Conservation Evaluation and Monitoring Activity

PFAS Testing in Water or Soil

CEMA 209

Definition

A Conservation Evaluation and Monitoring Activity (CEMA) is the assessment, monitoring, or recordkeeping activities required to plan, implement, or determine the effectiveness of conservation practices as described herein.

This CEMA provides testing (sample collection and laboratory analysis) to detect and quantify per- and polyfluoroalkyl substances (PFAS) in water or soil using EPA- or State-approved field sampling techniques and laboratory methods.

The purpose of this CEMA is to provide prescreening information to producers to determine if PFAS may be present in soils or water at their agricultural operation. This CEMA is not intended to determine the nature and extent of contamination applicable to a Federal or State cleanup action or provide a risk-based comparison to soil or water screening level values. As this is intended only as a prescreening step, this CEMA is intended to complement, not replace, PFAS testing offered by State agencies or EPA.

The CEMA includes the performance of work and documentation of the tasks, results, interpretations, and other activities described herein.

REQUIREMENTS

Qualified Individual Requirements

The Natural Resources Conservation Service (NRCS) strongly encourages participants to know the following Qualified Individual (QI) requirements to ensure the person they hire is a good match for their needs and objectives.

This CEMA will be completed by a Qualified Individual. The QI must meet the EPA definition of an environmental professional (an environmental professional is someone who possesses sufficient specific education, training, and experience necessary to exercise professional judgment to develop opinions and conclusions regarding conditions indicative of releases or threatened releases of hazardous substances on, at, in, or to a property) and meet at least one of these qualifications:

- Professional Engineer's or Professional Geologist's license or registration and three years of full-time relevant experience.
- Licensed or certified by a State, Tribe, or the Federal government to perform All Appropriate Inquiries and have three years of full-time relevant experience.
- Bachelor's degree or higher in science or engineering and five years of relevant, full-time work experience.
- Ten years of relevant, full-time work experience.

QI Documentation Requirements

The QI will provide documentation (see *Deliverables* below) that demonstrates their possession of at least one of the credentials described above.

QIs may include Technical Service Providers or State or Federal Agency Partners.

QIs must be aware of the regulatory consequences of PFAS concentrations that exceed local/State/federal/Tribal/ screening/action levels, and able to provide that to the participant and NRCS.

General Requirements

1) Prior to initiation of the CEMA, the QI must arrange a pre-work conference to ensure all parties understand the participant's objectives, required deliverables, and requirements of the CEMA tasks, and the potential ramifications of the result of PFAS testing. This CEMA only provides a prescreening step to determine if a significant presence of PFAS exists onsite; thus, if testing detects PFAS in water or soil at levels that exceed State or Federal screening levels, reporting of data and follow-up, detailed PFAS sampling may be needed.
   a) The parties in the pre-work conference must include the participant, the QI, and the NRCS field office staff. The parties should agree whether they will join in-person or join via phone, web-meeting, etc.
   b) If the participant will employ a Technical Service Provider (TSP) to implement a Conservation Planning Activity (CPA) or Design and Implementation Activity (DIA) that will be supported by results of this CEMA, it is recommended to invite them to the pre-work conference too.
2) The Qualified Individual will complete tasks as described in the **DELIVERABLES** section.
3) The Qualified Individual may use any of the Conservation Practice Documents, such as tools, guidance, templates, etc., located in the state's FOTG. The FOTG home page hyperlink is: https://efotg.sc.egov.usda.gov/#/

Technical Requirements Applicable to All Tests

QIs must collect, prepare, store, and ship all samples following EPA-or State-approved sampling procedures (summarized in ITRC 2020, USEPA 2020b). Prior to sample collection, the QI works with the participant to design the sampling strategy based on participant goals, available tools and resources, and published methods to address potential temporal or spatial variation in PFAS.

QIs must record the purpose and strategy for testing the soil or water resource. PFAS testing must follow EPA- or State-Approved Standard Operating Procedures for sample collection (MI DEQ 2018, MA DEP 2021, MI DEGLE) and must by analyzed by a State- or EPA-accredited laboratory. Laboratory analyses for PFAS are extremely sensitive and thus it is critical to adhere to standard sample collection protocols to avoid contamination (ASTM 2017, 2020; USEPA 2019, 2020a, 2021a, 2021b). Water and soil samples can be easily contaminated by everyday products that may contain PFAS, such as waterproof clothing, personal protective equipment, personal hygiene products, food packaging, etc. It is important that sampling activities follow strict protocols to prevent contamination from these potential sources. Sample integrity also must be verified by comparing field samples and field blanks (a sample collected and processed in the exact manner as a field sample, except with PFAS-free water or soil provided by the laboratory). Requiring field blanks allows verification that PFAS contamination was not caused by aspects of field sampling and helps ensure that the testing results reflect the actual PFAS levels in the analyzed water or

soil.

Technical Requirements Applicable to All Soil Tests

This CEMA is intended to test agricultural soil (surface or shallow subsurface). Design the soil sampling strategy based on goals, available resources, and published methods to account for any spatial (or temporal) variation in PFAS that is likely to occur. Analyze the soil type, topography, and management information to determine appropriate sampling locations and depths within a management unit. Common sampling strategies for this prescreening might include composite or problem-based sampling:

a) **Composite:** Soil is subsampled from many locations in a larger management unit and combined into one homogenous sample.

b) **Problem:** Distinct areas with evidence or suspected history of contamination are strategically sampled.

Always follow protocols specified by the laboratory to ensure that test results are as accurate as possible. Remove vegetation or debris from the soil surface, and ideally not after recent physical disturbances, additions of soil amendments, or other chemical inputs.

Technical Requirements Applicable to All Water Tests

This CEMA is intended to test existing water sources for agricultural use (e.g., surface water or well water in use for stockwater or irrigation systems). Design the water sampling strategy based on goals, available sources, and published methods to account for any temporal or spatial variation in PFAS in source water. To determine appropriate sampling locations and durations, consider factors such as end use, volume/frequency of use, local hydrologic factors, orientation to known external PFAS sources, etc.

To ensure test results are as accurate as possible, always follow State and laboratory specified sampling protocols. For example, EPA guidance for testing tap water (USEPA 2020a) requires a system flush for about 3-5 minutes to allow the water temperature to stabilize before collecting a water sample. Similarly, on-farm water sources should allow for appropriate time and flushing to stabilize the water source to ensure a representative sample, such as requiring sampling after completion of an irrigation run or filling a large water tank.

DELIVERABLES

The QI must provide documentation showing all the tasks indicated in the **General Requirements** section, the **Technical Requirements** sections, and the following sections:

Cover Page

Cover page reporting the technical services provided by the QI. Cover page(s) must include the following:

1) CEMA name and number.

2) Participant information: Name, farm bill program name, contract number (QI obtains contract number from participant), land identification (e.g., state, county, farm, and tract number).

3) QI name, address, phone number, email.

4) A statement by the QI explaining how they currently meet the Qualified Individual Requirements for this CEMA. Attaching or enclosing a copy of documentation for how the QI

requirements are met is encouraged. Examples include:

a) Professional Engineer's or Professional Geologist's license or registration and three years of full-time relevant experience.

b) Licensed or certified by a State, Tribe, or the Federal government to perform All Appropriate Inquiries and have three years of full-time relevant experience.

c) Bachelor's degree or higher in science or engineering and five years of relevant, full-time work experience.

d) Ten years of relevant, full-time work experience.

5) A statement by the QI that services provided meet NRCS requirements, such as:

I certify the work completed and delivered for this CEMA:

- *Complies with all applicable Federal, State, Tribal, and local laws and regulations.*
- *Meets the general requirements, technical requirements and deliverables for this CEMA.*
- *Is consistent with and meets the conservation objectives for which the program contract was entered into by the participant.*
- *Addresses the participant's conservation objectives for this CEMA.*

QI Signature: _____ Date: _____

6) A Participant's acceptance statement, such as:

I accept the completed CEMA deliverables as thorough and satisfying my objectives.

Participant Signature: _____ Date: _____

7) A space for an NRCS reviewer to certify the agency's acceptance of the completed CEMA and, such as:

NRCS administrative review completion by:

Signature: _____ Title: _____ Date: _____

Sampling and Testing

1) Develop a sampling plan with a map to detect contamination from PFAS on the property.

2) Prepare a map for the CEMA including:

a) A title block showing:

i) Map title.

ii) Participant's name (individual or business).

iii) Assisted By [QI name].

iv) Date prepared

v) Map scale.

vi) North arrow.

b) For soil testing, show soil map units and sample locations.

c) For water testing, show location of well or intake being sampled, as well as

d) Information needed to locate the assessment or monitoring area, such as a vicinity map with labeled roads, geographic coordinates, public land survey coordinates, etc.

e) A map symbol legend on the map or as an attachment.

3) Collect samples and field blanks following appropriate safety and sampling protocols.

4) Prepare and package sample(s) and field blanks for transport and deliver to State- or EPA-accredited laboratory for analysis of PFAS.

5) Receive soil or water test results of PFAS concentrations, including specific PFAS constituents.

Documentation

1) Provide results of new soil or water test for PFAS.

2) Provide results and report from prior PFAS testing assisted by NRCS.

3) Appropriate government (i.e., federal, Tribal, State, local) risk threshold levels for any PFAS detected, and if reporting is required

Deliver Completed Work

1) The QI must prepare and provide the participant two sets of all of the items listed in the **General Requirements**, the **Technical Requirements** and the **Deliverables** sections of this document.

2) One set is for the participant to keep.

3) The other set is for the local NRCS Office. It is recommended to provide the NRCS field office an opportunity to review the CEMA deliverables, prior to asking for their acceptance.

4) The QI may transmit a set of the completed work to the local NRCS Office, if their participant has authorized it.

It is recommended to provide the NRCS field office an opportunity to review the CEMA deliverables, prior to asking for their acceptance.

References

ASTM Standard D7968-17a. 2017. Standard Test Method for Determination of Polyfluorinated Compounds in Soil by Liquid Chromatography Tandem Mass Spectrometry (LC/MS/MS). ASTM International, West Conshohocken, PA.

ASTM Standard D7979-20. 2020. Standard Test Method for Determination of Per- and Polyfluoroalkyl Substances in Water, Sludge, Influent, Effluent, and Wastewater by Liquid Chromatography Tandem Mass Spectrometry (LC/MS/MS). ASTM International, West Conshohocken, PA.

ITRC (Interstate Technology & Regulatory Council). 2020a. Regulation of Per- and Polyfluoroalkyl Substances (PFAS) Fact Sheet. Washington, D.C.: Interstate Technology & Regulatory Council, PFAS Team. https://pfas-1.itrcweb.org/fact-sheets/

ITRC (Interstate Technology & Regulatory Council). 2020b. Sampling Precautions and Laboratory Analytical Methods for Per- and Polyfluoroalkyl Substances Fact Sheet. Washington, D.C.: Interstate Technology & Regulatory Council, PFAS Team. https://pfas-1.itrcweb.org/fact-

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ITRC (Interstate Technology & Regulatory Council). 2021. PFAS Technical and Regulatory Guidance Document. Washington, D.C.: Interstate Technology & Regulatory Council, PFAS Team. Accessed 5/2022. https://pfas-1.itrcweb.org/#1_7

MA DEP (Massachusetts Department of Environmental Protection). 2021. Field Sampling Guidelines for PFAS Using EPA Method 537 or 537.1. https://www.mass.gov/doc/field-sampling-guide-for-pfas/download Accessed 5/2022

MI DEGLE (Michigan Department of Environment, Great Lakes, and Energy). 2022. "PFAS Sampling Guidance." Michigan PFAS Response Team. Accessed 5/2022. https://www.michigan.gov/pfasresponse/investigations/sampling-guidance

MI DEQ (Michigan Department of Environmental Quality). 2018. General PFAS Sampling Guidance. https://www.michigan.gov/pfasresponse/-/media/Project/Websites/PFAS-Response/Sampling-Guidance/General.pdf?rev=5fb24f7dabf0468b9415679b60681503

USDA Natural Resources Conservation Service. Field Office Technical Guide. https://efotg.sc.egov.usda.gov/#/

USDA Natural Resources Conservation Service. National TSP Website. https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/tsp/

USDA Natural Resources Conservation Service. National TSP Resources. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/technical/tsp/?cid=nrcseprd1417414

USEPA. 2019. Method 533: Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry. EPA/815-B-19-20. Cincinnati, OH. https://www.epa.gov/sites/production/files/2019-12/documents/method-533-815b19020.pdf.

USEPA. 2020a. Method 537.1 Determination of Selected Per- and Polyflourinated Alkyl Substances in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). Revision 2.0. Washington D.C.: U.S. Environmental Protection Agency. https://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=348508&Lab=CESER&simpleSearch=0&showCriteria=2&searchAll=537.1&TIMSType=&dateBeginPublishedPresented=03%2F24%2F2018.

USEPA. 2020b. Technical Brief: Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) Methods and guidance for sampling and analyzing water and other environmental media. EPA/600/F-17/022h. Washington, DC https://www.epa.gov/sites/default/files/2020-01/documents/pfas_methods-sampling_tech_brief_7jan2020-update.pdf

USEPA. 2021a. Draft Method 1633 Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS. EPA 821-D-21-001.

Washington, D.C. USEPA. https://www.epa.gov/system/files/documents/2021-09/method_1633_draft_aug-2021.pdf

USEPA. 2021b. Method 8327 Per- and Polyfluoroalkyl Substances (PFAS) by Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). Washington, D.C.: USEPA. https://www.epa.gov/hw-sw846/sw-846-test-method-8327-and-polyfluoroalkyl-substances-pfas-liquid-chromatographytandem.