# Sufficiently Sensitive Test Methods

## 1. Regulatory Background

The National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods for Permit Applications and Reporting rule was published in the Federal Register on August 19, 2014 and became effective on September 18, 2014. Under the NPDES program, where EPA-approved test methods exist, NPDES applicants and permittees must use sufficiently sensitive EPA-approved analytical methods. Permit applicants must use sufficiently sensitive analytical test methods when completing an NPDES permit application and permittees must use sufficiently sensitive methods for analyses of pollutants or pollutant parameters under an NPDES permit.

## 2. NPDES Applications

For the purposes of an application for an NPDES permit, a test method approved under 40 CFR part 136 or required under 40 CFR chapter I, subchapter N or O is sufficiently sensitive where:

1. The method minimum level (ML) is at or below the level of the applicable water quality criterion for the measured pollutant or pollutant parameter; or
2. The method ML is above the applicable water quality criterion, but the amount of the pollutant or pollutant parameter in a facility's discharge is high enough that the method detects and quantifies the level of the pollutant or pollutant parameter in the discharge; or
3. The method has the lowest ML of the analytical methods approved under 40 CFR part 136 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter.[1]

The minimum level[2] refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL). The MDL[3] is defined as the minimum measured concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero.

The ML's specified are obtained in several ways and are either:

1. Published in a method;
2. Sample concentrations equivalent to the lowest acceptable calibration point used by a laboratory; or

[1] 40 CFR § 122.21(e)(3).
[2] EPA is considering the following terms related to analytical method sensitivity to be synonymous: "quantitation limit," "reporting limit," "level of quantitation," and "minimum level."
[3] The MDL is determined using the procedure at 40 CFR Part 136, Appendix B. Note that 40 CFR Part 136 defines an MDL as being distinguishable from the method blank, not zero.

3. Calculated by multiplying the MDL in a method, or the MDL determined by a lab, by a factor of 3.[4]

## 3. Notice of Intent

If the NOI does not provide data analyzed using a sufficiently sensitive EPA-approved analytical method, EPA may determine that the application is "incomplete" per 40 CFR 122.21(e). EPA anticipates providing additional resources to assist operators in following the methodology for meeting the SSTM requirements described in this Appendix on the Region 1 DRGP website.[5]

Instructions for Confirmation of Sufficiently Sensitive Test Method (SSTM) Requirements:

Obtain monitoring data for the site.

1. Complete a general data quality check. For example, the parameters that are required were analyzed, the data does not contain obvious errors (e.g., incorrect units), or quality assurance/quality control issues (e.g., estimated values). Additional resources are available for more thorough data quality assurance/quality control, if needed.[6]

2. Confirm that both the minimum level and test method used is reported for each required parameter. If the test method or minimum level is not reported, the NOI preparer will not be allowed to submit the NOI electronically. If/when values are correctly reported, proceed to the next step.

For the following steps, identify 40 CFR Part 136 test methods.

1. If a parameter is analyzed and there are no test methods listed, the analysis meets SSTM requirements (e.g., 1-4 dioxane). Proceed to the next parameter. Otherwise, proceed to the next step.
2. If a parameter is analyzed and quantified (i.e., detected) and a test method listed was used, the analysis meets the SSTM requirements. If a parameter is detected but the test method used is not listed, the analysis may be deemed incomplete. Proceed to the next parameter. Otherwise, proceed to the next step.
3. If a parameter is analyzed and not quantified (i.e., non-detect) and the test method used is listed, proceed to the next step. If the test method used is not listed, the analysis may be deemed incomplete. Proceed to the next parameter.

For the following steps, compare the non-detect value to the corresponding waterbody-specific criteria (Appendix E and G). To do this, find the criteria that corresponds to the

[4] This multiplying factor is specified in 40 CFR Part 136 Section 23 (glossary).
[5] https://www.epa.gov/npdes-permits/remediation-general-permit-rgp-massachusetts-new-hampshire
[6] See, for example, see EPA's *Data Quality Assessment: A Reviewer's Guide*, February 2006. EPA QA/G-9R.

state, waterbody type, and classification.[7] Adjust the waterbody-specific criterion for receiving water chemistry (e.g., pH, temperature, salinity, hardness, etc.) and/or dilution.[8]

4. If there are no corresponding waterbody-specific criteria, the analysis meets SSTM requirements. Proceed to the next parameter. Otherwise, proceed to the next step.
5. If the non-detect value is equal to or less than the adjusted waterbody-specific criteria (e.g., WQBEL), the analysis meets SSTM requirements. Proceed to the next parameter. Otherwise, proceed to the next step.
6. If the non-detect value is greater than the adjusted waterbody-specific criteria and there are test method minimum levels that are equal to or below that criteria, the analysis may be deemed incomplete. Proceed to the next parameter. Otherwise, proceed to the next step.
7. If the non-detect value is greater than the adjusted waterbody-specific criteria and all of the minimum levels are greater than that criteria, if the minimum level is equal to or less than the lowest of the minimum levels listed for that parameter, the analysis meets SSTM requirements. Proceed to the next parameter. Otherwise, proceed to the next step.
8. If the non-detect value is greater than the adjusted waterbody-specific criteria and all of the minimum levels are greater than the criteria, but the minimum level is greater than the lowest of the minimum levels listed for that parameter, the SSTM requirements have not been met, unless the minimum level is matrix-specific. Proceed to the next parameter. Otherwise, proceed to the next step.

If incorrect test methods or insufficient minimum levels were used, the application may be considered incomplete per 40 CFR 122.21(e). Consistent with 40 CFR part 136, operators have the option of providing matrix or sample specific minimum levels rather than published levels. In other words, where an applicant or permittee uses a method that would otherwise meet the definition of "sufficiently sensitive" and the analytical results are consistent with the QA/QC specifications for that method, then the method may be considered adequate even if the published minimum level is not achieved.[9] Where no other EPA-approved methods exist, a method should be selected consistent with 40 CFR 122.44(i)(iv)(B).

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[7] To proceed through these steps, you will need to compare the lowest applicable waterbody-specific criteria for each parameter. For example, if the waterbody type is Class B or SB, you will generally be comparing non-detect values to the lowest of the aquatic life and organism-only human health criteria, unless the discharge is upstream of a drinking water supply intake. For Class A and discharges upstream of a drinking water supply intake, you will generally be comparing non-detect values to the lowest of the aquatic life and consumption human health criteria. For Class SA, you will generally be comparing non-detect values to the lowest of the aquatic life and human health organism-only criteria, unless another criterion for a pollutant is more stringent.

[8] Only apply an approved dilution factor. If the State has not approved a dilution factor or the dilution factor will be revised, do not apply a dilution factor unless an approved and/or revised dilution factor is confirmed with the State.

[9] Where the analytical results are not consistent with the QA/QC specifications for that method, then EPA may determine that the method is not performing adequately and EPA should select a different method from the remaining EPA-approved methods that is sufficiently sensitive with 40 CFR 122.(i)(iv)(A).

Consistent with the *National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods for Permit Applications and Reporting rule*, EPA has discretion to determine whether the data provided with a permit application were collected with methods that are sufficiently sensitive to measure at the relevant regulatory value.[10] Where EPA provides a relevant dilution analysis, the applicant would only need to show that the method it has selected has a minimum level that is at least as sensitive as necessary to determine compliance with the water quality criterion, after accounting for allowable dilution. The water quality criterion as adjusted for allowable dilution would be the "applicable water quality criterion" under 40 CFR § 122.21(e)(3).

**4. Limitations and Monitoring Requirements**

For the purposes of establishing limitations, standards, and other permit conditions (compliance monitoring) under an NPDES permit, a test method approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O is sufficiently sensitive where:

1. The method minimum level (ML) is at or below the level of the effluent limit established for the measured pollutant or pollutant parameter; or
2. The method has the lowest ML of the analytical methods approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter.[11]

Suggestions for QA/QC BMP Review of Sufficiently Sensitive Test Methods:

1. Prepare BMP Plan attachment for test methods and minimum levels with the sufficiently sensitive minimum levels and the test method(s) that achieve these minimum levels as described above.
2. Include attachment in the BMP Plan for the site.
3. Refer to BMP Plan attachment when conducting data quality assurance/quality control (QA/QC) of permit data, compare test methods and MLs to attachment to confirm compliance with SSTM Requirements.

**5. Selected Definitions specific to this general permit:**

1. Method revision numbers are generally not shown in EPA Region 1's SSTM resource. Generally, the most recent method revision as promulgated in 40 CFR Part 136 should be used for analyses.
2. See Standard Methods for the Examination of Water and Wastewater for the full text of standard methods.
3. Methods 522, 504.1, 524, and 525.2 are drinking water methods that **<u>can</u>** be used for the purposes of this general permit when necessary.

[10] See Section III.B. of the rule: Summary of Public Comments and EPA's Response – Administration and Timing.
[11] 40 CFR §122.44(i)(1)(iv).

4. The Massachusetts test methods for Volatile Petroleum Hydrocarbons (VPH) and Extractable Petroleum Hydrocarbons (EPH) **cannot** be used for the purposes of analysis under this general permit.
5. Test methods 8260 and 8270 **cannot** be used for the purposes of analysis under this general permit unless approved for use in accordance with 40 CFR Part 136.5. Specific preparation methods may be required. Selected Ion Monitoring is a test method modification allowed in 40 CFR Part 136.6 and is recommended for analysis of volatile and semi-volatile organic compounds when necessary.