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CP5-TS-1000 FRev. 1	**TITLE**: Per- and Polyfluoroalkyl Substances Sampling Guidelines	Page 1 of 18

DOCUMENT CATEGORY: Guide	
LEVEL OF USE: Information Level	
FUNCTIONAL AREA: Characterization (Sampling/Lab) **SUBJECT MATTER AREA:** Characterization	**SUBJECT MATTER EXPERT**: Chris Skinner, Characterization Sampling Lead
NUCLEAR SAFETY REVIEW DOCUMENTATION: N/A per Step 6.1.1.D from CP3-NS-2001	**APPROVED BY/DATE** (Signature on file): David Curry, Laboratory/Characterization Manager / 08/19/2024
REQUIRED REVIEW DATE (or expiration date for temporary change): 08/19/2029	**EFFECTIVE DATE**: 08/20/2024

REVISION/CHANGE LOG

Revision/Change Letter	Description of Changes	Pages Affected	Date of Revision/Change
FR0	Initial release	All	03/16/2023
FR1	Update to add a Quality Control Samples section and add description for dedicated sampling materials.	All	08/19/2024

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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides the information to project planners and field sampling staff (project staff) during the planning and execution of sampling various environmental media (for example, groundwater, surface water, soil sediment, or process wastewater) for per- and polyfluoroalkyl substances (PFAS) analysis. The guidance presented in this guide are recommendation to ensure that a consistent approach is used during sampling and that representative samples for PFAS analysis are collected. Because site-specific characteristics, conceptual site models, and project objectives drive the decisions of where and how to collect PFAS samples, project staff should implement these guidelines in a manner that is applicable to the circumstances for each sampling location and purpose when developing project-specific sampling instructions.

1.2 Scope

This guide is applicable to Paducah Gaseous Diffusion Plant (PGDP) Deactivation and Remediation (D&R) project planners and field sampling staff involved with sampling PFAS.

2.0 REFERENCES

2.1 Use References

None

2.2 Source References

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3.0 COMMITMENTS

None

4.0 RESPONSIBILITIES

Sampling and Sample Planning personnel

5.0 GENERAL INFORMATION

5.1 PFAS are highly fluorinated aliphatic chemicals that have been manufactured for more than 60 years. PFAS are generally categorized as polymers versus nonpolymers, and the nonpolymers are further subdivided between perfluorocarboxylic acids (PFCAs) and perfluorosulfonic acids (PFSAs). The most recalcitrant compounds are found in these two classes, with PFCAs, such as perfluorooctanoic acid (PFOA), and PFSAs, such as perfluorooctane sulfonic acid (PFOS), representing the most commonly found compounds.

PFAS have been used in a variety of industries as lubricants, surfactants, and water and oil and/or grease repellents, including in clothing, carpeting, upholstery, food packaging, construction materials, automotive products, cleaning products, and others (Glüge et al. 2020).

PFAS exhibit unique hydro- and oleophobic properties that make them well-suited for use in a wide range of industrial and consumer products due to their ability to resist heat, oil, grease, and water. These unique properties also make some PFAS extremely persistent, potentially hazardous, bioaccumulative, and ubiquitous in the environment. Regulatory guidance values established for some PFAS are extremely low – typically in the part per trillion (ppt), nanograms per liter (ng/L) range in water.

Quantification of trace concentrations of PFAS in environmental media can be challenging due to the prevalence of PFAS in commonly used products, including those used during environmental sample collection, which poses a risk for cross-contamination (such as false positives). Special care should be taken when collecting samples for PFAS analysis. The highest risk of cross-contamination in the field is from materials that come in direct contact with samples or sampling equipment (Rodowa et al. 2020).

Numerous guidance documents have been produced outlining recommendations to be followed during PFAS sampling. This document summarizes best practices for PFAS sample collection as derived from several federal, state, municipal, and U.S. Department of Defense (DOD) agencies, as well as industrial organizations (EPA 2020; KDEP 2020; MassDEP 2022; CA Water Boards 2020; U.S. Navy 2020; DOD EDQW 2017; ITRC 2022). Relevent U.S. Department of Energy (DOE) guidance will be considered by the project team.

6.0 INSTRUCTIONS

6.1 General Sampling Considerations

PFAS Sampler or Sampling Planner

When planning for and conducting PFAS sampling, consideration should be given to selection of personal care products (PCPs), field clothing, personal protective equipment (PPE), sampling and equipment supplies, sample management, decontamination procedures, field quality control (QC), sample shipment, and other considerations. This guidance is intended to inform project staff about best practices taken in the field to reduce the potential for cross-contamination during sample collection and handling. Site-specific conditions should be evaluated prior to field implementation and the provided guidelines incorporated to meet project goals. Project staff should refer to the project-specific Quality Assurance Project Plan (QAPP) and/or sampling instructions for information regarding sample locations, collection of field QC samples, sample preservation, and sample collection and packing procedures.

6.1.1 Personal Care Products

Many commercially available PCPs, including cosmetics, moisturizers, skin care products, sunscreens, shampoo, and conditioners have been found to contain PFAS. Field sampling staff should avoid use of PFAS containing PCPs during sampling. A summary of known PFAS-containing PCPs is provided in Appendix B, *PFAS Products List*.

Whenever possible, field staff should use PCPs that have been tested and shown to be PFAS-free. A summary of known PFAS-free PCPs is provided in Appendix B. However, **if** a potentially PFAS-containing PCP is needed during a sampling event, **then** it should be applied in a staging area located downwind of and away from the sampling containers and equipment, followed by handwashing and donning a new pair of nitrile gloves.

6.1.2 Field Clothing

PFAS have been used in the textile industry as a coating that repels water and stains (Van der Veen et al. 2022). Therefore, clothing advertised as waterproof, water-repellant, stain-resistant, flame-resistant, or with ultraviolet protections, should be avoided. PFAS-free clothing, made of 100% cotton, synthetic or natural fibers, wax-coated fabrics, rubber, neoprene, or uncoated Tyvek is considered acceptable for use during sampling activities. Outer clothing shall be well-laundered. A summary of considerations related to field clothing is provided in Appendix B.

6.1.3 Personal Protective Equipment

PFAS are present in some materials used as PPE. Use of PFAS-containing PPE should be avoided where possible, without compromising the safety of field personnel. **If** PFAS-free alternatives are **NOT** available, **then** record the use of the PFAS-containing PPE in the field notes and take precautions to avoid PPE contact with the sample matrix as much as practicable. The highest risk of cross-contamination in the field is from materials that come in direct contact with samples or sampling equipment (Rodowa et al. 2020). A summary of considerations related to PPE is provided in Appendix B.

6.1.4 Sampling Equipment and Field Supplies

A. Sampling Equipment

1. Equipment and supplies commonly used during field sampling may contain PFAS. This is of particular concern to project planners because sampling equipment typically comes into contact with the sampled media. In general, sampling equipment constructed of the following material is acceptable for use:

- High-density polyethylene (HDPE)
- Low-density polyethylene (LDPE)
- Polypropylene
- Stainless steel
- Acetate
- Silicon

2. **When** required by the project **and** documented in the QAPP, **then** the following recommendations may apply for the fluorine-containing materials which are commonly present in certain types of sample tubing, pump bladders, plumbing paste, or plumbers tape should be avoided for use in PFAS sampling.

- Polytetrafluoroethylene (PTFE)/Teflon
- Polyvinylidene fluoride (PVDF)
- Fluoropolymer elastomer and synthetic rubber compounds/Viton

3. Refer to Appendix B for a detailed list of sampling materials that are either acceptable or should be avoided for use during sampling.

B. Field Supplies

Materials commonly used for field documentation may potentially contain PFAS. Materials advertised as waterproof, such as weatherproof field logbooks, clip boards and sample labels may contain fluorochemical coatings.

Aluminum, polypropylene, or Masonite filed clipboards, loose paper (non-waterproof, nonrecycled) and use of ball point pens are acceptable for use when sampling for PFAS.

Refer to Appendix B for a detailed list of field equipment that are either acceptable or should be avoided during sampling.

C. Sample Containers

Project staff should refer to the project-specific QAPP for sample bottle requirements. However, for general awareness, samples for PFAS analysis should be collected in polypropylene **or** HDPE containers with unlined screw caps (**NO** Teflon or Hostaflon-lined caps). Some self-adhesive labels used for sample containers may contain PFAS **or** may be adhered to backing material that contains PFAS. Therefore, it is recommended that sample container labels be applied after the samples have been collected and the sample containers have been closed.

Refer to Appendix B for a detailed summary of considerations that apply to sample containers.

D. Quality Control Samples

Due to the prevalence of PFAS in a wide range of materials, there may be a greater likelihood for cross-contamination during sampling, transport, and storage of samples. As a result, quality control samples (e.g., field blanks, trip blanks, field duplicates, equipment blanks, DI water blanks) will be collected to evaluate whether cross-contamination has occurred. The type and frequency of quality control samples will be identified in the project specific QAPP.

E. Sample Management and Shipping

Project staff should refer to the project-specific QAPP for detailed instructions related to sample management and shipping. In general, care should be taken when selecting supplies related to packing and shipping of samples. Use of sealed, reusable icepacks should be avoided. Instead, double-bagging of samples and/or ice using resealable plastic bags (for example, LDPE Ziploc bags or similar) is recommended.

PFAS samples should be segregated from samples collected for other analytes (such as volatile organics) which may have Teflon-lined sample lids. PFAS samples should be in separate coolers **or**, **if NOT** possible, **then** be double-bagged.

Samples should be shipped within the same day as collected or at maximum within 24 hours after collection.

Refer to Appendix B for a detailed summary of considerations that apply to sample management and shipping.

F. Decontamination Procedures

Disposable equipment generally does **NOT** require decontamination before use but should be stored away from PFAS-containing or potentially PFAS-containing materials. All reusable field sampling equipment should be decontaminated between uses. Refer to Appendix B for a detailed summary of considerations that apply to decontamination of field sampling equipment.

Special care should be taken when identifying water for use during decontamination. The source of decontamination water should be documented in project records (for example, in the field records by project staff).

6.1.5 Other Items For Consideration

A. Food or Beverages

NO pre-packaged food, fast food wrapped in grease-proof paper or bag, or drinks should be brought onsite, **except** for bottled water and hydration drinks (for example, Gatorade or Powerade), which will be allowed onsite and can be consumed within staging areas. Hands should be washed thoroughly after eating and a new pair of powderless nitrile gloves should be donned before returning to the sampling area.

B. Field Transport

Vehicle upholstery may commonly be treated with PFAS-containing cleaners. Sampling gear (such as nitrile glove, disposable tubing, and sample coolers) and/or sample bottles shall **NOT** be placed directly on field vehicle carpeting or upholstery. Instead, stage sampling gear and bottles on plastic sheeting (or equivalent) within the field vehicle to serve as a barrier for potential PFAS cross-contamination.

6.2 Additional Sampling Considerations by Environmental Matrix

PFAS Sampler or Sampling Planner

In addition to the general sampling considerations, the following recommendations apply to sampling of specific environmental matrices for PFAS analysis.

NOTE:

Groundwater sampling is being performed using existing, dedicated bladder pumps with Teflon bladders and tubing known to present potential PFAS cross-contamination issues. A management decision has been made to continue to use existing, dedicated bladder pumps with Teflon bladders and tubing known to present potential PFAS cross-contamination issues based on replacement cost. As a result, targeted or bias quality control samples will be collected when sampling for PFAS.

6.2.1 Groundwater Sampling

A. **When** required by the project **and** documented in the QAPP, **then** the following recommendations may apply for groundwater sampling:

1. Pumps and associated tubing used during sampling should be PFAS-free. **If** dedicated pumps and tubing are present at existing monitoring wells, **then** project planners should review any known construction information regarding the types of pumps and tubing that are present to determine if these materials are known to be PFAS-free. A list of known PFAS-free pumps and tubing material is provided in Appendix B.

2. Field filtration of the sample is **NOT** advised, as filters can absorb PFAS and many filters contain fluorinated compounds.

B. The following should be considerations for monitoring well installation (if applicable):

1. PTFE-containing drilling lubricants or other drilling fluids should **NOT** be used during monitoring well installation.

2. Water used during monitoring well installation and development should be demonstrated to be PFAS-free through sampling.

6.2.2 Surface Water, Sump, Leachate, or Wastewater Sampling

A. **When** required by the project **and** documented in the QAPP, **then** the following recommendations may apply:

- Always approach surface water sampling locations from downstream to avoid disturbance of the water to be sampled.
- Aqueous samples collected directly from a port (for example, treatment plant wastewater or landfill leachate) should be collected directly into the PFAS sample container. The sample should **NOT** be taken from a hose or collected into an intermediate container used to transfer the sample to the sample bottle. **If** it is **NOT** possible to remove a hose from a sample port, **then** note as such in the field records.

B. The chemical properties of PFAS result in their tendency to form a PFAS enriched microlayer at the surface water to air interface (Field et al. 2021). This phenomenon is most likely to occur in still or very slow-flowing surface water bodies. To ensure that the surface water sample is representative of the water feature being sampled, the following guidance is provided:

- Bulk surface water samples should be collected in a manner to avoid or minimize collection of surface microlayers where PFAS can accumulate (Field et al. 2021). In water features deeper than the sample container, this can be achieved by submerging a closed sample container and removing the lid once the container is submerged, **or if** this is **NOT** possible, **then** lowering an open bottle beneath the surface at right angles rather than skimming water from the surface.
- **If** needed, **then** use PFAS-free waders and floatation devices.

Appendix A – Acronyms/Definitions

ACRONYMS

D&R – Deactivation and Remediation

DOD – U.S. Department of Defense

DOE – U.S. Department of Energy

EDQW – Environmental Data Quality Workgroup

EPA – U.S. Environmental Protection Agency

ETFE – Ethylene-tetrafluoroethylene

FEP – Fluorinated Ethylene Propylene

HDPE – High-density polyethylene

ITRC – Interstate Technology and Regulatory Council

KDEP – Kentucky Department for Environmental Protection

LDPE – Low-density polyethylene

ng/L – nanograms per liter

PCP – Personal Care Products

PCTFE - Polychlorotrifluoroethylene

PFAS – Per- and Polyfluoroalkyl Substances

PFCA – perfluorocarboxylic acid

PFOA – perfluorooctanoic acid

PFOS – perfluorooctane sulfonic acid

PFSA – perfluorosulfonic acid

PGDP – Paducah Gaseous Diffusion Plant

PPE – Personal Protective Equipment

ppt – parts per trillion

PTFE – Polytetrafluoroethylene

PVC – Polyvinyl Chloride

PVDF – Polyvinylidene fluoride

Appendix A – Acronyms/Definitions (Continued)

PVF – Polyvinyl Fluoride

QAPP – Quality Assurance Project Plan

QC – Quality Control

SDS – Safety Data Sheet

SS- Stainless Steel

DEFINITIONS

None

Appendix B – PFAS Products List

Summary of Recommendations for PFAS Sampling

	Acceptable	Avoid	Needs Screening
Personal Care Products (PCPs)			
Sun protection	▪ Sunscreens that have been evaluated and found to be PFAS-free or **NOT** contain PFAS ingredients. ▪ Sunscreen should be applied in the staging area, away from sampling bottles, equipment, and sample site area, followed by thoroughly washing hands. ▪ Vetted sunscreen products: - Alba Organics Natural - Yes to Cucumbers - Aubrey Organics - Jason Natural Sun Block - Kiss My Face - Baby-safe sunscreens (“free” or “natural”) - Avon Skin So Soft Bug Guard-SPF 30 - 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	▪ Any sunscreen applied in the sampling area, close to sampling bottles or field equipment. ▪ Sunscreen known to contain PFAS.	▪ Sunscreens that have **NOT** been tested for PFAS. ▪ Baby sunscreens that are “free” or “natural".

Appendix B – PFAS Products List (Continued)

Summary of Recommendations for PFAS Sampling

	Acceptable	Avoid	Needs Screening
Personal Care Products (PCPs)			
Insect repellants	▪ Insect repellants that have been evaluated and found to be PFAS-free or **NOT** contain PFAS ingredients. ▪ Insect repellents should be applied in the staging area, away from sampling bottles and equipment followed by thoroughly washing hands. ▪ Vetted insect repellants: - Jason Natural Quit Bugging Me - Repel Lemon Eucalyptus - Herbal Armor - California Baby Natural Bug Spray - BabyGanics - Avon Skin So Soft Bug Guard-SPF 30 - OFF Deep Woods - Sawyer Permethrin	▪ Any insect repellant applied in the sampling area, close to sampling bottles or field equipment. ▪ Insect repellant known to contain PFAS.	▪ Insect repellants that have **NOT** been tested for PFAS.
Cosmetics and hygiene products	▪ PFAS-free cosmetics, hygiene products, and other PCPs applied several hours before the sampling event. ▪ Where necessary, PCPs should be applied in the staging area, away from sampling bottles and equipment followed by thoroughly washing hands.	▪ Any PCP applied in the sampling area, close to sampling bottles or field equipment. ▪ PCPs known to contain PFAS.	▪ PCPs that have **NOT** been tested for PFAS.
Field Clothing			
Clothing/gear	▪ PFAS-free clothing, made of or with 100% cotton, synthetic and natural fibers, polyurethane, PVC, wax-coated fabrics, rubber and/or neoprene, and uncoated Tyvek	▪ Clothing and rain gear made of or with: Gore-Tex or similar water-resistant and/or breathable synthetics. ▪ Clothing treated with ScotchGuard or other aftermarket fabric protectors. ▪ Wrinkle-resistant, water-repellant, or stain-resistant fabrics. ▪ Fluoropolymer-coated Tyvek. ▪ Flame-resistant clothing with fluorochemical treatment.	▪ Waterproof clothing and/or gear of unknown manufacture or materials.

Appendix B – PFAS Products List (Continued)

Summary of Recommendations for PFAS Sampling

	Acceptable	Avoid	Needs Screening
Field Clothing (Continued)			
Laundry	▪ Well-laundered clothing ▪ Clothing should be kept dust- and fiber-free.	▪ New or unlaundered clothing. ▪ Clothing recently laundered with fabric softeners. ▪ Clothing recently dry-cleaned.	
Eye and face protection	▪ Polycarbonate safety glasses	▪ Antifogging spray	▪ Safety glasses **NOT** made of HDPE.
Personal Protective Equipment (PPE)			
Hand protection	▪ Powderless nitrile gloves. ▪ Hands should be washed, and new pair of nitrile gloves shall be donned before or after the following activities at each sample location: - Prior to collecting each sample. - Decontamination of reusable sampling equipment. - Handling non-PFAS-free boots and first-aid adhesive wrappers. - Insertion of silicon tubing into the peristaltic pump or completion of monitor well purging when collecting groundwater. - Handling of any quality assurance and/or quality control samples including field blanks and equipment blanks. - Handling of any non-dedicated sampling equipment, contact with non-decontaminated surfaces, **or** when judged necessary by field personnel. ▪ Hands should be washed and new gloves donned after handling materials potentially containing PFAS. ▪ New gloves should be donned prior to collecting each sample.	▪ Gore-Tex gloves and any PFAS-containing material gloves. ▪ Vinyl gloves ▪ Water-resistant, stain-resistant or water-repellant gloves or accessories.	▪ Latex gloves
Foot protection	▪ Safety footwear will consist of steel-toed boots made with polyurethane and PVC, untreated leather boots, or well-worn leather boots. Newer leather boots may be worn if they are covered with polypropylene, polyethane, or PVC boot covers.	▪ Boots with a PFAS-containing material (such as, Gore-Tex or Tyvek covers) as an outer layer, as it contains a PTFE membrane. ▪ Boots with chemical waterproofing or stain-resistant treatment applied.	▪ Boots with waterproof inner layers (it may be acceptable for boots to include a PFAS-containing material as an inner layer if the material is **NOT** exposed).

Appendix B – PFAS Products List (Continued)

Summary of Recommendations for PFAS Sampling

	Acceptable	Avoid	Needs Screening
Personal Protective Clothing (Continued)			
Other protection	▪ Field gear made of cotton construction, polyurethane, PVC, wax-coated fabrics, rubber, or neoprene, and well-laundered. ▪ Polyurethane, PVC, or rubber raingear ▪ HDPE hard hats ▪ Polyethylene foam and nylon shell fabric life jackets ▪ Waders made of Neoprene or other PFAS-free material ▪ Well-washed cotton coveralls ▪ Waterproof snake gaiters should be well-washed prior to use	▪ Waders made of Gore-Tex or other known PFAS-containing materials ▪ Water-resistant, waterproof, or stain-treated PPE gear during field sampling ▪ New gear while sampling or handling samples	▪ Hard hats made of a material other than HDPE
Sampling Equipment and Supplies			
Sampling equipment	▪ HDPE, LDPE, polypropylene, stainless steel (SS), acetate, and silicon materials ▪ Peristaltic, ProActive SS Pumps with PVC leads or Geotech SS Geosub pumps ▪ For deeper wells (greater than 150 feet bgs), a Grundfos RediFlo pump (or similar) may be used because of the pumping limitations of stainless-steel pumps. ▪ Acetate liners to collect soil samples ▪ Kemmerer bottle made of stainless steel with polyurethane end seal, and Van Dorn sampler with transparent acrylic tube and PFAS-free end stoppers for surface water sampling. ▪ Cable ties made of natural rubber, nylon, or uncoated metal springs. ▪ Tubing for sampling ports made of HDPE, polypropylene, silicone, polyvinyl chloride (PVC), or other PFAS-free materials ▪ Stainless-steel spoon, bowl, or shovel for the collection of soil and/or sediment samples.	▪ **If** PFAS are listed on the equipment safety data sheets (SDS), **then** it is recommended the equipment and/or supply **NOT** be used. ▪ PTFE- or Teflon- or PVDF-containing materials (such as, PTFE tubing, bailers, tape, plumbing paste, or other PTFE materials) **or** other materials with ingredients containing fluoro, perfluoro, or fluorosurfactant since they contain fluorinated compounds. ▪ Polychlorotrifluoroethylene (PCTFE), ethylene-tetrafluoroethylene (ETFE) or other fluoropolymer-containing materials (such as, Kynar, Neoflon, Tefzel) ▪ Containers made of LDPE materials because PFAS are used in the manufacturing process of LDPE materials and can cross-contaminate the samples. ▪ Plumber sealant tape (thread tape) or plumbing paste	▪ Any equipment or materials that will come into direct contact with the sample that have **NOT** been verified to be PFAS-free

Appendix B – PFAS Products List (Continued)

Summary of Recommendations for PFAS Sampling

	Acceptable	Avoid	Needs Screening
Sampling Equipment and Supplies (Continued)			
Field documentation	▪ Aluminum, polypropylene, or Masonite field clipboards ▪ "Rite in the Rain" notebooks ▪ Loose paper (non-waterproof, non-recycled) ▪ Ballpoint pens and pencils and Fine or Ultra-Fine Point Sharpie markers ▪ Preprinted standard (non-weatherproof) Avery sample labels ▪ Sample labels should be placed on the containers after sampling is complete and the container lids are in place to prevent possible cross-contamination. ▪ Fill out field documentation before sampling or when sampling is completed to avoid cross-contamination.	▪ Clipboards coated with PFAS-containing materials (look for "waterproof" label) ▪ Notebooks made with PFAS treated paper ▪ PFAS treated loose paper ▪ Post-It Notes or other adhesive paper products ▪ Standard Sharpie markers ▪ Coated materials, including paper towels ▪ Felt-tip pens or permanent markers ▪ Kimwipes	▪ Waterproof field notebooks ▪ Plastic clipboards, binders, or spiral hard cover notebooks
Other field supplies	▪ Polyethylene resealable plastic bags ▪ Untreated paper towels or cotton cloths	▪ Non-stick aluminum foil ▪ PTFE-or Teflon plumber sealant tape (thread tape) and plumbing paste ▪ Recycled or chemically treated paper towels	▪ Glass equipment (avoid prolonged contact with aqueous samples)
Sample Containers			
Sample containers	▪ Keep sample containers sealed and only open during collection. ▪ Once open, sample containers should **NOT** be stored **or** in contact with materials suspected to contain PFAS. ▪ Polypropylene or HDPE sampling bottles with unlined polypropylene caps (**NO** PTFE-or Teflon-lined caps) ▪ PFAS-free labels and packing tape	▪ LDPE bottles ▪ Bottle with PTFE-or Teflon-lined caps ▪ Glass bottles or containers ▪ Containers made of or with PFAS or fluoropolymers such as, PTFE, PVDF, polyvinyl fluoride (PVF), or fluorinated ethylene propylene (FEP) ▪ Sample bottles that appear to be discolored, dusty, or structurally compromised (get new sample bottles from the laboratory).	▪ LDPE containers may be used if an equipment blank has confirmed it to be PFAS-free

Appendix B – PFAS Products List (Continued)

Acceptable		Avoid	Needs Screening
Decontamination Procedures			
Rinse water	▪ Triple-rinse with PFAS-free water ▪ PFAS-free water can include: - Laboratory supplied PFAS-free deionized water (recommended for final rinse of handheld equipment) - Commercially available deionized water in an HDPE or polypropylene container verified to be PFAS-free - Municipal drinking water that has been tested for PFAS with **NO** detections of PFAS above reporting limits less than project screening levels	▪ Water containing PFAS at concentrations greater than project screening levels	▪ Untested municipal drinking water
Detergents	▪ Become familiarized with the detergent SDS before beginning decontamination ▪ Alconox ▪ Liquinox	▪ Decon 90 ▪ Dawn dish detergent	
Scrub pad or brush	▪ Cotton cloth or untreated paper towels ▪ Polyethylene or PVC brushes	▪ PFAS treated paper towel (look for "bamboo or recycled paper" label) ▪ Cloth made of PFAS-containing materials	
Other considerations	▪ Decontaminated equipment should be placed on clean plastic sheeting (PFAS-free) to prevent contact with contaminated soil and allowed to air dry. ▪ **If** the equipment is **NOT** used immediately, **then** it can be covered or wrapped in plastic sheeting or uncoated aluminum foil to minimize airborne contamination. ▪ Equipment blanks should be collected to verify decontamination efficacy. ▪ Sampling equipment can air dry on a PFAS-free surface. ▪ Properly dispose of decontamination water, solids, or PPE in designated areas.	▪ Reusing non-dedicated equipment without decontaminating ▪ LDPE plastic sheeting. Equipment blanks should be collected for sampling equipment contacting LDPE sheeting.	
Sample Shipments			
Sample shipment	▪ Regular ice ▪ Overnight shipping ▪ Packed with lab-approved PFAS-free cushioning material, such as bubble wrap ▪ The chain of custody forms should be placed in single bagged LDPE Ziploc bags and taped to the inside of the cooler lid ▪ The cooler should be taped closed with a lab-supplied custody seal	▪ Blue or chemical ice (use may be acceptable if tested and shown to be PFAS-free) ▪ PFAS-containing shipping materials (e.g., water-resistant cushioned shipping roll)	▪ LDPE packing foam

Appendix B – PFAS Products List (Continued)

Acceptable	Avoid	Needs Screening
Other		
Food	▪ Food handled and consumed outside the sampling area followed by washing hands and donning fresh gloves	▪ Handling, consuming, or otherwise interacting with pre-wrapped food or snacks, carry-out food, fast food, or other food items or their wrappers in the sampling area, close to sampling bottles or field equipment	
Drinks	▪ HDPE or polypropylene bottled water or hydration drinks	▪ Any beverages in the sampling area, close to sampling bottles or field equipment	
General	▪ Carefully following standard sample hygiene practices (such as, frequent handwashing, donning fresh gloves after handling materials potentially containing PFAS, donning fresh gloves prior to collecting each sample)	▪ Any field supply, container, or equipment made with: - PTFE (such as, Teflon and Hostaflon) - PVDF (such as, Kynar) - PCTFE (such as, Neoflon) - ETFE (such as, Tefzel) - FEP (such as, Teflon FEP and Hostaflon FEP)	▪ Any supply, container, or equipment that will directly contact samples that has **NOT** been verified to be PFAS-free