

## Step by Step Directions for Analyzing a Dataset Using the SQO Calculation Tool

### October 2019

Note: Text in **Bold** indicates worksheet names; text in *italics* indicates column/row headings.

#### General

1. Calculate or otherwise obtain the RIVPACS benthic index O/E value.
2. Check in the source data file that all the needed data is present: station number, benthic habitat designation, chemistry data, toxicity data, benthic taxa, and abundance data.
3. Open the Tool.
4. Delete any data from the **DataInput** and **BenthicInput** tabs that is in the file already.

#### Data Entry-Station information

1. Click on the **DataInput** worksheet tab.
2. Enter the *station id*. The output data will not appear unless something is entered into this cell.
3. Enter the *benthic assemblage* code (C for southern California Bays and Estuaries; D for San Francisco Bay Polyhaline). The benthic output data will not appear unless one of these is entered. The benthic index data will not be correct if the wrong code is entered.

#### Data Entry-Chemistry data

1. In the data source file or another Excel spreadsheet (not the Tool) sort the chemistry data into the same order that it appears on the **DataInput** tab in the Tool. The easiest way to do this is by using the sorting function provided.
2. To sort the data, first make sure that each chemical is spelled exactly as it appears in the Tool.
3. Drag the sorting function formula (found in first cell below *Sorter* column) down in its column so that it appears in every row for which there is chemistry data.
4. Next arrange the data using Excel's sorting function. Highlight all the data, including the header row. Open up a "custom sort" on the "Data" menu and check the box "My data has headers". Sort first by *StationID* (ascending), then by *Sorter* (ascending). In the case of the practice data, this is columns A and J. Click on Sort. The data should now be grouped by station and sorted in the order needed for the tool within each station. Any chemicals not needed for use in the Tool will be grouped at the bottom of the data within each station.
5. Check that the units are correct for each chemical. All metals should be mg/kg; all organic chemicals should be µg/kg. Correct as necessary.
6. Copy and paste data from the source file to the **DataInput** sheet of the Tool.

#### Data Entry-Toxicity data

1. It is usually best and easiest to enter the data manually onto the **DataInput** sheet rather than copy and paste.
2. Select the toxicity test method from the drop down list.

3. Enter the raw control response data in percentage units for survival and development tests and mg/day for the growth test.
4. Enter the raw station response data in percentage units for survival and development tests and mg/day for the growth test.
5. Select Yes or No from the drop down list for whether the station response was statistically significantly different from the control response.
6. Repeat for remaining toxicity tests for each station.

#### Data Entry-RIVPACS benthic index value

1. Enter the *RIVPACS* O/E value calculated from outside the tool on the **DataInput** sheet.

#### Data Entry-Benthic data

1. Open the **BenthicInput** sheet of the Tool.
2. In the data source file, sort the taxa and abundance data alphabetically within each station. Do not sort inside the tool file. Highlight all of the data. Open up a “custom sort” on the “Data” menu and check the box “My data has headers”. Sort first by *StationID*, then by the *SpeciesName* column. Click on Sort. The data should now be grouped by station and sorted in alphabetical order within each station.
3. Copy the first station’s benthic data into the Tool starting at Row 3. The second station should be entered starting at Row 130.
4. Check Column A (*Spell Check*) for spelling errors. If there are none, repeat with data for the next station.
5. If there are spelling errors, compare the spelling to the list on the **BenthicLookup** worksheet. If the spelling errors are minor and can be corrected without causing the order of the taxa to change (alphabetical), then do it directly in the tool. If any errors cause a need to reorder, or the addition or removal of lines of data, then make the changes in the source file or another Excel sheet outside of the Tool. Delete the incorrect data from the Tool and recopy and paste the corrected data. Any insertion or deletion of cells in this portion of the sheet will destroy important links between worksheets that cannot be repaired. If this happens, close the file without saving and reopen to start over.
6. Check that all spelling errors have been corrected. If so, repeat the process with data for the next station.
7. When all the benthic data is entered, the data input process is complete.

#### SQO Results

1. Open the **DataOutput** sheet. Check that there is output data for all entries that were made. If there are error values in cells, check that the instructions above have been followed.
2. If the data is to be saved. Save to a new file name.

### Spatial Analysis

1. Sum the area weights for all the stations within the area of interest.
2. Identify which stations do not meet the SQO for aquatic life (Possibly Impacted or Likely Impacted; if any station within the area of interest is in the Clearly Impacted category then spatial analysis is not necessary).
3. Sum the area weights for the stations that do not meet the SQO.
4. Divide the area of stations not meeting the SQO by the total area and multiply by 100.  
This value is the percentage of area not meeting the SQO.