Sediment Quality Database User Guide

Version 1.0

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Los Angeles Basin Contaminated Sediments Task Force

Los Angeles Region
CONTAMINATED
SEDIMENTS
TASK FORCE

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Section 1
1 Introduction to the Los Angeles Contaminated Sediment Task Force's Sediment Quality Database

1.1   History of the Sediment Quality Database

The California Coastal Commission (CCC) and the Los Angeles Regional Water Quality Control Board (LARWQCB) pursuant to Senate Bill 673, Karnette, established the Los Angeles Basin Contaminated Sediments Task Force (CSTF) in 1997. The goal of this Task Force is to develop a long-term management plan for the dredging and disposal of contaminated sediments found in coastal waters adjacent to Los Angeles County. Several projects are being conducted by the CSTF in order to address data gaps related to the development of the management plan. One of the data gaps being addressed by the CSTF is the lack of an integrated database of sediment quality and storm water quality data for the Los Angeles area that can be used to support projects such as sediment quality guideline development. The CSTF Sediment Quality Database (SQD) was developed to help address the need for an information management system for dredging-related data.

The SQD integrates a large number of data sets, including sediment chemistry, sediment toxicity, and benthic infauna data for southern California. It is a relational database that enables varying combinations of the data to be retrieved for subsequent analysis by the user. The SQD will be used by the CSTF to support several different activities, such as analysis of the correspondence between sediment contamination and biological effects, and evaluation of spatial and temporal trends in sediment quality throughout the Los Angeles area.

1.2   Selection of Studies for the Database

The SQD contains two major types of studies:

- ❑ Dredged material characterization studies from projects in Los Angeles County;
- ❑ Monitoring and research studies conducted throughout southern California.

1.2.1   Dredged Material Characterization Studies

A list of the dredged material characterization studies now in the SQD is provided in Appendix A of this User Guide. Dredged material characterization studies were hand-entered as provided by the Port of Los Angeles (POLA), Port of Long Beach (POLB), and the Los Angeles District of the US Army Corps of Engineers (USACE). An extensive screening process was conducted for selection of appropriate studies for the SQD. A series of data entry and data quality review utilities were developed for this phase; these utilities are included as part of Version 1.0 in the case that additional studies will be hand-entered into the SQD (Section 6).

Screening Criteria for Dredging Studies

A screening tool was used to include only dredging data that met specific criteria for inclusion in the SQD. The most common reasons for rejecting reports were:
- ❑ Data more than ten years old;
- ❑ Lack of matching sediment chemistry/biological data;
- ❑ Insufficient documentation of geographic locations.

Studies were classified as primary, secondary, and tertiary using the screening criteria shown in Table 1-1. Only primary (met all criteria) and secondary (lacking bioeffects data) studies were included in the SQD.

1.2.2   Monitoring Data

The monitoring data in the SQD include a variety of mostly electronic submissions. Sediment chemistry, toxicity, and infaunal data were included as provided by the original source. Sediment chemistry data from Marina del Rey studies (LA County) were hand-entered. Other regional monitoring data include Bight '94, Bight '98, and West EMAP. Data from the California Bay Protection and Toxic Cleanup Program (BPTCP) were obtained from the EPA's National Sediment Inventory (NSI) Database, along with many other datasets. Data from the NSI Database were extracted for coordinates located in southern California or if the State Code was 'CA' (California), if coordinates were not readily available. For studies with no positions, the original references were obtained and stations located using a geographical information system basemap (ESRI's ArcView). Generally, data prior to 1990 were excluded, unless deemed to be of particularly good quality.

Table 1-1. List of Criteria Used to Screen Dredged Material Characterization Reports

Criteria Code	Description	Mand
TENYEAR	Study conducted within last 10 years.	Yes
LACOUNTY	Sampling stations are marine/estuarine sites located within Los Angeles County.	Yes
GEOCOORD	Geographic coordinates available/obtainable for each station.	Yes
FIELDMETHOD	Method of sediment sample collection/preparation documented.	Yes
SEDCHEM	Sediment chemistry data available for each station that includes analytes from at least two of the following general categories: trace metals, PAHs, PCBs, chlorinated pesticides (e.g., DDTs).	Yes
CHEMMETHOD	Chemical analysis methods described.	Yes
BIOEFFECTS	At least one measure of biological response (toxicity, bioaccumulation in lab, benthic infaunal abundance) reported for the sample	Yes
BIOMETHODS	Biological test methods described.	Yes
BIOSTATS	The biological response data were evaluated for the presence of statistically significant differences, relative to a (negative) control or reference sample.	Yes
TABLE1	The data are included in the list of priority studies (Table 1) or are included in electronic data files already identified by CSTF for inclusion in the database.	Yes
CHEMREVIEW	A QA/QC review of the chemistry data was performed.	Yes
BIOREVIEW	A QA/QC review of the toxicity data was performed.	Yes
CHEMDL	Chemical detection limits below NOAA ERL.	No
GRAINSZ	Sediment grain size reported.	No
TOXWQ	Toxicity test water quality documented.	No
CTRLREF	Control and reference sample data available.	No
TOXREPDATA	Data for toxicity test replicates available.	No
DR_RESULT	Quantity of sediment dredged and location of disposal known.	No
SEDDW	Is sediment data in dry weight?	No
SMPLFROZEN	Were sediments frozen before testing?	No
TOC	Sediment TOC reported.	No
CHEMHOLDING	Length of time sediment was held before conducting chemical analyses.	No
TOXHOLDING	Length of time sediment was held before conducting toxicity tests.	No
BIOPREP	Note the length of time toxicity test organisms were acclimated in lab.	No
TOX_DO	Did dissolved oxygen content stay above 60% throughout tox tests?	No
CTRLPASS	Did negative control/ref toxicity results pass survival requirements?	No
DATAQUAL	Final code to assign for data quality.	Yes

Studies meeting all mandatory ("Mand") criteria were classified as primary studies and included in the database. Selected studies not meeting all criteria (secondary studies) were also included.

1.2.3 Geographic Extent of the Data

The SQD contains data for marine and estuarine stations that extend from 35.4°N (San Luis Obispo County) to 31.75°N, beyond the US border in Mexico. There are also limited inland data derived from EPA's NSI Database (USGS, Orange County). Currently there are no fields within the SQD to differentiate these fresh water samples. All monitoring data were incorporated as provided, with minor quality review of the stations locations.

The dredging data are for locations within LA County, except for samples collected at the LA-2 and LA-3 dredged material disposal site reference areas. There are locations in the SQD for samples from other areas of the country (Newport Bay, OR; Narragansett Bay, RI); these are exclusively sediment samples collected for negative control samples for toxicity testing.

There were some data provided in the NSI Database that had no locations, but were classified as being in the state of California. The locations for these studies were obtained or estimated from the original reference material (generally studies related to the Palos Verdes shelf).

1.3   Organization and Conventions of the User Guide

This User Guide provides basic information on the contents of the CD-ROM containing the database (Section 2), installation instructions (Section 3), and a description of the key features of the database (Section 4). In addition, instructions are provided for extracting data from the database (Section 5), adding new data (Section 6), and viewing the metadata (Section 7). Detailed information regarding the structure of the database and specifications for data submission are included in the companion Technical Reference manual. Terms and definitions, as well as abbreviation descriptions, are provided in Section 8 of this User Guide.

To optimize viewing of the electronic (pdf) version of this document, select 'Windows' and 'Show Bookmarks' to be able to navigate through the sections and figures. Several conventions are used for different types of information.

♪ NOTE ♪ This notation is used to highlight mark specific comments or summary statements important to the user.

✐ TROUBLE SHOOTING ✐ This notation is used to provide advice on problems that may arise using SQD utilities.

☞ CONVENTION This notation is used to highlight conventions used when populating the database.

Tblstudy Database table names are italicized and underlined.
StationID Field names are italicized and bolded.

Section 2
2   Contents of the CD-ROM

This section describes the content of the CSTF SQD CD-ROM, and where in the User Guide more information can be found. The sections below refer to specific directories on the CD-ROM where you can find data and other supporting information and utilities. During installation (Section 3), some files are installed on your hard drive, while others remain on the CD-ROM as supporting information.

🎜 NOTE 🎜 This documentation is for Version 1.0 of the CSTF SQD. Please check the readme.txt file on your CD-ROM for the most recent information on the SQD.

2.1   Main CSTF Database

This includes the main SQD, merging data from many Southern California dredging and monitoring studies. This manual describes the use of the SQD. A description of the structure and field definitions of this SQD is provided in Section 4 of this document. The database also includes a utility for extracting data from the SQD, called the Enhanced Query Tool (EQT). Directions for using the EQT are in Section 5 of this guide. The installation procedure will install this database onto your hard drive (Section 3).

2.2   MetaManager Metadata Database

An Access database was created to store metadata for each study in the SQD, with an interface called the MetaManager that allows ease of browsing the metadata, as well as creation of exported text files compatible with the federal standard. A section on how to use this information is included in this User Guide, Section 6. The installation procedure will install this database onto your hard drive (Section 3).

🎜 NOTE 🎜 More information on the FGDC Content Standard for Digital Geospatial Metadata is available on the web at the URL: http://www.fgdc.gov/metadata/contstan.html.

The other files in the metadata folder on the CD-ROM contain text files in FGDC format, one file for each study. They are named after the StudyID field (e.g., Study01.txt). These files will not be installed on your hard drive.

2.3   Documentation

This folder includes the electronic version of this User Guide, a Technical Reference Manual, and a Quick Start Guide. This User Guide describes the content of the SQD,

and explains how to extract information or enter new data. The Technical Reference Manual is a folder that contains several linked files that include formal database specifications, a data dictionary, and relationships diagram. To open the Technical Reference Manual, first open the main Technical Reference file (TechRef_Manual.pdf). Read the TechRef_Readme.txt file prior to opening this document. The installation procedure will install all the documentation fields onto your hard drive (Section 3).

2.4   Templates

This folder includes a blank version of the SQD, which can be used by a database professional to add new data to the SQD from electronic reports. The folder also includes a database with imbedded forms for entering new data by hand from hard copy reports, used for entering dredging data. Neither of these databases is installed on your hard drive. See Section 6 of this User Guide for more information.

2.5   Archived Data

The Archived Data folder includes two subfolders with different versions of the data sets. These are supporting files and are not installed on your hard drive.

2.5.1 Original

This subfolder provides all of the data sets in the original formats, prior to merging. These data are provided to allow users to access the original data for questions regarding a specific study. This directory also includes all the processing notes for the electronic databases (summarized in the metadata record for each study).

♪ NOTE ♪ Extensive quality review has been conducted on the original data sets, which may have resulted in changes to the data merged into SQD; these changes are NOT reflected in the original data sets.

2.5.2 Option 2

This database includes the data merged at the study and station levels only. It is provided so users can more easily include new or updated results from the original databases.

♪ NOTE ♪ The User Guide provides no further information on the original or Option 2 databases.

2.6   Shape Files

The dredged material characterization data commonly represented a composite of several core locations. While the original coordinates for each individual core is stored, the most representative format for these data was selected as a point

theme shape file. Therefore, one shape file for each area was created using ESRI® ArcView, and saved using the naming convention of the study number concatenated with the name of the station/area. These files are provided in a subdirectory of the Version 1.0 CD-ROM. These are supporting files and are not installed on your hard drive.

Section 3

3   Installation and Quick Start Guide

3.1   System Requirements

The SQD can be used with most MS Windows operating systems; however, some features of the Enhanced Query Tool (EQT) may not work on Windows 95. Therefore, we recommend using a Windows 98, 2000, NT or XP operating system. Because of the size and complexity of database queries, we recommend using a computer with a Pentium processor and at least 256K of RAM.

The data are provided in Microsoft Access 2000. If you do not know which version of Microsoft Access you have, open your program and look for "About Microsoft Access" under the Help menu.

3.2   Quick Start

❑   Read the !readme_first.txt file for latest installation information. This information my supercede the information in the User Guide.
❑   Install the database onto your hard drive by double clicking on setup.exe.
❑   Open the CSTF SQD from your Start/Programs menu.
❑   Use the EQT to query, view, and extract data.
❑   Double click on the CSTF Metadata Database to view metadata associated with each study. Note, the CSTF SQD StudyID and the Metadata DatasetID are the same.

3.3   Installation Guide

The most recent information for installing the program is in the !readme_first.txt file on the CD-ROM. Please consult this file first to note any changes to the installation procedure. This section provides step-by-step instructions for installing the database on your PC.

3.3.1 Installation of the CSTF SQD

1.   Insert the CD-ROM into your CD-ROM drive.
2.   Browse to the CD using Windows Explorer or My Computer, usually the D: drive, and view its contents.
3.   Double click on the file setup.exe. This will launch a program that will install the database components to your hard drive. Generally, you should be able to accept all defaults that the install program will suggest.

4. You may change the default file path from C:\CSTF to another path for the CSTF directory.
5. If you get a screen alerting you to the fact that you are trying to install a dll that is older than one on your machine, click 'yes' to keep the machine's copy of the dll.
6. Once the install is done, you can go to your Start menu, click "All Programs" and then "CSTF Main Database." You will then be able to click on the program (database or help file) that you want to open.
7. We also recommend making a folder under the new CSTF folder for your output queries and other extracted data files. This folder should be named something to make it personal for your data exports (e.g., C:\CSTF\Joe's Queries).

3.3.2 Uninstalling the CSTF SQD

To uninstall the Main CSTF Database and related components, go to your control panel, click "Add or Remove Programs" and then click the "Change or Remove" button after the line listing the Main CSTF Database. This will uninstall the program. If you get a screen asking you if you want to remove dao36.dll, select "No."

Section 4
4 Features and Description of the Database

4.1 Enhanced Query Tool (EQT)

When the SQD is first opened, the Enhanced Query Tool (EQT) will automatically open. The EQT enables users to extract data from the SQD without having to learn Access or develop their own queries. A series of 'Help' buttons are also part of the EQT. A guide to the EQT is included in Section 5 of this manual.

4.2 Database Structure and Hierarchy

A relational database is an efficient mechanism to store large amounts of data by keeping related information in separate tables that are related by one or more key fields (columns in the table). As an example, information about a whole study is stored in a table called *tblStudy*, so that this information is not repeated for every result. Information is retrieved from the database through the use of a query, which defines a subset of linked tables and contains a series of criteria used to retrieve the specific data of interest.

The SQD contains 57 tables. The list of tables can be seen by selecting the "Tables" category under the list of objects in MS Access database window. Double clicking on a table name in this list will open the table and allow you to view the contents.

4.2.1 Data Tables and Lookup Lists

There are two types of tables in the SQD: the data table, and the Lookup List. Data tables start with the preface 'tbl' followed by the description of the data within that table (e.g., *tblChemistryResults*). These tables contain the actual data stored in the database. The Lookup List tables start with the preface 'luList' followed by the list number, and a descriptive name of the information stored in that table. Lookup lists store standardized definitions of codes and names of data stored in the data tables.

There are three ways to discover the definitions and conventions used for the fields within the SQD. First, while in the SQD, click on the field while the table is open; the description will appear in the Status Bar at the bottom of the screen (right above the Task Bar). Second, a description of each field is included in the database dictionary contained in Appendix B of this manual. Finally, this section describes many the most important tables and fields used for each type of data stored in the SQD.

In general, nulls were avoided in the SQD. Although many of the fields are not required in the database (other than key fields), most were populated with relevant information, or with a standard default value if no information was available. This population effort was conducted so the user could know the difference between the different types of the meaning of null (e.g., no information available vs. not applicable).

Required fields and conventions used for nulls and defaults can be found in Appendix B. Required fields are noted in the table, as well as the default value for valid null fields. Fields that are linked to lookup tables do not always have default nulls noted in the dictionary because the field must match a code in the lookup table. Commonly the null value is one of the options in the lookup table (e.g., UNK for Unknown, NA for Not Applicable, etc.). Default values are used for these mandatory fields when no other information is available. Nulls were acceptable in comment fields, and in fields where null is an implicit not applicable (e.g., null fields in the Qualifier field indicate that there was no qualifier for that result).

✐CONVENTION – Null values

In order to avoid having blank fields in the SQD, a series of conventions were adopted to handle missing or unavailable information:

- ❑ Missing numerical information has a –99 in the field;
- ❑ Missing text information has an 'NA' in the field; the exception is if there the field links to a Lookup List that has a specific code for missing, inapplicable, or unreported data;
- ❑ Missing or unreported dates are filled with 1/1/1900;
- ❑ Missing or unreported times are filled with 00:00.

There are other conventions for missing or inapplicable data that are specific to that field, and are discussed in individual sections in this guide.

4.2.2 Database Structure and Relationships

The SQD structure contains four levels of organization: Study, Station, Sampling, and Data (Figure 4-1). This organization reflects the very different sample design between dredging characterization and monitoring data.

The top level SQD hierarchy is the Study. Every dredging report, as well as every monitoring dataset, is one study. Each study has a unique identifier (*StudyID*) in the SQD. The tables *tblStudy* and *tblStudyReference* contain information about each one of the studies in the SQD. Appendix A summarizes the studies included in Version 1.0 of the SQD. Metadata related to each study is stored in the CSTF Metadata Database (Section 6).

The next level contains information about stations, and environmental information collected during a visit to a station (Section 4.2.3). This table contains information for both dredging and monitoring data.
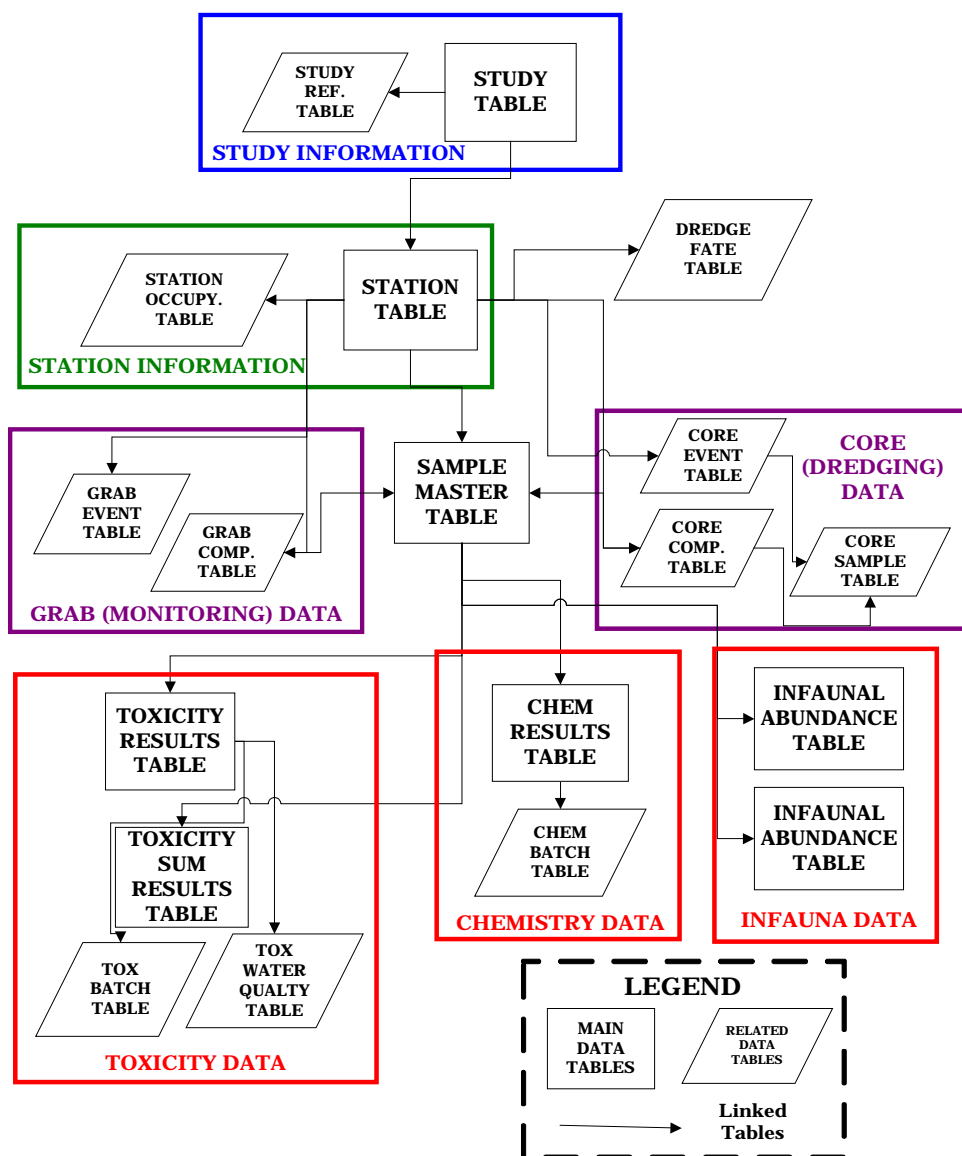
Figure 4-1. Organization of the sediment quality database.

Next, the SQD contains a series of tables that describe sampling information for the dredging and monitoring studies. Separate tables are present to document the sampling information for each type of study because of differences in study design and sample compositing between the methods (Section 4.2.4).

The lowest level of the SQD contains the data tables. These tables are organized by information type (e.g., chemistry, toxicity, and infauna) and contain the results of measurements from both dredging and monitoring studies.

The tables are related to each other in a specific way, such that for any queries that are developed, the tables must be first be related according to the structure of the

SQD. Although the EQT was developed so that the casual user would not have to understand the underlying structure, it is still useful to understand the basic concepts of how a database stores information. A relationships diagram is available in the SQD under the menu item Tools/Relationships. A more formal relationship diagram (entity relationship diagram) is included in the companion Technical Reference Manual.

The SQG contains tables that are related on a multiple key index. A description of the primary keys in each table is in Appendix B. Because of the varied sources of the data, several studies in the SQD may use the same station number for different samples. Several fields in the SQD are defined as primary keys. The data tables are generally related on one or more of the following fields:

- *StudyID*
- *StationID*
- *CompositeID*

4.2.3 Stations and Station Locations

All dredging and monitoring data have a geo-referenced location in latitude/longitude coordinates (NAD83). For dredging data, the 'Station' may actually represent an area, such as a dredging polygon from which multiple cores were collected. In this case, the field *Area* in *tblStation* will be checked to 'Yes.'

In order to assign each dredging area to a point location that could be stored in the station table, a single core location was selected to represent the area. The representative location was selected using an algorithm using GIS software that selected the point that was closest to all the other points (median).
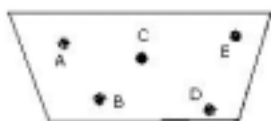
In this case, the core location 'C' would be selected to represent the area.
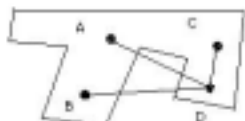
In this case, the core location 'D' would be selected to represent the area.

Figure 4-2. Example of how a median location was selected to represent a dredging polygon.

♪ **NOTE** ♪ If the *Area* box is checked to 'Yes' in the Station table, the coordinates provided in that table is a median point selected from several cores collected at that station. Actual coordinates for all the cores collected at that station are stored in the table called *tblCoreEvent*.

In addition to a point location, each station was assigned to one or more regions using several GIS (geographic information system) layers provided by SCCWRP and the POLA. The regions include:

- ❑ *Hydrounit* (Hydrologic Unit Code name or watershed description)
- ❑ *Port* (POLA or POLB)
- ❑ *Regional Board* (California Regional Water Quality Board)
- ❑ *Locality* (bays and harbors)
- ❑ *County* (California counties, primarily)
- ❑ *Country* (US/Mexico)

The Port, HUC, and Regional Board boundaries were provided by the POLA. The HUC name was used for classification, except for the Dominguez Channel watershed (a sub-classification of the HUC). County and country boundaries were obtained from the California Teale Data Center (see http://www.gis.ca.gov/). County boundaries include a three nautical mile extension into the water, so that the layers incorporate the water-based data. For stations located more than three miles offshore, the nearest county boundary was used.

The Locality regions were based on SCCWRP GIS (MapInfo) layers of bays and harbors in Southern California. Stations that were located upland were identified either from the *Description* field in *tblStation*, or stored with a locality of 'upland.' Control stations were identified as to location of the collected sediment (e.g., Tomales Bay); if this information was unavailable or inapplicable (e.g., water controls), the regions were classified as 'NA.'

☞**CONVENTION** – Station Locations

There are some latitude/longitudes that are unknown or were unavailable, these are noted with a –99. Latitude/longitudes that are noted with zero (0) values are not geo-referenced stations (e.g., laboratory control samples).

4.2.4 Dredging (Core) and Monitoring (Grab) Data

Dredged material characterization data are often collected using long cores, often with composite samples created from parts of several different cores. As an example, one sample may reflect the top half of five different cores (five different locations), representing an upper layer of a berth area to be dredged. Conversely, monitoring data typically are collected using a grab sampler, with one sample reflecting a single point location. The SQD structure reflects this difference, with several tables containing only dredging data (tables starting with 'tblCore'), and several tables reflecting only monitoring data (tables starting with 'tblGrab'). The

naming convention can be deceiving in that there are grab sample data in the Core tables (e.g., reference grabs collected near the offshore disposal sites), and there are core data in the Grab tables. More accurately, tables with the preface tblCore contain only dredging-related information.

A master sample table was created (*tblSampleMaster*) that contains basic sample information for both core and grab data. This table increases the efficiency of querying, and simplifies the use of the SQD for novice users. It contains the basic information necessary to describe a sample event (e.g., date, sediment depth). The core and grab tables need only be accessed for field information specific to that type of data.

4.2.5 Composites and Replicates

Below the station level, the common nomenclature for samples is the composite, with the unique identifier called ***CompositeID***. The ***CompositeID*** is used to match samples analyzed for both chemistry and toxicity analyses. If more than one sample was analyzed at a station, the ***CompositeID*** is the same, and the replicate information is stored in other fields. If the additional sample is a field replicate, the field called ***SampleType*** is filled with an FR. If the replicate is a laboratory replicate, the ***SampleType*** field is DUP. In the chemistry results table, there is a ***Labrep*** field to distinguish between multiple laboratory replicates.

☞CONVENTION – Sample Types

Each ***CompositeID*** has a unique sample type. The ***SampleType*** codes are defined in *luList04_SampleTypes*. Possible options include: Numerical Result (RESULT), Field Replicate (FR), Reference Sample (REF), Duplicate (laboratory replicates, DUP), Tissue Replicates (TREP), Negative Control (CNEG), samples with infaunal data only (INF), fish tissue chemistry samples (TRAWL), and Seawater Blank (SWBLK).

4.3   Sediment, Tissue, and Elutriate Chemistry Data

Chemistry data for sediment, tissue, and sediment elutriate samples are all stored in the same table, called *tblChemistryResults*. The matrix of the result is stored in a field called ***MaterialCode***, options include SD (sediment), EL (elutriate), PW (pore water) and TS (tissue). The type of study is also stored in the chemistry results table (***StudyType***): 'D' for dredging-related data, and 'M' for monitoring-related data.

♪NOTE♪ Available tissue chemistry data include laboratory bioaccumulation data for dredging studies (***StudyType*** = 'D') and fish tissue chemistry data for monitoring data (***StudyType*** = M and ***SampleType*** = 'TRAWL'). Species codes for fish tissue chemistry data are contained in Lookup List 42.

4.3.1 Chemicals and Units

The chemical names and units have all been standardized to increase the efficiency of analyses. The standard chemical names and units are stored in *luList18_ChemicalParameters*. The standard unit for the majority of organic chemicals is parts per billion (µg/kg). Exceptions are several dioxin/furan compounds (parts per trillion, ng/kg), and conventional organic tests such as TRPH and oil & grease (parts per million, mg/kg). Metals are stored as mg/kg, and grain size and total organic carbon (TOC) are stored as percent (%). Data and units for sediment are in dry weight (e.g., mg/kg); data and units for tissue are in wet weight.

4.3.2 Chemistry Results, Qualifiers, and Detection Limits

Results were provided as reported unless they were converted to match the standard units. For results reported as below detection, a 'U' was stored in the qualifier field, and the reported value reflects the reporting limit. Both the reporting limit and method detection limit are also provided. The reporting limit is essentially a practical method detection limit, and also can vary if the sample was diluted (sample dilutions are also stored). The reporting limit is the concentration of a parameter that can be reliably reported in the presence of a moderate amount of sample-based interferences. Definitions of all standardized qualifiers are stored in luList13_QualifierCodes.

♪ NOTE ♪ Sediment data are all in dry weight. Tissue data are all in wet weight.

4.3.3 Chemical Method Information

Within the Chemistry Results table, there is a field called *QABatch*. This field, along with the *StudyID*, relates to the chemical method information that is stored in the table called *tblChemistryBatchInfo*. This table stores the preparation and analysis method information. For dredging-related data, the method name was used as the *QABatch* identifier to uniquely identify a batch of samples analyzed by the same method. The *QABatch* for monitoring data generally were incorporated as provided. Many data (e.g., NSI) did not have method information; the *QABatch* in these cases is 'NA.' Codes for analysis and preparatory method information are stored in Lookup Lists 33 and 34.

4.4   Toxicity Data

There are four tables that contain toxicity results:

- ❑ *TblToxicityResults* - contains raw replicate results, if available;
- ❑ *TblToxicitySumResults* - contains mean toxicity results, and includes identifiers for statistical significance of toxic response;
- ❑ *TblToxicityBatchInfo* - contains method, species, matrix, and test duration information;

❑ _TblToxicityWaterQuality_ - contains summary water quality data from toxicity testing.

4.4.1 Toxicity Test Information

Each of the toxicity tables has several fields in common describing the test conditions. These fields are:

❑ **SpeciesCode** – the code for the test species, described in Lookup List 20;
❑ **EPCode** – the code for the test endpoint (e.g., survival), described in Lookup List 23;
❑ **Units** – units of the endpoint;
❑ **Dilution** – applicable to water tests, this value stores the concentration of the sample tested, expressed as a proportion (e.g., 0.5 = 50% concentration);
❑ **Concentration** – applicable to reference toxicant tests, this field is not used since reference toxicant data are not included in this version of the SQD;
❑ **QACode** – A code assigned to describe the usability of the test, described in Lookup List 23.

☞**CONVENTION** – Test Endpoints

Test endpoints provided as mortality or abnormality were converted to survival and normality for ease of comparison across studies.

4.4.2 Toxicity Summary Statistics

The toxicity summary table stores a series of summary values describing the results of that test. These fields include:

❑ **Mean** – mean value of laboratory replicates;
❑ **N** – number of replicates;
❑ **StdDev** – standard deviation of replicates;
❑ **PctControl** – mean value expressed as a percent of the negative control assigned to that batch of samples;
❑ **SigEffect** – reported statistical significance from original report and/or database;
❑ **Stat_Test** – test used to calculate statistical significance;
❑ **LC50** – the concentration (%) of the sample that is lethal to 50% of the test organisms (applicable only to the endpoint of survival and usually only reported for dredged material elutriate tests);
❑ **EC50** – the concentration (%) of the sample that produces an adverse effect on 50% of the test organisms (applicable to sublethal endpoints and usually only reported for dredged material elutriate tests);
❑ **NormSigEffect** – results of a standardized pairwise statistical test between the sample and negative control conducted by the CSTF to provide a more consistent indicator of toxicity.

4.4.3 Significance of Toxicity Calculations

The codes used for statistical significance for both the *SigEffect* and *NormSigEffect* fields are described in Lookup List 50. The codes differentiate between comparison to reference (SR/NSR) and control (SC/NSC). There is also a threshold value applied in some cases when comparing to reference. This most often is for sediment (solid phase) toxicity testing for dredging studies; if the resulting value is within 10% of reference, commonly there was no statistical analysis conducted (20% for amphipods, according to dredging guidelines). For more information on federal dredging testing and statistical guidelines (e.g., Green Book), see http://www.epa.gov/owow/oceans/gbook/index.html.

The *NormSigEffect* field reports the results of a one-tailed, two sample test procedure that compared the sample to the negative control for that test group (*QABatch*). One of three related tests was conducted, depending upon the characteristics of the data. A t-test assuming equal variances was used when the data were normally distributed and had equal variances. A t-test with unequal variances was used if the variances were not equal, and a non-parametric t-test using a rankit-transformation was applied when the data were not normally distributed. An alpha = 0.05 was used to identify significant differences for all three test methods. More information is available in the Technical Reference Manual.

☞ CONVENTION – Negative Control and Reference Samples

If there was more than one negative control sample analyzed for a batch of samples, only one was selected for calculation of percent control and for standardized negative control. The reason for the replicate controls, and the choice of which control to use for statistics, is provided in the metadata for that study. Commonly, a second control was analyzed if there was unacceptably low survival in the first batch. Reference samples were treated as normal results for control-normalization and significance calculations.

4.4.4 Toxicity Method and Water Quality Information

Within the Toxicity Results and Toxicity Sum Results tables, there is a field called *QABatch*. This field, along with the *StudyID*, relates to the toxicity method information that is stored in the table called *tblToxicityBatchInfo*. This table stores the test date, protocol, duration, temperature, and test acceptance information. For dredging-related data, the test type (solid phase, suspended particulate phase, or bioaccumulation survival) and species code was used as the *QABatch* identifier to uniquely identify a batch of samples analyzed by the same method. The *QABatch* for monitoring data generally were incorporated as provided. Codes for toxicity test information are stored in Lookup Lists 20 through 25.

Measured water quality parameters are stored in the table *tblToxicityWaterQuality*. Minimum, maximum, mean, and standard deviation values are stored, if available. Water quality parameter codes are defined in Lookup List 24.

♪**NOTE**♪ The *QABatch* is an extremely important field in the SQD. This field identifies a group of samples analyzed using the same methods. The *QABatch* must be included in a query in order to identify the correct negative control or reference sample for the test sample of interest.

4.5   Dredging-Related Information

This table (*tblDredgeFate*) combines two different types of information: first is suitability classifications (provided in dredged material characterization reports either for a station, composite, or core); second is fate information, which documents the actual fate of the dredged material characterized, commonly on a project or area (e.g., berth) basis. Because of the different levels of related information, relationships between this table and others are not enforced. This table is currently linked to the station table, although some records are based on a project (study), and there is composite information in some of the records.

The dredging characterization studies often contain information about the volume and expected suitability of the material for disposal. The table called *tblDredgeFate* contains this information, as well as related information from the dredging and regulatory agencies such as permit numbers, volumes dredged, and the location or type of disposal. This information allows the user to track the fate of the dredged material and determine the final suitability decision made by the regulatory agencies for the material.

Information stored in the Dredge Fate table include:

- ❑ Predicted Volume/Proposed Disposal Site – This information was incorporated from the dredged material characterization reports, if available, and reflects pre-project estimates only.
- ❑ Volume/Disposal Site – This information was provided by the project proponents (e.g., ports and USACE), showing the actual volume dredged and the ultimate placement site of the material.
- ❑ Suitability Recommendation – This field contains a text description of the overall toxicity of the material as well as suitability for open-water unconfined disposal. It is based on the chemical and biological data as reported by the characterization report's author.
- ❑ Recommend/Regulatory/Disposal Codes – These are standardized codes that describe the suitability of the dredged material for offshore open-water unconfined disposal. The Recommend code stores a summary code from the Suitability Recommendation; the Regulatory code stores the decision for suitability for offshore disposal according to the regulatory agencies; and the disposal code stores a code for the type of disposal site ultimately used for placement of the sediment. All three codes are described in Lookup List 30.

4.6   Infaunal Data

Currently there are only benthic infaunal data for two studies: SCCWRP's Bight '94

program, and Western EMAP. The benthic abundance table stores the absolute number of each species measured in the sample. The Bight '94 program also included calculation of biomass (in grams) for each species. Standardized benthic species names were derived from Southern California Association of Marine Invertebrate Taxonomists (SCAMIT), stored in Lookup List 10. For more information on species names and SCAMIT, see http://www.scamit.org/.

4.7   Comment Reporter

If you find an error in the SQD or bug in the programming, click on the Comment button in the EQT. Then fill in the date, your name, and a description of the error. These will be stored in a central database that can be forwarded to those responsible for maintaining the database. For Version 1.0 comments, forward your comments to sqd@sccwrp.org. Directions on how to send this file to the email address is in Section 5 of this guide. Database maintenance is discussed further in the Technical Reference Manual.

🎵 NOTE 🎵 The EQT and Comment Reporter also can be opened through the CSTF Tools Menu on the top bar of the Access interface.

Section 5
5 Extracting Data from the Database

5.1 Composition of the Database

The SQD contains data from many different dredging and monitoring studies (Table 5-1). The type of information included within each study varies, depending upon the objectives of the project. The toxicity data includes information from tests conducted on whole sediment, interstitial water, elutriates and overlying water that used a variety of test species (Table 5-2). The chemistry data in the SQD is also quite extensive, with information on the concentrations of trace metals, organics, and other constituents for locations throughout southern California Table 5-3).

Table 5-1. Types of Studies in the Database Summarized By Geographic Region

Geographic Region	Number of Stations With Data in Category			
	Sediment Chemistry	Toxicity	Tissue Chemistry	Infauna
Dredging Studies				
Southern California Bight	60	43	41	0
Los Angeles County	60	43	41	0
Orange County	0	0	0	0
San Diego County	0	0	0	0
San Luis Obispo County	0	0	0	0
Santa Barbara County	0	0	0	0
Ventura County	0	0	0	0
Port of Los Angeles	43	33	31	0
Port of Long Beach	12	8	8	0
Monitoring Studies				
Southern California Bight	35	17	1	2
Los Angeles County	26	10	1	2
Orange County	15	11	1	2
San Diego County	13	10	1	2
San Luis Obispo County	4	2	1	2
Santa Barbara County	7	5	1	2
Ventura County	7	7	1	2
Port of Los Angeles	8	8	1	1
Port of Long Beach	9	8	1	1

The geographic region indicates the county or port where the study stations were located. Values indicate the number of stations resulting from a query using the fields StudyID, StationID, and StudyType, linked to County and Port from the Station table. Reference and control stations for some studies were located outside of California and are not included in this table. The Southern California Bight category includes all studies contained in the database, including stations both in the US and Mexico.

Table 5-2. Summary of Toxicity Data in the Database

Species Group	Dredging Studies			Monitoring Studies		
	Bulk Sed.	Interst. Water	Elut.	Bulk Sed.	Interst. Water	Elut.
Amphipod	174	0	0	1137	0	0
Polychaete	161	0	0	225	0	0
Bivalve	56	0	779	0	16	0
Fish	0	0	129	0	0	0
Echinoderm	0	0	9	23	450	0
Other Molluscs	0	0	0	0	102	0

Values indicate the number of samples resulting from a query using StudyID, StationID, CompositeID, SampleType (excluding CNEG), SpeciesGroup and MatrixCode, summarized for each species group. The numbers in the table do not indicate the number of unique samples tested because more than one species was often used to test each sample. The database contains information for additional species groups that are not listed in this table. The elutriate category (Elut.) contains data for the suspended particulate phase test.

Table 5-3. Summary of Sediment Chemistry Data in the Database

Chemical	Dredging Studies		Monitoring Studies	
	So. Calif. Bight	LA County	So. Calif. Bight	LA County
Cd	728	669	2199	630
Cu	702	644	2192	559
Pb	792	733	2220	630
Zn	778	719	2195	599
PAHs	795	740	1163	345
Pesticides	751	692	2178	615
PCBs	717	655	1885	503

Values indicate the number of samples resulting from a query using StudyID, StationID, CompositeID, SampleType (excluding CNEG and DUP), ChemicalName and ChemicalGroup for MaterialCode = SD, summarized by County and StudyType. The Southern California Bight category includes stations both in the US and Mexico. The database contains information for more chemical groups and areas than the ones presented in this table.

The SQD is intended to be a repository for data in a standardized format. Limited data analysis tools are built into the database. Before analyses of the data can be conducted, the desired information must first be extracted from the SQD using a query.

5.2   The Enhanced Query Tool

This section provides step-by-step instructions for the use of the Enhanced Query Tool (EQT). Specifics on how to use the different user interface controls (e.g., drop-down boxes, etc.) is in Section 8.1.2. The EQT is designed to allow users to ask detailed questions about the findings in the SQD by slicing the data in myriad ways. For example, if you are only interested in data on mercury found in toxicity studies around Marina del Rey, the EQT will filter the SQD to extract just that information.

With the EQT, you can preserve the specifications used in your query -- and the results you generated -- as Microsoft Excel files. The EQT also includes a Comment Reporter for feedback on the data or bugs found in the SQD.
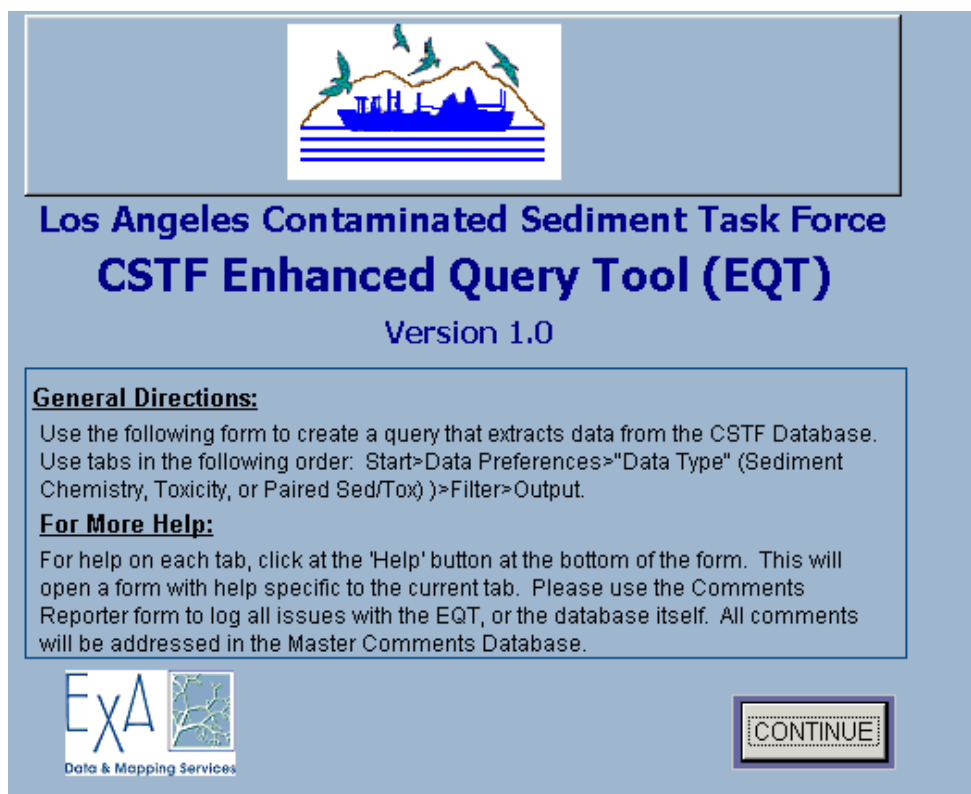
Figure 5-1. Opening ('splash') screen for the EQT.

When you start the CSTF SQD, you will be greeted by the opening splash screen (Figure 5-1). As you will see, a significant amount of user guidance has been embedded into the EQT program itself, enabling you to use it generally without assistance from this User Guide if you prefer.

Click Continue to move on from opening screen.

5.3   Getting Help for the EQT

The Help button at the bottom of each screen will give you more information on how to use the forms on that screen. In addition, hints are imbedded into the form itself for general guidance.

5.4   Making Comments/Reporting Bugs on EQT

The Comment button at the bottom of each screen enables you to send comments or report bugs about the SQD. You can also access the Comment form through the

CSTF Tools menu. Each comment stores the version of the SQD, the date, and the location of where you are when you select 'Comment.' After entering your initials and comment, this information will be stored in a table within the SQD (*tblComments*). At any time, the comment table can be forwarded to the central data manager (sqd@sccwrp.org). To send the file, follow these instructions:

❑ Activate the main Access window (headed with the file name); this window will show Groups and Objects along the left –hand side of the window;
❑ Select the object called 'Tables;'
❑ Scroll through the tables until you find the table called *tblComments* (tables are sorted alphabetically);
❑ Double-click on *tblComments* to open;
❑ After the table is open, use your mouse to the main Access 'File' menu, and select 'Export;'
❑ The 'Export To…' browse window will open up. Select a location to store the comments file, and pick 'Save As Type' Microsoft Excel. Excel has been selected as the common format to store the comment information.
❑ Save the file (e.g., Joe's Comments.xls);
❑ Send the file as an attachment to the email address listed above. (Check the readme.txt file for latest information on receipt of the SQD comments.)

The Comments table contains several fields that will store information on how, when, and who fixed the bug. This is for tracking purposes for the data manager. In this way, if you elect to save and email your comments table multiple times, duplicate comments records can be easily deleted from the main Comments database.

5.4   Closing a Screen

The "Close" button at the bottom of each screen will close that screen and allow you to choose another screen from the tabs at the top of the window.

♪ NOTE ♪ This application is optimized for a screen resolution of 1024 x 768 pixels. If you monitor is on different settings, you may need to manually expand the EQT window to see the Help, Comment and Close buttons described above.

5.5   The Start Screen

The EQT operates through a series of screens with options for narrowing your search of the data. To see an explanation of a particular option, look under the following sections for the relevant screen. We start with the Start screen.
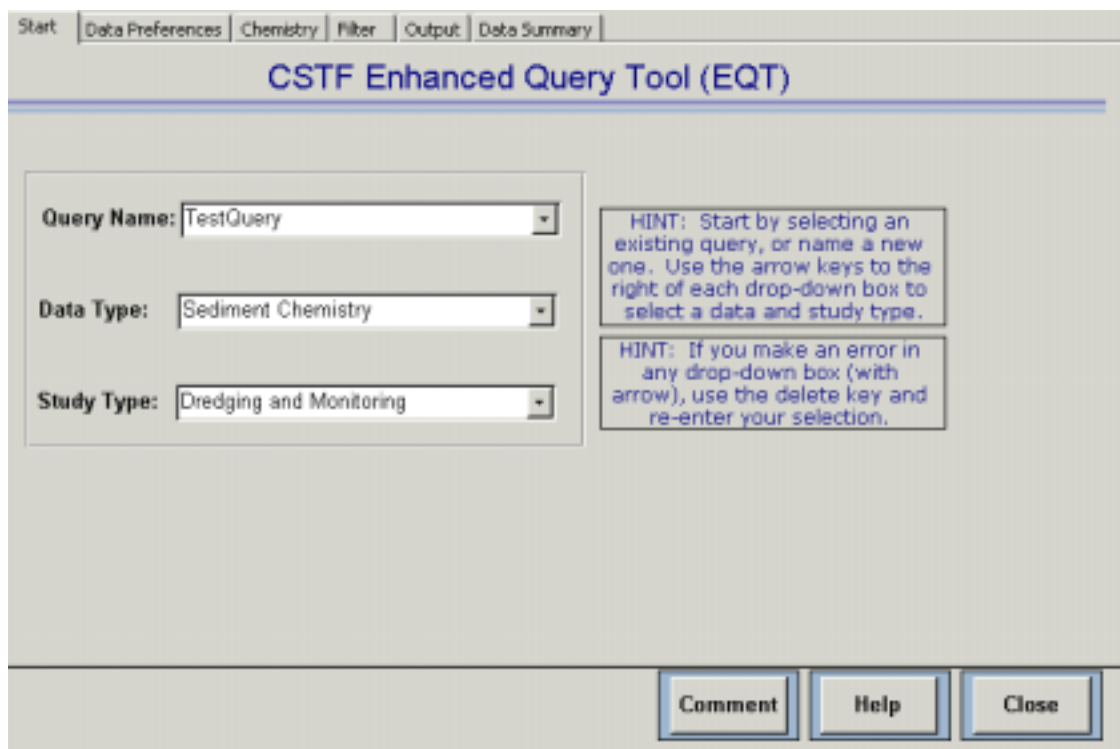
Figure 5-2. EQT Start screen.

5.6.1 Enter Query Name

This enables you to create a new query or re-load and edit a previously created query. Select a pre-existing query from the "Query Name" drop-down list or begin typing in a new name. A message box will appear that asks you if you want to add the newly named query.

5.6.2 Choose Study Type(s)

You can search just the dredging-related data, just the monitoring data, or both. Select from the "Study Type" drop-down list.

5.6.3 Choose Data Type

You can narrow your search to particular areas of interest, such as toxicity data, sediment chemistry, or paired sediment/toxicity data. Select from the "Data Type" drop-down list.

5.7 The Data Preferences Screen

5.7.1 Data Exclusion Options

A variety of data types can be excluded: missing data (numerical data recorded as '-99'), control data, reference data, and duplicate (laboratory replicates) data. Click on the adjacent radio button for every data type you wish to exclude.

5.7.2 Handling Data Below Detection

The user selects what value to output for data reported as below detection. Options include the detection limit (as reported), ½ the detection limit, or zero. The output will reflect both the original reported value, and an additional column reflecting the user-requested value.

5.7.3 Normalization

This option allows the user retrieve total organic carbon (TOC) data paired with the chemistry data for normalization. If there are no matching TOC data, the user can select a default TOC value such as 0.5% or 2%.

5.8 Sediment Screen

The next screen will vary depending on the type of query you have specified (i.e., whether sediment only, toxicity only or sediment and toxicity combined data is being sought). This screen allows the user to specify characteristics of the data. When the sediment data type is selected, this screen will allow the user to specify the chemical(s) and range of concentration for the data that are retrieved.

Figure 5-2. EQT Chemistry data type screen.

5.8.1 Select a Chemical Group

You can select a Chemical Group, a Chemical, or a combination of both using the drop-down lists. If you want to further filter the data by a numerical value (discussed below), then you must select a single chemical.

5.8.2 Filter by Existing Sediment Quality Guideline (SQG)

If you want to filter your query using an existing sediment quality guideline (SQG) then check the box prompting you with that question. A list of available SQGs are in Lookup Lists 64 and 65. You may only filter a chemical by an SQG if there are guidelines for that chemical.

✎ Trouble Shooting ✎ If you do not retrieve any data using the filter by SQG function, it is likely you have selected an erroneous combination of SQG and chemical. We recommend looking at the definition of the guidelines (Lookup List 64), and what chemical values are available (Lookup List 65) before choosing this operation.

Once you pick the check box for SQG, the drop-down list for "SQG Type" will then be activated to allow your selection. Choose an SQG Type, and then select how you want to filter the data relative to that value. In the box labeled "Show all data _____ selected filter," you will have the option of selecting all the data greater than ($>$) or less than or equal to ($\leq$) this value. You also have the option of selecting all the data, but including the SQG value for your own analysis ("but include").

5.8.3 Filter by User-Selected Values

Rather than a specific guideline, you may also filter your query data by numerical criteria of your own choosing. Check the box that prompts you "Do you want to define the values on which to filter (User-Defined query)?" Upon selecting this box, the existing statistics for that chemical (minimum, maximum, mean) will be calculated on the fly and shown in the 'Database Statistics' boxes. Using this information, you can pick a minimum, maximum, or both to filter your data.

✎ Trouble Shooting ✎ If you have trouble filtering by value, you may have tried to select both the SQG filter and user-selected filter. The EQT only filters using one, and may freeze up if both boxes are checked.

5.9 Toxicity Data Screen

When toxicity is selected as the data type, a screen appears to allow the user to specify the test species and characteristics of the data (Figure 5-3).

Figure 5-3. EQT Toxicity data type screen.

5.9.1 Toxicity Data Source

You must select either toxicity replicate or toxicity summary data for this query. Your selection will alter how the Toxicity Data Type screen appears.

Toxicity Replicate Data Filter Options

For toxicity replicate data, you will have the option of picking a biological group name, a species name, and an endpoint. You may pick only a group, only a species, only an endpoint, or any combination of the above.

Toxicity Replicate Data Filter Options

The options for toxicity summary data will be similar. You will have the option of picking a biological group name, a species name, and an endpoint. You may pick only a group, only a species, only an endpoint, or any combination of the above. You will also have the choice of filtering by the reported OR the standardized significance values. In this way, you can pick toxicity results that were considered significantly toxic relative to control or reference data.

✒ TROUBLE SHOOTING ✒ If you have trouble filtering by toxicity significance, you may have tried to select a significance code that does not exist for that test. For example, almost all of the elutriate toxicity tests have both reported and standardized statistical significance compared to negative control; if you filter by comparison to reference, you will not retrieve very much data.

5.10 Sediment Toxicity Screen

When both sediment chemistry and toxicity data are selected, a screen appears with options for selecting the test type and chemical parameters (Figure 5-4).

Figure 5-4. EQT paired Sediment Toxicity data type screen.

5.11 Filter Screen

The "Filter" screen allows the user to limit the query results they will receive by specifying a funding Agency, or a particular region (Figure 5-5). The possible regions are: Locality, Regional Board, County, Watershed ('Hydrounit'), Port, or Country.

You may use any combination of these drop-down list filter options. However, we recommend only using one region filter at a time if you are unfamiliar with the data, as more than one may severely limit the results from your query.

✗TROUBLE SHOOTING✗ Use the region filters with caution. Although every point is classified by at least one of the filters, you may select a filter that applies to only a small percentage of the data, especially if trying multiple region filters. The query works on an AND basis; for example, if you select Locality = San Diego Bay, AND Regional Board = Los Angeles you will receive no data (for there are no positions that fall within both San Diego and Los Angeles at the same time).

Figure 5-5. EQT Filter screen.

5.12 Output Screen

Use the Output screen (Figure 5-6) to define what fields will be exported from Access to your Excel file.

5.12.1 View Default Export Fields

By clicking on the "View Default Export Fields" you can see the list of non-removable information that will be included in your query results.

5.12.2 Keep/Remove Optional Export Fields

On the EQT "Output" Screen you can use the arrow buttons to keep or remove various fields from your query results. Click on the name of the field and then click the left-pointing arrow to "Keep" that field. To remove a field, click on the name of the field and then click the right pointing arrow. The field name should now appear under "Remove."

🎵 **NOTE** 🎵 You must make any removals BEFORE clicking on the Export Query button to have your request processed correctly.

5.12.3 Export Query to Excel

By clicking on the "Export Query to Excel" button, you will "send" your query for processing. The results will be exported to a Microsoft Excel spreadsheet in the location that you specified. Your query specifications will also be retained in the Database under the Query Objects with the name you specified.
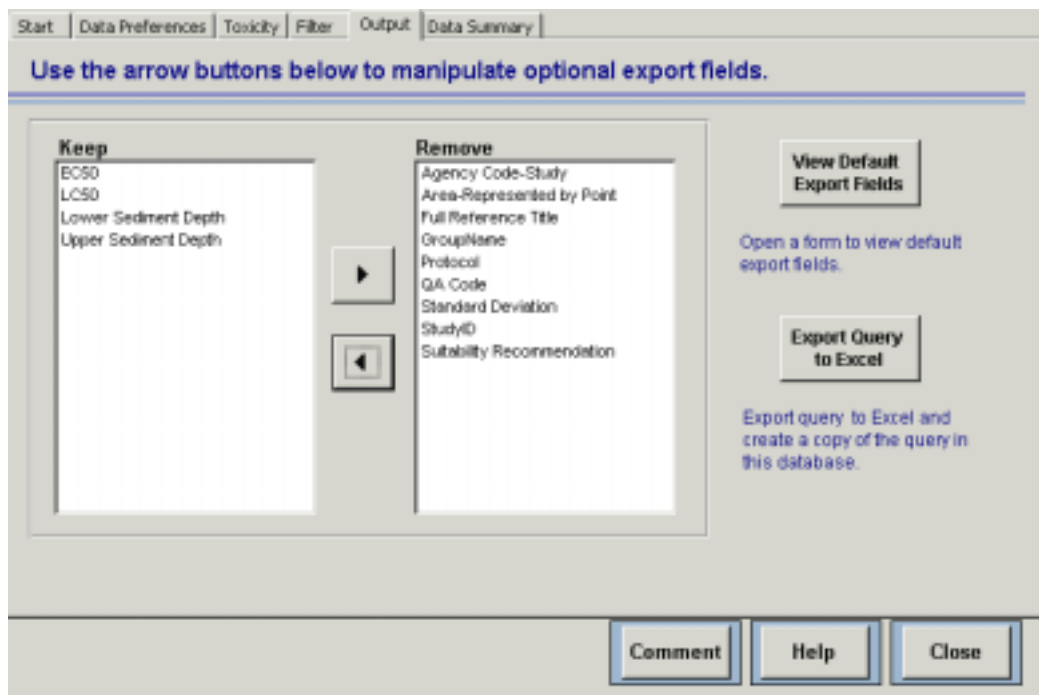
Figure 5-6. EQT Output screen.

5.13 Data Summary Screen

The Data Summary screen will post a summary of the query parameters you have selected, as in this example:

"The query, 'sedtoxtest' was run on 6/19/2002, Database Version 1.0. The following parameters were used in this query: The study type is Dredging and Monitoring. Missing (-99) data is excluded from both toxicity and chemical data. Data is from the chemical group Metal. Data is from the chemical Zinc. The group name is Amphipod. The species is AA. The endpoint is SP."

5.14 Crafting Your Own Query

Although not intended to replace a course in Microsoft Access or data mining, there are tools in the SQD that allow users to develop their own queries. To get you started we have created two initial summary queries: Chem_Stats and ToxResults_Stats. These queries have been designed to provide you with statistics on a particular chemical or toxicity test. Double-clicking on the query name will run the query. To edit the query parameters, click once on the query name, and enter

'Design View' by clicking on the 'Design' icon (a blue corner tool). You can then change the selection criteria directly in design view.

A custom query can also be created by modifying one the queries created by the EQT. To modify one of these queries, double click on the name of the saved query you wish to modify and enter the design view by clicking on the 'Design' icon. The criteria and fields contained in the query can then be modified.

Section 6
6 Templates: Adding New Data

The SQD is intended to be updated on a regular basis with corrections and additions to the data. Although anyone can modify the information contained in the database, this activity is strongly discouraged. For publicly distributed databases such as the SQD, it is important that changes be made solely by the database manager. In this way, changes can be documented and all users will have access to the same information. Submission of data by others is encouraged by the CSTF. General information is provided in the following sections regarding the options for data submission.

6.1 Electronic Data

A version of the SQD with empty data tables (complete Lookup Lists are included) is provided on the CD-ROM for appending new electronic data to the SQD (SQD_NewData.mdb). The blank database includes two table templates for parsing electronic data, which usually comes in a single table or "flat file." These tables (*tblGrabImport* and *tblCoreImport*) can be used to merge new electronic data into the SQD. The tables contain the basic required fields for sediment grab data (one station/one sample), and for dredging-related coring data (one station/multiple positions). There is no tool or template to automate the append process; it should be managed by a database professional with experience in standardized naming conventions using the Technical Reference Manual. As always, a MetaManager record should be established for each new study appended to the database.

In addition to the Access database, we have also provided an Excel template that also contains the basic field information for storing study, station, and sediment chemistry data (Chemistry_GrabTemplate.xls).

6.2 Entering Data from Hard-Copy Reports

The second file in the Templates folder is called 'Dredging Data Entry.mdb' and contains a series of forms used to enter dredged material characterization data into the database. As part of this project, a series of data entry screens were created to enter the data more efficiently. This utility was originally intended for internal use, to increase the efficiency and accuracy of data entry. It is provided here as an additional resource for the CSTF and associated users. Although it was not intended for public distribution, we have provided detailed documentation on how to use the tool, and any problems that you may encounter in using it. A guide to use this utility is provided in a separate file (DredgingDataEntryGuide.pdf), linked to the Technical Reference Manual (but can be opened and printed separately).

Section 7
7   User Guide for the CSTF MetaManager

What is metadata? Metadata is data about data. Each original study included in the SQD has a metadata report summarizing the quality and content of that data set. This section gives a brief overview of the CSTF the SQD MetaManager, and provides a guide for finding the information necessary to complete a metadata record

This MetaManager is compliant with the Federal Geographic Data Committee (FGDC) standard. If you need more information on metadata in general, sources are available at www.fgdc.gov. For detailed information regarding the FGDC standards used here, please refer to the FGDC Content Standard for Digital Geospatial Metadata (FGDC-STD-001-1998).

When you open the MetaManager, you will see two options: View Report and Browse Data as in the figure below. The "View Report" function is used to generate text reports on existing metadata. "Browse Data" is the main operation, and allows you to view, edit, or add metadata.

7.1   View Report

This feature allows you to generate an FGDC-compliant metadata report for a single set of data. A report listing every metadata record in the SQD can be viewed from this screen. This option allows you to view or save the metadata all in one file. It will produce a metadata report compatible with that used by SCCWRP, as well as the long and short forms of the FGDC standard.

To select the metadata record you would like to view, click on the drop-down menu box under "Select a Metadata Record." The list that appears will show every record entered in MetaManager.

Next, indicate which type of report you would like to generate by checking the box for the Full (long form) FGDC Metadata Report or the Summary (short form) Metadata Report. You have the option of viewing the report on screen, saving the report to a text file, or printing the report.
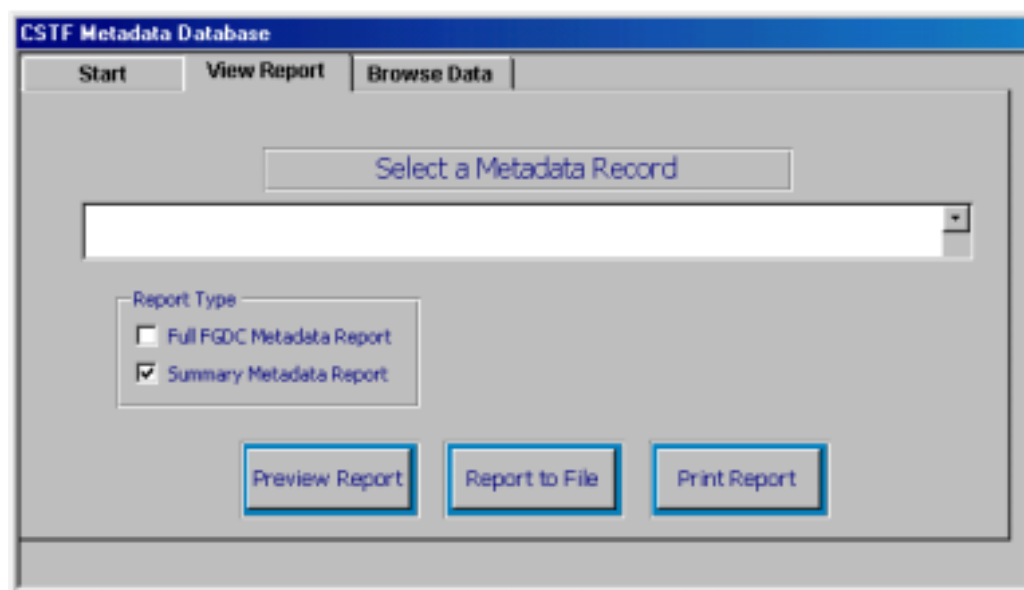
Figure 7-1. MetaManager View Report screen.

7.2 Browse Data

Clicking on the "Browse Data" tab will open the database and allow you to look through all of the information collected in each record. If you are familiar with Access, you can browse through the information more quickly using the filter functions.

From the Browse Data screen, you can click on "Open Data Retrieval Forms" to open the database and show Section 1 of the FGDC standard information. Additional sections are accessed by clicking the buttons at the top of the Section 1 form. From this form, you can browse through the records by incrementing the Record Number at the bottom of the form. Or, to more easily find a specific record, you can use native Access functions to filter or sort the records.

Only Sections 1, 2, 5, and 7 of the FGDC standard were required for the CSTF project. However, other sections may be included in some records. Following is a review of the fields in the required sections and also Sections 8, 9, and 10.

7.3 Metadata Sections

The CSTF Metadata contains information about each dredging report, as well as information that could be found on the electronically submitted data. The sections below contain general information about the standard, and often how information was collected to include in the metadata for a report or database.

7.3.1 FGDC Section 1—Identification Information

Figure 7-2. MetaManager Metadata Information and Section 1 screen.

FGDC Section 1 contains identification information for a given study including its purpose, along with an abstract summarizing the study. It is linked to the tables for Sections 8, 9, and 10 for citation, time period, and contact information.

Start by priming the form for a new record. At the bottom of the MetaManager form, the record navigation bar indicates the current record number.

Metadata Name

Metadata Name is a shortened version of the formal title for a given dredged material characterization report. It should match the "Study Name" in the CSTF SQD.

Keywords

Keywords should capture the significance of the data. Taxonomic keywords are the most common and include species names for biological tests. Theme keywords include information about the type of tests performed and collection methods, such as 'Sediment Chemistry' and 'vibracore.' Place keywords include names of towns, bays, counties, or other place names that refer to the area that the data represents.

Abstract

The abstract is a critical description of the data set contents. It should contain a concise but specific summary of the characteristics and meaning of the data.

Purpose

Purpose describes simply the purpose of the study.

Supplementary Information

Supplemental information may contain source URLs or important notes about the data.

Progress

Progress describes the state of the data set, whether is it considered to be complete or in progress. If, for example, the purpose of a study is to collect monitoring data, then the data set is considered in progress.

Maintenance and Update Frequency

Maintenance and Update Frequency describes the frequency with which changes and additions are made to data set. This applies to studies "in progress."

Bounding Coordinates

For the dredging studies, the same bounding coordinates (West, East, North, South) were used as the data fell within a limited geographic range (San Pedro Bay). Bounding coordinates were included for other databases if provided in the original source material.

Access/Use Constraints

Access/Use Constraints defines restrictions to data access or uses of the data. If there were any disclaimers in the originating report, this information was included here.

Time Period of Content

Time Period of Content has two standard options, Publication Date or Ground Condition. If the Time Record in MetaManager FGCC Section 9 refers to the publication date, the correct entry here is Publication Date. If the Time Record in Section 9 refers to a time for which the data are meant to represent and reflect observations and conditions, the correct entry for this field is Ground Condition.

7.3.2 FGDC Section 2—Data Quality

Section 2 contains information about the accuracy and completeness of the data, including a completeness report, attribute accuracy report, process description, and processing reference. The CSTF version also includes three non-FGDC sections describing the lab methods, field methods, and analysis methods used in the study. These fields are derived from the National Biological Service version of the metadata standard, as used by SCCWRP.

From the MetaManager Information form, look at the buttons in the box below "View FGDC Section:" near the top of the form. Click on the upper-left button "2: Data Quality" to access this information.

Attribute Accuracy Report

The Attribute Accuracy Report contains much of the quality assurance information for the data set. For dredging reports, the discussion was focused on the presence or absence of a QA section in the originating report. Also, any problems with the data were noted in this section.

Figure 7-3. MetaManager Data Quality/Lineage Information Section 2 screen.

Logical Consistency Report

The Logical Consistency Report describes any inconsistent data within the set. If there are no apparent inconsistent data for this field, this field was filled with "N/A" for not available.

Completeness Report

The Completeness Report reflects any missing data, such as samples that were collected but not analyzed. Other examples include data that were analyzed but rejected due to quality control issues.

Positional Accuracy Reports

The Horizontal and Vertical positional accuracy reports describe the methods and accuracy used to determine positions of the samples collected for analysis. Vertical position refers to water depth and horizontal position refers to the latitude and longitude.

Type of Source Media

Type of Source Media describes the physical medium of the data set. The most common descriptions are either paper (for a bound document) or electronic.

Process Description

Process Description provides key information about the creation and development of the data. A thorough process description will help future users understand the quality of the data even if other fields in this section are blank. It contains a description of the most recent data processing steps. For hand-entered data (dredging reports), it contains primarily any processing that had to be done outside of data entry (e.g., incorporate latitude and longitude into the data set when only maps of sample locations were provided). For electronic data, a summary of the processing steps required to make the database compatible with the CSTF SQD is summarized.

Process Date

Process Date indicates when the latest edits or revisions to the data set were made.

Field, Laboratory, and Analysis Methods

Field Method describes how the samples were collected. Lab Method describes the processes and procedures that were followed in the laboratory. This includes the conditions under which the samples were held, compositing, and the specific analyses that were performed. Analysis Method describes the specific statistical analysis methods used to determine the quality of the data and the performance of the samples relative to the established criteria.

Citation

Citation (Lineage) refers to the most recent responsible agency. It is linked to Section 8 of the database. If the data were passed from the originating publisher to another agency for pre-inclusion processing, the agency that processed the data would be listed here. Usually, the agency listed in Section 1 still applies to Section 2.

Time Period

Time Period is linked to the "ground condition," that is, what time period the data

actually represent. This may be the same as in Section 1.

Process Contact

Process Contact is the name of a contact person at the most recent responsible agency in the data lineage. Often the contacts are the same for Sections 1 and 2.

7.3.3 FGDC Section 5—Entity and Attribute

The Entity and Attribute Section contains important information about the data set's contents. For the CSTF project, we used this section to document all of the chemistry and toxicity tests reported in a study.
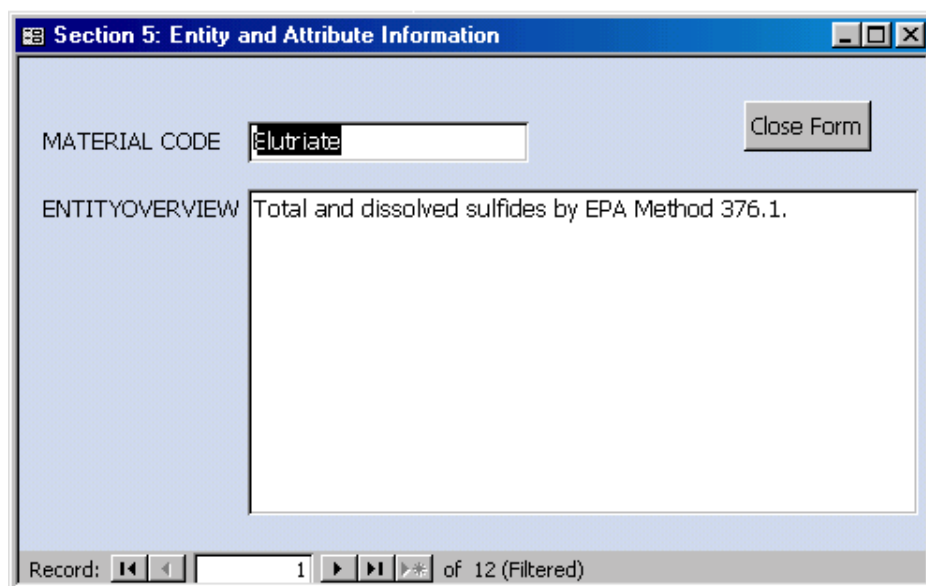
Figure 7-4. MetaManager Entity and Attribute Information Section 5 screen.

There will only be one record each for Sediment, Elutriate, and Tissue, despite the number of different chemical analyses performed on these materials.

7.3.4 FGDC Section 7—Metadata Reference Information

FGDC Section 7 contains information about the metadata, including the date, standard, and contact information for each record.

Metadata Standard Name and Version

The Metadata Standard Name and Version will, by default, reflect the standard used by CSTF at the time of delivery. As of this writing, that default is the FGDC Content Standard for Digital Geospatial Metadata Version 2.0.

Contact Information

Contact information is linked to Section 10 and indicates the person responsible for the metadata entry.

7.3.5 FGDC Section 8—Citation Information

FGDC Section 8 is essentially the bibliographic information for the study. It contains required fields for a data set citation, including the originator, publication date, title, and version. Section 8 is linked to Sections 1 and 2 and duplicates information found there. The fields available for describing bibliographic information in the metadata standard Section 8 include:

- ❑ Citation Record Name
- ❑ Originator
- ❑ Publication date
- ❑ Title
- ❑ Edition
- ❑ Data Presentation
- ❑ Other Citation Details
- ❑ Online Linkage

7.3.6 FGDC Section 9—Time Period Information

FGDC Section 9 is used to describe the time period describing either when the data were collected ('Ground Condition') or reported ('Publication'). The time can be reported as either a single date or a range of dates. Sections 1, 2, and 6 link to Section 9 to provide a time reference. If sampling dates were not provided, the publication date was entered. All dates conformed to a standard form of YYYYMMDD.

The fields available for describing bibliographic information in the metadata standard Section 9 include:

- ❑ Time Period of Content Data Explanation
- ❑ Time Record Name
- ❑ Calendar Dates

7.3.7 FGDC Section 10—Contact Information

The contact for the study should be the person who would know most about the contents of the study. In general, this will be the agency representative (i.e., project manager) for the study.

The fields available for describing bibliographic information in the metadata standard Section 10 include:

- ❑ Contact Record Name
- ❑ Contact Person
- ❑ Contact Organization
- ❑ Contact Position
- ❑ Address Type

- ❑ Address
- ❑ Contact Voice Phone
- ❑ Internet Address

Section 8
8 Glossary and Acronyms

8.1 Glossary

8.1.1 Database Definition and Terms

Database - A database is a collection of pieces of electronic information (known as *data*) that have been organized into categories (known as *fields*) and grouped into units (known as *records and tables*). Databases are created so that information can be stored efficiently and quickly retrieved. Some examples of databases are a library catalog or motor vehicle records. The CSTF Sediment Quality Database is discussed in this document.

Objects - Databases have objects (tables and queries) that can be thought of as discrete units that are contained within the database. Tables are the basic unit of data storage in database.

Query – A query is a statement that is used to extract data from a database. Also, within Access, it is an object that is used to store query statements. Can also be used as a verb (to query the database).

Relationships – A relationship defines how two or more tables are related through key fields. Common types of relationships between two tables include one-to-one (each record in one table is related to one record in the other), or one-to-many.

Table – Object within the database application used to store information.

8.1.2 Application Definition and Terms

Application – A database application contains objects (forms and reports) that offer a more convenient way than tables and queries for users to interact with data.

Forms – Forms are custom-built user interfaces are that enable more intuitive interactions with data. The user forms that exist in the EQT make it a database application rather than just a database.

Form Controls - Users interact with forms through the use of controls. Controls are the basic unit of graphical user interface such as a button, menu, or text box. When a control is enabled you can use it normally. However, when it is disabled, it is grayed out and you cannot interact with it or enter data into it.
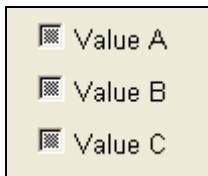
- Text Box – Enter information into white indented box.

Enter Information Here [   ]
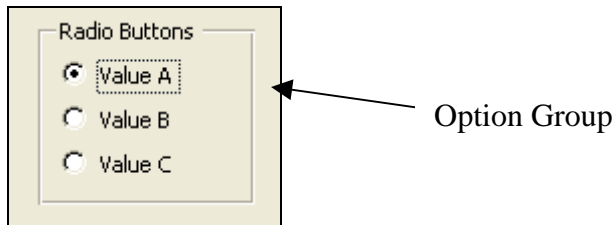
- Drop-Down Box or List - Click on the arrow to the right of the white entry box and click on the parameter you want to select.

Query Name: [new   ▼]

- Check Box – Square check boxes; check in any combination of the boxes, or none at all.

☒ Value A
☒ Value B
☒ Value C

- Radio Button- contained within an option group. You can check in only one of the buttons in the 'Option Group'.

Radio Buttons
⦿ Value A   ← Option Group
○ Value B
○ Value C

8.1.3 Selected Environmental Data Terminology

Composite, CompositeID - Sample(s) which have been homogenized vertically (entire length of the core) or horizontally (segments of the same horizon from multiple cores) either in the field or the laboratory.

Control Sample - A sediment sample collected from an area known to have little or no pollutants resulting from human impact. Also may refer to a laboratory control, such as a seawater blank sample for elutriate toxicity testing.

Detection Limit or Method Detection Limit - The lowest concentration of a particular analyte that is detectable by the analytical instrument.

Elutriate – The fraction of sediment contaminants that are easily released into water. The standard elutriate test is used to predict the release of contaminants to

the water column resulting from open-water dredged material disposal.

Metadata - Documentation about spatial datasets that is federally mandated. Provides important information about the quality and content of a spatial data set.

Reference Sample - A sediment sample collected from an area that has environmental characteristics similar to the samples collected for a study.

Refusal - When a core does not reach full penetration due to interference with a geologically hard layer (e.g., sand, rock).

Reporting Limit - The adjusted method detection limit reflecting dilutions made to sample prior to analysis or elevated limit due to matrix interference.

Tiers - A dredged material characterization term, used in the Green Book standards to detail what analyses should be conducted. Tier I is the first level of sample analysis – sediment chemistry only. Tier II is the second level of sample analysis and includes both sediment chemistry and toxicity testing. Tier III is the third level of sample analysis with chemistry toxicity, and bioaccumulation analyses.

8.2   Acronyms

BPTCP – Bay Protection and Toxic Cleanup Program
EMAP – Environmental Monitoring and Assessment Program
EPA – Environmental Protection Agency
GIS – Geographic Information System
NSI – National Sediment Inventory
POLA – Port of Los Angeles
POLB – Port of Long Beach
SCCWRP – Southern California Coastal Water Research Project
SQD – Sediment Quality Database
SQG – Sediment Quality Guideline
SQL – Structured Query Language
USACE – United States Army Corps of Engineers
VBA – Visual Basic for Applications

Appendix A

List of Studies in the CSTF Sediment Quality Database

Part A
Includes the StudyID, the Study Name, Agency Code, Study Type (Dredging or Monitoring), and the type(s) of data contained within that study (sediment chemistry [sed chem], toxicity [sed tox], elutriate chemistry [el chem], bioaccumulation [lab accum], and infaunal data.

Part B
Includes the StudyID, the Study Name, the year of publication, authors, and title of publication.

Also available as AppendixA.xls

Study ID	StudyName	AgencyCode	Study Type	Sed Tox	Sed Chem	Lab Accum	El Chem	Infauna
1	POLA Berths 40-44 Sedchem	POLA	D	N	Y	N	N	N
2	POLA Berths 121-126 Final Rprt 1/2	POLA	D	Y	Y	Y	N	N
3	POLA Berth 191 Final Report 2/2	POLA	D	Y	Y	Y	N	N
4	POLA Berth 144 Final Report 1/2	POLA	D	Y	Y	Y	N	N
5	POLA Berths 143-144 Sed Test 1/2	POLA	D	Y	Y	Y	Y	N
6	POLA Berth 142 Sed Test 2/2	POLA	D	Y	Y	Y	Y	N
7	POLA Berths 148-151 Sed Test	POLA	D	Y	Y	Y	N	N
8	POLA Berths 167-169 Sed Tests	POLA	D	Y	Y	Y	N	N
9	POLA Berths 127-131 Final Report	POLA	D	Y	Y	Y	Y	N
11	POLA Berths 174-176 Sed Tests	POLA	D	Y	Y	Y	N	N
12	POLA Berths 187-190 Final Report	POLA	D	Y	Y	Y	N	N
15	ACOE Portwide Prelim Testing	ACOE	D	N	Y	N	N	N
18	POLA Berths 212-215 Sed Tests	POLA	D	Y	Y	Y	N	N
19	POLA Berths 216-221 Sed Tests	POLA	D	Y	Y	Y	N	N
20	POLA Berths 233-236 Sed Tests	POLA	D	Y	Y	Y	N	N
22	POLA Berths 237-239 Sed Tests	POLA	D	Y	Y	Y	N	N
24	POLB Channel 2 Sed Testing	POLB	D	Y	Y	Y	N	N
25	ACOE LA River Estuary Sed Testing	ACOE	D	Y	Y	Y	N	N
26	POLB West Basin, 6/96 Sed Testing	POLB	D	N	Y	N	N	N
27	POLB Pier J, East Channel Dredge	POLB	D	Y	Y	Y	N	N
28	POLB West Basin, 8/96 Sed Testing	POLB	D	N	Y	N	N	N
29	POLB West Basin, 8/98 Sed Testing	POLB	D	Y	Y	Y	N	N
32	POLB Berths J245-247	POLB	D	Y	Y	Y	N	N

Study ID	StudyName	AgencyCode	Study Type	Sed Tox	Sed Chem	Lab Accum	El Chem	Infauna
35	POLB Berths J266-270	POLB	D	Y	Y	Y	N	N
36	POLB West Basin SA I, II, III, VI, VII	POLB	D	Y	Y	Y	N	N
37	POLB West Basin SA IV and V	POLB	D	N	Y	N	Y	N
38	POLA Berths 258-259 Final Report	POLA	D	N	Y	N	N	N
39	POLA Berths 261-262 Sed Tests	POLA	D	Y	Y	Y	N	N
40	POLA Berths 263-264 Sed Tests	POLA	D	Y	Y	N	N	N
41	POLA Pier 400 Final Rprt Chem Tests	POLA	D	N	Y	N	Y	N
44	POLA Main Channel Sed Eval	POLA	D	Y	Y	Y	Y	N
45	POLA West Ch B40-44 Sed Testing	POLA	D	Y	Y	Y	N	N
46	POLA Berths 45-47 Final Report	POLA	D	Y	Y	Y	N	N
47	POLA Berths 97-102 Sed Testing	POLA	D	Y	Y	Y	N	N
48	POLA Berths 118-120 Eval	POLA	D	Y	Y	N	Y	N
50	POLA Berth 35 Final Report	POLA	D	N	Y	N	N	N
51	POLA Berths145,146,121-122 TechEval	POLA	D	Y	Y	Y	N	N
52	POLA Berth 147 Final Report 2/2	POLA	D	Y	Y	Y	N	N
53	ACOE Marina del Rey Sed Tests	ACOE	D	Y	Y	Y	N	N
54	ACOE Marina del Rey Chem Tests	ACOE	D	N	Y	N	N	N
55	ACOE LA River Est Sed Tests	ACOE	D	N	Y	N	N	N
58	BPTCP/NOAA Cooperative 1992 (Legs 1 - 5)	BPTP	M	Y	Y	N	N	N
60	BPTCP/EMAP/NOAA Coop Pilot 1994 (Legs 34, 36)	BPTP	M	Y	Y	N	N	N
61	POLB Pier S Dredging, Final Report	POLB	D	Y	Y	Y	N	N
64	BPTCP Screening 1993 (Legs 15-19)	BPTP	M	Y	Y	N	N	N

Study ID	StudyName	AgencyCode	Study Type	Sed Tox	Sed Chem	Lab Accum	El Chem	Infauna
65	BPTCP Screening/San Diego Confirm 1993 (Legs 20-23	BPTP	M	Y	Y	N	N	N
66	BPTCP Confirmation/Reference 1994 (Legs 24-30; 30-	BPTP	M	Y	Y	N	N	N
67	BPTCP Confirmation 1996 (Legs 45-46)	BPTP	M	Y	Y	N	N	N
68	BPTCP Confirmation/Screening 96-97 (Legs 47-48, 53	BPTP	M	Y	Y	N	N	N
69	Southern California Bight Pilot Project 1994	SCCW	M	Y	Y	N	N	Y
70	ACOE LA Harbor and Estuary Sed Test	ACOE	D	Y	Y	Y	N	N
71	Temporal Change in the Benthos: EPA Outfall Study	EPAX	M	Y	Y	N	N	N
72	Vertical Profiles, PV Shelf and Santa Monica Bay	EPAX	M	Y	Y	N	N	N
73	Sediments from Palos Verdes and Santa Monica Bay	EPAX	M	Y	Y	N	N	N
74	Characteristics and Effects of Contaminated Seds	SCCW	M	Y	Y	N	N	N
75	Investigation of Toxicity in Palos Verdes Sediment	SCCW	M	Y	Y	N	N	N
76	Ecological changes in the Southern CA Bight	SCCW	M	Y	Y	N	N	N
77	NSI/USGS 1990-1998 Sediment Data	USGS	M	N	Y	N	N	N
78	NSI/California RWQCB Surface Water Study	RWQB	M	N	Y	N	N	N
79	NSI/Orange County 1990-97 Sediment Data	ORCO	M	N	Y	N	N	N
81	NSI/ODES Encina 301(h) Sediment Data	NSI	M	N	Y	N	N	N
82	NSI/ODES Goleta 301(h) Sediment Data	NSI	M	N	Y	N	N	N
86	NSI/ODES Orange County 301(h) Sediment Data	ORCO	M	N	Y	N	N	N

Study ID	StudyName	AgencyCode	Study Type	Sed Tox	Sed Chem	Lab Accum	El Chem	Infauna
88	NSI/NOAA NS&T Benthic Surveillance 1984	NOAA	M	N	Y	N	N	N
89	Bight 1998 Regional Marine Monitoring Survey	SCCW	M	Y	Y	N	N	N
90	Marine Environment of Marina del Rey 1991-92	LACO	M	N	Y	N	N	N
92	Marine Environment of Marina del Rey 1993-94	LACO	M	N	Y	N	N	N
93	Marine Environment of Marina del Rey 1995-96	LACO	M	N	Y	N	N	N
94	Marine Environment of Marina del Rey 1996-97	LACO	M	N	Y	N	N	N
95	Marine Environment of Marina del Rey 1997-98	LACO	M	N	Y	N	N	N
96	Marine Environment of Marina del Rey 1998-99	LACO	M	N	Y	N	N	N
97	Marine Environment of Marina del Rey 1999-2000	LACO	M	N	Y	N	N	N
98	Marine Environment of Marina del Rey 1990-91	LACO	M	N	Y	N	N	N
99	West EMAP 1999	SCCW	M	Y	Y	N	N	Y
100	Long Beach Naval Station Feasibility Study 1998	NALB	M	N	Y	N	N	N
101	POLA Berths 171-173 Sed Tests	POLA	D	Y	Y	Y	N	N
102	POLA Berth 71 Maintenance Dredging	POLA	D	Y	Y	Y	N	N
103	POLA Berths 163-164 Sed Tests	POLA	D	Y	Y	Y	N	N
104	POLA Slip 5 Sed Tests	POLA	D	Y	Y	Y	N	N
109	POLA DWP Reclaimed Water Pipeline Crossing	POLA	D	Y	Y	Y	N	N
110	POLA Consolidated Slip Channel	POLA	D	N	Y	N	Y	N

Study ID	StudyName	AgencyCode	Study Type	Sed Tox	Sed Chem	Lab Accum	El Chem	Infauna
112	POLA Berths 107-109 Chem/Elut Tests	POLA	D	N	Y	N	Y	N
113	POLA Berths 167-169 Tech Eval	POLA	D	Y	Y	Y	N	N
114	POLA Berth 121, 122-124 Final Rprt 2/2	POLA	D	Y	Y	Y	N	N
115	POLA Berth 240B Final Report	POLA	D	Y	Y	Y	N	N
116	POLA Berth 36 Final Report	POLA	D	N	Y	N	Y	N
117	POLA Berth 100 Final Report	POLA	D	N	Y	N	N	N

Study ID	Agency Code	Year	Authors	Report Title
1	POLA	1995	Ogden Environmental and Energy Services	Final Report Chemistry Results For Sediment Adjacent To Berths 40-44
2	POLA	1997	Ogden Environmental and Energy Services, Inc.	Final Report - Dredged Material Testing For Ocean Disposal Berth 121-126. Project Directive Number 12 Agreement No 1831
3	POLA	1997	Ogden Environmental and Energy Services	Final Report, Dredged Material Testing For Ocean Disposal Berth 191. Project Directive Number 11; Agreement No. 1831
4	POLA	1996	Ogden Environmental and Energy Services	Final Report Dredged Material Testing For Ocean Disposal Berth 144 Project Directive Number 9, Agreement No 1931
5	POLA	1992	MEC Analytical	Results of Chemical, Physical, And Bioassay Analysis On Sediments For Maintenance Dredging At Berth 143-144 In The Port of Los Angeles River
6	POLA	1992	MEC Analytical	Results of Chemical, Physical, And Bioassay Analysis of Sediments For Maintenance Dredging At Berth 142 In The Port of Los Angeles
7	POLA	2000	Advanced Biological Testing, Inc (ABT)	Results of Chemical, Physical, And Bioassay Testing of Sediments for Maintenance Dredging At Berths 148-151 Port of Los Angeles
8	POLA	2000	Advanced Biological Testing, Inc (ABT)	Results of Chemical, Physical, And Bioassay Testing of Sediments For Maintenance Dredging At Berths 167-169 Port of Los Angeles
9	POLA	1995	Ogden Environmental and Energy Services	Final Report, Dredged Material Testing For Ocean Disposal Berths 127-131. Project Directive Number 3; Agreement Number 1831
11	POLA	1993	MEC Analytical	Results of Biological And Chemical Testing of Sediments From Berths 174 Through 176 Port of Los Angeles
12	POLA	1995	Ogden Environmental and Energy Services Co., Inc.	Final Report, Dredged Material Testing For Ocean Disposal Berths 187-190, Project Directive Number 2, Agreement No. 1831
15	ACOE	1993	ToxScan, Inc. and Kinnetic Laboratories Inc.	Preliminary Testing Program Portwide Maintenance Dredging
18	POLA	2000	Advanced Biological Testing, Inc (ABT)	Results of Chemical, Physical, And Bioassay Testing of Sediments For Maintenance Dredging At Berths 212-215 Port of Los Angeles

Study ID	Agency Code	Year	Authors	Report Title
19	POLA	1996	Kinnetic Laboratories Inc/ ToxScan Inc	Chemical Analysis And Toxicity Evaluation of Sediments Proposed For Maintenance Dredging And Ocean Disposal. Berths 216-221, Port of Los Angeles.
20	POLA	1997	Kinnetic Laboratories, Inc and ToxScan, Inc.	Chemical Analysis And Toxicity Evaluation of Sediments Proposed For Maintenance Dredging And Ocean Disposal. Berths 233-236. Port of Los Angeles. Directive IIa.
22	POLA	1996	Kinnetic Laboratories, Inc. and ToxScan, Inc.	Chemical Analysis And Toxicity Evaluation of Sediments Proposed For Maintenance Dredging And Ocean Disposal Berths 237-239, Port of Los Angeles. Directive IIIa.
24	POLB	1999	MEC Analytical	Results of Physical, Chemical, And Bioassay Testing of Sediments From Channel Two In The Port of Long Beach
25	ACOE	1998	MEC Analytical	Results of Physical, Chemical, And Bioassay Testing of Sediments Collected From The Los Angeles River Estuary
26	POLB	1996	MEC Analytical	Sediment Characterization In The West Basin, Port of Long Beach
27	POLB	1992	MEC Analytical	Physical, Chemical, And Bioassay Analyses of Dredge Sediments From Pier J And The East Channel In Long Beach Harbor
28	POLB	1996	MEC Analytical	Sediment Characterization In The West Basin, Port of Long Beach (samples Collected August 1996)
29	POLB	1999	MEC Analytical	Results of Chemical, Physical, And Bioassay Testing of Sediments Collected From The West Basin, Port of Long Beach
31	POLB	1995	MEC Analytical	Results of Chemical, Physical, And Bioassay Testing For Port of Long Beach Berths 88-94 (sampling 11/94)
32	POLB	1997	MEC Analytical	Results of Chemical, Physical, And Bioassay Testing For Port of Long Beach Berths J245-247
34	POLB	1998	Ogden Environmental and Energy Services	Final Report: Sediment Testing For Maintenance Dredging Permit. Contract HD5951, Job Task 9801
35	POLB	1997	ToxScan, Inc.	Chemical Analysis And Toxicity Evaluation of Sediments At Berths J266-270, Port of Long Beach
36	POLB	1999	MEC Analytical	Sediment Testing For Proposed West Basin Dredging, Port of Long Beach (Subareas I, II, III, VI, VII)

Study ID	Agency Code	Year	Authors	Report Title
38	POLA	1995	Odgen Environmental and Energy Services	Final Report, Chemistry Results For Berths 258-259 Project Directive Number 4, Agreement No. 1831
39	POLA	1998	MEC Analytical	Results of Physical, Chemical, And Bioassay Testing of Sediments Collected From Berths 261-262 In Fish Harbor In The Port of Los Angeles
40	POLA	2000	Advanced Biological Testing, Inc (ABT)	Results of Chemical, Physical, And Bioassay Testing of Sediments For Maintenance Dredging At Berths 263-264, Port of Los Angeles
41	POLA	1996	ToxScan, Inc.	Chemical Analysis And Evaluation of Sediments, Stage 1 Pier 400, Main Channel, Borrow Area. Directive VII Final Report
44	POLA	1997	Kinnetic Laboratories/ToxScan, Inc.	Environmental Evaluation of Sediments For The Channel Deepening Program, Port of Los Angeles
45	POLA	1998	MEC Analytical	Results of Physical, Chemical, And Bioassay Testing of Sediments Collected From The Watchorn Basin In The Port of Los Angeles
46	POLA	1995	Ogden Environmental and Energy Services	Final Report Dredge Material Testing Results For Ocean Disposal Berths 45-47
47	POLA	1995	ToxScan, Inc.	Chemical Analysis And Toxicity Evaluation of Sediments Proposed For Dredging And Ocean Disposal. West Basin Entrance Widening
48	POLA	1997	Kinnetic Laboratories/ToxScan, Inc.	Evaluation of Maintenance Dredging Sediments, Berths 118-120, Port of Los Angeles
50	POLA	1995	Odgen Environmental and Energy Services Inc.	Final Report, Chemistry Results For Berth 35 Project Directive Number 6; Agreement No. 1831
51	POLA	1994	ToxScan, Inc.	Technical Evaluation of Environmental Impact Potential For Proposed Ocean Disposal of Dredged Material From Berths 145, 146, And 121-122 West Basin In Los Angeles Harbor
52	POLA	1996	Ogden Environmental and Energy Services	Final Report Dredged Material Testing For Ocean Disposal Berth 147 Project Directive Number 10, Agreement No 1831
53	ACOE	1998	MEC Analytical	Report of Testing of Sediments Collected From Marina Del Rey, CA
55	ACOE	1995	Sweetwater Environmental Biologists and MEC	Sediment Sampling And Analysis For Sediment Characterizations. Los Angeles River Estuary.

Study ID	Agency Code	Year	Authors	Report Title
60	BPTP	1994	Russell Fairey, Moss Landing Marine Lab	BPTCP/EMAP/NOAA Coop Pilot (Legs 34, 36)
61	POLB	2000	Ogden Environmental and Energy Services	Final Report Pier S Realignment And Dredging Project Contract HD-5951
62	ACOE	1999	MEC Analytical	Results of physical and chemical analysis of sediments from Marina del Rey, California
63	BPTP	1993	Russell Fairey, Moss Landing Marine Lab	BPTCP Screening (Legs 5-14)
64	BPTP	1998	Krahn, Margaret M., Jon Buzitis, Gina M. Ylitalo, Catherine A. Sloan, Donald W.	BPTCP Screening 1993 (Legs 15-19)
65	BPTP	1993	Russell Fairey, Moss Landing Marine Lab	BPTCP Screening/San Diego Confirm (Legs 20-23)
66	BPTP	1994	Russell Fairey, Moss Landing Marine Lab	BPTCP Screening 1994 (Legs 24-30; 30-33)
67	BPTP	1996	Russell Fairey, Moss Landing Marine Lab	BPTCP Confirmation (Legs 45-46)
68	BPTP	1997	Russell Fairey, Moss Landing Marine Lab	BPTCP Confirmation/Screening (Legs 47-48, 53-54)
69	SCCW	1996	SCCWRP	Southern California Bight Pilot Project 1994
70	ACOE	1995	MEC Analytical	Results of chemical, physical, and Bioassay Testing for Los Angeles District Army Corps of Engineers
71	EPAX	1991	Ferraro, S.P., Swartz, R.C., Cole, F.A., and Schults, D.W.	Temporal Changes in the Benthos along a Pollution Gradient: Discriminating the Effects of Natural Phenomena from Sewage-Industrial Wastewater Effects
72	EPAX	1991	Swartz, R.C., Schults, D.W., Lamberson, J.O., Ozretich, R.J., and Stull, J.K.	Vertical Profiles of Toxicity, Organic Carbon, and Chemical Contaminants in Sediment Cores from the Palos Verdes Shelf and Santa Monica Bay, California
73	EPAX	1985	Swartz, R.C., Schults, D.W., Ditsworth, G.R., DeBen, W.A., and Cole, F.A.	Sediment Toxicity, Contamination and Macrobenthic Communities Near a Large Sewage Outfall
74	SCCW	1988	Anderson, J.W., Bay, S.M., and Thompson, B.E.	Characteristics and Effects of Contaminated Sediments from Southern California
75	SCCW	1994	Bay, S., Greenstein, D., Brown, J., and Jirik, A.	Investigation of Toxicity in Palos Verdes Sediments
77	USGS	2000	NSI	NSI/USGS 1990-1998 Sediment Data
78	RWQB	2000	NSI	NSI/California RWQCB Surface Water Study
79	ORCO	2000	NSI	NSI/Orange County 1990-97 Sediment Data

Study ID	Agency Code	Year	Authors	Report Title
81	NSI	2000	NSI	NSI/ODES Encina 301(h) Sediment Data
82	NSI	2000	NSI	NSI/ODES Goleta 301(h) Sediment Data
85	NSI	2000	NSI	NSI/ODES Morrow Bay 301(h) Sediment Data
86	ORCO	2000	NSI	NSI/ODES Orange County 301(h) Sediment Data
88	NOAA	1984	NSI	NSI/NOAA NS&T Benthic Surveillance 1984
89	SCCW	1998	SCCWRP	Bight 1998 Regional Marine Monitoring Survey
90	LACO	1992	Soule, D.R., Oguri, M., and Jones, B.H.	The Marine Environment of Marina del Rey; October 1991-June 1992
91	LACO	1993	Soule, D.R., Oguri, M., and Jones, B.H.	The Marine Environment of Marina del Rey; July 1992-June 1993 and 1976-1993 Summary
92	LACO	1994	Soule, D.R. and Oguri, M.	The Marine Environment of Marina del Rey; July - September 1993, January - May 1994
93	LACO	1997	Soule, D.R., Oguri, M., and Pieper, R.E.	The Marine Environment of Marina del Rey; July 1995-June 1996
94	LACO	1997	Aquatic Bioassay and Consulting Laboratories, Inc.	The Marine Environment of Marina del Rey; July 1996-June 1997
95	LACO	1998	Aquatic Bioassay and Consulting Laboratories, Inc.	The Marine Environment of Marina del Rey; July 1997-June 1998
96	LACO	1999	Aquatic Bioassay and Consulting Laboratories, Inc.	The Marine Environment of Marina del Rey; July 1998-June 1999
97	LACO	2000	Aquatic Bioassay and Consulting Laboratories, Inc.	The Marine Environment of Marina del Rey; July 1999-June 2000
98	LACO	1992	Soule, D.R., Oguri, M., and Jones, B.H.	The Marine Environment of Marina del Rey; October 1990-September 1991
99	SCCW	1999	SCCWRP	West EMAP Information Management Plan
100	NALB	1998	NA	1998 Feasibility Study, no reference information available
101	POLA	1996	Kinnetic Laboratories Inc. and ToxScan Inc.	Chemical Analysis and Toxicity Evaluation of Sediments Proposed for Dredging Berthing Facility improvements Berths 171-173 Port of Los Angeles.
102	POLA	1999	Advanced Biological Testing, Inc.	Results of Chemical, Physical, and Bioasay Testing of Sediments for Maintenance Dredging at Berth 71

Study ID	Agency Code	Year	Authors	Report Title
104	POLA	1999	Advanced Biological Testing, Inc.	Results of Chemical, Physical, and Bioassay Testing of Sediments for Maintenance Dredging at Slip 5, Port of Los Angeles, Los Angeles, California
106	POLA	1996	Kinnetic Laboratories, Inc. And ToxScan, Inc.	Chemical Analysis and toxicity Evaluation for Sediments Proposed for Maintenance Dredging Berths 51-55 Port of Los Angeles Directive VI
109	POLA	1997	Kinnetic Laboratories, Inc. and ToxScan, Inc.	Environmental Evaluation of Sediments to be Removed for the Department of Water and Power Reclaimed Water Pipeline Crossing Addendum to Channel deepening Testing Program
110	POLA	1997	Kinnetic Laboratories, Inc. and ToxScan, Inc.	Evaluation of Maintenance Dredging Sediments consolidated Slip Channel
112	POLA	1993	Toxscan, Inc.	Chemical Analysis of Sediments and Elutriates Prepared From Sediments Proposed for Dredging From Berths 107-109 In Los Angeles Harbor
113	POLA	1992	Toxscan, Inc.	Technical Evaluation of Environmental Impact Potential for Proposed Ocean Disposal of Dredged material From Berths 167-169 in the Port of Los Angeles
114	POLA	2001	AMEC Earth & Environmental, Inc.	Final Report Berth 121 Wharf Extension and Berths 122 - 124 Maintenance Dredging Sediment Characterization Study
115	POLA	2001	AMEC	Final Report Berth 240B Maintenance Dredging Sediment Characterization Study
116	POLA	2001	AMEC Earth & Environmental, Inc.	Final Report Cabrillo Beach yacht Club (Berth 36) Sediment characterization Study
117	POLA	2001	MEC Analytical Systems, Inc.	Berth 100 Wharf Construction and Shoreline Improvement - Sediment Characterization Study

Appendix B

CSTF Sediment Quality Database Dictionary

Part A
Includes the Table Name, Field Name, and Description of the Field Name.

Part B
Includes the Table Name, Field Name, the Data Format (text, number, date/time), StudyID, whether the field is a Key Field, the default value for nulls, and if the field is formally required.

Also available as AppendixB.xls

Table	Field	Description
tblChemistryBatchInfo	StudyID	Unique ID for the study from tblStudy.
tblChemistryBatchInfo	QABatch	The code for all of the samples processed in the same batch.
tblChemistryBatchInfo	MaterialCode	Matrix from luList17.
tblChemistryBatchInfo	SpeciesCode	Species code from luList20.
tblChemistryBatchInfo	PrepCode	Preparation code from luList 34
tblChemistryBatchInfo	PrepDate	The date the sample was extracted expressed as dd/mm/yyyy.
tblChemistryBatchInfo	MethodCode	Analysis method from lulist33.
tblChemistryBatchInfo	AnalysisDate	The date the sample was processed in the instrument expressed as dd/mm/yyyy
tblChemistryBatchInfo	AgencyCode	Agency code from luList01.
tblChemistryBatchInfo	Comments	Additional comments.
tblChemistryResults	StudyID	Unique ID for the study from tblStudy.
tblChemistryResults	StationID	Station or area name with a specific geographic location or center point.
tblChemistryResults	CompositeID	ID for the composite sample used for analysis.
tblChemistryResults	ChemicalName	Name of parameter from luList18.
tblChemistryResults	QABatch	Code for all samples processed in the same batch.
tblChemistryResults	StudyType	Defines whether the data are dredging (primarily core) or monitoring (primarily grab) data.
tblChemistryResults	SampleType	The type of result from luList04.
tblChemistryResults	LabRep	Laboratory replicates, if present (tissue replicate samples handled as separate samples).
tblChemistryResults	Qualifier	Data qualifiers from luList13; U is standard for data below detection.
tblChemistryResults	Result	Numerical result; dry wt for sediment / wet weight for tissue and water.
tblChemistryResults	Units	Units for the result (standard units as in luList18).
tblChemistryResults	Measbasis	DW (dry weight/sediment) or WW (wet weight/tissue).
tblChemistryResults	MaterialCode	Matrix code from luList17.
tblChemistryResults	MDL	Method detection limit.
tblChemistryResults	RL	Reporting limit.
tblChemistryResults	Dilution	Dilution factor if available.
tblChemistryResults	AgencyCode	The agency code from luList01.
tblChemistryResults	Comments	Additional comments.
tblCoreComposites	StudyID	Unique ID for the study from tblStudy.
tblCoreComposites	StationID	Station or area name with a specific geographic location or center point.
tblCoreComposites	CompositeID	Identifier for the composite sample used for analysis.

Table	Field	Description
tblCoreComposites	StudyType	Defines whether the data are dredging (primarily core) or monitoring (primarily grab) data.
tblCoreComposites	AnalysisType	Tier analysis according to the Green Book.
tblCoreComposites	Comments	Additional comments.
tblCoreEvent	StudyID	Unique ID for the study from tblStudy.
tblCoreEvent	StationID	Station or area name with a specific geographic location or center point.
tblCoreEvent	CoreID	A unique identifier for the individual core.
tblCoreEvent	SampleDepth	Total water depth expressed in meters.
tblCoreEvent	Date	The date the core sample was taken expressed as mm/dd/yyyy.
tblCoreEvent	Time	The time the core sample was taken expressed in 24 hour time.
tblCoreEvent	Segments	Number of segments tested from the core based on horizontal divisions.
tblCoreEvent	Latitude	Location of the individual core in decimal degrees (NAD83).
tblCoreEvent	Longitude	Location of the individual grab in decimal degrees (NAD83), negative for West longitude.
tblCoreEvent	CoreLength	Total core length expressed in cm below the sediment water interface.
tblCoreEvent	Penetration	Total penetration of the core barrel expressed in cm below the sediment water interface.
tblCoreEvent	Color	Color of the sediment from luList26.
tblCoreEvent	Composition	Composition of the sediment from luList06.
tblCoreEvent	Odor	Odor of the sediment from luList07.
tblCoreEvent	ShellHash	Is shell hash present in the sediment (Y/N)?
tblCoreEvent	Refusal	Was refusal reached (Y/N)?
tblCoreEvent	Comments	Additional comments.
tblCoreSamples	StudyId	Unique ID for the study from tblStudy.
tblCoreSamples	StationID	Station or area name with a specific geographic location or center point.
tblCoreSamples	CoreID	Identifier for the individual core.
tblCoreSamples	CompositeID	Identifier for the composite sample that includes the core sample.
tblCoreSamples	CoreSampleID	Unique identifier for the core sample.
tblCoreSamples	UpperMeasure	Upper sediment depth, measured from the sediment water interface, expressed in cm.
tblCoreSamples	LowerMeasure	Lower sediment depth, measured from the sediment water interface, expressed in cm.
tblCoreSamples	Comments	Additional comments.
tblComments	CommentID	Identifier number of comment; automatically assigned using Comment Reporter tool.
tblComments	EventType	Used to sort by type of problem, 'comment' is default; 'bug' acceptable option.
tblComments	DateVal	Date of comment.

Table	Field	Description
tblComments	DatabaseVersion	Version of the CSTF database; automatically filled out by Comment Reporter tool.
tblComments	UserName	Name of person entering comment.
tblComments	ControlName	Name of the EQT control, if applicable. Automatically filled out by Comment Reporter tool.
tblComments	ErrorDescription	Description of the comment or bug.
tblComments	BugFix	Description of the comment or bug.
tblComments	BugFixer	Who fixed the problem.
tblComments	BugFixDate	When the problem was fixed.
tblDredgeFate	StudyID	Unique ID for the study from tblStudy.
tblDredgeFate	StationID	Station or area name with a specific geographic location or center point.
tblDredgeFate	CompositeID	Identifier for the composite sample used for analysis.
tblDredgeFate	Project Name	Project name internal to the agency, for tracking purposes.
tblDredgeFate	AgencyCode	The agency that paid for the study from luList01.
tblDredgeFate	PredictedVolume	Estimated volume (cy) quoted in sediment characterization report.
tblDredgeFate	ProposedDisposalSite	Proposed disposal site in sediment characterization report, if available.
tblDredgeFate	Area	Area of footprint (square feet) to be dredged.
tblDredgeFate	Agency Number	Project number internal to the agency, for tracking purposes.
tblDredgeFate	Project Start	Start date of project.
tblDredgeFate	COE Date Of Permit	Corps of Engineer Permit date.
tblDredgeFate	COE PermitNumber	Corps of Engineer Permit number.
tblDredgeFate	RB Date Of Permit	Regional Water Quality Control Board Permit date.
tblDredgeFate	RB Case File Number	Regional Water Quality Control Board Permit number.
tblDredgeFate	RB Permit Number	Regional Water Quality Control Board Case File number.
tblDredgeFate	Dredge Start Date	Date (year) dredging started.
tblDredgeFate	Dredge End Date	Date (year) dredging ended.
tblDredgeFate	Disposal Method	Disposal method used for project.
tblDredgeFate	Disposal Site	Ultimate location of material disposed.
tblDredgeFate	Volume	Total volume dredged and disposed.
tblDredgeFate	Contractor	Name of dredging contractor.
tblDredgeFate	Comments	Comments.
tblDredgeFate	Suitability Recommendation	Recommendation, if available, for fate of material from sediment characterization report.
tblDredgeFate	RegulatoryCode	Permitted suitability for unconfined open-ocean disposal, from luList30.
tblDredgeFate	DisposalCode	Code for final disposal site, from luList30.

Table	Field	Description
tblGrabComposites	StudyID	Unique ID for the study from tblStudy.
tblGrabComposites	StationID	Station or area name with a specific geographic location or center point.
tblGrabComposites	CompositeID	ID for the composite that includes this core sample.
tblGrabComposites	StudyType	Defines whether the data are dredging (primarily core) or monitoring (primarily grab) data.
tblGrabComposites	UpperMeasure	Upper sediment depth, measured from the sediment water interface, expressed in cm.
tblGrabComposites	LowerMeasure	Lower sediment depth, measured from the sediment water interface, expressed in cm.
tblGrabComposites	Comments	Additional comments.
tblGrabEvent	StudyID	Unique ID for the study from tblStudy.
tblGrabEvent	StationID	Station or area name with a specific geographic location or center point.
tblGrabEvent	GrabID	A unique identifier for the individual grab sample.
tblGrabEvent	CompositeID	ID for the composite sample if the grab was used for analysis.
tblGrabEvent	Depth	Total water depth expressed in meters.
tblGrabEvent	Date	The date the grab sample was taken expressed as mm/dd/yyyy.
tblGrabEvent	Time	The time the grab sample was taken expressed in 24 hour time.
tblGrabEvent	Latitude	Location of the individual grab in decimal degrees to 5 places (NAD83).
tblGrabEvent	Longitude	Location of the individual grab in decimal degrees to 5 places (NAD83), negative for West longitude.
tblGrabEvent	Penetration	Total penetration of the grab sampler expressed in cm below the sediment water interface.
tblGrabEvent	Color	Color of the sediment from luList26.
tblGrabEvent	Composition	Composition of the sediment from luList06.
tblGrabEvent	Odor	Odor of the sediment from luList07.
tblGrabEvent	ShellHash	Is shell hash present in the sediment?
tblGrabEvent	GrabFailCode	If the grab failed record a code from luList09.
tblGrabEvent	Comments	Additional comments.
tblInfaunalAbundance	StudyID	Unique ID for the study from tblStudy.
tblInfaunalAbundance	StationID	Station or area name with a specific geographic location or center point.
tblInfaunalAbundance	CompositeID	ID for the composite sample if the grab was used for analysis.
tblInfaunalAbundance	Species	Infaunal species from luList10.
tblInfaunalAbundance	Abundance	Number of animals.
tblInfaunalAbundance	Qualifier	Qualifier from luList13.

Table	Field	Description
tblInfaunalAbundance	Unidentified	From Bight '94.
tblInfaunalAbundance	Exclude	Flag to exclude data from analysis.
tblInfaunalAbundance	AgencyCode	Code for the laboratory the conducted the work from luList01.
tblInfaunalAbundance	ScreenSize	Sieve size in mm.
tblInfaunalAbundance	Voucher	The number of animals vouchered of this species at this station.
tblInfaunalAbundance	Comments	Additional comments.
tblInfaunalBiomass	StudyID	Unique ID for the study from tblStudy.
tblInfaunalBiomass	StationID	Station or area name with a specific geographic location or center point.
tblInfaunalBiomass	CompositeID	ID for the composite sample if the grab was used for analysis.
tblInfaunalBiomass	GroupCode	Phyla group code from luList11.
tblInfaunalBiomass	Qualifier	Qualifier from luList13.
tblInfaunalBiomass	Biomass	The collective biomass of the group in Group Code.
tblInfaunalBiomass	Units	Default is grams.
tblInfaunalBiomass	ReweighPercent	From Bight '94.
tblInfaunalBiomass	OutlierFlag	Is this an individual biomass outlier?
tblInfaunalBiomass	AgencyCode	Laboratory that conducted the work from luList01.
tblInfaunalBiomass	NumIndividOut	The number of individuals in outlier species required for outlier.
tblInfaunalBiomass	OutlierBiomass	Biomass of individuals required for outlier.
tblInfaunalBiomass	Comments	Additional comments.
tblSampleMaster	StudyID	Unique ID for the study from tblStudy.
tblSampleMaster	StationID	Station or area name with a specific geographic location or center point.
tblSampleMaster	CompositeID	Identifier for the composite sample used for analysis.
tblSampleMaster	SampleType	The type of result from luList04.
tblSampleMaster	StudyType	Defines whether the data are dredging (primarily core) or monitoring (primarily grab) data.
tblSampleMaster	UpperMeasure	Upper sediment depth, measured from the sediment water interface, expressed in cm (average for multiple cores).
tblSampleMaster	LowerMeasure	Lower sediment depth, measured from the sediment water interface, expressed in cm (average for multiple cores).
tblSampleMaster	Date	The date the sample was taken expressed as dd/mmm/yyyy.
tblSampleMaster	TOC	TOC of the sample, for sample normalization.
tblSampleMaster	PctFines	Percent fines of the sample, for sample normalization.
tblSampleMaster	Comments	Additional comments.

Table	Field	Description
tblStation	StationID	Station or area name with a specific geographic location or center point.
tblStation	Strata	Classification of the station by area or region, generally used in monitoring studies.
tblStation	Description	A general description of the location of the station.
tblStation	Latitude	Decimal Degrees (NAD83)-point data
tblStation	Longitude	Decimal Degrees (NAD83)-point data
tblStation	Area	Are the data associated with an area (non-point location)?
tblStation	StudyType	Defines whether the data are dredging (primarily core) or monitoring (primarily grab) data.
tblStation	HydroUnit	Location of the station by watershed name.
tblStation	RegBoard	Location of the station by California Regional Water Quality Control Board.
tblStation	County	Location of the station in or near the noted County.
tblStation	Locality	Location of the station by water body as defined by SCCWRP.
tblStation	Port	Location of the station by Port name (Port of LA or Long Beach).
tblStation	Country	Location of the station by Country name.
tblStationOccupation	StudyID	Unique ID for the study from tblStudy.
tblStationOccupation	StationID	Station or area name with a specific geographic location or center point.
tblStationOccupation	SampleMethod	The method of sample collection from luList03.
tblStationOccupation	AgencyCode	A four digit agency code from luList01.
tblStationOccupation	Vessel	The name of the vessel.
tblStationOccupation	NavType	Type of navigation from luList28.
tblStationOccupation	WeatherCode	Weather description from luList08.
tblStationOccupation	WindSpeed	Wind speed in meters per second.
tblStationOccupation	WindDirection	Wind direction from luList05.
tblStationOccupation	SwellHeight	Swell height in meters.
tblStationOccupation	SwellPeriod	Swell period in seconds.
tblStationOccupation	SwellDirection	Swell direction from luList05.
tblStationOccupation	SeaState	Description of sea state from luList19.
tblStationOccupation	HabitatType	Habitat from luList41.
tblStationOccupation	Comments	Additional comments.
tblStudy	StudyID	A unique identifier for each study. Linked to metadata dataset ID.
tblStudy	StudyName	Name of the study.
tblStudy	AgencyCode	The agency that paid for the study from luList01.
tblStudy	Contact	Contact name for the study.
tblStudy	SedTox	Does this study have sediment toxicity data?

Table	Field	Description
tblStudy	SedChem	Does this study have sediment chemistry data?
tblStudy	SubSurf	Does this study have sediment subsurface chemistry data (below 1 ft.)?
tblStudy	LabAccum	Does this study have tissue bioaccumulation data?
tblStudy	ElChem	Does this study have sediment elutriate chemistry data?
tblStudy	Infauna	Does this study have benthic infaunal data?
tblStudy	Comments	Additional comments.
tblStudyReference	StudyID	Unique ID for the study from tblStudy.
tblStudyReference	Year	Year of publication, if applicable.
tblStudyReference	Authors	Authors of the publication.
tblStudyReference	Title	Title of the publication.
tblStudyReference	Source	Other reference or source information.
tblToxicityBatchInfo	StudyID	Unique ID for the study from tblStudy.
tblToxicityBatchInfo	QABatch	Identifier to match samples analyzed as a group.
tblToxicityBatchInfo	MatrixCode	Matrix of the test medium, from luList22.
tblToxicityBatchInfo	SpeciesCode	Code of species or type of biological system used for the toxicity test; refer to luList20.
tblToxicityBatchInfo	AgencyCode	The agency that performed toxicity analyses, from luList01.
tblToxicityBatchInfo	Protocol	Test protocol, from luList21.
tblToxicityBatchInfo	TestDate	Date of the test.
tblToxicityBatchInfo	TestDuration	Duration of the test, in days.
tblToxicityBatchInfo	Temperature	Temperature of the test, degrees C.
tblToxicityBatchInfo	AcceptCode	Acceptance code, from luList25.
tblToxicityResults	StudyID	Unique ID for the study from tblStudy.
tblToxicityResults	StationID	Station or area name with a specific geographic location or center point.
tblToxicityResults	CompositeID	Identifier for the composite sample used for analysis.
tblToxicityResults	SampleType	The type of result from luList04.
tblToxicityResults	QABatch	Code for all samples processed in the same batch (commonly includes matrix, species, method for uniqueness).
tblToxicityResults	AgencyCode	The four digit agency code from luList01.
tblToxicityResults	SpeciesCode	Code of species or type of biological system used for the toxicity test; refer to luList20.
tblToxicityResults	Dilution	The dilution factor expressed as a proportion.
tblToxicityResults	Concentration	Concentration in mg/L.
tblToxicityResults	EPCode	The type of test end point from luList23.
tblToxicityResults	Units	The units of the end point.
tblToxicityResults	LabRep	Lab replicate number.
tblToxicityResults	Value	Numerical result of the test.
tblToxicityResults	QACode	Quality assurance code from luList25.
tblToxicityResults	Comments	Additional comments.

Table	Field	Description
tblToxicitySumResults	StudyID	Unique ID for the study from tblStudy.
tblToxicitySumResults	StationID	A geographic location label from the station table.
tblToxicitySumResults	CompositeID	Unique identifier for the core composite within the study.
tblToxicitySumResults	SampleType	The type of result from luList04.
tblToxicitySumResults	QABatch	Identifier to match samples analyzed as a group.
tblToxicitySumResults	SpeciesCode	Code of species or type of biological system used for the toxicity test; refer to luList20.
tblToxicitySumResults	Dilution	The dilution factor expressed as a proportion.. When not required, complete with -99.
tblToxicitySumResults	Concentration	Concentration in mg/L. When not required, complete with -99.
tblToxicitySumResults	EPCode	The type of endpoint for the test. Refer to luList23.
tblToxicitySumResults	Units	The units for the endpoint.
tblToxicitySumResults	Mean	The mean value for the test and sample generated from the lab replicates in tblCoreToxicityResults.
tblToxicitySumResults	N	The number of replicates used to calculate mean and standard deviation from the lab replicates in tblCoreToxicityResults.
tblToxicitySumResults	StdDev	The standard deviation for the test and sample generated from the lab replicates in tblCoreToxicityResults.
tblToxicitySumResults	PctControl	The mean expressed as a percentage of the mean for the control (i.e., mean of the lab replicates divided by the mean for the control and multiplied by 100).
tblToxicitySumResults	SigEffect	Statistically significant effect based on reference. Refer to luList50.
tblToxicitySumResults	QACode	The quality assurance code for the analysis. Refer to luList25.
tblToxicitySumResults	Stat_Test	Statistical test used in determining final toxicity significance (reported).
tblToxicitySumResults	LC50	Concentration that results in the mortality of 50 percent of the most sensitive test organisms (lethal concentration).
tblToxicitySumResults	EC50	Concentration resulting in sublethal effects in 50 percent of the test organisms (effects concentration).
tblToxicitySumResults	NormSigEffect	Standardized significance of result compared to negative control.
tblToxicitySumResults	Comment	Note comments on statistical test used if known (e.g. ANOVA, t-test, etc.).
tblToxicityWaterQuality	StudyID	Unique ID for the study from tblStudy.

Table	Field	Description
tblToxicityWaterQuality	CompositeID	Identifier for the composite sample used for analysis.
tblToxicityWaterQuality	SpeciesCode	Code of species or type of biological system used for the toxicity test; refer to luList20.
tblToxicityWaterQuality	EPCode	The type of test end point from luList23.
tblToxicityWaterQuality	QABatch	Code for all samples processed in the same batch (commonly includes matrix, species, method for uniqueness).
tblToxicityWaterQuality	STWQCode	Standard water quality parameter code, from luList24.
tblToxicityWaterQuality	MatrixCode	Matrix of the test medium, from luList22.
tblToxicityWaterQuality	Dilution	The dilution factor expressed as a proportion.
tblToxicityWaterQuality	Concentration	Concentration in mg/L.
tblToxicityWaterQuality	MinValue	Minimum measured water quality parameter.
tblToxicityWaterQuality	MinQualifier	Qualifier for the minimum measured parameter.
tblToxicityWaterQuality	MaxValue	Maximum measured water quality parameter.
tblToxicityWaterQuality	MaxQualifier	Qualifier for the maximum measured parameter.
tblToxicityWaterQuality	Mean	Mean measured water quality parameter.
tblToxicityWaterQuality	StdDev	Standard deviation of the measured water quality parameter.

Table	Field	Data Type	Key Field	Value if Null	Required?
tblChemistryBatchInfo	StudyID	Text	Y		Y
tblChemistryBatchInfo	QABatch	Text	Y	NA	Y
tblChemistryBatchInfo	MaterialCode	Text			Y
tblChemistryBatchInfo	SpeciesCode	Text		NR	
tblChemistryBatchInfo	PrepCode	Text		NA or NR	
tblChemistryBatchInfo	PrepDate	Date/Time		1/1/1900	
tblChemistryBatchInfo	MethodCode	Text		NR	Y
tblChemistryBatchInfo	AnalysisDate	Date/Time		1/1/1900	
tblChemistryBatchInfo	AgencyCode	Text		UNK	
tblChemistryBatchInfo	Comments	Text			
tblChemistryResults	StudyID	Text	Y		Y
tblChemistryResults	StationID	Text	Y		Y
tblChemistryResults	CompositeID	Text	Y		Y
tblChemistryResults	ChemicalName	Text	Y		Y
tblChemistryResults	QABatch	Text	Y	NA	Y
tblChemistryResults	StudyType	Text			Y
tblChemistryResults	SampleType	Text			Y
tblChemistryResults	LabRep	Text	Y	01	Y
tblChemistryResults	Qualifier	Text			Y
tblChemistryResults	Result	Number			Y
tblChemistryResults	Units	Text			Y
tblChemistryResults	Measbasis	Text			Y
tblChemistryResults	MaterialCode	Text			Y
tblChemistryResults	MDL	Number		-99	
tblChemistryResults	RL	Number		-99	
tblChemistryResults	Dilution	Number		1	
tblChemistryResults	AgencyCode	Text		UNK	
tblChemistryResults	Comments	Text			
tblCoreComposites	StudyID	Text	Y		Y
tblCoreComposites	StationID	Text	Y		Y
tblCoreComposites	CompositeID	Text	Y		Y
tblCoreComposites	StudyType	Text			Y
tblCoreComposites	Horizon	Text		NA	
tblCoreComposites	AnalysisType	Text		NA	
tblCoreComposites	Comments	Text			
tblCoreEvent	StudyID	Text	Y		Y
tblCoreEvent	StationID	Text	Y		Y
tblCoreEvent	CoreID	Text	Y	NA	Y
tblCoreEvent	SampleDepth	Number		-99	Y
tblCoreEvent	Date	Date/Time		1/1/1900	Y
tblCoreEvent	Time	Date/Time		0:00	
tblCoreEvent	Segments	Number		-99	
tblCoreEvent	Latitude	Number		0 or -99	Y
tblCoreEvent	Longitude	Number		0 or -99	Y

Table	Field	Data Type	Key Field	Value if Null	Required?
tblCoreEvent	CoreLength	Number		-99	Y
tblCoreEvent	Penetration	Number		-99	
tblCoreEvent	Color	Text		NR	
tblCoreEvent	Composition	Text		NR	
tblCoreEvent	Odor	Text		NR	
tblCoreEvent	ShellHash	Text		U	
tblCoreEvent	Refusal	Text		U	
tblCoreEvent	Comments	Text			
tblCoreSamples	StudyId	Text	Y		Y
tblCoreSamples	StationID	Text	Y		Y
tblCoreSamples	CoreID	Text	Y		Y
tblCoreSamples	CompositeID	Text	Y		Y
tblCoreSamples	CoreSampleID	Text	Y		Y
tblCoreSamples	UpperMeasure	Number		-99	Y
tblCoreSamples	LowerMeasure	Number		-99	Y
tblCoreSamples	Comments	Text			
tblComments	CommentID	AutoNumber	Y		
tblComments	EventType	Text			
tblComments	DateVal	Date/Time			
tblComments	DatabaseVersion	Text			
tblComments	UserName	Text			
tblComments	ControlName	Text			
tblComments	ErrorDescription	Memo			
tblComments	BugFix	Text			
tblComments	BugFixer	Memo			
tblComments	BugFixDate	Date/Time			
tblDredgeFate	StudyID	Text	Y		Y
tblDredgeFate	StationID	Text	Y		Y
tblDredgeFate	CompositeID	Text	Y	All	
tblDredgeFate	Project Name	Text			
tblDredgeFate	AgencyCode	Text		UNK	Y
tblDredgeFate	PredictedVolume	Number		-99	
tblDredgeFate	ProposedDisposalSite	Text		NA	
tblDredgeFate	Area	Number		-99	
tblDredgeFate	Agency Number	Text			
tblDredgeFate	Project Start	Date/Time			
tblDredgeFate	COE Date Of Permit	Date/Time			
tblDredgeFate	COE PermitNumber	Text			
tblDredgeFate	RB Date Of Permit	Date/Time			
tblDredgeFate	RB Case File Number	Text			
tblDredgeFate	RB Permit Number	Text			
tblDredgeFate	Dredge Start Date	Text			
tblDredgeFate	Dredge End Date	Text			
tblDredgeFate	Disposal Method	Text			
tblDredgeFate	Contractor	Text			
tblDredgeFate	Comments	Text			

Table	Field	Data Type	Key Field	Value if Null	Required?
tblDredgeFate	Suitability Recommendation	Text			
tblDredgeFate	RecommendCode	Text		NA	
tblDredgeFate	RegulatoryCode	Text		NA	
tblDredgeFate	DisposalCode	Text		NA	
tblGrabComposites	StudyID	Text	Y		Y
tblGrabComposites	StationID	Text	Y		Y
tblGrabComposites	CompositeID	Text	Y		Y
tblGrabComposites	StudyType	Text	Y		Y
tblGrabComposites	UpperMeasure	Number		-99	Y
tblGrabComposites	LowerMeasure	Number		-99	Y
tblGrabComposites	Comments	Text			
tblGrabEvent	StudyID	Text	Y		Y
tblGrabEvent	StationID	Text	Y		Y
tblGrabEvent	GrabID	Text	Y		Y
tblGrabEvent	CompositeID	Text	Y		Y
tblGrabEvent	Depth	Number		-99	
tblGrabEvent	Date	Date/Time	Y	1/1/1900	Y
tblGrabEvent	Time	Date/Time		0:00	
tblGrabEvent	Latitude	Number		0 or -99	Y
tblGrabEvent	Longitude	Number		0 or -99	Y
tblGrabEvent	Penetration	Number		-99	
tblGrabEvent	Color	Text		NR	
tblGrabEvent	Composition	Text		NR	
tblGrabEvent	Odor	Text		NR	
tblGrabEvent	ShellHash	Text		U	
tblGrabEvent	GrabFailCode	Text		NA	
tblGrabEvent	Comments	Text			
tblInfaunalAbundance	StudyID	Text	Y		Y
tblInfaunalAbundance	StationID	Text	Y		Y
tblInfaunalAbundance	CompositeID	Text	Y		Y
tblInfaunalAbundance	Species	Text	Y		Y
tblInfaunalAbundance	Abundance	Number			Y
tblInfaunalAbundance	Qualifier	Text			
tblInfaunalAbundance	Unidentified	Text			
tblInfaunalAbundance	Exclude	Text			
tblInfaunalAbundance	AgencyCode	Text		UNK	
tblInfaunalAbundance	ScreenSize	Number			
tblInfaunalAbundance	Voucher	Number			
tblInfaunalAbundance	Comments	Text			
tblInfaunalBiomass	StudyID	Text			Y
tblInfaunalBiomass	StationID	Text			Y
tblInfaunalBiomass	CompositeID	Text			Y
tblInfaunalBiomass	Qualifier	Text			
tblInfaunalBiomass	Biomass	Number			Y

Table	Field	Data Type	Key Field	Value if Null	Required?
tblInfaunalBiomass	Units	Text			
tblInfaunalBiomass	ReweighPercent	Number			
tblInfaunalBiomass	OutlierFlag	Text			
tblInfaunalBiomass	AgencyCode	Text		UNK	
tblInfaunalBiomass	NumIndividOut	Number			
tblInfaunalBiomass	OutlierBiomass	Number			
tblInfaunalBiomass	Comments	Text			
tblSampleMaster	StudyID	Text	Y		
tblSampleMaster	StationID	Text	Y		
tblSampleMaster	CompositeID	Text	Y		
tblSampleMaster	SampleType	Text		None	RESULT
tblSampleMaster	StudyType	Text			
tblSampleMaster	UpperMeasure	Number			
tblSampleMaster	LowerMeasure	Number			
tblSampleMaster	Date	Date/Time			
tblSampleMaster	TOC	Number			
tblSampleMaster	PctFines	Number			
tblSampleMaster	Comments	Text			
tblStation	StudyID	Text	Y		Y
tblStation	StationID	Text	Y		Y
tblStation	Strata	Text		NA	
tblStation	Description	Text			
tblStation	Latitude	Number		0 or -99	Y
tblStation	Longitude	Number		0 or -99	Y
tblStation	Area	Yes/No		N	
tblStation	StudyType	Text			Y
tblStation	HydroUnit	Text		NA	
tblStation	RegBoard	Text		NA	
tblStation	County	Text		NA	
tblStation	Locality	Text		NA	
tblStation	Port	Text		NA	
tblStation	Country	Text		NA	
tblStationOccupation	StudyID	Text	Y		Y
tblStationOccupation	StationID	Text	Y		Y
tblStationOccupation	SampleMethod	Text		UNK	Y
tblStationOccupation	AgencyCode	Text		UNK	Y
tblStationOccupation	Vessel	Text		NR	
tblStationOccupation	NavType	Text		NR	
tblStationOccupation	WeatherCode	Text		NR	
tblStationOccupation	WindSpeed	Number		-99	
tblStationOccupation	WindDirection	Text		NR	
tblStationOccupation	SwellHeight	Number		-99	
tblStationOccupation	SwellDirection	Text		NR	
tblStationOccupation	SeaState	Text		NR	
tblStationOccupation	HabitatType	Text		NR	
tblStationOccupation	Comments	Text			

Table	Field	Data Type	Key Field	Value if Null	Required?
tblStudy	StudyID	Text	Y		Y
tblStudy	StudyName	Text			Y
tblStudy	AgencyCode	Text		UNK	Y
tblStudy	Contact	Text		NR	
tblStudy	StudyType	Text		F	Y
tblStudy	SedTox	Text		F	Y
tblStudy	SedChem	Text		F	Y
tblStudy	SubSurf	Text		F	Y
tblStudy	LabAccum	Text		F	Y
tblStudy	ElChem	Text		F	Y
tblStudy	Infauna	Text		F	Y
tblStudy	Comments	Text			
tblStudyReference	StudyID	Text	Y		Y
tblStudyReference	Year	Text		NA/NR	
tblStudyReference	Authors	Text		NA/NR	
tblStudyReference	Title	Text		NA/NR	
tblStudyReference	Source	Text		NR	
tblToxicityBatchInfo	StudyID	Text	Y		Y
tblToxicityBatchInfo	QABatch	Text	Y		Y
tblToxicityBatchInfo	MatrixCode	Text			Y
tblToxicityBatchInfo	SpeciesCode	Text			Y
tblToxicityBatchInfo	AgencyCode	Text			Y
tblToxicityBatchInfo	Protocol	Text			Y
tblToxicityBatchInfo	TestDate	Date/Time			Y
tblToxicityBatchInfo	TestDuration	Number			Y
tblToxicityBatchInfo	Temperature	Number			Y
tblToxicityBatchInfo	AcceptCode	Text			Y
tblToxicityResults	StudyID	Text	Y		Y
tblToxicityResults	StationID	Text	Y		Y
tblToxicityResults	CompositeID	Text	Y		Y
tblToxicityResults	SampleType	Text		None	Y
tblToxicityResults	QABatch	Text	Y		Y
tblToxicityResults	AgencyCode	Text		UNK	Y
tblToxicityResults	SpeciesCode	Text			Y
tblToxicityResults	Dilution	Number	Y	-99	
tblToxicityResults	Concentration	Number		-99	
tblToxicityResults	EPCode	Text	Y		Y
tblToxicityResults	Units	Text		NA	
tblToxicityResults	LabRep	Number	Y	NA	Y
tblToxicityResults	QACode	Text		A	
tblToxicityResults	Comments	Text			
tblToxicitySumResults	StudyID	Text	Y		Y
tblToxicitySumResults	StationID	Text	Y		Y
tblToxicitySumResults	CompositeID	Text	Y		Y
tblToxicitySumResults	SampleType	Text			Y

Table	Field	Data Type	Key Field	Value if Null	Required?
tblToxicitySumResults	QABatch	Text	Y		Y
tblToxicitySumResults	SpeciesCode	Text			Y
tblToxicitySumResults	Dilution	Number	Y	-99	
tblToxicitySumResults	Concentration	Number		-99	
tblToxicitySumResults	EPCode	Text	Y		Y
tblToxicitySumResults	Units	Text		NA	
tblToxicitySumResults	Mean	Number			Y
tblToxicitySumResults	N	Number		-99	
tblToxicitySumResults	StdDev	Number		-99	
tblToxicitySumResults	PctControl	Number		-99	
tblToxicitySumResults	SigEffect	Text		NR	Y
tblToxicitySumResults	QACode	Text		A	
tblToxicitySumResults	Stat_Test	Text		NA/NR	
tblToxicitySumResults	LC50	Text		NA/NR	
tblToxicitySumResults	EC50	Text		NA/NR	
tblToxicitySumResults	NormSigEffect	Number		NA	
tblToxicitySumResults	Comment	Text			
tblToxicityWaterQuality	StudyID	Text	Y		Y
tblToxicityWaterQuality	StationID	Text	Y		Y
tblToxicityWaterQuality	CompositeID	Text	Y		Y
tblToxicityWaterQuality	SpeciesCode	Text			Y
tblToxicityWaterQuality	EPCode	Text	Y		Y
tblToxicityWaterQuality	QABatch	Text	Y		Y
tblToxicityWaterQuality	STWQCode	Text	Y		Y
tblToxicityWaterQuality	MatrixCode	Text	Y		Y
tblToxicityWaterQuality	Dilution	Number	Y	-99	
tblToxicityWaterQuality	Concentration	Number		-99	
tblToxicityWaterQuality	MinValue	Number		-99	
tblToxicityWaterQuality	MinQualifier	Text		NR	
tblToxicityWaterQuality	MaxValue	Number		-99	
tblToxicityWaterQuality	MaxQualifier	Text		NR	
tblToxicityWaterQuality	Mean	Number		-99	
tblToxicityWaterQuality	StdDev	Number		-99	