

Management of “Non-Detect” Results for Discharge Monitoring Reports

The following information relates to the Department of Environmental Protection’s (DEP’s) preference over the management of data that are reported as “non-detect” on wastewater Discharge Monitoring Reports (DMRs). If you receive a report with a parameter value listed as non-detect (ND) or is qualified by a less than (<) symbol, it indicates that the laboratory has verified that the parameter value is less than the Quantitation Limit (QL) (also referred to as “reporting limit”), and is reporting the value as a “non-detect” result. DEP’s publications titled “Discharge Monitoring Reports Overview and Summary” (3800-BK-DEP3047) and “Water Quality Toxics Management Strategy” (361-0100-003) describe how non-detect results should be handled, and this fact sheet is intended to supplement this information. The recommended steps to follow for handling non-detect data are as follows (also refer to Flow Chart on next page):

- **Question 1 - Does the parameter have a limit in the permit that is less than the most sensitive detection limit in Pa. Code 25 Chapter 16 (Appendix A, Tables 2A and 2B)?** If the permit requires “Monitor & Report” only, the answer is no. If the parameter is not listed in Chapter 16 (Water Quality Toxics Management Strategy), the answer is no. In general, if the limit is less than the most sensitive detection limit available, this will be noted in the permit (usually Part C in NPDES permits). If the answer to this question is yes, move on to Question 2. If the answer is no, then statistics for concentration and mass load should be calculated by ignoring the less than (<) symbol for non-detect results, using detected results and the reporting limits for non-detect results. If there is at least one non-detect result in the data set for the reporting period, then use the less than (<) symbol with the calculated statistical result. If you are unsure whether the limit is more stringent than the most sensitive detection limit, consult Chapter 16 (see www.pacode.com) or contact the Permits Section of the regional office that issued your permit.
- **Question 2 (If Answer to Question 1 is Yes) - Was the Method with the Most Sensitive Detection Limit Used by the Permittee’s Laboratory?** Examine the permit to determine the target detection/reporting limit for the parameter. The target will often be the most sensitive limit identified in Chapter 16, Appendix A. If the laboratory was able to meet the objective, move on to Question 3, otherwise calculate statistics for concentration and mass load by ignoring the less than (<) symbol for non-detect results, and use the less than (<) symbol with the statistical result if there is at least one non-detect result.
- **Question 3 (If Answer to Question 2 is Yes) - Was there at least one detected result during the reporting period?** If the answer to this question is no, calculate statistics for concentration and mass load by ignoring the less than (<) symbol for non-detect results, and use the less than (<) symbol with the statistical result if there is at least one non-detect result. If the answer is yes, use zero (0) for non-detect results to compute concentration and load statistics, and do not report the statistical value with the less than (<) symbol on the DMR.

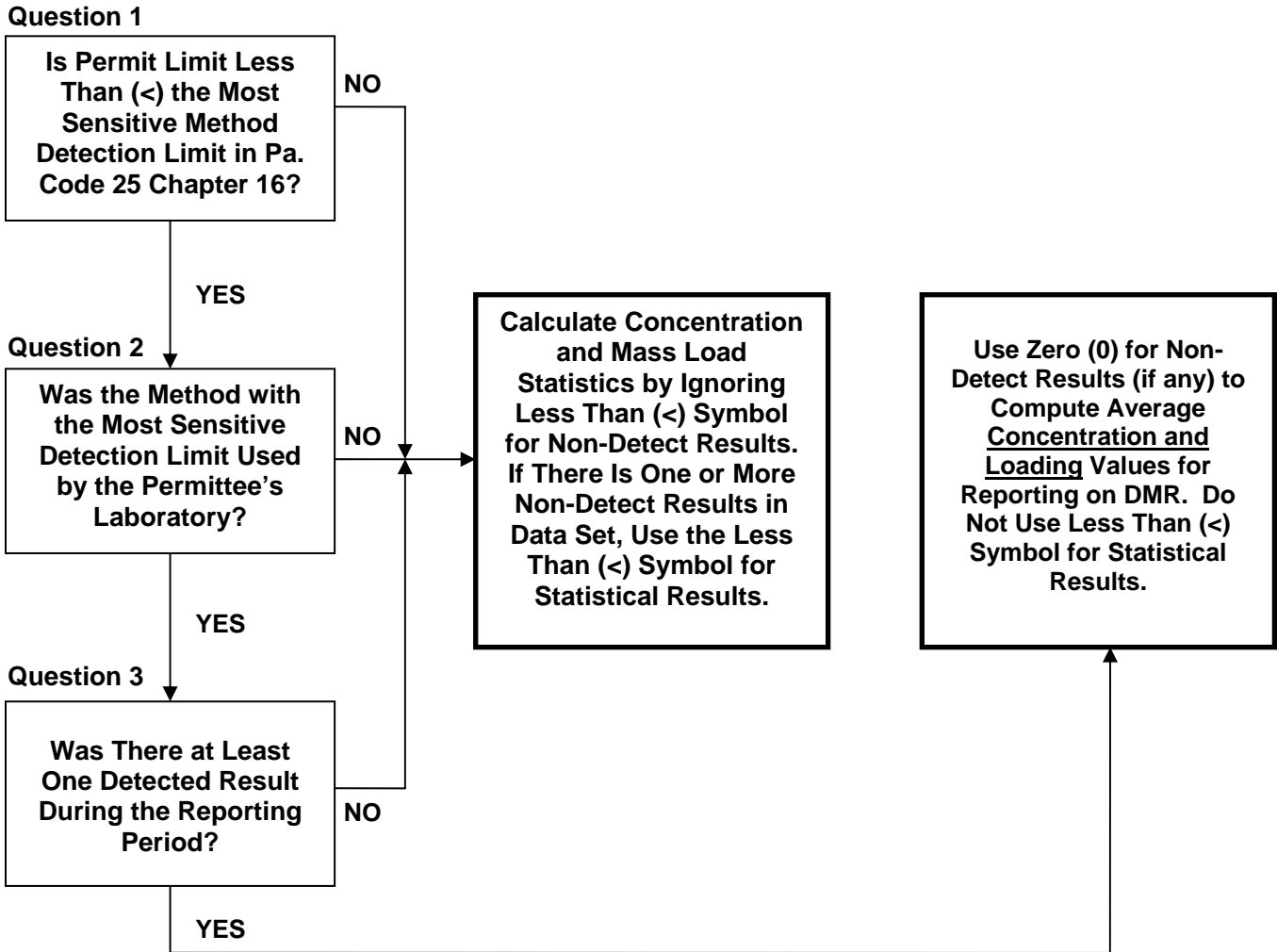
Example 1: A laboratory reports four weekly sample results for Total Suspended Solids (TSS) of < 2.0 milligrams per liter (mg/l), 5.0 mg/l, 2.0 mg/l, and 10.0 mg/l. The average daily flow on the sampling dates were 1.0 million gallons per day (MGD) (each day). The average monthly concentration result to report on the DMR is < 4.8 mg/l, and the average monthly loading result is < 40 lbs/day.

Example 2: A permit contains a limit of 0.00021 µg/l for Chlordane. The most sensitive detection limit for Chlordane in Chapter 16 is 0.014 micrograms per liter (µg/l). Two results were obtained for a month: < 0.014 µg/l and 0.02 µg/l. The average monthly concentration result to report on the DMR is 0.01 µg/l, since the < 0.014 µg/l result is treated as zero.

Example 3: A permit requires “Monitor & Report” for Total Copper concentration and loading. One sample is collected during a month, resulting in a concentration of < 0.01 mg/l on a day in which the flow is 1.0 MGD. The average and maximum concentration values are < 0.01 mg/l, and the loading is < 0.08 lbs/day.

For more information, visit www.depweb.state.pa.us, keyword: Water Management.

DECISION FLOW CHART FOR HANDLING OF “NON-DETECT” DATA FOR DISCHARGE MONITORING REPORTS¹



¹ Flow Chart Based on “Discharge Monitoring Reports Overview and Summary” (3800-BK-DEP3047) and “Water Quality Toxics Management Strategy” (361-0100-003).