

FACDQ Recommendations on Uses of Detection and Quantitation in Clean Water Act Programs

1. Lab-Determined Detection Limits and Quantitation Limits

Recommendation: The FACDQ recommends that EPA promulgate¹ the modified ACIL single-laboratory procedure recommended by the FACDQ for individual laboratories to determine their detection and quantitation limits. The modified ACIL single-laboratory procedure shall² be used instead of the current MDL procedure in 40 CFR Part 136, Appendix B, for calculating all future Laboratory Detection and Quantitation Limits. The modified ACIL procedure has the following two capabilities:

- Demonstrates the lab's performance at a specified level.
- Determines the lowest possible value achievable by the lab while meeting the measurement quality objectives (MQOs).

2. Matrix Effects

Recommendation: The FACDQ recommends that EPA consider how matrix effects impact detection and quantitation. The FACDQ requests that the Policy Work Group bring back a conceptual recommendation including details to be considered.

3. Verification of Laboratory Proficiency of Detection and Quantitation Limits

Recommendation: The FACDQ recommends developing a process for verification of detection and quantitation limits by laboratories which will strive for feasibility, practicality, representativeness, and cost-effectiveness. This recommendation includes the following guidance:

- The process should include separate initial and on-going verification of Laboratory Detection and Quantitation Limits.
- The process should verify that the method meets the chosen MQOs.
- The Laboratory Detection Limit must be equal to or lower than the National Detection Limit, if a National Detection Limit exists. [This point will be deleted if the DL_{nat} is eliminated from the recommendations.]

¹ The FACDQ recognizes that EPA cannot commit to promulgate the recommendations of the FACDQ without the benefit of public notice and comment. Wherever “promulgate” appears in the FACDQ recommendations, the FACDQ expects that EPA will propose a rule consistent with the FACDQ recommendations and then finalize a rule that fully considers those public comments.

² The Policy Work Group proposes that a small subgroup of the Policy Work Group examine each “shall,” “should,” and “must” to determine if they are being appropriately used.

- The Laboratory Quantitation Limit must be equal to or lower than the National Quantitation Limit, if a National Quantitation Limit exists.

4. Future Method Promulgation

Recommendation A (Placeholder): The FACDQ recommends that EPA promulgate a [multi-laboratory or inter-laboratory] procedure recommended by the FACDQ for determining National Quantitation Limits.

Recommendation B: National Quantitation Limits: The FACDQ recommends that EPA establish National Quantitation Limits for analytes with WQBELs below the detection and quantitation capabilities of existing methods at Part 136. These National Quantitation Limits should be established based on application of the procedure recommended by the FACDQ. When new methods are promulgated at Part 136, EPA should gather information regarding the new method performance. If the new method appears likely to be equally or more sensitive than the existing methods, EPA should perform a multi-laboratory quantitation limit evaluation to derive a National Quantitation Limit for the new method. Because EPA resources for new analytic method development/promulgation are limited, EPA should focus new method promulgation where there is a need for greater method sensitivity.

5. Future Updates of Promulgated Analytical Methods

Recommendation A (Placeholder): The FACDQ recommends that EPA promulgate a [multi-laboratory or inter-laboratory] procedure recommended by the FACDQ for determining National Quantitation Limits.

Recommendation B: The FACDQ recommends that EPA periodically review current capabilities of promulgated analytical methods for parameters where the acknowledged quantitation limit is greater than the lowest published water quality criteria. The focus of this review should be to identify such existing methods where there have been significant improvements in quantitation limits and/or on such methods for which there is no National Quantitation Limits. As part of its review, EPA should consider information submitted by states and/or other qualified third parties. EPA shall publish a *Federal Register* Notice announcing the National Quantitation Limits it proposes to update. Provisions later in this document are for the purpose of providing EPA with robust data sets for updating and or creating National Quantitation Limits.

6. Setting Permit Conditions, Reporting and Using Data, and Determining Compliance When the Water Quality Based Effluent Limit (WQBEL) is Less Than Detection and Quantitation Capabilities of Existing Methods³

³ The Policy Work Group recommends that the language below **in green** would be more appropriate for the final report text and have limited this section to recommendations only, consistent with the rest of the document.

Recommendation: The FACDQ recommends that the following recommendations be incorporated into 40 CFR Part 122, as appropriate.

A. Recommendations for NPDES Permit and Compliance Uses When a National Quantitation Limit Exists

If the permitting authority requires use of a method more sensitive than the method for which a QL_{nat} exists, go to section B.

1) Permit Requirements Related to Detection and Quantitation

Recommendation: The FACDQ recommends the following be required where EPA has promulgated a National Quantitation Limit in 40 CFR Part 136:

- a. The default quantitation limit to be included in the permit (Permit Quantitation Limit) is the lowest Part 136 promulgated National Quantitation Limit unless the regulator determines that the Permit Quantitation Limit should be adjusted to account for sensitivity, selectivity, and/or matrix effects;
- b. The permit shall contain a condition that the quantitation limit determined by the permittee's laboratory (Laboratory Quantitation Limit) shall be at or below the Permit Quantitation Limit. The permittee's laboratory may use any Part 136 method for which they can demonstrate a Laboratory Quantitation Limit at or below the Permit Quantitation Limit.
- c. The permit shall require the permittee to report the detection limit (Laboratory Detection Limit) and the Laboratory Quantitation Limit and maintain such information for a period of at least five years;

The FACDQ recognizes that the existence of WQBELs *at concentrations less than quantitation limits* presents a number of NPDES-related issues. These include appropriate approaches for:

- Calculating monthly averages
- Determining compliance with daily maximum limits and monthly average limits
- Reporting data, and
- Appropriate compliance response in light of data uncertainty and the need for the protection of public health and the environment.

To deal with these various issues, the FACDQ recommends a balanced response as outlined below.

States that have been delegated the NPDES program from EPA have the authority under the Clean Water Act to adopt regulatory provisions that are different, but no less stringent than, those required under federal regulations. Such provisions, *if authorized or not prohibited by state law*, would operate in lieu of the following recommendations and could include a QL_{st} value lower than the nationally promulgated *National Quantitation Limit*. In that case, the QL_{st} applicable under the state program would be used for determining compliance, reporting, and other applicable requirements.

- d. The permit shall require the permittee to maintain individual numeric results for a period of at least five years. The regulator may require the individual numeric result for any value that is greater than or equal to the Laboratory Detection Limit and less than the Permit Quantitation Limit be reported in a supplemental report.
- e. The permit shall require that the Laboratory Detection Limit and the Laboratory Quantitation Limit be determined using the steps of the 40 CFR Part 136 procedure to establish the lowest possible value by the laboratory;
- f. The Permit Quantitation Limit shall be applicable for the term of the permit unless the regulator reopens and modifies the permit; and
- g. That EPA require the Laboratory Detection Limit, the Laboratory Quantitation Limit, and the Permit Quantitation Limit be reported by the regulator to the Integrated Compliance Information System (ICIS) for purposes of updating 40 CFR Part 136 National Quantitation Limits.

2) **Establishing Compliance Thresholds and Determining Compliance**

Recommendation: The FACDQ recommends the following be required where EPA has promulgated a National Quantitation Limit in 40 CFR Part 136:

- a) Regulators will set average and daily maximum permit limits at the WQBEL.
- b) Permittees must report to the regulator all information in the following manner on the Discharge Monitoring Report (DMR):
 - i) To report daily maximum sample results:
 - a. For values not detected at the Laboratory Detection Limit, report “not detected”.
 - b. For values detected at the Laboratory Detection Limit but less than the Permit Quantitation Limit, report “detected less than the Permit Quantitation Limit”.
 - c. For values greater than or equal to the Permit Quantitation Limit, report the actual numeric values.
 - ii) To report average sample results:
 - a. When all values used to calculate an average are not detected at the Laboratory Detection Limit, report “not detected”.
 - b. When all values used to calculate an average are “detected less than Permit Quantitation Limit,” report “detected less than the Permit Quantitation Limit.”
 - c. When values used to calculate an average are a combination of “not detected” and “detected less than the Permit Quantitation Limit”, report “detected less than the Permit Quantitation Limit”.
 - d. When any value used to calculate an average is greater than or equal to the Permit Quantitation Limit, report the calculated numeric average after assigning zero to any individual value reported either as “not detected” or “detected less than the Permit Quantitation Limit.”

- c) To determine NPDES permit compliance with results reported on the DMR, regulators will:
 - i) Determine that any daily maximum or monthly average results reported as either “not detected” or “detected less than the Permit Quantitation Limit” are in compliance with the effluent limitation.
 - ii) Compare any numeric results directly to the WQBEL

3) **Additional Permit Requirements**

Recommendation: The FACDQ recommends the following be required where EPA has promulgated a National Quantitation Limit in 40 CFR Part 136: Permits shall include language that triggers additional steps when a “significant number” (to be determined in permitting process) of values detected at the Laboratory Detection Limit but less than the Permit Quantitation Limit are reported. These steps may include additional or accelerated monitoring, analytical studies such as matrix studies, pollutant minimization programs, or other permit conditions outside of the determination of compliance with effluent limitations. Reports under such provisions will be done outside of the DMR process, except that any additional effluent testing performed using approved analytical methods as part of the special studies must be reported on the DMR.

B. Recommendations for NPDES Permits and Compliance Uses When No National Quantitation Limit Exists, or if the Permitting Authority Requires Use of a Method More Sensitive than the Method for Which a National Quantitation Limit exists: Recommendations:

- 1) In the absence of a National Quantitation Limit, the permitting authority is free to establish its method for determining compliance for analytes that have limits/water quality standards at a level lower than that which can be detected and/or quantified.
- 2) For a list of analytes as defined by EPA, the permit shall require that the Laboratory Detection Limit and the Laboratory Quantitation Limit be determined using the steps of the 40 CFR Part 136 procedure to establish the lowest possible value by the laboratory;
- 3) That EPA require the Laboratory Detection Limit and the Laboratory Quantitation Limit and the Permit Quantitation Limit be reported by the regulator to the Integrated Compliance Information System (ICIS) for purposes of updating 40 CFR Part 136 National Quantitation Limits.

7. **Great Lakes Initiative**

Recommendation: The FACDQ recommends that the FACDQ recommendations should not supersede the current Great Lakes Initiative provisions. The FACDQ believes that there is not a significant conflict between the FACDQ recommendations and the Great Lakes Initiative.

8. Other Uses to Consider

Recommendation: The FACDQ tabled the discussion on recommendations regarding the use of detection and quantitation for other uses including, but not limited to, the following:

- ambient monitoring 305(b)
- pretreatment
- non-regulatory operational monitoring
- stormwater monitoring
- other studies, such as fish tissues or biosolids characterization
- reasonable potential analysis
- effluent guidelines development
- limit derivation
- development of water quality criteria

9. Alternative Test Procedures

Recommendation: The FACDQ tabled the option of developing specific recommendations to EPA on updating the Alternative Test Procedures (ATP) Program. The FACDQ, however, does recommend that the ATP Program be updated to be consistent with recommendations from this document.