DREDGED MATERIAL MANAGEMENT OFFICE

NEWSLETTER

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The DMMO has initiated this newsletter to disseminate information and policies that may be of use to applicants and their representatives in the permitting process; particularly issues related to sediment testing and results reporting. The newsletter will be issued occasionally, as new items arise. In the future we may adopt a regular schedule, such as quarterly. This first issue of the newsletter will address items that have come up during DMMO review of sediment Sampling and Analysis Plans (SAPs) and sediment testing Reports of Results for dredging and disposal projects over the past year. The following policies will be incorporated into the Regional Implementation Manual (RIM) for the Inland Testing Manual (ITM).

GENERAL COMMENTS

Test Results Used In Tier I Determinations

Although there are not specific criteria for acceptability, the age of the testing results submitted in support of a Tier I exclusion from testing determination is considered when the request is reviewed. If, for instance, the area under consideration is dredged every year, then the material located there is relatively new and test data from more than five years ago would probably not be considered valid for that area. On the other hand, if the area of consideration is only dredged every three or four years and has a history of consistent results that go back ten or twelve years (the last three dredging cycles), five-year-old data could be considered valid. The methods of analysis used, detection limits of the data available and the prevailing requirements at the time of consideration (not necessarily at the time of testing) will all be weighed when determining whether the data are adequate.

Standard Operating Procedures for Biological Tests

All SAPs for testing programs that will include biological testing should contain summary tables listing test conditions and acceptability criteria for the tests. The conditions in the summary table should (in most cases) reflect the established laboratory protocol for the test, recorded in the lab's standard operating

procedure (SOP). If there are proposed deviations from the SOP, then comments in the text of the SAP should be included to explain these deviations. The same conditions and procedures shall be followed for the same test from project to project. Any planned deviations shall be noted in the SAP, and other deviations shall be documented in the Results Report.

Explanations of Deviations from SAP in Reported Data

The Report of Results shall contain notations or explanations for any deviations from the approved SAP. Typically, the SAP (or sometimes the test report) specifies acceptable parameters or ranges for the various analyses performed. The case narrative in the report shall point out all deviations from acceptable parameters and ranges, shall make a statement about any possible effects of deviations on the test results, and shall report any corrective actions taken to insure that future test results will not contain similar problems. Reporting and explaining these deviations will eliminate delays in DMMO review of the project.

Organization and Accuracy of Reports

SAPs and Reports of Results should be organized so that the information in them can be easily accessed. The Table of Contents should describe the document contents, including pages of Notes and Appendices, if any. Appendices should be labeled with appropriate page numbers (A-1, A-2, for example). The source and date of information contained in appendices should be clearly labeled. The information contained in the appendices should be that which was labeled. Delays in DMMO review of documents may result from poorly organized or mis-labeled reports.

Internal Consistency of SAPs and Reports

The SAPs shall have internal consistency when addressing *depths*, *volumes* and *sample designations*.

The *permitted depth* for the project, the *desired project depth* and the *overdepth* that is permitted or requested should be listed and properly identified. All of these *depths* should be expressed in reference to the tidal datum of Mean Lower Low Water (MLLW).

The *volumes* that are specified in various places in the SAP (usually in the Overview, Quantity Calculations, and Sediment Collection sections of a SAP) should be good approximations of actual calculated numbers and should all agree with one another. These *volumes* should also agree with any *volumes* listed on the various diagrams or bathymetric surveys supplied as part of the SAP.

The *sample designations* used for individual sample points and for composite samples in the body of the SAP shall be identical to the *sample designations* used on the diagrams or surveys and later in the Results Report.

If the *designations* are not identical, or the *volumes* are not in agreement, or the *depths* are not clear, a delay in the review of the SAP or testing results report may result until the correct information is supplied. (Please include the current or previous USACE file number and if no permit exists, it should be so stated in the SAP).

Chain of Custody

Chain of custody (COC) data that has been specified in the SAP shall be

supplied in the Results Reports. A complete chain of events is required from the time the sediment sample is obtained until all of the analyses are complete. Common mistakes include:

- the original COC space for Sampler's Signature has other parameters listed vice a signature;
- it is not clear if the person who relinquished the samples is the person who actually took the samples;
- the COC from one lab to another does not have all of the required sending and receiving signatures;
- the COC sent from one lab to another is inconsistent with respect to date and time of sampling. For example, the samples were taken on 4 and 5 August 1999. The COC sent to other labs indicate sampling date of 10 August 1999. This confusion may be because the composite date is incorrectly used instead of the sample date. Holding times are to be calculated from the date of original sampling of individual cores.

Modification to Standard Methods Documented

If modifications to a standard analytical method are performed, the *nature* of the modification should be described. Because the DMMO does not maintain files on the standard operating procedures of the various labs, such documentation is necessary in either the SAP or Results Report for each project in which the modified method is used.

For example, a statement that "a modified ASTM D 2579 for TOC (Total Organic Carbon) was used," with no explanation of how the standard method was modified is insufficient. This particular method is a water method and from this statement, it would not be clear how the modification would make it suitable for sediment samples. Also, it would not be known if this is a combustion (recommended by ITM) or chemical oxidation (not recommended by ITM) method.

Proper Use of Terms

Some SAPS and Results Reports refer to the term LPC (Limiting Permissible Concentration) when discussing results of suspended phase bioassays. This term is only applicable for ocean disposal per the Green Book and is not applicable for use with ITM testing and in-Bay disposal discussions. For in-Bay use, the ITM refers to comparison of the modeled concentrations, expressed as percentages, to 0.01 times the LC_{50} or EC_{50}, depending on the duration of the test.

QUALITY CONTROL DATA

Qualification of Reported Test Results – Method Blanks

For a method blank with 0.2 mg/kg of an analyte, one of the standard tests to see if this amount is significant is to multiply this value by 20 and compare it to the sample result. If reported results for all composite samples were less than 4, this blank value is significant and should be noted in the case narrative with a qualifier on the test results. See SW-846, Chapter ONE, 5.0 definitions, page ONE-25, METHOD BLANK.

Matrix Spikes (MS) Left Out of Report

The approved SAP usually specifies that certain tests and proper quality control parameters will be accomplished. Therefore, the data reported shall contain the results of these tests. Quality control

data for matrix spikes shall be included in the Results Report and shall be analyzed using the proper project's samples for the matrix spikes. Typically, a sample of the project matrix is spiked and analyzed to determine the bias in analytical measurements due to interfering substances or matrix effects. (A blank spike does not satisfy the requirement for a matrix spike.) A spiked sample from a project in northern SF Bay is not considered representative for a project from southern SF Bay. On the other hand, a sample from a Carquinez Bridge project may be considered representative for a project for the Benicia-Martinez Bridge because the sediment for these two projects is nearby and is expected to have similar characteristics.

Matrix Spike Duplicate (MSD) and Relative Percent Difference (RPD)

Poor MSD and RPD results for pesticides are sometimes attributed to matrix effects when the reported spiked sample results are not detected (ND) without any supporting data on which project samples were spiked. There is insufficient evidence to justify a matrix interference statement with inconsistent (poor) matrix spike recovery results.

Matrix Interference Reported Properly

If matrix interference is used as an explanation of poor quality control results, this explanation must be substantiated. In a recent example of improperly reported matrix interference, a report noted matrix interference in STLC (Soluble Threshold Limit Concentration) mercury (Hg) results. The sample spiked was not identified. There was no similar interference detected in the matrix spiking of the project samples. The report did not mention possible bias in Hg STLC results, nor was any attempt made to explain the reason for the discrepancy between the STLC results and the sample results in the matrix spike sample. Proper discussion in the Results Report for these types of circumstances is required for DMMO to be able to evaluate the sample results.

Matrix Spike/Matrix Spike Duplicate Recovery Values

Sometimes the MS/MSD in butyltins is poor, but within the laboratory's reported acceptance ranges. However, the ranges for mono and di-butyl tin are extremely wide, from a recovery of about 75 to 160%. This range allows almost any result to be considered satisfactory and throws suspicion on the method's ability to adequately detect and quantitate these species.

Acceptance Ranges for LCS (Laboratory Control Samples)

Some labs cite LCS recovery acceptance ranges of 8-127% for Aroclor-1260. This is not considered acceptable! Guidance in SW-846, Method 8000 (8.5) suggests initial starting values of 70-130%. While in-house values may not be centered on 100%, the range should be on the order of plus or minus 30% and not in the range of plus or minus 60%.

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