STORET Interface Module (SIM)

Version 2.0

User Guide and Reference Manual

US Environmental Protection Agency
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Introducing SIM v2.0

The STORET Interface Module (SIM) Version 2.0 is a software program that helps users load data into STORET Version 2.0. STORET is an EPA-maintained database of ambient environmental data. STORET is a distributed system where individual agencies manage their own data at a local level and can use a national data warehouse to share it with others. Both STORET and SIM operate in an Oracle environment and can be implemented on a personal desktop or on a client/server basis.

To use SIM, you must perform the following tasks:

- Organize your data into delimited text files
- Establish SIM Import Configurations that describe the format of your text files
- Import your text files into SIM and migrate the data that passes validation into STORET

This User Guide and Reference Manual will:

- Provide guidance to you as you create your delimited text files
- Teach you how to create a SIM Import Configuration
- Walk you through the process of using SIM to load data into STORET

The successful use of SIM is dependant on your clear understanding of STORET. You should establish all relevant metadata defaults in STORET before you begin to use SIM.

Using this Tutorial

This tutorial is designed to provide you with "hands on" instruction for using SIM. Each lesson focuses on different pieces of functionality included in SIM. There are text descriptions of the functions and associated concepts, and then there are step-by-step instructions for using the tools. The step-by-step instructions for you to follow on your PC are called out into text boxes, separate from the text.

1.This is an example of a text box that contains instructions for using the Toolkit with the sample data.

Formatting Your Data

Before using SIM, you must organize your data into delimited text files. Most organizations use common software products such as Excel, Access, or Lotus 1-2-3 to create data tables, which can be saved and exported as delimited text files. Larger organizations may produce these files as exports from existing Data Management or Laboratory Information Management Systems (LIMS). SIM accepts six different file types:

1. **Project Descriptions**

   Initiatives or reasons why data was collected.

2. **Station Descriptions**

   Points or areas where field measurements are made or samples are collected.

3. **Additional Locations**

   Points that define boundaries, sample locations, or observation sites within a station.

4. **Wells**

   Wells that are constructed to gather samples or field measurements.

5. **Field Measurements and Non-biological Samples**

   Results of field measurements or the analysis of non-biological samples.

6. **Biological Samples**

   Results associated with biological samples.

The data in the six file types complement each other and the order in which you migrate data files to STORET is important. Station Descriptions should always be loaded before Additional Locations and Wells. Project Descriptions and all the station information files should always be loaded before your result files. This insures that the key data elements will be registered in STORET and are ready for results to be associated with them.

The data elements or fields in each file type are organized in a tabular format where the column delimiter is either a Tab ( ), Pipe (|), Tilde (~), or Comma (,).[1] Additionally, a sub-delimiter (\) is available for columns that can accept multiple values.[2] The required and optional elements for each file type are described in Appendix A. Note that many of these data elements have a list of valid values that the user must select from. The order in which you place the data elements in your delimited text files is not important as SIM allows you to define that order before you import your file. ***Do <u>not</u> include a header row in the delimited text files that you create.***

[1] If any of these characters appear in your data, you should NOT use that character as a delimiter since there is no way for SIM to tell which is the delimiter and which is simply part of the data.
[2] Certain fields such as Project ID in the 'Field Measurements and Non-Biological Samples' can accept multiple values in a single column and row of the import file. See Appendix A for a list of columns that support loading multiple values.

There are several example text files in the C:\STORET\orasto2\SIM\SIM200_EXAMPLES directory that may help you as you organize your data.

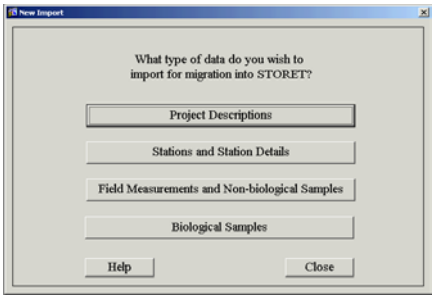
Tutorial I. Defining an Import Configuration

The following lesson will show you how to create a custom Import Configuration that will describe the format of your text files.

1. Begin by starting SIM.

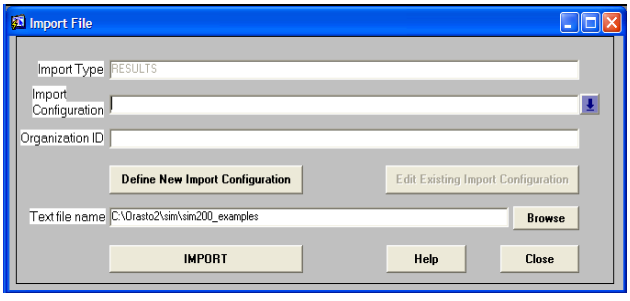
2. From this screen, you can either start a new import of data or access an existing import that you may have brought into SIM but have yet to migrate to the STORET database.

Click **New Import**.



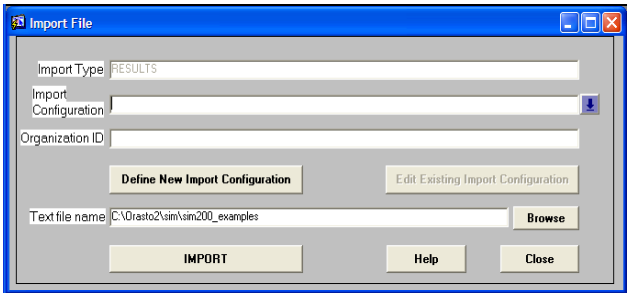
3. From this New Import menu, you select the type of file that you wish to import into SIM. If you choose Stations and Station Details, you will be prompted to select a secondary type.

Click **Field Measurements and Non-biological Samples.**



4. This menu allows you to specify the Import Configuration and the path to the text file that you want to import.

Click **Define New Import Configuration**.



5. From this SIM Import Configuration menu, you can:

a) Provide a name and description for the Import Configuration

b) Define the organization that this data will load into.

c) Indicate the delimiter that will be used in the text file.

d) Select the data elements that will be included in the text file.

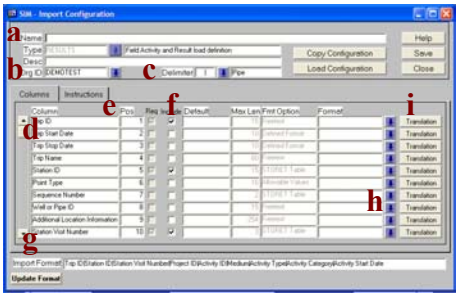
e) Define the position or order in which the data elements will appear in the file.

f) Establish default values for the data elements in the import file that are left null or blank.

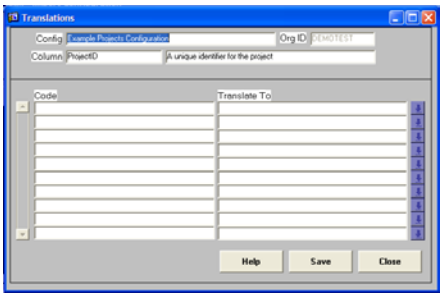
g) View the format that each row in the import file must adhere to if this configuration is used.

h) Establish how individual data elements will be additionally formatted (if appropriate).

i) Establish translation parameters that change values while a file is being imported.

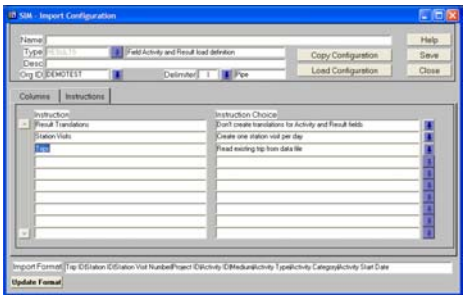


6. Click any **Translation**.



7. You can establish a translation by defining the "Code" that should be translated and the value that it should be "Translated To". Users can use the arrows at the end row of each data elements to translate to valid STORET values (if they exist).

Click **Close** and then the **Instructions** tab on the Import Configuration menu.



8. You can use this menu to establish general import instructions. Change an instruction by highlighting a row and clicking the relevant arrow. If you choose to "create translations…", the software will populate the "Code" field on the Translations menu with any values that do not match required valid values. You must then fill in the "Translate To" field and re-import the file for the changes to take place. Other instructions allow you to auto-generate Trip IDs and Visit Numbers.

Summary

The purpose of an import configuration is to set up a pattern to translate your data file into STORET by using SIM. SIM import configurations can help you set up the order of fields, format data, and perform simple data translations.
In Tutorial I. Defining an Import Configuration, you learned how to:

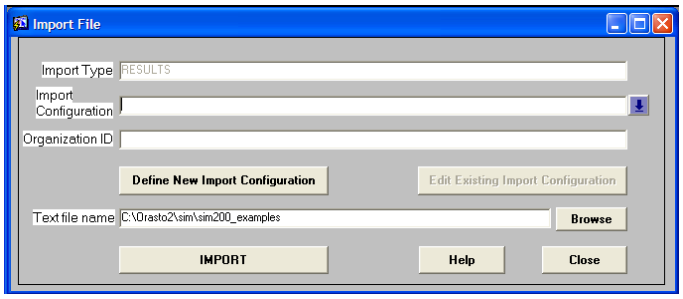
- Define a new import configuration
- Save a new import configuration
- Use translations to change values while a file is being imported.

Tutorial II. Using SIM to Migrate Data to STORET

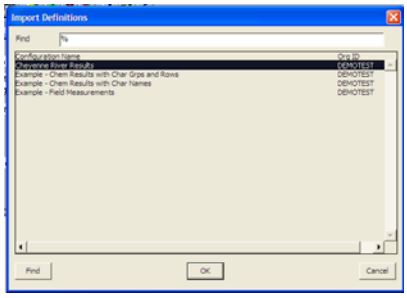
This tutorial illustrates the following:

- The Import of a text file into SIM so that it can be validated against the STORET database.
- The Migration of data that passes validation from the temporary SIM tables into STORET.

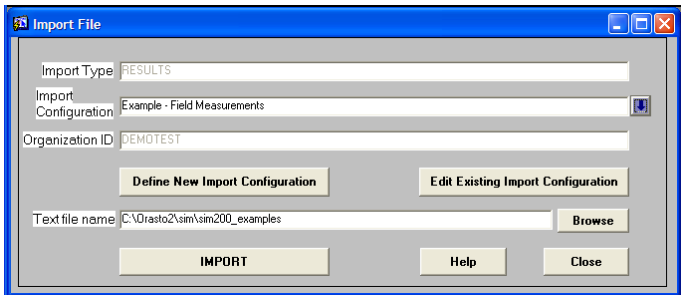
1. Follow Steps 1-3 in Tutorial 1 to reach the Import File menu for Field Measurements and Non-biological Samples.



2. You must first select an existing Import Configuration. Click the down-turned arrow at the end of the line labeled "Import Configuration".

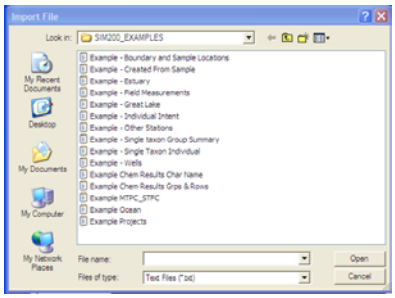


3. This screen provides a list of Import Configurations that have been created in SIM. Highlight "Example-Field Measurements" and click **OK**.



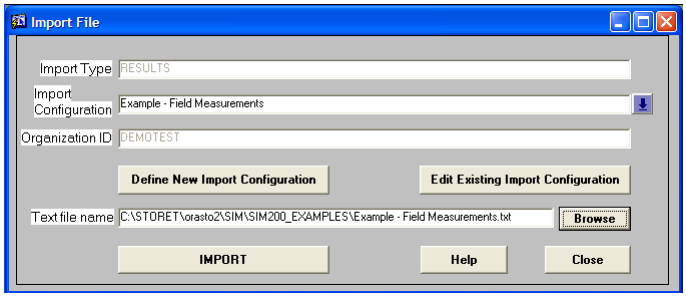
4. The name of the Import Configuration and the Organization to which the data will be associated should now appear on the Import File menu. You can review the configuration details by clicking the button labeled "Edit Existing Import Configuration".

You must now define the path to the file that you want to import. Click **Browse**.



5. This menu allows you to navigate your drives and directories to locate the appropriate file.

Select "C:\STORET\orasto2\SIM\SIM200_EXAMPLES\Example - Field Measurements" and click **Open**. Note – Based on your original installation parameters, the example files may be located on a different path on your system.



6. The name of the text file should now appear on the Import File menu.

Now click **IMPORT** and then **OK** when the import is complete.

7. SIM checked the file for errors that would prevent the data from being loaded to STORET and it has imported the data into a series of temporary tables.

From this Import Status menu, you can:

a) Review the number of records that that SIM imported, the number of those records that had errors, and the number of those records that are ready to be migrated to STORET.

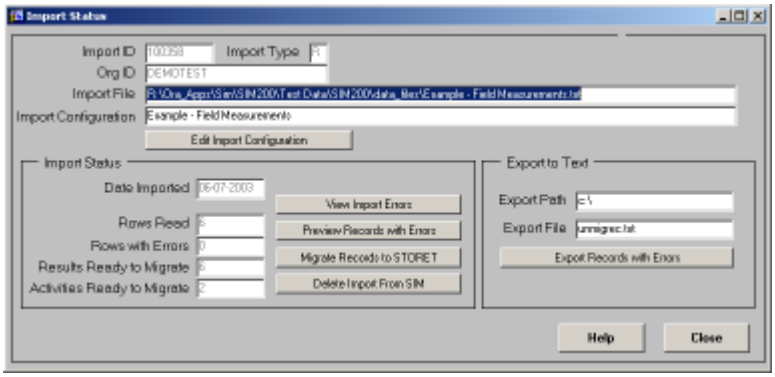
b) View import errors for the entire file and/or preview records with errors on a record-by-record basis.

c) Delete an import from SIM's temporary tables. All data remains in the SIM temporary tables until the import is deleted. You should delete your imports once you are satisfied that your data has been accurately loaded to STORET.

d) Export records with errors after an *Export Path* and an *Export File Name* have been designated.

e) Reference and/or edit the Import Configuration that was used for this import.

f) Click **Migrate Records to STORET** and move the data you imported from the temporary SIM tables to STORET's permanent tables.



Summary

In Tutorial II. Using SIM to Migrate Data to STORET, you learned how to:

- Import files to SIM using a pre-defined import configuration and text file.
- Migrate data into STORET.

Tutorial III. Advanced Functions

This tutorial illustrates the following:

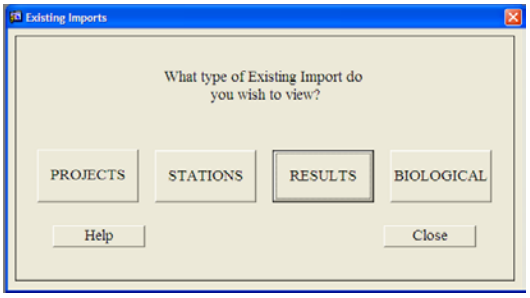
- Viewing the status of import files brought into SIM but not migrated or purged
- Removing (undo) a migration of data from STORET
- Generating an error report to print or save
- Reordering field positions in an Import Configuration
- Saving and loading Import Configurations
- Viewing data that has been imported to SIM

1. View the status of an import that was brought into SIM but was not migrated or purged

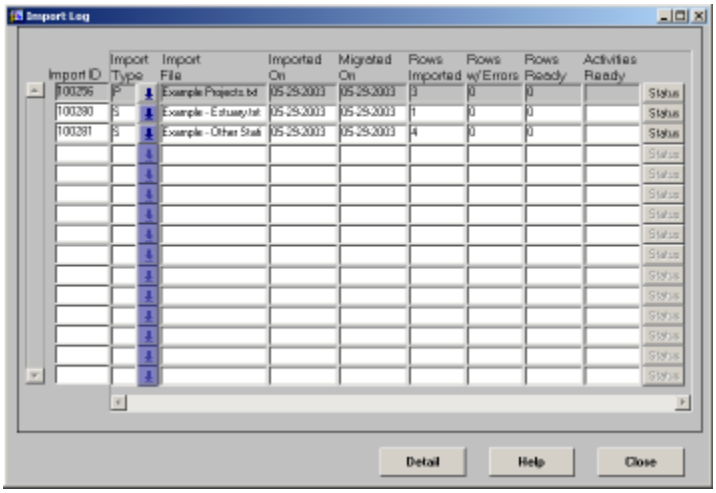
There may be cases where you have previously imported files to SIM, but did not migrate them to STORET. This may occur because you had to stop your session, you wanted to review a file, or for another reason. Other times, you may not recall whether you migrated a particular file to STORET, or purged it from STORET. This tutorial helps you review your imports to determine their status.

From the SIM Welcome menu, click **Existing Imports**.

There are four different categories of imports that you can access: Projects, Stations, Results, and Biological. To review the status of the import that was performed in Tutorial II, click **RESULTS**.



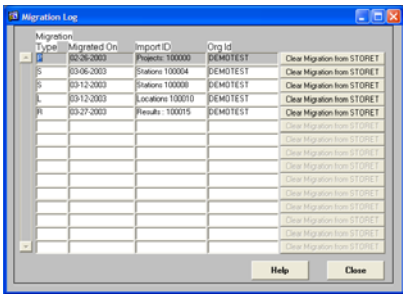
Click on the row that represents the relevant import and click **Status** at the end of the line. You will return to the Import Status menu that you saw in Step 4 of Tutorial II.



2. Remove or undo a migration of data from STORET

Select "Advanced" then "Migration Log" from the SIM windows menu.

Highlight the migration that you would like to remove from STORET and click the appropriate **Clear Migration from STORET** button.

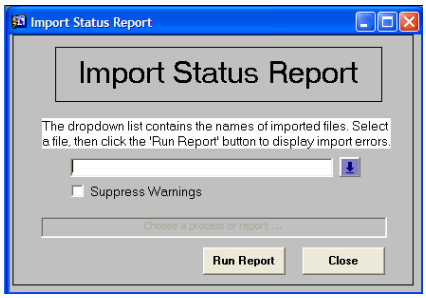


Note that SIM cannot undo a migration once the import has been deleted from SIM. Additionally, you cannot undo a migration once any changes or additions have been made to the migrated data through the STORET interface.

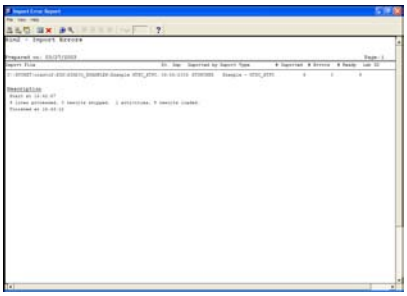
3. Generate an error report file to print or save

Select "Advanced" then "Import Error Report" from the SIM windows menu.

Use the down-turned arrow to select the file that was imported. Next, click **Run Report**.

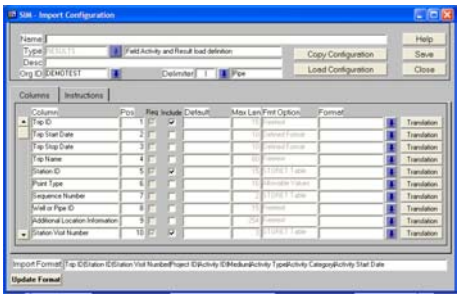


A report of errors that occurred during import is displayed. From this screen, you can print the report or save it to a file.



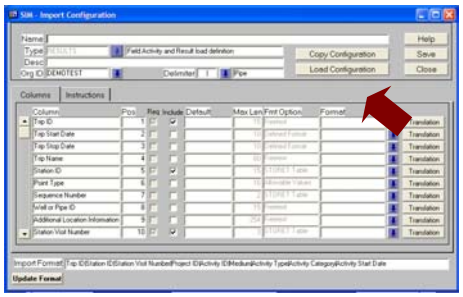
4. Reordering field positions in an Import Configuration

Field or column positions can be reordered from the Import Configuration menu. Suppose Start Date needs to be in the second position instead of the third. You can change the position number from 3 to a number between 1 and 2 (such as 1.5) and click **Save** to reorder the columns.



5. Saving and loading Import Configurations

From the Import Configuration menu: you can save import configurations to a external file and load copied configurations using the **Copy Configurations** and **Load Configurations** buttons.



6. Viewing Data that has been imported to SIM

View data that is in SIM using the View…List capability that can be found under the Projects, Stations, or Results and Activities menus. Double-click an individual record to recall and view the data. Each record will have a status of:
Approved for migration to STORET
Not approved for migration to STORET
Exported (migrated) from SIM to STORET
Uploaded if SIM copied data from STORET itself

System Configuration Definitions

Under the Advanced/System Config menu option in SIM v2.0, there are several user-defined settings used to configure your system. The definitions for each of the configuration settings are listed below.

BUILD_NUMBER
The Build Number configuration item displays the four digit Gold Systems release number for this installation for SIM. This number is displayed in the description column. The value column is not used.

DFLT_ORG
The Default Organization configuration item allows the user to identify a STORET organization that will default throughout the SIM application when the user is prompted to enter an organization. This will not prohibit the user from selecting another valid organization if desired.

IMPORT_PATH
The Import Path configuration item allows the user to set a path to a directory where text files are located for import into SIM. When the user clicks the Browse button in the Import File form, the user will automatically be directed to the directory named in the Import Path configuration item value. If the ALLOW_LONG_LINES configuration item is set to "Yes", the import path must be entered from the server's perspective and the browse button will be disabled.

DFLT_EXPORT_PATH
The Default Export Path configuration item allows the user to set a path to a directory where files will be created if errors were found in the import. In the Import Status window, the user can view/edit the export path and click the Export Records with Errors button to create the export file.

DFLT_EXPORT_FILE
The Default Export File configuration item allows the user to define the default name of a file, which will be created if errors were found in the import. In the Import Status window, the user can view/edit the export filename and click the Export Records with Errors button to create the export file.

HELP_PATH
The Help Path configuration item allows the user to point to a directory that contains the files needed to access the general help window. The chosen directory path must contain the files sim2_gen.gid and sim2_gen.hlp. In a standard SIM v2.0 installation, the files will be contained in the directory where the software was installed.

SINGLE_USER_ENVIRONMENT
The Single User Environment configuration item allows the user to set a value for either a single or multiple user environments. If only one user will be accessing the SIM and STORET databases at any given time set this to "YES". If the value is set to "Yes", the speed of the migration will increase.

COPY_PATH
The Copy Path configuration item allows the user to set a default path to a directory where the copy/load utility will read/write the import configuration files. In the Copy and Load Configuration forms, the user can view/edit the default copy path and file name.

ALLOW_LONG_LINES
The Allow Long Lines configuration item allows the user to configure the system to read ASCII files with very long lines. When the configuration value is set to "Yes", the user can import files with lines longer than 1000 characters. When the system is configured to allow long lines, the import file is parsed by the database rather than the client machine. As a result, the browse button is disabled and you must enter the full path and file name as it could be found from the database server. DO NOT alter this value without consulting USER MANUAL.

DIRLIST_PATH
The Directory Path configuration item allows the user to choose the FTP Directory Path. This configuration item value is not used in the standard SIM v2.0 installation.

DIRLIST_NAME
The Directory List Name configuration item allows the user to choose the FTP Directory List Name. This configuration item value is not used in the standard SIM v2.0 installation.

DO_PRE_CHECK
The Do Pre-Check configuration item allows the user to ascertain whether data files contain errors before they are stored in the SIM database. This configuration item value is not used in the standard SIM v2.0 installation.

Appendix A.
Listing of Available STORET Data Elements for Each File Type

1. Project Descriptions

Data Element	Required	Allowed Values
Project ID	Yes	
Name	Yes	
Start Date	Yes	
Duration	Yes	
Purpose	Yes	
Contact		

2. Station Descriptions

Data Element	Required	Allowed Values
Station ID	Yes	
Station Name	Yes	
Primary Type	Yes	Yes
Secondary Type	Yes	Yes
Establishment Date		
Point Name		
Water Depth		
Water Depth Units	Conditional	Yes
Station Description		
EPA Key Identifier		
Latitude	Yes	
Latitude Direction	Defaults to “N”	Yes
Longitude	Yes	
Longitude Direction	Defaults to “W”	Yes
Lat/Long Measurement Date		
Geopositioning Datum	Yes	Yes
Geopositioning Method	Yes	Yes
Scale	Conditional	
State	Yes	
County	Yes	
HUC		
Ecoregion Name		
NRCS Watershed ID		
Influence Area		
Travel Directions		
ZID Relation		Yes
Native American Land Name		
Native American Land State		
Elevation		
Elevation Units	Conditional	Yes
Elevation Method	Conditional	
Elevation Datum	Conditional	
Elevation Measurement Date		
Ocean Name	Conditional	Yes
Shore Relation	Conditional	Yes
Additional Ocean Name		
Ocean Station Dist to Shore		
Ocean Station Dist to Shore Units	Conditional	Yes
Ocean Station Ref Point		
Ocean Station Bottom Topography		
Primary Estuary	Conditional	
Secondary Estuary		
Estuary State	Conditional	Yes
Other Estuary		
Additional Estuary Name		
Estuary Distance to Shore		
Estuary Dist to Shore Units	Conditional	Yes
Estuary Reference Point		

Data Element	Required	Allowed Values
Estuary State	Conditional	Yes
Great Lake	Conditional	Yes
Additional Great Lake Name		
Great Lake Dist to Shore		
Great Lake Dist to Shore Units	Conditional	Yes
Great Lake Reference Point		

3. Additional Locations

Data Element	Required	Allowed Values
StationID	Yes	Must exist in STORET
Point Type	Yes	Yes
Point Name		
Sequence Number	Yes	
Latitude	Yes	
Latitude Direction	Defaults to "N"	Yes
Longitude	Yes	
Longitude Direction	Defaults to "W"	Yes
Lat/Long Measurement Date		
Geopositioning Datum	Yes	Yes
Geopositioning Method	Yes	Yes
Elevation		
Elevation Units	Conditional	
Elevation Method	Conditional	Yes
Elevation Datum	Conditional	Yes
Elevation Measurement Date		
Scale	Conditional	

4. Wells

Data Element	Required	Allowed Values
StationID	Yes	Must Exist in STORET
Well Number	Yes	
Well Name	Yes	
Well Status	Yes	Yes
Well Use	Yes	Yes
Well Head Latitude		
Well Head Latitude Direction	Conditional. Defaults to "N"	Yes
Well Head Longitude		
Well Head Longitude Direction	Conditional. Defaults to "N"	Yes
Well Head Geopositioning Datum	Conditional	Yes
Well Head Geopositioning Method	Conditional	Yes
Well Head Scale	Conditional	
Well Head Measurement Date		
Well Head Elevation		
Well Head Elevation Units	Conditional	Yes
Well Head Elevation Method	Conditional	Yes
Well Head Elevation Datum	Conditional	Yes
Elevation Measurement Date		

5. Field Measurements and Non-biological Samples

Data Element	Required	Allowed Values	Multiple Allowed
Trip ID	Yes	Must Exist in STORET	
Trip Start Date			
Trip Stop Date			
Trip Name			
Station ID	Yes	Must Exist in STORET	
Point Type		Must Exist in STORET	
Sequence Number		Conditional	
Well or Pipe ID		Conditional	
Additional Location Information			
Station Visit Number	Yes		
Station Visit Arrival Date			
Visit Comments			
Project ID	Yes	Must Exist in STORET	Yes. Separate with "\"

Data Element	Required	Allowed Values	Multiple Allowed
Activity ID	Yes		
Medium	Yes	Yes	
Activity Type	Yes	Yes	
Activity Category	Conditional	Yes	
Trip QC Type	Conditional	Yes	
QC Indicator		Yes	
Sample Matrix		Yes	
Chain of Custody ID			
Replicate Number	Conditional		
Activity Start Date	Yes		
Activity Start Time			
Activity Start Time Zone	Conditional	Yes	
Activity End Date			
Activity End Time			
Activity End Time Zone	Conditional	Yes	
Total Sample Weight			
Total Sample Weight Units	Conditional	Yes	
Depth to Activity			
Depth to Activity Units	Conditional	Yes	
Relative Depth		Yes	
Depth Measured From			
Lower Depth			
Upper Depth			
Upper/Lower Depth Units	Conditional	Yes	
Depth Zone Type		Yes	
Thermocline		Yes	
Halocline		Yes	
Pycnocline		Yes	
Personnel		Must Exist in STORET	Yes. Separate with "\"
Activity Comments			
Sample Collection Procedure ID	Conditional	Must Exist in STORET	
Gear ID	Conditional	Yes	
Gear Configuration ID		Must Exist in STORET	
Gear Deployment Comments			
Sample Preservation, Transport & Storage ID		Must Exist in STORET	
Sample Transport and Storage Comments			
Field Set Name	Conditional		
Field Set ID	Conditional		
Detection Condition		Yes	
Characteristic Group ID	Conditional	Must Exist in STORET	
Characteristic Row ID	Conditional	Must Exist in STORET	
Characteristic Name	Conditional	Yes	
Result Value	Conditional	Yes*	
Result Value Units	Conditional	Yes	
Result Status	Defaults to "F"	Yes	
Sample Fraction	Conditional	Yes	
Statistic Type		Yes	
Value Type	Defaults to "Actual"	Yes	
Precision			
Confidence Level		Yes	
Bias			
CL Corrected for Bias		Yes	
Duration Basis		Yes	
Temperature Basis		Yes	
Weight basis		Yes	
Result Comment			
Laboratory ID		Must Exist in STORET	

Data Element	Required	Allowed Values	Multiple Allowed
Field/Lab Procedure	Conditional	Must Exist in STORET	
Field/Lab Procedure Source	Conditional	Yes	
Laboratory Certified		Yes	
Laboratory Batch ID			
Analysis Date			
Analysis Time			
Analysis Time Zone	Conditional	Yes	
Lab Sample Prep Procedure		Must Exist in STORET	
Lab Sample Prep Procedure Source	Conditional	Yes	
Quantification Low			
Quantification High			
Detection Limit			
Detection Limit Unit	Conditional	Yes	
Detection Limit Comment			

6. Biological Samples

Data Element	Required	Allowed Values	Multiple Allowed
Trip ID	Yes		
Trip Start Date			
Trip Stop Date			
Trip Name			
Station ID	Yes	Must Exist in STORET	
Point Type		Must Exist in STORET	
Sequence Number	Conditional		
Well or Pipe ID	Conditional		
Additional Location Information			
Station Visit Number	Yes		
Station Visit Arrival Date			
Visit Comments			
Project ID	Yes	Must Exist in STORET	Yes. Separate with "\"
Activity ID	Yes		
Medium	Yes	Biological	
Activity Type	Yes	Yes	
Activity Category	Yes	Yes	
QC Indicator		Yes	
Sample Matrix		Yes	
Chain of Custody ID			
Replicate Number	Conditional		
Intent	Yes	Yes	
Parent Sample ID	Conditional	Must Exist in STORET or Current Data File	
Community	Conditional	Yes	
Bio Part	Conditional	Yes	
Subject Taxon	Conditional	Yes	
Subject Taxon Species Number		Yes	
Total Sample Weight			
Total Sample Weight Units	Conditional	Yes	
Activity Start Date	Yes		
Activity Start Time			
Activity Start Time Zone	Conditional	Yes	
Activity End Date			
Activity End Time			
Activity End Time Zone	Conditional	Yes	
Depth to Activity			
Depth to Activity Units	Conditional	Yes	
Relative Depth		Yes	
Depth Measured From			
Lower Depth			
Upper Depth			
Upper/Lower Depth Units	Conditional	Yes	
Depth Zone Type		Yes	
Thermocline		Yes	
Halocline		Yes	
Pycnocline		Yes	
Personnel		Must Exist in STORET	Yes. Separate with "\"
Activity Comments			
Sample Collection Procedure ID	Conditional	Must Exist in STORET	
Gear ID	Conditional	Yes	
Gear Configuration ID		Must Exist in STORET	
Gear Deployment Comments			
Sample Preservation, Transport & Storage ID		Must Exist in STORET	
Sample Transport and Storage Comments			
Field Set ID	Conditional		

Data Element	Required	Allowed Values	Multiple Allowed
Field Set Name	Conditional		
Distance Fished			
Distance Fished Units	Conditional	Yes	
Fished Duration			
Fished Duration Units	Conditional	Yes	
Trap or Net Sampling Duration			
Trap or Net Sampling Duration Units	Conditional	Yes	
Relative Current Direction			
Relative Wind Direction			
Orientation to Current		Yes	
Trap or Net Comments			
Bio Results Group ID	Conditional		
Bio Results Type	Conditional	Yes	
Bio Results Group Description			
Bio Group Count Type	Conditional	Yes	
Total Number in Group	Conditional		
Frequency Analysis Type	Conditional	Yes	
Primary Class Descriptor	Conditional	Yes	
Secondary Class Descriptor		Yes	
Primary Class Value	Conditional		
Secondary Class Value			
Common Class Descriptor	Conditional	Yes	
Common Class Descriptor Units	Conditional	Yes	
Sex		Yes	
Life Stage		Yes	
Frequency Class Count	Conditional		
Lower Class Bound	Conditional		
Upper Class Bound	Conditional		
Number of Individuals in Group	Conditional		
Individual Number	Conditional		
Detection Condition		Yes	
Characteristic Group ID	Conditional	Must Exist in STORET	
Characteristic Row ID	Conditional	Must Exist in STORET	
Characteristic Name	Conditional	Yes	
Characteristic Species Number			
Result Value	Conditional	Yes*	
Result Value Units	Conditional	Yes	
Result Status	Defaults to "F"	Yes	
Sample Fraction	Conditional	Yes	
Statistic Type		Yes	
Value Type	Defaults to "Actual"	Yes	
Precision			
Confidence Level		Yes	
Bias			
CL Corrected for Bias		Yes	
Duration Basis		Yes	
Temperature Basis		Yes	
Weight basis		Yes	
Cell Form		Yes	
Cell Shape		Yes	
Habit		Yes	
Voltinism		Yes	
Taxon Pollution Tolerance			
Trophic Level			
Result Comment			
Laboratory ID		Must Exist in STORET	
Field/Lab Procedure	Conditional	Must Exist in STORET	

Data Element	Required	Allowed Values	Multiple Allowed
Field/Lab Procedure Source		Yes	
Laboratory Certified		Yes	
Laboratory Batch ID			
Analysis Date			
Analysis Time			
Analysis Time Zone	Conditional	Yes	
Lab Sample Prep Procedure		Must Exist in STORET	
Lab Sample Prep Procedure Source		Yes	
Quantification Low			
Quantification High			
Detection Limit			
Detection Limit Unit	Conditional	Yes	
Detection Limit Comment			

*Result values can be numbers or, in some cases they are chosen from lists of allowable values.