
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910 White Plains, NY 10601 T: 914.323.7400 F: 914.323.7401

To: Zaw Thein, PE - Westchester Department of Health

From: Ryan Manderbach, CHMM
Stewart Abrams, PE

Info: Kevin Hay, Sal Misiti – Town of North Castle
Kimberly Semon, PE, Matthew Wenrick, PE - Langan

Date: March 2, 2022

Re: Treatment Evaluation Memorandum
Town of North Castle – Water District #2
Armonk, New York 10504
Langan Project No.: 190073501

This Treatment Evaluation Memorandum (“Memo”) was prepared by Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, DPC (Langan) on behalf of the Town of North Castle for the Water District #2 (the “Site”) located in Armonk, New York. This Memo was prepared in response to the Notices of Violation from the Westchester County Department of Health (WCDOH) for per- and polyfluoroalkyl substances (PFAS), specifically Perfluorooctanoic acid (PFOA) and/or Perfluorooctanesulfonic acid (PFOS), concentrations exceeding the Maximum Contamination Level (MCL) of 10 parts per trillion (ppt) in Wells #2, #3 and #5, located at the Site. This memo summarizes the planned corrective action for the removal of PFOA and PFOS in accordance with Part 5, Subpart 5-1, Section 5-1.12(a)(2) of the New York State Sanitary Code (NYSSC).

Background

The Site is identified as Public Water Supply (PWS) ID 5903446 and is located in the primarily residentially Windmill Farms area, and serves a population of about 1,200 residents through 372 connections plus two non-residential connections (Coman Hill Elementary School and The Summit Club). A Site Location Map is provided on **Figure 1**. The Site comprises five water supply wells (Well #2 through Well #5). Groundwater is collected from the remaining four monitoring wells, set within the Mianus Aquifer. The supply well screens are set between about 40 and 70 feet below surface grade (about 370 to 400 feet above mean sea level).

The wells are sampled quarterly for PFOA and PFOS in accordance with the NYSSC. During the second quarter 2021 monitoring event, PFOA was identified in Well #2 at a concentration of 11.7 ppt, exceeding the NYSDOH MCL of 10 ppt. Additionally, PFOA was identified in Well #5 at a concentration of 11.2 ppt during the third quarter 2021 monitoring event. Notices of violation are provided as **Attachment 1**. Based on the information provided by Mr. Sal Misiti, the Town

Technical Memorandum

Treatment Evaluation Memorandum
Town of North Castle – Water District #2
Armonk, New York 10504
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March 2, 2022- Page 2 of 7

Director of Water & Sewer Operations, Well #2 is not currently used for potable water production due to low yield. Well #5 has also been temporarily shut down at this time.

A fourth quarter sampling event was conducted on December 21, 2021. During this sampling event, PFOA was detected in Well #3 at a concentration of 11.2 ppt, and PFOS was detected in Well #2 at a concentration of 11.1 ppt. A sample collected from the system entry point identified PFOA and PFOS at concentrations of 6.34 ppt and 5.84, respectively, which are below the NYSDOH MCL. A confirmation sampling event conducted on February 11, 2022 did not identify PFOA or PFOS above the MCL in Wells #3 and #5. Analytical results from the fourth quarter 2021 sampling event and February 2022 confirmation sampling are provided in **Attachment 2**.

Purpose

The purpose of this Memo is to provide a preliminary evaluation of treatment options to reduce concentrations of PFOA and PFOS from drinking water produced by the Site. Treatment technologies selected for the evaluation are widely used, proven PFAS removal methods. This evaluation addresses site constraints noted in the November 17, 2021 site walk performed by Langan and documentation provided to Langan by the Town of North Castle.

Site Description

The Site has a groundwater supply system that includes four groundwater extraction wells (Wells #2 through #5). Well #2 and Wells #3 and #5 are located about 800 and 1,000 feet southwest of the main pump house, respectively. Well #2 is located within a standalone concrete housing unit, and Well #3 is located within a fenced-in area with secured gate. There is no housing or fencing around Well #5. Three test wells, one outside of the Well #2 housing and two adjacent to Well #5, were also observed during the site visit; however, they do not produce water for the system. Wells #2, #3 and #5 merge at a housing unit about 600 feet southwest of the main pump house. The combined water line is pumped to the main pump house which also houses Well #4. A sodium hypochlorite liquid chlorination feed is added to the consolidated water line, which is then pumped to an underground, 10,000 gallon contact tank located southeast of the main pump house. When the District's 600,000 gallon storage tank calls for water, two alternating 30 horsepower (HP) multi-stage vertical booster pumps convey water from the contact tank to the distribution system.

The Site is bound by vacant land to the north, residential properties to the east, preserved wetlands, vacant land and residential properties to the south, and Mianus River followed by residential properties to the west. The surrounding area is occupied primarily by residential properties and freshwater forested/shrub wetlands and freshwater ponds. An easement associated with an overhead electrical line runs from northeast to southwest along the eastern side of the main pump house. The Site Layout is shown in **Figure 2** and configuration of the Site Features are provided on **Figure 3**. A photo log is provided as **Attachment 3**.

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Water Quality and Demand

The water is sourced from an unconfined aquifer (Mianus Aquifer). The water quality is generally low in dissolved solids, pH neutral, low alkalinity, low iron and manganese, and moderate hardness. Based on the available data, the Langelier and Ryznar indices predict neither significant scaling nor corrosive conditions. Sodium concentrations are elevated; however, this is expected for groundwater extracted from an unconfined aquifer near the northeastern coastline. The July 29, 2020 Report of Analysis is provided as **Attachment 4**.

Typical water generation rates, provided by the District, have been 100 gallons per minute (gpm) monthly average with a peak monthly average of 235 gpm (August 2015). The maximum daily pumping rates have historically ranged from about 0.3 to 0.33 million gallons per day (MGD), and the maximum pumping capacity for the system is about 0.52 MGD. A table summarizing historical water generation rates and historical NYSDEC Water Taking Reports are provided as **Attachments 5A and 5B**, respectively. Chlorination is applied to retain a residual for disinfection of the distribution system; no further conditioning or treatment is required prior to distribution of water.

Utility Service Area, Use & Characteristics

The Site is one of four water districts servicing the Town of North Castle and has 372 residential and two non-residential service connections. Currently, further residential development is not planned within the District; therefore, a significant increase in demand or performance upgrades is not anticipated. Between 2012 and 2016, upgrades to the District included modifications to the pump equipment, controls, and emergency power, and the replacement of aging and failing piping within the entire distribution network.

PFOA/PFOS Treatment Process Selection

The two most common types of PFAS removal technologies are granular activated carbon (GAC) adsorption or ion-exchange (IX) resin. Both types of media are widely used and proven technologies. GAC is often used to remove a variety of organic contaminants including volatile organic compounds (VOC), and disinfection byproducts as well as generally enhancing aesthetic properties such as taste and odor. A wide range of IX resins are available for the removal of individual constituents such as metals or other specific ions. Comparatively, IX requires less contact time than GAC for the removal of PFAS, therefore requiring smaller volume vessels. While GAC is known to have excellent PFAS adsorption, it is less effective than IX at removing shorter chain PFAS compounds. Lastly, both GAC and IX may be recycled/regenerated depending on analytical characterization of the spent media.

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Implementation and Construction Considerations

- Influent Water Chemistry and Biological Activity - Overall, high water quality is necessary for the proper function of either GAC or IX, which in turn supports a long media life and high adsorptive efficiency. Based on the analytical data received by Langan (**Attachment 4**), the water quality appears to be pH-neutral and neither corrosive nor scale-forming. Further, relatively low concentrations of naturally-occurring metals (i.e., iron and manganese), turbidity and total dissolved solids (TDS) indicate that pretreatment will not be necessary for either GAC or IX other than sediment filtration, as recommended by the manufacture of the contactor units.
- Disinfection - Groundwater is chlorinated at a dosage necessary to create a chlorine residual at the farthest point of the water supply distribution system. Disinfection is important for both GAC and IX; however, chlorination will impact GAC and IX reducing the life of the each media. The current chlorination system will remain in place, but will be delivered at a point after the GAC or IX contactors. If necessary, a bio-dispersant feed or a low-level chlorine feed can be used prior to GAC and IX to prevent biological clogging of the contactors.
- Layout, Integration of Equipment, and Utility Needs – Accounting for pretreatment and disinfection, the location of the contactors will be between the confluence of the individual wells and prior to final chlorination. The selected location is adjacent to the main pump house. Depending on the manufacturer's specification, there will be a need for an available water supply for the backwash system, a waste line for the backwash water, and a compressed air line to assist with the carbon exchange transfer process. Examples of backwash water flow rates and compressed air specifications are included in **Attachments 6A and 6B**. The available data suggests that that backwash events will occur infrequently.
- Weather Protection – Providing insulation or housing will be required, as the contactors generally do not have integrated freeze protection. Therefore, building new or modifying the existing structure is recommended over attempting to winter-proof, for energy efficiency as well as health and safety of personnel, security, and operability. The structure must have access for media exchanges, heat and lighting for safe, continuous operation, and be sized appropriately for the contactor vessels. The approximate vessel sizes are included in **Attachments 6A and 6B** for consideration of building size requirements.
- Accessibility – Media changes for contactors in this size range are typically performed by vacuum trucks which also haul the fresh media to the Site and the spent media from the Site for regeneration. These tractor trailers can carry up to 20,000 pounds of dry media (40,000 pounds wet). Combined with the weight of the empty tractor-trailer, this significant vehicle weight will be taken into account when designing the driveway and parking areas. An example of a vacuum trailer with dimensions is provided as **Attachment 7**. The truck will connect to the contactor units, air and water supplies for

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exchanges, sufficient space will be provided for the truck to turnaround at the Site prior to departure. Additionally, during absorber delivery and installation and media exchange events, the work area will be maintained interference with vegetation, power lines and other overhead obstructions.

- Geotechnical and Civil – As previously stated, the load bearing capacity of the driveway and the layout for tractor-trailer maneuvers are critical. The contactors and housing will also need to be considered in the design. See the example contactor specifications provided as **Attachment 6A and 6B**.
- Other Site Considerations – In tandem with overhead obstructions and subsurface structural aspects, soil types, wetlands delineation, flood plain analysis, Site use, and permits will all need to be considered.

Operation, Monitoring and Maintenance (OM&M) Plan

Periodically (at least monthly), samples would be collected at the total influent, between the lead and lag vessel, and effluent of the vessels to verify removal of contaminant concentrations. Pressures would be monitored at these locations as well to access bed clogging. Occasional backwashing of the carbon vessels re-stratifies the beds and removes solids and helps prolong media life and more effective adsorption. Beyond routine OM&M, media exchanges are not expected to be necessary more frequently than once per year. Specialized operators or training is not necessary if the GAC or IX is not being regenerated onsite and media exchanges will be performed by the vendors.

PFOA/PFOS Treatment Evaluation Summary

Based on the above operational parameters and discussions with reputable vendors, the installation of two 20,000-pound GAC units or two 79 cubic foot (equivalent size to 3,300-pound GAC vessels) IX resin units plumbed in series would be the most appropriate for this application. The size of the units are based on historical maximum flow rates and a minimum empty bed contact time (EBCT) recommended for PFAS removal. Based on the concentrations of PFOA and PFOS, GAC or IX exchanges are both expected to be infrequent with the media exchange frequency being once every 12 to 18 months. Based on water quality analytical data provided, there is no undesirable impacts to the media from water quality issues are expected (i.e., scaling, iron fouling, etc.). Additionally, the storage capacity of the water distribution system is large enough to allow for short shutdowns of the groundwater extraction system; therefore, no additional back-up units are being recommended to allow for continuous flow during backwashes or maintenance events.

GAC is a widely used adsorption media, readily available, and generally a cost-effective means to reducing a variety of contaminate compounds; however, based on the Site access and spatial limitations, IX resin may be a more viable option for the treatment of PFAS impacted groundwater for the District. Requirements for ground load bearing capacity, building size, water and

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compressed air requirements, and encroachment of existing utilities, easements, and protected lands will be considered as part of the final design, which are simplified with the much smaller IX units.

IX resin has a proven higher effectiveness at removing low concentrations of PFOA and PFOS to non-detect as well as removing shorter-chain PFAS compounds that are not easily adsorbed by GAC. There are no additional contaminants of concern or water quality parameters that would benefit from the ability to adsorb a variety of constituents provided by GAC, therefore the selective contaminant removal capability of IX is more advantageous. While the unit price and wide availability of GAC are cost effective for most applications, the predicted low exchange rate coupled with the much smaller vessel size requirement, lower the capital cost, annual cost for rebedding services, and reduced OM&M requirements for IX are significant for this application. Therefore, Langan is recommending IX for the removal of PFOA and PFOS at this Site to provide a cost effective solution and will provide exceptional reduction of risk.

PFOA/PFOS Treatment Design and Implementation

Two 79 cubic foot IX units arranged in series and coupled with a manifold capable of switching the vessels from lead to lag and lag to lead by manipulating valves is a common configuration and is recommended for this Site. The IX units will require sediment filtration to 5 microns through trade size #2 bag filter housings rated for the maximum design flow (or equivalent cartridge filtration system) to protect the IX units from clogging. While not expected, and therefore not included in this design scope, should biofouling become an issue in the IX units, a bio-dispersant chemical or chlorine low-level feed implementation will be considered. This arrangement of unit processes will be plumbed into the existing system immediately before the existing chlorination feed.

Assuming overhead obstructions, trucking path, load bearing properties and other considerations mentioned above are not limiting, the Site will need to be prepared for placement of the new equipment. A proposed building addition location is shown in **Figures 4A and 4B**. The building shall be equipped with heat, insulation, lighting, and an overhead door that will provide easy access for installation, rebedding, and removal services of the IX vessels. The tie-in location shall be designed with a bypass of the IX vessels so that water production may continue during construction, startup/shutdown and pilot testing (if required). A need for compressed air, permanent connection to sewer or hard-piped backwash lines are not expected to be necessary as the need for backwashes is infrequent.

Startup and shakedown will be performed once the final construction punch list is completed. The new equipment shall be filled with water to identify leaks and remain filled for at least 24 hours to allow the IX to degas. The initial fill shall be performed by filling the vessels from the bottom up as this will assist to stratify the beds and creating conditions more conducive to providing maximum contact with the water. After soaking the vessels, a performance test will

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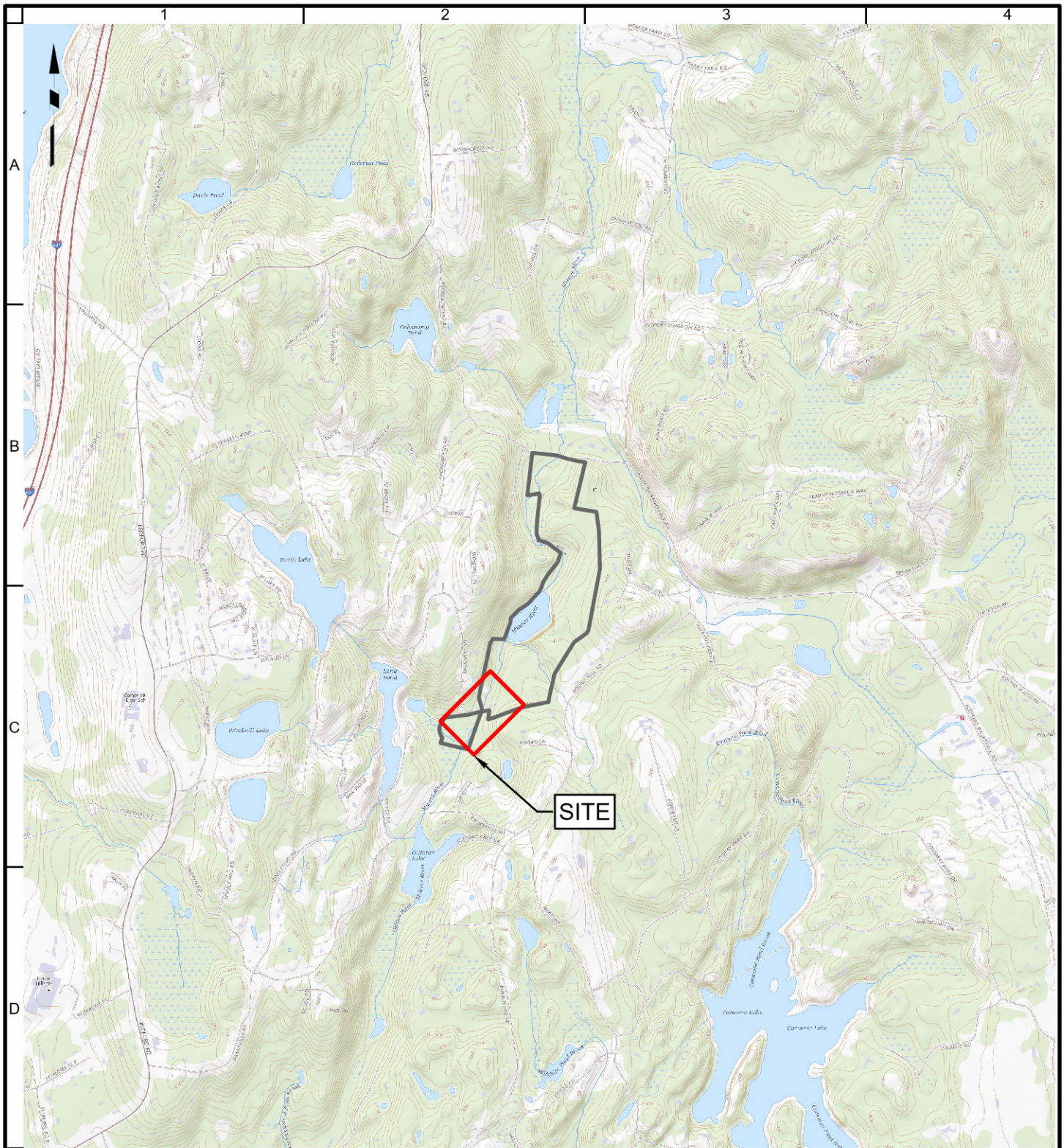
be performed by diverting water through the sediment filters and IX units at the expected design flow. Confirmation samples will be collected from the influent, between vessels and effluent to demonstrate the removal of PFOS and PFOA from the water. This test water shall be sent to waste until the system is shown to be effective.

Once the filtration and IX system is online, the Town will be responsible for the routine OM&M of the system. Records of flow rates/totals, pressures on either side of the filtration and IX units, and sampling data will be kept onsite. High differential pressures and reduced flow rates are indicators of bag/cartridge filter or IX media clogging and the filter and/or media would be replaced to mitigate the pressure difference to within manufacturer's specifications. Backwashing of the IX units is not expected to be required between rebedding services based on the provided water quality data. PFOA/PFOS analytical data collected pre-, mid- and post-IX vessel will be used to indicate when an exchange is necessary. The IX vendor will be notified to perform an exchange of the lead vessel once a breakthrough concentration, roughly 10% of the untreated water concentration, is confirmed via analytical data at the mid-IX location. The lag vessel is intended solely as a polishing step and diligent monitoring will minimize contaminant loading on the lag vessel. Following the exchange and prior to restart, the lead vessel with fresh media shall be placed in the lag position and the previous lag vessel in the lead position so that the fresh media will always act as the polishing step. The treatment system shall be inspected for leaks, paint damage, metal corrosion, etc. on a routine basis as well.

Summary

Ion exchange is recommended for providing the highest level of protection compared to GAC, is significantly more compact and is more cost effective. A building addition is proposed to provide protection from environmental conditions that will house the proposed equipment. Two major pieces of treatment equipment are recommended which include the two 79 cubic foot IX vessels with manifold and a set of four #2 bag filter housings with 5-micron filter bags for protection of the IX units. Ongoing OM&M is expected to be performed by the Town with the exception of media exchanges provided by the vendor.

FIGURES



Legend

- Approximate Site Boundary
- Approximate Lot Boundary



Notes:
 1. Basemap adapted from United States Geological Survey (USGS) 7.5-Minute Series Topographical Maps, Mount Kisco, New York, Quadrangle.
 2. All features shown are approximate.

LANGAN

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Langan Engineering & Environmental Services, Inc.
 Langan Engineering, Environmental, Surveying,
 Landscape Architecture and Geology, D.P.C.
 Langan International LLC

Collectively known as Langan

Project

74 WINDMILL ROAD

Parcel ID 102.01-2-89

ARMONK

WESTCHESTER COUNTY NEW YORK

Figure Title

SITE LOCATION MAP

Project No.

190073501

Date

2/14/2022

Scale

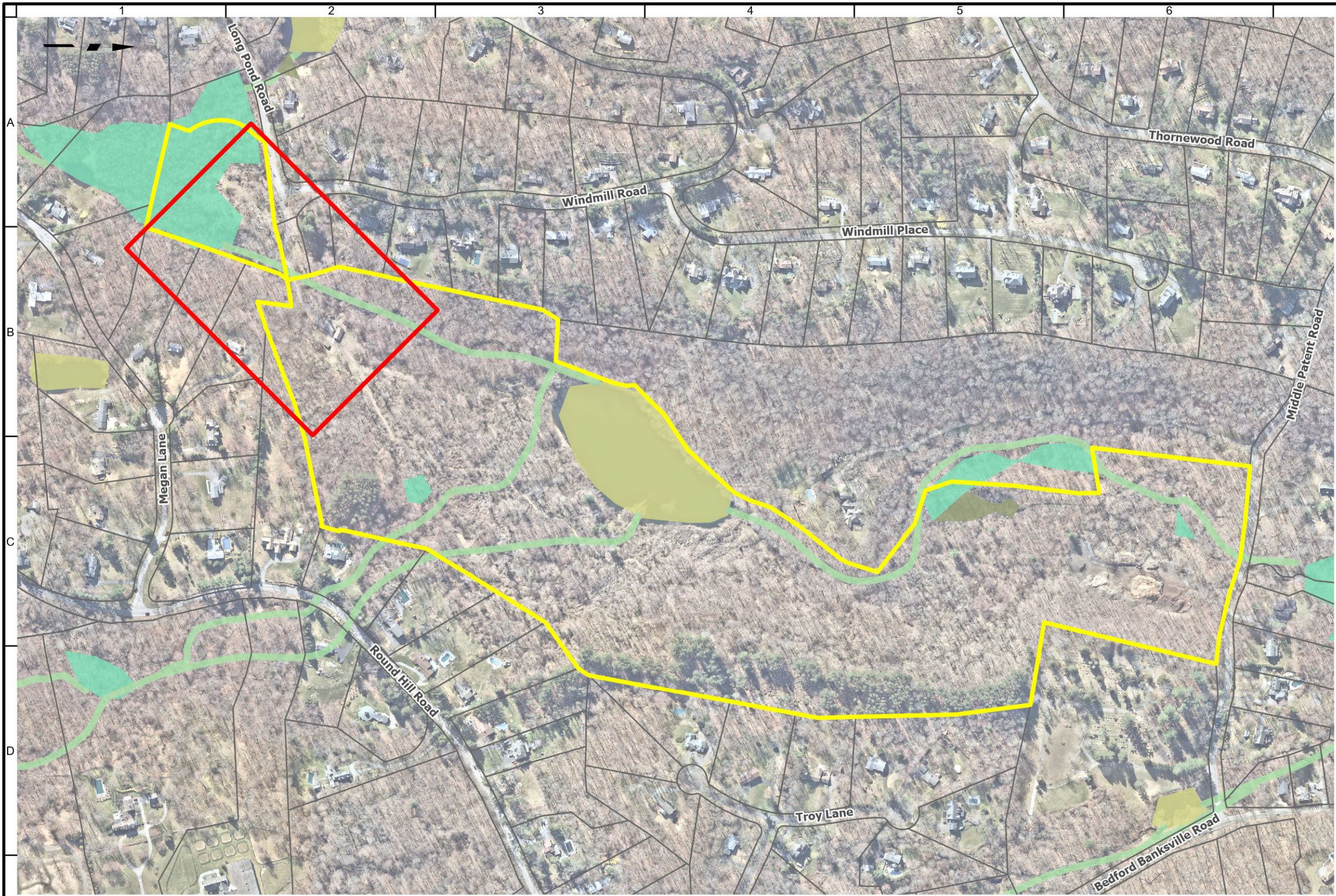
1"=2,000'

Drawn By

GS

Figure No.

1



Legend

- Approximate Site Boundary
- Approximate Lot Boundary
- North Castle Parcels
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

Notes:
1. Aerial imagery provided through Langan's subscription to NearMap.com, flown 04/06/2021.
2. Site Located in the Saugatuck watershed.
3. Wetlands data provided by the U.S. Fish and Wildlife Service.
4. Parcel data provided by Westchester County Geographic Information Systems.
5. All features shown are approximate.



LANGAN Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. 1 North Broadway, Suite 910 White Plains, NY 10601 T: 914.323.7400 F: 914.323.7401 www.langan.com	Project 74 WINDMILL ROAD Parcel ID 102.01-2-89 ARMONK WESTCHESTER COUNTY NEW YORK	SITE LAYOUT	Project No. 190073501	2
	Date 2/14/2022			
	Scale AS SHOWN			
	Drawn By GS			



Legend
Approximate Lot Boundary

Notes:
1. Aerial imagery provided through Langan's subscription to NearMap.com, flown 04/06/2021.
2. All features shown are approximate.



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Project
74 WINDMILL ROAD

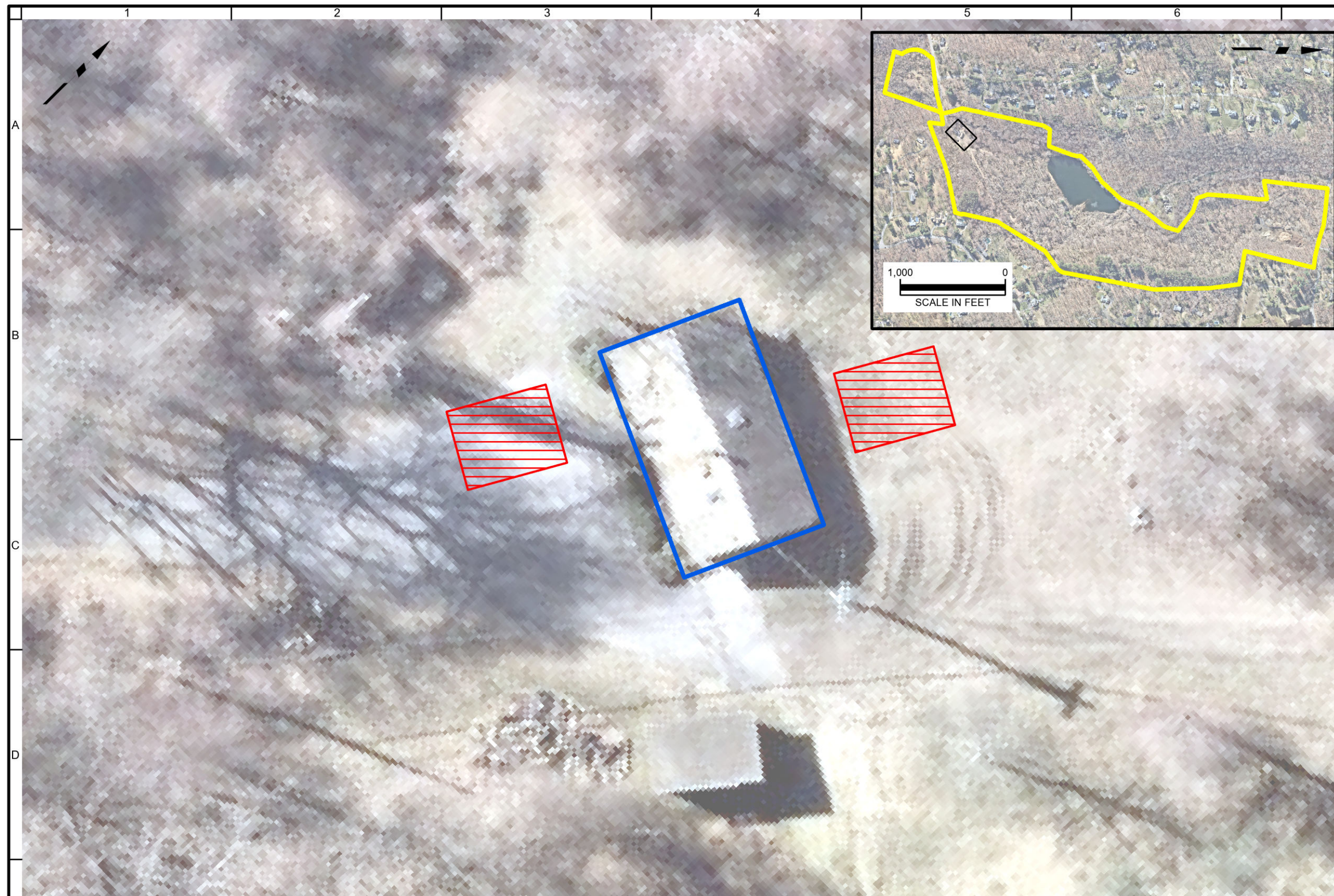
Parcel ID 102.01-2-89
ARMONK

WESTCHESTER COUNTY NEW YORK




Figure Title
SITE FEATURE MAP

Project No.
190073501
Date
3/2/2022
Scale
1"=80'
Drawn By
GS

Figure No.
3



Legend

-  Approximate Footprint for IX Vessel Housing
 Main Pump House Boundary
 Approximate Lot Boundary

Notes:

- Notes:
1. Aerial imagery provided through Langan's subscription to NearMap.com, flown 04/06/2021.
 2. All features shown are approximate.
 3. Approximate IX vessel housing footprint is 20-feet long by 20-feet wide with a minimum 12-foot headroom.
 4. IX = Ion-Exchange Resin

A horizontal scale bar with a central point labeled '0'. To the left of '0' is a tick mark labeled '20', and to the right is another tick mark labeled '20'. The entire bar is labeled 'SCALE IN FEET' below it.

LANGAN

Langan Engineering, Environmental, Surveying,
Landscape Architecture and Geology, D.P.C.
1 North Broadway, Suite 910
White Plains, NY 10601

T: 914.323.7400 F: 914.323.7401 www.langan.com

Project	
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74 WINDMILL ROAD

Parcel ID 102.01-2-89

ARMONK

WESTCHESTER COUNTY

NEW YORK

Figure Title

PROPOSED EQUIPMENT PLACEMENT AREAS - IX

Project No.	
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190073501

T	Date
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2/14/2022

Scale

AS SHOWN

Drawn By	
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Figure No.

4B

ATTACHMENT 1

Westchester Dept. of Health Notice of
Violations

George Latimer
County Executive

Sherlita Amler, M.D.
Commissioner of Health

September 21, 2021

Town of North Castle
15 Bedford Road
Armonk, NY 10504
ATTN: Hon Michael J. Schiliro, Supervisor

RE: Violation ID: 2021 196
Public Water Supply
North Castle WD#2
North Castle (T)
PWS ID: NY 5903446

Dear Supervisor Schiliro:

A review of Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) sampling results for the second quarter 2021 monitoring period for the above referenced public water supply revealed that the PFOA levels exceeded the Maximum Contamination Level (MCL) of 0.0000100 milligrams per liter (mg/L) with an average value for the quarter of 0.0000117 mg/L at well #2. This constitutes non-compliance with Part 5, Subpart 5-1, Section 5-1.52, and Table 3 of the New York State Sanitary Code (NYSSC).

You are reminded that Tier 2 Public Notification must be made within thirty (30) days from the date of this notice in accordance with Part 5, Subpart 5-1, Section 5-1.52 (Table 13) and 5-1.78 of the New York State Sanitary Code, and that within ten (10) days of completing the Public Notification, certification shall be submitted to the Department with a copy of the notice which was distributed. A draft of the notice must be submitted to this Department for review prior to distribution.

Please find the attached Notices of Violation generated by the New York State Department of Health Safe Drinking Water Information System (SDWIS) and recorded on its database.

In light of the above, it is requested that a proposal to provide a corrective action to the above MCL violations must be submitted to this Department no later than October 31, 2021.

Should you have any questions or require additional information, please Ms. Xinxin Li at (914) 864-5490 or the undersigned at (914) 864-7348.

Very truly yours,



Zaw Thein, P.E.
Associate Engineer
Bureau of Environmental Quality

ZT:XL

encl.

cc: Sal Misiti, Director of Water & Sewer Operations
Andy Tse, NYSDOH
File

September 21, 2021
NOTICE OF VIOLATION
New York State Sanitary Code, 10 NYCRR Part 5

Re: 02 - MCL, AVERAGE
Violation ID: 2021 196
Determination Date: September 21, 2021
NORTH CASTLE WD #2
PWS ID: NY5903446
NORTH CASTLE (T), WESTCHESTER
County

Violation ID: 2021 196
Determination Date: 9/21/2021
Violation Type:
Name: 02 - MCL, AVERAGE
Analyte Group: PERFLUOROCTANOIC ACID (PFOA) - 2806
Analyte Name: PERFLUOROCTANOIC ACID (PFOA)
Analyte Code: 2806
Compliance Period Begin: 4/1/2021
Compliance Period End: 6/30/2021
Violation Period Begin Date: 4/1/2021
Violation Period End Date: 6/30/2021

Reference Enforcement ID: 2021 199



George Latimer
County Executive

Sherita Amler, M.D.
Commissioner of Health

RECEIVED



December 22, 2021

Town of North Castle Water &
Sewer Department

December 15, 2021

Town of North Castle
15 Bedford Road
Armonk, NY 10504
ATTN: Hon Michael J. Schiliro, Supervisor

RE: Violation ID: 2022 199
North Castle WD#2
Public Water Supply
North Castle (T)
PWS ID: NY 5903446

Dear Supervisor Schiliro:

A review of Perfluorooctanoic acid (PFOA) sampling results for the third quarter 2021 monitoring period for the above referenced public water supply revealed that the PFOA levels exceeded the Maximum Contaminant Level (MCL) of 0.0000100 milligrams per liter (mg/l) with an average values for the quarter of 0.0000112 mg/l at well #5. This constitutes non-compliance with Part 5, Subpart 5-1, Section 5-1.52, and Table 3 of the New York State Sanitary Code (NYSSC).

You are reminded that Tier 2 Public Notification must be made within thirty (30) days from the date of this notice in accordance with Part 5, Subpart 5-1, Section 5-1.52 (Table 13) and 5-1.78 of the New York State Sanitary Code, and that within ten (10) days of completing the Public Notification, certification shall be submitted to the Department with a copy of the notice which was distributed. A draft of the notice must be submitted to this Department for review prior to distribution.

Please find the attached Notices of Violation generated by the New York State Department of Health Safe Drinking Water Information System (SDWIS) and recorded on its database.

Please be advised that the Department established a compliance schedule for North Castle WD#2 under the letter dated November 3, 2021 to provide corrective action for the removal of PFOA within 120 days (i.e. by March 3, 2022) in accordance with Part 5, Subpart 5-1, Section 5-1.12(a)(2) of the NYSSC. Failure to comply with the schedule may results in issuance of Notice of Hearing and referral to Administrative Hearing Office.

Should you have any questions or require additional information, please contact Ms. Xinxin Li, Assistant Engineer, at (914) 864-5490 or the undersigned at (914) 864-7348.

Very truly yours,

Zaw Thein, P.E.
Associate Engineer
Bureau of Environmental Quality

ZT:XL

cc: Sal Misiti, Director of Water & Sewer Operations
Andy Tse, NYSDOH
File

Department of Health
25 Moore Avenue
Mount Kisco, New York 10549

Telephone: (914) 864-7348

Fax: (914) 813-4691



December 15, 2021
NOTICE OF VIOLATION
New York State Sanitary Code, 10 NYCRR Part 5

Re: 02 - MCL, AVERAGE
Violation ID: 2022 199
Determination Date: December 14, 2021
NORTH CASTLE WD #2
PWS ID: NY5903446
NORTH CASTLE (T), WESTCHESTER
County

Violation ID: 2022 199
Determination Date: 12/14/2021
Violation Type:
Name: 02 - MCL, AVERAGE
Analyte Group: PERFLUOROCTANOIC ACID (PFOA) - 2806
Analyte Name: PERFLUOROCTANOIC ACID (PFOA)
Analyte Code: 2806
Compliance Period Begin: 7/1/2021
Compliance Period End: 9/30/2021
Violation Period Begin Date: 7/1/2021
Violation Period End Date: 9/30/2021

Reference Enforcement ID: 2022 208

ATTACHMENT 2

2021 Fourth Quarter Analytical Results



ANALYTICAL REPORT

Lab Number:	L2171287
Client:	Town of North Castle Water Department 15 Business Park Drive Armonk, NY 10504
ATTN:	Sal Misiti
Phone:	(914) 273-3000
Project Name:	TOWN OF NORTH CASTLE
Project Number:	Q4 SAMPLES
Report Date:	01/19/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: TOWN OF NORTH CASTLE
Project Number: Q4 SAMPLES

Lab Number: L2171287
Report Date: 01/19/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2171287-01	WELL #3	DW	WD2-WELLS	12/28/21 12:25	12/29/21
L2171287-02	WELL #4	DW	WD2-WELLS	12/28/21 12:40	12/29/21
L2171287-03	WELL #2	DW	WD2-WELLS	12/28/21 12:55	12/29/21
L2171287-04	WELL #5	DW	WD2-WELLS	12/28/21 13:05	12/29/21
L2171287-05	ENTRY POINT	DW	WD2-WELLS	12/28/21 13:10	12/29/21
L2171287-06	FB	DW	WD2-WELLS	12/28/21 13:15	12/29/21
L2171287-07	FB	DW	WD2-WELLS	12/28/21 13:20	12/29/21

Project Name: TOWN OF NORTH CASTLE
Project Number: Q4 SAMPLES

Lab Number: L2171287
Report Date: 01/19/22

Case Narrative

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

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

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

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

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

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

Project Name: TOWN OF NORTH CASTLE
Project Number: Q4 SAMPLES

Lab Number: L2171287
Report Date: 01/19/22

Case Narrative (continued)

Report Submission

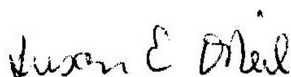
All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Perfluorinated Alkyl Acids by EPA 533

WG1593525-2R: The sample was re-analyzed due to QC failures in the original analysis. The results of the re-analysis are reported.

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

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 01/19/22

ORGANICS

SEMIVOLATILES

Project Name: TOWN OF NORTH CASTLE
Project Number: Q4 SAMPLES

Lab Number: L2171287
Report Date: 01/19/22

SAMPLE RESULTS

Lab ID: L2171287-01
 Client ID: WELL #3
 Sample Location: WD2-WELLS

Date Collected: 12/28/21 12:25
 Date Received: 12/29/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Dw
 Analytical Method: 120,522
 Analytical Date: 01/17/22 20:28
 Analyst: PS

Extraction Method: EPA 522
 Extraction Date: 01/11/22 04:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by EPA 522 - Mansfield Lab						
1,4-Dioxane	ND		ug/l	0.150	0.150	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
1,4-Dioxane-d8	78			70-130		

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2171287**Project Number:** Q4 SAMPLES**Report Date:** 01/19/22**SAMPLE RESULTS**

Lab ID: L2171287-01

Date Collected: 12/28/21 12:25

Client ID: WELL #3

Date Received: 12/29/21

Sample Location: WD2-WELLS

Field Prep: Not Specified

Sample Depth:

Matrix: Dw

Extraction Method: EPA 533

Analytical Method: 136,533

Extraction Date: 01/13/22 11:15

Analytical Date: 01/18/22 14:36

Analyst: MP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	4.45		ng/l	1.84	0.614	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.84	0.614	1
Perfluoropentanoic Acid (PFPeA)	2.54		ng/l	1.84	0.614	1
Perfluorobutanesulfonic Acid (PFBS)	5.88		ng/l	1.84	0.614	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.84	0.614	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	1.84	0.614	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.84	0.614	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.84	0.614	1
Perfluorohexanoic Acid (PFHxA)	2.83		ng/l	1.84	0.614	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.84	0.614	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.84	0.614	1
Perfluoroheptanoic Acid (PFHpA)	1.36	J	ng/l	1.84	0.614	1
Perfluorohexanesulfonic Acid (PFHxS)	1.54	J	ng/l	1.84	0.614	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.84	0.614	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.84	0.614	1
Perfluorooctanoic Acid (PFOA)	10.1		ng/l	1.84	0.614	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	0.614	1
Perfluorononanoic Acid (PFNA)	0.735	J	ng/l	1.84	0.614	1
Perfluorooctanesulfonic Acid (PFOS)	8.12		ng/l	1.84	0.923	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.84	0.614	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	0.614	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.84	0.614	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	0.614	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.84	0.614	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	0.614	1

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2171287**Project Number:** Q4 SAMPLES**Report Date:** 01/19/22**SAMPLE RESULTS**

Lab ID: L2171287-01

Date Collected: 12/28/21 12:25

Client ID: WELL #3

Date Received: 12/29/21

Sample Location: WD2-WELLS

Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	111		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	88		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	118		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	86		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	82		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	77		50-200

Project Name: TOWN OF NORTH CASTLE
Project Number: Q4 SAMPLES

Lab Number: L2171287
Report Date: 01/19/22

SAMPLE RESULTS

Lab ID: L2171287-02
 Client ID: WELL #4
 Sample Location: WD2-WELLS

Date Collected: 12/28/21 12:40
 Date Received: 12/29/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Dw
 Analytical Method: 120,522
 Analytical Date: 01/17/22 20:54
 Analyst: PS

Extraction Method: EPA 522
 Extraction Date: 01/11/22 04:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by EPA 522 - Mansfield Lab						
1,4-Dioxane	ND		ug/l	0.144	0.144	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
1,4-Dioxane-d8	82			70-130		

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2171287**Project Number:** Q4 SAMPLES**Report Date:** 01/19/22**SAMPLE RESULTS**

Lab ID: L2171287-02

Date Collected: 12/28/21 12:40

Client ID: WELL #4

Date Received: 12/29/21

Sample Location: WD2-WELLS

Field Prep: Not Specified

Sample Depth:

Matrix: Dw

Extraction Method: EPA 533

Analytical Method: 136,533

Extraction Date: 01/13/22 11:15

Analytical Date: 01/18/22 14:45

Analyst: MP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	2.56		ng/l	1.91	0.638	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.91	0.638	1
Perfluoropentanoic Acid (PFPeA)	1.07	J	ng/l	1.91	0.638	1
Perfluorobutanesulfonic Acid (PFBS)	7.26		ng/l	1.91	0.638	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.91	0.638	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	1.91	0.638	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.91	0.638	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.91	0.638	1
Perfluorohexanoic Acid (PFHxA)	1.15	J	ng/l	1.91	0.638	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.91	0.638	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.91	0.638	1
Perfluoroheptanoic Acid (PFHpA)	0.840	J	ng/l	1.91	0.638	1
Perfluorohexanesulfonic Acid (PFHxS)	0.917	J	ng/l	1.91	0.638	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.91	0.638	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.91	0.638	1
Perfluorooctanoic Acid (PFOA)	4.81		ng/l	1.91	0.638	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.91	0.638	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.91	0.638	1
Perfluorooctanesulfonic Acid (PFOS)	3.02		ng/l	1.91	0.959	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.91	0.638	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.91	0.638	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.91	0.638	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.91	0.638	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.91	0.638	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.91	0.638	1

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2171287**Project Number:** Q4 SAMPLES**Report Date:** 01/19/22**SAMPLE RESULTS**

Lab ID: L2171287-02

Date Collected: 12/28/21 12:40

Client ID: WELL #4

Date Received: 12/29/21

Sample Location: WD2-WELLS

Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	90		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	122		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	81		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	96		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	78		50-200

Project Name: TOWN OF NORTH CASTLE
Project Number: Q4 SAMPLES

Lab Number: L2171287
Report Date: 01/19/22

SAMPLE RESULTS

Lab ID: L2171287-03
 Client ID: WELL #2
 Sample Location: WD2-WELLS

Date Collected: 12/28/21 12:55
 Date Received: 12/29/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Dw
 Analytical Method: 120,522
 Analytical Date: 01/17/22 21:48
 Analyst: PS

Extraction Method: EPA 522
 Extraction Date: 01/11/22 04:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by EPA 522 - Mansfield Lab						
1,4-Dioxane	ND		ug/l	0.144	0.144	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
1,4-Dioxane-d8	82			70-130		

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2171287**Project Number:** Q4 SAMPLES**Report Date:** 01/19/22**SAMPLE RESULTS**

Lab ID: L2171287-03

Date Collected: 12/28/21 12:55

Client ID: WELL #2

Date Received: 12/29/21

Sample Location: WD2-WELLS

Field Prep: Not Specified

Sample Depth:

Matrix: Dw

Extraction Method: EPA 533

Analytical Method: 136,533

Extraction Date: 01/13/22 11:15

Analytical Date: 01/18/22 14:54

Analyst: MP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	5.10		ng/l	1.93	0.645	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.93	0.645	1
Perfluoropentanoic Acid (PFPeA)	3.47		ng/l	1.93	0.645	1
Perfluorobutanesulfonic Acid (PFBS)	6.25		ng/l	1.93	0.645	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.93	0.645	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	1.93	0.645	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.93	0.645	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.93	0.645	1
Perfluorohexanoic Acid (PFHxA)	2.66		ng/l	1.93	0.645	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.93	0.645	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.93	0.645	1
Perfluoroheptanoic Acid (PFHpA)	2.55		ng/l	1.93	0.645	1
Perfluorohexanesulfonic Acid (PFHxS)	2.16		ng/l	1.93	0.645	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.93	0.645	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.93	0.645	1
Perfluorooctanoic Acid (PFOA)	17.3		ng/l	1.93	0.645	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.93	0.645	1
Perfluorononanoic Acid (PFNA)	0.772	J	ng/l	1.93	0.645	1
Perfluorooctanesulfonic Acid (PFOS)	11.2		ng/l	1.93	0.969	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.93	0.645	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.93	0.645	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.93	0.645	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.93	0.645	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.93	0.645	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.93	0.645	1

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2171287**Project Number:** Q4 SAMPLES**Report Date:** 01/19/22**SAMPLE RESULTS**

Lab ID: L2171287-03

Date Collected: 12/28/21 12:55

Client ID: WELL #2

Date Received: 12/29/21

Sample Location: WD2-WELLS

Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	113		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	110		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	80		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	82		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	82		50-200

Project Name: TOWN OF NORTH CASTLE
Project Number: Q4 SAMPLES

Lab Number: L2171287
Report Date: 01/19/22

SAMPLE RESULTS

Lab ID: L2171287-04
 Client ID: WELL #5
 Sample Location: WD2-WELLS

Date Collected: 12/28/21 13:05
 Date Received: 12/29/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Dw
 Analytical Method: 120,522
 Analytical Date: 01/17/22 22:17
 Analyst: PS

Extraction Method: EPA 522
 Extraction Date: 01/11/22 04:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by EPA 522 - Mansfield Lab						
1,4-Dioxane	ND		ug/l	0.144	0.144	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
1,4-Dioxane-d8	80			70-130		

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2171287**Project Number:** Q4 SAMPLES**Report Date:** 01/19/22**SAMPLE RESULTS**

Lab ID: L2171287-04

Date Collected: 12/28/21 13:05

Client ID: WELL #5

Date Received: 12/29/21

Sample Location: WD2-WELLS

Field Prep: Not Specified

Sample Depth:

Matrix: Dw

Extraction Method: EPA 533

Analytical Method: 136,533

Extraction Date: 01/13/22 11:15

Analytical Date: 01/18/22 15:03

Analyst: MP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	4.81		ng/l	1.85	0.618	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.85	0.618	1
Perfluoropentanoic Acid (PFPeA)	1.63	J	ng/l	1.85	0.618	1
Perfluorobutanesulfonic Acid (PFBS)	4.62		ng/l	1.85	0.618	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.85	0.618	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	1.85	0.618	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.85	0.618	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.85	0.618	1
Perfluorohexanoic Acid (PFHxA)	1.85		ng/l	1.85	0.618	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.85	0.618	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.85	0.618	1
Perfluoroheptanoic Acid (PFHpA)	1.59	J	ng/l	1.85	0.618	1
Perfluorohexanesulfonic Acid (PFHxS)	1.78	J	ng/l	1.85	0.618	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.85	0.618	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.85	0.618	1
Perfluorooctanoic Acid (PFOA)	11.0		ng/l	1.85	0.618	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.85	0.618	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.85	0.618	1
Perfluorooctanesulfonic Acid (PFOS)	6.81		ng/l	1.85	0.929	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.85	0.618	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.85	0.618	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.85	0.618	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.85	0.618	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.85	0.618	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.85	0.618	1

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2171287**Project Number:** Q4 SAMPLES**Report Date:** 01/19/22**SAMPLE RESULTS**

Lab ID: L2171287-04

Date Collected: 12/28/21 13:05

Client ID: WELL #5

Date Received: 12/29/21

Sample Location: WD2-WELLS

Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	92		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	77		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	100		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	75		50-200

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2171287**Project Number:** Q4 SAMPLES**Report Date:** 01/19/22**SAMPLE RESULTS**

Lab ID: L2171287-05
 Client ID: ENTRY POINT
 Sample Location: WD2-WELLS

Date Collected: 12/28/21 13:10
 Date Received: 12/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 136,533
 Analytical Date: 01/18/22 15:11
 Analyst: MP

Extraction Method: EPA 533
 Extraction Date: 01/13/22 11:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	3.23		ng/l	1.81	0.605	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.81	0.605	1
Perfluoropentanoic Acid (PFPeA)	1.60	J	ng/l	1.81	0.605	1
Perfluorobutanesulfonic Acid (PFBS)	6.85		ng/l	1.81	0.605	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.81	0.605	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	1.81	0.605	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.81	0.605	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.81	0.605	1
Perfluorohexanoic Acid (PFHxA)	1.70	J	ng/l	1.81	0.605	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.81	0.605	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.81	0.605	1
Perfluoroheptanoic Acid (PFHpA)	0.979	J	ng/l	1.81	0.605	1
Perfluorohexanesulfonic Acid (PFHxS)	1.49	J	ng/l	1.81	0.605	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.81	0.605	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.81	0.605	1
Perfluorooctanoic Acid (PFOA)	6.34		ng/l	1.81	0.605	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.81	0.605	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.81	0.605	1
Perfluorooctanesulfonic Acid (PFOS)	5.84		ng/l	1.81	0.910	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.81	0.605	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.81	0.605	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	0.605	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	0.605	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.81	0.605	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	0.605	1

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2171287**Project Number:** Q4 SAMPLES**Report Date:** 01/19/22**SAMPLE RESULTS**

Lab ID: L2171287-05
 Client ID: ENTRY POINT
 Sample Location: WD2-WELLS

Date Collected: 12/28/21 13:10
 Date Received: 12/29/21
 Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	94		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	74		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	73		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	70		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	84		50-200

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2171287**Project Number:** Q4 SAMPLES**Report Date:** 01/19/22**SAMPLE RESULTS**

Lab ID: L2171287-06

Date Collected: 12/28/21 13:15

Client ID: FB

Date Received: 12/29/21

Sample Location: WD2-WELLS

Field Prep: Not Specified

Sample Depth:

Matrix: Dw

Extraction Method: EPA 533

Analytical Method: 136,533

Extraction Date: 01/13/22 11:15

Analytical Date: 01/18/22 15:20

Analyst: MP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.77	0.592	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.77	0.592	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.77	0.592	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.77	0.592	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.77	0.592	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	1.77	0.592	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.77	0.592	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.77	0.592	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.77	0.592	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.77	0.592	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.77	0.592	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.77	0.592	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.77	0.592	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.77	0.592	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.77	0.592	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.77	0.592	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.77	0.592	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.77	0.592	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.77	0.890	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.77	0.592	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.77	0.592	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.77	0.592	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.77	0.592	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.77	0.592	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.77	0.592	1

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2171287**Project Number:** Q4 SAMPLES**Report Date:** 01/19/22**SAMPLE RESULTS**

Lab ID: L2171287-06

Date Collected: 12/28/21 13:15

Client ID: FB

Date Received: 12/29/21

Sample Location: WD2-WELLS

Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	80		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	89		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	82		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	81		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	90		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	107		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	88		50-200

Project Name: TOWN OF NORTH CASTLE
Project Number: Q4 SAMPLES

Lab Number: L2171287
Report Date: 01/19/22

SAMPLE RESULTS

Lab ID: L2171287-07
 Client ID: FB
 Sample Location: WD2-WELLS

Date Collected: 12/28/21 13:20
 Date Received: 12/29/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Dw
 Analytical Method: 120,522
 Analytical Date: 01/17/22 22:41
 Analyst: PS

Extraction Method: EPA 522
 Extraction Date: 01/11/22 04:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by EPA 522 - Mansfield Lab						
1,4-Dioxane	ND		ug/l	0.147	0.147	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
1,4-Dioxane-d8	82			70-130		

Project Name: TOWN OF NORTH CASTLE
Project Number: Q4 SAMPLES

Lab Number: L2171287
Report Date: 01/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 120,522
Analytical Date: 01/11/22 06:17
Analyst: PS

Extraction Method: EPA 522
Extraction Date: 01/11/22 04:00

Parameter	Result	Qualifier	Units	RL	MDL
1,4 Dioxane by EPA 522 - Mansfield Lab for sample(s): 01-04,07 Batch: WG1592690-1					
1,4-Dioxane	ND		ug/l	0.150	0.150

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	92		70-130

Project Name: TOWN OF NORTH CASTLE
Project Number: Q4 SAMPLES

Lab Number: L2171287
Report Date: 01/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 01/18/22 12:14
Analyst: MP

Extraction Method: EPA 533
Extraction Date: 01/13/22 11:15

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-06 Batch: WG1593525-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.668
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	0.668
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.668
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.668
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	0.668
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	2.00	0.668
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	0.668
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.668
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.668
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.668
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	0.668
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.668
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.668
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.668
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	0.668
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.668
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.668
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.668
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	1.00
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	0.668
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	0.668
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.668
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.668
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	0.668
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.668

Project Name: TOWN OF NORTH CASTLE
Project Number: Q4 SAMPLES

Lab Number: L2171287
Report Date: 01/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
 Analytical Date: 01/18/22 12:14
 Analyst: MP

Extraction Method: EPA 533
 Extraction Date: 01/13/22 11:15

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-06 Batch: WG1593525-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	83		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	85		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	78		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	65		50-200

Lab Control Sample Analysis**Batch Quality Control****Project Name:** TOWN OF NORTH CASTLE**Lab Number:** L2171287**Project Number:** Q4 SAMPLES**Report Date:** 01/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by EPA 522 - Mansfield Lab Associated sample(s): 01-04,07 Batch: WG1592690-2 WG1592690-3								
1,4-Dioxane	90		96		70-130	6		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,4-Dioxane-d8	92		93		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: TOWN OF NORTH CASTLE

Project Number: Q4 SAMPLES

Lab Number: L2171287

Report Date: 01/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-06 Batch: WG1593525-2								
Perfluorobutanoic Acid (PFBA)	102		-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	110		-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	110		-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	97		-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	106		-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	115		-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	71		-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	118		-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	120		-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	96		-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	98		-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	86		-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	102		-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	106		-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	119		-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	129		-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	115		-		70-130	-		30
Perfluorononanoic Acid (PFNA)	111		-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	103		-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	118		-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	111		-		70-130	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: TOWN OF NORTH CASTLE

Lab Number: L2171287

Project Number: Q4 SAMPLES

Report Date: 01/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-06 Batch: WG1593525-2								
Perfluorodecanoic Acid (PFDA)	126		-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	112		-		70-130	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	118		-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	111		-		70-130	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	82				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	87				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	93				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	84				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	98				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	76				50-200

Matrix Spike Analysis **Batch Quality Control**

Project Name: TOWN OF NORTH CASTLE
Project Number: Q4 SAMPLES

Lab Number: L2171287
Report Date: 01/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab		Associated sample(s): 01-06			QC Batch ID: WG1593525-3		QC Sample: L2170948-01		Client ID: MS Sample			
Perfluorobutanoic Acid (PFBA)	1.88	37.9	43.8	111		-	-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	37.9	38.8	102		-	-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	3.77	37.9	45.5	110		-	-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	9.72	33.6	48.8	116		-	-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	37.9	41.8	110		-	-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	33.8	42.0	124		-	-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	37.9	32.6	86		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	1.73J	35.5	43.8	123		-	-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	6.89	37.9	49.4	112		-	-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	35.6	37.4	105		-	-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	37.9	37.0	98		-	-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	1.62J	37.9	35.0	92		-	-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	34.6	36.8	107		-	-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	35.8	41.2	115		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	36.1	47.3	131	Q	-	-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	9.19	37.9	52.3	114		-	-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	36.1	40.0	111		-	-		70-130	-		30
Perfluorononanoic Acid (PFNA)	ND	37.9	45.0	119		-	-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	35.2	41.2	117		-	-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	35.4	41.1	116		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	36.4	39.8	109		-	-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	ND	37.9	40.0	106		-	-		70-130	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: TOWN OF NORTH CASTLE
Project Number: Q4 SAMPLES

Lab Number: L2171287
Report Date: 01/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab		Associated sample(s): 01-06			QC Batch ID: WG1593525-3		QC Sample: L2170948-01		Client ID: MS Sample			
Perfluoroundecanoic Acid (PFUnA)	ND	37.9	45.5	120	-	-	-	-	70-130	-	-	30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	35.8	38.3	107	-	-	-	-	70-130	-	-	30
Perfluorododecanoic Acid (PFDoA)	ND	37.9	44.3	117	-	-	-	-	70-130	-	-	30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	81				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	104				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	84				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	81				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	110				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82				50-200
Perfluoro[13C4]Butanoic Acid (MPFBA)	94				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	80				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	78				50-200

Lab Duplicate Analysis Batch Quality Control

Project Name: TOWN OF NORTH CASTLE

Project Number: Q4 SAMPLES

Lab Number: L2171287

Report Date: 01/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1593525-4 QC Sample: L2170949-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	1.85J	1.70J	ng/l	NC		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	3.28	3.64	ng/l	10		30
Perfluorobutanesulfonic Acid (PFBS)	9.34	8.78	ng/l	6		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	ND	ng/l	NC		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	ND	ng/l	NC		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	1.16J	1.15J	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	6.79	6.33	ng/l	7		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	1.23J	1.15J	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	9.30	9.61	ng/l	3		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: TOWN OF NORTH CASTLE

Project Number: Q4 SAMPLES

Lab Number: L2171287

Report Date: 01/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1593525-4 QC Sample: L2170949-01 Client ID: DUP Sample						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		101		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115		119		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		90		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	128		118		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		73		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		76		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		103		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		73		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	96		97		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		78		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		86		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		69		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	83		82		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		64		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		69		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	71		66		50-200

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2171287**Project Number:** Q4 SAMPLES**Report Date:** 01/19/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
C	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2171287-01A	Plastic 250ml Ammonium Acetate preserved	C	NA		3.4	Y	Absent		A2-533(28)
L2171287-01B	Plastic 250ml Ammonium Acetate preserved	C	NA		3.4	Y	Absent		A2-533(28)
L2171287-01C	Amber 500ml NaSulfite/NaHSO4 preserved	A	<4	<4	2.7	Y	Absent		A2-14DIOXANE-522(28)
L2171287-01D	Amber 500ml NaSulfite/NaHSO4 preserved	A	5	5	2.7	N	Absent		A2-14DIOXANE-522(28)
L2171287-02A	Plastic 250ml Ammonium Acetate preserved	C	NA		3.4	Y	Absent		A2-533(28)
L2171287-02B	Plastic 250ml Ammonium Acetate preserved	C	NA		3.4	Y	Absent		A2-533(28)
L2171287-02C	Amber 500ml NaSulfite/NaHSO4 preserved	A	<4	<4	2.7	Y	Absent		A2-14DIOXANE-522(28)
L2171287-02D	Amber 500ml NaSulfite/NaHSO4 preserved	A	5	5	2.7	N	Absent		A2-14DIOXANE-522(28)
L2171287-03A	Plastic 250ml Ammonium Acetate preserved	C	NA		3.4	Y	Absent		A2-533(28)
L2171287-03B	Plastic 250ml Ammonium Acetate preserved	C	NA		3.4	Y	Absent		A2-533(28)
L2171287-03C	Amber 500ml NaSulfite/NaHSO4 preserved	A	<4	<4	2.7	Y	Absent		A2-14DIOXANE-522(28)
L2171287-03D	Amber 500ml NaSulfite/NaHSO4 preserved	A	<4	<4	2.7	Y	Absent		A2-14DIOXANE-522(28)
L2171287-04A	Plastic 250ml Ammonium Acetate preserved	C	NA		3.4	Y	Absent		A2-533(28)
L2171287-04B	Plastic 250ml Ammonium Acetate preserved	C	NA		3.4	Y	Absent		A2-533(28)
L2171287-04C	Amber 500ml NaSulfite/NaHSO4 preserved	A	<4	<4	2.7	Y	Absent		A2-14DIOXANE-522(28)
L2171287-04D	Amber 500ml NaSulfite/NaHSO4 preserved	A	<4	<4	2.7	Y	Absent		A2-14DIOXANE-522(28)
L2171287-05A	Plastic 250ml Ammonium Acetate preserved	C	NA		3.4	Y	Absent		A2-533(28)
L2171287-05B	Plastic 250ml Ammonium Acetate preserved	C	NA		3.4	Y	Absent		A2-533(28)
L2171287-06A	Plastic 250ml Ammonium Acetate preserved	C	NA		3.4	Y	Absent		A2-533(28)
L2171287-07A	Amber 500ml NaSulfite/NaHSO4 preserved	A	<4	<4	2.7	Y	Absent		A2-14DIOXANE-522(28)
L2171287-07B	Amber 500ml NaSulfite/NaHSO4 preserved	A	<4	<4	2.7	Y	Absent		A2-14DIOXANE-522(28)

Project Name: TOWN OF NORTH CASTLE
Project Number: Q4 SAMPLES

Serial_No:01192216:08
Lab Number: L2171287
Report Date: 01/19/22

PFAS PARAMETER SUMMARY

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

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2171287**Project Number:** Q4 SAMPLES**Report Date:** 01/19/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name: TOWN OF NORTH CASTLE
Project Number: Q4 SAMPLES

Lab Number: L2171287
Report Date: 01/19/22

Footnotes

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

Terms

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

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

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

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

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

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

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

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

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

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: TOWN OF NORTH CASTLE
Project Number: Q4 SAMPLES

Lab Number: L2171287
Report Date: 01/19/22

Data Qualifiers

- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



Project Name: TOWN OF NORTH CASTLE
Project Number: Q4 SAMPLES

Lab Number: L2171287
Report Date: 01/19/22

REFERENCES

- 120 Determination of 1,4-Dioxane in Drinking Water by Solid Phase Extraction (SPE) and Gas Chromatography/Mass Spectrometry (GC/MS) with Selected Ion Monitoring (SIM). EPA Method 522, EPA/600/R-08/101. Version 1.0, September 2008.
- 136 Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 533, EPA Document 815-B-19-020, November 2019.

LIMITATION OF LIABILITIES

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

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



Alpha Analytical, Inc.

ID No.:17873

Facility: **Company-wide**

Revision 19

Department: **Quality Assurance**

Published Date: 4/2/2021 1:14:23 PM

Title: **Certificate/Approval Program Summary**

Page 1 of 1

Certification Information

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

Westborough Facility**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene**EPA 625/625.1:** alpha-Terpineol**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.**Mansfield Facility****SM 2540D:** TSS**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,


3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:**Drinking Water****EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,****EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.**EPA 624.1:** Volatile Halocarbons & Aromatics,**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.****Mansfield Facility:****Drinking Water****EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.****EPA 522, EPA 537.1.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.**EPA 245.1 Hg.****SM2340B**

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

 NEW YORK CHAIN OF CUSTODY Westborough, MA 01581 8 Walkup Dr. TEL: 508-898-9220 FAX: 508-898-9193 Mansfield, MA 02048 320 Forbes Blvd TEL: 508-822-9300 FAX: 508-822-3288		Service Centers Mahwah, NJ 07430: 35 Whitney Rd, Suite 5 Albany, NY 12205: 14 Walker Way Tonawanda, NY 14150: 275 Cooper Ave, Suite 105		Page <u>1</u> of <u>3</u>		Date Rec'd in Lab <u>12/30/21</u>		ALPHA Job # <u>L2171287</u>	
		Project Information Project Name: <u>TOWN OF NORTH CASTLE</u> Project Location: <u>WD2 - WELLS</u> Project # <u>Q4 SAMPLES</u> Use Project name as Project # <input type="checkbox"/>		Deliverables <input type="checkbox"/> ASP-A <input type="checkbox"/> ASP-B <input type="checkbox"/> EQuIS (1 File) <input type="checkbox"/> EQuIS (4 File) <input type="checkbox"/> Other		Billing Information <input type="checkbox"/> Same as Client Info PO #			
Client Information Client: <u>TOWN OF NORTH CASTLE</u> Address: <u>15 BUSINESS PARK DR ARMONK, NY 10504</u> Phone: <u>914-273-3000 x55</u> Fax: <u></u> Email: <u>smis@NORTHCASTLE.NY.GOV</u>		Project Manager: <u>SAL MISITI</u> ALPHAQuote #: Turn-Around Time Standard <input checked="" type="checkbox"/> Rush (only if pre approved) <input type="checkbox"/> Due Date: <u></u> # of Days: <u></u>		Regulatory Requirement <input type="checkbox"/> NY TOGS <input type="checkbox"/> NY Part 375 <input type="checkbox"/> AWQ Standards <input type="checkbox"/> NY CP-51 <input type="checkbox"/> NY Restricted Use <input checked="" type="checkbox"/> Other <input type="checkbox"/> NY Unrestricted Use <input type="checkbox"/> NYC Sewer Discharge		Disposal Site Information Please identify below location of applicable disposal facilities. Disposal Facility: <input type="checkbox"/> NJ <input type="checkbox"/> NY <input type="checkbox"/> Other:			
These samples have been previously analyzed by Alpha <input type="checkbox"/>						ANALYSIS			
Other project specific requirements/comments:						Sample Filtration <input type="checkbox"/> Done <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please Specify below) Sample Specific Comments			
Please specify Metals or TAL.						TOTAL BOTTLE			
ALPHA Lab ID (Lab Use Only)		Sample ID		Collection Date Time		Sample Matrix		Sampler's Initials	
<u>71287-01</u>		<u>WELL #3</u>		<u>12/28/21 12:25 PM</u>		<u>SM</u>		<u>SM</u>	
<u>02</u>		<u>WELL #4</u>		<u>12:40 PM</u>		<u>SM</u>		<u>SM</u>	
<u>03</u>		<u>WELL #2</u>		<u>12:55 PM</u>		<u>SM</u>		<u>SM</u>	
<u>04</u>		<u>WELL #5</u>		<u>1:05 PM</u>		<u>SM</u>		<u>SM</u>	
<u>05</u>		<u>ENTRY POINT</u>		<u>1:10 PM</u>		<u>SM</u>		<u>SM</u>	
<u>06</u>		<u>FB</u>		<u>1:15 PM</u>		<u>SM</u>		<u>SM</u>	
<u>07</u>		<u>FB</u>		<u>1:20 PM</u>		<u>SM</u>		<u>SM</u>	
Preservative Code: A = None B = HCl C = HNO ₃ D = H ₂ SO ₄ E = NaOH F = MeOH G = NaHSO ₄ H = Na ₂ S ₂ O ₃ K/E = Zn Ac/NaOH O = Other		Container Code: P = Plastic A = Amber Glass V = Vial G = Glass B = Bacteria Cup C = Cube O = Other E = Encore D = BOD Bottle		Westboro: Certification No: MA935 Mansfield: Certification No: MA015		Container Type <u>AP</u>		Preservative	
Form No: 01-25 HC (rev. 30-Sept-2013)		Relinquished By: <u>Dorothy Moroney</u> Date/Time: <u>12/29/21 11:05</u>		Received By: <u>ALPHA</u> Date/Time: <u>12/29/21 11:05</u>		Relinquished By: <u>ALPHA</u> Date/Time: <u>12/29/21 11:05</u>		Received By: <u>ALPHA</u> Date/Time: <u>12/29/21 11:05</u>	
		Relinquished By: <u>ALPHA</u> Date/Time: <u>12/29/21 13:30</u>		Received By: <u>ALPHA</u> Date/Time: <u>12/29/21 13:30</u>		Relinquished By: <u>ALPHA</u> Date/Time: <u>12/29/21 13:30</u>		Received By: <u>ALPHA</u> Date/Time: <u>12/29/21 13:30</u>	
		Relinquished By: <u>ALPHA</u> Date/Time: <u>12/29/21 23:55</u>		Received By: <u>ALPHA</u> Date/Time: <u>12/29/21 23:55</u>		Relinquished By: <u>ALPHA</u> Date/Time: <u>12/29/21 23:55</u>		Received By: <u>ALPHA</u> Date/Time: <u>12/29/21 23:55</u>	
		Relinquished By: <u>ALPHA</u> Date/Time: <u>12/30/21 21:30</u>		Received By: <u>ALPHA</u> Date/Time: <u>12/30/21 21:30</u>		Relinquished By: <u>ALPHA</u> Date/Time: <u>12/30/21 21:30</u>		Received By: <u>ALPHA</u> Date/Time: <u>12/30/21 21:30</u>	
		Relinquished By: <u>ALPHA</u> Date/Time: <u>12/30/21 04:30</u>		Received By: <u>ALPHA</u> Date/Time: <u>12/30/21 04:30</u>		Relinquished By: <u>ALPHA</u> Date/Time: <u>12/30/21 04:30</u>		Received By: <u>ALPHA</u> Date/Time: <u>12/30/21 04:30</u>	



ANALYTICAL REPORT

Lab Number:	L2207399
Client:	Town of North Castle Water Department 15 Business Park Drive Armonk, NY 10504
ATTN:	Sal Misiti
Phone:	(914) 273-3000
Project Name:	TOWN OF NORTH CASTLE
Project Number:	WELLS2,3,5(Q4'21 CON
Report Date:	02/28/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: TOWN OF NORTH CASTLE
Project Number: WELLS2,3,5(Q4'21 CON

Lab Number: L2207399
Report Date: 02/28/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2207399-01	WELL 2	DW	WD2	02/10/22 13:40	02/11/22
L2207399-02	WELL 3	DW	WD2	02/10/22 13:25	02/11/22
L2207399-03	WELL 5	DW	WD2	02/10/22 13:35	02/11/22
L2207399-04	FB	DW	WD2	02/10/22 13:45	02/11/22

Project Name: TOWN OF NORTH CASTLE
Project Number: WELLS2,3,5(Q4'21 CON

Lab Number: L2207399
Report Date: 02/28/22

Case Narrative

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

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

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

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

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

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

Project Name: TOWN OF NORTH CASTLE
Project Number: WELLS2,3,5(Q4'21 CON

Lab Number: L2207399
Report Date: 02/28/22

Case Narrative (continued)

Report Submission

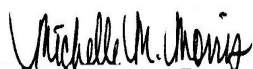
All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Perfluorinated Alkyl Acids by EPA 533

WG1608161-1R and WG1608161-2R: The sample was re-analyzed due to QC failures in the original analysis. The results of the re-analysis are reported.

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

Authorized Signature:



Michelle M. Morris

Title: Technical Director/Representative

Date: 02/28/22

ORGANICS

SEMIVOLATILES

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2207399**Project Number:** WELLS2,3,5(Q4'21 CON**Report Date:** 02/28/22**SAMPLE RESULTS**

Lab ID: L2207399-01

Date Collected: 02/10/22 13:40

Client ID: WELL 2

Date Received: 02/11/22

Sample Location: WD2

Field Prep: Not Specified

Sample Depth:

Matrix: Dw

Extraction Method: EPA 533

Analytical Method: 136,533

Extraction Date: 02/23/22 08:35

Analytical Date: 02/24/22 21:12

Analyst: MP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	5.14		ng/l	1.88	0.627	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.88	0.627	1
Perfluoropentanoic Acid (PFPeA)	4.05		ng/l	1.88	0.627	1
Perfluorobutanesulfonic Acid (PFBS)	5.89		ng/l	1.88	0.627	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.88	0.627	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	1.88	0.627	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.88	0.627	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.88	0.627	1
Perfluorohexanoic Acid (PFHxA)	3.87		ng/l	1.88	0.627	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.88	0.627	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.88	0.627	1
Perfluoroheptanoic Acid (PFHpA)	2.82		ng/l	1.88	0.627	1
Perfluorohexanesulfonic Acid (PFHxS)	2.25		ng/l	1.88	0.627	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.88	0.627	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.88	0.627	1
Perfluorooctanoic Acid (PFOA)	14.7		ng/l	1.88	0.627	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.88	0.627	1
Perfluorononanoic Acid (PFNA)	1.01	J	ng/l	1.88	0.627	1
Perfluorooctanesulfonic Acid (PFOS)	13.5		ng/l	1.88	0.942	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.88	0.627	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.88	0.627	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.88	0.627	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.88	0.627	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.88	0.627	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.88	0.627	1

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2207399**Project Number:** WELLS2,3,5(Q4'21 CON**Report Date:** 02/28/22**SAMPLE RESULTS**

Lab ID: L2207399-01

Date Collected: 02/10/22 13:40

Client ID: WELL 2

Date Received: 02/11/22

Sample Location: WD2

Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	103		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	88		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	152		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	99		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	120		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	128		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	118		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	119		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	96		50-200

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2207399**Project Number:** WELLS2,3,5(Q4'21 CON**Report Date:** 02/28/22**SAMPLE RESULTS**

Lab ID: L2207399-02

Date Collected: 02/10/22 13:25

Client ID: WELL 3

Date Received: 02/11/22

Sample Location: WD2

Field Prep: Not Specified

Sample Depth:

Matrix: Dw

Extraction Method: EPA 533

Analytical Method: 136,533

Extraction Date: 02/23/22 08:35

Analytical Date: 02/24/22 21:30

Analyst: MP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	4.83		ng/l	1.81	0.606	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.81	0.606	1
Perfluoropentanoic Acid (PFPeA)	3.19		ng/l	1.81	0.606	1
Perfluorobutanesulfonic Acid (PFBS)	5.73		ng/l	1.81	0.606	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.81	0.606	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	1.81	0.606	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.81	0.606	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.81	0.606	1
Perfluorohexanoic Acid (PFHxA)	3.08		ng/l	1.81	0.606	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.81	0.606	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.81	0.606	1
Perfluoroheptanoic Acid (PFHpA)	2.00		ng/l	1.81	0.606	1
Perfluorohexanesulfonic Acid (PFHxS)	1.78	J	ng/l	1.81	0.606	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.81	0.606	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.81	0.606	1
Perfluorooctanoic Acid (PFOA)	9.00		ng/l	1.81	0.606	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.81	0.606	1
Perfluorononanoic Acid (PFNA)	0.690	J	ng/l	1.81	0.606	1
Perfluorooctanesulfonic Acid (PFOS)	7.48		ng/l	1.81	0.911	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.81	0.606	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.81	0.606	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	0.606	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	0.606	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.81	0.606	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	0.606	1

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2207399**Project Number:** WELLS2,3,5(Q4'21 CON**Report Date:** 02/28/22**SAMPLE RESULTS**

Lab ID: L2207399-02

Date Collected: 02/10/22 13:25

Client ID: WELL 3

Date Received: 02/11/22

Sample Location: WD2

Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	141		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	117		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	68		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	114		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	72		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	116		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	71		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	114		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	82		50-200

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2207399**Project Number:** WELLS2,3,5(Q4'21 CON**Report Date:** 02/28/22**SAMPLE RESULTS**

Lab ID: L2207399-03

Date Collected: 02/10/22 13:35

Client ID: WELL 5

Date Received: 02/11/22

Sample Location: WD2

Field Prep: Not Specified

Sample Depth:

Matrix: Dw

Extraction Method: EPA 533

Analytical Method: 136,533

Extraction Date: 02/23/22 08:35

Analytical Date: 02/24/22 21:47

Analyst: MP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	4.61		ng/l	1.83	0.610	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.83	0.610	1
Perfluoropentanoic Acid (PFPeA)	1.75	J	ng/l	1.83	0.610	1
Perfluorobutanesulfonic Acid (PFBS)	4.72		ng/l	1.83	0.610	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.83	0.610	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	1.83	0.610	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.83	0.610	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.83	0.610	1
Perfluorohexanoic Acid (PFHxA)	1.83		ng/l	1.83	0.610	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.83	0.610	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.83	0.610	1
Perfluoroheptanoic Acid (PFHpA)	1.57	J	ng/l	1.83	0.610	1
Perfluorohexanesulfonic Acid (PFHxS)	1.83		ng/l	1.83	0.610	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.83	0.610	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.83	0.610	1
Perfluorooctanoic Acid (PFOA)	8.34		ng/l	1.83	0.610	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.83	0.610	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.83	0.610	1
Perfluorooctanesulfonic Acid (PFOS)	5.96		ng/l	1.83	0.918	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.83	0.610	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.83	0.610	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.83	0.610	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.83	0.610	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.83	0.610	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.83	0.610	1

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2207399**Project Number:** WELLS2,3,5(Q4'21 CON**Report Date:** 02/28/22**SAMPLE RESULTS**

Lab ID: L2207399-03

Date Collected: 02/10/22 13:35

Client ID: WELL 5

Date Received: 02/11/22

Sample Location: WD2

Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	137		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	88		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	118		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	118		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	119		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	92		50-200

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2207399**Project Number:** WELLS2,3,5(Q4'21 CON**Report Date:** 02/28/22**SAMPLE RESULTS**

Lab ID: L2207399-04

Date Collected: 02/10/22 13:45

Client ID: FB

Date Received: 02/11/22

Sample Location: WD2

Field Prep: Not Specified

Sample Depth:

Matrix: Dw

Extraction Method: EPA 533

Analytical Method: 136,533

Extraction Date: 02/23/22 08:35

Analytical Date: 02/24/22 21:56

Analyst: MP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.87	0.624	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.87	0.624	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.87	0.624	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.87	0.624	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.87	0.624	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	1.87	0.624	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.87	0.624	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.87	0.624	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.87	0.624	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.87	0.624	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.87	0.624	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.87	0.624	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.87	0.624	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.87	0.624	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.87	0.624	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.87	0.624	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.87	0.624	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.87	0.624	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.87	0.937	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.87	0.624	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.87	0.624	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.87	0.624	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.87	0.624	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.87	0.624	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.87	0.624	1

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2207399**Project Number:** WELLS2,3,5(Q4'21 CON**Report Date:** 02/28/22**SAMPLE RESULTS**

Lab ID: L2207399-04

Date Collected: 02/10/22 13:45

Client ID: FB

Date Received: 02/11/22

Sample Location: WD2

Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	73		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	116		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	106		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	123		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	115		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	114		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	116		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	73		50-200

Project Name: TOWN OF NORTH CASTLE
Project Number: WELLS2,3,5(Q4'21 CON

Lab Number: L2207399
Report Date: 02/28/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 02/25/22 14:29
Analyst: MP

Extraction Method: EPA 533
Extraction Date: 02/23/22 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-04 Batch: WG1608161-1 R					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.668
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	0.668
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.668
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.668
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	0.668
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	2.00	0.668
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	0.668
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.668
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.668
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.668
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	0.668
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.668
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.668
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.668
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	0.668
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.668
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.668
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.668
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	1.00
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	0.668
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	0.668
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.668
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.668
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	0.668
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.668

Project Name: TOWN OF NORTH CASTLE
Project Number: WELLS2,3,5(Q4'21 CON

Lab Number: L2207399
Report Date: 02/28/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 136,533
 Analytical Date: 02/25/22 14:29
 Analyst: MP

Extraction Method: EPA 533
 Extraction Date: 02/23/22 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-04 Batch: WG1608161-1 R					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	97		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	124		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	114		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	128		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	127		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	123		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	120		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	107		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	109		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	95		50-200

Lab Control Sample Analysis **Batch Quality Control**

Project Name: TOWN OF NORTH CASTLE

Project Number: WELLS2,3,5(Q4'21 CON

Lab Number: L2207399

Report Date: 02/28/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-04 Batch: WG1608161-2								
Perfluorobutanoic Acid (PFBA)	83		-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	76		-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	86		-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	85		-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	79		-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	82		-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	72		-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	84		-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	83		-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	78		-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	83		-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	82		-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	80		-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	77		-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	77		-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	80		-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	80		-		70-130	-		30
Perfluorononanoic Acid (PFNA)	81		-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	76		-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	77		-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	79		-		70-130	-		30

Lab Control Sample Analysis **Batch Quality Control**

Project Name: TOWN OF NORTH CASTLE

Lab Number: L2207399

Project Number: WELLS2,3,5(Q4'21 CON

Report Date: 02/28/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-04 Batch: WG1608161-2								
Perfluorodecanoic Acid (PFDA)	81		-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	84		-		70-130	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	78		-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	81		-		70-130	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	53				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	50				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	111				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	55				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	51				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	114				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	51				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	123				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	51				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	51				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	113				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	64				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	55				50-200

Matrix Spike Analysis

Batch Quality Control

Project Name: TOWN OF NORTH CASTLE

Project Number: WELLS2,3,5(Q4'21 CON

Lab Number: L2207399

Report Date: 02/28/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1608161-3 QC Sample: L2207399-01 Client ID: WELL 2												
Perfluorobutanoic Acid (PFBA)	5.14	160	160	97		-	-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	160	122	76		-	-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	4.05	160	165	101		-	-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	5.89	142	147	100		-	-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	160	150	94		-	-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	142	142	100		-	-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	160	118	74		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	150	146	98		-	-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	3.87	160	156	95		-	-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	150	144	96		-	-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	160	160	100		-	-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	2.82	160	156	96		-	-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	2.25	146	140	95		-	-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	151	148	98		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	152	141	93		-	-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	14.7	160	162	92		-	-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	152	140	92		-	-		70-130	-		30
Perfluorononanoic Acid (PFNA)	1.01J	160	153	96		-	-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	13.5	148	144	88		-	-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	149	132	88		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	153	149	97		-	-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	ND	160	150	94		-	-		70-130	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: TOWN OF NORTH CASTLE
Project Number: WELLS2,3,5(Q4'21 CON

Lab Number: L2207399
Report Date: 02/28/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab			Associated sample(s): 01-04			QC Batch ID: WG1608161-3			QC Sample: L2207399-01		Client ID: WELL 2	
Perfluoroundecanoic Acid (PFUnA)	ND	160	151	94		-	-		70-130	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	151	136	90		-	-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	ND	160	153	96		-	-		70-130	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	122				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	157				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	138				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	105				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	119				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99				50-200
Perfluoro[13C4]Butanoic Acid (MPFBA)	107				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	125				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	116				50-200

Lab Duplicate Analysis Batch Quality Control

Project Name: TOWN OF NORTH CASTLE

Project Number: WELLS2,3,5(Q4'21 CON

Lab Number: L2207399

Report Date: 02/28/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1608161-4 QC Sample: L2207399-02 Client ID: WELL 3						
Perfluorobutanoic Acid (PFBA)	4.83	4.78	ng/l	1		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	3.19	3.07	ng/l	4		30
Perfluorobutanesulfonic Acid (PFBS)	5.73	5.61	ng/l	2		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	ND	ng/l	NC		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	ND	ng/l	NC		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	3.08	3.11	ng/l	1		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	2.00	1.90	ng/l	5		30
Perfluorohexanesulfonic Acid (PFHxS)	1.78J	1.74J	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	9.00	8.91	ng/l	1		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	0.690J	0.644J	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	7.48	6.86	ng/l	9		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: TOWN OF NORTH CASTLE

Project Number: WELLS2,3,5(Q4'21 CON

Lab Number: L2207399

Report Date: 02/28/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1608161-4 QC Sample: L2207399-02 Client ID: WELL 3						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		103		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		90		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108		114		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	141		142		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		100		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		92		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	117		123		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	68		86		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	114		121		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	72		86		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	116		126		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	71		78		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	114		118		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		85		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		84		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	82		97		50-200

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2207399**Project Number:** WELLS2,3,5(Q4'21 CON**Report Date:** 02/28/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information**Cooler** **Custody Seal**

A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2207399-01A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2207399-01B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2207399-02A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2207399-02B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2207399-03A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2207399-03B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2207399-04A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)

Project Name: TOWN OF NORTH CASTLE
Project Number: WELLS2,3,5(Q4'21 CON

Serial_No:02282217:59
Lab Number: L2207399
Report Date: 02/28/22

PFAS PARAMETER SUMMARY

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

Project Name: TOWN OF NORTH CASTLE**Lab Number:** L2207399**Project Number:** WELLS2,3,5(Q4'21 CON**Report Date:** 02/28/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
	Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name: TOWN OF NORTH CASTLE
Project Number: WELLS2,3,5(Q4'21 CON

Lab Number: L2207399
Report Date: 02/28/22

Footnotes

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

Terms

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

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

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

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

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

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

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

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

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

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: TOWN OF NORTH CASTLE
Project Number: WELLS2,3,5(Q4'21 CON

Lab Number: L2207399
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Data Qualifiers

- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



Project Name: TOWN OF NORTH CASTLE
Project Number: WELLS2,3,5(Q4'21 CON

Lab Number: L2207399
Report Date: 02/28/22

REFERENCES

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

LIMITATION OF LIABILITIES

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

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



Certification Information

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

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpineol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

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

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

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

ATTACHMENT 3
Photograph Log



Photograph 1 - View of the Site entrance, facing north.



Photograph 2 - View of Windmill Road and Long Pond Road from Site entrance, facing south.



Photograph 3 - View Well #2 housing, facing south.



Photograph 4 - View of Well #2, facing south.



Photograph 5 - View of test well adjacent to Well #2 housing, facing east.



Photograph 6 - View of Wells #5 (front), test wells and Well #3 (back), facing south.



Photograph 7 - View of Well #3, facing south.



Photograph 8 - View of test wells proximate to Well #3, facing east.



Photograph 9 - View Wells #2, #3 and #5 merger piping, facing west.



Photograph 10 - View of electrical panels in southern electrical/merger housing, facing south.



Photograph 11 - View of Well #1 (abandoned), facing east.



Photograph 12 - View of driveway to main pump house, facing south.



Photograph 13 - View of main pump house booster pumps and associated piping, facing south.



Photograph 14 - View of booster pump, facing west.



Photograph 15 - View of garage door along back of main pump house, facing north.



Photograph 16 - View of Well #4 located in main pump house, facing south.



Photograph 17 - View of chlorination tank and feed system, facing south.



Photograph 18 - View of chlorine analyzer located in main pump room, facing west.



Photograph 19 - View of area behind main pump house and test well, facing west.



Photograph 20 - View of test well (front), main pump house and overhead power line (back), facing southeast.



Photograph 21 - View of underground 10,000-gallon contact tank (facing east).



Photograph 22 - View of overhead power lines and easement area (facing north).

ATTACHMENT 4
Water Quality Report

REPORT OF ANALYSIS

Westchester County Department of Labs and Research

10 Dana Road Valhalla, New York 10595

Sample Location : NO. CASTLE WD2
74 WINDMILL RD
ARMONK, NY

Received By : VA SM**Bottle No :** A5876 B589 C4239 D1148 E3425**Collection Point :** ENTRY POINT**Collected By :** FUTIA**ID of Source :** WELLS 2,3,4,5**Collection Date :** 07/29/2020 AT 9:00:00AM**Submitted On :** 07/29/2020 AT 1:31:00PM

Agency : North Castle Water Department
15 Business Park Drive
Armonk, NY 10504
Attn: Sal Misiti

PWS No. : 5903446**Type Descriptor :** 022**Source ID :** 000**pH :****Free Cl2 :** 0.8**Residual Cl2 :****Sample chilled on arrival ? :** YES**Sample Type :** POT_WELL**Comment :** INORGANICS 8B, 8C, 8D**add'l Report To :**

Method	Test Description	Results	Qualifier	Units	DL/LOQ	Analyzed on	Validator
Inorganics							
EPA 200.8	Silver	< LOQ		ug/L	2.0	07/31/2020	MO
SM22 2320B	Alkalinity as Calcium Carbonate	154		mg/L	5.0	08/13/2020	MO
EPA 200.8	Arsenic	< LOQ		ug/L	1.0	07/31/2020	MO
EPA 200.8	Barium	119		ug/L	1.0	07/31/2020	MO
EPA 200.8	Beryllium	< LOQ		ug/L	0.3	07/31/2020	MO
EPA 300.0	Chloride	129		mg/L	5.0	08/11/2020	MM
Kelada-01	Cyanide - Potable	0.007		mg/L	0.005	08/03/2020	MO
SM22-2120B	Color, Apparent	< LOQ		units	1	07/29/2020	2:45 pm JLM
EPA 200.8	Chromium	< LOQ		ug/L	1.0	07/31/2020	MO
EPA 200.7	Iron	167		ug/L	50.0	08/10/2020	MO
SM22-4500 FC	Fluoride by ISE	< LOQ		mg/L	0.2	08/20/2020	MO
EPA 200.8	Mercury	< LOQ		ug/L	0.2	07/31/2020	MO
EPA 200.8	Manganese	18.8		ug/L	1.0	07/31/2020	MO
EPA 200.7	Sodium	50400		ug/L	100	08/10/2020	MO
EPA 200.8	Nickel	4.2		ug/L	0.2	07/31/2020	MO
SM22-4500NO2B	Nitrite Nitrogen as N	< LOQ		mg/L	0.01	07/30/2020	2:12 pm MO
EPA 353.2, Rev 2.0	N-Nitrate Calculated	1.26		mg/L	0.05	08/11/2020	RH
SM20-4500HB	Hydrogen Ion	7.16		units	0.1	07/29/2020	2:57 pm JLM
<i>The pH is a field parameter with a 15 minute hold time. The Laboratory provides this test results only as a guide, this result cannot be used for regulatory reporting purposes.</i>							
EPA 200.8	Antimony	< LOQ		ug/L	0.4	07/31/2020	MO
EPA 200.8	Selenium	< LOQ		ug/L	2.0	07/31/2020	MO
EPA 300.0	Sulfate, Potable	16.5		mg/L	1.0	08/11/2020	MM
EPA 200.8	Thallium	< LOQ		ug/L	0.3	07/31/2020	MO
DL = Detection Limit		LOQ = Limit of Quantitation		J=value is an estimate		H = exceeds holding time	

Approved By Robert Hilbrandt**QA Officer****Date Approved :** 08/25/2020**Environmental Laboratories****NYS ELAP # 10108****(914) 231-1620****Report Number:** 1238**EMAIL** 8/25/2020

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These analytical results relate only to the sample identified in this report.

Sample No. **AW14500**

Method	Test Description	Results	Qualifier	Units	DL/LOQ	Analyzed on	Validator
EPA 180.1	Turbidity	0.54		NTU	0.02	07/29/2020 2:45 pm	JLM
EPA 200.8	Zinc	14.6		ug/L	2.0	07/31/2020	MO

DL = Detection Limit

LOQ = Limit of Quantitation

J=value is an estimate

H = exceeds holding time

Approved By **Robert Hilbrandt**

QA Officer

Date Approved : 08/25/2020

Environmental Laboratories
NYS ELAP # 10108
(914) 231-1620

Report Number: 1238

EMAIL 8/25/2020

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These analytical results relate only to the sample identified in this report.

ATTACHMENT 5A

Water Generation Rates (2015 to 2020)

Attachment 4
Water Generation Rates
 Water District #2
 Town of North Castle
 Langan Project No.: 190073501

WATER DISTRICT NO.2

	Q1		Q2		Q3			Q4			Q1				
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total	Ann. Avg. Monthly	Average Daily
2015 Total	5,469,116	4,557,884	5,286,770	4,943,205	8,606,704	8,505,870	10,013,414	10,167,582	8,824,918	6,736,412	4,527,464	3,522,789	81,162,128	6,763,511	225,450
Avg	176,423	151,929	176,226	164,774	286,890	283,529	333,780	338,919	294,164	224,547	150,915	117,426			
gpm	123	113	118	114	193	197	224	235	204	151	101	79	154		
2016 Total	2,588,569	2,632,567	2,724,572	3,190,880	4,809,243	7,060,130	7,308,350	6,809,200	6,530,600	4,446,167	2,708,196	2,369,643	53,178,117	4,431,510	147,717
Avg	83,502	87,752	90,819	106,363	160,308	235,338	243,612	226,973	217,687	148,206	90,273	78,988			
gpm	58	65	61	74	108	163	164	158	151	100	61	53	101		
2017 Total	2,338,817	1,897,277	2,371,100	2,896,300	4,246,100	5,808,100	6,897,429	6,622,321	5,609,601	4,398,886	2,528,291	2,487,061	48,101,283	4,008,440	133,615
Avg	75,446	63,243	79,037	96,543	141,537	193,603	229,914	220,744	186,987	146,630	84,276	82,902			
gpm	52	47	53	67	95	134	155	153	130	99	57	56	91		
2018 Total	2,555,309	1,993,508	2,182,972	2,404,922	4,411,107	6,403,130	6,909,169	5,405,394	5,375,871	2,867,073	2,285,756	2,350,390	45,144,601	3,762,050	125,402
Avg	82,429	66,450	72,766	80,164	147,037	213,438	230,306	180,180	179,196	95,569	76,192	78,346			
gpm	57	49	49	56	99	148	155	125	124	64	51	53	86		
2019 Total	2,539,174	2,021,315	2,129,808	2,468,813	3,782,336	5,066,887	6,965,777	6,306,052	5,743,567	3,830,117	2,459,364	1,938,907	45,252,117	3,771,010	125,700
Avg	81,909	67,377	70,994	82,294	126,078	168,896	232,193	210,202	191,452	127,671	81,979	64,630			
gpm	57	50	48	57	85	117	156	146	133	86	55	43	86		
2020 Total	2,080,268	1,811,777	2,455,585	2,685,583	4,491,870	7,614,120	8,684,706	7,323,634	6,633,936	4,366,706	2,571,916	2,324,392	53,044,493	4,420,374	147,346
Avg	67,105	60,393	81,853	89,519	149,729	253,804	289,490	244,121	221,131	145,557	85,731	77,480			
gpm	47	45	55	62	101	176	195	170	154	98	58	52	101		
2021 Total	2,278,216	1,888,576	2,214,164	2,919,880	5,475,680	7,068,300	6,226,532	6,083,116	4,995,800	3,775,952			42,926,216	4,292,622	143,087
Avg	73,491	62,953	73,805	97,329	182,523	235,610	207,551	202,771	166,527	125,865					
gpm	51	47	50	68	123	164	139	141	116	85	-	-	82		
Average	103	gpm		0.15	MGD										
Maximum	235	gpm		0.34	MGD										

ATTACHMENT 5B

Water Taking Reports (2017 to 2020)

New York State Department of Environmental Conservation

Division of Water, Bureau of Water Resources Management
625 Broadway, Albany, NY 12233-3508

Water Withdrawal Reporting Form

Due by March 31st each year

Prior to filling out this form, please read the instructions on the last page

This form not for Agricultural Facilities

Section 1 of 6 - Basic Information

Facility Name	<input type="text" value="North Castle Water District No.2"/>	Facility Street Address	<input type="text" value="15 Business Park Drive"/>	Reporting Year	<input type="text" value="2017"/>
City	<input type="text" value="Armonk"/>	Zip	<input type="text" value="10504"/>	Town	<input type="text" value="Town of North Castle"/>
				County	<input type="text" value="Westchester"/>
Contact Name	<input type="text" value="Sal Misiti"/>	Email	<input type="text" value="smisiti@northcastleny.com"/>	Telephone	<input type="text" value="(914) 273-1882"/>

Source Name	<input type="text" value="Well #2"/>	Source Type	<input type="text" value="UW"/>	Well Depth	<input type="text" value="67"/>	Max Rate	<input type="text" value="50"/>	Units	<input type="text" value="GPM"/>
Source Name	<input type="text" value="Well #3"/>	Source Type	<input type="text" value="UW"/>	Well Depth	<input type="text" value="69"/>	Max Rate	<input type="text" value="110"/>	Units	<input type="text" value="GPM"/>
Source Name	<input type="text" value="Well #4"/>	Source Type	<input type="text" value="UW"/>	Well Depth	<input type="text" value="40"/>	Max Rate	<input type="text" value="190"/>	Units	<input type="text" value="GPM"/>
Source Name	<input type="text" value="Well #5"/>	Source Type	<input type="text" value="UW"/>	Well Depth	<input type="text" value="65"/>	Max Rate	<input type="text" value="280"/>	Units	<input type="text" value="GPM"/>
Source Name	<input type="text"/>	Source Type	<input type="text"/>	Well Depth	<input type="text"/>	Max Rate	<input type="text"/>	Units	<input type="text"/>
Source Name	<input type="text"/>	Source Type	<input type="text"/>	Well Depth	<input type="text"/>	Max Rate	<input type="text"/>	Units	<input type="text"/>
Source Name	<input type="text"/>	Source Type	<input type="text"/>	Well Depth	<input type="text"/>	Max Rate	<input type="text"/>	Units	<input type="text"/>

<input type="text" value="0.134"/>	<input type="text" value="MGD"/>	<input type="text" value="0.309"/>	<input type="text" value="MGD"/>	<input type="text" value="0.52"/>	<input type="text" value="MGD"/>
Average Day Withdrawal	Units	Maximum Day Withdrawal	Units	Maximum System Capacity or NYSDEC Permitted Withdrawal	Units

Submitted by	<input type="text" value="Sal Misiti"/>	Title	<input type="text" value="Director of Water & Sewer"/>	Date	<input type="text" value="2/8/18"/>
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Water Withdrawal Category

(Check One)

☒ Agricultural - Must use form at <http://www.dec.ny.gov/lands/86904.html>

☐ Bottled / Bulk Water

☐ Commercial

☐ Environmental

☐ Industrial

☐ Institutional

☐ Mine Dewatering

☐ Oil / Gas Production

Power Production:

☐ Fossil Fuel

☐ Nuclear

☐ Other Pwr

☒ Public Water Supply

Recreational:

☐ Golf Course

☐ Snow Making

☐ Other Rec

☐ Other Category

Water Withdrawal Reporting Form

Section 2 of 6 - Water Use

Calculation Method M

If multiple methods are used, choose the one that measures the greatest percentage of water in your system.
 E = Estimated M = Metered readings W = Flow through a weir
 P = Flow through a pipe or pump run times C = Pump curve calculation

Units: Must be in gallons per month	January	February	March	April	May	June
Withdrawn	2,338,817	1,897,277	2,371,100	2,896,300	4,246,100	5,808,100
Transferred / Imported / Purchased						
Consumed	2,338,817	2,388,226	2,388,226	2,388,226	5,650,543	5,650,543
Returned						
Diversions In / Out, if any						

For Transferred water or Diversions Out, use a negative (-) sign

Units: Must be in gallons per month	July	August	September	October	November	December
Withdrawn	6,897,429	6,622,321	5,609,601	4,398,886	2,528,291	2,487,061
Transferred / Imported / Purchased						
Consumed	5,650,543	5,543,603	5,543,603	5,543,603	2,523,554	2,523,554
Returned						
Diversions In / Out, if any						

Describe location of returned water

Water Withdrawal Reporting Form
Section 3 of 6 - General Map and Interbasin Diversions

General Map Required

Please submit a map showing the location of all withdrawals and any points of return flow. Precise locations will remain confidential.

A map is not necessary if one was submitted in a previous year and no changes have occurred.

A paper copy of a USGS map or other high quality map or an electronically generated map can be faxed, mailed, or emailed. Please ensure that the map scale is sufficient to be able to see specific locations. Designate all water withdrawal locations on the map. Add markers to locate any related dams, weirs, or diversion structures. Label the name of each point.

Submit your map to DEC in one of the following ways:

- Print and mail or fax to 518 402-8290. Include cover letter identifying facility owner.
- Print, scan and email to awqrsdec@dec.ny.gov
- Copy electronically and email to awqrsdec@dec.ny.gov

Interbasin Diversions

Fill out this section only if water is being transferred between major drainage basins. To determine basin ID, go to the [DEC Major Drainage Basins map \(http://www.dec.ny.gov/lands/56800.html\)](http://www.dec.ny.gov/lands/56800.html). Then enter the basin ID by using the drop down menus under Originating and Receiving Major Drainage Basin headings below. Describe the locations of originating and receiving sites in the site description boxes (e.g. Town water intake on Route 12 at northern end of Pleasant Lake to Stony Reservoir near Bear Road).

Originating Major Drainage Basin

Basin Name

Originating Site Description

Receiving Major Drainage Basin

Basin Name

Receiving Site Description

Water Withdrawal Reporting Form

Section 4 of 6 - Water Conservation and Efficiencies

Instructions: Check one of the boxes below for EITHER Section A or Section B, as appropriate for your facility type. A list of questions pertinent to that facility type will appear. Please answer all questions.

☒ Section 4A: Public Water Supply Facilities

☐ Section 4B: Non-Public Water Supply Facilities

If the incorrect box is selected, just scroll back up a page and change selection

NOTE: All permitted water withdrawal systems must have a [Water Conservation Program](#).

Water Withdrawal Reporting Form

Section 4A: Public Water Supply Facilities

Public water suppliers must answer all the questions in this section

1. Are all sources of supply including major interconnections equipped with master meters? ☒ Yes ☐ No

2. What percentage of your system is metered? % Average age of meters, in years: Range of age of meters, in years:

3. How often were customer meters read this past year? (choose from drop list)

4. Number of water service connections: Total population served:

5. How many customer meters were recalibrated and/or replaced in the past year?

6. Miles of pipe in water distribution system: Length of pipe replaced in the past year: Units

7. Miles of pipe on which leak detection was performed using sonic listening equipment: Type of equipment used:

8. How many system-wide water audits were performed in the past year?

9. Residential charge per 1000 gallons of water: \$

10. What percentage of the water withdrawn was not billed to customers? % Lost to distribution system leakage? %

11. Was information about household water saving devices and ways to reduce water use distributed to residential customers? ☐ Yes ☒ No

12. Was water conservation information about promoting recycling and reuse distributed to industrial and commercial customers? ☒ Yes ☐ No

13. Do you have lawn sprinkling time restrictions (e.g. odd/even days) during periods of peak demand? ☒ Yes ☐ No

14. Do you have a plan that takes progressive steps to further reduce outdoor water use during drought conditions with an ordinance or procedure to assure compliance? ☐ Yes ☒ No If yes, please forward a copy to the address shown in Section 1 of this form.

15. Please review your permit(s) for any specific water conservation conditions and report below on progress made in past year:

Entire distribution system was replaced during 2015

Water Withdrawal Reporting Form
Section 5 of 6 - Outside Sales to Other Water Systems or Facilities

Instructions:

Permittees must record any sales to outside water systems or facilities. If this applies to your facility, please check the box titled, "Section 5 - Outside Sales" and fill in the information requested.

If your facility does not sell water to systems or facilities other than your own, skip the section by clicking the box for "No Outside Sales".

☐ Section 5 - Outside Sales

☒ No Outside Sales

If the incorrect box is selected, just scroll back up a page and change selection

Water Withdrawal Reporting Form

Section 6 of 6 - Forward Form To NYSDEC

Unless required fields have not been filled in, the form can now be sent to NYSDEC. To send the form electronically, simply click the green box titled, "Click here to submit by email after filling out all sections of this form". Alternatively, the form can be printed and then mailed or faxed to NYSDEC at the address found on the first page.

When the form is sent by clicking the "submit by email" button, an automatic confirmation is returned. If this does not arrive within 10 minutes, please contact awqrsdec@dec.ny.gov

Click here to submit by email
after filling out all sections
of this form

Print Form

Print Blank Form For
Handwritten Submission

Clear Entire
Form

Water Withdrawal Reporting Form

Instructions & Definitions

Agricultural Purpose	The practice of farming for crops, plants, vines and trees, and the keeping, grazing or feeding of livestock, for sale of livestock or livestock products. Agricultural facilities must use the form titled "Registration and Water Withdrawal Reporting Form for Agricultural Facilities".
Public Water Supply	Supply water to the public. Examples include: municipality, hotel, apartment, restaurant, church, campground, etc.
Source Name	Name of well or surface water body (e.g., Well No. 1, Alcove Reservoir, etc.). List all sources including unused or back-up wells.
Source Type	S = Stream or River. L = Pond or Lake. R = Reservoir. BW = Bedrock Well. UW = Unconsolidated Well (e.g., sand and gravel). SP = Spring. P = Purchased.
Well Depth	Total depth in feet below ground surface. Leave blank for surface sources.
Max Rate	Maximum potential withdrawal rate of the water source. Will be equal to or greater than Permitted Rate.
Units (Max Rate)	Gallons per minute (gpm), gallons per day (gpd), or million gallons per day (mgd). Use drop down menu.
Average Day Withdrawal	Total amount withdrawn during reporting year divided by total days withdrawn.
Maximum Day Withdrawal	Largest single day withdrawal rate of the source during the reporting year.
Maximum Sys Capacity or Permitted Withdrawal	If permit information is unknown, contact NYSDEC at awqrsdec@dec.ny.gov or 518-402-8182. Maximum system capacity is the sum of all sources simultaneously pumping at full rate.
Calculation Method	If multiple methods are used, choose the one that measures the greatest percentage of water in your system E = estimated. M = metered readings. W = flow through a weir or flume. P = flow through a pump or pump run time. C = Pump curve calculation.
Withdrawn	Amount of water removed from all sources. This includes groundwater and/or surface water.
Transferred/Imported	Amount of water brought in from or sent to another facility, includes bulk sales. For transferred water use a negative (-) sign.
Consumed	Amount of water not returned (e.g. water incorporated into a product or lost through evaporation). Public water suppliers must use metered sales to customers. Irrigation is considered "consumed water".
Returned	Amount of water discharged to a water treatment system or discharged back to the environment. Irrigation is not returned water.
Diversions In/Out	Amount of water, if any, diverted from/to another major drainage basin. For Diversions Out, use a negative (-) sign.
Location of Returned Water	State the general area where returned water is discharged. Example: "Hudson River near Poughkeepsie", "Groundwater near Auburn".
Major Drainage Basins	Report only "Major Basin" transfers. Use the internet link available on the form and enter Basin ID into the box indicated (use drop down menu). Describe the location of originating withdrawal and receiving discharge. Be as specific as possible.
Water Audit	A water audit is a thorough examination of the accuracy of water records and system control equipment to determine water system efficiency and to identify, quantify, and verify water and revenue losses. Water audits are beneficial in identifying the amount of unaccounted-for water.

New York State Department of Environmental Conservation

Division of Water, Bureau of Water Resources Management
625 Broadway, Albany, NY 12233-3508

Water Withdrawal Reporting Form

Due by March 31st each year

Prior to filling out this form, please read the instructions on the last page

This form not for Agricultural Facilities

Section 1 of 6 - Basic Information

Facility Name	<input type="text" value="North Castle Water District No.2"/>	Facility Street Address	<input type="text" value="15 Business Park Drive"/>	Reporting Year	<input type="text" value="2018"/>
City	<input type="text" value="Armonk"/>	Zip	<input type="text" value="10504"/>	Town	<input type="text" value="North Castle"/>
				County	<input type="text" value="Westchester"/>
Contact Name	<input type="text" value="Sal Misiti"/>	Email	<input type="text" value="smisiti@northcastleny.com"/>	Telephone	<input type="text" value="(914) 273-1882"/>

Source Name	<input type="text" value="Well#2"/>	Source Type	<input type="text" value="UW"/>	Well Depth	<input type="text" value="67"/>	Max Rate	<input type="text" value="50"/>	Units	<input type="text" value="GPM"/>
Source Name	<input type="text" value="Well#3"/>	Source Type	<input type="text" value="UW"/>	Well Depth	<input type="text" value="69"/>	Max Rate	<input type="text" value="110"/>	Units	<input type="text" value="GPM"/>
Source Name	<input type="text" value="Well#4"/>	Source Type	<input type="text" value="UW"/>	Well Depth	<input type="text" value="40"/>	Max Rate	<input type="text" value="190"/>	Units	<input type="text" value="GPM"/>
Source Name	<input type="text" value="Well#5"/>	Source Type	<input type="text" value="UW"/>	Well Depth	<input type="text" value="65"/>	Max Rate	<input type="text" value="280"/>	Units	<input type="text" value="GPM"/>
Source Name	<input type="text"/>	Source Type	<input type="text"/>	Well Depth	<input type="text"/>	Max Rate	<input type="text"/>	Units	<input type="text"/>
Source Name	<input type="text"/>	Source Type	<input type="text"/>	Well Depth	<input type="text"/>	Max Rate	<input type="text"/>	Units	<input type="text"/>
Source Name	<input type="text"/>	Source Type	<input type="text"/>	Well Depth	<input type="text"/>	Max Rate	<input type="text"/>	Units	<input type="text"/>

<input type="text" value="0.125"/>	<input type="text" value="MGD"/>	<input type="text" value="0.3"/>	<input type="text" value="MGD"/>	<input type="text" value="0.52"/>	<input type="text" value="MGD"/>
Average Day Withdrawal	Units	Maximum Day Withdrawal	Units	Maximum System Capacity or NYSDEC Permitted Withdrawal	Units

Submitted by	<input type="text" value="Sal Misiti"/>	Title	<input type="text" value="Director of Water & Sewer"/>	Date	<input type="text" value="3/5/19"/>
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Water Withdrawal Category

(Check One)

☒ Agricultural - Must use form at <http://www.dec.ny.gov/lands/86904.html>

☐ Bottled / Bulk Water

☐ Commercial

☐ Environmental

☐ Industrial

☐ Institutional

☐ Mine Dewatering

☐ Oil / Gas Production

Power Production:

☐ Fossil Fuel

☐ Nuclear

☐ Other Pwr

☒ Public Water Supply

Recreational:

☐ Golf Course

☐ Snow Making

☐ Other Rec

☐ Other Category

Water Withdrawal Reporting Form

Section 2 of 6 - Water Use

Calculation Method M

If multiple methods are used, choose the one that measures the greatest percentage of water in your system.
 E = Estimated M = Metered readings W = Flow through a weir
 P = Flow through a pipe or pump run times C = Pump curve calculation

Units: Must be in gallons per month	January	February	March	April	May	June
Withdrawn	2,555,309	1,993,508	2,182,972	2,404,922	4,411,107	6,403,130
Transferred / Imported / Purchased						
Consumed	2,233,236	1,880,963	1,880,963	1,880,963	5,444,054	5,444,054
Returned						
Diversions In / Out, if any						

For Transferred water or Diversions Out, use a negative (-) sign

Units: Must be in gallons per month	July	August	September	October	November	December
Withdrawn	6,909,169	5,405,394	5,375,871	2,867,073	2,285,756	2,350,390
Transferred / Imported / Purchased						
Consumed	5,444,054	3,963,666	3,963,666	3,963,666	2,088,307	2,088,307
Returned						
Diversions In / Out, if any						

Describe location of returned water

Water Withdrawal Reporting Form
Section 3 of 6 - General Map and Interbasin Diversions

General Map Required

Please submit a map showing the location of all withdrawals and any points of return flow. Precise locations will remain confidential.

A map is not necessary if one was submitted in a previous year and no changes have occurred.

A paper copy of a USGS map or other high quality map or an electronically generated map can be faxed, mailed, or emailed. Please ensure that the map scale is sufficient to be able to see specific locations. Designate all water withdrawal locations on the map. Add markers to locate any related dams, weirs, or diversion structures. Label the name of each point.

Submit your map to DEC in one of the following ways:

- Print and mail or fax to 518 402-8290. Include cover letter identifying facility owner.
- Print, scan and email to awqrsdec@dec.ny.gov
- Copy electronically and email to awqrsdec@dec.ny.gov

Interbasin Diversions

Fill out this section only if water is being transferred between major drainage basins. To determine basin ID, go to the [DEC Major Drainage Basins map \(http://www.dec.ny.gov/lands/56800.html\)](http://www.dec.ny.gov/lands/56800.html). Then enter the basin ID by using the drop down menus under Originating and Receiving Major Drainage Basin headings below. Describe the locations of originating and receiving sites in the site description boxes (e.g. Town water intake on Route 12 at northern end of Pleasant Lake to Stony Reservoir near Bear Road).

Originating Major Drainage Basin

Basin Name

Originating Site Description

Receiving Major Drainage Basin

Basin Name

Receiving Site Description

Water Withdrawal Reporting Form

Section 4 of 6 - Water Conservation and Efficiencies

Instructions: Check one of the boxes below for EITHER Section A or Section B, as appropriate for your facility type. A list of questions pertinent to that facility type will appear. Please answer all questions.

☒ Section 4A: Public Water Supply Facilities

☐ Section 4B: Non-Public Water Supply Facilities

If the incorrect box is selected, just scroll back up a page and change selection

NOTE: All permitted water withdrawal systems must have a [Water Conservation Program](#).

Water Withdrawal Reporting Form

Section 4A: Public Water Supply Facilities

Public water suppliers must answer all the questions in this section

1. Are all sources of supply including major interconnections equipped with master meters? ☒ Yes ☐ No

2. What percentage of your system is metered? % Average age of meters, in years: Range of age of meters, in years:

3. How often were customer meters read this past year? (choose from drop list)

4. Number of water service connections: Total population served:

5. How many customer meters were recalibrated and/or replaced in the past year?

6. Miles of pipe in water distribution system: Length of pipe replaced in the past year: Units

7. Miles of pipe on which leak detection was performed using sonic listening equipment: Type of equipment used:

8. How many system-wide water audits were performed in the past year?

9. Residential charge per 1000 gallons of water: \$

10. What percentage of the water withdrawn was not billed to customers? % Lost to distribution system leakage? %

11. Was information about household water saving devices and ways to reduce water use distributed to residential customers? ☐ Yes ☒ No

12. Was water conservation information about promoting recycling and reuse distributed to industrial and commercial customers? ☐ Yes ☒ No

13. Do you have lawn sprinkling time restrictions (e.g. odd/even days) during periods of peak demand? ☒ Yes ☐ No

14. Do you have a plan that takes progressive steps to further reduce outdoor water use during drought conditions with an ordinance or procedure to assure compliance? ☐ Yes ☒ No If yes, please forward a copy to the address shown in Section 1 of this form.

15. Please review your permit(s) for any specific water conservation conditions and report below on progress made in past year:

n/a

Water Withdrawal Reporting Form
Section 5 of 6 - Outside Sales to Other Water Systems or Facilities

Instructions:

Permittees must record any sales to outside water systems or facilities. If this applies to your facility, please check the box titled, "Section 5 - Outside Sales" and fill in the information requested.

If your facility does not sell water to systems or facilities other than your own, skip the section by clicking the box for "No Outside Sales".

☐ Section 5 - Outside Sales

☒ No Outside Sales

If the incorrect box is selected, just scroll back up a page and change selection

Water Withdrawal Reporting Form

Section 6 of 6 - Forward Form To NYSDEC

Unless required fields have not been filled in, the form can now be sent to NYSDEC. To send the form electronically, simply click the green box titled, "Click here to submit by email after filling out all sections of this form". Alternatively, the form can be printed and then mailed or faxed to NYSDEC at the address found on the first page.

When the form is sent by clicking the "submit by email" button, an automatic confirmation is returned. If this does not arrive within 10 minutes, please contact awqrsdec@dec.ny.gov

Click here to submit by email
after filling out all sections
of this form

Print Form

Print Blank Form For
Handwritten Submission

Clear Entire
Form

Water Withdrawal Reporting Form

Instructions & Definitions

Agricultural Purpose	The practice of farming for crops, plants, vines and trees, and the keeping, grazing or feeding of livestock, for sale of livestock or livestock products. Agricultural facilities must use the form titled "Registration and Water Withdrawal Reporting Form for Agricultural Facilities".
Public Water Supply	Supply water to the public. Examples include: municipality, hotel, apartment, restaurant, church, campground, etc.
Source Name	Name of well or surface water body (e.g., Well No. 1, Alcove Reservoir, etc.). List all sources including unused or back-up wells.
Source Type	S = Stream or River. L = Pond or Lake. R = Reservoir. BW = Bedrock Well. UW = Unconsolidated Well (e.g., sand and gravel). SP = Spring. P = Purchased.
Well Depth	Total depth in feet below ground surface. Leave blank for surface sources.
Max Rate	Maximum potential withdrawal rate of the water source. Will be equal to or greater than Permitted Rate.
Units (Max Rate)	Gallons per minute (gpm), gallons per day (gpd), or million gallons per day (mgd). Use drop down menu.
Average Day Withdrawal	Total amount withdrawn during reporting year divided by total days withdrawn.
Maximum Day Withdrawal	Largest single day withdrawal rate of the source during the reporting year.
Maximum Sys Capacity or Permitted Withdrawal	If permit information is unknown, contact NYSDEC at awqrsdec@dec.ny.gov or 518-402-8182. Maximum system capacity is the sum of all sources simultaneously pumping at full rate.
Calculation Method	If multiple methods are used, choose the one that measures the greatest percentage of water in your system E = estimated. M = metered readings. W = flow through a weir or flume. P = flow through a pump or pump run time. C = Pump curve calculation.
Withdrawn	Amount of water removed from all sources. This includes groundwater and/or surface water.
Transferred/Imported	Amount of water brought in from or sent to another facility, includes bulk sales. For transferred water use a negative (-) sign.
Consumed	Amount of water not returned (e.g. water incorporated into a product or lost through evaporation). Public water suppliers must use metered sales to customers. Irrigation is considered "consumed water".
Returned	Amount of water discharged to a water treatment system or discharged back to the environment. Irrigation is not returned water.
Diversions In/Out	Amount of water, if any, diverted from/to another major drainage basin. For Diversions Out, use a negative (-) sign.
Location of Returned Water	State the general area where returned water is discharged. Example: "Hudson River near Poughkeepsie", "Groundwater near Auburn".
Major Drainage Basins	Report only "Major Basin" transfers. Use the internet link available on the form and enter Basin ID into the box indicated (use drop down menu). Describe the location of originating withdrawal and receiving discharge. Be as specific as possible.
Water Audit	A water audit is a thorough examination of the accuracy of water records and system control equipment to determine water system efficiency and to identify, quantify, and verify water and revenue losses. Water audits are beneficial in identifying the amount of unaccounted-for water.

New York State Department of Environmental Conservation

Division of Water, Bureau of Water Resources Management
625 Broadway, Albany, NY 12233-3508

Water Withdrawal Reporting Form

Due by March 31st each year

Prior to filling out this form, please read the instructions on the last page

This form not for Agricultural Facilities

Section 1 of 6 - Basic Information

Facility Name	<input type="text" value="North Castle Water District No.2"/>	Facility Street Address	<input type="text" value="15 Business Park Drive"/>	Reporting Year	<input type="text" value="2019"/>
City	<input type="text" value="Armonk"/>	Zip	<input type="text" value="10504"/>	Town	<input type="text" value="North Castle"/>
				County	<input type="text" value="Westchester"/>
Contact Name	<input type="text" value="Sal Misiti"/>	Email	<input type="text" value="smisiti@northcastleny.com"/>	Telephone	<input type="text" value="914-273-3000 x55"/>

Source Name	<input type="text" value="Well No.2"/>	Source Type	<input type="text" value="UW"/>	Well Depth	<input type="text" value="67"/>	Max Rate	<input type="text" value="50"/>	Units	<input type="text" value="GPM"/>
Source Name	<input type="text" value="Well No.3"/>	Source Type	<input type="text" value="UW"/>	Well Depth	<input type="text" value="69"/>	Max Rate	<input type="text" value="110"/>	Units	<input type="text" value="GPM"/>
Source Name	<input type="text" value="Well No.4"/>	Source Type	<input type="text" value="UW"/>	Well Depth	<input type="text" value="40"/>	Max Rate	<input type="text" value="190"/>	Units	<input type="text" value="GPM"/>
Source Name	<input type="text" value="Well No.5"/>	Source Type	<input type="text" value="UW"/>	Well Depth	<input type="text" value="65"/>	Max Rate	<input type="text" value="280"/>	Units	<input type="text" value="GPM"/>
Source Name	<input type="text"/>	Source Type	<input type="text"/>	Well Depth	<input type="text"/>	Max Rate	<input type="text"/>	Units	<input type="text"/>
Source Name	<input type="text"/>	Source Type	<input type="text"/>	Well Depth	<input type="text"/>	Max Rate	<input type="text"/>	Units	<input type="text"/>
Source Name	<input type="text"/>	Source Type	<input type="text"/>	Well Depth	<input type="text"/>	Max Rate	<input type="text"/>	Units	<input type="text"/>

<input type="text" value="0.126"/>	<input type="text" value="MGD"/>	<input type="text" value="0.305"/>	<input type="text" value="MGD"/>	<input type="text" value="0.52"/>	<input type="text" value="MGD"/>
Average Day Withdrawal	Units	Maximum Day Withdrawal	Units	Maximum System Capacity or NYSDEC Permitted Withdrawal	Units

Submitted by	<input type="text" value="Sal Misiti"/>	Title	<input type="text" value="Director of Water & Sewer"/>	Date	<input type="text" value="3/2/2020"/>
--------------	---	-------	--	------	---------------------------------------

Water Withdrawal Category

(Check One)

☒ Agricultural - Must use form at <http://www.dec.ny.gov/lands/86904.html>

☐ Bottled / Bulk Water

☐ Commercial

☐ Environmental

☐ Industrial

☐ Institutional

☐ Mine Dewatering

☐ Oil / Gas Production

Power Production:

☐ Fossil Fuel

☐ Nuclear

☐ Other Pwr

☒ Public Water Supply

Recreational:

☐ Golf Course

☐ Snow Making

☐ Other Rec

☐ Other Category

Water Withdrawal Reporting Form

Section 2 of 6 - Water Use

Calculation Method M

If multiple methods are used, choose the one that measures the greatest percentage of water in your system.
 E = Estimated M = Metered readings W = Flow through a weir
 P = Flow through a pipe or pump run times C = Pump curve calculation

Units: Must be in gallons per month	January	February	March	April	May	June
Withdrawn	2,539,174	2,021,315	2,129,808	2,468,813	3,782,336	5,066,887
Transferred / Imported / Purchased						
Consumed	2,047,474	2,231,641	2,231,641	2,231,641	4,833,380	4,833,380
Returned						
Diversions In / Out, if any						

For Transferred water or Diversions Out, use a negative (-) sign

Units: Must be in gallons per month	July	August	September	October	November	December
Withdrawn	6,965,777	6,306,052	5,743,567	3,830,117	2,459,364	1,938,907
Transferred / Imported / Purchased						
Consumed	4,833,380	4,708,335	4,708,335	4,708,335	1,846,414	1,846,414
Returned						
Diversions In / Out, if any						

Describe location of returned water

Water Withdrawal Reporting Form
Section 3 of 6 - General Map and Interbasin Diversions

General Map Required

Please submit a map showing the location of all withdrawals and any points of return flow. Precise locations will remain confidential.

A map is not necessary if one was submitted in a previous year and no changes have occurred.

A paper copy of a USGS map or other high quality map or an electronically generated map can be faxed, mailed, or emailed. Please ensure that the map scale is sufficient to be able to see specific locations. Designate all water withdrawal locations on the map. Add markers to locate any related dams, weirs, or diversion structures. Label the name of each point.

Submit your map to DEC in one of the following ways:

- Print and mail or fax to 518 402-8290. Include cover letter identifying facility owner.
- Print, scan and email to awqrsdec@dec.ny.gov
- Copy electronically and email to awqrsdec@dec.ny.gov

Interbasin Diversions

Fill out this section only if water is being transferred between major drainage basins. To determine basin ID, go to the [DEC Major Drainage Basins map \(http://www.dec.ny.gov/lands/56800.html\)](http://www.dec.ny.gov/lands/56800.html). Then enter the basin ID by using the drop down menus under Originating and Receiving Major Drainage Basin headings below. Describe the locations of originating and receiving sites in the site description boxes (e.g. Town water intake on Route 12 at northern end of Pleasant Lake to Stony Reservoir near Bear Road).

Originating Major Drainage Basin

Basin Name

Originating Site Description

Receiving Major Drainage Basin

Basin Name

Receiving Site Description

Water Withdrawal Reporting Form

Section 4 of 6 - Water Conservation and Efficiencies

Instructions: Check one of the boxes below for EITHER Section A or Section B, as appropriate for your facility type. A list of questions pertinent to that facility type will appear. Please answer all questions.

☒ Section 4A: Public Water Supply Facilities

☐ Section 4B: Non-Public Water Supply Facilities

If the incorrect box is selected, just scroll back up a page and change selection

NOTE: All permitted water withdrawal systems must have a [Water Conservation Program](#).

Water Withdrawal Reporting Form

Section 4A: Public Water Supply Facilities

Public water suppliers must answer all the questions in this section

1. Are all sources of supply including major interconnections equipped with master meters? ☒ Yes ☐ No

2. What percentage of your system is metered? % Average age of meters, in years: Range of age of meters, in years:

3. How often were customer meters read this past year? (choose from drop list)

4. Number of water service connections: Total population served:

5. How many customer meters were recalibrated and/or replaced in the past year?

6. Miles of pipe in water distribution system: Length of pipe replaced in the past year: Units:

7. Miles of pipe on which leak detection was performed using sonic listening equipment: Type of equipment used:

8. How many system-wide water audits were performed in the past year?

9. Residential charge per 1000 gallons of water: \$

10. What percentage of the water withdrawn was not billed to customers? % Lost to distribution system leakage? %

11. Was information about household water saving devices and ways to reduce water use distributed to residential customers? ☒ Yes ☐ No

12. Was water conservation information about promoting recycling and reuse distributed to industrial and commercial customers? ☐ Yes ☒ No

13. Do you have lawn sprinkling time restrictions (e.g. odd/even days) during periods of peak demand? ☒ Yes ☐ No

14. Do you have a plan that takes progressive steps to further reduce outdoor water use during drought conditions with an ordinance or procedure to assure compliance? ☐ Yes ☒ No If yes, please forward a copy to the address shown in Section 1 of this form.

15. Please review your permit(s) for any specific water conservation conditions and report below on progress made in past year:

N/A

Water Withdrawal Reporting Form
Section 5 of 6 - Outside Sales to Other Water Systems or Facilities

Instructions:

Permittees must record any sales to outside water systems or facilities. If this applies to your facility, please check the box titled, "Section 5 - Outside Sales" and fill in the information requested.

If your facility does not sell water to systems or facilities other than your own, skip the section by clicking the box for "No Outside Sales".

☐ Section 5 - Outside Sales

☒ No Outside Sales

If the incorrect box is selected, just scroll back up a page and change selection

Water Withdrawal Reporting Form

Section 6 of 6 - Forward Form To NYSDEC

Unless required fields have not been filled in, the form can now be sent to NYSDEC. To send the form electronically, simply click the green box titled, "Click here to submit by email after filling out all sections of this form". Alternatively, the form can be printed and then mailed or faxed to NYSDEC at the address found on the first page.

When the form is sent by clicking the "submit by email" button, an automatic confirmation is returned. If this does not arrive within 10 minutes, please contact awqrsdec@dec.ny.gov

Click here to submit by email
after filling out all sections
of this form

Print Form

Print Blank Form For
Handwritten Submission

Clear Entire
Form

Water Withdrawal Reporting Form

Instructions & Definitions

Agricultural Purpose	The practice of farming for crops, plants, vines and trees, and the keeping, grazing or feeding of livestock, for sale of livestock or livestock products. Agricultural facilities must use the form titled "Registration and Water Withdrawal Reporting Form for Agricultural Facilities".
Public Water Supply	Supply water to the public. Examples include: municipality, hotel, apartment, restaurant, church, campground, etc.
Source Name	Name of well or surface water body (e.g., Well No. 1, Alcove Reservoir, etc.). List all sources including unused or back-up wells.
Source Type	S = Stream or River. L = Pond or Lake. R = Reservoir. BW = Bedrock Well. UW = Unconsolidated Well (e.g., sand and gravel). SP = Spring. P = Purchased.
Well Depth	Total depth in feet below ground surface. Leave blank for surface sources.
Max Rate	Maximum potential withdrawal rate of the water source. Will be equal to or greater than Permitted Rate.
Units (Max Rate)	Gallons per minute (gpm), gallons per day (gpd), or million gallons per day (mgd). Use drop down menu.
Average Day Withdrawal	Total amount withdrawn during reporting year divided by total days withdrawn.
Maximum Day Withdrawal	Largest single day withdrawal rate of the source during the reporting year.
Maximum Sys Capacity or Permitted Withdrawal	If permit information is unknown, contact NYSDEC at awqrsdec@dec.ny.gov or 518-402-8182. Maximum system capacity is the sum of all sources simultaneously pumping at full rate.
Calculation Method	If multiple methods are used, choose the one that measures the greatest percentage of water in your system E = estimated. M = metered readings. W = flow through a weir or flume. P = flow through a pump or pump run time. C = Pump curve calculation.
Withdrawn	Amount of water removed from all sources. This includes groundwater and/or surface water.
Transferred/Imported	Amount of water brought in from or sent to another facility, includes bulk sales. For transferred water use a negative (-) sign.
Consumed	Amount of water not returned (e.g. water incorporated into a product or lost through evaporation). Public water suppliers must use metered sales to customers. Irrigation is considered "consumed water".
Returned	Amount of water discharged to a water treatment system or discharged back to the environment. Irrigation is not returned water.
Diversions In/Out	Amount of water, if any, diverted from/to another major drainage basin. For Diversions Out, use a negative (-) sign.
Location of Returned Water	State the general area where returned water is discharged. Example: "Hudson River near Poughkeepsie", "Groundwater near Auburn".
Major Drainage Basins	Report only "Major Basin" transfers. Use the internet link available on the form and enter Basin ID into the box indicated (use drop down menu). Describe the location of originating withdrawal and receiving discharge. Be as specific as possible.
Water Audit	A water audit is a thorough examination of the accuracy of water records and system control equipment to determine water system efficiency and to identify, quantify, and verify water and revenue losses. Water audits are beneficial in identifying the amount of unaccounted-for water.

New York State Department of Environmental Conservation

March 2020

Division of Water, Bureau of Water Resources Management

625 Broadway, Albany, NY 12233-3508

Water Withdrawal Reporting Form

Due by **March 31st** of each year

Prior to filling out this form, please read the instructions on the last page

Section 1 of 6 – Basic Information

Facility Name	<input type="text"/>	Facility Street Address	<input type="text"/>	Reporting Year	<input type="text"/>
City	<input type="text"/>	Zip	<input type="text"/>	Town	<input type="text"/>
				County	<input type="text"/>
Contact Name	<input type="text"/>	Email	<input type="text"/>	Telephone	<input type="text"/>

Source Name		Source Type		Well Depth		Max Rate		Units	
Source Name		Source Type		Well Depth		Max Rate		Units	
Source Name		Source Type		Well Depth		Max Rate		Units	
Source Name		Source Type		Well Depth		Max Rate		Units	
Source Name		Source Type		Well Depth		Max Rate		Units	
Source Name		Source Type		Well Depth		Max Rate		Units	
Source Name		Source Type		Well Depth		Max Rate		Units	

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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Average Day Withdrawal Units Maximum Day Withdrawal Units NYSDEC Permitted Withdrawal Units

Submitted By:	<input type="text"/>	Title	<input type="text"/>	Date	<input type="text"/>
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Water Withdrawal Category
(Check One)

- Agricultural
- Bottled / Bulk Water
- Commercial
- Environmental
- Industrial
- Institutional
- Mine Dewatering
- Oil / Gas Production
- Power Production:
 - Fossil Fuel
 - Nuclear
 - Other Pwr
- Public Water Supply
- Recreational:
 - Golf Course
 - Snow Making
 - Other Rec
- Other Category

Water Withdrawal Reporting Form

Section 2 of 6 – Water Use

Calculation Method

If multiple methods are used, choose the one that measures the greatest percentage of water in your system.

E = Estimated

M = Metered readings

W = Flow through a weir

P = Flow through a pipe or pump run times

C = Pump curve calculation

*Units: Must be in gallons per month	January	February	March	April	May	June
Withdrawn						
Transferred / Imported / Purchased						
Consumed						
Returned						
Diversions In / Out (If Applicable)						

For transferred water or diversions out use a negative (-) sign

*Units: Must be in gallons per month	July	August	September	October	November	December
Withdrawn						
Transferred / Imported / Purchased						
Consumed						
Returned						
Diversions In / Out (If Applicable)						

Describe location of returned water:

Water Withdrawal Reporting Form
Section 3 of 6 – Interbasin Diversions & General Maps

Interbasin Diversions

Fill out this section only if water is being transferred between major drainage basins. To determine basin name, go to the DEC Major Drainage Basins map (<http://www.dec.ny.gov/lands/56800.html>). Then, enter the basin names below. Describe the locations of originating and receiving sites in the site description boxes (e.g. Town water intake on Route 12 at northern end of Pleasant Lake to Stony Reservoir near Bear Road).

Originating Major Drainage Basin

Basin Name

Originating Site Description

Receiving Major Drainage Basin

Basin Name

Receiving Site Description

General Map

*** Note** – A map is required only for Interbasin Diversions (6 NYCRR Part 601.18(e)(2)) and Agricultural Water Withdrawals (6 NYCRR Part 601.17(b)(2))

Please submit a map showing the location of all withdrawals and any points of return flow.

A paper copy of a USGS map or other high-quality map or an electronically generated map can be faxed, mailed, or emailed. Please ensure that the map scale is sufficient to be able to see specific locations. Designate all water withdrawal locations on the map. Add markers to locate any related dams, wetlands, weirs, or diversion structures. Label the name of each point.

Submit your map to DEC in one of the following ways:

- Print and mail to the address in Section 6 of this Form or fax to (518) 402-8290. Include cover letter identifying facility owner.
- Print, scan and email to awqrsdec@dec.ny.gov
- Copy electronically and email to awqrsdec@dec.ny.gov

Water Withdrawal Reporting Form

Section 4A of 6 – Public Water Supplies

Public Water Suppliers must answer all questions in this section. If not a Public Water Supply – skip to Section 4B

1. Are all sources of supply including major interconnections equipped with master meters? Yes No
2. What percentage of your system is metered? % Average age of meters, years: Range of age of meters, years:
3. How often were customer meters read this past year?
4. Number of water service connections: Total population served:
5. How many customer meters were recalibrated and/or replaced in the past year?
6. Miles of pipe in water distribution system: Length of pipe replaced in the past year: Units:
7. Miles of pipe on which leak detection was performed using sonic listening equipment: Type of equipment used:
8. How many system-wide water audits were performed in the past year?
9. Residential charge per 1,000 gallons of water: \$
10. What percentage of the water withdrawn was not billed to customers? % Lost to distribution system leakage? %
11. Was information about household water saving devices and ways to reduce water use distributed to residential customers?
Yes No
12. Was water conservation information about promoting recycling and reuse distributed to industrial and commercial customers?
Yes No
13. Do you have lawn sprinkling time restrictions (e.g., odd/even days) during periods of peak demand? Yes No
14. Do you have a plan that takes progressive steps to further reduce outdoor water use during drought conditions with an ordinance to assure compliance? Yes No If yes, please forward a copy to the address shown in Section 1 of this form.
15. Please review your permit(s) for any specific water conservation conditions and report below on progress made in the past year:

Water Withdrawal Reporting Form

Section 4B of 6 – Non-Public Water Supplies

Non-Public Water Suppliers must answer all questions in this section. For Public Water Supplies – return to Section 4A

1. Are all sources of supply including major interconnections equipped with master meters? Yes No
2. How many times were master meters read in the past year?
3. How many times were master meters calibrated in the past year?
4. Are there secondary meters located within the facility or system? Yes No
5. Identify other water conservation and efficiency measures currently used in your system (e.g. Best Management Practices such as recycling process and cooling waters, use of drip irrigation and moisture probes, utilizing storm water runoff and reclaimed wastewater or conducting facility water audits):

Water Withdrawal Reporting Form

Section 5 of 6 – Outside Sales to Other Water Systems or Facilities

Permittees must record any sales occurring outside of their water service area or facility and include the information requested below.

If this does not apply to your facility, please proceed to the next section.

Purchaser Name	Facility Type	Type of Sale	Contracted Amount (gallons per day)	Water Sold in Year (gallons per year)	Average Amount (gallons per day)	Maximum Amount (gallons per day)

Facility Type:

PWS = Public Water Supply; **IND** = Industrial; **COM** = Commercial; **INS** = Institutional; **O/G** = Oil or Gas; **REC** = Recreational; **BOT** = Bottled or Bulk

Type of Sale:

C = Continuous; **I** = Intermittent; **E** = Emergency

Average Amount:

To calculate Average Amount, divide total water (gallons) used in a year by number of days of purchase. Total is in gallons per day.

Maximum Amount:

Maximum Amount is the one day greatest use in the year of record, shown in gallons per day.

Water Withdrawal Reporting Form

Section 6 of 6 – Legally Responsible Party Information & Submittal Instructions

Legally Responsible Party Information:

Name of Company/Legally Responsible Party for the Facility:

Legally Responsible Party Address:

Printed Name of Representative*:

Title of Representative*:

Certification Statement: I hereby certify that the information provided on this reporting form is true to the best of my knowledge and belief. I understand that false statements made in this reporting form are made under penalty of perjury and that they are punishable under section 210.45 of the New York State Penal Law.

Representative* Signature: _____

Date:

***Legally Responsible Party Representative** - The legally responsible party representative is: 1) For a corporation - the president, secretary, treasurer, or vice president of the corporation in charge of a principal business function; or other responsible corporate officer as specified in 6 NYCRR 601.22(a)(1)(i) or (ii); 2) For a partnership or sole proprietorship - general partner or proprietor, respectively; 3) For a municipality, State, Federal or other public agency - the principal executive officer or ranking elected official. For a Federal agency, the principal executive officer includes the chief executive officer of the agency; or a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., regional administrators of EPA).

Submittal Instructions: When all required fields have been filled in, submit the form to NYSDEC in one of the following ways:

Mail: New York State Department of Environmental Conservation
Attn: Water Withdrawal Reporting Program
4th Floor
625 Broadway
Albany, NY 12233-3508

Email (Scan Form): awqrsdec@dec.ny.gov

Fax: (518) 402-8290

Water Withdrawal Reporting Form

Instructions & Definitions

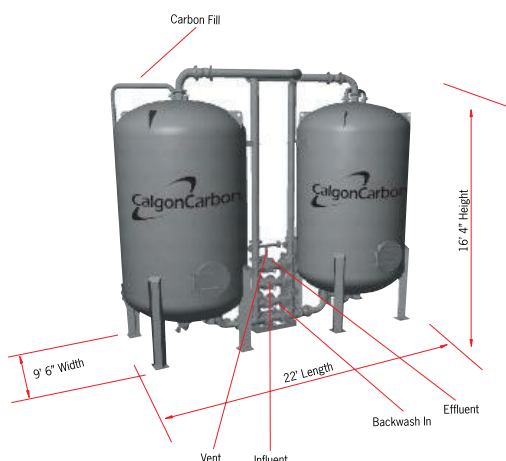
Agricultural Purpose	The practice of farming for crops, plants, vines and trees, and the keeping, grazing or feeding of livestock, for sale of livestock or livestock products. Agricultural facilities should complete this form for annual registration.
Public Water Supply	Supply water to the public. Examples include: municipality, hotel, apartment, restaurant, church, campground, etc.
Source Name	Name of well or surface water body (e.g., Well No. 1, Alcove Reservoir, etc.). List all sources including unused or back-up wells.
Source Type	S = Stream or River. L = Pond or Lake. R = Reservoir. BW = Bedrock Well. UW = Unconsolidated Well (e.g., sand and gravel). SP = Spring. P = Purchased.
Well Depth	Total depth in feet below ground surface. Leave blank for surface sources.
Max Rate	Maximum potential withdrawal rate of the water source. Will be equal to or greater than Permitted Rate.
Units (Max Rate)	Gallons per minute (gpm), gallons per day (gpd), or million gallons per day (mgd). Write in or use the drop-down menu.
Average Day Withdrawal	Total amount withdrawn during reporting year divided by total days withdrawn.
Maximum Day Withdrawal	Largest single day withdrawal rate of the source during the reporting year.
NYSDEC Permitted Withdrawal	If permit information is unknown, contact NYSDEC at awqrsdec@dec.ny.gov or (518) 402-8182. Note - If you do not currently have a permit, report the sum of all sources simultaneously pumping at full rate.
Calculation Method	If multiple methods are used, choose the one that measures the greatest percentage of water in your system E = estimated. M = metered readings. W = flow through a weir or flume. P = flow through a pump or pump run time. C = Pump curve calculation.
Withdrawn	Amount of water removed from all sources. This includes groundwater and/or surface water.
Transferred/Imported	Amount of water brought in from or sent to another facility, includes bulk sales. For transferred water use a negative (-) sign.
Consumed	Amount of water not returned (e.g. water incorporated into a product or lost through evaporation). Public water suppliers must use metered sales to customers. Irrigation is considered "consumed water".
Returned	Amount of water discharged to a water treatment system or discharged back to the environment. Irrigation is not returned water.
Diversions In / Out	Amount of water, if any, diverted from/to another major drainage basin. For Diversions Out, use a negative (-) sign.
Location of Returned Water	State the general area where returned water is discharged. Example: "Hudson River near Poughkeepsie", "Groundwater near Auburn".
Major Drainage Basins	Report only "Major Basin" transfers. Use the internet link available on the form and enter Basin name into the box indicated. Describe the location of originating withdrawal and receiving discharge. Be as specific as possible.
Water Audit	A water audit is a thorough examination of the accuracy of water records and system control equipment to determine water system efficiency and to identify, quantify, and verify water and revenue losses. Water audits are beneficial in identifying the amount of unaccounted-for water.

ATTACHMENT 6A

Granular Activated Carbon Vessel Specification

MODEL 8

Modular Carbon Adsorption System



Description

The Calgon Carbon Model 8 is an adsorption system designed for the removal of dissolved organic compounds from water or other liquids using granular activated carbon. The modular design concept allows for selection of options or alternate materials to best meet the requirements of the site and treatment application.

The Model 8 system is delivered as two adsorbers and a separate compact center piping network and interconnecting piping requiring minimal space and field assembly. The pre-engineered Model 8 design assures that adsorption system functions can be performed with the system as provided. The design has the benefit of Calgon Carbon's extensive expertise and has been proven in numerous applications. The engineering package can be provided quickly and the system expedited through Calgon Carbon's production capabilities.

The process piping network for the Model 8 offers operation of the two adsorbers in parallel or two-stage series flow, with either adsorber in the lead position. The piping can also isolate either adsorber for carbon exchange or backwash operations, while maintaining flow through the other adsorber. In addition, the Calgon Carbon underdrain design provides for efficient use of the carbon through uniform collection of water at the bottom of the bed, and even distribution of backwash water to minimize carbon bed disturbance.

The Model 8 system is designed for use with Calgon Carbon's closed loop carbon exchange service. Using specially designed carbon transport trailers, the spent carbon can be removed from the adsorber via a pressurized carbon-water slurry, and fresh carbon refilled in the same manner. This closed loop transfer is accomplished without exposure of personnel to either spent or fresh carbon. Calgon Carbon can also manage the disposition of the spent carbon. It is typically returned to Calgon Carbon for reactivation, avoiding the need for the site to arrange for disposal.

Carbon Adsorbers

MODEL 8

Carbon steel ASME code stamped pressure vessels

Internal vinyl ester lining (25-35 mils) to protect carbon steel surfaces

Suitable for potable water and most liquid applications

Internal underdrain with stainless steel slotted septa for water collection and backwash distribution

Standard Adsorption System Piping

Schedule 40 carbon steel piping with cast iron fittings

Cast iron or steel wafer butterfly valves in process piping

Polypropylene lined steel pipe for resin discharge pipe

Full bore stainless steel ball valves for carbon and discharge piping

Pressure gages to measure pressure drop across system and each adsorber

Rupture discs open to each vessel for emergency pressure relief

System External Coating

High solids epoxy paint system

Typical System Options

In-bed water sample collection probes

System skid, shipped separately, upon which system components can be assembled

Safety Message

Wet activated carbon can deplete oxygen from air in enclosed spaces. If use in an enclosed space is required, procedures for work in an oxygen deficient environment should be followed.

1.800.4CARBON calgoncarbon.com

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DS-MODEL817-EIN-E1

Dimensions and Field Conditions MODEL 8

Adsorber Vessel Diameter	8' (2,440 mm)
Process and Backwash Piping	6" (4" option)
Influent/Effluent Connections	6" 125# ANSI flange
Backwash/Vent Connections	6" 125# ANSI flange
Utility Water Connection	3/4" hose connection
Utility Air Connection	3/4" hose connection
Carbon Hose Connections	4" Kamlock type
Adsorber Side Manway	20" round flanged with davit
Adsorber Shipping Weight	16,000 lbs empty (7,300 kg)
System Operating Weight	92,000 lbs (41,800 kg)

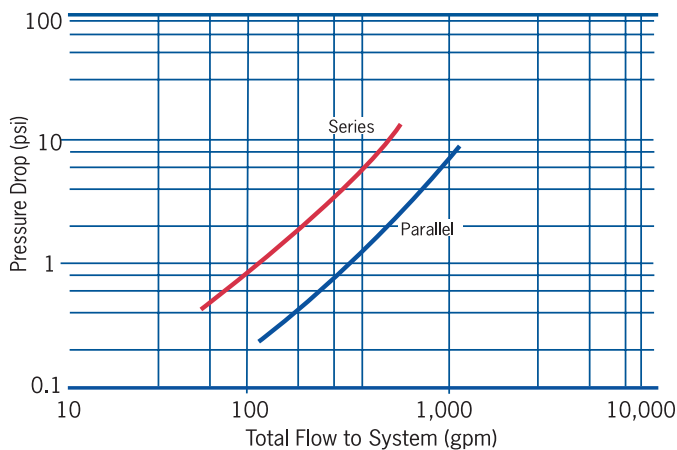
Operating Conditions

MODEL 8

Carbon per Adsorber	10,000 lbs (4,536 kg)
Pressure Rating	125 psig (862 kPa)
Temperature Rating	140°F maximum (60°C)
Pressure Relief	Graphite rupture disc
Backwash Rate	Typical 500 gpm (25% expansion)
Carbon Transfer	Air pressurized slurry transfer
Utility Air	100 scfm at 30 psig (reduce to 15 psig for trailer)
Utility Water	100 gpm at 30 psig
Freeze Protection	None provided; enclosure or protection recommended

Pressure Drop Curve

F300 Carbon, 55°F, 4" Steel Pipe



Calgon Carbon Systems and Services

The Model 8 system is designed for a variety of higher pressure water or process liquid applications at moderate flowrates. Calgon Carbon Corporation offers a wide range of carbon adsorption systems and services for a range of water or liquid flow rates and carbon usages to meet specific applications.

Calgon Carbon also provides additional services for support of water treatment systems, including supply of virgin and reactivated grades of granular activated carbon, or exchange of carbon in the treatment system, including disposal or reactivation of the spent activated carbon.



Safety Message

Wet activated carbon can deplete oxygen from air in enclosed spaces. If use in an enclosed space is required, procedures for work in an oxygen deficient environment should be followed.

1.800.4CARBON calgoncarbon.com

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DS-MODEL817-EIN-E1

SALES SPECIFICATION SHEET

FILTRASORB 400 AR+

Granular Activated Carbon

Test	Specification		Calgon Carbon Test Method
	Min	Max	
IODINE NUMBER, mg/g	950	-	TM-4,ASTM D4607
MOISTURE (AS PACKAGED), wt%	-	2	TM-1,ASTM D2867
ABRASION NUMBER	75	-	TM-9,AWWA B604
ASH, wt%	-	9	ASTM D2866,TM-5
DENSITY (APPARENT), g/cc	0.49	-	TM-7,ASTM D2854
EFFECTIVE SIZE, mm	0.55	0.75	TM-47,ASTM D2862
UNIFORMITY COEFFICIENT	-	1.9	TM-47,ASTM D2862
FCC - WATER EXTRACTABLE, wt%	-	4	TM-43,FCC
TRACE CAPACITY NUMBER (TCN), mg/cc	T&R	-	TM-79,TM-85 (converted to TCN)
12 US MESH [1.70 mm], wt%	-	5	TM-8,ASTM D2862
< 40 US MESH [0.425 mm] (PAN), wt%	-	5	TM-8,ASTM D2862

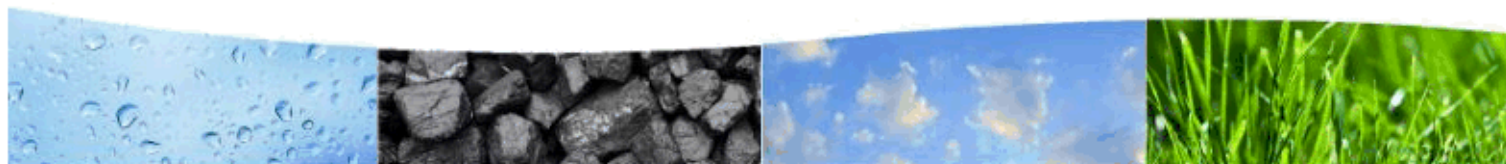
Typical Properties:

This product complies with ANSI/AWWA B604 (2012) – Granular Activated Carbon.

This product complies with the requirements for activated carbon as defined by the Food Chemicals Codex (FCC) (Latest Edition) published by the U.S. Pharmacopeia.

Only products bearing the NSF Mark are Certified to NSF/ANSI/CAN 61 - Drinking Water System Components - Health Effects standard. Certified Products will bear the NSF Mark on packing or documentation shipped with the product.

Calgon Carbon Corporation's activated carbon products are continuously being improved and changes may have taken place since this publication went to press. 13543-04/23/2019



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ATTACHMENT 6B

Ion Exchange Resin Vessel Specification



Summary

Utilizing ECT2's SORBIX™ PURE Ion Exchange Resins, designed to remove a wide spectrum of PFAS chemicals for contaminated water down to non-detect levels, the H Series Product Line is for projects with flows greater than 58 gpm. This proven performance provides the best removal efficiency of PFAS compounds, including short chain molecules, on the market. For optimal performance, the installation of two vessels in a lead/lag configuration is recommended.

The H Series treatment system is designed to reduce concentrations of PFAS to non-detect levels. Additionally, because of the high removal capacity and higher kinetics of the SORBIX PURE resins, less media and fewer changeouts are required than carbon, resulting in lower waste volumes to dispose of and a smaller footprint.

Model Number	Vessel Diameter (ft)	Straight Shell Height (ft)	Resin Volume (ft ³)	Flow Rate (gpm)	EBCT at Max Flow (min)*	Vessel Connection Size (in)	Overall System Dimensions (LxWxH)	Max GAC Flow Rate with Same Vessel Diameter (gpm)
35+	3.5	5	39	58-115	2.5	3	13'4"x6'x8'10"	28
45	4	5	50	75-151	2.5	3	14'4"x6'6"x9'2"	50
56	5	6	79	118-236	2.5	4	17'5"x8'2"x12'3"	79
66	6	6	113	170-339	2.5	6	19'3"x8'10"x12'10"	113
86	8	6	201	302-603	2.5	6	23'3"x10'11"x13'10"	217 ^a
108	10	8	393	471-942	3.1	8	28'3"x12'11"x17'2"	534 ^b
128	12	8	679	679-1357	3.7	8	31'4"x15'1"x18'2"	534 ^b - 1069 ^c

*Flows can exceed the published flows with ECT2 approval

a - with 10,000 lbs

b - with 20,000 lbs

c - with 40,000 lbs

Features:

- Compact Design
- Fast Kinetics
- Non-Detect Performance
- High PFAS Capacity
- Robust Design

Benefits:

- Small Footprint
- Fewer Changeouts
- Small Waste Volumes
- Cost Effective
- Low Maintenance

Applications:

- Drinking Water
- Groundwater Remediation
- Industrial Wastewater
- Surface Water Remediation
- Rapid Response

Product Design & Options:

- NSF61 certified resin and components
- 125 psig ASME code vessels
- 8 or 11-valve manifold
 - Lined Carbon Steel, PVC, or 304SS
- Interconnecting piping
- Upper and lower screen distributors for even flow distribution
- PVC internals up to Model 66, 304 SS option available
- 304SS internals Models 86, 108 and 128
- (3) Mid-bed sample valves
- Lead/lag configuration
- Fully drainable vessel
- Resin traps (Optional)
- Customer configurations available for tight footprints



ECT2's SORBIX PURE Ion Exchange Resins are certified by the Water Quality Association to meet NSF/ANSI/CAN 61 Drinking Water System Components standards for drinking water. The WQA's Gold Seal Product Certification program independently verifies that the product has passed the rigorous testing requirements of industry standards.

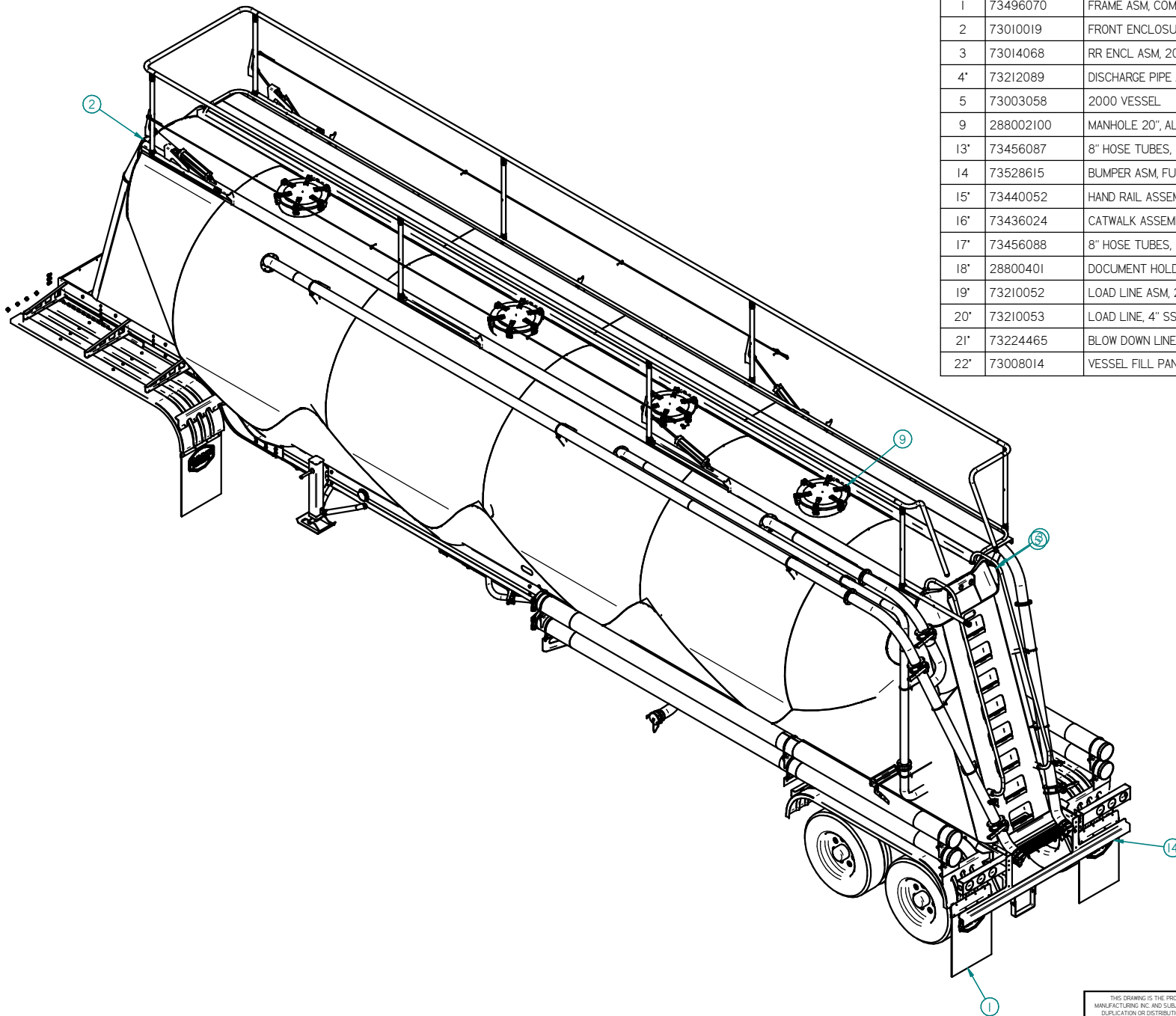
SORBIX PFAS Treatment System Feedwater Quality Specification

The following are the limits for water quality feeding a SORBIX Ion Exchange system before pretreatment will be required.

Parameter	Limit
VOC 8260	<0.5 mg/L
pH	4 < X < 10
Alkalinity	<1,500 mg/L as CaCO ₃
Hardness	
TOC	<10 mg/L
TDS	<2,000 mg/L
TSS	<2 mg/L
Turbidity	<2 NTU
Bromide	<10 mg/L
Chloride	<100 mg/L. Anything > 100 mg/L will affect short-chain PFCA capacity
Nitrate	<10 mg/L
Nitrite	<10 mg/L
Ammonia	<1 mg/L
Sulfate	<250 mg/L
Ferrous Iron	
Total Iron	<0.1 mg/L
Perchlorate	
Arsenic	
Calcium	<500 mg/L
Magnesium	<100 mg/L
Manganese	
Sodium	<1,000 mg/L
Methylene Blue Active Substances (surfactants)	
Temperature – this needs to be a field measurement	45°F < X < 95°F
Phosphate	<50 mg/L
Fluoride	<50 mg/L
Potassium	<1,000 mg/L
Uranium	
Bicarbonate Alkalinity	
Chromate	

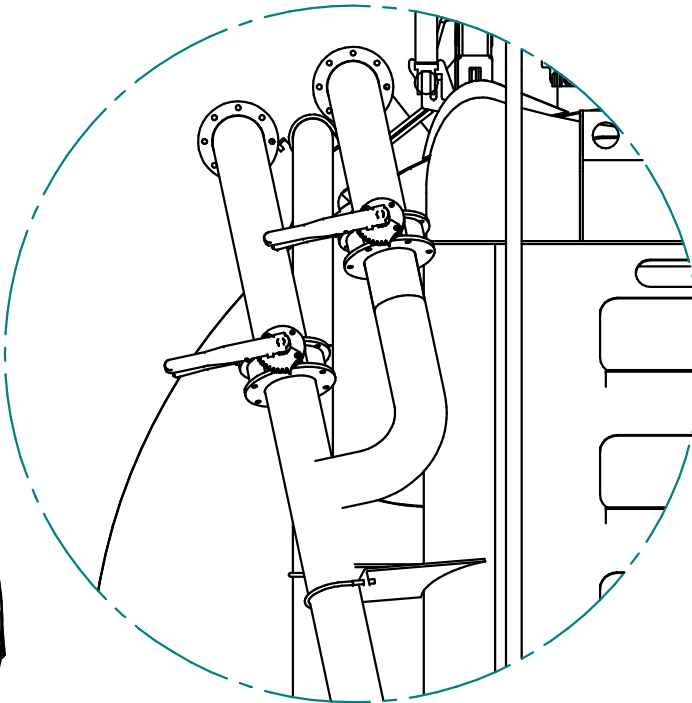
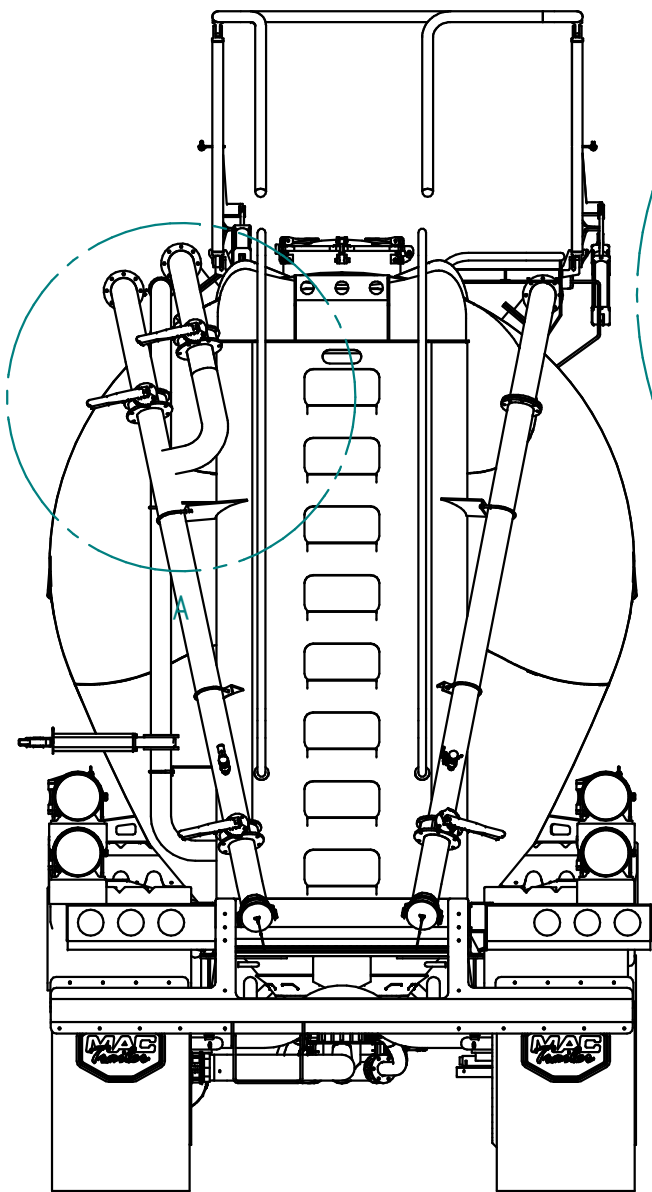
ATTACHMENT 7

Calgon Carbon Truck Specification

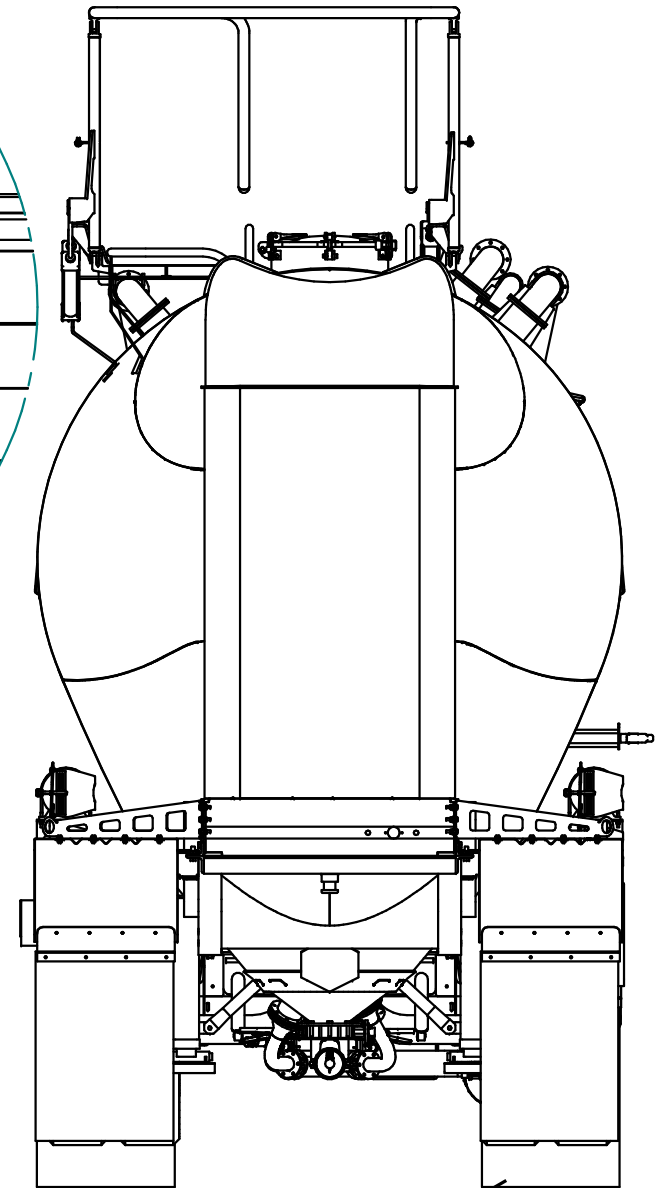


Item	PART NUMBER	DESCRIPTION	QTY.	WEIGHT
1	73496070	FRAME ASM, COMPLETE, 2000, TANDEM	1	2685.7 lbm
2	73010019	FRONT ENCLOSURE ASM, 2000	1	242.0 lbm
3	73014068	RR ENCL ASM, 2000	1	381.4 lbm
4*	73212089	DISCHARGE PIPE ASM	1	1354.8 lbm
5	73003058	2000 VESSEL	1	3725.6 lbm
9	288002100	MANHOLE 20", ALUM. W/ BUNA SEAL, 6 CAM	4	241.8 lbm
13*	73456087	8" HOSE TUBES, DOUBLE CURB SIDE	1	102.5 lbm
14	73528615	BUMPER ASM, FULL, TANK, 102"	1	41.6 lbm
15*	73440052	HAND RAIL ASSEMBLY 2000	1	220.7 lbm
16*	73436024	CATWALK ASSEMBLY	1	230.4 lbm
17*	73456088	8" HOSE TUBES, DOUBLE ROAD SIDE	1	107.4 lbm
18*	28800401	DOCUMENT HOLDER	1	
19*	73210052	LOAD LINE ASM, 2000, DS	1	646.2 lbm
20*	73210053	LOAD LINE, 4" SST, CS	1	339.5 lbm
21*	73224465	BLOW DOWN LINE, ASM	1	217.7 lbm
22*	73008014	VESSEL FILL PANEL ASM	1	133.3 lbm


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UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. ANGLES 45°, 60°, 90°, 120°, 135°, 150°.				20270 BULK UNIT	
DRAWN:	DATE:	9/23/2011	REVISION:		
WEIGHT: 9122.8 lbm			REVISION:		
REV.	DATE	REASON FOR CHANGE	ECN #	BY	PAGE 1 OF 4 PART NO 24472-24473

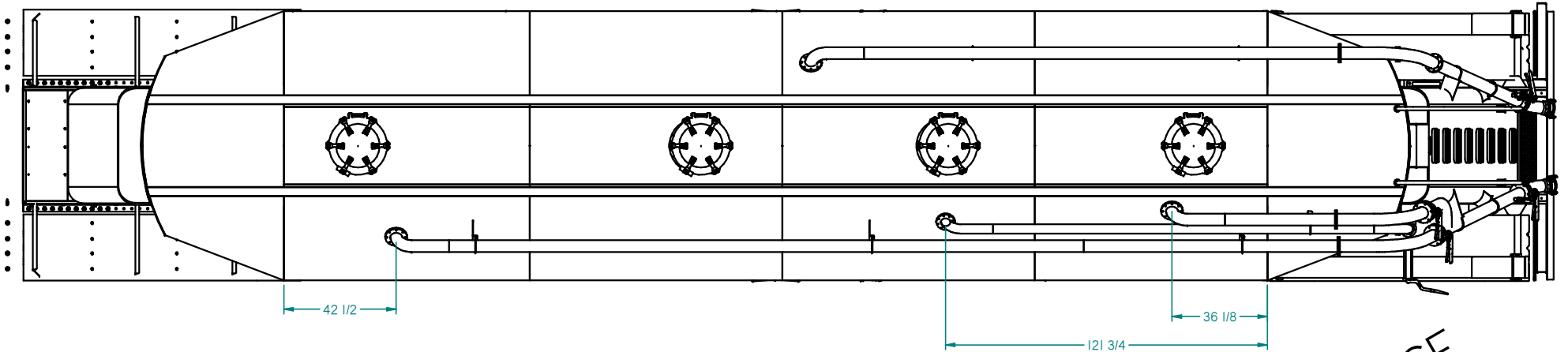
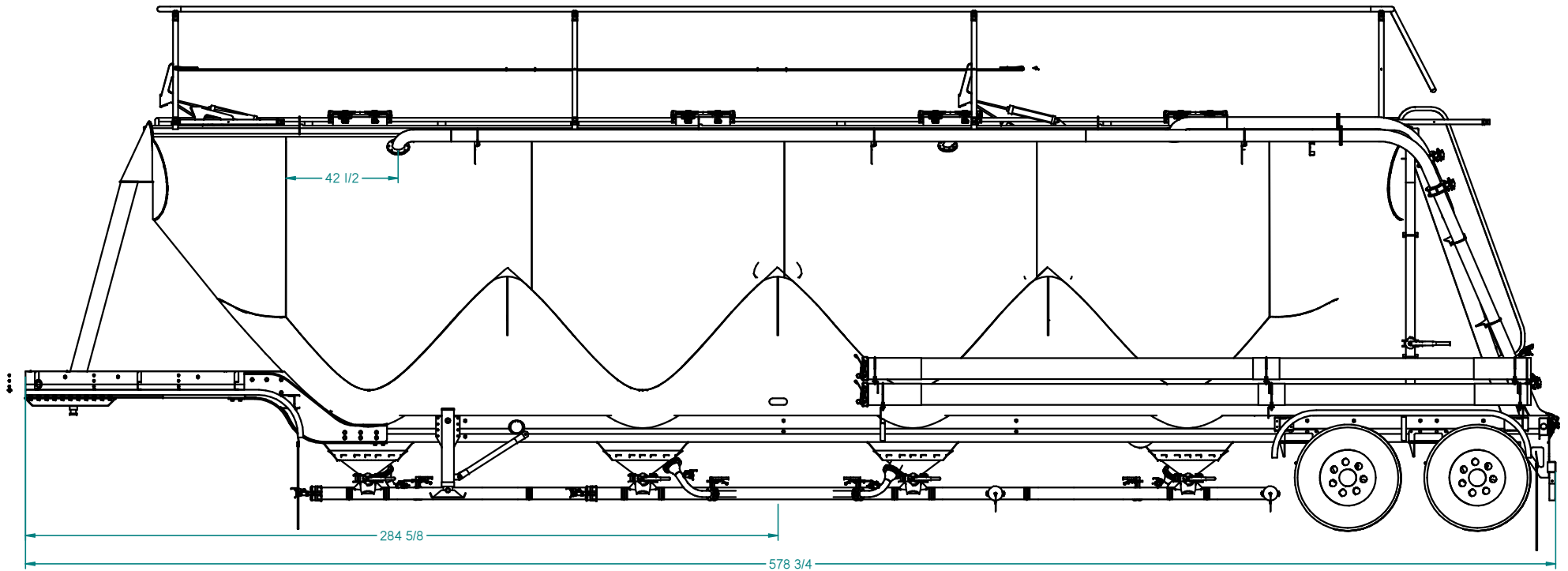


DETAIL A



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UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. ANGLES 45° - 90° - 135° - 180°.		20270 BULK UNIT	
DRAWN: 9/23/2011	DATE: 9/23/2011	MAC MANUFACTURING INC.	
WEIGHT: 9,223 lbs	REVISION: I	PAGE 2 OF 4	PART NO 24472-24473

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES ANGLES 42° FRACTIONS 1/16" DECIMALS 0.02		20270 BULK UNIT	
DRAWN: DATE: 9/23/2011			
WEIGHT: 9000 LBS ID#	REVISION: I	PAGE 3 OF 4	PART NO 24472-24473



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UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. ANGLES 45° - 135° - 225° - 315° - 360°.		
DRAWN: 9/23/2011	DATE: 9/23/2011	20270 BULK UNIT
WEIGHT: 9,223 lbs	REVISION: I	PAGE 4 OF 4 PART NO 24472-24473

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