DMMO Dredging Characterization Data Template v.3a - User’s Manual

Contents

[1.0 Introduction 2](#_Toc303689884)

[1.1 Purpose of the DMMO Sediment Characterization Template 2](#_Toc303689885)

[1.2 Filling out the Templates: Roles and Responsibilities 2](#_Toc303689886)

[1.3 Purpose of this User’s Manual 2](#_Toc303689887)

[1.4 Template Version 3a 3](#_Toc303689888)

[2.0 Template Description 3](#_Toc303689889)

[2.1 Description of the Individual Template Files 3](#_Toc303689890)

[2.2 Template Worksheets 4](#_Toc303689891)

[3.0 Process for Populating the Templates 4](#_Toc303689892)

[4.0 ‘Check Data’ Command 6](#_Toc303689893)

[4.1 Process 6](#_Toc303689894)

[4.2 Critical vs. Flag Errors 6](#_Toc303689895)

[4.3 Is an Individual Template File Ready for Web Upload? 6](#_Toc303689896)

[4.4 Filling Default Values 7](#_Toc303689897)

[4.5 Reset Button 7](#_Toc303689898)

[4.6 PR\_Calcs, RPD\_Calcs, QA\_Counts Worksheets 7](#_Toc303689899)

[5.0 LookUp Lists 7](#_Toc303689900)

[5.1 AnalyteLookUp and ChemSyn Lists 8](#_Toc303689901)

[5.2 QALookUp List 8](#_Toc303689902)

[6.0 Master Template 9](#_Toc303689903)

[6.1 Readiness Summary 9](#_Toc303689904)

[6.2 Quality Assurance/Quality Control (QA/QC) Report 9](#_Toc303689905)

[7.0 Uploading to the DMMO Website 10](#_Toc303689906)

# Introduction

The DMMO Template sets a standard for data quality in order to support the DMMO Database and Website, thus includes strict rules that are checked before a template may be submitted. The instructions and rules are daunting at first. Repeated use of the template using standard formats and procedures will decrease the level of effort needed to complete the template.

## 1.1 Purpose of the DMMO Sediment Characterization Template

The DMMO Sediment Characterization Template (“Template”) provides a system for submitting data to the DMMO that ensures that dredged material testing data are:

* internally consistent;
* in a standard format;
* prepared to be uploaded to the DMMO website;
* summarized for review by the DMMO; and,
* ultimately appended to the DMMO San Francisco Bay Dredging and Disposal database.

The Template generally follows the Surface Water Ambient Monitoring Program (SWAMP) data management program guidance and should be familiar to Users that have used the SWAMP Templates and Documentation (<http://www.waterboards.ca.gov/water_issues/programs/swamp/>).

Data in the Template will undergo a review for completeness and consistency through macros built into the Template files. This review does not involve an evaluation of data quality, but does ensure that the data are in an acceptable format for submission over the DMMO website. Subsequent to data submittal over the DMMO website, the DMMO will review the data and determine if it meets acceptability requirements relative to the Data Quality Objectives and Quality Assurance and Quality Control (QA/QC) limits provided in the Sampling and Analysis Plan (SAP). For this review, DMMO personnel will partially rely on a QAQC Report that is generated by the Template. This report will summarize the data set and identify potential QA/QC problems (described below).

## 1.2 Filling out the Templates: Roles and Responsibilities

Field data (core locations, sampling dates, etc.) – The personnel who collected the data should fill out the station and core/grab worksheets.

Laboratory data (sediment, elutriate, tissue chemistry, and bioassay data) – The laboratory can provide data in an EDD format that is compatible with the SWAMP-based template format. Either the lab or the primary contractor can run the check code in the individual templates to ensure that the data conform to the template requirements.

Master template and QA/QC report – The primary contractor is responsible for running the master check code to ensure consistency of sample nomenclature between the templates, running the QA/QC report generator, as well as submitting the data over the DMMO website.

## 1.3 Purpose of this User’s Manual

The Template User’s Manual contains general instructions on how to populate and prepare the templates for submission.  Although the DMMO template generally follows the SWAMP format, there are important differences and it is strongly recommended that users read this Manual prior to entering data into the Template files.

In addition to this User’s Manual, each of the individual template files includes additional instructions and guidance specific to the data type (see first worksheet in each individual template).

## 1.4 Template Version 3a

Template Version 2 was modified from Version 1 to be compatible with the SWAMP standard by request from the DMMO contractors. The SWAMP standard is in the process of merging with a statewide environmental data standard called the California Environmental Data Exchange Network (CEDEN; <http://www.ceden.org/>). Version 3 of the Template included fixed lookup lists drawn from the CEDEN Valid Value Lists. The template is provided in Excel 2003.

In Version 3a, the Guidance and lookup lists have been updated to make population of the templates easier. Several new features have been implemented, including:

* It is now possible to classify results reported as zero (0), for example calculated sums with no detections, without an error message;
* A new error message has been implemented to ensure that all results with a ResultQualcode of “ND” also have a “U” in the Qualifier Code;
* The template now allows percent recovery to be reported in lieu of measured concentrations for QC spike samples;
* Sediment chemistry data for moisture or solids allow a reporting basis of wet weight;
* Appropriate values reported in percent are now allowed (e.g., lipids, grain size);
* Several smaller error message improvements have been implemented and issues with the QA/QC report, e.g., TRG count have been addressed.

Comments or questions on this template can be directed to the DMMO template development team (Peggy Myre [[peggy.myre@exadata.net](mailto:peggy.myre@exadata.net)] or Dawn Smorong [[dawn@mavenconsulting.ca](mailto:%20dawn@mavenconsulting.ca)]).

# 2.0 Template Description

The Template files and individual worksheets within the files are described in this Section. The template files are in Excel 2003 format**.** The files can be used in Excel 2000, 2003, or 2007, but i**t is important that the template files are not saved as a different version of Excel**, or the internal data checks could fail. Occasionally, you may encounter the Windows ‘Minor Loss of Fidelity’ error screen when saving the templates – usually because you are using a newer Excel version. You can ignore this screen and press ‘continue’. The functionality of the template will not be compromised.

## 2.1 Description of the Individual Template Files

The template for submission of sediment testing data includes seven individual template files as described below.

### Master\_Template\_V3a\_April2016.xls

This file connects all other template files. The checks contained in this file determine whether all other files are ready for upload to the website and also prepare a QAQC Report that summarizes the data and identifies potential QAQC issues. (See Section 6.0 for additional details on the Master Template).

### Station\_Template\_V3a\_April2016.xls

A file that contains specific information related to the Dredging Unit sampled (e.g., StationCode, Waterbody, Port) which allows the Dredging Unit to be categorized by geographic area. *Note that the Dredging Unit is termed ‘StationCode’ as per SWAMP parlance.*

### CoreGrab\_Template\_V3a\_April2016.xls

A file that contains specific information about each of the core or grab samples collected within a specific Dredging Unit (e.g., sample method, water depth at sampling location, penetration depth).

### SedChemistry\_Template\_V3a\_April2016.xls

A file for capturing bulk sediment chemistry measurement results.

### ElutriateChemistry\_Template\_V3a\_April2016.xls

A file for capturing elutriate chemistry measurement results.

### TissueChemistry\_Template\_V3a\_April2016.xls

A file for capturing tissue chemistry measurement results obtained from sediment bioaccumulation tests.

### Bioassay\_Template\_V3a\_April2016.xls

A file for capturing the results of sediment and elutriate toxicity tests. Includes three worksheets including:

* Results – includes results for bioassay replicates
* Summary – summarized bioassay results (mean of replicate results)
* ToxBatch – results of reference toxicant tests

## 2.2 Template Worksheets

The templates include the following worksheets (*note that each template may not include all of the worksheets*):

* Instructions worksheet. Includes instructions specific to the individual template and a list and description of the fields in the main data entry worksheet.
* SpecialInstructions worksheet. Instructions for entering results for analytical QAQC samples (e.g., blanks, standards, surrogate chemicals, matrix spikes) into the main data entry worksheets are available here (for SedChemistry, ElutriateChemistry and TissueChemistry templates only).
* Main data entry worksheet. Prefixed with ‘DMMO\_’ (e.g., DMMO\_SedChemTemplate).
* Checker worksheet. Includes a ‘Check Data’ command that has been designed to check the data for completeness and consistency. This tool will guide the process of modifying a data set so that it is suitable for submission.
* Errors and SummaryErrors worksheets. The ‘Check Data’ command will populate these worksheets with error messages to identify data completeness and consistency issues that may need to be resolved.
* PR\_Calcs, RPD\_Calcs and QA\_Counts worksheets. The ‘Check Data’ command will populate the QA\_Counts worksheet that is used for the QAQC Report in the Master template. The ‘Calculate RPD Values’ and ‘Calculate Recovery Values’ commands will populate the RPD\_Calcs and PR\_Calcs worksheets, respectively (see Section 6.2 for more information on these reports).
* Example worksheet. Includes an example data set that is formatted correctly for data submission.
* LookUp List worksheets. Includes a list of codes/entries that are allowed for specific fields. The table in the ‘Instructions’ worksheet describes which LookUp Lists apply to each field in the main data entry worksheet.

# Process for Populating the Templates

The following is the general process that should be followed for populating the templates and ensuring that they are ready for web upload.

1. Download/use a fresh set of Templates for each individual Project you are planning to submit.
2. Place all of the individual Template files in a single project-related folder (Master, Station, CoreGrab, SedChemistry, at a minimum; optionally there may be Bioassay, TissueChemistry and ElutriateChemistry files). Note: the tools in the files will not work if the files are saved in a “.zip” folder.
3. Change each Template name to identify the Project you are working on. The templates are designed to store data from only one sampling and analysis event (to match the delivery of one sampling and analysis report, or SAR). It is also recommended that the template file names include a date, to ensure that potential future revisions are not confused with earlier uploaded files (e.g., SedChemistry\_V2\_BAESystems\_02112011.xls).
4. When re-naming the templates, ensure that the following key phrases are imbedded in each file name: “Stat”, “Core”, “SedC”, “BioA”, “Tiss” and “Elut”. These key phrases are case independent so “stat”, STAT” or “Stat” are all acceptable. Other files can be stored in this folder, except there can be no more than ONE Excel file with the key phrase.
5. Request the laboratory EDD in the required format[[1]](#footnote-1), or re-format and insert the chemistry data into the SedChemistry, ElutriateChemistry and/or TissueChemistry Templates:
   * Adjust columns and column headers to match the template.
   * Populate required fields and/or cells that do not have entries.
   * For columns that have LookUp Lists, cross-reference current entries with the acceptable codes/entries listed in the LookUp worksheets.
   * Adjust the cell formats based on the information in the ‘Instructions’ worksheet (‘Field Type’ column); look for green error triangles in cells and cells that have different justification than the others in the same column.
   * Execute the ‘Check Data’ command in the ‘Checker’ worksheet and resolve any errors found.
6. Insert the toxicity test results into the Bioassay Template following the same process described above.
7. Ensure that the ‘Check Data’ command has been executed (see Section 4.0 for more information) in the Chemistry and Bioassay templates and that these templates are ready for upload to the web (see Section 4.3).
8. Populate the Station Template with Dredging Unit and location information.
9. Populate the CoreGrab Template with field and sample information.
10. Ensure that all the Template files have been saved and are **closed**.
11. Open the Master Template and execute the ‘Check Data’ command. Resolve any errors listed in the ‘Errors’ worksheet in the Master Template. Note: Executing the ‘Check Data’ command in the Master Template will open the other Template files as part of the process. After each iteration of executing the ‘Check Data’ command in the Master Template, save and close all the files and click the ‘Reset’ command in the Master Template.
12. After resolving errors or making any modifications, re-execute the ‘Check Data’ command in the Master Template (this is necessary to ensure that the status of the templates is current).
13. Ensure that the Template files are ready for upload to the web by referring to the ‘Readiness Summary’ worksheet in the Master Template (Section 6.1).
14. Review the ‘QAQC Report’ worksheet in the Master Template to identify any data quality issues that could be resolved before submitting the data to DMMO for review (see Section 6.2 for more information on the QAQC Report).
15. Submit the data over the website (Section 7.0).

**IMPORTANT:**

* Do not rename or change the order of the worksheets in the template files
* Do not rename or change the order of the column names in the template files

# ‘Check Data’ Command

Each of the Template laboratory data files includes a ‘Checker’ worksheet that includes a ‘Check Data’ command. Note that the Station and Core/Grab Templates do not. These two templates are reviewed when the ‘Check Data’ command is executed in the Master Template. Clicking this button initiates a series of checks that evaluate the data for consistency, formatting, and completeness.

## Process

Click the ‘Check Data’ button in the ‘Checker’ worksheet. The ‘Check Data’ command was designed to be used as an iterative process, so the tool will stop after certain intervals. It is recommended that the User stop, fix errors and then proceed (the checks are phased, so fixing basic checks will make the rest of the process easier).

For example, the ‘Check Data’ command will return a message such as ‘There were errors in checking the LookUp Lists. Do you wish to continue?’. It is suggested that the User select ‘No’. The code will stop and the User should review the error messages listed in the ‘Errors’ and ‘SummaryErrors’ worksheets and resolve them. Subsequently, the ‘Check Data’ command should be re-executed. The checking process will start over. The ‘Errors’ and ‘SummaryErrors’ worksheets are updated to reflect only the most recent information. Repeat this process until the ‘Check Data’ command runs all the way to the end and returns the message “No Errors, done”.

## Critical vs. Flag Errors

In the ‘Errors’ and ‘Summary Errors’ worksheets, the ‘Check Data’ command lists the errors encountered in the data. In these worksheets there is a ‘Type’ column that indicates if an error is “Critical” or a “Flag”.

All critical errors must be resolved or the data set will not be accepted for web upload.

Flag errors indicate potential problems in the data and should be resolved. However, the website will accept the data set if there are remaining ‘Flag’ errors. Often the flag errors can be addressed by a Comment that explains the deviation from the expected standard.

## 4.3 Is an Individual Template File Ready for Web Upload?

To determine if an individual Template file is ready for web upload, refer to cell A2 of the ‘Errors’ worksheet:

* “Passed, no Errors” means the template is ready for web upload.
* “There are 0 Flag Errors and 1 Critical Errors” means that the template is ***not*** ready for web upload (critical errors must be resolved).
* “There are 15 Flag Errors and 0 Critical Errors” means that the template is ready for web upload (‘Flag’ errors do not have to be resolved prior to web upload). Note that any remaining errors are listed in the QAQC Report to alert the DMMO reviewers of potential issues remaining in the data set.

## 4.4 Filling Default Values

One of the first things the ‘Check Data’ command does is ask the User “Do you want to fill Defaults?”. This is referring to the Default entries listed in the ‘Overview’ table in the ‘Instructions’ worksheet at the beginning of each template for fields that are not required. If the User answers ‘No’ then the Default entries will ***not*** be auto-filled and error messages will be listed to alert the User of any blank cells. If the User answers ‘Yes’ then Default entries will be automatically entered into any blank cells. .

It is recommended that the User answer ‘No’ the first time the ‘Check Data’ command is executed, so any blank cells can be identified and potentially resolved by entering a ‘real’ value. Subsequently, the User should answer ‘Yes’ to this question.

## 4.5 Reset Button

This command executes the initialization procedures for the Template files. Click this button if there is a major failure in the analysis process, or there are anomalous check results. A major failure occurs when the VBA code crashes - a pop-up window will appear asking the user if they want to ‘debug.’ The user must then identify and fix the problem and click the ‘Reset’ button. Errors and anomalies in the data that cause the code to crash are not always easy to identify.

## 4.6 PR\_Calcs, RPD\_Calcs, QA\_Counts Worksheets

In the Chemistry Template files, the ‘Checker’ worksheet includes commands for ‘Calculate RPD Values’ and ‘Calculate Recovery Values’. After all critical errors have been resolved, the User should execute these commands which will calculate Relative Percent Difference and Percent Recovery values and enter the results in the RPD\_Calcs and PR\_Calcs worksheets, respectively. The ‘QA\_Counts’ worksheet includes a summary of the number of QAQC results obtained; it is generated automatically. Subsequently, these results will be used by the Master Template to generate the QA/QC Report.

Percent Recovery is calculated as:

(Result/Expected Value) \* 100

Except for matrix spike samples, where Percent Recovery is calculated as:

(Spiked Sample Result – Sample Result)/Expected Result) \* 100

Relative Percent Difference is calculated:

%\text{ Diff} = \left|\frac{x_1-x_2}{(x_1+x_2)/2}\right|\times100 

# 5.0 LookUp Lists

The purpose of LookUp Lists is to standardize the entries in a particular field so that the data can be more consistently filtered, sorted, and analyzed.

The LookUp lists include special codes if information for required fields is not available (e.g., ‘none’ or ‘not reported’). The Checker will only accept these values as correct entries.

The ‘Overview of Field Characteristics and Instructions’ table in the ‘Instructions’ worksheet describes which LookUp Lists apply to each field in the main data entry worksheet. These lists include a list of codes/entries that are allowed for specific fields. For example, in the Chemistry Templates, the SampleTypeCode is a field with a LookUp List (SampleTypeLookUp). Only codes listed in this table are allowed in the SampleTypeCode field in the main data entry worksheet.

Users are allowed to enter new codes to the LookUp lists. Every effort should be made to find existing Lookup codes before new codes are added, to assist in maintaining consistency in the database. Use the FIND and FILTER tools in Excel to find existing codes or synonyms. If it is necessary to add a new code, it is important to add a description in the adjacent column.

## 5.1 AnalyteLookUp and ChemSyn Lists

Chemical names often have many synonyms and/or reporting formats (e.g., Mercury, Hg, Total Mercury; Lindane, gamma-BHC, HCH-gamma). Therefore, there is a special system embedded in the chemistry Templates for checking and updating the AnalyteName field in the main data entry worksheet. All entries in the AnalyteName field are checked against the ‘ChemSyn’ LookUp table – if any synonyms are found they are automatically replaced with the AnalyteName specified in the AnalyteLookUp List.

Before adding a new AnalyteName code to the AnalyteLookUp List, search for synonyms for the reported AnalyteName in the AnalyteLookUp List by using the Find or Filter tools and searching for a root word. If a synonym is found, enter this in the ChemSyn

Worksheet (i.e., enter the reported AnalyteName in the ‘Lab Chem’ field, and the corresponding synonym from the AnalyteLookUp list in the ‘Template Chem’ field). If a new AnalyteName code is added, it is important to also enter a chemical group (e.g., metals, PAHs) into the ‘DMMOGroup’ column.

**IMPORTANT:**

* Codes may be added to the AnalyteLookUp list, but existing entries must not be modified.

## 5.2 QALookUp List

Quality Assurance or validator codes used to qualify analytical results are often laboratory and/or study specific and occur in combinations. As such, this information is difficult to standardize and a special system is used for the QALookUp List. For each study submitted, the User enters all of the study-specific QA Codes and a description of the codes into the QALookUp worksheet (i.e., this is not a LookUp List, *per se*, but a place to describe the qualifier codes used for the study). The only exceptions are that “U” should be used for values reported as below detection and ‘R’ should be used for rejected results.

# 6.0 Master Template

The Master Template connects all other template files. The ‘Check Data’ command executes a series of overall checks to ensure that the data set, as a whole, is reported correctly, for example:

* Checks file names;
* Checks whether StationCodes and SampleIDs are consistent between files;
* Checks column headings and column order;
* Checks that worksheets are present and correctly named.

Note: Executing the ‘Check Data’ command in the Master Template will open the other Template files as part of the process. If any of the Template files are already open, the User will be alerted that they need to either save and close the files or any changes made to these files will be discarded.

**IMPORTANT:**

* After resolving errors or making any modifications, it is necessary to re-run the ‘Check Data’ command in the Master Template (this is necessary to ensure that the Readiness Summary and QAQC Report are updated to reflect the most recent changes in the templates).

In addition, the Master Template generates a ‘Readiness Summary’ and a ‘QAQC Report’ which are discussed in the following sections.

## 6.1 Readiness Summary

When the Master Template ‘Check Data’ command is executed, a ‘Summary of Data Set Readiness for Website Upload’ table is automatically generated in the ‘Readiness Summary’ worksheet. The table summarizes the status of the individual template files and assesses whether the data set is ready for web upload. If the answer to “Data Set Ready for Web Upload” is “NO” this indicates that critical errors remain in one or more of the individual template files and the data set will not be accepted for upload by the website.

In addition, if the ‘Check Data’ command has not been executed in the Master Template, the

data set will not be accepted for upload by the website.

## 6.2 Quality Assurance/Quality Control (QA/QC) Report

When the ‘Check Data’ command is executed in the Master Template a summary of the data set and the QA/QC results are automatically generated in the QA/QC\_Report worksheet.

The QA/QC Report will not be generated until all of the critical errors in the individual template files have been resolved and the data set is ready for website upload.

Before the QA/QC Report is generated, the User will be prompted to enter information that will associate the data submission to a DMMO Project with associated documentation. You may or may not have a Project ID (unique identifier for the applicant) or an Event ID (unique identifier for the dredging event). If you have it, you can enter it into the Master template.

Generation of the QA/QC Report is the last step before upload. It is provided as summary information for the DMMO to review. The QA/QC Report includes three parts:

* + 1. Part 1 includes summary tables on the data set as a whole, and on the analytical results.
    2. Part 2 includes summary tables on biological testing results.
    3. Part 3 includes summary tables on analytical QA/QC data. These summary tables address typical QA/QC questions (e.g., were holding times exceeded?; were percent recovery results for spiked surrogate chemicals within control limits?). Many on the questions regarding the QA/QC data are based on default quality control limits and holding times provided in the worksheet named ‘QAQC\_LookUp’. As acceptance limits are commonly laboratory-specific, data providers can edit the QAQC\_LookUp worksheet directly.

Note that the scope of the QA/QC Report is **not** to assess the quality of data or compare the results to project-specific Data Quality Objectives (DQOs) and/or quality control limits.

# 7.0 Uploading to the DMMO Website

Once you have completed all the checks and the QA/QC report has been prepared, you are ready to upload the data to the DMMO website ([www.dmmosfbay.org/](http://www.dmmosfbay.org/)). You must have a password for the project (applicant) to access and submit data. Contact the DMMO Administrator for this password, or a DMMO representative.

Once you are on the DMMO website, click on Project and Data Submittal from the left-hand menu. If not already logged onto the site, enter your User Name and Password. Select the appropriate project from the project drop-down list. If your project is not listed, then you must contact the DMMO Administrator to initiate a Project.

From the Project page, select Submittals from the menu on the left-hand side of the site, and then go to Data submittals. Select the applicable dredging Event from the drop-down list; the Event should have been created upon upload of previous documents (e.g., SAP, SAR). If the Event is not in the drop-down list, it must be generated by you or a member of the DMMO. Then, click on the “Upload” button (green plus sign) to submit a new dataset, and follow the instructions given to you on the screen.

A data submission **must** be in the DMMO Sediment Characterization Template format and **must** include at least the following four templates - Master, Station, CoreGrab, SedChemistry. The remaining three templates (ElutriateChemistry, TissueChemistry and Bioassay) are optional.

After template files have been uploaded they cannot be edited. If the data set has been updated, the entire Template must be re-uploaded (e.g., you cannot upload just the bioassay template). When uploading a revised data set, rename the template files to indicate this is a revision (add a date or RevX suffix).

One of the questions you will be asked is if you want the data to be available for a DMMO meeting. This will tag the dataset for review by the DMMO, and be stored in the on-line DMMO Meeting Room for inclusion into the next agenda. See the DMMO website for further information.

1. Some laboratories have the capability of exporting their data to match a requested format. [↑](#footnote-ref-1)