

**ALASKA DEPARTMENT OF ENVIRONMENTAL
CONSERVATION DIVISION OF SPILL PREVENTION AND
RESPONSE CONTAMINATED SITES PROGRAM**

Technical Memorandum

Date: April 2019

**Treatment of Non-Detects and Blank Detections in
Per- and Polyfluoroalkyl Substances (PFAS) Analysis**

Background

In April 2019, the Alaska Department of Environmental Conservation (DEC) issued a technical memorandum (tech memo) [Action Levels for PFAS in Water and Guidance on Sampling Groundwater and Drinking Water](#). That tech memo set an action level of 0.07 µg/L for combined Per- and Polyfluoroalkyl Substances (PFAS) in groundwater and surface water. Those PFAS are:

- Perfluorooctanesulfonic Acid (PFOS)
- Perfluorooctanoic Acid (PFOA)

DEC uses the action level to determine when an alternative water supply or water treatment system is needed to protect human health.

Purpose

The purpose of this tech memo is to discuss how to sum non-detected compounds and address quality assurance issues related to the April 2019 tech memo.

Determining the Combined PFAS Level

The sum of the PFAS concentrations is calculated by adding the detected concentrations of the individual substances together. If one or more of these substances is below the lab's Limit of Quantitation (or Reporting Limit), then use one of the following (in order of preference):

- A J-flagged concentration if the reported concentration is between the Limit of Quantitation (LoQ) and Limit of Detection (LoD)
- A value equal to the LoD if the substance is non-detect at the LoD¹
- A J-flagged concentration if the reported concentration is between the LoQ and Method Detection Limit (MDL) and an LoD is not available
- A value equal to twice the MDL if an LoD is not available and the substance is non-detect at the MDL.

This is consistent with DEC's April 2017 [Technical Memorandum Guidelines for Treatment of Non-Detect Values, Data Reduction for Multiple-Detections and Comparison of Quantitation Limits to Cleanup Values](#).

Blank Detections

In this section, the term "blank" can apply to a method blank, trip blank, or field blank. Due to the prevalence of PFAS, blank detections are more common in PFAS analysis than in other lab analyses.

¹ If the lab reports a value between the MDL and LoD, use a value equal to the LoD.

Quality control failures should be addressed in the project Quality Assurance Project Plan (QAPP) before any sampling takes place. DEC suggests the following for each individual PFAS.

If...	Then
Blank detections are below the lab's LoQ	Use the data with no flagging
Blank detections are above the lab's LoQ AND the sum of the PFAS (including the non-detects) is more than 10 times greater than the blank detection	Use the data with no flagging
Blank detections are above the lab's LoQ AND the sum of the PFAS (including the non-detects) is less than 0.07 µg/L	Use the data with no flagging
Blank detections are above the lab's LoQ AND the sum of the PFAS (including the non-detects) is less than 10 times greater than the blank detection BUT greater than 0.07 µg/L	Use caution with the data. In these cases it is difficult to know if the PFAS in the field sample is coming from the water sampled or another source. DEC recommends rejecting the data and then re-prepping and re-analyzing the sample or collecting an entirely new sample. If the data is used, apply a B-flag to indicate the potential high bias due to blank contamination.

More stringent requirements may be required depending on the type of site being investigated and other regulatory requirements. Responsible parties can propose more stringent criteria in the project-specific QAPP.

Blank Subtraction

Blank subtraction is not allowed by DEC. Blank subtraction is a process where an analyte (in this case PFAS) is detected in the blank, and the concentration in the method blank is subtracted from each field sample to give a lower “corrected” value. Because cross contamination does not occur at an equal amount in all samples, this process leads to poor quality data.

For questions, please contact:

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For more information on PFAS QA/QC, please see:

- U.S. Department of Defense Quality Systems Manual Version 5.1
- Environmental Protection Agency’s Risk Assessment Guidance for Superfund
- EPA’s National Functional Guidelines
- EPA’s Data Review and Validation Guidelines for Perfluoroalkyl Substances Analyzed Using EPA Method 537