

# Biosolids PFAS Sampling, Analysis and Reporting Guidance

## A guide to sampling, analyzing and reporting on PFAS in biosolids that are intended to be land applied in Minnesota

The content was developed collaboratively based on EPA Method 1633A, the Minnesota Pollution Control Agency's (MPCA) Guidance for Per- and Polyfluoroalkyl substances (PFAS): Sampling, and from other state's resources and programs that have already begun to sample biosolids for PFAS. The guidance was also reviewed by an independent third party.

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## Introduction

The 2023-2024 Minnesota (MN) Legislature directed the MPCA to develop and begin implementing a strategy to test PFAS substances in biosolids that are applied to land in MN. This legislative directive led to the development of Minnesota Biosolids PFAS Strategy (Strategy). This sampling guidance covers the collection, analysis and reporting of PFAS in biosolids samples to assist with meeting the requirements of the Strategy. The MPCA will update the information contained within this PFAS sampling and analysis guidance documents as new information becomes available.

## Definition

Under Minn. R. 7041, “Sewage sludge” means solid, semisolid or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, scum or solids removed in primary, secondary or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works. Sewage sludge that is acceptable and beneficial for recycling on land as a soil conditioner and nutrient source is also known as biosolids.

## Applicability

Beginning September 1, 2025, all biosolids **intended for land application in Minnesota** must be analyzed for PFAS. The following process for sampling, analyzing, reporting and the tiered response actions outlined in the Strategy apply to all Permittees that intend to apply biosolids to land. Permittees that do not land apply their biosolids are not required to sample, analyze and report for PFAS under the Strategy. This process in addition to the current rules, regulations and permit conditions applicable to managing biosolids and ongoing efforts to reduce PFAS in municipal wastewater.

## Goals

While some PFAS compounds are linked to health impacts, the potential human health risk of PFAS exposure due to biosolids land application is not completely understood nor are there state of Minnesota or federal EPA regulations pertaining to PFAS and biosolids. The information we learn from this effort, as well as additional

sources of information including the EPA's pending Risk Assessment of Pollutants in Biosolids<sup>1</sup>, will help to inform future MPCA actions pertaining to biosolids and PFAS.

Data collected and reported to the MPCA through the Strategy is public information and will be stored in an MPCA database and may be shared with other state agencies, the public and stakeholders as requested. Permittees who see analysis result values in Tiers 2, 3, or 4 are required to share results directly to landowners and/or farmers through a notification letter. Permittees in Tier 1 are required to notify landowners and/or farmers that results are available upon request. The MPCA has created a Biosolids PFAS Results Notification Letter template available on the MPCA website. Permittees are not required to use this template but may find it helpful.

## Sampling

Communication with the laboratory is essential. Permittees must coordinate with the laboratory to confirm required sample volumes and collection, and preservation techniques are met. In addition, verify with the laboratory regarding turnaround time for receiving the sample results as the sample results will be required prior to land application unless prior approval is received by the MPCA.

To ensure quality assurance in sampling and analysis, the Permittee should create a detailed biosolids PFAS sampling analysis plan (SAP) tailored to its operations. This plan should comprehensively outline the sampling preparation, collection of representative samples, and proper preservation and transportation to an analytical laboratory. It should be reviewed by all relevant staff and serve as a reference during sampling events. The plan should also specify the necessary supplies and equipment, detail the sampling procedures and include measures to prevent sample contamination. The sampling plan should include, but not be limited to the following:

- Facility name
- Facility address
- Sample description
  - Include historic or typical percent solids
- Sample location
- Sampling frequency/planned sampling dates
- Sampling procedure
- Sample labeling protocol
  - Description of how you are naming your samples
- Staff performing the sampling
- Analytical laboratory name; and
- Shipping requirements.

The SAP does not need to be submitted to the MPCA, but it is recommended to be kept on record at the facility. The MPCA has provided an example Biosolids PFAS Sampling and Analysis Plan located on the MPCA website.

## Sample location

The sample location(s) within a facility must be representative of the volume and nature of the biosolids at the facility for biosolids that are intended to be land applied. Ideally, biosolids should be sampled after the end of treatment process and prior to land application or distribution.

## Sample type

EPA Method 1633A recommends grab samples as the preferred sample collection type as this sample type minimizes contamination. The EPA discourages the use of automated composite samplers. Automated composite samplers are not generally used for obtaining biosolids samples. If use of automated composite

<sup>1</sup> [EPA's biosolids PFAS risk assessment webpage](#)

samplers is the preferred sample collection method, please contact the MPCA prior to sample collection at: [municipal.wastewater.pfas.mpca@state.mn.us](mailto:municipal.wastewater.pfas.mpca@state.mn.us). The MPCA is encouraging a composite grab sample as required under Minn. 7041.1500, subp. 1, which details how to collect a representative sample for all facilities. A composite grab sample should be attained by collecting equal amounts of biosolids from multiple locations and depths across the stored biosolids then mixing them to create a homogenous sample for analysis.

Although not required, the Permittee may choose to do one or more types of samples for quality control purposes. See the Analysis quality control section below for additional information.

**Table 1. Representative sampling techniques based on storage type.**

Storage type	Sampling technique
Storage pads/drying beds/reed beds	At least ten grab samples from different locations and depths of equal amounts should be collected. These grab samples should then be thoroughly mixed to form the composite sample. From this thoroughly mixed sample, place the required amount of sample volume into the sample containers provided by the lab for the biosolid sample. All sampling equipment, including the mixing container, should be PFAS free (see Equipment section below).
Storage tanks	It is highly recommended that storage tanks are mixed for at least 24 hours prior to sampling. While the tank is still mixing, collect four sample aliquots over the next 24-hour period. For each of the four grab composites, fill single lab-provided container or other suitable collection container and empty it into a suitable mixing container large enough for the four grab composite samples. Repeat this process three more times, targeting collecting equal amounts of sample for each composite. Mix the contents of the mixing container and collect and fill a single sample container to submit to the lab as the sample. Make sure to indicate in the lab chain of custody this is a “composite” sample and indicate start and end time/date.  Note: cover (if feasible) and refrigerate the contents of the mixing container between each composite interval.
Biosolids from septic tanks	The MPCA will be working directly with facilities that need to sample biosolids from septic tanks. This section will be updated as more is learned about best procedures and techniques for obtaining representative sample from these systems. If your wastewater permit contains the “Biosolids from Septic Tanks” profile, please contact the MPCA prior to sampling.

## Frequency

Starting September 1, 2025, all Permittees that intend to land apply biosolids in MN are required to sample once per cropping year prior to land application. Permittees that produce Exceptional Quality (EQ) biosolids for land application and/or resale or entities that have Management Plans for EQ biosolids will be required to sample and report quarterly. Permittees may choose to collect additional samples and the MPCA may request additional sampling if necessary.

## Timing

Samples may be collected up to 60 days prior to a land application event to meet the requirements for annual sampling. Permittees that produce EQ Biosolids and/or have Management Plans for EQ biosolids, can sample any time during each calendar quarter. This allows time for a lab analysis and the return of results to the Permittee

## Reported Value(s)

When a single sample is collected within 60 days prior to land application, the result should be used as the representative sample result. When multiple samples are collected within a 60-day period prior to land application, the results are required to be averaged and used as the representative sample result (see Reporting,

averages section below for how to calculate an average). Permittees that produce EQ Biosolids and/or have Management Plans for EQ biosolids, should average any/all samples collected during the same calendar quarter. Results of the sample(s) must be reviewed, and the Permittee must follow recommendations in the Strategy based on the results.

## General equipment needed

Sampling equipment can vary depending on the sampling location and type of sample. The list below provides commonly used items:

- Sample containers
- Sample labels
- Chain of Custody (COC)
  - Use the MPCA provided COC to ensure an electronic data deliverable (EDD) is created for reporting purposes.
- Powderless nitrile gloves
- Reagent water for field blank
- Individual sealed plastic bag
- Cooler
- Ice
- Sampling tools or equipment (spade/shovel, scoop, trowel, corer, bucket auger, etc.), as required.

## Sample containers and hold times

EPA Method 1633A provides recommendations for sample containers, hold times and preservatives (soil, sediment, biosolids, excluding tissue), as outlined in Table 2. Permittees must coordinate with the analytical laboratory for specific sampling, container and shipping requirements.

**Table 2. Sample containers and hold times.**

	Recommendations	Notes
Sample container	For each sample: One 125-mL wide-mouth high-density polyethylene (HDPE) container with linerless HDPE or polypropylene cap.	Sample containers should be lot certified to be PFAS-free (by the laboratory). Note that the lab-provided container sizes for a biosolid sample may vary and may be as large as 500 mL. Use whichever size is provided by the laboratory and documented in their biosolid sampling instructions.
Fill volume	Fill to no more than $\frac{3}{4}$ of the volume of the container.	
Preservative	None	
Shipping	Protected from light 0 – 6°C	Maintain biosolid sample in HDPE containers so that they are protected from exposure to light from the time of collection until receipt at the laboratory.  Samples must be shipped with sufficient ice to maintain the sample temperature below 6°C for a period of at least 48-hours to allow for shipping delays.  The receiving laboratory must confirm that the sample temperature is between 0 – 6°C upon receipt.  Samples should be shipped to the laboratory as soon as practical or stored away from light at the required 0 – 6°C temperature until they can be shipped such that analysis can be completed within the hold time required by your laboratory.

	Recommendations	Notes
Hold times – for sample once received by the laboratory from collection to extraction	90-days at 0 – 6°C or ≤ - 20°C	EPA recommends that biosolid samples be frozen if they need to be stored for more than a few days before extraction because microbial activity can build up gases in the container over time.

## Cross contamination

PFAS can be measured at very low levels, so special care is needed during sample collection to avoid contamination. Since PFAS are used in many traditional sampling equipment, materials or products, these can be sources of contamination. This guidance document has divided commonly used sampling materials and field supplies into three categories.

- **Acceptable materials:** these materials are not known to cause PFAS contamination and can be safely used at all stages of sampling and in the immediate area. In this guide, these are associated with “Best practice” designations.
- **Staging area-only materials:** these materials might contain PFAS and should not touch the sample, but they can be used in the staging area. Keep them away from sample bottles and equipment and be sure to wash hands and put on new gloves after handling them.
- **Prohibited materials:** these materials are known to contain (or likely to contain) PFAS and could contaminate the sample, so they should not be used at any stage of sampling. These types of materials are listed as “avoid”.

## Equipment

Sampling equipment must be made from PFAS-free materials, such as HDPE, polypropylene, silicone, stainless steel, nylon, polyvinyl chloride (PVC), acetate and cotton, since they come into direct contact with samples. Equipment with PFAS-coated parts (like Teflon-coated components) can be used as long as the coated part is inside the equipment and does not touch the sample or external environment. Avoid using sampling equipment with low-density polyethylene (LDPE) parts if they come into direct contact with the sample. However, if absolutely necessary, LDPE-containing equipment may be used if testing confirms it is PFAS-free.

Automatic sampling has a higher risk of contamination because parts like tubing, valves, strainers and suction lines may contain PFAS (fluoropolymers). As described earlier in the guide, use of automatic composite sampling devices should be avoided unless there is no other way to collect a representative sample. If automatic sampling is necessary, use parts made from safer materials such as HDPE, polypropylene, silicone, stainless steel, nylon, PVC and acetate whenever possible. Before sampling, check the materials by talking with the equipment provider, and for consumables reviewing safety data sheets (if available). When there is uncertainty, it is a best practice to perform an equipment blank PRIOR TO the sampling event (when possible) to ensure they are PFAS-free.

## Containers

All sample containers for PFAS sampling should be provided by the laboratory conducting the PFAS analysis. The preferred containers are HDPE bottles with Teflon-free caps. Glass containers should not be used for water, leachate or other liquid samples because PFAS can stick to glass. Containers made from LDPE should be avoided, as PFAS are used in their production. LDPE is commonly found in bottles and plastic bags.

Best practice	Avoid
<b>Sample or composite/mixing container</b>	
HDPE or polypropylene (PP)	LDPE or glass
Unlined HDPE or PP caps	Teflon or PTFE lined cap
<b>Field equipment</b>	
HDPE or PP materials	Teflon containing materials
Stainless steel, nylon	Teflon tubing
Silicone tubing	

Best practice	Avoid
Stainless steel trowels and spoons, as well as glass HDPE or stainless-steel bowl, could be used to collect and homogenize biosolids samples	Waterproof field books Plastic clipboards, binders or spiral notebooks
Loose paper (non-water resistant)	Post-It® notes
Aluminum field clipboards or Masonite	Chemical (blue) ice packs
Pencils, ball point pens	Regular/thick size markers (Sharpie® or otherwise)
Fine and ultra-fine point Sharpie® markers	
<b>Field equipment decontamination items</b>	
Laboratory supplied PFAS-free deionized water is preferred for decontamination	Decon 90
Alconox®, Liquinox®, and/or Citranox®	
Methanol for automatic sampler tubing cleaning	

Note: Brand names are included for illustration only, and do not imply endorsement of the product.

## Personal protective equipment and field clothing

PFAS are used to coat clothing and personal protective equipment (PPE) to make them water, oil and dirt resistant. When preparing for sampling, be cautious of clothing or PPE labeled as waterproof, water repellent or stain-resistant, as these items may contain PFAS and could contaminate the samples. However, personal safety should always come first. If PPE is necessary to protect the health and safety of the sampling team and no PFAS-free options are available, make sure to note the use of PPR in the field notes and/or COC. If needed, mention it in the final analytical report.

Best practice	Avoid
<b>Field clothing and personal protection equipment</b>	
Well-laundered clothing, defined as clothing that has been washed six or more times after purchase, made of synthetic or natural fibers (preferably cotton)	New clothing
Cotton clothing	Water-resistant, waterproof or stain-resistant clothing, materials or equipment; avoid ANY clothing laundered using fabric softener
Powderless nitrile gloves (changed between each sample collection)	Tyvek®, Gore-Tex®, Hostaflo®, Tefzel®, Neoflon®
Boots made with polyurethane and polyvinyl chloride (PVC)	Boots containing Gore-Tex®

Note: Brand names are included for illustration only, and do not imply endorsement of the product.

## Sun and insect protection and personal care products

Sunscreens may be necessary if field staff are exposed to the sun for long periods, but they could contain PFAS, which may cause cross-contamination. Similarly, insect repellents might also be made with PFAS. It's important to carefully choose sunscreens and insect repellents during PFAS sampling events. Just because a product is labeled as "natural" or "organic" does not mean it's PFAS-free.

If sunscreen or insect repellent is used during sampling, apply it in the staging area. After applying, wash hands and use new gloves before handling any sampling materials.

Many personal care products, such as cosmetics, moisturizers, fragrances and creams may contain or become contaminated with PFAS from their packaging. To reduce the risk of contamination, avoid or limit the use of these products on the day of sampling and for 24-hours before sampling.

The MPCA has not completed testing of sunscreens, insect repellants or cosmetics at the date of this publication. Some states have done this analysis and list PFAS-free products in their sampling guidance. More information can be found in these documents but note that these guides do not list all products, and the

inclusion or omission of any product does not imply approval or disapproval. There is no guarantee that these products will always be PFAS-free, so additional testing may need to be complete.

## Food packaging

PFAS are known to be prevalent in food packaging, including paper plates, aluminum foil, paper towels, food containers, bags and wraps. Although long-chain PFAS have been banned for use in the manufacturing of contact food materials in the United States and Amara's Law has prohibited PFAS used in food packaging in Minnesota, it is possible legacy food packaging materials still exist. Therefore, these products could be source of PFAS contamination.

Food	
Best practice	Avoid
Bottled water and bottled hydration drinks to be brought and consumed only in the staging area.	Food and drink in the sampling area, with exceptions hydrating such as bottled water or hydration drinks.
Wash hands and put on a new pair of powderless nitrile gloves and appropriate PPE at the staging area before returning to the sampling area.	Fast food wrappers, packaged foods, pizza boxes or foods wrapped in grease-proof bags and/or aluminum foil.

## Sampling protocol

1. Wash hands and use new powderless nitrile gloves for each sample location.
2. Collect the PFAS sample first, prior to collecting samples for any other parameters into any other containers; this avoids contact with any other type of sample containers, bottles or package materials. You may receive two bottles from your lab. One for PFAS analysis and one for total solids.
3. Bottles should only be opened immediately prior to sample collection.
4. Avoid all contact with the inside of the sample bottle and its cap. Do not place the sample bottle cap on any surface when collecting the sample.
5. Fill container no more than  $\frac{3}{4}$  full.
6. Collect a grab composite sample based on your storage type. Refer to Table 1 for more detail.
7. If reusable sampling equipment is needed, decontaminate the sampling equipment then triple rinse with PFAS-free water. Decontaminate sampling equipment after sampling at each location and at the end of the workday. A four-step decontamination process to clean sampling is described below.
  - Rinse equipment in a bucket containing a mixture of potable water and PFAS-free soap.
  - Rinse equipment in clean potable water (repeat minimum 2x).
  - Final rinse if equipment is with PFAS-free water. Use this rinse to collect an equipment blank.
  - Dry sampling equipment, or allow sampling equipment to air dry, before the next sample. Use PFAS-free material to dry equipment.
8. Cap the bottle immediately after collecting the sample.
9. Double bag the sample container in individual LDPE (e.g., Ziploc®) resealable storage bags after the sample is collected.
10. Place samples in cooler with ice within **15 minutes** of sample collection. Samples should be protected from light and must be chilled during shipment and should arrive at the lab at 0 – 6°C.
11. Deliver to lab as soon as possible after sample collection or hold between 0 – 6°C protected from light and ensure samples are analyzed within the required hold times.
12. Collect field sample duplicates using same method.



# Analysis

## Method

The sample must be a representative sample of biosolids that are to be land applied and must be analyzed with EPA Method 1633A, or the most current update to that method. Review the date of this publication to ensure the sampling and analysis methods are the most recent 1633 method. Check with analytical laboratories to confirm required sample volumes, collection and preservation techniques. The sample results must be received prior to the first land application event of that cropping year.

## Special considerations

### Laboratory methods

Until Method 1633A is promulgated by the EPA, the MPCA acknowledges that several laboratories are currently certified for EPA Method 1633, but not the current version, EPA Method 1633A. At this time, the MPCA will accept results for EPA Method 1633 while the chosen accredited laboratory is working towards their certification for EPA Method 1633A.

### Reporting limit

Please ensure the laboratory reports all results to the reporting limit (RL). Laboratories should **not** report results to the method detection limit (MDL) and all results should be reported on a dry weight basis.

### Method limitations

Limitations of EPA Method 1633A exist with biosolids sample containing less than 5% total solids. Biosolids with less than 5% total solids may lead to reporting limits that are above 20 parts per billion (ppb). The Permittee should reach out to the Project Manager at the laboratory if biosolids samples are typically below 5% total solids to ensure labs can take steps to achieve a reportable limit of 20 ppb or less for PFOA and PFOS. Permittees should also use the “Sampler comments” section of the MPCA supplied COC to indicate solids are typically less than 5%. If the laboratory cannot meet the 20 ppb for PFOA and PFOS, please contact the MPCA at: [municipal.wastewater.pfas.mpca@state.mn.us](mailto:municipal.wastewater.pfas.mpca@state.mn.us).

Contracted laboratories may refer to the [Guidance for per- and polyfluoroalkyl substances: Analytical](#) or contact MPCA staff via email at: [ga.question.mpca@state.mn.us](mailto:ga.question.mpca@state.mn.us) with any analytical questions.

### Conversions

Permittees may have to convert analytical results from the lab sheet to interpret and report the results. To convert from a dry weight basis in ng/g to dry weight basis in µg/kg:

- Unit conversion only, one to one conversion (see Table 3: Helpful conversions, below).
- $\text{ng/g} = \mu\text{g/kg}$

**Table 3. Helpful conversion.**

Parts per million (ppm)	Parts per billion (ppb)	Parts per trillion (ppt)
1 milligram/kilogram (mg/kg) = 1 ppm	1 microgram/kilogram (µg/kg) = 1 ppb	1 nanogram/kilogram (ng/kg) = 1 ppt
1 milligram/liter (mg/l) = 1 ppm	1 microgram/liter (µg/l) = 1 ppb	1 nanogram/liter (ng/l) = 1 ppt
1 microgram/gram (µg/g) = 1 ppm	1 nanogram/gram (ng/g) = 1 ppb	1 picogram/gram (pg/g) = 1 ppt

Helpful conversions:  $0.000001 \text{ ppm} = 0.001 \text{ ppb} = 1 \text{ ppt}$

## Parameter list

Samples shall be analyzed for all the constituents (i.e., target analytes) that can be measured by EPA Method 1633A (currently 40 constituents).

## Analytical laboratory requirements

There are several analytical laboratories that conduct PFAS analysis. Permittees can work with a laboratory of their choosing as long as they are accredited to conduct the analysis required in this sampling guidance. There are several factors to consider when choosing a laboratory.

**Table 4. Considerations for analytical laboratory selection.**

Item	Considerations	Notes
Cost per sample	Unit price quoted should include: <ul style="list-style-type: none"> <li>• Sample containers</li> <li>• PFAS-free reagent water</li> <li>• Return shipping</li> <li>• Disposal fees</li> <li>• Environmental fees</li> </ul>	
Method 1633A analytes	Must report all analytes per the analysis. Should provide the laboratory-specific MDLs and RLs for each analyte.	The target will be an RL of < 20 ppb on a dry weight corrected basis for PFOA and PFOS.
Typical turnaround time (TAT) days	Sample results will be required prior to land application unless prior approval is received by the MPCA.	Make sure to discuss required TAT with the lab, ESPECIALLY if you are within 60-days of the application window prior to submitting a sample.
Dry weight basis	Provide result on a dry weight basis.	Need to add total solids and percentage.
Method 1633A updates	Vendor will be responsible for monitoring and incorporating any changes to the EPA 1633A Method.	
Electronic data delivery (EDD)	Provide results via EDD files per MPCA specification.	Minnesota Department of Health accredited labs can provide this EDD requirement. Permittees provide the laboratory with the MPCA COC Form that contains information needed to generate the EDD.
Reports	Provide Level 2 laboratory report with associated QA/QC.	This is typically the standard (routine) report format for the laboratory.

## Quality control

Permittees that are required to sample PFAS in biosolids are encouraged to collect quality control (QC) samples to assess data impacts of sample collection and contamination in the field. However, Permittees *may* want to consider quality control measures in addition to internal laboratory QC, such as:

- Field blanks: field blanks are an indicator of potential contamination from sampling efforts. A field blank may be collected with each sample and shipped to the laboratory.
- Equipment blanks: equipment blanks may be used to verify that sampling equipment has not been contaminated or contains detected PFAS. It is a volume of rinse water that is PFAS-free that is moved through or passed over the sampling equipment and then analyzed.
- Field sample duplicates: sample duplicates may be used to measure the variability in results based on possible variations in sampling and analysis.

- Confirmation sample: anytime a sample result indicates a need for follow-up, the first step should be confirming the sample results. The lab reports and QC samples should be reviewed for anomalies and held field blanks and sample duplicates analyzed. As soon as possible, a confirmation sample should be collected and submitted to the laboratory.

## Reporting

### Averages\*

Average all sample results collected within a 60-day period according to the MPCA's Permit User's Manual. Land apply biosolids based on the appropriate tier represented by the averaged values.

- If some values are less than (<) the RL, substitute zero for all non-detectable values to report the average or summed concentration.

Example: the values for the sampling events are: 5.0 mg/L, 4.0 mg/L, 3.0 mg/L and < 2.0 mg/L.  
Report the average or sum as  $(5.0 + 4.0 + 3.0 + 0.0) = 12.0 \div 4 = 3.0$  mg/L.

- If all values are less than (<) the RL, use the RL for all non-detectable values to calculate the average or sum and report as < the RL calculated average or summed concentration.

Example: the values for the sample period are < 0.2 mg/L, < 0.4 mg/L, < 0.2 mg/L, < 2.0 mg/L.  
Report the average or sum as  $(0.2 + 0.4 + 0.2 + 2.0) = 2.8 \div 4 = < 0.7$  mg/L.

\*Averaging guidance is under evaluation and is subject to change.

### Timing

Data must be received, reviewed and evaluated prior to land application and Permittees must follow actions outlined in the Biosolids Strategy for land application techniques. The actual reports and data must be submitted to the MPCA based on the following guidelines. This submittal timeline also applies to any additional samples that are collected above and beyond the required sampling.

Results	Submittal timeline (upon receipt of lab report)
Tier 4: PFOA or PFOS concentrations $\geq 125$ µg/kg	Notify the MPCA within 10-days. Submit the EDD and lab report (PDF) within 30-days.
Tier 3: PFOA or PFOS concentrations 51-124 µg/kg	Submit the EDD and lab report (PDF) within 30-days.
Tier 2: PFOA or PFOS concentrations 21-50 µg/kg	Submit the EDD and lab report (PDF) within 30-days.
Tier 1: PFOA or PFOS concentrations $\leq 20$ µg/kg	Submit the EDD and lab report (PDF) within 30-days
EQ biosolids	Submit the EDD and lab report (PDF) within 30-days.

Permittees should send both the EDD and lab report PDF via email to:

[municipal.wastewater.pfas.mPCA@state.mn.us](mailto:municipal.wastewater.pfas.mPCA@state.mn.us) within 30-days of receiving the lab results.

## Source identification and reduction

The MPCA's Biosolids Strategy recommends source identification and reduction work by all facilities that land apply biosolids and requires it for all facilities in Tiers 3 and 4. The Permittee must initiate or, if it already begun, expedite existing source identification and reduction work if the results are in Tier 3 or 4. If a PFAS Pollutant Management Plan (PMP) has not been created and implemented, by 180-days, the facility must create, submit to the MPCA and implement a PFAS PMP. The goal of the PFAS PMP is reducing or eliminating non-domestic sources and/or education.

Permittees should investigate the following if additional sampling or analysis is needed for the source investigation.

- Ensure data value(s) have been confirmed.

- Review the lab report for any anomalies.
- Analyze any field blanks or sample duplicates that were taken at the time of sampling but not analyzed. It is important to note if these were analyzed within applicable holding times.
- Review sampling protocol and process for any potential contamination issues.
- Collect and analyze appropriate confirmation and QC samples.
- Review any findings from wastewater pretreatment PFAS source identification studies, if available. In all cases, it is best to collaborate with pretreatment staff or your source providers to plan a source identification and control program.

## References and resources

A compilation of useful references related to PFAS and biosolids land application and resources used to develop this guidance.

Resource	Description
<b>Federal</b>	
<a href="#">EPA Method 1633</a>	EPA Method 1633 Landing page with history and versions of the draft.
<a href="#">Biosolids Management Handbook (503)</a>	EPA Biosolids Management Handbook.
<b>Minnesota</b>	
MPCA PFAS email: <a href="mailto:municipal.wastewater.pfas.mpca@state.mn.us">municipal.wastewater.pfas.mpca@state.mn.us</a>	General email for all PFAS biosolids communications and submittal of lab reports.
<a href="#">MPCA Land Application of Biosolids webpage</a>	Land Application of Biosolids Resources.
<a href="#">MPCA PFAS in Biosolids Strategy webpage</a>	Biosolids PFAS Strategy and Implementation documents.
<a href="#">MPCA Amara's Law Toolkit</a>	Helpful educational resources related to reducing PFAS and the PFAS prevention law.
<a href="#">MPCA Guidance for per- and polyfluoroalkyl substances: Analytical</a>	General PFAS sampling guidance.
Minnesota Department of Health <a href="#">Search for Accredited Laboratories – Environmental Laboratory Accreditation Program</a>	Search for PFAS labs (use customized search).
<b>Other states</b>	
<a href="#">California State Water Quality Control Board – PFAS Biosolids Sampling Guidance</a>	California's sampling guidance for PFAS.
<a href="#">Colorado Department of Public Health and Environment – PFAS and Biosolids</a>	Colorado's Biosolids Interim Strategy and resources.
<a href="#">Maine PFAS Screening Levels</a>	Document with conversion tables related to PFAS analysis.
<a href="#">Michigan Department of Environment, Great Lakes and Energy (EGLE)</a>	Variety of resources relate to EGLE's PFAS Biosolids Interim Strategy.