



WASTEWATER PFAS SAMPLING

Guidance

Introduction

This guidance document contains the processes, decontamination procedures, and acceptable materials for sampling wastewater for per- and polyfluoroalkyl substances (PFAS). In addition, this guidance will be used to support the sampling objectives and procedures based on the Quality Assurance Project Plan (QAPP) developed prior to sampling activities.

NOTE: Sections 1-4 of the **General PFAS Sampling Guidance** should be reviewed prior to reviewing this guidance document.

The Michigan Department of Environmental Quality (DEQ) intends to update the information contained within this PFAS Sampling Guidance document as new information becomes available. The user of this PFAS Sampling Guidance is encouraged to visit the Michigan PFAS Action Response Team webpage (www.michigan.gov/PFASresponse) to access the current version of this document.

Because PFAS compounds can be analyzed at concentrations in the parts per trillion (ppt) range, precautions must be taken to prevent cross-contamination. Wastewater sampling may require the use of non-dedicated equipment (i.e., equipment used for sampling at multiple locations), such as stainless steel or glass beakers and dippers, which should be decontaminated prior to first use and between samples to avoid cross-contamination per **Section 3.1** of the **General PFAS Sampling Guidance**. Any disposable equipment must be known to be PFAS-free.

This wastewater sampling guidance document covers the collection of wastewater PFAS samples related to municipal and industrial discharges and storm water and contains methods to prevent cross-contamination that can occur from:

- Field clothing and personal protective equipment (PPE)
- Personal care products (PCPs)
- Food packaging
- Sampling equipment
- Equipment decontamination
- Sample collection and handling
- Sample shipment

CONTENTS

Introduction 1

1. Potential Sources for PFAS Cross-Contamination 2

 1.1 Field Clothing and Personal Protective Equipment (PPE)..... 3

 1.2 Personal Care Products (PCPs) 4

 1.3 Food Packaging 4

2. Sampling Equipment 5

3. Sampling Methods..... 5

 3.1 Grab Sampling 5

 3.2 Automatic Sampling..... 6

4. Equipment Decontamination..... 7

5. Sample Collection and Handling..... 7

6. Sample Shipment..... 8

NOTE: Additional information about PFAS testing can be found on the Michigan PFAS Action Response Team (MPART) website: www.michigan.gov/PFASresponse

1. Potential Sources for PFAS Cross-Contamination

Potential sources for PFAS cross-contamination include items and materials used within the sampling environment, such as sampling equipment, field clothing, personal protective equipment (PPE), sun and biological protection products, personal hygiene, personal care products (PCPs), and food packaging. A detailed discussion about potential sources for PFAS cross-contamination is included in the **General PFAS Sampling Guidance**, which should be reviewed before reading this document. However, a high-level summary is presented in this guidance.

All of the items and materials discussed in each of the MDEQ’s PFAS Sampling Guidance Documents are divided into three major groups:

- Prohibited (●) identifies items and materials that should not be used when sampling. It is well documented that they contain PFAS or that PFAS are used in their manufacture.
- Allowable (■) identifies items and materials that have been proven not to be sources of PFAS cross contamination and are considered acceptable for sampling.
- Needs Screening (▲) identifies items and materials that have the potential for PFAS cross-contamination due to a lack of scientific data or statements from manufacturers to prove otherwise. These items and materials are further sub-divided into two categories:
 - o **Category 1:** Items and materials that will come in direct contact with the sample. These should not be used when sampling unless they are known to be PFAS-free, by collecting an equipment blank sample prior to use.
 - o **Category 2:** Items and materials that will not come in direct contact with the sample. These should be avoided, if possible, unless they are known to be PFAS-free by collecting an equipment blank sample prior to use.

● - Prohibited ■ - Allowable ▲ - Needs Screening

Please note that at this time no published research is available that documents the use of various materials and effect on sample results. Therefore, a conservative approach is recommended, and the guidance is based on the collection of multiple environmental samples at various PFAS Sites. Sampling staff should take practical and appropriate precautions to avoid items that are likely to contain PFAS at the sampling site as well as avoid specific items during the sampling event.

A general overview of PFAS contamination sources during sampling can be found in **Section 4.2** of the **General PFAS Sampling Guidance**. Any items or materials utilized that are not identified in this guidance or not discussed in **Section 4.2** should be evaluated as described in **Section 4.2.1**.

Sampling staff should take practical and appropriate precautions to avoid items that are likely to contain PFAS at the sampling site as well as avoid specific items during the sampling event (see below).

1.1 Field Clothing and Personal Protective Equipment (PPE)

Prior to sampling, staff should refer to **Section 4.2.2** of the **General PFAS Sampling Guidance** for approved field clothing as well as any requirements in a Health and Safety Plan (HASP). As with any field mobilization, it is the responsibility of all personnel to be aware of the physical, chemical and biological hazards associated with a particular site. Personal safety is paramount. Any deviation from this guidance, including those necessary to ensure the health and safety of sampling personnel, should be recorded in field notes and discussed in the final report.

NOTE: Special attention should be given to clothing that has been advertised as having waterproof, water-repellant, or dirt and/or stain repellent characteristics. They are likely to contain PFAS.

Depending on the project objectives and sampling plan, the collection of wastewater samples could be as simple as a grab sample or as complex as a sample collected using automatic sampling equipment. If life jackets or waders are needed they should be made of PFAS-free materials.

NOTE: Life jackets may have protective coatings that contain PFAS.

However, if samples are collected upgradient of the field person, and the wastewater sample is not expected to come into contact with the life jackets or waders, these could be considered **Category 2** items.

- Do not use waders made of Gore-Tex® or other known PFAS containing materials.
- Life jackets made of polyethylene foam and nylon shell fabric may be used.
- Waders made of Neoprene or other PFAS-free materials may be used.

Specific sunscreens that have been tested and found to be PFAS-free include:

- Banana Boat® for Men Triple Defense Continuous Spray Sunscreen SPF 30
- Banana Boat® Sport Performance Coolzone Broad Spectrum SPF 30
- Banana Boat® Sport Performance Sunscreen Lotion Broad Spectrum SPF 30
- Banana Boat® Sport Performance Sunscreen Stick SPF 50
- Coppertone® Sunscreen Lotion Ultra Guard Broad Spectrum SPF 50
- Coppertone® Sport High Performance AccuSpray Sunscreen SPF 30
- Coppertone® Sunscreen Stick Kids SPF 55
- L'Oréal® Silky Sheer Face Lotion 50+
- Meijer® Clear Zinc Sunscreen Lotion Broad Spectrum SPF 50
- Meijer® Sunscreen Continuous Spray Broad Spectrum SPF 30
- Meijer® Sunscreen Lotion Broad Spectrum SPF 15

● - Prohibited ■ - Allowable ▲ - Needs Screening

- Meijer® Sunscreen Lotion Broad Spectrum SPF 30
- Meijer® Wet Skin Kids Sunscreen Continuous Spray Broad Spectrum SPF 70
- Neutrogena® Beach Defense Water + Sun Barrier Lotion SPF 70
- Neutrogena® Beach Defense Water + Sun Barrier Spray Broad Spectrum SPF 30
- Neutrogena® Pure & Free Baby Sunscreen Broad Spectrum SPF 60+
- Neutrogena® UltraSheer Dry-Touch Sunscreen Broad Spectrum SPF 30

1.2 Personal Care Products (PCPs)

A number of sampling guidance documents recommend that personal hygiene and personal care products (PCPs) (e.g., cosmetics, shampoo, sunscreens, dental floss, etc.) not be used prior to and on the day(s) of sampling because the presence of PFAS in these products has been documented (OECD, 2002, Fujii, 2013, Borg and Ivarsson, 2017). However, if the MDEQ's sampling SOPs are followed, these items should not come into contact with the sampling equipment or the sample being collected. As of the date of this sampling guidance, cross-contamination of samples due to the use of PCPs has not been documented during the collection of thousands of samples. However, field personnel should be aware of the potential of cross-contamination if the sampling equipment or actual samples would come into contact with these products. The following precautions should be taken when dealing with personal hygiene or PCPs before sampling:

- Do not handle or apply PCPs in the sampling area.
- Do not handle or apply PCPs while wearing PPE that will be present during sampling.
- Move to the staging area and remove PPE if applying personal care products becomes necessary.
- Wash hands thoroughly after the handling or application of PCPs and, when finished, put on a fresh pair of powderless nitrile gloves.

1.3 Food Packaging

PFAS has been used by the paper industry as a special protective coating against grease, oil, and water for paper and paperboards, including food packaging since the late 1950s (Trier et al., 2018). PFAS application for food packaging includes paper products that come into contact with food such as paper plates, food containers, bags, and wraps (OECD, 2002). Pre-wrapped food or snacks (such as candy bars, microwave popcorn, etc.) must not be in the sampling and staging areas during sampling due to PFAS contamination of the packaging. When staff requires a break to eat or drink, they should remove their gloves, coveralls, and any other PPE, if worn, in the staging area and move to the designated area for food and beverage consumption. When finished, staff should wash their hands and put on a fresh pair of powderless nitrile gloves at the staging area, before returning to the sampling area.

- Do not handle, consume, or otherwise interact with pre-wrapped food or snacks, carry-out food, fast food, or other food items while on-site during sampling.
- Move to the staging area and remove PPE prior to leaving the sampling and staging areas if consuming food on site becomes necessary.

2. Sampling Equipment

Sampling equipment that falls into Category 1 or 2 are presented below:

Category 1: Any item that will directly contact the wastewater, including various wastewater samplers, tubing, sample bottles, etc. These items should be known to be PFAS-free prior to use.

NOTE: As a precautionary action, for **Category 1** sampling materials, an equipment rinsate blank should be collected even if the sampling materials are made of materials that are not expected to contain PFAS.

Category 2: Any item that will not directly contact the wastewater, including GPS receivers, notebooks, and clipboards. Although these items will not directly contact wastewater samples, the surface of some of these materials might contain PFAS and cross-contamination may still occur. Every effort should be made to ensure these items are PFAS-free. Be aware, surfaces of this field equipment or the containers in which they are kept may contain PFAS. Care should be taken to prevent cross-contamination in these cases.

Do not use any equipment that contains any known fluoropolymers including, but not limited to:

- Polytetrafluoroethylene (PTFE), that includes the trademarks Teflon® and Hostafion®.
- Polyvinylidene fluoride (PVDF), that includes the trademark Kynar®.
- Polychlorotrifluoroethylene (PCTFE), that includes the trademark Neoflon®.
- Fluorinated ethylene propylene (FEP), that includes the trademarks Teflon® FEP, Hostafion® FEP, and Neoflon® FEP.
- Ethylene-tetrafluoro-ethylene (ETFE), that includes the trademark Tefzel®.

Items that may contain fluoropolymers such as those listed above include, but are not limited to hose and pipe lining, tubing, cables and wires, films/coatings on aluminum, galvanized or aluminized steel, valves, seals, and gaskets.

- Do not use items containing low density polyethylene (LDPE) that will come into **direct contact** with the sample media. LDPE can be found in many items such as plastic bags, tubing, and containers, including some sample bottles.
 - ▲ **However**, an item containing LDPE may be used if it is known to be PFAS-free. LDPE as a raw material does not contain PFAS, but cross-contamination during manufacturing can occur.
- Items containing LDPE (e.g. Ziploc® storage bags) that **do not** come into direct contact with the sample media and do not introduce cross-contamination with samples may be used.
- Keep tubing in the original cardboard or bag in which it was shipped.
- Store tubing in a clean location free of dust and fibers.

NOTE: Manufacturers can change the chemical composition of any product. As a result, all materials that will come into direct contact with the sample media (defined as Category 1) should be tested to confirm they are “PFAS-free”, i.e. will not contaminate samples at detectable levels. **There is no guarantee that materials in the ‘Allowable category will always be PFAS-free.**

3. Sampling Methods

Wastewater sample collection can be divided into two methods: grab and automatic sampling.

3.1 Grab Sampling

Grab sampling is used to collect wastewater samples directly into the sample container from locations that are easily accessible. Grab sampling is preferred.

● - Prohibited ■ - Allowable ▲ - Needs Screening

Various types of immersion sampling equipment are available for wastewater sampling, including extension rods that can be used to immerse the laboratory sample bottle, beakers, and peristaltic pumps with tubing that extends into the wastewater.

The most common extension rods are telescoping or swing samplers. Both of these types of rods are similar in design and concept; the rods facilitate the immersion of either the sampling bottle, beaker, or scoop. Examples of extension rod designs include:

- Pendulum or angular beaker
- Fixed scoop
- Fixed or rotatable head bottle holder

NOTE: PFAS are expected to accumulate at the air/water interface. Unless specifically required in the QAPP, it is not advisable to collect samples from the very top layer of any wastewater, as it is not representative of the bulk wastewater.

A peristaltic pump can also be used with extension rods by attaching the tubing to the extension rods and immersing both the rod and the connected tubing to the desired depth in the wastewater.

- Cable ties used to secure the sample bottle should be made of natural rubber or nylon or uncoated metal springs.
- Use only sample collection bottles, tubing, beakers, and/or scoop materials that are known to be PFAS-free such as stainless steel, high-density polyethylene (HDPE), polypropylene, polyvinyl chloride (PVC), or silicone.
- Use only extension rods made of materials that are known to be PFAS-free, such as uncoated aluminum and steel.
- Glass bottles or containers may be used if they are known to be PFAS-free, however, PFAS have been found to adsorb to glass, especially when the sample is in contact with the glass for a long period of time (e.g. being stored in a glass container). If the sample comes into direct contact with the glass for a short period of time (e.g. using a glass container to collect the sample, then transferring the sample to a non-glass sample bottle), the adsorption is minimal.

3.2 Automatic Sampling

Automatic sampling equipment is used to collect either composite samples during a defined time interval or discrete samples at defined times without the presence of a technician. Automatic sampling should be avoided due to the increased potential for cross-contamination. It should only be used if a representative sample cannot otherwise be collected.

Typical automatic sampling equipment includes:

- A strainer used to strain large solids and avoid plugging of the equipment; the strainer is typically weighted to keep the suction line (i.e. tubing) at the desired depth and location;
- Suction line made of a flexible tubing that is run through a peristaltic pump;
- Distribution nozzle made of flexible tubing that discharges the sample into the sample bottle; and
- Sample bottle which is used for sample collection.

NOTE: The strainer should be decontaminated or replaced between each sampling event. The suction line, distribution nozzle and sample bottle should always be replaced between each sampling event.

The items and materials described above are **Category 1**; therefore, the following apply:

- Do not use any items or materials that are suspected or known to contain PFAS;
- Use stainless-steel couplings; and
- Use sampling materials (e.g., sample bottle, tubing, strainer, etc.) made of HDPE, polypropylene, silicone, PVC, or other materials known to be PFAS-free.

4. Equipment Decontamination

Disposable **Category 1** sampling equipment should be used, especially for sample bottles and tubing that are used in automatic samplers where the wastewater sample may be in contact with the sampling equipment for an extended period of time. Field sampling equipment used at multiple sites or sampling locations can become highly contaminated with PFAS. Decontamination procedures should be implemented to prevent cross-contamination, especially between individual sample locations.

For non-dedicated **Category 1** sampling equipment, the following materials and procedures should be used for decontamination:

- Do not use Decon® 90.
- Laboratory supplied PFAS-free deionized water is preferred for decontamination.
- Alconox®, Liquinox®, and Citranox® may be used for equipment decontamination.
- Sampling equipment can be scrubbed using a polyethylene or PVC brush to remove particulates.
- Decontamination procedures should include triple rinsing with PFAS-free water.
- Commercially available deionized water in an HDPE container may be used for decontamination if the water and container are known to be PFAS-free.
- ▲ Municipal drinking water may be used for decontamination purposes if it is known to be PFAS-free.

5. Sample Collection and Handling

The following should be observed for sample collection:

- Dust and fibers must be kept out of sample bottles.
- The sample cap should never be placed directly on the ground during sampling. If sampling staff must set the sample bottle cap down during sample collection and a second member of the sampling crew (wearing a fresh pair of powderless nitrile gloves) is not available, set the cap on a clean surface (cotton sheeting, HDPE sheeting, triple rinsed cooler lid, etc.).
- Do not insert or let tubing or any items or materials inside the sample bottle.
- Do not sample without powderless nitrile gloves.
- Regular/thick size markers (Sharpie® or otherwise) are to be avoided; as they may contain PFAS.
- Fine and Ultra-Fine Point Sharpie® markers are acceptable.
- Ballpoint pens may be used when labeling sample containers. If ballpoint pens do not write on the sample container labels, preprinted labels from the laboratory may be used.
- Hands should be well washed and gloved.
- Use HDPE or polypropylene sample bottles with Teflon®-free caps, provided by the laboratory.
- Commercially bought sample bottles used with automatic sampling equipment should be decontaminated prior to sampling and equipment blank samples should be collected using laboratory supplied PFAS-free water.
- Bottles should only be opened immediately prior to sampling.
- Bottles should be capped immediately after collecting the sample.

● - Prohibited ■ - Allowable ▲ - Needs Screening

- Samples should be double bagged using LDPE resealable storage bags.
- In the absence of a United States Environmental Protection Agency (USEPA) approved method, staff should contact the laboratory performing the sample analysis to obtain values for thermal preservation and holding time consistent with the analytical method to be used. At a minimum, samples should be placed on ice within 15 minutes of collection and chilled to a temperature of $\leq 42.8^{\circ}\text{F}$ (6°C) (as determined by EPA 40 CFR 136 – NPDES). This temperature should be maintained during collection and through transit to the laboratory.
- Glass bottles or containers may be used if they are known to be PFAS-free, however, PFAS has been found to adsorb to glass, especially when the sample is in contact with the glass for a long period of time (e.g. being stored in a glass container). If the sample comes into direct contact with the glass for a short period of time (e.g. using a glass container to collect the sample, then transferring the sample to a non-glass sample bottle), the adsorption is minimal.

NOTE: Currently, there are no USEPA-approved methods for PFAS analysis of wastewater. You may use either ASTM D7979 or an isotope dilution method. Either of these methods is a scan for a list of PFAS that the particular laboratory chooses to analyze. All PFAS analytes found on the DEQ PFAS Minimum Laboratory Analyte List are required to be reported for any PFAS samples collected by MDEQ staff or their contractors. The PFAS Minimum Laboratory Analyte List can be found at www.michigan.gov/PFASresponse.

If site specific information is available, sampling should be conducted from the least to the most contaminated location. Additional guidance on the sampling sequence can be found in Section 4.3.3 of the **General PFAS Sampling Guidance**.

If possible, collect PFAS samples prior to collecting non-PFAS samples or field parameters (pH, temperature, etc.).

Powderless nitrile gloves should be changed any time there is an opportunity for cross-contamination during sampling, including, but not limited to:

- Immediately prior to sample collection
- Each time sampling equipment is placed in and removed from wastewater (e.g., various wastewater samplers, water quality meter, turbidity meter, pump, tubing, etc.)
- Placing sampling tubing into the wastewater
- Handling of any sample, including quality assurance/quality control (QA/QC) samples
- After the handling of any non-dedicated sampling equipment
- After contact with non-decontaminated surfaces
- After decontamination of sampling equipment
- When judged necessary by field personnel

6. Sample Shipment

The following procedures should be used for sample shipment:

- Regular ice should be used to cool and maintain the sample at or below 42.8°F (6°C).
 - ▲ Chemical or blue ice may be used if it is known to be PFAS-free and it is absolutely certain that the sample is cooled and maintained at or below 42.8°F (6°C) during collection and through transit to the laboratory.
 - Check the cooler periodically to ensure samples are well iced and at the proper temperature.
- - Prohibited ■ - Allowable ▲ - Needs Screening

- Refresh with regular ice, if needed, double bagged in LDPE resealable storage bags if needed.
- Chain of Custody and other forms should be single bagged in LDPE resealable storage bags and taped to the inside of the cooler lid.
- The cooler should be taped closed with a custody seal and shipped by overnight courier.
- Samples should be shipped as soon as possible (e.g. overnight) to ensure the samples arrive within the analytical holding time specified by the lab.

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MDEQ PFAS SAMPLING QUICK REFERENCE FIELD GUIDE¹

All Items Used During Sampling Event

● Prohibited
<ul style="list-style-type: none"> Items or materials that contain fluoropolymers such as <ul style="list-style-type: none"> Polytetrafluoroethylene (PTFE), that includes the trademarks Teflon® and Hostaflon® Polyvinylidene fluoride (PVDF), that includes the trademark Kynar® Polychlorotrifluoroethylene (PCTFE), that includes the trademark Neoflon® Ethylene-tetrafluoro-ethylene (ETFE), that includes the trademark Tefzel® Fluorinated ethylene propylene (FEP), that includes the trademarks Teflon® FEP and Hostaflon® FEP Items or materials that contain any other fluoropolymer

Pumps, Tubing, and Sampling Equipment

● Prohibited	■ Allowable	▲ Needs Screening ²
<ul style="list-style-type: none"> Items or materials containing any fluoropolymer (potential items include tubing, valves, or pipe thread seal tape) 	<ul style="list-style-type: none"> High-density polyethylene (HDPE) Low-density polyethylene (LDPE) tubing Polypropylene Silicone Stainless-steel Any items used to secure sampling bottles made from: <ul style="list-style-type: none"> Natural rubber Nylon (cable ties) Uncoated metal springs Polyethylene 	<ul style="list-style-type: none"> Any items or materials that will come into direct contact with the sample that have not been verified to be PFAS-free <ul style="list-style-type: none"> Do not assume that any sampling items or materials are PFAS-free based on composition alone

Sample Storage and Preservation

● Prohibited	■ Allowable	▲ Needs Screening ²
<ul style="list-style-type: none"> Polytetrafluoroethylene (PTFE): Teflon® lined bottles or caps 	<ul style="list-style-type: none"> Glass jars⁴ Laboratory-provided PFAS-Free bottles: <ul style="list-style-type: none"> HDPE or polypropylene Regular wet ice Thin HDPE sheeting LDPE resealable storage bags (i.e. Ziploc®) that will not contact the sample media⁶ 	<ul style="list-style-type: none"> Aluminium foil⁴ Chemical or blue ice⁵ Plastic storage bags other than those listed as ■ Allowable Low-density polyethylene (LDPE) bottles

Field Documentation

● Prohibited	■ Allowable	▲ Needs Screening ²
<ul style="list-style-type: none"> Clipboards coated with PFAS Notebooks made with PFAS treated paper PFAS treated loose paper PFAS treated adhesive paper products 	<ul style="list-style-type: none"> Loose paper (non-waterproof, non-recycled) Rite in the Rain® notebooks Aluminium, polypropylene, or Masonite field clipboards Ballpoint pens, pencils, and Fine or Ultra-Fine Point Sharpie® markers 	<ul style="list-style-type: none"> Plastic clipboards, binders, or spiral hard cover notebooks All markers not listed as ■ Allowable Post-It® Notes or other adhesive paper products Waterproof field books

Decontamination

● Prohibited	■ Allowable	▲ Needs Screening ²
<ul style="list-style-type: none"> Decon 90® PFAS treated paper towel 	<ul style="list-style-type: none"> Alconox®, Liquinox®, or Citranox® Triple rinse with PFAS-free deionized water Cotton cloth or untreated paper towel 	<ul style="list-style-type: none"> Municipal water Recycled paper towels or chemically treated paper towels

Clothing, Boots, Rain Gear, and PPE

● Prohibited	■ Allowable	▲ Needs Screening ²
<ul style="list-style-type: none"> • New or unwashed clothing • Anything made of or with: <ul style="list-style-type: none"> ○ Gore-Tex™ or other water-resistant synthetics • Anything applied with or recently washed with: <ul style="list-style-type: none"> ○ Fabric softeners ○ Fabric protectors, including UV protection ○ Insect resistant chemicals ○ Water, dirt, and/or stain resistant chemicals 	<ul style="list-style-type: none"> • Powderless nitrile gloves • Well-laundered synthetic or 100% cotton clothing, with most recent launderings not using fabric softeners • Made of or with: <ul style="list-style-type: none"> ○ Polyurethane ○ Polyvinyl chloride (PVC) ○ Wax coated fabrics ○ Rubber / Neoprene ○ Uncoated Tyvek® 	<ul style="list-style-type: none"> • Latex gloves • Water and/or dirt resistant leather gloves • Any special gloves required by a HASP • Tyvek® suits, clothing that contains Tyvek®, or coated Tyvek®

Food and Beverages

● Prohibited	■ Allowable
<ul style="list-style-type: none"> • No food should be consumed in the staging or sampling areas, including pre-packaged food or snacks. <ul style="list-style-type: none"> ■ If consuming food on-site becomes necessary, move to the staging area and remove PPE. After eating, wash hands thoroughly and put on new PPE. 	<ul style="list-style-type: none"> • Brought and consumed only outside the vicinity of the sampling area: <ul style="list-style-type: none"> ○ Bottled water ○ Hydration drinks (i.e. Gatorade®, Powerade®)

Personal Care Products (PCPs) - for day of sample collection⁶

● Prohibited	■ Allowable	▲ Needs Screening ²
<ul style="list-style-type: none"> • Any PCPs⁶, sunscreen, and insect repellent applied in the sampling area. 	<p>PCPs⁶, sunscreens, and insect repellents applied in the staging area, away from sampling bottles and equipment followed by thoroughly washing hands:</p> <p>PCPs⁶:</p> <ul style="list-style-type: none"> • Cosmetics, deodorants/antiperspirants, moisturizers, hand creams, and other PCPs⁶ <p>Sunscreens:</p> <ul style="list-style-type: none"> • Banana Boat® for Men Triple Defense Continuous Spray Sunscreen SPF 30 • Banana Boat® Sport Performance Coolzone Broad Spectrum SPF 30 • Banana Boat® Sport Performance Sunscreen Lotion Broad Spectrum SPF 30 • Banana Boat® Sport Performance Sunscreen Stick SPF 50 • Coppertone® Sunscreen Lotion Ultra Guard Broad Spectrum SPF 50 • Coppertone® Sport High Performance AccuSpray Sunscreen SPF 30 • Coppertone® Sunscreen Stick Kids SPF 55 • L'Oréal® Silky Sheer Face Lotion 50 • Meijer® Clear Zinc Sunscreen Lotion Broad Spectrum SPF 50 • Meijer® Sunscreen Continuous Spray Broad Spectrum SPF 30 • Meijer® Clear Zinc Sunscreen Lotion Broad Spectrum SPF 15, 30 and 50 • Meijer® Wet Skin Kids Sunscreen Continuous Spray Broad Spectrum SPF 70 • Neutrogena® Beach Defense Water+Sun Barrier Lotion SPF 70 • Neutrogena® Beach Defense Water+Sun Barrier Spray Broad Spectrum SPF 30 • Neutrogena® Pure & Free Baby Sunscreen Broad Spectrum SPF 60+ • Neutrogena® UltraSheer Dry-Touch Sunscreen Broad Spectrum SPF 30 <p>Insect Repellents:</p> <ul style="list-style-type: none"> • OFF® Deep Woods • Sawyer® Permethrin 	<ul style="list-style-type: none"> • Products other than those listed as <ul style="list-style-type: none"> ■ Allowable

¹ This table is not considered to be a complete listing of prohibited or allowable materials. All materials should be evaluated prior to use during sampling. The manufacturers of various products should be contacted in order to determine if PFAS was used in the production of any particular product.

² Equipment blank samples should be taken to verify these products are PFAS-free prior to use during sampling.

³ **For surface water foam samples:** LDPE storage bags may be used in the sampling of foam on surface waters. In this instance, it is allowable for the LDPE bag to come into direct contact with the sample media.

⁴ **For fish and other wildlife samples:** Depending on the project objectives, glass jars and aluminum foil might be used for PFAS sampling. PFAS has been found to bind to glass and if the sample is stored in a glass jar, a rinse of the jar is required during the sample analysis. PFAS are sometimes used as a protective layer for some aluminum foils. An equipment blank sample should be collected prior to any aluminum foil use.

⁵ Regular ice is recommended as there are concerns that chemical and blue ice may not cool and maintain the sample at or below 42.8°F (6°C) (as determined by EPA 40 CFR 136 – NPDES) during collection and through transit to the laboratory.

⁶ Based on evidence, avoidance of PCPs is considered to be precautionary because none have been documented as having cross-contaminated samples due to their use. However, if used, application of PCPs must be done at the staging area and away from sampling bottles and equipment, and hands must be thoroughly washed after the use of any PCPs prior to sampling.