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**Work Plan for Residential Well Sampling  
Saint-Gobain Performance Plastics  
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Merrimack, New Hampshire 03054  
NHDES Site No.: 199712055  
Project Number: 36430**

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# WORK PLAN FOR RESIDENTIAL WELL SAMPLING

**SAINT-GOBAIN PERFORMANCE PLASTICS  
MERRIMACK, NEW HAMPSHIRE**

WORK PLAN

**Submitted To:** New Hampshire Department of Environmental Services  
Hazardous Waste Remediation Bureau  
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Concord, New Hampshire 03302

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**December 22, 2017**

**Project No.: 166-8623**

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## 1.0 INTRODUCTION

On behalf of Saint-Gobain Performance Plastics (SGPP), Golder Associates Inc. (Golder) is submitting this work plan to the New Hampshire Department of Environmental Services (NHDES) to sample certain residential water supply wells in Bedford, New Hampshire. This work plan is submitted in response to the NHDES' request in a letter on November 3, 2017 (NHDES, 2017b).

### 1.1 NHDES Request for Work Plan

NHDES requested the following in the November 3, 2017 letter:

“Several private drinking water supply wells located outside of the designated alternate water areas in Bedford and Merrimack have had detections of [perfluorooctanoic acid] PFOA and perfluorooctane sulfonic acid (PFOS) at concentrations greater than 35 nanograms per liter (ng/L). Consistent with recommendations provided to potentially responsible parties (PRPs) for other sites managed by NHDES' Waste Division, additional monitoring of these wells is needed to establish a trend and assess whether the wells are at risk for having future exceedances of the Ambient Groundwater Quality Standard (AGQS) of 70 ng/L. NHDES has undertaken some additional monitoring at these locations, but is requesting that Saint-Gobain take over these efforts. **Within two weeks of the date of this letter, provide a sampling plan for additional monitoring prepared in accordance with Waste Division guidance.** NHDES will provide an updated copy of our database of analytical sampling results to facilitate your identification of wells that need additional monitoring.” [bold text is DES emphasis] (NHDES, 2017b)

SGPP responded to NHDES' letter on November 17, 2017 (SGPP, 2017) to request that residential well sampling request be incorporated into the consent decree. NHDES responded and re-iterated the request on November 21, 2017. NHDES provided an updated database to SGPP on November 30, 2017 to inform selection of wells for sampling; and indicated during a call on December 12, 2017 that they were expecting a work plan within 2 weeks of provision of the database.

### 1.2 NHDES Guidance on Residential Well Sampling

In May 2017, NHDES issued the following guidelines for wells with detections of PFOA and/or PFOS above laboratory reporting limits (NHDES, 2017a):

- Detections of less than 50% of AGQS (i.e., 35 ng/l): waiving future sampling requirements if two consecutive rounds of sampling fail to detect these PFAS above 35 ng/l.
- Detections  $\geq$  50% AGQS (i.e., 35 ng/l): Additional monitoring will likely be required to establish a trend, the frequency and duration of which will be based on site-specific conditions. However, between two and four rounds of monitoring will likely be needed.



- If increasing concentrations are observed, an evaluation of the site characterization, remedy, and future monitoring frequency will be necessary.
- If steady or decreasing concentrations are observed, additional sampling on a less frequent basis until concentrations decrease to less than 50% of AGQS.
- Additional guidance for detections  $\geq 50\%$  AGQS (i.e., 35 ng/l) in water supply wells: More frequent monitoring is recommended to establish trends.
  - $\geq 70\%$  AGQS (i.e., 49 ng/l): Sample monthly.
  - $\geq 50\%$  to  $\geq 70\%$  AGQS (i.e., 35 to 49 ng/l): Sample in 3 to 6 [months].

Golder has considered these guidelines in selecting the sample locations and frequencies specified below.



## 2.0 ASSESSMENT OBJECTIVES AND SCOPE OF WORK

This section provides the assessment objectives, methodology for selecting wells, and proposed activities.

### 2.1 Objectives

The objective of this work plan is to provide for routine monitoring of wells with PFOA concentrations between 35 and 70 ppt, based on NHDES' request (NHDES, 2017b) and guidance (NHDES, 2017a). This objective was used to develop the scope of the activities described below.

### 2.2 Identification of Wells and Sampling Frequency

Table 1 presents a list of wells proposed for monitoring. Golder identified the wells listed on Table 1 based on identifying drinking water supply wells with at least one result at or above the guidance value of 35 ppt for PFOA that are not connected to a public water supply or are not provided with point-of-entry (POE) or point-of-use (POU) treatment system. The wells listed on Table 1 did not include wells that fall into one or more of the following categories:

- Wells with a combined concentration of PFOA and PFOS above the guidance value of 35 ppt but where PFOA is not above 35 ppt. Available data suggest that PFOS impacts are not associated with the SGPP air deposition pathway.
- Wells where the signature of PFAS compounds is inconsistent with an SGPP air deposition signature.
- Wells on properties with a use history that suggests other PFAS sources may be present on the property or on a nearby property.
- Wells that are located distant from the SGPP facility (e.g. wells located in Hollis, New Hampshire that NHDES identifies as being within the "SGPP" sub-project in the database).

Table 1 includes PFOA analytical results (as provided by NHDES) and proposed monitoring frequency for each of the wells proposed for monitoring. The proposed monitoring frequency is based on past PFOA analytical results and NHDES guidance as outlined in Section 1.2. Specifically, Golder identified a monitoring frequency based on the following criteria:

- Monthly monitoring is proposed for wells where the most recent PFOA concentration is greater than or equal to 49 ppt and fewer than 4 samples have been collected.
- Quarterly monitoring is proposed for:
  - Wells where the most recent PFOA concentration is below 49 ppt but prior PFOA detections are above and there are insufficient monitoring results to evaluate trends; or
  - Wells where the most recent PFOA concentration is above 49 ppt but there are sufficient monitoring results (i.e., more than 4 monitoring events) to establish either a decreasing or steady concentration trend



- Semi-annual (every 6 months) monitoring is proposed for wells where the two most-recent PFOA concentrations are below 49 ppt

Golder will periodically re-evaluate monitoring frequencies based on these criteria and communicate any proposed changes in sampling frequency to the property owner and NHDES in the cover letter transmitting data and summarize the changes in the semi-annual reports (see Section 3.6 below). As described in NHDES Guidance, Golder will discontinue monitoring if PFOA is detected at a concentration below 35 ppt in two consecutive monitoring events.

### 2.3 Sampling Methodology and Field Documentation

Samples will be collected according to the standard operating procedures (SOPs) included in Appendices A through C.

Golder will record field parameters (temperature, pH, dissolved oxygen, specific conductivity, oxidation-reduction potential, and turbidity), and field observations (including but not limited to color, odor, clarity, foam, and sheen) for each sample.

### 2.4 Analytical Parameters

Samples will be submitted to Eurofins Lancaster Laboratories Environmental Inc. of Lancaster, Pennsylvania (ELLE) under chain-of-custody protocols for analysis of compounds listed in Table 2 including: PFAS compounds, total suspended solids, and principal ions (alkalinity as bicarbonate, ammonium, calcium, chloride, iron, magnesium, manganese, nitrate, nitrite, potassium, sodium, sulfate, and sulfite) and phosphorous. All samples will be analyzed for PFAS compounds. SGGP may discontinue analysis of non-PFAS parameters or field parameters besides temperature, at any time. SGGP may add additional parameters if monitoring results indicate that localized PFAS sources may be present.

### 2.5 Quality Assurance/Quality Control

Quality assurance/quality control samples will be collected in accordance with the sampling procedure included as Appendix C.

### 2.6 Reporting

Unvalidated analytical results will be reported to the property owner(s) within 45 days of receipt of the analytical results from the laboratory. NHDES Waste Management Division, NHDES Environmental Health Program, and town health officers will be copied on transmittals of analytical results to the property owner(s).

If any of the analyzed parameters are detected at a concentration above an AGQS in a sample collected from a water supply well that is being used as a drinking water source, Golder will:



- Provide notification to homeowners in accordance with the methods identified during access agreement negotiations and verbal notification to NHDES within 24 hours of receipt of analytical data.
- Notify the property owner(s), NHDES, and town health officers in writing within 5 business days after receiving the results.

For the duration of the sampling under this work plan, Golder will provide a semi-annual status report to NHDES in July and February of each year summarizing the available sampling results and providing recommendations for future well sampling locations, frequencies, and parameters. The first semi-annual status report is tentatively scheduled for July 15, 2018 (assuming NHDES approval of this Work Plan by January 31, 2018) and would cover the period from January 1, 2018 to June 1, 2018.





### 3.0 NEXT STEPS AND SCHEDULE

Following work plan approval from NHDES, Golder will complete the following activities:

- Initial contact and access agreements provided to property owners within 30 days of work plan approval
- Sampling of wells with monthly sampling frequency within 30 days of access agreement acceptance, pending schedule agreement with property owner(s)
- Sampling of wells with quarterly or semi-annual sampling frequency within 60 days of access agreement acceptance, pending schedule agreement with property owner(s)



#### 4.0 CLOSING

The undersigned are the principal authors of this Report. Should you have any questions regarding this document, please contact Ross Bennett at (603) 668-0880.

##### **GOLDER ASSOCIATES INC.**

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## 5.0 REFERENCES

NHDES, 2017a. Frequently Asked Questions (FAQs) for Sampling and Analysis of PFAS at WMD Sites. May 17, 2017.

NHDES, 2017b. Letter Re: October 30, 2017 Meeting. November 3, 2017.

## **TABLES**

Table 1: Residential Well Sampling Locations

Station ID	Station Name	Sample Date	Most Recent Result ?	PFOA (ng/L)	Proposed Frequency		
					Semi-Annual	Quarterly	Monthly
NHDES_M_7078	STORAGE TANK	2/21/2017		52			
NHDES_M_7078	STORAGE TANK	3/27/2017		40			
NHDES_M_7078	STORAGE TANK	9/18/2017	X	32	X		
NHDES_M_5011	BASEMENT UTILITY SINK	5/18/2017		42			
NHDES_M_5011	BASEMENT UTILITY SINK	10/16/2017	X	30	X		
NHDES_M_4946	KITCHEN FAUCET	6/13/2017	X	58			X
NHDES_M_8030	STORAGE TANK	12/14/2016		46			
NHDES_M_8030	STORAGE TANK	4/27/2017	X	26	X		
NHDES_M_7025	STORAGE TANK	12/16/2016		47			
NHDES_M_7025	STORAGE TANK	4/27/2017	X	25	X		
NHDES_M_6017	BATHROOM SINK-BEDROOM	11/30/2016		53			
NHDES_M_6017	BATHROOM SINK-BEDROOM	4/27/2017	X	17		X	
NHDES_M_8017	KITCHEN SINK	12/8/2016		46			
NHDES_M_8017	KITCHEN SINK	4/27/2017	X	30	X		
NHDES_M_5528	KITCHEN SINK	6/16/2016		37			
NHDES_M_5528	KITCHEN SINK	6/16/2016	X	44	X		
NHDES_M_5527	STORAGE TANK	6/16/2016		37			
NHDES_M_5527	STORAGE TANK	6/16/2016		44			
NHDES_M_5527	STORAGE TANK	6/28/2017	X	46.5	X		
NHDES_M_7036	STORAGE TANK	12/27/2016		46			
NHDES_M_7036	STORAGE TANK	6/7/2017	X	32	X		
NHDES_M_8042	STORAGE TANK	12/19/2016	X	43	X		
NHDES_M_14045	6 HEMLOCK DR	4/21/2016	X	42	X		
NHDES_M_4781	OUTSIDE SPIGOT	10/20/2016		32			
NHDES_M_4781	OUTSIDE SPIGOT	7/24/2017	X	35	X		
NHDES_M_2738	STORAGE TANK_WELL 1	4/28/2016		57			
NHDES_M_2738	STORAGE TANK_WELL 1	11/17/2016		59			
NHDES_M_2738	STORAGE TANK_WELL 1	4/27/2017	X	32		X	
NHDES_M_2739	STORAGE TANK_WELL 2	4/28/2016		49			
NHDES_M_2739	STORAGE TANK_WELL 2	11/17/2016		46			
NHDES_M_2739	STORAGE TANK_WELL 2	4/27/2017	X	44	X		
NHDES_M_4556	STORAGE TANK	5/5/2016		62			
NHDES_M_4556	STORAGE TANK	11/17/2016	X	36		X	
NHDES_M_4839	KITCHEN SINK	12/20/2016	X	35	X		

Notes:

PFOA data based on spreadsheet titled "20171130 DB to SGPP.xlsx" provided by NHDES  
 Station IDs were assigned by NHDES; "M" indicates "MTBE"  
 PFOA = perfluorooctanoic acid  
 ng/L = nanograms per liter

Prepared by: RWB  
 Checked by: HDE  
 Reviewed by: APTM

- PFOA concentration greater than or equal to 49 ppt (70% of AGQS)
- PFOA concentration less than 49 ppt (70% of AGQS) and greater than or equal to 35 ppt (50% of AGQS)
- PFOA concentration less than 35 ppt (50% of AGQS)

**Table 2: Residential Well Sampling - Analytical Parameters**  
**Saint-Gobain Performance Plastics**  
**New Castle, Delaware**

Method Parameter	Units	Anticipated Method Detection Limit	Bottle Requirements	Preservative	Hold Time
<b>EPA 300.0</b>					
Chloride	mg/L	1	40 mL glass vial	none	28 days
Nitrate Nitrogen	mg/L	0.25	40 mL glass vial	none	48 hours
Nitrite Nitrogen	mg/L	0.25	40 mL glass vial	none	48 hours
Sulfate	mg/L	1.5	40 mL glass vial	none	28 days
<b>EPA 350.1</b>					
Ammonia Nitrogen	mg/L	0.05	500 mL round glass	sulfuric acid	28 days
<b>EPA 365.1</b>					
Total Phosphorus as P (water)	mg/L	0.05	500 mL round glass	sulfuric acid	28 days
<b>EPA 537 modified</b>					
NETFOSAA	ng/L	0.4	250 mL wide mouth plastic	none	28 days
NMeFOSAA	ng/L	0.4	250 mL wide mouth plastic	none	28 days
Perfluorobutanesulfonate	ng/L	0.3	250 mL wide mouth plastic	none	28 days
Perfluorobutanoic acid	ng/L	2	250 mL wide mouth plastic	none	28 days
Perfluorodecanoic acid	ng/L	0.4	250 mL wide mouth plastic	none	28 days
Perfluorododecanoic acid	ng/L	0.3	250 mL wide mouth plastic	none	28 days
Perfluoroheptanoic acid	ng/L	0.3	250 mL wide mouth plastic	none	28 days
Perfluorohexanesulfonate	ng/L	0.4	250 mL wide mouth plastic	none	28 days
Perfluorohexanoic acid	ng/L	0.3	250 mL wide mouth plastic	none	28 days
Perfluorononanoic acid	ng/L	0.3	250 mL wide mouth plastic	none	28 days
Perfluoro-octanesulfonate	ng/L	0.7	250 mL wide mouth plastic	none	28 days
Perfluorooctanoic acid	ng/L	0.3	250 mL wide mouth plastic	none	28 days
Perfluoropentanoic acid	ng/L	0.3	250 mL wide mouth plastic	none	28 days
Perfluorotetradecanoic acid	ng/L	0.3	250 mL wide mouth plastic	none	28 days
Perfluorotridecanoic acid	ng/L	0.3	250 mL wide mouth plastic	none	28 days
Perfluoroundecanoic acid	ng/L	0.4	250 mL wide mouth plastic	none	28 days
<b>SM 2320B</b>					
Bicarbonate Alkalinity	mg/L	1.7	250 mL wide mouth plastic	none	14 days
Total Alkalinity to pH 4.5	mg/L	1.7	250 mL wide mouth plastic	none	14 days
<b>SM 2540D</b>					
Total Suspended Solids	mg/L	1	1L round plastic	none	7 days
<b>SM 4500-SO3 B</b>					
Sulfite	mg/L	1.5	250 mL round amber	EDTA	immediate
<b>SW-846 6010C</b>					
Calcium	mg/L	0.06	250 mL wide mouth plastic	nitric acid	6 months
Iron	mg/L	0.0805	250 mL wide mouth plastic	nitric acid	6 months
Magnesium	mg/L	0.0374	250 mL wide mouth plastic	nitric acid	6 months
Manganese	mg/L	0.0016	250 mL wide mouth plastic	nitric acid	6 months
Potassium	mg/L	0.179	250 mL wide mouth plastic	nitric acid	6 months
Sodium	mg/L	0.321	250 mL wide mouth plastic	nitric acid	6 months

## Notes:

mg/L = milligrams per liter  
ng/L = nanograms per liter  
mL = milliliters  
L = liters

Prepared by: BPC  
Checked by: TGB  
Reviewed by: RWB

**APPENDIX A**

**SOP-1: GENERAL FIELD METHODS FOR PFAS SAMPLING PROGRAMS**

# APPENDIX A

## STANDARD OPERATING PROCEDURE

### SOP-1

**Title:** General Field Methods for PFAS Sampling Programs

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## 1.0 GENERAL APPLICABILITY

The purpose of this Standard Operating Procedure (SOP) is to describe the procedures that shall be used during implementation of this perfluorinated compound (PFAS) sampling program.

Due to the extremely low method detection limits associated with PFAS analysis (i.e., nanograms per liter [ng/l]) and the many potential sources of trace levels of PFASs, field personnel shall employ the greatest caution by strictly following the protocols described herein. Frequent replacement of nitrile gloves and decontamination of non-dedicated sampling equipment in accordance with the appropriate procedures will reduce the potential for false detections of PFASs.

This SOP includes the following:

- Considerations regarding food packaging and food consumption during PFAS sampling programs
- Field gear and clothing restrictions
- Personal hygiene requirements
- Sample area access restrictions
- Field equipment decontamination

Some of the provisions of the PFAS sampling program requirements described herein may conflict with standard health and safety procedures (e.g., use of insect repellent or sunscreen). Therefore, prior to implementation of a field program subject to these General Provisions, an Addendum to the site-specific Health and Safety Plan (HASP) shall be prepared to address any potential conflicts between the requirements described herein and standard health and safety procedures.

## 2.0 RESPONSIBILITIES

The Field Team Leader and field personnel have the shared responsibility to oversee and ensure that the PFAS sampling program is performed in accordance with the program-specific protocols described in this SOP. The Field Team Leader shall ensure that on-site personnel, including subcontractors and third parties that may have direct access to the sampling area, understand and comply with this SOP. Field personnel shall be notified of these requirements a minimum of three days prior to the start of field work in order to have the time to appropriately comply with many of the food and clothing requirements prior to arriving at the site.

## 3.0 GENERAL FIELD METHODS

### 3.1 Food Consumption

Components of some food packages have been treated to resist wetting. Historically, this was achieved through the use of PFASs. Accordingly, field personnel shall avoid the use of paper bags and other paper packaging to transport food to the site, including pre-wrapped foods and snacks (e.g., chocolate bars, energy bars, granola bars, potato chips, etc.). Field personnel shall not bring any fast food to the site that uses any form of paper wrapping such as sandwiches or paper drinking cups. If possible, field personnel shall use hard plastic or stainless steel food containers. Field personnel shall not use aluminum foil, wax paper, or coated textiles to transport food to the site.

The Teflon® coating on some frying pans contains fluorinated compounds and as such represents a potential source of PFASs. Field personnel shall not transport to or consume food at the site that has been prepared using a Teflon® coated cooking utensil.



# APPENDIX A

## STANDARD OPERATING PROCEDURE

### SOP-1

Field personnel shall not consume food or beverages in the field vehicle or in the immediate vicinity of the sample location. Prior to consuming food or beverages, field personnel shall remove their nitrile gloves and coveralls and move to a location a minimum distance of 35 feet away from the sample location, preferably in the downwind direction. When finished eating or drinking, field personnel shall wash their hands, put their coveralls back on and put on a new pair of nitrile gloves prior to returning to the work area.

### 3.2 Field Gear and Clothing Restrictions

Because treatments to provide water resistant, water proof, or stain-resistant clothing include the use of PFASs, field personnel shall not wear any water resistant, water proof, stain-resistant treated clothing or Tyvek clothing during the field program. Permissible field clothing for PFAS sampling programs includes clothing made from natural fibers, preferably cotton. Clothing made of synthetic fibers shall be avoided (i.e., reflective vests).

Field clothing shall be laundered with a minimal amount of detergent and no fabric softener or scented products shall be used. Once field clothing has been washed appropriately, field clothing shall be washed a second time on a rinse-only cycle, using only water, prior to drying. Anti-static dryer sheets shall not be used when drying field clothing. Field clothing shall preferably be old cotton clothing that has been laundered many times, as new clothing may contain PFAS related treatments. Clothing containing Gore-Tex™ shall not be worn during the sampling program, as Gore-Tex™ clothing contains a PFAS membrane.

Because field vehicle seats may have been treated with PFAS-containing products for stain resistance, the seats of field vehicles shall be covered with a well laundered cotton sheet or blanket for the duration of the field program in order to avoid direct contact between field personnel clothing and vehicle seat fabric. Measures taken to mitigate field personnel contact with field vehicle seat fabric shall not in any way interfere with the functionality or impede the use of vehicle safety belts.

Waterproof field books shall not be used; field notes shall be recorded on loose paper using aluminum clip boards. Plastic clip boards, self-sticking notes, binders or spiral hard cover notebooks shall not be used. Field notes shall be recorded in pen or pencil. Markers shall not be used.

Most safety footwear is constructed of leather and synthetic materials that have been treated to provide some degree of waterproofing and/or increased durability. Therefore, footwear materials represent a potential source of trace PFASs. Field personnel contact with safety footwear including donning footwear or tying laces shall not occur within 35-feet of the sampling area. If footwear must be adjusted, field personnel shall re-locate to an area a minimum of 35-feet from the sampling area, preferably in a downwind direction, and make the necessary adjustments. Nitrile gloves shall be worn when contacting footwear. The nitrile gloves worn while contacting footwear shall be removed and new nitrile gloves shall be put on prior to re-entering the sampling area.

Disposable nitrile gloves shall be worn at all times. A new pair of nitrile gloves shall be donned prior to the following activities at each sample location:

- Contact with laboratory-supplied sample containers or PFAS-free water containers
- Decontamination of sampling equipment
- Insertion of anything into the well (e.g., HDPE tubing, HydraSleeve, bailer, etc.)
- Insertion of silicon tubing into the peristaltic pump
- Completion of monitoring well purging

# APPENDIX A

## STANDARD OPERATING PROCEDURE

### SOP-1

**Title:** General Field Methods for PFAS Sampling Programs

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- Sample collection
- Handling of QA/QC samples including field blanks and equipment blanks
- After the handling of any non-dedicated sampling equipment or contact with non-decontaminated surfaces

### 3.3 Personal Hygiene

Field personnel shall not use shampoo, conditioner, body gel, cosmetic cream, or hand cream as part of their personal showering routine on the day of a sampling event, as these products may contain surfactants and represent a potential source of PFASs. Field personnel shall follow their normal hygiene routine the night before a sampling event and then rinse with water only the morning before a sampling event. The use of bar soap is acceptable; however, bar soap including moisturizers shall be avoided.

Field personnel shall not use moisturizers, cosmetics, dental floss, sunscreen, and/or insect repellent for the duration of the field program, either on-site or off-site, as these products may contain trace PFASs. Appropriate accommodation to address the prohibition of the use of these substances must be incorporated into a site-specific HASP.

### 3.4 Sample Area Access

Visitors, including contractors or site personnel, who are not following these general PFAS sampling program protocols shall not be allowed to approach within 35 feet of the sample area until PFAS sample collection activities are complete and the PFAS sample container has been enclosed in a Ziploc® storage bag and placed in the sample cooler.

### 3.5 Field Equipment Decontamination

Use the procedures in this section to decontaminate all non-dedicated sampling equipment (e.g., submersible pumps, bladder pump components, tubing shears, etc.) used to collect samples:

- Rinse thoroughly with Citranox solution
- Rinse thoroughly with de-ionized (DI) water
- Rinse with methanol
- Rinse with DI water
- Allow to air dry
- Store equipment in clean Ziploc® storage bag until needed for sampling

Decontamination fluids used to clean equipment including Citranox, DI water, and methanol shall not be reused during field decontamination and shall be collected and discharged to the publicly-owned treatment works at the on-site treatment building.

**APPENDIX B**  
**SOP-2: PFAS PROGRAM SAMPLING PROTOCOLS**

# APPENDIX B

## STANDARD OPERATING PROCEDURE

### SOP-2

**Title:** PFAS Program Sampling Protocols

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## 1.0 GENERAL APPLICABILITY

The purpose of this Standard Operating Procedure (SOP) is to describe the procedures that shall be followed during sample collection for analysis of perfluoroalkyl substances (PFAS).

This SOP includes the following:

- Sample Container Considerations
- Sample Collection
- Sample Shipping Requirements

## 2.0 RESPONSIBILITIES

The Field Team Leader and field personnel have the shared responsibility to oversee and ensure that the monitoring well purge and PFAS groundwater sampling program is performed in accordance with the program-specific protocols described in this SOP. The Field Team Leader shall ensure that field personnel understand and comply with this SOP.

## 3.0 SAMPLING PROCEDURES

### 3.1 Sample Containers

Drinking water samples shall be collected in HDPE sample containers provided by the laboratory specifically for use in the collection samples for analysis of PFAS (i.e., HDPE without a Teflon® liner). Glass containers shall not be used due to the potential for loss of PFAS through adsorption.

Sample container lids shall remain on the sample container until immediately prior to sample collection and lids shall be resealed immediately following sample collection. Field personnel shall hold the sample container lid in their hand until the lid is replaced on the sample container. Field personnel shall not rinse sample container bottles during groundwater sample collection. Sample container labels shall be completed using a pen or a pencil after the lid has been re-secured on the sample container. Field personnel shall not use markers to complete sample container labels.

### 3.2 Sample Collection

Field personnel shall wash their hands and put on a new pair of nitrile gloves prior to sample collection. Once the nitrile gloves are put on, field personnel shall not handle papers, pens, clothes, etc. prior to the collection of groundwater samples. If field personnel need to take notes or handle anything other than the sample container prior to collecting the sample, the old nitrile gloves with which contact was made shall be removed and new nitrile gloves put on.

Field personnel shall hold the sample container in such a manner that the sample container does not come in direct contact with the sampling equipment. The sampling container shall be filled completely. If field personnel observe suspended solids in the collected sample, a new sample shall be collected, if possible. If it is not possible to collect a sample with minimal suspended solids (i.e., no evidence of solids settling at the bottom of the sampling container), field personnel shall contact the project manager and, if the sample is submitted for analysis, indicate the presence of suspended solids as a note on the chain-of-custody.

Samples shall be placed directly into the laboratory-supplied HDPE containers. Once the sample container lid has been resealed, groundwater sample containers are to be placed into individual new Ziploc® (or equivalent) storage bags. Following sample collection, sample containers enclosed within their Ziploc® (or

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equivalent) storage bags shall be placed on ice in the laboratory-provided sample cooler. Field personnel shall minimize sample exposure to sunlight during sample handling and storage.

All sampling materials shall be treated as single use and disposed of following completion of sampling at each location.

### **3.3 Sample Shipping**

Sample containers shall be stored on ice and maintained at approximately 4 degrees Celsius (°C) and transported by overnight courier to the laboratory. Field personnel shall only use new, fresh ice. Reusable chemical or gel ice packs shall not be used as these may contain PFAS. Tracking numbers for all shipments shall be provided once the sample coolers have been shipped to ensure their timely delivery.

**APPENDIX C**

**SOP-3: PFAS PROGRAM RESIDENTIAL/PRIVATE WELL SAMPLING PROTOCOL**

# APPENDIX C

## STANDARD OPERATING PROCEDURE

### 1.0 GENERAL APPLICABILITY

The purpose of this Standard Operating Procedure (SOP) is to describe the methods to be followed when collecting samples from private water supply wells for laboratory analyses from locations in the vicinity of the Saint-Gobain Performance Plastics manufacturing facility in Merrimack, New Hampshire.

### 2.0 EQUIPMENT AND MATERIALS

#### 2.1 Equipment

The list below identifies the equipment required to complete this task.

- Clean hand tools, such as a wrench, to remove aerators
- Clean container for field measurements
- Graduated container and stop watch and/or flowmeter to determine purge rate and volume
- Clean bucket for purge water (if sampling outdoor or basement tap)
- Temperature probe or thermometer
- First-aid kit
- Fire extinguisher
- Metal clipboard for field observations

#### 2.2 Materials

The list below identifies the materials required to complete this task.

- Laboratory-supplied, pre-preserved sample containers and trip blanks
- Chain-of-Custody
- Cooler with ice
- Field sampling form
- Personal protective equipment (PPE)
- pH paper

### 3.0 PROCEDURES

#### 3.1 Preliminary Activities

Observe well head if exposed. Note on the sampling form any defects observed in the well head and/or potential contaminant sources located near well head.

Determine and note on the sampling form the volume of the holding/pressure tank(s).

Trace the cold water system and look for in-house treatment devices, such as water softeners, pH adjusters, point-of-entry treatment (POET) systems, radon systems, carbon systems, or ultra violet systems. Note in-house treatment devices on the sampling form. The sample must be collected prior to any type of water treatment system or the system must be bypassed.

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Samples should be collected as close to the well head as possible.

Samples should be collected from an outdoor tap, if possible, but may be collected from an indoor tap (kitchen sink, bathroom sink, tap at the holding/pressure tank, etc.) if necessary.

Note the location of sample collection on the field form.

Make sure that the sample point is clean (i.e., no grease, lead soldering, or other possible contaminants). Note any nearby potential contamination sources (PFC containing materials, cleaners, solvents, gas cans, paint cans, dry cleaning [if indoors], etc.) on the field form. If there are any potential contamination sources nearby, consider using a different sampling point.

Always wear new personal protection gloves (e.g., nitrile) at each location when collecting samples.

### 3.2 Sampling

If using an indoor faucet, remove the aerator. If the aerator can't be removed, choose a different sampling point.

Begin purging the cold water tap using an empty container of known volume and stopwatch or a flowmeter to determine the sampling port flow rate. Note the time purging began and the estimated flow rate on the field form. Measure the temperature and pH of the water and record it and the appearance of the water on the field form.

Pre-label the laboratory supplied, certified pre-cleaned containers using indelible ink (Sharpie).

After purging a minimum of 10 minutes and removing a minimum of 110% the volume of the pressure tank, measure the temperature of the water every 2 to 3 minutes and record it, as well as the appearance of the water, on the field form. A sample may be collected once the temperature stabilizes (3 consecutive readings are  $\pm 0.3$  °C).

If purging an indoor location, purge water can be sent down the drain. If purging an outdoor location, purge water should be collected in a bucket and poured on the ground in an area away from walkways/play areas etc., such that ice or wet/slippery conditions are not created.

Once temperature stabilization has been achieved, collect the sample:

Reduce the flow rate from the sampling port to achieve as laminar a flow as possible.

Collect the primary PFAS samples (and duplicate, if applicable), then collect the remaining primary and duplicate samples. Field duplicate samples will be collected at one in every twenty sampling locations for all parameters. Open the labeled sample container and collect the sample by allowing the water to flow gently down the inside wall of the container with minimal turbulence.

Wearing nitrile gloves, fill the sample bottles nearly to the top, secure caps on the bottles, and gently agitate the bottles to allow the preservative to dissolve. Do not rinse the sample containers or allow them to overflow.

Field blanks for perfluorinated compound (PFAS) samples will be collected at each sampling location. Collect the PFAS field blank for the location by slowly pouring the provided laboratory DI water into the appropriate sample container at the same location where the primary sample is collected. Place the sample



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container in the cooler with ice and record the sample collection time on the field form and complete the chain-of-custody.

Place the sample containers in a cooler on ice at 4 degrees Celsius to be delivered to the laboratory within 24-hours of collection.

Record the sample collection time and field parameters, if measured, on the field form and complete the chain-of-custody.

Replace the aerator, if removed.

Samples must be delivered to the laboratory within 24-hours of collection.

### 4.0 SAMPLE NAMING

For consistency, name samples using the following conventions:

For primary field samples – use the street number, name and town (e.g., “179 Back River Road-Bedford”).

For field duplicate samples - use the primary sample name appended by “Dup” (e.g., “179 Back River Road-Bedford-DUP” for a field duplicate collected at 179 Back River Road, Bedford).

For field blank samples (Method 537.1 only) – use the primary sample name appended by “FB” (e.g., “179 Back River Road-Bedford-FB” for the field blank collected at 179 Back River Road, Bedford).

### 5.0 QA/QC SAMPLES

#### 5.1 Field Duplicates

Field personnel shall collect one blind field duplicate for every 20 primary field samples collected. Field personnel shall collect field duplicates immediately after collection of the primary field samples. Field duplicates shall be collected in the laboratory-supplied PFAS-free HDPE sample containers. Field duplicate container lids shall remain in the hand of field personnel until replaced on the sample container. Sample container labels shall be completed as described above.

Field personnel shall collect groundwater field duplicates for analysis of PFAS using the following procedures:

- Following collection of the primary sample, change gloves and prepare to collect the field duplicate.
- Field duplicates shall be collected immediately following collection of the primary sample.
- Completely fill the laboratory-provided HDPE groundwater sample container.
- Replace and re-seal the lid on the groundwater sample containers and then complete the sample container label as described above.

#### 5.2 Field Blanks

Field personnel shall submit of one field blank for each sampling location. Field blanks shall consist of PFAS-free water containerized in an HDPE sample container filled at the laboratory prior to beginning the field program. Field blank sample containers shall be opened during the collection of a sample and the

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laboratory-supplied PFAS-free water contained therein shall be poured directly into a laboratory-supplied HDPE sample container and then resealed. Field blank container lids shall remain in the hand of field personnel until replaced on the sample container. Sample container labels shall be completed as described above.

One field blank per every twenty samples will be submitted for analysis for PFAS compounds only, and the remaining field blank samples will be placed on hold pending preliminary review of analytical results.

### 5.3 Trip Blanks

Field personnel shall submit one laboratory-supplied trip blank per day of sampling. Trip blanks shall consist of PFAS-free water containerized in an HDPE sample container filled at the laboratory prior to the beginning of the field program. Field personnel shall place one trip blank container in the sample cooler at the beginning of the day and the trip blank shall remain in the cooler for the duration of sampling activities conducted on that day. Trip blank containers shall be submitted to the laboratory with the daily field sample shipment.

One trip blank per every twenty samples will be submitted for analysis for PFAS compounds only, and the remaining trip blank samples will be placed on hold pending preliminary review of analytical results.

### 6.0 DOCUMENTATION

The field sampling form should be filled out in its entirety, including information regarding the location of sample collection, potential sources of cross contamination located near the sampling location, field measurements, any observations about the sample, and sample times. Field duplicate samples and trip blanks should be included on the chain-of-custody.

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