	0	30
Perfluorodecanoic Acid (PFDA	U	0.6	2.0	0	0	0		0	0	0	30
Perfluorododecanoic Acid (PF	U	0.3	2.0	0	0	0		0	0	0	30
Perfluoroheptanoic Acid (PFH)	U	0.5	2.0	0	0	0		0	0	0	30
Perfluorohexanesulfonic Acid (	U	0.3	2.0	0	0	0		0	0	0	30
Perfluorohexanoic Acid (PFHx	U	0.6	2.0	0	0	0		0	0	0	30
Perfluorononanoic Acid (PFNA	U	0.5	2.0	0	0	0		0.01706	0	0	30
Perfluorooctanesulfonic Acid (	U	0.2	2.0	0	0	0		0	0	0	30
Perfluorooctanoic Acid (PFOA	U	0.5	2.0	0	0	0		0	0	0	30
Perfluorotetradecanoic Acid (F	U	0.4	2.0	0	0	0		0	0	0	30
Perfluorotridecanoic Acid (PF	U	0.3	2.0	0	0	0		0	0	0	30
Perfluoroundecanoic Acid (PF	U	0.4	2.0	0	0	0		0	0	0	30
11CI-Pf3OUDs	U	0.3	2.0	0	0	0		0	0	0	30
9CI-PF3ONS	U	0.1	2.0	0	0	0		0	0	0	30
4,8-Dioxa-3H-perfluorononano	U	0.3	2.0	0	0	0		0	0	0	30
Surr: 13C2-PFHxA	34	0	0	35.09	0	96.9	70-130	33.6	1.18	30	
Surr: 13C2-PFDA	33.74	0	0	35.09	0	96.2	70-130	32.4	4.04	30	
Surr: d5-N-EtFOSAA	111.2	0	0	140.4	0	79.2	70-130	99.78	10.8	30	
Surr: 13C3-HFPO-DA	31.9	0	0	35.09	0	90.9	70-130	30.8	3.49	30	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Fishbeck, Inc.  
**Work Order:** 21060077  
**Project:** Cedar Springs (201460)

## QC BATCH REPORT

Batch ID: 177808      Instrument ID LCMS1      Method: E537.1

LCS2		Sample ID: LCS2-177808-177808				Units: ng/L		Analysis Date: 6/3/2021 04:42 PM			
Client ID:		Run ID: LCMS1_210603A			SeqNo: 7455687		Prep Date: 6/2/2021		DF: 1		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hexafluoropropylene oxide din	18.21	0.7	2.0	20	0	91	70-130	0	0		
N-Ethylperfluoroctanesulfona	18.7	0.3	2.0	20	0	93.5	70-130	0	0		
N-Methylperfluoroctanesulfonfor	17.64	0.5	2.0	20	0	88.2	70-130	0	0		
Perfluorobutanesulfonic Acid (	14.76	0.4	2.0	17.68	0	83.5	70-130	0	0		
Perfluorodecanoic Acid (PFDA	18.62	0.7	2.0	20	0	93.1	70-130	0	0		
Perfluorododecanoic Acid (PF	18.4	0.4	2.0	20	0	92	70-130	0	0		
Perfluoroheptanoic Acid (PFH	21.34	0.6	2.0	20	0	107	70-130	0	0		
Perfluorohexanesulfonic Acid (	18.19	0.3	2.0	18.2	0	100	70-130	0	0		
Perfluorohexanoic Acid (PFHx	19.39	0.7	2.0	20	0	96.9	70-130	0	0		
Perfluorononanoic Acid (PFNA	20.16	0.6	2.0	20	0	101	70-130	0	0		
Perfluoroctanesulfonic Acid (	18.4	0.2	2.0	18.56	0	99.1	70-130	0	0		
Perfluorooctanoic Acid (PFOA	19.69	0.5	2.0	20	0	98.4	70-130	0	0		
Perfluorotetradecanoic Acid (F	16.41	0.5	2.0	20	0	82.1	70-130	0	0		
Perfluorotridecanoic Acid (PF	18.82	0.3	2.0	20	0	94.1	70-130	0	0		
Perfluoroundecanoic Acid (PF	18.98	0.4	2.0	20	0	94.9	70-130	0	0		
11CI-Pf3OUDS	16.27	0.4	2.0	18.84	0	86.4	70-130	0	0		
9CI-PF3ONS	16.45	0.2	2.0	18.64	0	88.2	70-130	0	0		
4,8-Dioxa-3H-perfluorononano	18.38	0.3	2.0	18.84	0	97.5	70-130	0	0		
Surr: 13C2-PFHxA	41.78	0	0	40	0	104	70-130	0	0		
Surr: 13C2-PFDA	40.97	0	0	40	0	102	70-130	0	0		
Surr: d5-N-EtFOSAA	146.2	0	0	160	0	91.4	70-130	0	0		
Surr: 13C3-HFPO-DA	39.13	0	0	40	0	97.8	70-130	0	0		

The following samples were analyzed in this batch:

21060077-01A	21060077-02A	21060077-03A
21060077-04A	21060077-05A	21060077-06A
21060077-07A		

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Fishbeck, Inc.  
**Work Order:** 21060077  
**Project:** Cedar Springs (201460)

## QC BATCH REPORT

Batch ID: **177884**      Instrument ID **LCMS1**      Method: **E537.1**

Sample ID: <b>MBLK-177884-177884</b>					Units: <b>ng/L</b>		Analysis Date: <b>6/4/2021 03:22 PM</b>		
Client ID:		Run ID: <b>LCMS1_210604C</b>			SeqNo: <b>7462993</b>		Prep Date: <b>6/3/2021</b>		DF: <b>1</b>
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit Qual
Hexafluoropropylene oxide din	UI	0.7	2.0						
N-Ethylperfluoroctanesulfona	U	0.3	2.0						
N-Methylperfluoroctanesulfonfor	Ui	0.5	2.0						
Perfluorobutanesulfonic Acid (	U	0.4	2.0						
Perfluorodecanoic Acid (PFDA	U	0.7	2.0						
Perfluorododecanoic Acid (PF	U	0.4	2.0						
Perfluoroheptanoic Acid (PFH	U	0.6	2.0						
Perfluorohexanesulfonic Acid (	U	0.3	2.0						
Perfluorohexanoic Acid (PFHx	U	0.7	2.0						
Perfluorononanoic Acid (PFNA	U	0.6	2.0						
Perfluoroctanesulfonic Acid (	U	0.2	2.0						
Perfluorooctanoic Acid (PFOA	U	0.5	2.0						
Perfluorotetradecanoic Acid (F	U	0.5	2.0						
Perfluorotridecanoic Acid (PF1	U	0.3	2.0						
Perfluoroundecanoic Acid (PF	U	0.4	2.0						
11CI-Pf3OUDS	U	0.4	2.0						
9CI-PF3ONS	U	0.2	2.0						
4,8-Dioxa-3H-perfluorononano	U	0.3	2.0						
Surr: 13C2-PFHxA	45.56	0	0	40	0	114	70-130	0	
Surr: 13C2-PFDA	43.6	0	0	40	0	109	70-130	0	
Surr: d5-N-EtFOSAA	160.9	0	0	160	0	101	70-130	0	
Surr: 13C3-HFPO-DA	43.77	0	0	40	0	109	70-130	0	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Fishbeck, Inc.  
**Work Order:** 21060077  
**Project:** Cedar Springs (201460)

## QC BATCH REPORT

Batch ID: 177884      Instrument ID LCMS1      Method: E537.1

MS3      Sample ID: 21060077-08A MS3			Units: ng/L			Analysis Date: 6/4/2021 03:43 PM					
Client ID: CS-21-05-DW-4095 16 Mile Rd (I)      Run ID: LCMS1_210604C			SeqNo: 7462995			Prep Date: 6/3/2021      DF: 1					
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hexafluoropropylene oxide din	86.91	0.6	2.0	86.51	0	100	70-130	0	0		
N-Ethylperfluoroctanesulfona	77.39	0.3	2.0	86.51	0	89.5	70-130	0	0		
N-Methylperfluoroctanesulfonfor	64.92	0.4	2.0	86.51	0.03849	75	70-130	0	0		
Perfluorobutanesulfonic Acid (	71.24	0.3	2.0	76.47	0	93.2	70-130	0	0		
Perfluorodecanoic Acid (PFDA	81.44	0.6	2.0	86.51	0.03643	94.1	70-130	0	0		
Perfluorododecanoic Acid (PF	80.75	0.3	2.0	86.51	0	93.3	70-130	0	0		
Perfluoroheptanoic Acid (PFH)	100.1	0.5	2.0	86.51	0.06873	116	70-130	0	0		
Perfluorohexanesulfonic Acid (	83.15	0.3	2.0	78.72	0	106	70-130	0	0		
Perfluorohexanoic Acid (PFHx	92.42	0.6	2.0	86.51	0.04089	107	70-130	0	0		
Perfluorononanoic Acid (PFNA	93.96	0.5	2.0	86.51	0.8756	108	70-130	0	0		
Perfluoroctanesulfonic Acid (	75.68	0.2	2.0	80.28	0.03505	94.2	70-130	0	0		
Perfluorooctanoic Acid (PFOA	92.99	0.5	2.0	86.51	0	107	70-130	0	0		
Perfluorotetradecanoic Acid (F	74.58	0.4	2.0	86.51	0	86.2	70-130	0	0		
Perfluorotridecanoic Acid (PF1	80.42	0.3	2.0	86.51	0.06186	92.9	70-130	0	0		
Perfluoroundecanoic Acid (PF	79.95	0.4	2.0	86.51	0.1859	92.2	70-130	0	0		
11CI-Pf3OUDS	61.64	0.3	2.0	81.49	0	75.6	70-130	0	0		
9CI-PF3ONS	69.98	0.1	2.0	80.62	0	86.8	70-130	0	0		
4,8-Dioxa-3H-perfluorononano	82.59	0.3	2.0	81.49	0	101	70-130	0	0		
Surr: 13C2-PFHxA	42.03	0	0	34.6	0	121	70-130	0	0		
Surr: 13C2-PFDA	37.04	0	0	34.6	0	107	70-130	0	0		
Surr: d5-N-EtFOSAA	124.2	0	0	138.4	0	89.7	70-130	0	0		
Surr: 13C3-HFPO-DA	40.14	0	0	34.6	0	116	70-130	0	0		

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Fishbeck, Inc.  
**Work Order:** 21060077  
**Project:** Cedar Springs (201460)

## QC BATCH REPORT

Batch ID: 177884      Instrument ID LCMS1      Method: E537.1

DUP	Sample ID: 21060077-09A DUP				Units: ng/L		Analysis Date: 6/4/2021 04:56 PM				
Client ID:	CS-21-05-DW-4107 16 Mile Rd (I)			Run ID:	LCMS1_210604C		SeqNo:	7463001	Prep Date:	6/3/2021	DF:
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hexafluoropropylene din	UI	0.6	2.0	0	0	0		0	0	30	
N-Ethylperfluoroctanesulfona	U	0.3	2.0	0	0	0		0	0	30	
N-Methylperfluoroctanesulfonfor	Ui	0.4	2.0	0	0	0		0	0	30	
Perfluorobutanesulfonic Acid (	U	0.3	2.0	0	0	0		0	0	30	
Perfluorodecanoic Acid (PFDA	U	0.6	2.0	0	0	0		0	0	30	
Perfluorododecanoic Acid (PF	U	0.3	2.0	0	0	0		0	0	30	
Perfluoroheptanoic Acid (PFH	U	0.5	2.0	0	0	0		0.1592	0	30	
Perfluorohexanesulfonic Acid (	U	0.3	2.0	0	0	0		0	0	30	
Perfluorohexanoic Acid (PFHx	U	0.6	2.0	0	0	0		0.2255	0	30	
Perfluorononanoic Acid (PFNA	0.6099	0.5	2.0	0	0	0		1.618	0	30	J
Perfluoroctanesulfonic Acid (	U	0.2	2.0	0	0	0		0.0432	0	30	
Perfluorooctanoic Acid (PFOA	U	0.4	2.0	0	0	0		0.316	0	30	
Perfluorotetradecanoic Acid (F	U	0.4	2.0	0	0	0		0	0	30	
Perfluorotridecanoic Acid (PF	U	0.3	2.0	0	0	0		0.05816	0	30	
Perfluoroundecanoic Acid (PF	U	0.4	2.0	0	0	0		0.2707	0	30	
11CI-Pf3OUDS	U	0.3	2.0	0	0	0		0	0	30	
9CI-PF3ONS	U	0.1	2.0	0	0	0		0	0	30	
4,8-Dioxa-3H-perfluorononano	U	0.3	2.0	0	0	0		0	0	30	
Surr: 13C2-PFHxA	37.73	0	0	34.25	0	110	70-130	38.78	2.74	30	
Surr: 13C2-PFDA	36.56	0	0	34.25	0	107	70-130	35.4	3.21	30	
Surr: d5-N-EtFOSAA	119.7	0	0	137	0	87.4	70-130	116.4	2.87	30	
Surr: 13C3-HFPO-DA	34.96	0	0	34.25	0	102	70-130	37.09	5.91	30	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Fishbeck, Inc.  
**Work Order:** 21060077  
**Project:** Cedar Springs (201460)

## QC BATCH REPORT

Batch ID: 177884      Instrument ID LCMS1      Method: E537.1

LCS3		Sample ID: LCS3-177884-177884				Units: ng/L		Analysis Date: 6/4/2021 03:32 PM			
Client ID:		Run ID: LCMS1_210604C			SeqNo: 7462994		Prep Date: 6/3/2021		DF: 1		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hexafluoropropylene oxide din	108.1	0.7	2.0	100	0	108	70-130	0	0		
N-Ethylperfluoroctanesulfona	105.9	0.3	2.0	100	0	106	70-130	0	0		
N-Methylperfluoroctanesulfonfor	94.23	0.5	2.0	100	0	94.2	70-130	0	0		
Perfluorobutanesulfonic Acid (	88.42	0.4	2.0	88.4	0	100	70-130	0	0		
Perfluorodecanoic Acid (PFDA	104.5	0.7	2.0	100	0	105	70-130	0	0		
Perfluorododecanoic Acid (PF	103.9	0.4	2.0	100	0	104	70-130	0	0		
Perfluoroheptanoic Acid (PFH	119.6	0.6	2.0	100	0	120	70-130	0	0		
Perfluorohexanesulfonic Acid (	100.6	0.3	2.0	91	0	111	70-130	0	0		
Perfluorohexanoic Acid (PFHx	114	0.7	2.0	100	0	114	70-130	0	0		
Perfluorononanoic Acid (PFNA	112.8	0.6	2.0	100	0	113	70-130	0	0		
Perfluoroctanesulfonic Acid (	97.24	0.2	2.0	92.8	0	105	70-130	0	0		
Perfluorooctanoic Acid (PFOA	112	0.5	2.0	100	0	112	70-130	0	0		
Perfluorotetradecanoic Acid (F	95.08	0.5	2.0	100	0	95.1	70-130	0	0		
Perfluorotridecanoic Acid (PF	106.4	0.3	2.0	100	0	106	70-130	0	0		
Perfluoroundecanoic Acid (PF	107.4	0.4	2.0	100	0	107	70-130	0	0		
11CI-Pf3OUDS	89.25	0.4	2.0	94.2	0	94.8	70-130	0	0		
9CI-PF3ONS	93.37	0.2	2.0	93.2	0	100	70-130	0	0		
4,8-Dioxa-3H-perfluorononano	103.4	0.3	2.0	94.2	0	110	70-130	0	0		
Surr: 13C2-PFHxA	44.19	0	0	40	0	110	70-130	0	0		
Surr: 13C2-PFDA	42.74	0	0	40	0	107	70-130	0	0		
Surr: d5-N-EtFOSAA	156.2	0	0	160	0	97.6	70-130	0	0		
Surr: 13C3-HFPO-DA	42.9	0	0	40	0	107	70-130	0	0		

The following samples were analyzed in this batch:

21060077-08A	21060077-09A	21060077-10A
21060077-11A	21060077-12A	21060077-13A
21060077-14A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**CHAIN OF  
CUSTODY RECORD**

fishbeck  
Address: 1515 Arboretum Dr. SE  
Grand Rapids, MI 49546  
Phone: 616.575.3824

Report to: Penni Mahler  
Email: pdmahler@fishbeck.com

Copy to: \_\_\_\_\_  
Email: \_\_\_\_\_

Invoice to: Accounts Payable  
Email: acpay@fishbeck.com  
Lab Quote  
Reference: 21060077

RELINQUISHED BY DATE TIME  
*Bailey A* 5/26/21 14:58

~~RElinquished by~~ DATE TIME

**RELINQUISHED BY** \_\_\_\_\_ **DATE** \_\_\_\_\_ **TIME** \_\_\_\_\_

**METHOD OF SHIPMENT/TRACKING NUMBER**

RECEIVED BY DATE TIME  
TO STORAGE

RECEIVED BY From storage DATE 08/00  
5/28/21

~~RECEIVED BY~~ / ~~DATE~~ / ~~TIME~~

RECEIVED FOR LAB DATE TIME  
*[Signature]* 5/28/21 1530

2021-05260 = 01

**CHAIN OF  
CUSTODY RECORD**

fishbeck  
Address: 1515 Arboretum Dr. SE  
Grand Rapids, MI 49546  
Phone: 616.575.3824

Report to: Penni Mahler  
Email: pdmahler@fishbeck.com  
Copy to: \_\_\_\_\_  
Email: \_\_\_\_\_

Invoice to: Accounts Payable  
Email: [acpay@fishbeck.com](mailto:acpay@fishbeck.com)  
Lab Quote  
Reference: Z1060077

RELINQUISHED BY <i>Bailey KR</i>	DATE 5/26/21	TIME 14:58	RELINQUISHED BY* <i>From Spragg</i>	DATE 08:00	TIME	RELINQUISHED BY	DATE	TIME	METHOD OF SHIPMENT/TRACKING NUMBER <i>CocSealed ALS PickUp</i>
RECEIVED BY <i>To Storage</i>	DATE	TIME	RECEIVED BY <i>Chris Seitz</i>	DATE 5/28/21	TIME 1530	RECEIVED BY	DATE	TIME	RECEIVED FOR LAB DATE TIME <i>Chris Seitz 5/28/21 1530</i>

2021 NS711-D1

## Sample Receipt Checklist

Client Name: FTCH - GRDate/Time Received: 28-May-21 15:30Work Order: 21060077Received by: KRWChecklist completed by Kurt Wierenga  
eSignature

01-Jun-21

Reviewed by: Erlind Bosworth

02-Jun-21

Date

eSignature

Date

Matrices: WaterCarrier name: ALSHNShipping container/cooler in good condition? Yes  No  Not Present Custody seals intact on shipping container/cooler? Yes  No  Not Present Custody seals intact on sample bottles? Yes  No  Not Present Chain of custody present? Yes  No Chain of custody signed when relinquished and received? Yes  No Chain of custody agrees with sample labels? Yes  No Samples in proper container/bottle? Yes  No Sample containers intact? Yes  No Sufficient sample volume for indicated test? Yes  No All samples received within holding time? Yes  No Container/Temp Blank temperature in compliance? Yes  No Sample(s) received on ice? Yes  No Temperature(s)/Thermometer(s): 3.8/4.8 C IR3

Cooler(s)/Kit(s):

Date/Time sample(s) sent to storage: 6/1/2021 3:55:09 PMWater - VOA vials have zero headspace? Yes  No  No VOA vials submitted Water - pH acceptable upon receipt? Yes  No  N/A 

pH adjusted?

pH adjusted by:

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

Comments:	<input type="text"/>
-----------	----------------------

CorrectiveAction:

CorrectiveAction:	<input type="text"/>
-------------------	----------------------



04-Aug-2021

Penni Mahler  
Fishbeck, Inc.  
1515 Arboretum Dr SE  
Grand Rapids, MI 49546

Re: **Cedar Springs**

Work Order: **21072346**

Dear Penni,

ALS Environmental received 6 samples on 28-Jul-2021 12:45 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 20.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA  
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

A handwritten signature in black ink that reads "Jodi Blouw".

Electronically approved by: Jodi Blouw

Jodi Blouw

### Report of Laboratory Analysis

Certificate No: MN 026-999-449

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental

[www.alsglobal.com](http://www.alsglobal.com)

RIGHT SOLUTIONS RIGHT PARTNER

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs  
**Work Order:** 21072346

**Work Order Sample Summary**

<b>Lab Samp ID</b>	<b>Client Sample ID</b>	<b>Matrix</b>	<b>Tag Number</b>	<b>Collection Date</b>	<b>Date Received</b>	<b>Hold</b>
21072346-01	CS-21-07-QCFB-02	Water		7/28/2021 09:40	7/28/2021 12:45	<input type="checkbox"/>
21072346-02	CS-21-07-DW-13328 White Creek Ave (I)	Water		7/28/2021 10:20	7/28/2021 12:45	<input type="checkbox"/>
21072346-03	CS-21-07-DW-13550 White Creek Ave (I)	Water		7/28/2021 10:35	7/28/2021 12:45	<input type="checkbox"/>
21072346-04	CS-21-07-DW-13485 White Creek Ave (I)	Water		7/28/2021 10:55	7/28/2021 12:45	<input type="checkbox"/>
21072346-05	CS-21-07-DW-13485 White Creek Ave (D)	Water		7/28/2021 10:55	7/28/2021 12:45	<input type="checkbox"/>
21072346-06	CS-21-07-DW-3950 Cedar Rv Dr (I MS/MSD)	Water		7/28/2021 11:15	7/28/2021 12:45	<input type="checkbox"/>

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs  
**WorkOrder:** 21072346

**QUALIFIERS,  
ACRONYMS, UNITS**

<b><u>Qualifier</u></b>	<b><u>Description</u></b>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

<b><u>Acronym</u></b>	<b><u>Description</u></b>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<b><u>Units Reported</u></b>	<b><u>Description</u></b>
ng/L	Nanograms per Liter

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs  
**Work Order:** 21072346

**Case Narrative**

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Samples for the above noted Work Order were received on 07/28/2021. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

**Extractable Organics:**

No deviations or anomalies were noted.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs  
**Sample ID:** CS-21-07-QCFB-02  
**Collection Date:** 7/28/2021 09:40 AM

**Work Order:** 21072346  
**Lab ID:** 21072346-01  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537.1</b>			Method: E537.1		Prep: E537.1 / 7/30/21		Analyst: SK
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		0.6	2	ng/L	1	8/3/2021 21:26
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.3	2	ng/L	1	8/3/2021 21:26
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.5	2	ng/L	1	8/3/2021 21:26
Perfluorobutanesulfonic Acid (PFBS)	U		0.3	2	ng/L	1	8/3/2021 21:26
Perfluorodecanoic Acid (PFDA)	U		0.6	2	ng/L	1	8/3/2021 21:26
Perfluorododecanoic Acid (PFDoA)	U		0.3	2	ng/L	1	8/3/2021 21:26
Perfluoroheptanoic Acid (PFHpA)	U		0.5	2	ng/L	1	8/3/2021 21:26
Perfluorohexanesulfonic Acid (PFHxS)	U		0.3	2	ng/L	1	8/3/2021 21:26
Perfluorohexanoic Acid (PFHxA)	U		0.6	2	ng/L	1	8/3/2021 21:26
Perfluorononanoic Acid (PFNA)	U		0.5	2	ng/L	1	8/3/2021 21:26
Perfluorooctanesulfonic Acid (PFOS)	U		0.2	2	ng/L	1	8/3/2021 21:26
Perfluorooctanoic Acid (PFOA)	U		0.5	2	ng/L	1	8/3/2021 21:26
Perfluorotetradecanoic Acid (PFTeA)	U		0.5	2	ng/L	1	8/3/2021 21:26
Perfluorotridecanoic Acid (PFTriA)	U		0.3	2	ng/L	1	8/3/2021 21:26
Perfluoroundecanoic Acid (PFUnA)	U		0.4	2	ng/L	1	8/3/2021 21:26
11CI-Pf3OUDs	U		0.3	2	ng/L	1	8/3/2021 21:26
9CI-PF3ONS	U		0.1	2	ng/L	1	8/3/2021 21:26
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.3	2	ng/L	1	8/3/2021 21:26
Surr: 13C2-PFHxA	105			70-130	%REC	1	8/3/2021 21:26
Surr: 13C2-PFDA	98.3			70-130	%REC	1	8/3/2021 21:26
Surr: d5-N-EtFOSAA	89.6			70-130	%REC	1	8/3/2021 21:26
Surr: 13C3-HFPO-DA	93.8			70-130	%REC	1	8/3/2021 21:26

Note: See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs  
**Sample ID:** CS-21-07-DW-13328 White Creek Ave (I)  
**Collection Date:** 7/28/2021 10:20 AM

**Work Order:** 21072346  
**Lab ID:** 21072346-02  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537.1</b>			Method: E537.1		Prep: E537.1 / 7/30/21		Analyst: SK
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		0.6	2	ng/L	1	8/4/2021 10:27
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.3	2	ng/L	1	8/4/2021 10:27
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.4	2	ng/L	1	8/4/2021 10:27
Perfluorobutanesulfonic Acid (PFBS)	U		0.3	2	ng/L	1	8/4/2021 10:27
Perfluorodecanoic Acid (PFDA)	U		0.6	2	ng/L	1	8/4/2021 10:27
Perfluorododecanoic Acid (PFDoA)	U		0.3	2	ng/L	1	8/4/2021 10:27
Perfluoroheptanoic Acid (PFHpA)	U		0.5	2	ng/L	1	8/4/2021 10:27
Perfluorohexanesulfonic Acid (PFHxS)	U		0.3	2	ng/L	1	8/4/2021 10:27
Perfluorohexanoic Acid (PFHxA)	U		0.6	2	ng/L	1	8/4/2021 10:27
Perfluorononanoic Acid (PFNA)	U		0.5	2	ng/L	1	8/4/2021 10:27
Perfluorooctanesulfonic Acid (PFOS)	U		0.2	2	ng/L	1	8/4/2021 10:27
Perfluorooctanoic Acid (PFOA)	U		0.4	2	ng/L	1	8/4/2021 10:27
Perfluorotetradecanoic Acid (PFTeA)	U		0.4	2	ng/L	1	8/4/2021 10:27
Perfluorotridecanoic Acid (PFTriA)	U		0.3	2	ng/L	1	8/4/2021 10:27
Perfluoroundecanoic Acid (PFUnA)	U		0.4	2	ng/L	1	8/4/2021 10:27
11CI-Pf3OUDS	U		0.3	2	ng/L	1	8/4/2021 10:27
9CI-PF3ONS	U		0.1	2	ng/L	1	8/4/2021 10:27
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.3	2	ng/L	1	8/4/2021 10:27
Surr: 13C2-PFHxA	103			70-130	%REC	1	8/4/2021 10:27
Surr: 13C2-PFDA	82.3			70-130	%REC	1	8/4/2021 10:27
Surr: d5-N-EtFOSAA	78.2			70-130	%REC	1	8/4/2021 10:27
Surr: 13C3-HFPO-DA	97.6			70-130	%REC	1	8/4/2021 10:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs  
**Sample ID:** CS-21-07-DW-13550 White Creek Ave (I)  
**Collection Date:** 7/28/2021 10:35 AM

**Work Order:** 21072346  
**Lab ID:** 21072346-03  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537.1</b>							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		0.5	2	ng/L	1	8/3/2021 21:57
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.3	2	ng/L	1	8/3/2021 21:57
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.4	2	ng/L	1	8/3/2021 21:57
Perfluorobutanesulfonic Acid (PFBS)	U		0.3	2	ng/L	1	8/3/2021 21:57
Perfluorodecanoic Acid (PFDA)	U		0.6	2	ng/L	1	8/3/2021 21:57
Perfluorododecanoic Acid (PFDoA)	U		0.3	2	ng/L	1	8/3/2021 21:57
Perfluoroheptanoic Acid (PFHpA)	U		0.5	2	ng/L	1	8/3/2021 21:57
Perfluorohexanesulfonic Acid (PFHxS)	U		0.3	2	ng/L	1	8/3/2021 21:57
Perfluorohexanoic Acid (PFHxA)	U		0.6	2	ng/L	1	8/3/2021 21:57
Perfluorononanoic Acid (PFNA)	U		0.5	2	ng/L	1	8/3/2021 21:57
Perfluorooctanesulfonic Acid (PFOS)	U		0.2	2	ng/L	1	8/3/2021 21:57
Perfluorooctanoic Acid (PFOA)	U		0.4	2	ng/L	1	8/3/2021 21:57
Perfluorotetradecanoic Acid (PFTeA)	U		0.4	2	ng/L	1	8/3/2021 21:57
Perfluorotridecanoic Acid (PFTriA)	U		0.3	2	ng/L	1	8/3/2021 21:57
Perfluoroundecanoic Acid (PFUnA)	U		0.4	2	ng/L	1	8/3/2021 21:57
11CI-Pf3OuDS	U		0.3	2	ng/L	1	8/3/2021 21:57
9CI-PF3ONS	U		0.1	2	ng/L	1	8/3/2021 21:57
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.3	2	ng/L	1	8/3/2021 21:57
Surr: 13C2-PFHxA	108			70-130	%REC	1	8/3/2021 21:57
Surr: 13C2-PFDA	86.1			70-130	%REC	1	8/3/2021 21:57
Surr: d5-N-EtFOSAA	72.2			70-130	%REC	1	8/3/2021 21:57
Surr: 13C3-HFPO-DA	96.3			70-130	%REC	1	8/3/2021 21:57

Note: See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs  
**Sample ID:** CS-21-07-DW-13485 White Creek Ave (I)  
**Collection Date:** 7/28/2021 10:55 AM

**Work Order:** 21072346  
**Lab ID:** 21072346-04  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537.1</b>							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		0.6	2	ng/L	1	8/3/2021 21:05
N-Ethylperfluorooctanesulfonamidoacetic Acid	1.0	J	0.3	2	ng/L	1	8/3/2021 21:05
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.5	2	ng/L	1	8/3/2021 21:05
Perfluorobutanesulfonic Acid (PFBS)	2.6		0.3	2	ng/L	1	8/3/2021 21:05
Perfluorodecanoic Acid (PFDA)	U		0.6	2	ng/L	1	8/3/2021 21:05
Perfluorododecanoic Acid (PFDoA)	U		0.3	2	ng/L	1	8/3/2021 21:05
Perfluoroheptanoic Acid (PFHpA)	1.7	J	0.5	2	ng/L	1	8/3/2021 21:05
Perfluorohexanesulfonic Acid (PFHxS)	3.7		0.3	2	ng/L	1	8/3/2021 21:05
Perfluorohexanoic Acid (PFHxA)	1.2	J	0.6	2	ng/L	1	8/3/2021 21:05
Perfluorononanoic Acid (PFNA)	U		0.5	2	ng/L	1	8/3/2021 21:05
Perfluorooctanesulfonic Acid (PFOS)	10		0.2	2	ng/L	1	8/3/2021 21:05
Perfluorooctanoic Acid (PFOA)	13		0.5	2	ng/L	1	8/3/2021 21:05
Perfluorotetradecanoic Acid (PFTeA)	U		0.5	2	ng/L	1	8/3/2021 21:05
Perfluorotridecanoic Acid (PFTriA)	U		0.3	2	ng/L	1	8/3/2021 21:05
Perfluoroundecanoic Acid (PFUnA)	U		0.4	2	ng/L	1	8/3/2021 21:05
11CI-Pf3OuDS	U		0.4	2	ng/L	1	8/3/2021 21:05
9CI-PF3ONS	U		0.1	2	ng/L	1	8/3/2021 21:05
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.3	2	ng/L	1	8/3/2021 21:05
Surr: 13C2-PFHxA	111			70-130	%REC	1	8/3/2021 21:05
Surr: 13C2-PFDA	97.9			70-130	%REC	1	8/3/2021 21:05
Surr: d5-N-EtFOSAA	90.9			70-130	%REC	1	8/3/2021 21:05
Surr: 13C3-HFPO-DA	97.5			70-130	%REC	1	8/3/2021 21:05

Note: See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs  
**Sample ID:** CS-21-07-DW-13485 White Creek Ave (D)  
**Collection Date:** 7/28/2021 10:55 AM

**Work Order:** 21072346  
**Lab ID:** 21072346-05  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537.1</b>							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		0.6	2	ng/L	1	8/3/2021 22:08
N-Ethylperfluorooctanesulfonamidoacetic Acid	1.2	J	0.3	2	ng/L	1	8/3/2021 22:08
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.4	2	ng/L	1	8/3/2021 22:08
Perfluorobutanesulfonic Acid (PFBS)	2.5		0.3	2	ng/L	1	8/3/2021 22:08
Perfluorodecanoic Acid (PFDA)	U		0.6	2	ng/L	1	8/3/2021 22:08
Perfluorododecanoic Acid (PFDoA)	U		0.3	2	ng/L	1	8/3/2021 22:08
Perfluoroheptanoic Acid (PFHpA)	1.8	J	0.5	2	ng/L	1	8/3/2021 22:08
Perfluorohexanesulfonic Acid (PFHxS)	3.9		0.3	2	ng/L	1	8/3/2021 22:08
Perfluorohexanoic Acid (PFHxA)	1.4	J	0.6	2	ng/L	1	8/3/2021 22:08
Perfluorononanoic Acid (PFNA)	0.54	J	0.5	2	ng/L	1	8/3/2021 22:08
Perfluorooctanesulfonic Acid (PFOS)	9.4		0.2	2	ng/L	1	8/3/2021 22:08
Perfluorooctanoic Acid (PFOA)	13		0.4	2	ng/L	1	8/3/2021 22:08
Perfluorotetradecanoic Acid (PFTeA)	U		0.4	2	ng/L	1	8/3/2021 22:08
Perfluorotridecanoic Acid (PFTriA)	U		0.3	2	ng/L	1	8/3/2021 22:08
Perfluoroundecanoic Acid (PFUnA)	U		0.4	2	ng/L	1	8/3/2021 22:08
11CI-PF3OuDS	U		0.3	2	ng/L	1	8/3/2021 22:08
9CI-PF3ONS	U		0.1	2	ng/L	1	8/3/2021 22:08
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.3	2	ng/L	1	8/3/2021 22:08
Surr: 13C2-PFHxA	104			70-130	%REC	1	8/3/2021 22:08
Surr: 13C2-PFDA	98.0			70-130	%REC	1	8/3/2021 22:08
Surr: d5-N-EtFOSAA	90.7			70-130	%REC	1	8/3/2021 22:08
Surr: 13C3-HFPO-DA	93.5			70-130	%REC	1	8/3/2021 22:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Fishbeck, Inc.  
**Project:** Cedar Springs  
**Sample ID:** CS-21-07-DW-3950 Cedar Rv Dr (I MS/MSD)  
**Collection Date:** 7/28/2021 11:15 AM

**Work Order:** 21072346  
**Lab ID:** 21072346-06  
**Matrix:** WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>PFAS BY EPA 537.1</b>							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	U		0.6	2	ng/L	1	8/4/2021 01:36
N-Ethylperfluorooctanesulfonamidoacetic Acid	U		0.3	2	ng/L	1	8/4/2021 01:36
N-Methylperfluorooctanesulfonamidoacetic Acid	U		0.4	2	ng/L	1	8/4/2021 01:36
Perfluorobutanesulfonic Acid (PFBS)	U		0.3	2	ng/L	1	8/4/2021 01:36
Perfluorodecanoic Acid (PFDA)	U		0.6	2	ng/L	1	8/4/2021 01:36
Perfluorododecanoic Acid (PFDoA)	U		0.3	2	ng/L	1	8/4/2021 01:36
Perfluoroheptanoic Acid (PFHpA)	U		0.5	2	ng/L	1	8/4/2021 01:36
Perfluorohexanesulfonic Acid (PFHxS)	U		0.3	2	ng/L	1	8/4/2021 01:36
Perfluorohexanoic Acid (PFHxA)	U		0.6	2	ng/L	1	8/4/2021 01:36
Perfluorononanoic Acid (PFNA)	U		0.5	2	ng/L	1	8/4/2021 01:36
Perfluorooctanesulfonic Acid (PFOS)	U		0.2	2	ng/L	1	8/4/2021 01:36
Perfluorooctanoic Acid (PFOA)	U		0.5	2	ng/L	1	8/4/2021 01:36
Perfluorotetradecanoic Acid (PFTeA)	U		0.4	2	ng/L	1	8/4/2021 01:36
Perfluorotridecanoic Acid (PFTriA)	U		0.3	2	ng/L	1	8/4/2021 01:36
Perfluoroundecanoic Acid (PFUnA)	U		0.4	2	ng/L	1	8/4/2021 01:36
11CI-Pf3OUDS	U		0.3	2	ng/L	1	8/4/2021 01:36
9CI-PF3ONS	U		0.1	2	ng/L	1	8/4/2021 01:36
4,8-Dioxa-3H-perfluorononanoic Acid (DONA)	U		0.3	2	ng/L	1	8/4/2021 01:36
Surr: 13C2-PFHxA	95.0			70-130	%REC	1	8/4/2021 01:36
Surr: 13C2-PFDA	79.9			70-130	%REC	1	8/4/2021 01:36
Surr: d5-N-EtFOSAA	73.4			70-130	%REC	1	8/4/2021 01:36
Surr: 13C3-HFPO-DA	82.5			70-130	%REC	1	8/4/2021 01:36

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 04-Aug-21

Client: Fishbeck, Inc.

**QC BATCH REPORT**

Work Order: 21072346

Project: Cedar Springs

Batch ID: 181137

Instrument ID LCMS1

Method: E537.1

MBLK		Sample ID: MBLK-181137-181137			Units: ng/L		Analysis Date: 8/3/2021 08:34 PM			
Client ID:		Run ID: LCMS1_210803B			SeqNo: 7636888		Prep Date: 7/30/2021		DF: 1	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit	Qual
Hexafluoropropylene oxide din	U	0.7	2.0							
N-Ethylperfluoroctanesulfona	U	0.3	2.0							
N-Methylperfluoroctanesulfur	U	0.5	2.0							
Perfluorobutanesulfonic Acid (	U	0.4	2.0							
Perfluorodecanoic Acid (PFDA	U	0.7	2.0							
Perfluorododecanoic Acid (PFI	U	0.4	2.0							
Perfluoroheptanoic Acid (PFH)	U	0.6	2.0							
Perfluorohexanesulfonic Acid (	U	0.3	2.0							
Perfluorohexanoic Acid (PFHx	U	0.7	2.0							
Perfluorononanoic Acid (PFNA	U	0.6	2.0							
Perfluoroctanesulfonic Acid (l	0.2468	0.2	2.0							J
Perfluoroctanoic Acid (PFOA	U	0.5	2.0							
Perfluorotetradecanoic Acid (F	U	0.5	2.0							
Perfluorotridecanoic Acid (PT	U	0.3	2.0							
Perfluoroundecanoic Acid (PF	U	0.4	2.0							
11CI-Pf3OUdS	U	0.4	2.0							
9CI-PF3ONS	U	0.2	2.0							
4,8-Dioxa-3H-perfluorononano	U	0.3	2.0							
Surr: 13C2-PFHxA	49.06	0	0	40	0	123	70-130		0	
Surr: 13C2-PFDA	43.42	0	0	40	0	109	70-130		0	
Surr: d5-N-EtFOSAA	165.6	0	0	160	0	103	70-130		0	
Surr: 13C3-HFPO-DA	42.64	0	0	40	0	107	70-130		0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC Page: 1 of 8

**Client:** Fishbeck, Inc.  
**Work Order:** 21072346  
**Project:** Cedar Springs

## QC BATCH REPORT

Batch ID: 181137      Instrument ID LCMS1      Method: E537.1

MS3      Sample ID: 21072346-04A MS				Units: ng/L		Analysis Date: 8/4/2021 10:17 AM			
Client ID: CS-21-07-DW-13485 White Creek Ave (I)		Run ID: LCMS1_210804A		SeqNo: 7636941		Prep Date: 7/30/2021		DF: 1	
Analyte	Result	MDL	PQL	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit	Qual
Hexafluoropropylene oxide din	88.31	0.6	2.0	86.81	0	102	70-130	0	
N-Ethylperfluoroctanesulfona	86.31	0.3	2.0	86.81	1.016	98.3	70-130	0	
N-Methylperfluoroctanesulfonfor	93.03	0.4	2.0	86.81	0	107	70-130	0	
Perfluorobutanesulfonic Acid (	70.98	0.3	2.0	76.74	2.581	89.1	70-130	0	
Perfluorodecanoic Acid (PFDA	96.49	0.6	2.0	86.81	0	111	70-130	0	
Perfluorododecanoic Acid (PFI	86.37	0.3	2.0	86.81	0	99.5	70-130	0	
Perfluoroheptanoic Acid (PFH)	99.87	0.5	2.0	86.81	1.693	113	70-130	0	
Perfluorohexanesulfonic Acid (	91.23	0.3	2.0	78.99	3.681	111	70-130	0	
Perfluorohexanoic Acid (PFHx	83.5	0.6	2.0	86.81	1.201	94.8	70-130	0	
Perfluorononanoic Acid (PFNA	90.46	0.5	2.0	86.81	0	104	70-130	0	
Perfluorooctanesulfonic Acid (I	86.41	0.2	2.0	80.56	10.31	94.5	70-130	0	
Perfluorooctanoic Acid (PFOA	102.1	0.5	2.0	86.81	12.99	103	70-130	0	
Perfluorotetradecanoic Acid (F	77.97	0.4	2.0	86.81	0	89.8	70-130	0	
Perfluorotridecanoic Acid (PTI	81.75	0.3	2.0	86.81	0	94.2	70-130	0	
Perfluoroundecanoic Acid (PF)	92.12	0.4	2.0	86.81	0	106	70-130	0	
11CI-Pf3OUDs	73.72	0.3	2.0	81.77	0	90.2	70-130	0	
9CI-PF3ONS	74.1	0.1	2.0	80.9	0	91.6	70-130	0	
4,8-Dioxa-3H-perfluorononano	82.41	0.3	2.0	81.77	0	101	70-130	0	
Surr: 13C2-PFHxA	27.85	0	0	34.72	0	80.2	70-130	0	
Surr: 13C2-PFDA	27.74	0	0	34.72	0	79.9	70-130	0	
Surr: d5-N-EtFOSAA	112.8	0	0	138.9	0	81.2	70-130	0	
Surr: 13C3-HFPO-DA	27.34	0	0	34.72	0	78.8	70-130	0	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Fishbeck, Inc.  
**Work Order:** 21072346  
**Project:** Cedar Springs

## QC BATCH REPORT

Batch ID: 181137      Instrument ID LCMS1      Method: E537.1

DUP	Sample ID: 21072346-02A DUP				Units: ng/L		Analysis Date: 8/3/2021 09:47 PM				
Client ID:	CS-21-07-DW-13328 White Creek Ave (I)		Run ID:	LCMS1_210803B		SeqNo:	7636895	Prep Date:	7/30/2021	DF:	1
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hexafluoropropylene oxide din	U/I	0.6	2.0	0	0	0	0	0	0	0	30
N-Ethylperfluoroctanesulfona	U	0.3	2.0	0	0	0	0	0	0	0	30
N-Methylperfluoroctanesulfon	U/I	0.4	2.0	0	0	0	0	0	0	0	30
Perfluorobutanesulfonic Acid (	U	0.3	2.0	0	0	0	0	0	0	0	30
Perfluorodecanoic Acid (PFDA	U	0.6	2.0	0	0	0	0	0.08919	0	0	30
Perfluorododecanoic Acid (PFD	U	0.3	2.0	0	0	0	0	0.05709	0	0	30
Perfluoroheptanoic Acid (PFH	U	0.5	2.0	0	0	0	0	0.103	0	0	30
Perfluorohexanesulfonic Acid (	U	0.3	2.0	0	0	0	0	0	0	0	30
Perfluorohexanoic Acid (PFHx	U	0.6	2.0	0	0	0	0	0	0	0	30
Perfluorononanoic Acid (PFNA	U	0.5	2.0	0	0	0	0	0.08649	0	0	30
Perfluoroctanesulfonic Acid (I	U	0.2	2.0	0	0	0	0	0	0	0	30
Perfluorooctanoic Acid (PFOA	U	0.5	2.0	0	0	0	0	0.1547	0	0	30
Perfluorotetradecanoic Acid (F	U	0.4	2.0	0	0	0	0	0.05912	0	0	30
Perfluorotridecanoic Acid (PT	U	0.3	2.0	0	0	0	0	0.05034	0	0	30
Perfluoroundecanoic Acid (PF	U	0.4	2.0	0	0	0	0	0.09088	0	0	30
11CI-Pf3OUDs	U	0.3	2.0	0	0	0	0	0	0	0	30
9CI-PF3ONS	U	0.1	2.0	0	0	0	0	0	0	0	30
4,8-Dioxa-3H-perfluorononano	U	0.3	2.0	0	0	0	0	0	0	0	30
Surr: 13C2-PFHxA	40.23	0	0	34.48	0	117	70-130	37.66	6.6	30	
Surr: 13C2-PFDA	30.73	0	0	34.48	0	89.1	70-130	29.4	4.42	30	
Surr: d5-N-EtFOSAA	102.7	0	0	137.9	0	74.5	70-130	90.07	13.1	30	
Surr: 13C3-HFPO-DA	35.16	0	0	34.48	0	102	70-130	34.02	3.31	30	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Fishbeck, Inc.  
**Work Order:** 21072346  
**Project:** Cedar Springs

## QC BATCH REPORT

Batch ID: 181137      Instrument ID LCMS1      Method: E537.1

LCS3      Sample ID: LCS-181137-181137			Units: ng/L			Analysis Date: 8/4/2021 10:06 AM					
Client ID:		Run ID: LCMS1_210804A		SeqNo: 7636940		Prep Date: 7/30/2021		DF: 1			
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hexafluoropropylene oxide din	102.91	0.7	2.0	100	0	103	70-130	0	0		
N-Ethylperfluoroctanesulfona	97.56	0.3	2.0	100	0	97.6	70-130	0	0		
N-Methylperfluoroctanesulfor	100.61	0.5	2.0	100	0	101	70-130	0	0		
Perfluorobutanesulfonic Acid (	87.05	0.4	2.0	88.4	0	98.5	70-130	0	0		
Perfluorodecanoic Acid (PFDA	94.84	0.7	2.0	100	0	94.8	70-130	0	0		
Perfluorododecanoic Acid (PFI	94.61	0.4	2.0	100	0	94.6	70-130	0	0		
Perfluoroheptanoic Acid (PFH)	96.02	0.6	2.0	100	0	96	70-130	0	0		
Perfluorohexanesulfonic Acid (	90.26	0.3	2.0	91	0	99.2	70-130	0	0		
Perfluorohexanoic Acid (PFHx	90.19	0.7	2.0	100	0	90.2	70-130	0	0		
Perfluorononanoic Acid (PFNA	88.46	0.6	2.0	100	0	88.5	70-130	0	0		
Perfluoroctanesulfonic Acid (I	97.89	0.2	2.0	92.8	0	105	70-130	0	0		
Perfluoroctanoic Acid (PFOA	96.39	0.5	2.0	100	0	96.4	70-130	0	0		
Perfluorotetradecanoic Acid (F	84.43	0.5	2.0	100	0	84.4	70-130	0	0		
Perfluorotridecanoic Acid (PTI	90.48	0.3	2.0	100	0	90.5	70-130	0	0		
Perfluoroundecanoic Acid (PFI	96.46	0.4	2.0	100	0	96.5	70-130	0	0		
11CI-Pf3OUDS	89.14	0.4	2.0	94.2	0	94.6	70-130	0	0		
9CI-PF3ONS	85.14	0.2	2.0	93.2	0	91.4	70-130	0	0		
4,8-Dioxa-3H-perfluorononano	85.62	0.3	2.0	94.2	0	90.9	70-130	0	0		
Surr: 13C2-PFHxA	36.97	0	0	40	0	92.4	70-130	0	0		
Surr: 13C2-PFDA	35.79	0	0	40	0	89.5	70-130	0	0		
Surr: d5-N-EtFOSAA	161.3	0	0	160	0	101	70-130	0	0		
Surr: 13C3-HFPO-DA	37.77	0	0	40	0	94.4	70-130	0	0		

The following samples were analyzed in this batch:

21072346-01A

21072346-02A

21072346-03A

21072346-04A

21072346-05A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Fishbeck, Inc.  
**Work Order:** 21072346  
**Project:** Cedar Springs

## QC BATCH REPORT

Batch ID: 181312      Instrument ID LCMS1      Method: E537.1

MLBK	Sample ID: MBLK-181312-181312			Units: ng/L		Analysis Date: 8/4/2021 12:55 AM				
Client ID:	Run ID: LCMS1_210803B			SeqNo: 7636913		Prep Date: 8/3/2021		DF: 1		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit	Qual
Hexafluoropropylene oxide din	U	0.7		2.0						
N-Ethylperfluoroctanesulfona	U	0.3		2.0						
N-Methylperfluoroctanesulfonfor	U	0.5		2.0						
Perfluorobutanesulfonic Acid (	U	0.4		2.0						
Perfluorodecanoic Acid (PFDA	U	0.7		2.0						
Perfluorododecanoic Acid (PFI	U	0.4		2.0						
Perfluorohexanoic Acid (PFH)	U	0.6		2.0						
Perfluorohexanesulfonic Acid (	U	0.3		2.0						
Perfluorohexanoic Acid (PFHx	U	0.7		2.0						
Perfluorononanoic Acid (PFNA	U	0.6		2.0						
Perfluoroctanesulfonic Acid (l	U	0.2		2.0						
Perfluoroctanoic Acid (PFOA	U	0.5		2.0						
Perfluorotetradecanoic Acid (F	U	0.5		2.0						
Perfluorotridecanoic Acid (PFT	U	0.3		2.0						
Perfluoroundecanoic Acid (PFI	U	0.4		2.0						
11CI-Pf3OUDS	U	0.4		2.0						
9CI-PF3ONS	U	0.2		2.0						
4,8-Dioxa-3H-perfluorononano	U	0.3		2.0						
Surr: 13C2-PFHxA	40.65	0	0	40	0	102	70-130	0		
Surr: 13C2-PFDA	36.71	0	0	40	0	91.8	70-130	0		
Surr: d5-N-EtFOSAA	135	0	0	160	0	84.4	70-130	0		
Surr: 13C3-HFPO-DA	35.78	0	0	40	0	89.4	70-130	0		

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Fishbeck, Inc.  
**Work Order:** 21072346  
**Project:** Cedar Springs

## QC BATCH REPORT

Batch ID: 181312      Instrument ID LCMS1      Method: E537.1

MS1      Sample ID: 21072346-06AMS1				Units: ng/L			Analysis Date: 8/4/2021 01:16 AM				
Client ID: CS-21-07-DW-3950 Cedar Rv Dr (I MS/MSD)		Run ID: LCMS1_210803B		SeqNo: 7636915		Prep Date: 8/3/2021		DF: 1			
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hexafluoropropylene oxide din	1.7831	0.6	2.0	1.689	0	106	50-150	0	0	J	
N-Ethylperfluoroctanesulfona	1.449	0.3	2.0	1.689	0	85.8	50-150	0	0	J	
N-Methylperfluoroctanesulfon	1.361	0.4	2.0	1.689	0	80.5	50-150	0	0	J	
Perfluorobutanesulfonic Acid (	1.466	0.3	2.0	1.495	0	98	50-150	0	0	J	
Perfluorodecanoic Acid (PFDA	1.722	0.6	2.0	1.689	0.04586	99.2	50-150	0	0	J	
Perfluorododecanoic Acid (PF	1.47	0.3	2.0	1.689	0.06828	83	50-150	0	0	J	
Perfluoroheptanoic Acid (PFH	2.118	0.5	2.0	1.689	0.1014	119	50-150	0	0		
Perfluorohexanesulfonic Acid (	1.385	0.3	2.0	1.537	0	90.1	50-150	0	0	J	
Perfluorohexanoic Acid (PFHx	2.036	0.6	2.0	1.689	0	121	50-150	0	0		
Perfluorononanoic Acid (PFNA	1.9	0.5	2.0	1.689	0.08103	108	50-150	0	0	J	
Perfluoroctanesulfonic Acid (l	1.582	0.2	2.0	1.571	0	101	50-150	0	0	J	
Perfluorooctanoic Acid (PFOA	1.82	0.4	2.0	1.689	0.09586	102	50-150	0	0	J	
Perfluorotetradecanoic Acid (F	1.52	0.4	2.0	1.689	0.05345	86.8	50-150	0	0	J	
Perfluorotridecanoic Acid (PT	1.462	0.3	2.0	1.689	0.04724	83.8	50-150	0	0	J	
Perfluoroundecanoic Acid (PF	1.643	0.4	2.0	1.689	0.07345	92.9	50-150	0	0	J	
11CI-Pf3OUDs	1.072	0.3	2.0	1.588	0	67.5	50-150	0	0	J	
9CI-PF3ONS	1.346	0.1	2.0	1.571	0	85.7	50-150	0	0	J	
4,8-Dioxa-3H-perfluorononano	1.766	0.3	2.0	1.588	0	111	50-150	0	0	J	
Surrogate: 13C2-PFHxA	35.42	0	0	33.78	0	105	70-130	0	0		
Surrogate: 13C2-PFDA	30.82	0	0	33.78	0	91.2	70-130	0	0		
Surrogate: d5-N-EtFOSAA	99.51	0	0	135.1	0	73.6	70-130	0	0		
Surrogate: 13C3-HFPO-DA	31.1	0	0	33.78	0	92.1	70-130	0	0		

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Fishbeck, Inc.  
**Work Order:** 21072346  
**Project:** Cedar Springs

## QC BATCH REPORT

Batch ID: 181312      Instrument ID LCMS1      Method: E537.1

MSD1      Sample ID: 21072346-06AMSD1				Units: ng/L		Analysis Date: 8/4/2021 10:48 AM					
Client ID: CS-21-07-DW-3950 Cedar Rv Dr (I MS/MSD)		Run ID: LCMS1_210804A		SeqNo: 7636944		Prep Date: 8/3/2021		DF: 1			
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Hexafluoropropylene oxide din	1.6541	0.6	2.0	1.712	0	96.6	50-150	0	0	J	
N-Ethylperfluoroctanesulfona	2.035	0.3	2.0	1.712	0	119	50-150	0	0		
N-Methylperfluoroctanesulfonfor	1.7341	0.4	2.0	1.712	0	101	50-150	0	0	J	
Perfluorobutanesulfonic Acid (	1.578	0.3	2.0	1.515	0	104	50-150	0	0	J	
Perfluorodecanoic Acid (PFDA	1.718	0.6	2.0	1.712	0	100	50-150	0	0	J	
Perfluorododecanoic Acid (PF	1.592	0.3	2.0	1.712	0	93	50-150	0	0	J	
Perfluoroheptanoic Acid (PFH	2.184	0.5	2.0	1.712	0	128	50-150	0	0		
Perfluorohexanesulfonic Acid (	2.079	0.3	2.0	1.558	0	133	50-150	0	0		
Perfluorohexanoic Acid (PFHx	1.847	0.6	2.0	1.712	0	108	50-150	0	0	J	
Perfluorononanoic Acid (PFNA	1.608	0.5	2.0	1.712	0	93.9	50-150	0	0	J	
Perfluorooctanesulfonic Acid (l	1.774	0.2	2.0	1.592	0	111	50-150	0	0	J	
Perfluorooctanoic Acid (PFOA	1.856	0.4	2.0	1.712	0	108	50-150	0	0	J	
Perfluorotetradecanoic Acid (F	1.316	0.4	2.0	1.712	0	76.9	50-150	0	0	J	
Perfluorotridecanoic Acid (PT	1.395	0.3	2.0	1.712	0	81.5	50-150	0	0	J	
Perfluoroundecanoic Acid (PF	1.721	0.4	2.0	1.712	0	100	50-150	0	0	J	
11CI-Pf3OUDs	1.409	0.3	2.0	1.61	0	87.5	50-150	0	0	J	
9CI-PF3ONS	1.466	0.1	2.0	1.592	0	92.1	50-150	0	0	J	
4,8-Dioxa-3H-perfluorononano	1.765	0.3	2.0	1.61	0	110	50-150	0	0	J	
Surr: 13C2-PFHxA	32.21	0	0	34.25	0	94.1	70-130	0	0		
Surr: 13C2-PFDA	27.38	0	0	34.25	0	80	70-130	0	0		
Surr: d5-N-EtFOSAA	107.4	0	0	137	0	78.4	70-130	0	0		
Surr: 13C3-HFPO-DA	29.15	0	0	34.25	0	85.1	70-130	0	0		

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Fishbeck, Inc.  
**Work Order:** 21072346  
**Project:** Cedar Springs

## QC BATCH REPORT

Batch ID: 181312      Instrument ID LCMS1      Method: E537.1

LCS1      Sample ID: LCS1-181312-181312				Units: ng/L			Analysis Date: 8/4/2021 01:05 AM				
Client ID:		Run ID: LCMS1_210803B		SeqNo: 7636914		Prep Date: 8/3/2021		DF: 1			
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Hexafluoropropylene oxide din	2.0061	0.7	2.0	2	0	100	50-150	0			
N-Ethylperfluoroctanesulfona	2.028	0.3	2.0	2	0	101	50-150	0			
N-Methylperfluoroctanesulfonfor	1.8021	0.5	2.0	2	0	90.1	50-150	0		J	
Perfluorobutanesulfonic Acid (	1.702	0.4	2.0	1.77	0	96.2	50-150	0		J	
Perfluorodecanoic Acid (PFDA	2.077	0.7	2.0	2	0	104	50-150	0			
Perfluorododecanoic Acid (PFI	1.748	0.4	2.0	2	0	87.4	50-150	0		J	
Perfluoroheptanoic Acid (PFH)	2.496	0.6	2.0	2	0	125	50-150	0			
Perfluorohexanesulfonic Acid (	2.123	0.3	2.0	1.82	0	117	50-150	0			
Perfluorohexanoic Acid (PFHx	2.011	0.7	2.0	2	0	101	50-150	0			
Perfluorononanoic Acid (PFNA	2.176	0.6	2.0	2	0	109	50-150	0			
Perfluoroctanesulfonic Acid (I	1.892	0.2	2.0	1.86	0	102	50-150	0		J	
Perfluoroctanoic Acid (PFOA	2.236	0.5	2.0	2	0	112	50-150	0			
Perfluorotetradecanoic Acid (F	1.792	0.5	2.0	2	0	89.6	50-150	0		J	
Perfluorotridecanoic Acid (PFI	1.68	0.3	2.0	2	0	84	50-150	0		J	
Perfluoroundecanoic Acid (PFI	1.979	0.4	2.0	2	0	98.9	50-150	0		J	
11CI-Pf3OUDS	1.58	0.4	2.0	1.88	0	84.1	50-150	0		J	
9CI-PF3ONS	1.626	0.2	2.0	1.86	0	87.4	50-150	0		J	
4,8-Dioxa-3H-perfluorononano	2.024	0.3	2.0	1.88	0	108	50-150	0			
Surr: 13C2-PFHxA	36.28	0	0	40	0	90.7	70-130	0			
Surr: 13C2-PFDA	34.33	0	0	40	0	85.8	70-130	0			
Surr: d5-N-EtFOSAA	134.7	0	0	160	0	84.2	70-130	0			
Surr: 13C3-HFPO-DA	31.97	0	0	40	0	79.9	70-130	0			

The following samples were analyzed in this batch:

21072346-06A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



# CHAIN OF CUSTODY RECORD

Fishbeck, Thompson, Carr &amp; Huber, Inc.

Address \_\_\_\_\_

Phone \_\_\_\_\_

Report to Renni Mahler  
 Email rdmahler@fishbeck.com  
 Copy to \_\_\_\_\_  
 Email \_\_\_\_\_

Invoice to \_\_\_\_\_  
 Email \_\_\_\_\_  
 Lab Quote Reference 21072346

PROJECT NAME <i>Cedarsprings</i>		PROJECT NO. <i>210460</i>		MATRIX TYPE				REQUIRED ANALYSES												PAGE <u>1</u> OF <u>1</u>							
PROJECT LOCATION <i>Cedarsprings, MI</i>		SAMPLER(S) NAME <i>BAH</i>		AQUEOUS (WATER)	SOLID/SEMI-SOLID	AIR	NONAQUEOUS LIQUID													STD TAT <input checked="" type="checkbox"/> RUSH TAT <input type="checkbox"/> DATE DUE: _____							
PROJECT MANAGER <i>TKD</i>		PHONE EMAIL						PFAS/SST																			
ADDITIONAL INFORMATION																Triton											
SAMPLE		SAMPLE IDENTIFICATION		PRESERVATIVE												REMARKS											
DATE	TIME																										
7/28/21	0940	CS-21-07-QCFB-02		X				2																			
	1020	CS-21-07-DW-13328 (white) <i>green</i>		X				3																			
	1035	CS-21-07-DW-13330 (white) <i>green</i>		X				3																			
	1055	CS-21-07-DW-13435 (white) <i>green</i>		X				3																			
	1055	CS-21-07-DW-13123 (white) <i>green</i>		X				3																			
	1115	CS-21-07-DW-3930 (cedar Rd) or (Z MS) <i>MS</i>		X				6																			
RELINQUISHED BY <i>Bailey Jr.</i>		DATE 7/28/21	TIME 12:45	RELINQUISHED BY		DATE	TIME	RELINQUISHED BY		DATE	TIME	METHOD OF SHIPMENT/BILL OF LADING <i>JH</i>															
RECEIVED BY <i>Q-2 DC</i>		DATE	TIME	RECEIVED BY		DATE	TIME	RECEIVED BY		DATE	TIME	RECEIVED FOR LAB <i>Q-2 DC</i>		DATE 7/28/21	TIME 12:45												

WHITE Copy — Return with data package.

YELLOW Copy — field File / Project Documentation.

G 042363

2.7°C IR3

**Sample Receipt Checklist**Client Name: FTCH - GRDate/Time Received: 28-Jul-21 12:45Work Order: 21072346Received by: DSChecklist completed by Lydia Sweet  
eSignature

28-Jul-21

Reviewed by: Jodi Blawie

29-Jul-21

Date

eSignature

Date

Matrices: WaterCarrier name: Client

Shipping container/cooler in good condition?

Yes  No  Not Present 

Custody seals intact on shipping container/cooler?

Yes  No  Not Present 

Custody seals intact on sample bottles?

Yes  No  Not Present 

Chain of custody present?

Yes  No 

Chain of custody signed when relinquished and received?

Yes  No 

Chain of custody agrees with sample labels?

Yes  No 

Samples in proper container/bottle?

Yes  No 

Sample containers intact?

Yes  No 

Sufficient sample volume for indicated test?

Yes  No 

All samples received within holding time?

Yes  No 

Container/Temp Blank temperature in compliance?

Yes  No 

Sample(s) received on ice?

Yes  No 

Temperature(s)/Thermometer(s):

2.7/3.7C IR3

Cooler(s)/Kit(s):

7/28/2021 1:27:41 PM

Date/Time sample(s) sent to storage:

Yes  No  No VOA vials submitted 

Water - VOA vials have zero headspace?

Yes  No  N/A 

Water - pH acceptable upon receipt?

Yes  No  N/A 

pH adjusted?

pH adjusted by:

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:


CorrectiveAction:


# **Appendix 5**

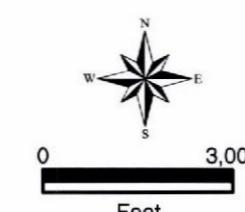
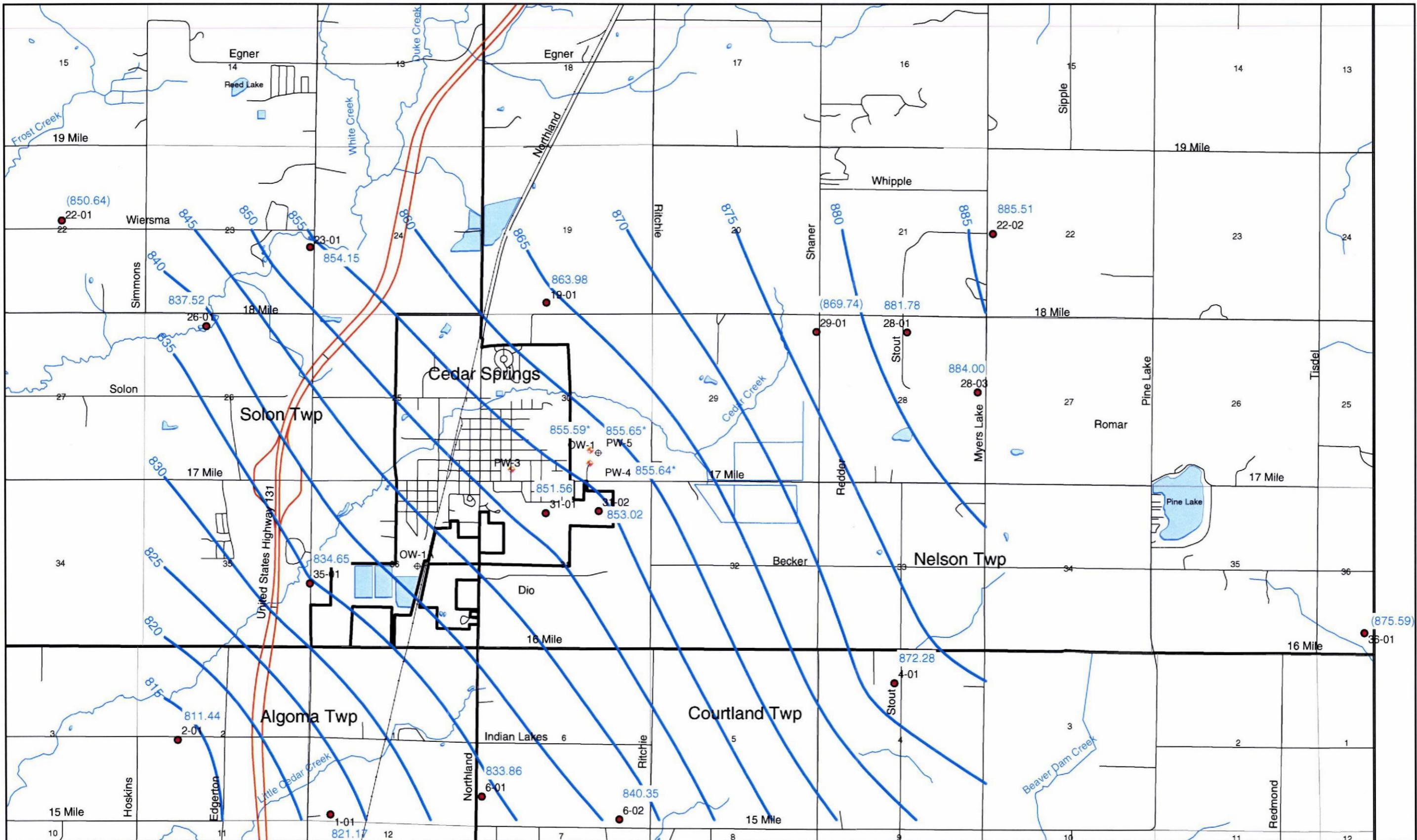
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Fishbeck, Thompson, Carr & Huber  
Engineers • Scientists • Architects  
Kalamazoo, Michigan

**fTCH**

City of Cedar Springs  
Kent County, Michigan  
Wellhead Protection Plan



**OBSERVED GROUNDWATER  
ELEVATION CONTOUR MAP**  
MEASURED JULY 2002

PROJECT NO.  
G02066

FIGURE NO.

### **3.0 OBSERVED GROUNDWATER ELEVATIONS AND HYDROLOGY**

Static water level elevations were measured at 17 observation and residential wells covering approximately 22 sections in Nelson and Solon Townships as summarized in Table 3. The static water level elevations were measured to the nearest 0.01 foot using an electronic water level meter. Figure 7 shows a potentiometric surface constructed from the observed static water level elevations. The observed groundwater elevation contour map confirms the groundwater flow direction is to the southwest toward Cedar Creek and the Rogue River at a gradient of approximately 2.65E-03 feet per foot (ft/ft).

## WATER WELL AND PUMP RECORD

PERMIT NUMBER

1 LOCATION OF WELL		County Kent		Township Name SOLOM		Fraction 1/4	1/4	1/4	Section Number 35	Town Number 10	N/S N	Range Number 11	E/W E/W
Distance And Direction From Road Intersection													
Street Address & City of Well Location													
Locate with "X" in Section Below				Sketch Map:		3 OWNER OF WELL: PINE BORDER FARM Address 3391 16 MILE RD CEDAR SPRINGS MI 49319 Address Same As Well Location? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							
						4 WELL DEPTH: 108 Date Completed 2/22/88 <input checked="" type="checkbox"/> New Well FT. <input type="checkbox"/> Replacement Well							
						5 <input type="checkbox"/> Cable tool <input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Hollow rod <input type="checkbox"/> Auger <input type="checkbox"/> Jetted							
						6 USE: <input type="checkbox"/> Domestic <input type="checkbox"/> Type I Public <input type="checkbox"/> Type III Public <input checked="" type="checkbox"/> Irrigation <input type="checkbox"/> Type IIa Public <input type="checkbox"/> Heat pump <input type="checkbox"/> Test Well <input type="checkbox"/> Type IIb Public							
						7 CASING: Diameter <input checked="" type="checkbox"/> Steel <input type="checkbox"/> Threaded Height: Above/Below <input type="checkbox"/> Plastic <input checked="" type="checkbox"/> Welded Surface 15 ft. 12 in. to 78 ft. depth Weight 52 lbs./ft. _____ in. to _____ ft. depth Grouted Drill Hole Diameter 12 in. to 32 ft. depth Drive Shoe <input type="checkbox"/> Yes _____ in. to _____ ft. depth <input type="checkbox"/> No							
						8 SCREEN: Type 55 Diameter 10 3/4 Slot/Gauze .030 Length 30' Set between 78 ft. and 108 ft. FITTINGS: <input type="checkbox"/> K-Packer <input type="checkbox"/> Lead Packer <input type="checkbox"/> Bremer Check <input type="checkbox"/> Blank above screen ft. Other well							
						9 STATIC WATER LEVEL: 5 ft. below land surface <input type="checkbox"/> Flow							
						10 PUMPING LEVEL: below land surface 67 ft. after 3 hrs. pumping at 1000 G.P.M. _____ ft. after _____ hrs. pumping at _____ G.P.M.							
						11 WELL HEAD COMPLETION: <input type="checkbox"/> Pitless adapter <input checked="" type="checkbox"/> 12" above grade <input type="checkbox"/> Basement offset <input type="checkbox"/> Approved pit							
						12 WELL GROUTED? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes From 0 to 35 ft. <input type="checkbox"/> Neat cement <input checked="" type="checkbox"/> Bentonite <input type="checkbox"/> Other _____ No. of bags of cement _____ Additives _____							
						13 Nearest source of possible contamination Type NONE Distance ft. Direction _____ Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Was old well plugged? <input type="checkbox"/> Yes <input type="checkbox"/> No							
						14 PUMP: <input type="checkbox"/> Not Installed <input checked="" type="checkbox"/> Pump Installation Only Manufacturer's name JA 00331 Model number 25AUSRYC1 HP 2.5 Volts 480 Length of Drop Pipe 77' ft. capacity 1000 G.P.M. TYPE: <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Jet PRESSURE TANK: Manufacturer's name NINE Model number Capacity Gallons							
USE A 2ND SHEET IF NEEDED													
15. Remarks, elevation, source of data, etc.													
16. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.													
Joe Brown Drilling 91-1817 <small>REGISTERED BUSINESS NAME</small> <small>REGISTRATION NO.</small>													
17. Rig Operator's Name: Dalton Davis													
Signed Joseph R. Brown Date Feb 26, 88													
Address _____													
Signed Joseph R. Brown AUTHORIZED REPRESENTATIVE													

**Table 3 - Static Water Elevation Summary**

Wellhead Protection Area Delineation

City of Cedar Springs, Michigan

Well ID	Address	Measuring Point Elevation (ft msl)	Static Water Level (ft bgl)	Groundwater Elevation (ft msl)
2-01	3380 Indian Lake	847.84	36.4	811.44
1-01	12410 White Creek	859.49	38.32	821.17
35-01	13525 White Creek	837.87	3.22	834.65
31-01	Bus Garage Facility	873.60	22.04	851.56
31-02	New High School	875.42	22.4	853.02
22-01	2791 Wiersma	893.85	43.21	850.64
22-02	15224 Myers Lake	896.29	10.78	885.51
36-01	9015 16 Mile	877.62	2.03	875.59
29-01	14715 Shaner	878.31	8.57	869.74
4-01	13121 Stout	902.62	30.34	872.28
28-01	14700 Stout	932.80	51.02	881.78
28-03	14417 Myers Lake	968.80	84.8	884.00
19-01	5151 18 Mile	902.02	38.04	863.98
26-01	3500 18 Miles	839.56	2.04	837.52
23-01	15135 White Creek	878.75	24.6	854.15
6-01	12550 Northland	860.49	26.63	833.86
6-02	5497 15 Mile	877.05	36.7	840.35

Notes:

ft msl - feet above mean sea level

ft bgl - feet below ground level