

**Southern California Bight
2003 Regional Marine Monitoring Survey
(Bight'03)**

Bight'03 Information Management Plan

**Prepared by:
Bight'03 Information Management Committee**

**Prepared for:
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I. INTRODUCTION

Bight'03 is a cooperative effort involving more than 60 Southern California agencies to assess the overall ecological health of the Southern California Bight. Bight'03 will monitor three components: coastal waters, microbiological inputs, and major systems that develop freshwater plumes during storm events.

The coastal portion of Bight'03 will involve an integrated, comprehensive assessment of estuarine and marine conditions of the Southern California Bight. This effort will focus on two major questions: 1.) What is the areal extent of impacts within the Bight? and 2.) What fates befall the contaminants discharged into the marine environments in the Bight?

One challenge in conducting the coastal component of Bight'03 is development of a unified data system. Each of the participating organizations has previously developed their own data management system. These systems vary in the types of data captured, the software systems in which they are stored, and the degree of data documentation. In order to meet the project goal of producing a regional assessment of the Southern California Bight, a cooperative information management system is necessary to ensure that the collected data can be shared effectively among participants.

Information management needs to occur on several levels. First, a process must be developed to ensure the quality, compatibility, and timeliness of the data each organization collects. Once collected and organized, it must be readily available to the project scientists for review, analysis and interpretation. Ultimately, this information will be made available to other interested organizations and the general public.

This document describes the information management system (IMS) that will support Bight'03. The document focuses on four major functions of the IMS:

- The standard protocols each participating agency will use to transfer data from their internal IMS to the Bight'03 IMS.
- The process by which data will be submitted to the Bight'03 data manager.
- The technical specification (guidelines) of how the data will be organized in the Bight'03 database.
- The milestones and mechanisms by which the data will be made accessible to project participants, other organizations, and the general public.

II. APPROACH TO INFORMATION MANAGEMENT

The Information Management System has several purposes, the primary of which is to provide a mechanism for sharing data among project participants; data sharing is required if the Bight'03 goal of producing an integrated regional assessment of the Southern California Bight is to be achieved. While this is the primary focus, the IMS has been developed in recognition that Bight'03 represents an ongoing effort toward data standardization among Bight wide regional monitoring participants and that protocols adopted here may be later used for other data sharing

purposes beyond this project. Thus, the system was designed to be flexible to future adaptation. In addition, the system was constructed primarily to serve the project scientists, but it has also been designed to supply data to non-project scientists and the interested public.

The IMS will be based on a centralized data storage model. A centralized system was selected because Bight'03 is an integrated project and the typical data user will be interested in obtaining the whole data set (or large parts thereof), rather than smaller units of data (individual parameters, subset of the geographic range) residing in individual laboratories. The centralized system was selected over the alternative of a distributed system linked through a series of FTP sites because sophisticated tools would have to be developed for users to access those sites, plus the difficulty of maintaining a linked-distributed system over an extended number of years.

The centralized database will be developed using standardized data transfer protocols (SDTP) for data exchange. The SDTP details the information to be submitted with each sample collection or processing element, the units and allowable values for each parameter, and the order in which that information will be submitted. They are necessary to ensure that data submitted by the participants are comparable and easily merged without significant effort or assumptions by the organization responsible for maintaining the centralized data system. Use of SDTP allows each participating organization to retain data they generate in their local data management system while providing a mechanism for data exchange among project participants and a means for populating a centralized database.

The SDTP will be organized through a relational structure. A relational structure involves use of multiple data tables linked through one or more common fields. A relational structure allows data created at different times (e.g. lab data vs. field data) to be entered at the time of data production, minimizing the possibility of data loss. A relational structure also minimizes redundant data entry, by allowing data that are recorded only once (e.g. station location) to be entered into separate tables rather than to be repeated in every data record.

Standardized Data Transfer Protocols

The SDTP for Bight'03 Coastal Ecology component contains 18 data tables, in a four-level relational model. The Microbiology component contains three tables. The Water Quality component contains four tables.

The first level in all of the components is the Station table, which includes a single data record for each site sampled. The Station table includes descriptors such as latitude, longitude, and landmarks. The Station table in the Coastal Ecology project will also contain the inclusion probability for each sample type at each sample site to ensure that samples are properly weighted in data analysis; since a stratified random sampling design was used to select sample sites for Bight'03 Coastal Ecology, data are not equally weighted in their contribution to an overall project mean. The Microbiology and Water Quality projects will employ fixed station grids and the stations will not have any statistical weighting variables associated with them.

The second level is the Station Occupation table, which requires a record for each visit to a sampling site. Date, time, and environmental descriptors such as weather and sea state are included in this table. The Station Occupation table is linked to the Station table by a StationID field, which resides in both tables. In the Microbiology component the Station Occupation and event tables are combined into a single table.

The third level is the Sample Event table, which contains a record for each sampling activity conducted during a visit to a site. There are four types of Sampling Event Tables corresponding to the four types of sampling activities conducted in the coastal component of Bight'03 (Benthic Grab, Trawl, Microbiology, CTD cast). The Sampling Event table is used to record information about each of these events, such as trawl duration, observations about sediment type in a grab, etc. Both StationID and Date link the Sampling Event tables to Station Occupation table.

The fourth level is the Results table, which contains a separate record for every measurement result. There are 16 Results tables corresponding to different types of measurements conducted in the field (e.g. fish abundance) or in the laboratory (e.g. chemical concentration). StationID and Date link the Results tables to Sampling Event tables. For some tables, they are also linked by Sample Time and Trawl Number.

Within the Results tables, all data are captured at the level of individual replicate, rather than in a summarized form. Fields for summary quality assurance information are also included. Detailed laboratory QA data will be retained at the laboratory where the data were generated.

Figure 1 provides a listing of all of the tables in the SDTP and illustrates their relational structure. The detailed descriptions of each field in each data table in the SDTP are found in each section related to specific portions of the project. Appendix 1 provides lists of acceptable entries for each field, where a constrained list is required. Appendix 2 provides the structure in which metadata for the project will be stored.

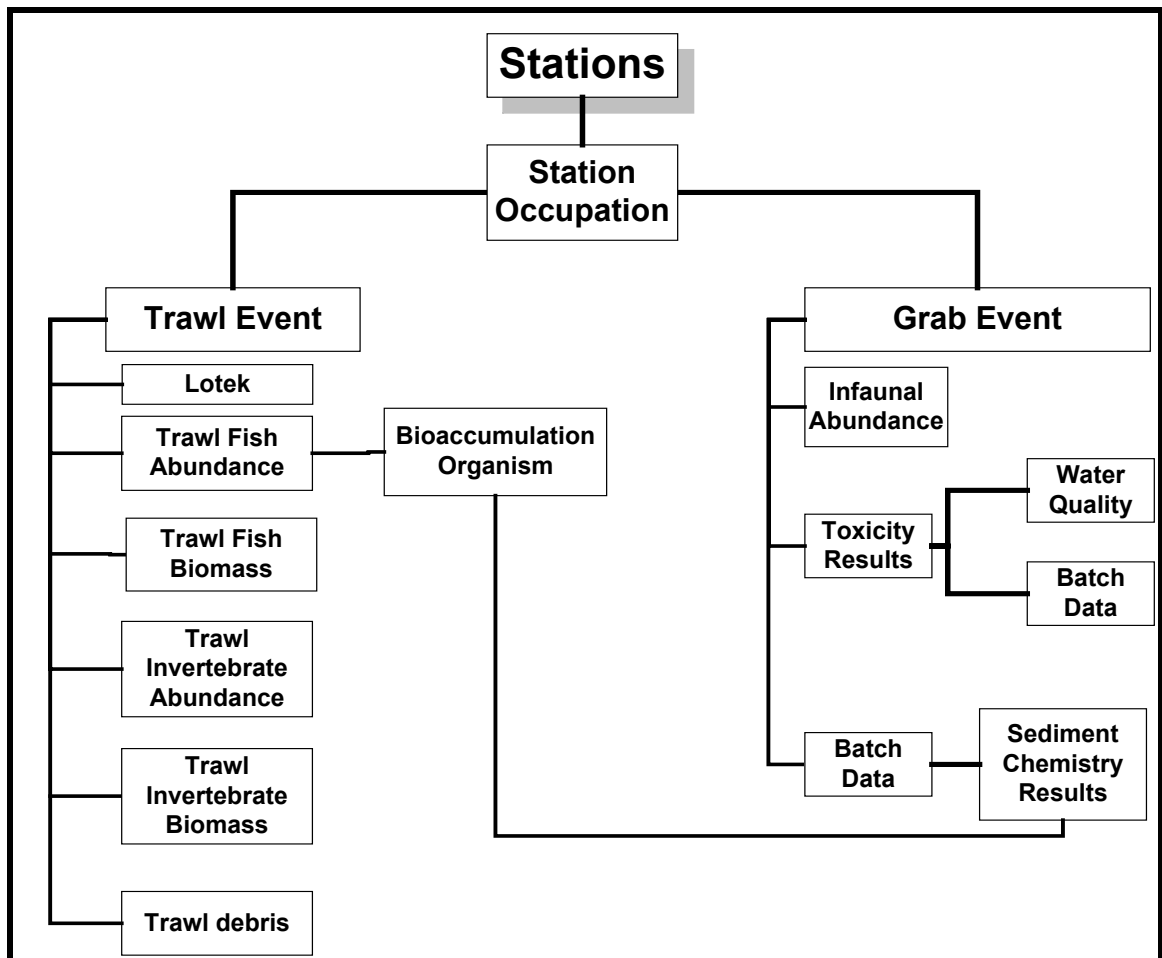


Figure 1. Coastal Ecology Data Table Diagram

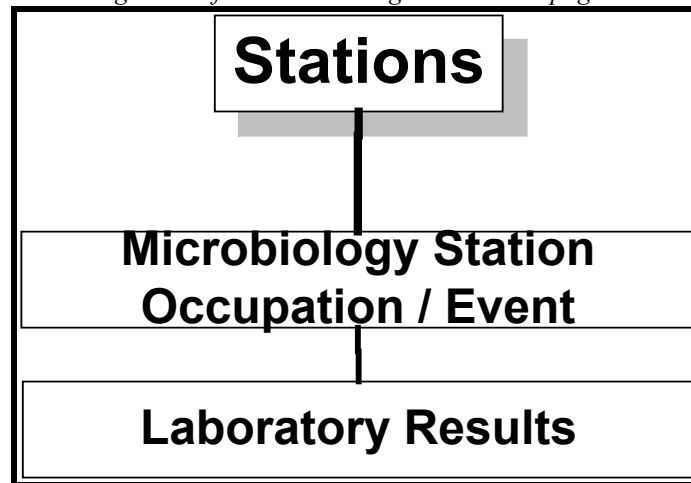


Figure 2. Microbiology Data Table Diagram

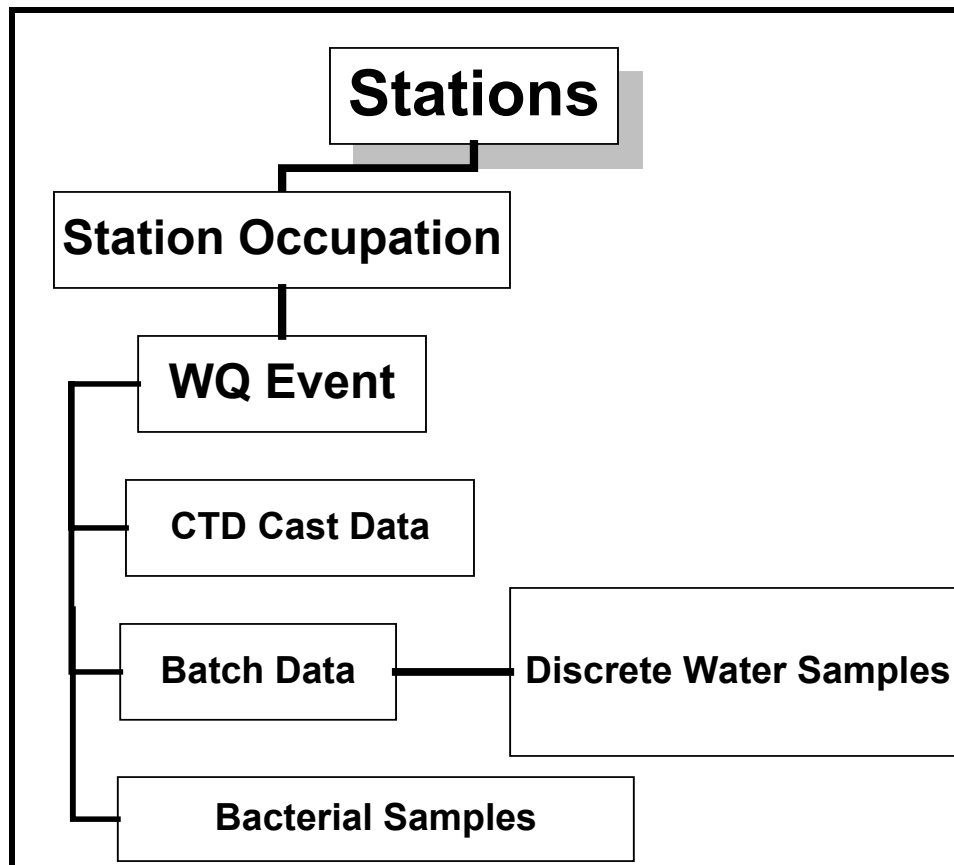


Figure 3. Water Quality Data Table Diagram

III. ROLES AND RESPONSIBILITIES

Bight'03 is a cooperative effort among more than 60 organizations (plus numerous additional subcontractor labs) which have limited experience working together. Effective implementation of the Bight'03 Information Management Plan requires clearly defined roles for each participant.

For the purpose of defining roles, there will be four types of participants in Bight'03:

- Data generator - Field crew leaders and laboratory supervisors who will be responsible for compiling data their organization generates and entering the data into one or more of the SDTP tables. The data generator is also responsible for QA/QC checks on the data prior to its submission.

- Agency Information Management (AIM) Coordinator - Responsible for keeping track of all data generated within their agency and acting as the primary contact for the Project Information Management Officer.
- Project Information Management Officer (IMO) - Responsible for working with Agency Information Managers Coordinators to develop SDTP, and for creation and management of the centralized Bight wide database.
- Bight'03 Technical Subcommittee chairs (TSC) - Responsible for overseeing quality assurance through the database development process and for working with the Bight'03 Information Management officer to generate metadata.

Contact information for all of the levels is provided in Table 1.

Table 1. Contact information for Bight'03 information management.

Coastal Ecology Agency Information Management Coordinators (AIM):

NAME	AGENCY	E-MAIL	TELEPHONE
Larry Cooper	Southern California Coastal Water Research Project (SCCWRP)	larryc@sccwrp.org	(714) 372-9229
Shelly Walther	Los Angeles County Sanitation Districts (LACSD)	swalther@lacsd.org	(310) 830-2400 x 5501
Diane Odonohue	City of San Diego Metropolitan Wastewater Department (CSDMWWD)	dodonohue@sanidiego.gov	(619) 758-2326
Kay Yamamoto	City of Los Angeles, Environmental Monitoring Division (CLAEMD)	kmy@san.lacity.org	(310) 648-5727
Susie Watts	Marine Environmental Consultants (MEC)	watts@mecanalytical.com	(760) 931-8081
Mike Mengel	Orange County Sanitation Districts (OCSD)	mjmengle@ocsd.com	(714) 593-7465
Scott Johnson	Aquatic Bioassay Consultants (ABC)	scj-aqua@pacbell.net	(805) 643-5621 x 11

Microbiology Health Departments/Agencies:

LABORATORY	PERSON	PHONE	E-MAIL
City of Los Angeles	Ioannice Lee	(310) 648-5196	iml@san.lacity.org
Loyola Marymount University	John Dorsey	(310) 338-7817	jdorsey@lmu.edu
Southern California Marine Institute	Kerry Flaherty	(310) 519-3176	kflahert@csulb.edu
City of Oceanside	Valerie Tierney	(760) 435-5943	vtierney@ci.oceanside.ca.us
County of San Diego	Gerry Washbaugh	(619) 692-8605	geraldine.washabaugh@sdcounty.ca.gov
Southern Orange County Water Authority	Ann Harley	(949) 234-5409	aharley@socwa.com
San Elijo Waste Water Treatment Plant	Nicki Branch	(760) 753-0352	branchn@sejpa.org
Oxnard	John Meehan	(805) 271-2207	john.meehan@ci.oxnard.ca.us
Encina	Jeff Parks	(760) 268-8861	jeff@encinajpa.com
CRG	Moy Yahya	(310) 350-9088	myahya@crqlabs.com
Orange County Sanitation Districts	Charles McGee	(714) 593-7504	cmcgee@ocsd.com
Orange County Public Health Laboratory	Donna Ferguson	(949) 219-0424	dferguson@hca.co.orange.ca.us
Los Angeles County Sanitation Districts	Kathy Walker	(310) 830-2400	kwalker@lacsds.org
City of Long Beach	Mae Nikaido	(562) 570-4164	Mae_nikaido@longbeach.gov
Aquatic Bio Labs	Fhil Ramirez	(805) 643-5621	framz@pacbell.net
Enviromatrix Analytical	Dave Renfrew	(858) 560-7717	drenfrew@enviromatrixinc.com
SM Baykeeper	Angie Berra	(310) 305-9645	octopus@smbaykeeper.org
MEC Analytical	Larissa Aumand	(760) 931-8081	aumand@mecanalytical.com
City of San Diego	Ric Amador	(619) 668-3226	ramador@sandiego.gov
UCI	Harmony Gates	(949) 824-4034	hgates@uci.edu
OC Coastkeeper	James Medlen	(949) 723-5424	jimmedlen@hotmail.com
University of Michigan	Rolf Deininger	(734) 763-4399	rad@umich.edu
Heal the Bay	Mark Abramson	(310) 453-0395	streamteam@healthebay.org
LA County Environ Tox Lab	Wai Leung	(562) 940-6778	Wai@acwm.co.la.ca.us
San Diego Baykeeper	Hiram Sarabia	(619) 758-7743	hsarabia@sdbaykeeper.org
AATI	Kristi Harkins	(515) 296-5307	KHarkins@AATI-US.com
Associated Laboratories	Faad Hashemi	714-771-9259	fhashemi@associatedlabs.com
Santa Barbara Channelkeeper	Leigh Ann Grabowsky	(805) 563-3377 x3	lag@sbck.org

Information Management Officer (IMO)

Larry Cooper
 Southern California Coastal Water Research Project
 7171 Fenwick Lane
 Westminster, CA 92683
 Ph. 714 894-2222
 Fax 714 894-9699
larryc@sccwrp.org

Data Flow

Each field crew or laboratory generating data will initially enter the data into their own data management system and subject it to their own internal QA/QC procedures (Figure 4). Recommended QA includes double entry of data, completeness, and range checks. Data will next be submitted to the Information Management Officer (IMO) and a copy sent to the Agency Information Manager (AIM). Submission in Microsoft Excel format which follows the SDTP is recommended. Each data generator will retain a copy of each file submitted as a back-up, until the central database is declared complete by the Bight'03 (IMO).

Each submitting group within the agency will initiate a series of error checks to ensure the data: 1) are within specified ranges appropriate to each parameter measured, 2) contain all required fields, 3) have encoded valid values from constrained look-up lists where specified, and 4) are in correct format (text in text fields, values in numeric fields, etc.). Upon receipt from the within agency submitting group, the AIM will update a data submission log to document the data received from each submitting group within his/her organization.

The IMO will then assess the submission to ensure that it is complete and consistent with the SDTP format requirements. If there are only a few, easily correctable errors, the IMO will make the changes, and send a list documenting the changes back to the AIM (who in turn will send them to the data generator). Changes will only be made with the consent of the AIM (who will be responsible for contacting the data generator). If there are numerous errors, or corrections are difficult to implement, the IMO will send the data file back to the AIM with a list of necessary corrections. The AIM will then work with the data generator to correct the files before resubmitting them. Once again, the IMO will subject the file to error checking. Strict adherence to these lines of communication is important to ensure that the data generator, the AIM and the IMO maintain consistent data sets.

Once all data tables of a particular data type (e.g. all tables containing fish data) have been certified by the IMO, integrated across-agency data tables will be provided to the Bight'03 Technical Sub-committee Chair (TSC) responsible for that data type in a agreed upon data format following the SDTP. The TSC, or his designee, will review the data with respect to scientific content. This review may involve plotting of data on maps, examining interrelationships among individual parameter responses, or other analyses that address more extensive data quality issues than can be accomplished by range checking alone. Necessary corrections resulting from this review process will be returned to the IMO. The IMO will be responsible for working with the AIM to effect necessary changes.

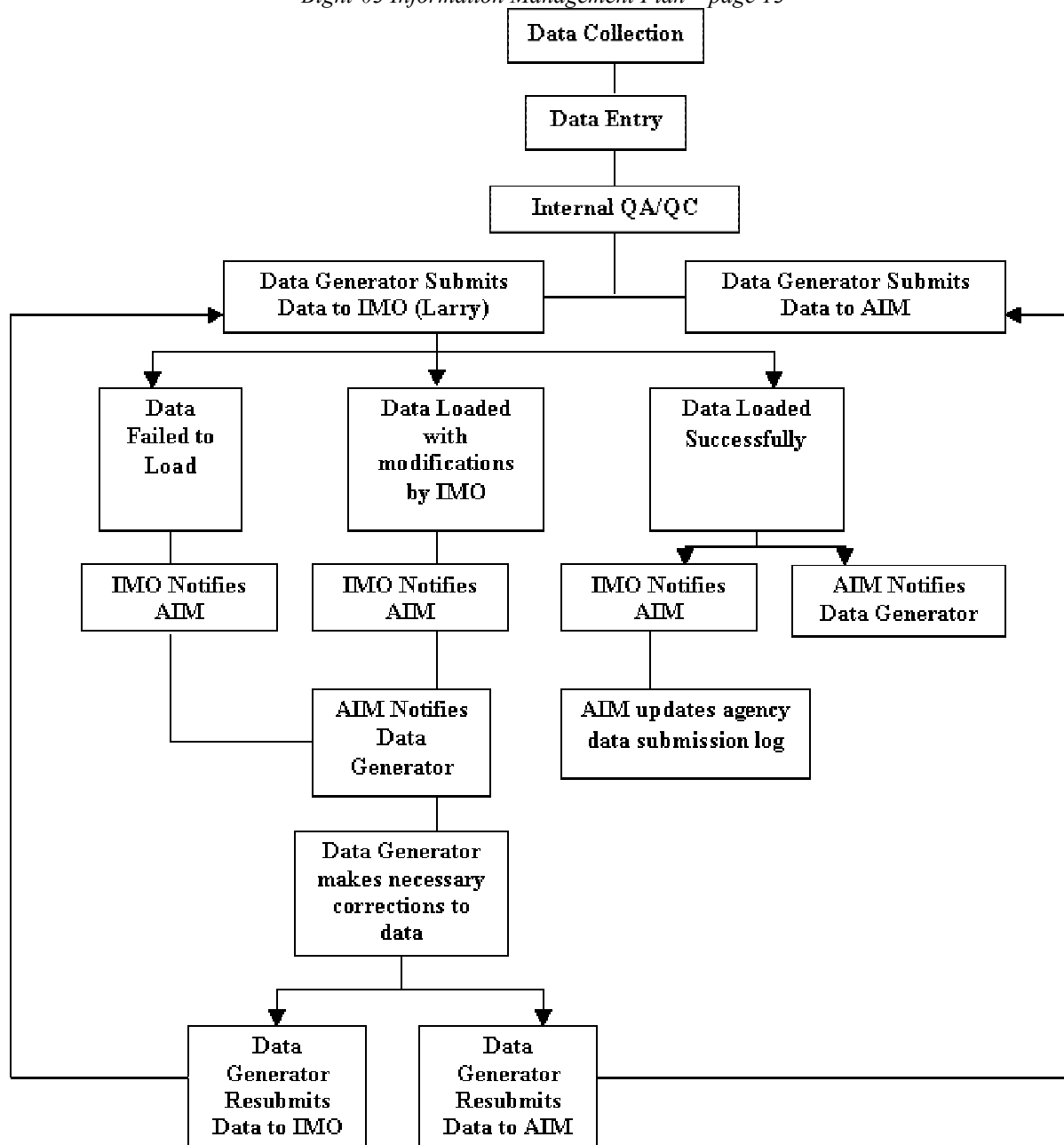


Figure 4. Data Flow Diagram

Data revision

Three types of data revisions are likely to be required after the data have been submitted to the IMO. The first type are errors discovered by data users, who may find anomalies after conducting analyses beyond those done by the TSC. If the data in question is maintained as part of a locally available data set, the IMO will contact the AIM and ask them to work with the data generator to resolve the discrepancy. If the agency is not maintaining the data locally, the IMO will contact the data generator directly, using contact information provided in the metadata.

Following resolution, corrections to the centralized data will be made by the IMO. Access to the database for other users will be in read-only form. Prior to making any changes, the IMO will document the changes and receive (written or electronic) concurrence from the organization that originated the data (or the AIM, as appropriate). The IMO will only make changes in the centralized database. Originating organizations will be responsible for making corresponding changes in their own internal data storage systems. All changes to the data will be documented in a computerized file available to all data users or through an on-line data change form.

The second type of error are those discovered after the fact by the data generators. Any project participant can initiate a request for changing data by notifying the IMO, who will then follow the procedures outlined above.

The third type of error are those resulting from changes in taxonomy or nomenclature following data completion. No attempt will be made as part of Bight'03 data maintenance to update species names and keep the taxonomy current with future name changes. The IMO may choose to add a taxonomy equivalency table to the metadata in subsequent years, as appropriate.

Schedule

The schedule for data submission varies by data type. Data collected in the field will be due first, while data produced through extensive laboratory analysis will be produced on a schedule consistent with nominal laboratory processing times. The schedule for initial submission of data to the IMO is summarized in Table 2. Individual data generators should provide their data to their AIM approximately one month prior to the deadlines listed in Table 2, so that there is sufficient time for the AIM to resolve any data discrepancies and to ensure the data are in the proper format for submission to the IMO.

Table 2. Expected time between the end of sampling and the transfer of Coastal Ecology data from the Data Generators to the Bight'03 Information Management Officer (IMO).

TABLE TYPE	DUE DATE (MONTHS AFTER COMPLETION OF SAMPLING)	ACTUAL DUE DATE
GrabEvent	3 Months	05-Dec-2003
StationOccupation	3 Months	05-Dec-2003
TrawlDebris	4 Months	09-Jan-2004
TrawlEvent	3 Months	05-Dec-2003
FishBiomass	4 Months	09-Jan-2004
FishAbundance	4 Months	09-Jan-2004
InvertBiomass	4 Months	09-Jan-2004
InvertAbundance	4 Months	09-Jan-2004
SedimentToxBatch	3 Months	05-Dec-2003
SedimentToxResults	3 Months	05-Dec-2003
SedimentToxWQ	3 Months	05-Dec-2003
Chem Metals	1 Year	10-Sep-2004
Chem Nutrients	1 Year	10-Sep-2004
Chem Organics	1 Year	10-Sep-2004
Chem Tissue	1 Year	10-Sep-2004
BioaccumulationOrganism	1 Year	10-Sep-2004
Benthic Infauna	1 Year	10-Sep-2004

IV. SUBMISSION GUIDELINES

Overview

Monitoring data, with specific names for each table, will be submitted to the IMO. The name for each data table is provided in each section specific to each table and is specified in the definition of each table. Other file names will not be accepted.

Data may be submitted in Microsoft Excel (preferred) , Microsoft Access, Dbase IV, Lotus, or comma delimited ASCII files for example, although other file types may be equally appropriate. The submitted file must include the correctly spelled field names and the field names must be in the same order as in the table description from each section. The files will be submitted to the IMO with the name FILENAME.XXX where XXX is the extension native to the file format of the submission file.

How to use this document:

The tabular descriptions of each data type give useful information to the person(s) responsible for constructing the tables. The first column contains the exact name for the field or the column name as it should be used for data submissions. Do not add spaces or other characters to the

field names. Field names that are bolded are intended to indicate a combination of fields that provide a unique value within the table.

The second column describes the type of variable to be used for the data in the field. The variable types are:

- Text any alphanumeric character
- Number numbers with decimal places or whole numbers only, no decimal places
- Y/N Boolean indicating Yes or No
- Memo unlimited number of alphanumeric characters

The third column indicates whether the field is mandatory or not.

- Y indicates that the field is mandatory,
- * indicates that the field is conditionally mandatory
- N indicates the field is not mandatory.
- R indicates that the field is recommended, but not mandatory.

The fourth column indicates the intended use for the field and a reference to a look up list containing a constrained list of values allowable in that field.

Submission Documentation

Files will be transmitted as e-mail attachments. Upon receipt, the IMO will send an e-mail reply indicating that he received the data submission. Once the data are loaded or rejected, the IMO will transmit another e-mail message indicating that the data loaded successfully, loaded with modifications, or failed to load to the database. If the data submission was modified, a detailed description will be provided by the IMO of all changes applied to the submission. If the data failed to load, the IMO will attempt to provide a reason for the failure.

Common Errors

Certain errors commonly occur that prevent the data from loading to the database. These include spelling the field names incorrectly or typing additional characters such as spaces or underscores. Other errors include using values in fields that are not appropriate for the specific field such as inputting character data to numerical fields or inputting values to fields that are limited to entry from constrained lists. Additional errors can result from simply omitting fields. Each file should be scrutinized for these common errors prior to submission.

Completeness

Data submissions will be rejected if they are incomplete. No partial data sets will be loaded to the database.

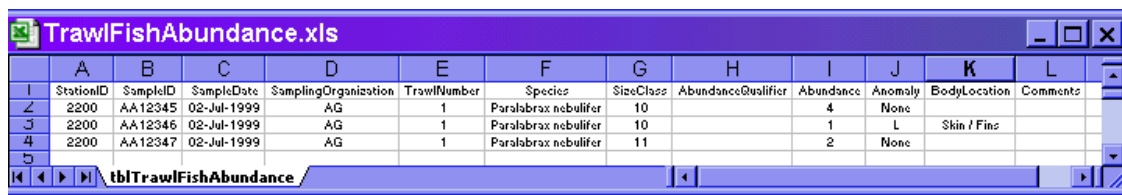
Geographic Conventions:

All latitude and longitude positions are based on the NAD 83 datum and are expressed in decimal degrees (to five decimal places) to facilitate easy interfacing with GIS systems. All longitudes will be expressed as negative numbers.

Data Submission Protocols

The first row in the file will be the entire list of Field Names, in the order specified by the particular data type (refer to each chapter for these lists). The subsequent rows will contain the actual data.

Example of a submitted file:



	A	B	C	D	E	F	G	H	I	J	K	L
	StationID	SampleID	SampleDate	SamplingOrganization	TrawlNumber	Species	SizeClass	AbundanceQualifier	Abundance	Anomaly	BodyLocation	Comments
2	2200	AA12345	02-Jul-1999	AG	1	Paralabrax nebulifer	10		4	None		
3	2200	AA12346	02-Jul-1999	AG	1	Paralabrax nebulifer	10		1	L	Skin / Fins	
4	2200	AA12347	02-Jul-1999	AG	1	Paralabrax nebulifer	11		2	None		

Data Entry Templates

To assist organizations in meeting the SDTP and improve the efficiency of data input, the IMO has created a series of computerized data entry templates. The templates query the data generator to input required data fields in a user friendly format and automatically output the data in SDTP. The data entry templates available for the field sampling effort link to a shipboard global positioning system to automatically download date, time, location and trawl direction/speed. These templates provide drop-down lists for station designation, sea surface, weather, sediment quality observations, and most other data types. They reduce errors through the elimination of hand-made entries. The templates also eliminate spelling errors, ensure that the data entered is appropriate for that field, and that the data is complete. Development of laboratory data entry templates have also been created at the request of data users, including Microbiology field and lab and Toxicity lab results.

V. DATA ACCESS

All measurement and supporting data gathered during Bight'03 will be made available to all participating organizations and to the general public, though the schedule of availability and point of contact will vary by user. The different schedules reflect the differing levels of quality assurance and data documentation that will have been completed at various stages in the project.

The first location of data availability will be the AIM, who will be responsible for data generated within their agency. The AIM will be free to distribute data collected by their agency, at the discretion of the project director for the Agency and at any point after the data has been submitted and approved as complete by the IMO. Data released prior to having been transmitted and accepted by the IMO should be identified as Agency data, not Bight'03 data because Bight'03's quality assurance procedures will not yet have been performed. It is highly recommended that data released prior to its submittal to the IMO be limited to organizations participating in the project, rather than to the general public. Releases to the general public are not recommended until quality assurance has been performed by the TSC and metadata documentation is completed.

The second location of data availability will be the IMO, who will be responsible for developing the across-agency data sets. These data sets will be sent to each participating agency's AIM when they are sent to the TSC. These data sets will be sent to the agencies with the understanding that the data are provisional until accepted by the IMO. Other Agency's data should not be redistributed without the express permission of the Project Manager for the Agency that generated the data.

The IMO will be the sole point of release for Bight'03-approved across-agency data sets. The IMO will only release across-agency data sets to participating agencies as provisional data sets for use in initial data analysis.

Metadata

Each release of data to the public will include comprehensive documentation about Bight'03 and the accompanying data sets. Referred to as metadata, this documentation will include database table structures (including table relationships) and lookup tables used to populate the fields in each table. It will also include quality assurance classifications of the data and documentation of the methodologies by which the data were collected.

A second type of metadata will document changes made to the data over time. As the data are used, we anticipate that errors will be found. As changes to the data are made, they will be documented in a file organized by date and data table. Including this file with each data download will allow users to reconcile potential differences in analysis output that result from using different versions of the data.

Metadata will follow guidelines from the Federal Geographic Data Committee, Content standard for digital geospatial metadata, version 2.0. FGDC-STD-001-1998 (FGDC 1998), including the Biological Data Profile and the Biological Names and Taxonomy Data Standards developed by the National Biological Information Infrastructure (NBII 1999). For tabular data, metadata that meet the FGDC content standard are contained by a combination of the Bight'03 Data Directory and the Bight'03 Data Catalog.

Coastal Ecology Data Tables

The Coastal Ecology project has two main goals: 1) To assess the impacts of discharges into the Bight and 2) To determine the fates of materials discharged into the Bight. To answer these questions, a probability based design was selected in order to apply statistical analyses to these questions. The tables in this project are intended to support those analyses by providing data at the replicate level and including QA/QC data within the tables themselves.

tblStations

PURPOSE: The file will be created by SCCWRP. Each record represents a description of a geographical location including label, latitude, longitude, statistical subpopulation, inclusion probability and statistical weight of the station. This table may appended as stations are added from the overdraw pool to replace abandoned stations.

TABLE GUIDELINES: Each record will be unique based on StationID.

Name	Type	Required	Description
StationID	Text	Y	A geographic location label
Stratum	Text	Y	The parent sub-population to which the station belongs
Latitude	Number	Y	The latitude of the station expressed in decimal degrees to five decimal places.
Longitude	Number	Y	The longitude of the station expressed as a negative number in decimal degrees to five decimal places.
BaysHarbors	Text	Y	A code for the bay or harbor station. Z for not a member of the stratum.
Marinas	Text	Y	A code for the marina station. Z for not a member of the stratum.
Bath6to30	Yes/No	Y	The station belongs to the 6 to 30 meters stratum.
Bath30to120	Yes/No	Y	The station belongs to the 30 to 120 meters stratum.
Bath120to200	Yes/No	Y	The station belongs to the 120 to 200 meters stratum.
Bath200to500	Yes/No	Y	The station belongs to the 200 to 500 meters stratum.
Bath500to1000	Yes/No	Y	The station belongs to the 500 to 1000 meters stratum.
Estuaries	Text	Y	A code for all Non-Los Angeles County estuaries. Z for not a member of the stratum.
EstuariesLA	Text	Y	A code for Los Angeles County estuaries. Z for not a member of the stratum.
USGS	Text	Y	A code describing USGS sampling areas. Z for not a member of the stratum.
SPME	Text	Y	A code for areas sampled by Solid Phase M Extraction. Z for not a member of the stratum.
ChannellIslands	Text	Y	A code for all Channel Islands stations. Z for not a member of the stratum.
LPTOW	Text	Y	A code for stations associated with large publicly owned treatment works. Z for not a member of the stratum.
SPOTW	Text	Y	A code for stations associated with small publicly owned treatment works. Z for not a member of the stratum.
SPMW	Number	Y	A code for station associated with Solid Phase Micro Extraction chemistry.
SMB_NEC	Number	Y	A code for Santa Monica Bay NEC stations.
InclusionProbability	Number	Y	Inclusion Probability
AreaWeight	Number	Y	Area Weight

tblStationOccupation

PURPOSE: The purpose of the Station Occupation table is to document the conditions under which each sample was collected. This table is used for sediment grab, trawl assemblage, bioaccumulation, and water quality cast sampling regimes. Each record contains a characterization of the station at the time of sampling in terms of the weather, sea state, sample type, vessel name, agency, and quality of the GPS signal at the time of sampling.

TABLE GUIDELINES: Each record will be unique based on a combination of StationID, SampleDate, ArrivalTime, SamplingOrganization, and SampleType. This file will be named StationOccupation.XXX

EXAMPLE DATA:

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	StationID	SampleDate	ArrivalTime	ArrivalTimeUnits	SamplingOrganization	SampleType	Vessel	NavType	Salinity	WeatherCode	WindSpeed	WindSpeedUnits	WindDirection
2	T200	12-Aug-1998	1238	PDST	AG	Trawl	My Boat	DGPS		Fog	1	KTS	w/
3	B105	12-Aug-1998	1245	PDST	AG	Sediment	My Boat	DGPS		Haze	1	KTS	w/

	N	O	P	Q	R	S	T	U
4	SwellHeight	SwellHeightUnits	SwellPeriod	SwellDirection	SeaState	StationFailCode	Abandoned	Comments
5	2 FT	w/	9	Cslm	None	N		low tide
6	2 FT	w/	12	Cslm	B	N		low tide

TABLE STRUCTURE:

Field Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table.
SampleDate	Date/Time	Y	The date the of the station visit expressed as dd-mm-yyyy.
ArrivalTime	Number	Y	The time of arrival on station expressed in 24 hour time hhmm
ArrivalTimeUnits	Text	Y	From luList28_Units.
SamplingOrganization	Text	Y	An agency code from luList01_AgencyCodes.
SampleType	Text	Y	From luList04_SampleTypes
Vessel	Text	Y	The name of the vessel.
NavType	Text	Y	DGPS for differential / GPS for non-differential From luList20_NavigationalInstruments.
Salinity	Number	*	The salinity of the station expressed in PSU. This is used for estuary samples only.
WeatherCode	Text	Y	Predetermined weather codes from luList08_WeatherCodes.
WindSpeed	Number	Y	Speed in knots.
WindSpeedUnits	Text	Y	From luList28_Units. Default value is kts.
WindDirection	Text	Y	N,NE,E,SE,S,SW,W,NW, (XX for calm) (NR for not recorded) From luList05_OrdinalDirections.

SwellHeight	Number	Y	Feet.
SwellHeightUnits	Text	Y	From luList28_Units.
SwellPeriod	Number	Y	Seconds.
SwellDirection	Text	Y	N,NE,E,SE,S,SW,W,NW, (XX for calm) (NR for not recorded) From luList05_OrdinalDirections.
SeaState	Text	Y	Calm, rough, choppy, or confused from luList16_SeaState.
StationFailCode	Text	Y	From luList40_EventFailureCodes
Abandoned	Yes/No	Y	Was the station abandoned? Default is no, but a yes requires a comment.
Comments	Text	*	Additional comments.

tblSedimentGrabEvent

PURPOSE: The grab event table documents all relevant information about each grab sample collected. The attributes of the grab are described including the geographic position to ensure that each grab met all of the sampling guidelines. Each successful grab will generate a record containing data used to describe the characteristics of the sediment collected in terms of the latitude, longitude, date, time, color, composition, odor, penetration, the presence or absence of shell hash, and the usage for the individual grab.

TABLE GUIDELINES: The combination of the fields StationID, SampleDate, SampleTime, and SamplingOrganization ensure unique values for each record in the table. This file will be named GrabEvent.XXX

EXAMPLE DATA:

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	StationID	SampleDepth	SampleDepthUnits	SampleDate	SampleTime	SampleTimeUnits	SamplingOrganization	GearCode	Latitude	Longitude	Datum	Penetration	PenetrationUnits
2	B205	15	M	12-Aug-1998	1121	PDST	AG	TVV	33.44923	-118.25741	NAD83	12	CM
3	B305	15	M	12-Aug-1998	1132	PDST	AG	VV	33.44456	-118.25231	NAD83	12	CM

	N	O	P	Q	R	S	T	U	V	W	X
1	Color	Composition	Odor	ShellHash	BenthicInfauna	SedimentChemistry	GrainSize	Toxicity	DistanceToTarget	GrabFailCode	Comments
2	Brown	Silt/Clay	Petroleum	No	Yes	Yes	No	No	10.03	None	urchin in grab
3	Brown	Silt/Clay	None	No	No	Yes	Yes	Yes	36.7	F	

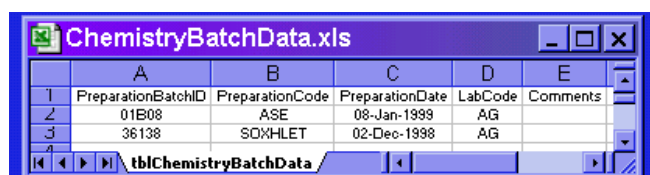
TABLE STRUCTURE:

Field Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table.
SampleDepth	Number	Y	The sample depth expressed in meters.
SampleDepthUnits	Text	Y	From luList28_Units.
SampleDate	Date/Time	Y	The date the sample was collected.
SampleTime	Number	Y	The time the sample was collected expressed as hhmm.
SampleTimeUnits	Text	Y	From luList28_Units.
SamplingOrganization	Text	Y	From luList01_AgencyCodes.
GearCode	Text	Y	From luList03_EquipmentCodes.
Latitude	Number	Y	Degrees to 5 decimal places (NAD83).
Longitude	Number	Y	Degrees to 5 decimal places (NAD83) expressed as a negative number.
Datum	Text	Y	The datum on which the latitude and longitude are based (default is NAD83).
Penetration	Number	Y	Penetration of the grab into the sediment expressed in cm.
PenetrationUnits	Text	Y	From luList28_Units. The default value is cm.
Color	Text	Y	Color of the sediment from luList18_SedimentColors.
Composition	Text	Y	Composition of the sediment from luList06_SedimentCompositionCodes.
Odor	Text	Y	Odor of the sediment from luList07_OdorCodes.
ShellHash	Yes/No	Y	Is shell hash present in the sediment?
BenthicInfauna	Yes/No	Y	Was this grab used for collecting Benthic Infauna?
SedimentChemistry	Yes/No	Y	Was this grab used for testing Sediment Chemistry?
Toxicity	Yes/No	Y	Was this grab used for testing Toxicity?
GrainSize	Yes/No	Y	Was this grab used for testing Grain Size?
DistanceToTarget	Number	N	Distance from target location in meters
GrabFailCode	Text	Y	From luList40_EventFailCodes
Comments	Text	N	Additional remarks.

tblChemistryBatchData

PURPOSE: This table contains information about preparation methods and dates with in each lab. A batch is defined as a group of samples with which the QA results are associated. For some labs, QA data is associated with the preparation batch while other labs associate the QA data with analytical batches. Samples prepared in the same batch may move through the lab in different analytical batches. To minimize redundant data entry, the preparation batch information has been broken off into a separate table and is related to the tblChemistryResults through the PreparationBatchID code. Each record in this table represents all information common to each preparation batch.

TABLE GUIDELINES: The PreparationBatchID and LabCode fields will ensure that each record in the table is unique. The file will be named ChemistryBatchData.XXX

EXAMPLE DATA:


	A	B	C	D	E
	PreparationBatchID	PreparationCode	PreparationDate	LabCode	Comments
1	01B08	ASE	08-Jan-1999	AG	
2	36138	SDXHLET	02-Dec-1998	AG	

TABLE STRUCTURE:

Field Name	Type	Required	Description
PreparationBatchID	Text	Y	The code for all of the samples processed in the same preparation batch
PreparationCode	Text	Y	The PreparationCode from luList25_PreparationCodes
PreparationDate	Date/Time	Y	The date the sample was extracted expressed as dd-mm-yyyy
LabCode	Text	Y	Agency code from luList01_AgencyCodes
Comments	Text	N	Additional comments

tblChemistryResults

PURPOSE: The purpose of the chemistry results table is to document the analysis results for sediment chemistry, sediment grain size, tissue chemistry, and water column chemistry. Each record represents a result from a specific analysis for a particular parameter at a single station or a single QA sample. This table will also contain all supporting QA sample results.

This table contains some information that will be derived from field data in order to differentiate samples collected at a single station, but at multiple depths. To facilitate loading of this data, the IMO will add the information to the fields; DiscreteSampleDepth, DiscreteSampleDepthUnits,

SampleDate, SampleTime, and SampleTimeUnits. These values will be reported as null (blank) by the chemistry labs for all sediment and tissue chemistry data.

SPECIAL CASES:

Results vs. TrueValue:

The reported result is the number gathered from the analytical instrument. The "True Value" is the concentration of the parameter in the reference sample. The purpose of the "True Value" is to facilitate the calculation of percent recovery. The True Value is only reported for matrix spikes. A True Value of –99 will be reported for all other samples.

Since the mean True Value of Certified reference materials is considered of little use, the range values for the minimum and maximum for parameters in the certified reference material will be carried in an ancillary table within the analytical database and will not be described here.

Matrix spikes:

The reported result is the number gathered from the instrument and is the net amount recovered from the sample after being corrected for the concentration from the non-spiked sample. For spiked samples the "True Value" is the concentration of the parameter added to the sample before analysis. Percent recovery will be calculated by dividing the result by the True Value times 100.

Recovery corrected data:

This is not reported because it can be calculated using the True Value of the reference material processed within the same batch.

Lab Duplicates:

Lab duplicates are defined as duplicate samples taken from the same jar. The result for each duplicate will be numbered starting at one, e.g. the result for the first duplicate will have a LabDuplicate of 1 and the result for the second duplicate will have a LabDuplicate of 2, etc. Replicate samples taken in the field will have separate sample ID numbers and a LabDuplicate of 1.

Non-Detects:

If the result is not reportable, a qualifier of “ND” should be used and the result reported as –99. In the case where the result is below method detection level or below the reporting level, but is being reported anyway, a qualifier of BMDL (below method detection limit) or BRL (below reporting level) should be used and the result reported.

QA Samples:

The field SampleType is used to distinguish QA and blank data from actual sample results. Since the QA samples are usually blanks, spikes, or certified reference materials, they do not have a station number associated with them. In this case the value "0000" will be used as the StationID. These samples will be associated to other samples with the same PreparationBatch code. These samples require a true value to allow for the calculation of percent recovery.

Tissue Chemistry:

Tissue chemistry samples must also contain a BioaccumulationSampleID code that links the sample to Bioaccumulation Organism table. For non-tissue sample the BioaccumulationSampleID will be reported as the word “None”.

Water Chemistry:

The actual depth in the water column at which the sample was collected should be reported in the DiscreteSampleDepth field.

Sediment Chemistry:

DiscreteSampleDepth field reported as 0 and will be updated by the IMO based on the depth of the station reported in the GrabEvent table.

Units:

Values expressed in parts per billion will carry the units tag of UG/KG. Values expressed in parts per million will carry the units tag of MG/KG

TABLE GUIDELINES: The combination of the fields StationID, DiscreteSampleDepth, PreparationBatchID, AnalysisBatchID, Matrix, SampleType, ParameterCode, LabDuplicate, and LabCode will ensure that all records in the table are unique. This file will be named ChemistryResults.XXX

EXAMPLE DATA:

ChemistryResults.xls										
	A	B	C	D	E	F	G	H	I	J
1	StationID	DiscreteSampleDepth	DiscreteSampleDepthUnits	SampleDate	SampleTime	SampleTimeUnits	BioaccumulationSampleID	PreparationBatchID	AnalysisBatchID	AnalysisMethod
2	2200	5	M	28-Jul-1998	1123	PDST		01B08	334E	MF
3	2200	15	M	28-Jul-1998	1123	PDST	B3321	36138	642H	\$W7060

ChemistryResults.xls															
	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
1	AnalysisDate	Matrix	SampleType	ParameterCode	Qualifier	Result	Units	MeasurementBasis	FieldDuplicate	LabDuplicate	LabSampleID	TrueValue	MDL	RL	LabCode
2	03-Jun-1999	Sediment	Result	CHLORDANE-a	<	1	MG/L	DW	1	1	AA12345		0.5	0.3	AG
3	04-Jun-1999	Sediment	Result	Arsenic	<	23.5	MG/L	DW	1	1	AA12345		50	1	AG

TABLE STRUCTURE:

Field Name	Type	Required	Description
StationID	Text	Y	A geographic location label from tblStations.
DiscreteSampleDepth	Number	Y	Depth within water column Report as 0 for sediment.
DiscreteSampleDepthUnits	Text	Y	From luList28_Units.
SampleDate	Date/Time	Y	The date the sample was collected expressed as dd-mmm-yyyy.
SampleTime	Number	Y	The time the sample was collected expressed as 24 hour time hhmm.
SampleTimeUnits	Text	Y	From luList28_Units.
BioaccumulationSampleID	Text	*	Required for tissue samples. Must match the BioaccumulationSampleID in the bioaccumulation organism table.
PreparationBatchID	Text	Y	A unique agency identifier for each batch of samples prepared together.
AnalysisBatchID	Text	Y	The code for all samples processed in the same batch
AnalysisMethod	Text	Y	The analysis method from luList24_AnalysisMethods
AnalysisDate	Date/Time	Y	The date the sample was processed in the instrument expressed as dd-mmm-yyyy
Matrix	Text	Y	The test material from luList14_TestMatrices.
SampleType	Text	Y	The type of result from luList04_SampleTypes.
ParameterCode	Text	Y	The measured parameter from luList15_ParameterCodes.
Qualifier	Text	N	Any necessary qualifier from luList11_QualifierCodes.
Result	Number	Y	Dry wt for sediment / wet weight for tissue.
Units	Text	Y	Units for the result from LuList28_Units.
MeasurementBasis	Text	Y	Wet weight or Dry weight WW / DW from luList17_MeasurementBasisCodes.
FieldDuplicate	Number	Y	Count from the field.
LabDuplicate	Number	Y	Count from the laboratory.
LabSampleID	Text	N	Unique sample identifier for the reporting agency.
TrueValue	Number	N	Required for all Spiked Samples only.
MDL	Number	Y	Method Detection Limit based on 40CFR136.
RL	Number	Y	Reporting Level as defined in metadata.
LabCode	Text	Y	Agency code from luList01_AgencyCodes.
Comments	Text	N	Additional remarks.

tblBioaccumulationOrganism

PURPOSE: The purpose of this table is to document individual organisms that contribute tissue to an individual bioaccumulation sample. This table may be used to report composited whole organisms or composited organs from organisms.

TABLE GUIDELINES: The StationID, LabCode, SampleDate, SampleTime, OrganismID, Species, Sex, TissueType, and BioaccumulationSampleID fields will ensure that each record in the table is unique. The file will be named BioaccumulationOrganism.XXX

EXAMPLE DATA:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	StationID	LabCode	SampleDate	SampleTime	SampleTimeUnits	OrganismID	Species	Sex	TissueType	Size	SizeUnits	SizeDescriptor	Weight	WeightUnits
2	2200	AG	12-Aug-1998	1123	PDST	AA12345	Pleuronicthys verticalis	M	Liver	15	CM	Standard Length	0.4	KG
3	2203	AG	12-Aug-1998	1328	PDST	AA12346	Pleuronicthys verticalis	F	Liver	17	CM	Standard Length	0.6	KG

	O	P	Q	R	S	T	U
1	TissueWeight	TissueWeightUnits	BioaccumulationSampleID	HomogenizationDate	Anomaly	BodyLocation	Comments
2	2.4	G	AA12345	13-Aug-1998	P	Eyes	
3	3.1	G	AA12345	13-Aug-1998	P	Eyes	

TABLE STRUCTURE:

Field Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table.
SamplingOrganization	Text	Y	From luList01_AgencyCodes.
SampleDate	Date	Y	The date the sample was taken expressed as dd-mmm-yyyy.
SampleTime	Number	Y	Time the sample was collected expressed as hhmm.
SampleTimeUnits	Text	Y	From luList28_Units.
OrganismID	Text	Y	Unique identifier provided by agency.
Species	Text	Y	From luList09_SpeciesList. Genus and species.
Sex	Text	Y	Male, female, indeterminate, or null.
TissueType	Text	Y	From luList10_TissueTypes.
Size	Number	*	Size of the individual.
SizeUnits	Text	*	From luList28_Units.
SizeDescriptor	Text	*	From luList12_SizeDescriptors.
Weight	Number	Y	Weight of the individual.
WeightUnits	Text	Y	From luList28_Units.
TissueWeight	Number	Y	The weight of tissue this organism is contributing to the sample.
TissueWeightUnits	Text	Y	From luList28_Units.
BioaccumulationSampleID	Text	Y	A code that matches the bioaccumulation SampleID in the chemistry results table.
HomogenizationDate	Date	Y	The date the fish was homogenized expressed as dd-mmm-yyyy.
Anomaly	Text	*	From luList22_TrawlFishAnomalyCodes.
BodyLocation	Text	*	From luList29_FishBodyLocations.

tblInfaunalAbundance

PURPOSE: The purpose of the infaunal abundance table is to document the numerical presence of all infaunal animals collected at a station. Each record represents the abundance of a particular infaunal species in an individual sample and the agency that collected the species.

The exclude code is explained below. If the agency wishes to separate adults and juveniles of the same species, the number of juveniles can be carried in the comments field, but the abundance number will reflect the total number of animals of that species at that station.

The species field should contain genus and species names free of any punctuation, including, periods, commas, and quotation marks. The ScreenSize field refers to the size screen used to process the sample on board ship and is carried for historical purposes.

Exclude Notation

Purpose: Provides an aid to data analysis when calculating metrics using the number of taxa present (e.g., diversity, species richness). This field in the final data set represents the taxonomist's recommendation that the reported taxon be excluded from counts of the number of taxa reported in the sample.

Rule of Use: The Exclude annotation is made on the bench sheet whenever a taxon should be excluded from counts of the number of taxa reported in the sample. This annotation is employed when three conditions co-exist:

The identification is not at the species-level (e.g., Pleustidae or *Polydora* sp).

And

The reported taxon is represented in the sample by other members of its taxon, which have been identified at lower levels.

And

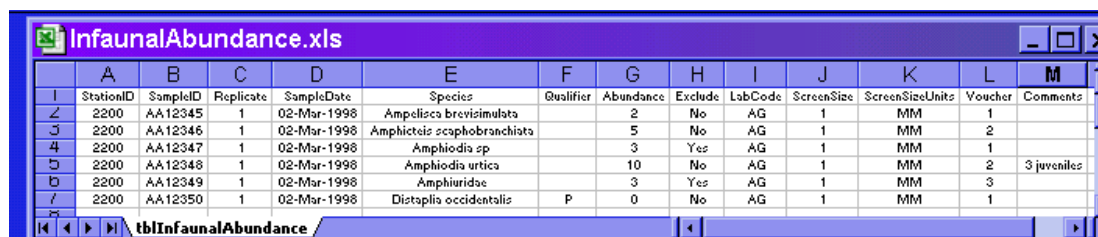
The taxonomist cannot determine if the specimen is distinct from the other members of its taxon represented in the sample.

It is necessary that the taxonomists make this evaluation during sample analysis (*i.e.*, by annotation of the bench sheet). It cannot be effectively applied after the fact, as there is no way of determining later whether the third criterion for use was met.

TABLE GUIDELINES:

The combination of StationID, Replicate, SampleDate, Species, and LabCode will ensure that each record in the table is unique. This file will be named InfaunalAbundance.XXX

EXAMPLE DATA:



	A	B	C	D	E	F	G	H	I	J	K	L	M
	StationID	SampleID	Replicate	SampleDate	Species	Qualifier	Abundance	Exclude	LabCode	ScreenSize	ScreenSizeUnits	Voucher	Comments
1	2200	AA12345	1	02-Mar-1998	Ampelisca brevisimulata		2	No	AG	1	MM	1	
2	2200	AA12346	1	02-Mar-1998	Amphictelis scaphobranchiata		5	No	AG	1	MM	2	
3	2200	AA12347	1	02-Mar-1998	Amphiodia sp		3	Yes	AG	1	MM	1	
4	2200	AA12348	1	02-Mar-1998	Amphiodia urtica		10	No	AG	1	MM	2	3 juveniles
5	2200	AA12349	1	02-Mar-1998	Amphiuridae		3	Yes	AG	1	MM	3	
6	2200	AA12350	1	02-Mar-1998	Distaplia occidentalis	P	0	No	AG	1	MM	1	

TABLE STRUCTURE:

Field Name	Type	Required	Description
StationID	Text	Y	A geographic location label from tblStations.
SampleID	Text	N	The laboratory internal sample identifier if any.
Replicate	Number	Y	The sequential number of the grab. The field may contain a one if there are no replicates.
SampleDate	Date/Time	Y	The date the sample was collected expressed as dd-mm-yyyy
Species	Text	Y	The species of infauna collected from luList09_SpeciesList.
Qualifier	Text	N	Any qualifier pertaining to the abundance from luList11_QualifierCodes (special case p for colonials to indicate their presence only).
Abundance	Number	Y	The number of individuals (0 for colonials).
Exclude	Yes/No	Y	Flag to exclude from the analysis.
LabCode	Text	Y	The agency code from luList01_AgencyCodes.
ScreenSize	Text	Y	Sieve size in mm. The default for this project is 1.0.
ScreenSizeUnits	Text	Y	From luList28_units. The default will be millimeters (mm)
Voucher	Number	N	The number of animals vouchered of this species from this station.
Comments	Text	N	Additional comments.

tblToxicityBatchInformation

PURPOSE: This table is used to record information specific to each test batch processed in the laboratory and is used as supporting documentation for the Toxicity Test data. Each record represents specific information common to a group of samples processed at the same time and is pertinent to all replicates processed. This is QA/QC data needed to document the test results.

TABLE GUIDELINES: Each record will be unique based on a combination of the fields QABatch and LabCode. The file will be submitted to the IMO with the name TOXICITYBATCH.XXX in Microsoft Excel format.

EXAMPLE DATA:

	A	B	C	D	E	F	G	H	I	J	K	L
	QABatch	LabCode	Species	Protocol	TestDate	Matrix	TestDuration	TestDurationUnits	Temperature	TemperatureUnits	TestAcceptability	Comments
1	01B08	AG	SP	Microbiotics 1992	24-Jun-1999	RT	2	Hours	22	C	A	

TABLE STRUCTURE:

Field Name	Type	Required	Description
QABatch	Text	Y	The batch code for the sample processing batch.
LabCode	Text	Y	The agency code from luList01_AgencyCodes of the processing laboratory.
Species	Text	Y	The species code from luList34_ToxicitySpecies.
Protocol	Text	Y	The test protocol from luList35_ToxicityProtocols.
TestDate	Date/Time	Y	The starting date of the test expressed as dd-mmm-yyyy.
Matrix	Text	Y	The test matrix from luList36_ToxicityMatrices.
TestDuration	Number	Y	The duration of the test expressed in days.
TestDurationUnits	Text	Y	From luList28_Units (Days or Hours).
Temperature	Number	Y	The temperature at which the test was conducted (degrees C).
TemperatureUnits	Text	Y	From luList28_Units.
TestAcceptability	Text	Y	Evaluation of the test results from luList39_ToxicityTestAcceptabilityCodes.
Comments	Text	N	Additional remarks.

tblToxicityResults

PURPOSE: The Toxicity table carries data relevant to sediment or water toxicity tests and their replicates. Each record represents the results of an individual replicate for an individual species processed in a batch of replicates.

TABLE GUIDELINES: Each record will be unique based on a combination of the fields StationID, SampleType, QABatch, LabCode, Species/TestType, Dilution, and Concentration. The file will be submitted to the IMO with the file name TOXICITYRESULTS.XXX in Microsoft Excel format.

EXAMPLE DATA:

	A	B	C	D	E	F	G	H	I	J	K	L	M
	StationID	SampleType	QABatch	LabCode	Species/TestType	Dilution	Concentration	ConcentrationUnits	EndPoint	LabRep	Value	QA Code	Comments
1	08S04	LB	22	LA	EE	0.001	34	MG/L	SP	1	44	A	

TABLE STRUCTURE:

Field Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table.
SampleType	Text	Y	Sample type from luList04_SampleTypes.
QABatch	Text	Y	Batch number for batch processed samples.
LabCode	Text	Y	The agency code from luList01_AgencyCodes.
Species/TestType	Text	Y	Test species from luList34_ToxicitySpecies.
Dilution	Number	Y	The dilution factor expressed as a proportion. Report as –99 for stations with no dilution factor.
Concentration	Number	Y	Concentration in mg/L. Report as –99 for stations with no concentration.
ConcentrationUnits	Text	Y	From luList28_Units.
EndPoint	Text	Y	The type of end point from luList37_ToxicityEndPoints.
LabRep	Number	Y	Count.
Value	Number	Y	The numerical result of the test.
QA Code	Text	Y	The quality assurance code from luList39_ToxicityTestAcceptabilityCodes.
Comments	Text	N	Additional remarks.

tblToxicityWQ

PURPOSE: This table is used to document water quality during the course of a toxicity test. Each record represents a measurement of an individual water quality parameter at a specific time interval during the course of the test batch.

TABLE GUIDELINES: Each record will be unique based on a combination of the fields StationID, QABatch, Parameter, Matrix, TimePoint, LabRep, and LabCode. The file will be submitted to the IMO with the file name TOXICITYWQ.XXX in Microsoft Excel format.

EXAMPLE DATA:

ToxicityWQ.xls														
	A	B	C	D	E	F	G	H	I	J	K	L	M	
1	StationID	QABatch	Matrix	Dilution	Concentration	ConcentrationUnits	TimePoint	Parameter	Qualifier	Value	ValueUnits	LabRep	LabCode	Comments
2	T24	W104	EX	0.001	34	MG/L	2	4'-DDE	<	0.01	P	1	AB	
3														
4	tblToxicityWQ													

TABLE STRUCTURE:

Field Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table.
QABatch	Text	Y	The batch code for the sample processing batch.
Matrix	Text	Y	The test matrix from luList36_ToxicityMatrices.
Dilution	Number	Y	The dilution factor expressed as a proportion.
Concentration	Number	Y	Concentration expressed in mg/L.
ConcentrationUnits	Text	Y	From luList28_Units.
TimePoint	Number	Y	The number of days from the start of the test.
Parameter	Text	Y	The water quality parameter being measured from luList15_ParameterCodes.
Qualifier	Text	N	Any necessary qualifier from luList11_QualifierCodes.
Value	Number	Y	The numerical result for the parameter.
ValueUnits	Text	Y	Any necessary qualifier from luList28_Units.
LabRep	Text	Y	The number of the replicate in which the measurement was taken. Report "0" for surrogate chambers.
LabCode	Text	Y	From luList01_AgencyCodes.
Comments	Text	N	Additional remarks.

tblToxicitySummaryResults

PURPOSE: This table is used to document the final determination of toxicity for each station. This table has been added to make the results easier to interpret by the final end users of the data set.

TABLE GUIDELINES: Each record will be unique based on a combination of the fields StationID, SpeciesCode, and LabCode. The file will be submitted to the IMO with the file name TOXICITYSUM.XXX in Microsoft Excel format.

EXAMPLE DATA:

The screenshot shows a Microsoft Excel spreadsheet titled 'tblToxicitySummaryResults.xls'. The spreadsheet contains the following data:

	A	B	C	D	E	F	G	H
	StationID	SampleType	QABatch	SpeciesCode	Dilution	Concentration	EPCode	Units
1	2177	RESULT	7/20/99	101L	-99	-99	B[a]PEq	ug/c
2	2177	RESULT	81998	GP	0.25	-99	RL	PM
3	2177	CNEG	81998-CONTROL	GP	-99	-99	RL	PM

The status bar at the bottom indicates 'Ready' and 'NUM'.

	H	I	J	K	L	M	N	O	P	Q	R
1	Units	Mean	N	StdDev	PctControl	SigEffect	QA Code	Comment			
2	ug/g	3	1	-99	3.3	NR	A				
3	PMT	2E+06	5	386640	100	F	A				
4	PMT	1E+06	5	121353	100	X	A				

Field Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
LabCode	Text	Y	From luList01_AgencyCodes.
SampleType	Text	Y	Type of sample. Refer to luList04
QABatch	Text	Y	Identifier to match samples analyzed as a group
SpeciesCode	Text	Y	Code of species or type of biological system used for the toxicity test; refer to luList34.
Dilution	Number	N	The dilution factor expressed as a proportion.. When not required, complete with -99.
Concentration	Number	N	Concentration in mg/L. When not required, complete with -99
EPCode	Text	Y	The type of endpoint for the test. Refer to luList37
Units	Text	Y	The units for the endpoint from luList28_Units.
StatisticalTest	Text	Y	The statistical method used to determine toxicity.
Mean	Number	Y	The mean value for the test and sample generated from the lab replicates in tblCoreToxicityResults
N	Number	Y	The number of replicates used to calculate mean and standard deviation from the lab replicates in tblCoreToxicityResults
StdDev	Number	Y	The standard deviation for the test and sample generated from the lab replicates in tblCoreToxicityResults
PctControl	Number	Y	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)
SigEffect	Text	Y	Statistically significant effect based on control response. From luList41_ControlResponses
QA Code	Text	Y	The quality assurance code for the analysis. Refer to luList39
Comment	Text	N	Note comments on statistical test used if known (e.g. ANOVA, t-test, etc.)

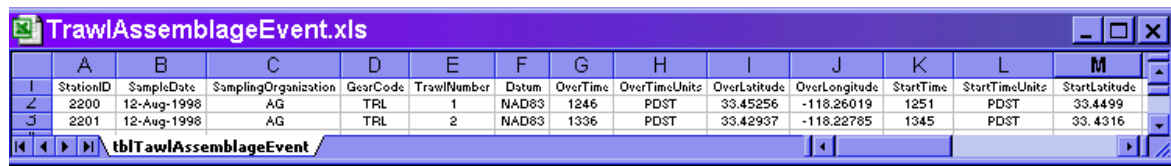
tblTrawlAssemblageEvent

PURPOSE: The purpose of the trawl data table is to document the track of all trawls conducted during the course of the project and the type of samples collected in the trawl. Each record represents a record of an individual trawl track.

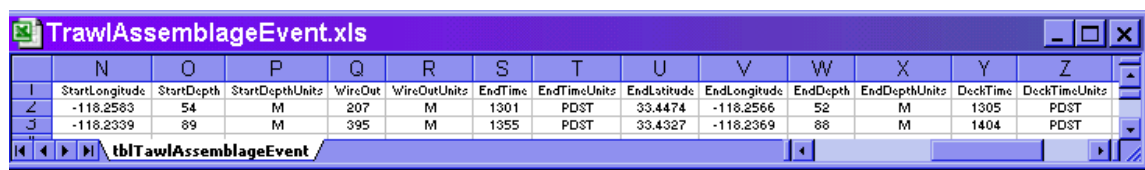
There are four positions recorded during a trawl; net over, net on the bottom, end of trawl, and net on deck. The first and last positions are recorded for Quality Assurance purposes. The time is recorded for each of these positions. The latitude and longitude are recorded for all of the positions in terms of decimal degrees.

TABLE GUIDELINES: The combination of StationID, SampleDate, SamplingOrganization, and TrawlNumber ensure that each record in the table will be unique. The file will be named TrawlAssemblageEvent.XXX

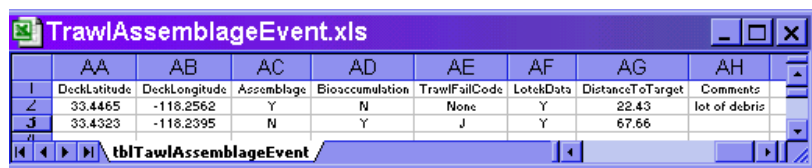
EXAMPLE DATA:



	A	B	C	D	E	F	G	H	I	J	K	L	M
I	StationID	SampleDate	SamplingOrganization	GearCode	TrawlNumber	Datum	OverTime	OverTimeUnits	OverLatitude	OverLongitude	StartTime	StartTimeUnits	StartLatitude
Z	2200	12-Aug-1998	AG	TRL	1	NAD83	1246	PDST	33.45256	-118.26019	1251	PDST	33.4499
J	2201	12-Aug-1998	AG	TRL	2	NAD83	1336	PDST	33.42937	-118.22785	1345	PDST	33.4316



	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
I	StartLongitude	StartDepth	StartDepthUnits	WireOut	WireOutUnits	EndTime	EndTimeUnits	EndLatitude	EndLongitude	EndDepth	EndDepthUnits	DeckTime	DeckTimeUnits
Z	-118.2583	54	M	207	M	1301	PDST	33.4474	-118.2566	52	M	1305	PDST
J	-118.2339	89	M	395	M	1355	PDST	33.4327	-118.2369	88	M	1404	PDST



	AA	AB	AC	AD	AE	AF	AG	AH
I	DeckLatitude	DeckLongitude	Assemblage	Bioaccumulation	TrawlFailCode	LotekData	DistanceToTarget	Comments
Z	33.4465	-118.2562	Y	N	None	Y	22.43	lot of debris
J	33.4323	-118.2395	N	Y	J	Y	67.66	

TABLE STRUCTURE:

Field Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table.
SampleDate	Date/Time	Y	The date the sample was collected expressed as dd-mm-yyyy.
SamplingOrganization	Text	Y	From luList01_AgencyCodes.
GearCode	Text	Y	From luList03_EquipmentCodes.
TrawlNumber	Number	Y	The sequence number of the trawl at the station.
Datum	Text	Y	The datum on which the latitude and longitude are based (default is NAD83).
OverTime	Number	Y	The time the net was deployed expressed as hhmm.
OverTimeUnits	Text	Y	From luList28_Units.
OverLatitude	Number	Y	Decimal Degrees to five places (NAD 83).
OverLongitude	Number	Y	Decimal Degrees to five places (NAD 83) expressed as a negative number.
StartTime	Number	Y	The time the net started fishing expressed as hhmm.
StartTimeUnits	Text	Y	From luList28_Units.

StartLatitude	Number	Y	Decimal Degrees to five places (NAD 83).
StartLongitude	Number	Y	Decimal Degrees to five places (NAD 83) expressed as a negative number.
StartDepth	Number	Y	The depth at the start of trawl in meters.
StartDepthUnits	Text	Y	From list28 Units.
WireOut	Number	Y	The length of wire out expressed in meters.
WireOutUnits	Text	Y	From luList28_Units.
EndTime	Number	Y	The time the net finish fishing expressed as hhmm.
EndTimeUnits	Text	Y	From luList28_Units.
EndLatitude	Number	Y	Decimal Degrees to five places (NAD 83).
EndLongitude	Number	Y	Decimal Degrees to five places (NAD 83) expressed as a negative number.
EndDepth	Number	Y	The depth at the end of the trawl in meters.
EndDepthUnits	Text	Y	From luList28_Units.
DeckTime	Number	Y	The time the net is recovered and on deck expressed as hhmm.
DeckTimeUnits	Text	Y	From luList28_Units.
DeckLatitude	Number	Y	Decimal Degrees to five places (NAD 83).
DeckLongitude	Number	Y	Decimal Degrees to five places (NAD 83) expressed as a negative number.
Assemblage	Yes/No	Y	Was this trawl used to study Community Structure?
Bioaccumulation	Yes/No	Y	Was this trawl used for Bioaccumulation?
TrawlFailCode	Text	Y	From luList40_EventFailCodes
LotekData	Yes/No	Y	Is there Lotek data associated with this trawl?
DistanceToTarget	Number	N	Distance from target location in meters
Comments	Text	N	Additional comments.

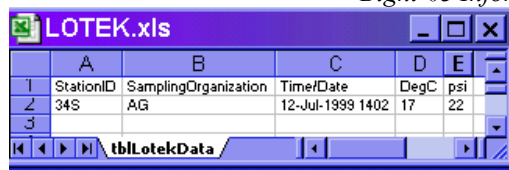
tblLotekData

PURPOSE: The Lotek device records time, temperature, and pressure. The data file from the device will be supplemented with the StationID and the Agency Code.

TABLE GUIDELINES: The combination of the fields StationID, AgencyCode, and Time/Date will ensure that each record is unique in the table. If LOTEK data is not collected at a trawl station, a single record will be entered for the station and the temperature and pressure will be reported as -99.

The file will be submitted to the IMO with the file name LOTEK.XXX.

EXAMPLE DATA:



The screenshot shows a Microsoft Excel spreadsheet titled 'LOTEK.xls'. The active sheet is 'tblLotekData'. The table has five columns: A (StationID), B (SamplingOrganization), C (Time/Date), D (DegC), and E (psi). The first three rows of data are visible: Row 1: StationID 34S, SamplingOrganization AG, Time/Date 12-Jul-1999 1402, DegC 17, psi 22. Row 2: StationID 34S, SamplingOrganization AG, Time/Date 12-Jul-1999 1402, DegC 17, psi 22. Row 3: StationID 34S, SamplingOrganization AG, Time/Date 12-Jul-1999 1402, DegC 17, psi 22.

TABLE STRUCTURE:

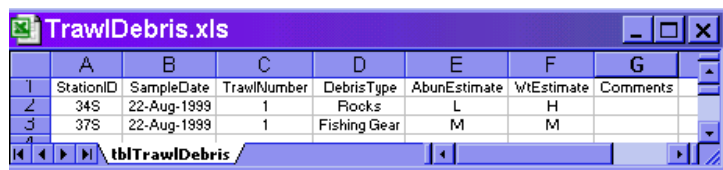
Field Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table.
SamplingOrganization	Text	Y	From luList01_AgencyCodes
Time/Date	Date/Time	Y	The date/time recorded by the instrument.
DegC	Number	Y	The temperature recorded by the instrument.
psi	Number	Y	The pressure recorded by the instrument.

tblTrawlDebris

PURPOSE: The purpose of the trawl debris table is to document the type and amount of debris encountered during each trawl.

TABLE GUIDELINES: The combination of StationID, SampleDate, TrawlNumber, DebrisType, and SamplingOrganization ensures that each record in the table will be unique. The file will be named TrawlDebris.XXX

EXAMPLE DATA:



The screenshot shows a Microsoft Excel spreadsheet titled 'TrawlDebris.xls'. The active sheet is 'tblTrawlDebris'. The table has eight columns: A (StationID), B (SampleDate), C (TrawlNumber), D (DebrisType), E (AbunEstimate), F (WtEstimate), G (Comments). The first three rows of data are visible: Row 1: StationID 34S, SampleDate 22-Aug-1999, TrawlNumber 1, DebrisType Rocks, AbunEstimate L, WtEstimate H, Comments. Row 2: StationID 37S, SampleDate 22-Aug-1999, TrawlNumber 1, DebrisType Fishing Gear, AbunEstimate M, WtEstimate M, Comments. Row 3: StationID 37S, SampleDate 22-Aug-1999, TrawlNumber 1, DebrisType Fishing Gear, AbunEstimate M, WtEstimate M, Comments.

TABLE STRUCTURE:

Field Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table.
SampleDate	Date/Time	Y	The date the sample was collected expressed as dd-mm-yyyy.
TrawlNumber	Number	Y	The number of the trawl from which the sample was collected.
SamplingOrganization	Text	Y	From luList01_AgencyCodes
DebrisType	Text	Y	Debris type from luList31_TrawlDebrisType.
AbunEstimate	Text	Y	Estimated numerical abundance code from luList32_TrawlDebrisAbundanceEstimates.
WtEstimate	Text	Y	Estimated weight of debris code from

Comments	Text	N	Additional remarks.
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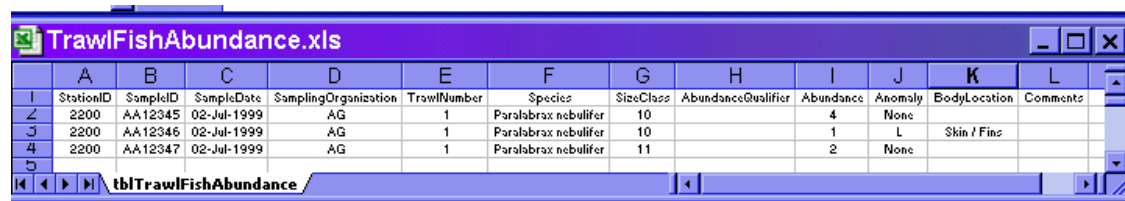
tblTrawlFishAbundance

PURPOSE: The purpose of the trawl fish abundance table is to document the number of individuals in each size class in each species from the Assemblage trawl collected at the station as well as anomalies encountered on individual fish. Each record represents the number of fish in a particular size class of a particular species and a particular anomaly state.

Each fish is measured individually and examined for anomalies. In the event that anomalies are found in combination, use the codes for anomaly combinations from list 22.

TABLE GUIDELINES: The combination of the fields StationID, SampleDate, LabCode, TrawlNumber, Species, SizeClass, and Anomaly will ensure that each record is unique in the table. This file will be named TrawlFishAbundance.XXX.

EXAMPLE DATA: Although this table is simple in structure, the actual application is sometimes confusing and so an example is included to clarify the use of this table. In this example the collected species was *Paralabrax nebulifer*. There were five fish in size class 10, one of which has a lesion. There were 2 fish in size class 11, both of which have no anomalies.



	A	B	C	D	E	F	G	H	I	J	K	L
	StationID	SampleID	SampleDate	SamplingOrganization	TrawlNumber	Species	SizeClass	AbundanceQualifier	Abundance	Anomaly	BodyLocation	Comments
1	2200	AA12345	02-Jul-1999	AG	1	Paralabrax nebulifer	10		4	None		
2	2200	AA12346	02-Jul-1999	AG	1	Paralabrax nebulifer	10		1	L	Skin / Fins	
3	2200	AA12347	02-Jul-1999	AG	1	Paralabrax nebulifer	11		2	None		

TABLE STRUCTURE:

Field Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table.
SampleID	Text	N	The laboratory internal sample identifier.
SampleDate	Date/Time	Y	The date the sample was taken expressed as dd-mm-yyyy.
SamplingOrganization	Text	Y	From luList01_AgencyCodes.
TrawlNumber	Number	Y	The sequential number of the the trawl taken at the station.
Species	Text	Y	The species being measured from luList09_SpeciesList.
SizeClass	Number	Y	The size class into which the fish falls expressed in cm.
AbundanceQualifier	Text	N	Any necessary qualifier from luList11_QualifierCodes.
Abundance	Number	Y	The number of fish in the size class.
Anomaly	Text	Y	Any present anomaly of combination of anomalies

from luList22_TrawlFishAnomalies.

BodyLocation	Text	N	From luList29_FishBodyLocations.
Comments	Text	N	Additional remarks.

tblTrawlFishBiomass

PURPOSE: The purpose of this table is to document the collective weight of each fish species in all size classes collected in the trawl used for assemblage.

The biomass will be recorded to a single decimal place. The “units” field default value is KG and is carried to document the units used in this survey for historical purposes.

TABLE GUIDELINES: The combination of the fields StationID, SampleDate, SamplingOrganization, TrawlNumber, and Species will ensure that each record is unique in the table. This file will be named TrawlFishBiomass.XXX

EXAMPLE DATA:

	A	B	C	D	E	F	G	H	I	J
	StationID	SampleID	SampleDate	SamplingOrganization	TrawlNumber	Species	BiomassQualifier	Biomass	BiomassUnits	Comments
2	2200	AA12345	21-Mar-1998	AG	1	Citharichthys fragilis	<	0.1	KG	
3	2200	AA12346	21-Mar-1998	AG	1	Citharichthys xanthostigma		0.8	KG	
4	2200	AA12347	21-Mar-1998	AG	1	Hippoglossina stomata		0.3	KG	
5	2200	AA12348	21-Mar-1998	AG	1	Icelinus quadriseriatus	<	0.1	KG	

TABLE STRUCTURE:

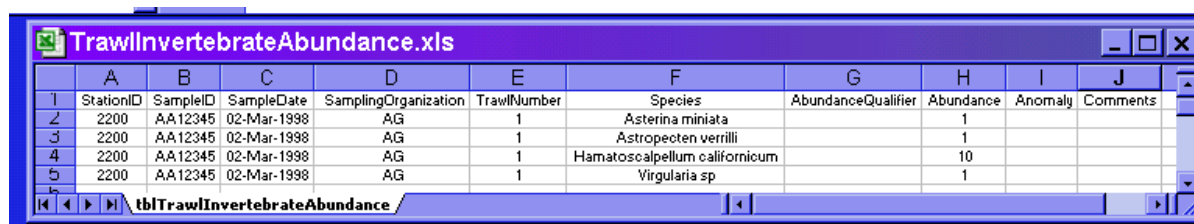
Field Name	Type	Required	Description
StationID	Text	Y	A geographic location label from tblStations.
SampleID	Text	N	The laboratory internal sample identifier.
SampleDate	Date/Time	Y	The date the sample was collected expressed as dd-mm-yyyy.
SamplingOrganization	Text	Y	From luList01_AgencyCodes.
TrawlNumber	Number	Y	The sequential number of the trawl at that station.
Species	Text	Y	The species measured from luList09_SpeciesList.
BiomassQualifier	Text	N	Any necessary qualifier from luList11_QualifierCodes.
Biomass	Number	Y	The weight of the collected members of the species in kg.
BiomassUnits	Text	Y	The units used for the weight, normally KG, from LuList28_Units.
Comments	Text	N	Additional comments.

tblTrawlInvertebrateAbundance

PURPOSE: The trawl invertebrate abundance table is used to document the numerical abundance of megabenthic invertebrates collected in trawls used for assemblage characterization. Each record represents the abundance and occurrence of anomalies in an individual species.

The qualifier field may carry an “A” indicating that the abundance was estimated by aliquot. In the case of certain species like urchins, where very large numbers of individuals may be encountered, a number (100 or 200 for example) may be weighed and the total haul number estimated from the total weight.

TABLE GUIDELINES: The combination of the fields StationID, SampleDate, LabCode, TrawlNumber, Species, and Anomaly will ensure that each record is unique in the table. This file will be named TrawlInvertebrateAbundance.XXX

EXAMPLE DATA:


	A	B	C	D	E	F	G	H	I	J
	StationID	SampleID	SampleDate	SamplingOrganization	TrawlNumber	Species	AbundanceQualifier	Abundance	Anomaly	Comments
1	2200	AA12345	02-Mar-1998	AG	1	Asterina miniata		1		
2	2200	AA12345	02-Mar-1998	AG	1	Astropecten verrilli		1		
3	2200	AA12345	02-Mar-1998	AG	1	Hamatoscalpellum californicum		10		
4	2200	AA12345	02-Mar-1998	AG	1	Virgularia sp		1		

TABLE STRUCTURE:

Field Name	Type	Required	Description
StationID	Text	Y	A geographic location label from tblStations.
SampleID	Text	N	The laboratory internal sample identifier.
SampleDate	Date/Time	Y	The date the sample was collected expressed as dd-mmm-yyyy.
SamplingOrganization	Text	Y	From luList01_AgencyCodes.
TrawlNumber	Number	Y	The sequential number of the trawl taken at that station.
Species	Text	Y	Scientific names of collected invertebrates from luList09_SpeciesList.
AbundanceQualifier	Text	N	A qualifier from luList11_QualifierCodes.
Abundance	Number	Y	Number of individuals of the species.
Anomaly	Text	Y	Anomaly from luList23_InvertebrateAnomalyCodes recorded as None if no anomaly.
Comments	Text	N	Additional remarks.

tblTrawlInvertebrateBiomass

PURPOSE: The purpose of the trawl invertebrate biomass table is to record the collective biomass of each megabenthic invertebrate species collected at a trawl station. Each record represents the collective biomass of an individual species expressed in kilograms.

TABLE GUIDELINES: The combination of the fields StationID, SampleDate, SamplingOrganization, TrawlNumber, and Species will ensure that each record is unique in the table. This file will be named TrawlInvertebrateBiomass.XXX

EXAMPLE DATA:

	A	B	C	D	E	F	G	H	I	J
	StationID	SampleID	SampleDate	SamplingOrganization	TrawlNumber	Species	BiomassQualifier	Biomass	BiomassUnits	Comments
1	2200	AA12345	03-Mar-1998	AG	1	Asterina miniata		0.1	KG	
2	2200	AA12346	03-Mar-1998	AG	1	Astropecten verillii	<	0.1	KG	
3	2200	AA12347	03-Mar-1998	AG	1	Hamatoscaphellum californicum	<	0.1	KG	
4	2200	AA12348	03-Mar-1998	AG	1	Luidia armata	<	0.1	KG	
5	2200	AA12349	03-Mar-1998	AG	1	Lytechinus pictus		7.1	KG	

TABLE STRUCTURE:

Field Name	Type	Required	Description
StationID	Text	Y	A geographic location label from tblStations.
SampleID	Text	N	The laboratory internal sample identifier.
SampleDate	Date/Time	Y	The date the sample was collected expressed as dd-mmm-yyyy.
SamplingOrganization	Text	Y	From luList01_AgencyCodes.
TrawlNumber	Number	Y	The sequential number of the trawl at that station from which assemblage data was collected expressed as dd-mmm-yyyy.
Species	Text	Y	The species being measured from luList09_SpeciesList.
BiomassQualifier	Text	N	Any necessary qualifier code from luList11_QualifierCodes.
Biomass	Number	Y	The weight of the collected individual species expressed in KG.
BiomassUnits	Text	Y	Normally KG from luList28_Units.
Comments	Text	N	Additional comments.

Microbiology Data Tables

The Microbiology project is focused on determining the extent of impact a river or creek system has on the beach into which it discharges. The goal of the project is to determine the persistence of the indicators and the linear extent on the bacterial impacts. This project uses a fixed station grid which is specially designed for each of the river systems being investigated. The following tables capture the data necessary for the analyses. The Station table will be the same as for the rest of the project, but will not carry any of the statistical weight variables associated with the probability based designs.

tblMicrobiologyStationOccupation

PURPOSE: The Microbiology Visual Observations table contains beach condition data collected when the sample is taken. Each record represents the conditions at the station where the sample was collected.

If the “MSO” field contains a value it must be accompanied by a comment.

TABLE GUIDELINES: The combination of the fields StationID, SampleDate, SampleTime, and SamplingOrganization will ensure that each record in the table is unique. The file will be named MicrobiologyStationOccupation.XXX

EXAMPLE DATA:

	A	B	C	D	E	F	G	H	I	J	K	L	M
I	StationID	SampleDate	SampleTime	SampleTimeUnits	SamplingOrganization	SampleDepth	SampleDepthUnits	Latitude	Longitude	TidalStage	SurfCondition	SeaState	WindSpeed
Z	2200	19-May-2000	1300	PDST	AG	0	M	34.12456	-118.2346	Ebb	Low (1-3)	Calm	2

	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
I	WindSpeedUnits	WindDirection	WeatherCode	Current	NumDogs	NumPeople	NumBirds	NumMarineMammals	MSO	MarineVegetation	WaterOutletflowing	StationFailReason	Comments
Z	KTS	E	Clear	down coast	0	0	0	0	None	Grease	None		Grease at surfline

TABLE STRUCTURE:

Field Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
SampleDate	Date/Time	Y	The date the sample was collected expressed as dd-mmm-yyyy
SampleTime	Number	Y	The time the sample was collected expressed as 24 hour time hhmm
SampleTimeUnits	Text	Y	From luList28_Units
SamplingOrganization	Text	Y	The agency code from luList01_AgencyCodes
SampleDepth	Number	Y	The depth at which the sample was taken
SampleDepthUnits	Text	Y	From luList28_Units
Latitude	Number	N	The latitude of the sample in decimal degrees

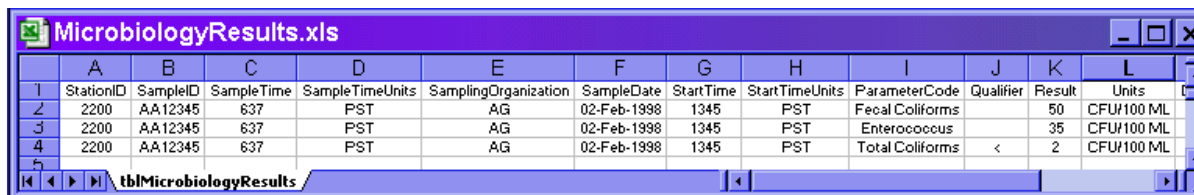
Longitude	Number	N	Decimal Degrees to five places (NAD 83) expressed as a negative number.
TidalStage	Text	Y	from luList13_TidalStages
SurfCondition	Text	Y	From luList27_SurfConditions
SeaState	Text	Y	From luList16_SeaStates
WindSpeed	Number	Y	The speed of the wind in knots
WindSpeedUnits	Text	Y	From luList28_Units
WindDirection	Text	Y	From luList05_OrdinalDirections ordinal magnetic direction from
WeatherCode	Text	Y	The weather code from luList08_WeatherCodes
Current	Text	Y	From luList19_CurrentDirections
NumDogs	Number	Y	The estimated number of dogs on the beach when the sample was collected.
NumPeople	Number	Y	Estimated number of people in the water
NumBirds	Number	Y	The estimated number of birds on the beach when the sample was collected
NumMarineMammals	Number	Y	The estimated number of marine mammals in the water when the sample was collected
MSO	Text	Y	Material of sewage origin from luList21_MaterialOfSewageOrigin
MarineVegetation	Text	Y	Marine Vegetation present
WaterOutletflowing	Text	Y	If the station is a water outlet is water flowing?
StationFailReason	Text	*	From luList40_EventFailCodes. Was the station abandoned for any reason? *Required if the sample was not collected
Comments	Text	*	Additional comments. *If MSO has a value a comment is required

tblMicrobiologyResults

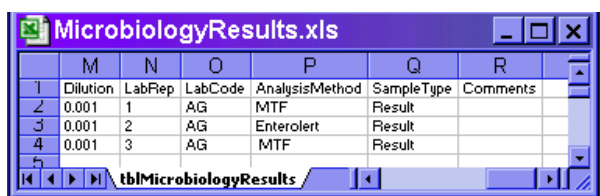
PURPOSE: The Microbiology results table contains bacteriological results data. Each record represents the results of an individual sample including collected samples and QA check samples. SamplingOrganization is carried in both the results table and the event table because one agency may collect samples that are analyzed by another laboratory.

TABLE GUIDELINES: The combination of the fields StationID, SampleTime, SampleDate, StartTime, ParameterCode, LabCode, Dilution, LabRep, and SampleType will ensure that each record is unique in the table. The file will be named MicrobiologyResults.XXX

EXAMPLE DATA:



	A	B	C	D	E	F	G	H	I	J	K	L
1	StationID	SampleID	SampleTime	SampleTimeUnits	SamplingOrganization	SampleDate	StartTime	StartTimeUnits	ParameterCode	Qualifier	Result	Units
2	2200	AA12345	637	PST	AG	02-Feb-1998	1345	PST	Fecal Coliforms		50	CFU/100 ML
3	2200	AA12345	637	PST	AG	02-Feb-1998	1345	PST	Enterococcus		35	CFU/100 ML
4	2200	AA12345	637	PST	AG	02-Feb-1998	1345	PST	Total Coliforms	<	2	CFU/100 ML



	M	N	O	P	Q	R
1	Dilution	LabRep	LabCode	AnalysisMethod	SampleType	Comments
2	0.001	1	AG	MTF	Result	
3	0.001	2	AG	Enterolert	Result	
4	0.001	3	AG	MTF	Result	

TABLE STRUCTURE:

Field Name	Type	Required	Description
StationID	Text	Y	A geographic location label from tblStations.
SampleID	Text	N	The laboratory internal sample identifier
SampleTime	Number	Y	The time the sample was collected expressed as hhmm
SampleTimeUnits	Text	Y	From luList28_Units
IncubatorStartTime	Number	Y	The time the incubation began expressed as hhmm.
IncubatorStartTimeUnits	Text	Y	From luList28_Units
SamplingOrganization	Text	Y	From luList01_AgencyCodes
SampleDate	Date/Time	Y	The date the sample was analyzed (must be the same date as when the sample was taken)
ProcessingStartTime	Number	Y	The time the testing was started expressed as hhmm
StartTimeUnits	Text	Y	From luList28_Units
ParameterCode	Text	Y	What type of bacteria are being analyzed from luList15_ParameterCodes
Qualifier	Text	N	Qualifier for the result, from luList11_QualifierCodes
Result	Number	Y	The numerical results of the test
Units	Text	Y	The units for the results from luList28_Units
Dilution	Number	Y	The dilution factor associated with the result.
LabRep	Text	Y	The count of the lab replicate.
LabCode	Text	Y	From luList01_AgencyCodes
AnalysisMethod	Text	Y	The Method used to do the analysis from luList24_Analysis Methods
SampleType	Text	Y	From luList04_SampleTypes
Comments	Text	N	Additional comments

Water Quality Data Tables

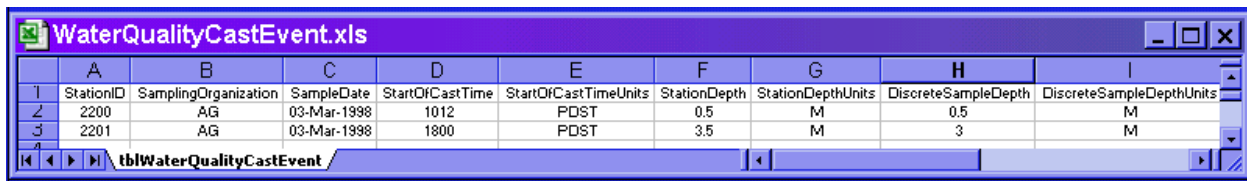
The Water Quality Project is focused on the persistence of fresh water plumes from major systems in the Southern California Bight. Water quality measures will be compared to values derived from a number of satellite image sources and other oceanographic data sources such as drifters and CODAR measurements. The tables described in this section are intended to capture the physical measures taken from boats. The stations in this portion of the project represent a fixed grid to track gradients. The Station table will be the same as for the rest of the project, but will not carry any of the statistical weight variables associated with the probability based designs.

tblWaterQualityCastEvent

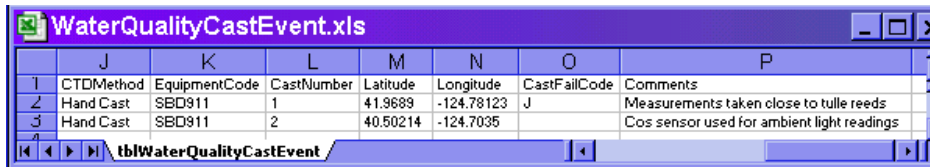
PURPOSE: This table carries records of each cast in terms of location and surface conditions taken at a station when a cast is conducted. Each successful cast will generate a record containing a record of the characteristics of the surface water as well as the time and latitude and longitude of the sampling event.

TABLE GUIDELINES: The combination of the fields StationID, SamplingOrganization, SampleDate, and StartofCastTime, and CastNumber will ensure that each record in the table is unique. This file will be named WaterQualityCastEvent.XXX.

EXAMPLE DATA:



	A	B	C	D	E	F	G	H	I
1	StationID	SamplingOrganization	SampleDate	StartOfCastTime	StartOfCastTimeUnits	StationDepth	StationDepthUnits	DiscreteSampleDepth	DiscreteSampleDepthUnits
2	2200	AG	03-Mar-1998	1012	PDST	0.5	M	0.5	M
3	2201	AG	03-Mar-1998	1800	PDST	3.5	M	3	M



	J	K	L	M	N	O	P
1	CTDMethod	EquipmentCode	CastNumber	Latitude	Longitude	CastFailCode	Comments
2	Hand Cast	SBD911	1	41.9689	-124.78123	J	Measurements taken close to tulle reeds
3	Hand Cast	SBD911	2	40.50214	-124.7035		Cos sensor used for ambient light readings

TABLE STRUCTURE:

Field Name	Type	Required	Description
StationID	Text	Y	A geographic location label
SamplingOrganization	Text	Y	From luList01_AgencyCodes
SampleDate	Date	Y	The sample date expressed as dd-mmm-yyyy
StartofCastTime	Number	Y	24 hour clock hhmm. Start of CTD cast or discrete sample cast
StartofCastTimeUnits	Text	Y	From luList28_Units
StationDepth	Number	Y	Depth
StationDepthUnits	Text	Y	From luList28_Units.
DiscreteSampleDepth	Number	*	Required if applicable
DiscreteSampleDepthUnits	Text	*	From luList28_Units. Required if applicable
CTDMethod	Text	Y	From luList2_CTDMethods

EquipmentCode	Text	Y	From luList03_EquipmentCodes
CastNumber	Number	Y	Sequence number of the cast
Latitude	Number	Y	Decimal Degrees to five places (NAD 83)
Longitude	Number	Y	Decimal Degrees to five places (NAD 83) expressed as a negative number.
CastFailCode	Text	Y	From luList40_EventFailureCodes
Comments	Text		Additional comments

tblWaterQualityDepthSamples

PURPOSE: This table carries records of each sample collected at each station including the depth at which the sample was collected.

TABLE GUIDELINES: The combination of the fields StationID, SampleNumber, and SamplingOrganization will ensure that each record in the table is unique. This file will be named WaterQualitySampleDepths.XXX.

EXAMPLE DATA:

Field Name	Type	Required	Description
StationID	Text	Y	A geographic location label.
SampleDate	Date/Time	Y	The date the sample was collected.
SampleNumber	Number	Y	The sequential number of the sample at that station on that date.
SampleDepth	Number	Y	The depth at which the sample was take in meters.
SampleDepthUnits	Text	Y	The units of the depth.
SamplingOrganization	Text	Y	A code for the agency collecting the sample.
Comments	Text	N	Additional remarks.

tblBinAveragedCastData

PURPOSE: The purpose of this table is to document the bin averaged cast data and QA flags for questionable data points. Each record represents a depth bin averaged set of measurements taken by the instrument during its descent through the water column.

The “CastPortion” field flags the record as Equilibration, Downcast, or Upcast referring to its position in the cast.

TABLE GUIDELINES: The combination of StationID, SampleDate, StartofCastTime, and DepthofMeasurement will ensure that each record will be unique in the table. The file will be named WaterQualityCastData.XXX

EXAMPLE DATA:

	A	B	C	D	E	F	G	H	I	J	K
	StationID	SampleID	SampleDate	StartofCastTime	StartofCastTimeUnits	Seconds	DescentRate	DescentRateUnits	DepthofMeasurement	DepthofMeasurementUnits	Temperature
1	2200	S22A	03-Sep-1999	1322	PDST	30	0.65	M/S	0.5	FT	15.56
2	2200	S23B	03-Sep-1999	1324	PDST	25	0.34	M/S	1	FT	15.48
3	2200	S24C	03-Sep-1999	1327	PDST	15	0.87	M/S	1.5	FT	15.7
4	2200	S25D	03-Sep-1999	1344	PDST	45	0.55	M/S	2	FT	14.98

	L	M	N	O	P	Q	R	S	T	U	V
	Conductivity	Salinity	OxygenMGL	OxygenPercentSaturation	Transmissivity	BeamC	PH	Fluorescence	Turbidity	CastPortion	Comments
1	3.862131	32.2988	10.45608	130.95637	4.19E+01	7.24E+41	8.426	340	25	D	
2	3.887446	32.5931	10.37618	138.36894	4.23E+01	1.81E+42	8.432	372	27	D	
3	3.877236	32.7802	10.30925	145E+02	4.56E+01	3.72E+45	8.434	345	46	D	
4	3.860274	32.7716	10.10275	147.71484	4.75E+01	2.82E+47	8.435	350	-99	D	

TABLE STRUCTURE:

Field Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
SampleID	Text		Unique laboratory internal sample identifier
SampleDate	Date	Y	Expressed as dd-mmm-yyyy
Seconds	Number	Y	From the instrument
DescentRate	Number	Y	Meters per second
DescentRateUnits	Text	Y	Units associated with descent rate (m/s) from luList28_Units
DepthofMeasurement	Number	Y	Depth of the measurement
DepthofMeasurementUnits	Text	Y	From luList28_Units
Temperature	Number	Y	Degrees centigrade
Conductivity	Number	Y	Siemens/m
Salinity	Number	Y	PSU (Practical Salinity Units)
OxygenMGL	Number	Y	MG/L
OxygenPercentSaturation	Number	Y	%Saturation
Transmissivity	Number	Y	%light
BeamC	Text	Y	Inverse log of transmissivity from the instrument
PH	Number	Y	Log of hydrogen ion concentration
Fluorescence	Number	Y	From the instrument
Turbidity	Number	Y	From the instrument
CastPortion	Text	Y	E (equilibration) ,D (downcast) , U (upcast)
Comments	Text		Additional comments

Appendix 1. Look up lists

IuList01_AgencyCodes

AgencyCode	AgencyDescription
AATI	Advanced Analytical Technology Incorporated
ABC	Aquatic Bioassay and Consulting Laboratories
AL	Associated Laboratories
CDFG	California Department of Fish and Game
CINMS	Channel Islands National Marine Sanctuary (CINMS)
CLAEMD	City of Los Angeles Environmental Monitoring Division (CLAEMD)
CLB	City of Long Beach
CRG	CRG Labs
CSD	City of San Diego
OCSD	Orange County Sanitation Districts (OCSD)
ENVIR	Enviromatrix Analytical
EW	Encina Waste Water Authority
HTB	Heal the Bay
IDEXX	IDEXX Laboratories
JPL	Jet Propulsion Laboratory
LACDHS	Los Angeles County Dept. of Health Services
LACET	LA County Environ Tox Lab
LACRWQCB	Los Angeles County Regional Water Quality Control Board
LACSD	Los Angeles County Sanitation Districts (LACSD)
LADWP	Los Angeles Department of Water and Power (LADWP)
LMU	Loyola Marymount University
MBC	Marine Biological Consulting
MEC	Marine Environmental Consulting Analytical Systems Inc.
MMS	Minerals Management Service
OCCK	Orange County Coast Keeper
OCEHD	Orange County Environmental Health Division
OCFPRD	Orange County Public Facilities and Resources (OCFPRD)
OCPHL	Orange County Public Health Laboratory
OS	City of Oceanside
OX	City of Oxnard
POLA	Port of Los Angeles
POLB	Port of Long Beach
SARWQCB	Santa Ana Regional Water Quality Control Board
SBCK	Santa Barbara Channelkeeper
SCCWRP	Southern California Coastal Water Research Project(SCCWRP)
SCMI	Southern California Marine Institute(SCMI)

AgencyCode	AgencyDescription
SDBK	San Diego Baykeeper
SDCDEH	San Diego County Dept. of Environmental Health
SDRWQCB	San Diego Regional Water Quality Control Board (SDRWQCB)
SEJPA	San Elijo Joint Powers Authority*
SF	Surfrider Foundation
SMBK	Santa Monica Baykeeper
SMBRP	Santa Monica Bay Restoration Project
SOCWA	Southern Orange County Water Authority
SV	Sea Ventures
SWRCB	State Water Resources Control Board (SWRCB)
UCI	University of California at Irvine
UCSB	University of California, Santa Barbara
USGS	United States Geological Survey
VRG	Vantuna Research Group

IuList02_CTDMethodCodes

Method	Description
RAM	Data recorded in RAM of device
REAL TIME	Data recorded on a computer

IuList03_EquipmentCodes

EquipmentCode	EquipmentType
TRL	Otter Trawl w. 7.62 meter head rope
TVV	Tandem van Veen 0.1 m ²
VV	Van Veen Grab
SBE19	Water Quality Analyzer SeaBird SBE/19
SBE25	Water Quality Analyzer SeaBird SBE/25
SBE911	Water Quality Analyzer Seabird SBE/911

IuList04_SampleTypes

SampleCode	SampleType	AssociatedTable
LB	Laboratory Blank	Chemistry/Toxicity
CHK	Laboratory Check Sample	Chemistry/Microbiology
CNEG	Laboratory Negative Control	Toxicity
CRM	Certified Reference Material	Chemistry
DB	Dilution Blank	Chemistry
DUP	Duplicate	Chemistry
EB	Extraction Blank	Chemistry
FBLANK	Final Blank at end of batch	Chemistry

SampleCode	SampleType	AssociatedTable
FWBLANK	Fresh water blank	Chemistry
IBLANK	Initial Blank at start of batch	Chemistry
LCM	Laboratory Control Material	Chemistry
MS	Matrix spike	Chemistry
MSD	Matrix spike duplicate	Chemistry
QA	Quality Assurance value	Chemistry
RESULT	Numerical Result of analysis	Chemistry/Toxicity/Microbiology
RFCD	Cadmium Reference Control	Toxicity
RFCU	Copper reference control	Toxicity
RFPH	Phenol Reference control	Biomarker
RFSDS	Reference Sodium dodecal sulphate	Toxicity
SB	Sampling blank	Chemistry
SRM	Standard Reference Material	Chemistry
SWBLANK	Seawater blank	Chemistry
GRAB	A 0.1 m2 van Veen Grab	StationOccupation
TRAWL	A 7.62 meter Marinovich trawl	StationOccupation
WQ	Water Quality	StationOccupation

luList05_OrdinalDirections

Direction	Description
E	East
N	North
NE	Northeast
NR	Not Recorded
NW	Northwest
S	South
SE	Southeast
SW	Southwest
W	West
XX	Calm

luList06_SedimentCompositionCodes

SedimentCompositionCode
Coarse Sand
Cobble
Fine Sand
Gravel
Mixed
NR
Silt/Clay

luList07_OdorCodes

Odor	OdorDescription
Humic	Decay
Hydrogen Sulfide	Sulfur
None	No Detectable Odor
NR	Not recorded
Other	requires a comment
Petroleum	Oil and grease

luList08_WeatherCodes

WeatherCode
Clear
Drizzle
Fog
Fog and Drizzle
Haze
NR
Overcast
Partly Cloudy
Rain
Thunderstorm

luList09_SpeciesList

Species	Associated Table
www.scamit.org	Trawl Inverts and Infauna
Common and Scientific names of fishes from the United States and Canada. Fifth Edition, 1991, American Fisheries Society Special Publication 20	Trawl Fish Abundance, Biomass, BioaccumulationOrganism.
Composite	Fish Biomass and Invert Biomass
No_Org_Pres	Fish Abundance and Invert Abundance

luList10_TissueTypes

TissueType
NR
Whole Body

luList11_QualifierCodes

Qualifier	Description
<	less than
<=	less than or equal to
>	greater than
>=	greater than or equal to
A	Count base on calculation of Aliquot
AE	Analyst Error
BMDL	Below Method Detection Limit
BRL	Below Reporting Level
C	Colonial (not for use with infauna)
CT	Contaminated
E	Estimated
I	Interference
N	None
NA	Not Analyzed
ND	Not Detected
NS	Not Sampled
P	Present, not counted
R	Rare species
S	Specialty taxonomy lot
X	Exotic species

IuList12_SizeDescriptors

SizeDescriptor
Carapace length
Carapace width
Fork length
Maximum dimension
Not recorded
Standard length
Standard length size class
Test diameter
Total length
Wing width

IuList13_TidalStage

Stage
Ebb
Flood
NR
Slack

IuList14_TestMatrices

MatrixCode	MatrixDescription	AssociatedTable
16-050	RTC Metals in Sediment	Chemistry
1944	NIST Sample Organics in Marine Sediment	Chemistry
CARP2	Certified Carp Samples	Chemistry
DORM2	Dog Fish Muscle Tissue	Chemistry
DW	Dilution Water	Chemistry
EL	Elutriate	Toxicity
ERA540	Metals in Soil	Chemistry
EX	Extract	Chemistry
FRESHWATER	Fresh water	Chemistry
IW	Interstitial Water	Toxicity
OL	Overlaying Water	Toxicity
RT	Reference Toxicant	Toxicity
SEAWATER	Sea Water	Chemistry / Discrete Water
SEDIMENT	Sediment	Chemistry / Toxicity
SOLVENT	Extraction Solvent	Chemistry
SpikedBlank	Self evident	Chemistry
TISSUE	Fish Tissue	Chemistry

IuList15_ParameterCodes

PARAMETER	CATEGORY	ASSOCIATED TABLE
Aluminum	METAL	Chemistry
Antimony	METAL	Chemistry
Arsenic	METAL	Chemistry
Barium	METAL	Chemistry
Beryllium	METAL	Chemistry
Cadmium	METAL	Chemistry
Chromium	METAL	Chemistry
Copper	METAL	Chemistry
Iron	METAL	Chemistry
Lead	METAL	Chemistry
Mercury	METAL	Chemistry
Nickel	METAL	Chemistry
Selenium	METAL	Chemistry
Silver	METAL	Chemistry
Zinc	METAL	Chemistry
Acenaphthene	PAH	Chemistry
Acenaphthylene	PAH	Chemistry
Anthracene	PAH	Chemistry
Biphenyl	PAH	Chemistry
Fluorene	PAH	Chemistry
2-Methylnaphthalene	PAH	Chemistry
1-Methylphenanthrene	PAH	Chemistry
Naphthalene	PAH	Chemistry
1-Methylnaphthalene	PAH	Chemistry
2,6-Dimethylnaphthalene	PAH	Chemistry
1,6,7-Trimethyl-naphthalene	PAH	Chemistry
Phenanthrene	PAH	Chemistry
Benz(a)anthracene	PAH	Chemistry
Benzo(a)pyrene	PAH	Chemistry
Benzo(b)fluoranthene	PAH	Chemistry
Benzo(e)pyrene	PAH	Chemistry
Benzo(g,h,i)perylene	PAH	Chemistry
Benzo(k)fluoranthene	PAH	Chemistry
Chrysene	PAH	Chemistry
Dibenz(a,h)anthracene	PAH	Chemistry
Fluoranthene	PAH	Chemistry
Indeno(1,2,3-c,d) pyrene	PAH	Chemistry
Perylene	PAH	Chemistry
Pyrene	PAH	Chemistry

PCB18	PCB	Chemistry
PCB28	PCB	Chemistry
PCB37	PCB	Chemistry
PCB44	PCB	Chemistry
PCB49	PCB	Chemistry
PCB52	PCB	Chemistry
PCB66	PCB	Chemistry
PCB70	PCB	Chemistry
PCB74	PCB	Chemistry
PCB77	PCB	Chemistry
PCB81	PCB	Chemistry
PCB87	PCB	Chemistry
PCB99	PCB	Chemistry
PCB101	PCB	Chemistry
PCB105	PCB	Chemistry
PCB110	PCB	Chemistry
PCB114	PCB	Chemistry
PCB118	PCB	Chemistry
PCB119	PCB	Chemistry
PCB123	PCB	Chemistry
PCB126	PCB	Chemistry
PCB128	PCB	Chemistry
PCB138	PCB	Chemistry
PCB149	PCB	Chemistry
PCB151	PCB	Chemistry
PCB153	PCB	Chemistry
PCB156	PCB	Chemistry
PCB157	PCB	Chemistry
PCB158	PCB	Chemistry
PCB167	PCB	Chemistry
PCB168	PCB	Chemistry
PCB169	PCB	Chemistry
PCB170	PCB	Chemistry
PCB177	PCB	Chemistry
PCB180	PCB	Chemistry
PCB183	PCB	Chemistry
PCB187	PCB	Chemistry
PCB189	PCB	Chemistry
PCB194	PCB	Chemistry
PCB201	PCB	Chemistry
PCB206	PCB	Chemistry
4,4'-DDT	Pesticide	Chemistry
2,4'-DDT	Pesticide	Chemistry
4,4'-DDD	Pesticide	Chemistry

2,4'-DDD	Pesticide	Chemistry
4,4'-DDE	Pesticide	Chemistry
2,4'-DDE	Pesticide	Chemistry
alpha-Chlordane	Pesticide	Chemistry
gamma-Chlordane	Pesticide	Chemistry
TOC	Total Organic Carbon	Chemistry
TN	Inorganic	Chemistry
Percent Fines	Inorganic	Chemistry
E. Coli	Bacteria	Microbiology Results
Total Coliforms	Bacteria	Microbiology Results
Fecal Coliforms	Bacteria	Microbiology Results
Enterococcus	Bacteria	Microbiology Results
Ammonium	Inorganic	Toxicity
Dissolved Oxygen	Oxygen	Toxicity
Hydrogen Sulfide	Inorganic	Toxicity
pH	pH	Toxicity
Salinity	Inorganic	Toxicity
Total Ammonia	Inorganic	Toxicity
Total Sulfides	Inorganic	Toxicity
Unionized Ammonia	Inorganic	Toxicity
%Moisture	Tissue Only	Chemistry
%Lipids	Tissue Only	Chemistry

Grain Size Parameter Codes

- The Gravel2m code is the percentage of the sediment sample retained on a 2-mm sieve. If no sediments are retained, the value will be zero.
- The other parameter codes refer to the percentage of Coulter Counter sample in the size range; i.e., the $\frac{1}{2}$ phi size data from the machine. These data should not be adjusted for material retained on the sieve.

ParameterCode	Size Range		Source	Units	Explanation
	metric units				
	Φ				
Gravel2m	< -1.0	> 2.0 mm	Sieve	Percent	Percentage retained on 2mm sieve
Phi-1.0	-1.0 – -0.5	1.41 – 2.0 mm	Coulter	Percent	Percentage of Coulter sample in size range
Phi-0.5	-0.5 – 0.0	1.0 – 1.41 mm	Coulter	Percent	
Phi00.0	0.0 – 0.5	0.71 – 1.0 mm	Coulter	Percent	
Phi00.5	0.5 – 1.0	500 – 707 μ	Coulter	Percent	
Phi01.0	1.0 – 1.5	354 – 500 μ	Coulter	Percent	
Phi01.5	1.5 – 2.0	250 – 354 μ	Coulter	Percent	
Phi02.0	2.0 – 2.5	177 – 250 μ	Coulter	Percent	
Phi02.5	2.5 – 3.0	125 – 177 μ	Coulter	Percent	
Phi03.0	3.0 – 3.5	88.4 – 125 μ	Coulter	Percent	

Phi03.5	3.5 – 4.0	62.5 – 88.4 μ	Coulter	Percent
Phi04.0	4.0 – 4.5	44.2 – 62.5 μ	Coulter	Percent
Phi04.5	4.5 – 5.0	31.3 – 44.2 μ	Coulter	Percent
Phi05.0	5.0 – 5.5	22.1 – 31.3 μ	Coulter	Percent
Phi05.5	5.5 – 6.0	15.6 – 22.1 μ	Coulter	Percent
Phi06.0	6.0 – 6.5	11.1 – 15.6 μ	Coulter	Percent
Phi06.5	6.5 – 7.0	7.8 – 11.1 μ	Coulter	Percent
Phi07.0	7.0 – 7.5	5.5 – 7.8 μ	Coulter	Percent
Phi07.5	7.5 – 8.0	3.9 – 5.5 μ	Coulter	Percent
Phi08.0	8.0 – 8.5	2.8 – 3.9 μ	Coulter	Percent
Phi08.5	8.5 – 9.0	1.95 – 2.8 μ	Coulter	Percent
Phi09.0	9.0 – 9.5	1.38 – 1.95 μ	Coulter	Percent
Phi09.5	9.5 – 10.0	0.98 – 1.38 μ	Coulter	Percent
Phi10.0	10.0 – 10.5	0.69 – 0.98 μ	Coulter	Percent
Phi10.5	10.5 – 11.0	0.49 – 0.69 μ	Coulter	Percent
Phi11.0	11.0 – 11.5	0.35 – 0.49 μ	Coulter	Percent
Phi11.5	11.5 – 12.0	0.24 – 0.35 μ	Coulter	Percent
Phi12.0	> 12.0	< 0.24 μ	Coulter	Percent

Optional parameter codes describe the statistical properties of the Coulter Counter sub-set of data:

ParameterCode	Source	Units	Explanation
Mean	Coulter	Phi	Statistical properties of the Coulter Counter data
Mode	Coulter	Phi	
Median	Coulter	Phi	
Kurtosis	Coulter	Phi	
Skewness	Coulter	Phi	

luList16_SeaStates

SeaStateCode
Calm
Choppy
Confused
NR
Rough

luList17_MeasurementBasisCodes

MeasurementBasisCode	Description
----------------------	-------------

MeasurementBasisCode	Description
DW	Dry Weight
WW	Wet Weight

IuList18_SedimentColors

Color
Black
Brown
Gray
NR
Olive Green
Other
Red

IuList19_CurrentDirections

Direction
Down Coast
Indeterminant
No Current
Up Coast

IuList20_NavigationalInstrumentCodes

NavType	Description
DGPS	Differential Global Positioning Satellite
GPS	Global Positioning Satellite

IuList21_Material of Sewage Origin

MSO
Condoms
Grease
Mixed
None
NR
Odor
Tampon applicators
Tampons

luList22_TrawlFishAnomalyCodes

AnomalyCode	Anomaly
A	Ambicoloration
AB	Ambicoloration/Albinism
ABD	Ambicoloration/Albinism/Deformity (Skeletal)
ABF	Ambicoloration/Albinism/Fin Erosion
ABL	Ambicoloration/Albinism/Lesion
ABP	Ambicoloration/Albinism/Parasite
ABT	Ambicoloration/Albinism/Tumor
AD	Ambicoloration/Deformity (Skeletal)
ADF	Ambicoloration/Deformity (Skeletal)/Fin Erosion
ADL	Ambicoloration/Deformity (Skeletal)/Lesion
ADP	Ambicoloration/Deformity (Skeletal)/Parasite
ADT	Ambicoloration/Deformity (Skeletal)/Tumor
AF	Ambicoloration/Fin Erosion
AFL	Ambicoloration/Fin Erosion/Lesion
AFP	Ambicoloration/Fin Erosion/Parasite
AFT	Ambicoloration/Fin Erosion/Tumor
AL	Ambicoloration/Lesion
ALP	Ambicoloration/Lesion/Parasite
ALT	Ambicoloration/Lesion/Tumor
AP	Ambicoloration/Parasite
APT	Ambicoloration/Parasite/Tumor
AT	Ambicoloration/Tumor
B	Albinism
BD	Albinism/Deformity (Skeletal)
BDF	Albinism/Deformity (Skeletal)/Fin Erosion
BDL	Albinism/Deformity (Skeletal)/Lesion
BDP	Albinism/Deformity (Skeletal)/Parasite
BDT	Albinism/Deformity (Skeletal)/Tumor
BF	Albinism/Fin Erosion
BFL	Albinism/Fin Erosion/Lesion
BFP	Albinism/Fin Erosion/Parasite
BFT	Albinism/Fin Erosion/Tumor
BL	Albinism/Lesion
BP	Albinism/Parasite
BT	Albinism/Tumor
D	Deformity (Skeletal)
DF	Deformity (Skeletal)/Fin Erosion
DFL	Deformity (Skeletal)/Fin Erosion/Lesion
DFP	Deformity (Skeletal)/Fin Erosion/Parasite
DFT	Deformity (Skeletal)/Fin Erosion/Tumor

AnomalyCode	Anomaly
DL	Deformity (Skeletal)/Lesion
DLP	Deformity (Skeletal)/Lesion/Parasite
DLT	Deformity (Skeletal)/Lesion/Tumor
DP	Deformity (Skeletal)/Parasite
DPT	Deformity (Skeletal)/Parasite/Tumor
DT	Deformity (Skeletal)/Tumor
F	Fin Erosion
FL	Fin Erosion/Lesion
FLP	Fin Erosion/Lesion/Parasite
FLT	Fin Erosion/Lesion/Tumor
FP	Fin Erosion/Parasite
FPT	Fin Erosion/Parasite/Tumor
FT	Fin Erosion/Tumor
L	Lesion
LP	Lesion/Parasite
LPT	Lesion/Parasite/Tumor
LT	Lesion/Tumor
None	No Anomaly
P	Parasite
PO	Parasite/Other
PT	Parasite/Tumor
T	Tumor

IuList23_TrawlInvertAnomalyCodes

Anomaly Code	Anomaly
None	No Anomaly
P	Parasite
PU	Burnspot disease / Parasite
U	Burnspot disease

IuList24_AnalysisMethodCodes

MethodCode	Method	Associated Table
AlpKem RFA 300 Series Nutrient Analyzer	AlpKem RFA 300 Series Nutrient Analyzer	Chemistry
APHA 9230 B	From Standard Methods	Micro
APHA 9230 C	From Standard Methods	Micro
CHN	EA1108 CHN Elemental Analyzer	Chemistry
Colilert (52 Well Tray)	Idexx	Micro

MethodCode	Method	Associated Table
Colilert (96 Well Tray)	Idexx	Micro
CVAA	Cold Vapor Atomic Absorption Analysis	Chemistry
Entrolert (52 Well Tray)	Idexx	Micro
Entrolert (96 Well Tray)	Idexx	Micro
EPA 160.2	Total Suspended Solids analysis method	Chemistry
EPA 1600	From Standard Methods	Micro
EPA200.7	From Standard Methods	Chemistry
EPA200.8	From Standard Methods	Chemistry
EPA206.2	From Standard Methods	Chemistry
EPA245.5	From Standard Methods	Chemistry
EPA270.2	From Standard Methods	Chemistry
FAA	Flame Atomic Absorption Spectrometer	Chemistry
FIAS	Flow Injection Analysis System	Chemistry
FIMS	Flow Injection Mercury System	Chemistry
FLUORO	Fluorometric analysis method for chlorophyll a and phaeopigment	Chemistry
GCECD	CG/ECD	Chemistry
GCMS	GS/MS	Chemistry
GFAA	Graphite Furnace Atomic Absorption Analysis	Chemistry
Gravimetric	Sediment Grain Size Sieve Analysis	Chemistry
HAA	Hydride Atomic Absorption Analysis	Chemistry
ICPAES	Inductively Coupled Plasma Atomic Emission Spectrometer	Chemistry
ICPMS	Inductively Coupled Plasma Mass Spectrometer	Chemistry
IONGCMS	Ion Trap GC/MS	Chemistry
MARPCN I	High temperature combustion method	Chemistry
Mettler H54AR Balance	Gravimetric	Chemistry
MF	Membrane Filtration	Micro
MF (APHA 9222 B)	From Standard Methods	Micro
MF (APHA 9222 D)	From Standard Methods	Micro
MF(APHA 9230 C)	From Standard Methods	Micro
MTF	Multiple Tube Fermentation	Micro
MTF (APHA 9221 B)	From Standard Methods	Micro
MTF by A-1 (APHA 9221 E.2)	From Standard Methods	Micro
MTF by EC (APHA 9221 E.1)	From Standard Methods	Micro
NA	Not analyzed	Chemistry

MethodCode	Method	Associated Table
NR	Missing data	Chemistry
PCB Congeners Consistent with NPDES method 608	From Standard Methods	Chemistry
PSEP86	Sediment Grain Size	Chemistry
Real Time	CTD	Chemistry
SM2540D	From Standard Methods	Chemistry
SM4500NH3	From Standard Methods	Chemistry
SM4500NO3	From Standard Methods	Chemistry
SM4500P	From Standard Methods	Chemistry
SW6010	From Standard Methods	Chemistry
SW7060	From Standard Methods	Chemistry
SW7740	From Standard Methods	Chemistry
SW8081	From Standard Methods	Chemistry
SW80818082	From Standard Methods	Chemistry
SW8270	From Standard Methods	Chemistry
Turner Designs 10-005R Fluorometer	Sensor	Chemistry
Wet Sieve Analysis	Gravimetric	Chemistry

luList25_PreparationCodes

PrepCode	Preparation Method
90% Acetone	90% Acetone Extract for chlorophyll a and phaeopigment
ASE	Accelerated Solvent Extraction
Conventional Oven	Conventional Oven
EPA245.5	Mercury in Sediment (Cold Vapor with Permanganate Digestion)
EPA3050A	Strong Acid Hot Plate Method (EPA3050A)
EPA3050B	Strong Acid Hot Plate or Microwave Method (EPA3050B)
EPA3051	Strong Acid Microwave Method (EPA 3051)
EPA3052	From standard methods.
EPA3052/3050B	From standard methods.
EPA3053	From standard methods.
EPA3055	Strong Acid Hot Plate Method (EPA 3055)
MASE	Microwave Assisted Solvent Extraction
MgNO3	Magnesium Nitrate
NA	No Applicable Prepcode
NR	Missing data
PSEP86	Sediment Grain Size
ROLLER	Roller Table Extraction
SFE	Supercritical Fluid Extraction

PrepCode	Preparation Method
Solvent extraction	Solvent extraction
SONIC	Ultrasonic Extraction
SOXHLET	Soxhlet Solvent Extraction
Varian-EPA245.5	From standard methods.

luList27_SurfConditions

Height
High(7+)
Low(1-3)
Mid(4-6)

luList28_Units

Units	Description	AssociatedTable
C	Degrees Centigrade	Micro
CFU/100ml	Colony Forming Units	Micro
CM	Centimeters	Grab Event
Days	The number of days	Toxicity Batch
FT	Feet	Station Occupation
G	grams	Whole Fish Composites
Hours	The number of hours	Toxicity
KG	Kilograms	Fish & Invertebrate Abundance
KTS	Knots	Station Occupation
M	Meters	Sediment Grab Event, Trawl Assemblage Event
M/S	Meters per second	WQ Cast
MG/KG	Milligrams per kilogram	Chemistry
MG/L	Milligrams per liter	Chemistry / Toxicity / Water Quality
MM	Millimeters	Infauna
MPN/100ml	Most Probable Number	Micro
PDT	Pacific Daylight savings time	All
PERCENT	Percent	Chemistry / Toxicity
PST	Pacific Standard Time	All
UG/KG	Micrograms per kilogram	Chemistry
UG/L	micrograms per liter	All
pH	Log of hydrogen ion concentration	Toxicity

luList29_FishBodyLocation

BodyLocation
Branchial Cavity
Buccal Cavity
Eyes
Musculoskeleton
Skin / Fins

luList30_MissingValueCodes

DataType	Code
Date	01/Jan/SampleYear
Time	-99
Numerical	-99
Text	NR

luList31_TrawlDebrisType

DebrisType
Rocks
Terrestrial Vegetation
Marine Vegetation
Lumber
Plastic
Metal Debris
Paper
Medical Waste
Cans
Glass Bottles
Fishing Gear
Tires
Other
Benthic Debris
Missing Data
No_Debris_Present

luList32_TrawlDebrisAbundanceCodes

Code	Description	Estimate
H	High	>100 items
L	Low	2-10 items
M	Moderate	11-100 items

Code	Description	Estimate
P	Present	1 item
NR	Not recorded	Not Recorded
None	For No_Debris_Present	0

IuList33_TrawlDebrisWtEstimates

Code	Description	Estimate
H	High	>10Kg
L	Low	0.2-1.0Kg
M	Moderate	1.1-10Kg
T	Trace	0.0-0.1Kg
NR	Not Recorded	Not Recorded
None	For No_Debris_Present	None

IuList34_ToxictySpecies/TestType

SpeciesCode	SpeciesName
EE	Eohaustorius estuarius
SP	Strongylocentrotus purpuratus

IuList35_ToxicityProtocols

ProtocolCode	ProtocolDescription
ASTM 1853	ASTM. 1997. E 1853-96
EPA 1994	EPA amphipod test method (EPA/600/R-94/025)
EPA 4425	From standard methods.
USGS F10.6	From standard methods.
USGS F10.7	From standard methods.
USGS SOP F10.6	Sea Urchin Fertilization Toxicity Test
USGS SOP F10.7	Sea Urchin Embryological Development Test

IuList36_ToxicityMatrices

MatrixCode	MatrixDescription
BS	bulk sediment
DW	Dilution Water
EL	elutriate
EX	extract
IW	interstitial water
OL	overlying water

MatrixCode	MatrixDescription
RT	reference toxicant

luList37_ToxicityEndPoints

EPCode	EndPoint
B[a]Peq	Benzo [a] Pyrene equivalents
DV	Percent Normal Pluteus Stage
EC50	median effective concentration
FP	Fertilized Percent
IC50	median inhibitory concentration
RL	relative luminescence
SP	survival percent

luList38_ToxicityWaterQualityParameters

STWQCode	STWQName	Units
COND	Conductivity	uSiemens
DO	Dissolved Oxygen	mg/L
H2S	Hydrogen Sulfide	mg/L
NH3T	Total Ammonia	mg/L
NH3U	Unionized Ammonia	mg/L
PH	pH	pH
SAL	Salinity	g/L
ST	Total Sulfide	ug/L
TEMP	Temperature	C

luList39_ToxicityTestAcceptabilityCodes

AcceptCode	CodeDescription
A	Acceptable data for analysis
AEHJ	Combination Code
AH	Combination Code
AHJ	Combination Code
AJ	Combination Code
AK	Combination Code
C	Reduced number of replicates
CDEH	Combination Code
D	Control performance criteria not met
DE	Combination Code
DEH	Combination Code
DJ	Combination of codes D and J
E	Sample stored > 14 days
EK	combination of codes E and K
G	Reference test missing or outside limits
H	Water quality data incomplete
HD	Combination Code
J	Minor deviation in test conditions
K	Incoming sample temperature exceeds limits
Q	Control did not meet replicate acceptability criterion (>or=80% in any one rep)

LuList40_EventFailure Codes

FailCode	FailureReason
-----------------	----------------------

A	Canted
B	Washed
C	Poor Closure
D	Disturbed Surface
E	< 5 cm Penetration
F	>5 & < 8 cm Penetration
G	Fouled Net
H	Torn Net
I	No contact w/ bottom
J	Improper Distance/Time
K	Irregular Bottom
L	Failed Trawls (comment req.)
M	Kelp Bed
N	Obstructions
Q	Outside Radius Limit
S	Rocky Bottom
V	Not within 10% of Target Site Depth
None	No Failure
Other	Comment Required

LuList41_Control Response Codes

Code	Definition
NC	Not Significant
S	Significant
NA	Not Applicable

Appendix 2. Metadata

The data documentation approach outlined here is based on the Federal Geospatial Data Committee (FGDC) standard and has been selected to meet the needs of the Southern California Marine Monitoring Standard Data Transfer Formats, developed through the Regional Water Control Board and regional sampling Information Management Committee participants. All mandatory elements of the FGDC standard are included. In addition, further elements, identified in the standard as mandatory if applicable, are required. Bolded elements represent special applications of metadata agreed upon by the Information Management committee. These elements, indicated by the words “**Standard Data Exchange Format Requirements**”, specify a prescribed reporting value (either numeric or textual). Finally, elements of the Biological Data Profile, referenced by the preface “BDP”, are included. All required elements have their section number underlined.

The metadata are used to document information about the dataset. Documentation should include all information about Event Types, which include Sediment Grabs, Trawl Assemblage, Bioaccumulation, Microbiology Station Occupation, Water Quality Casts, and the tables that are generated from the Event Type. For example, grab event metadata should include information about the sediment chemistry table and benthic infaunal abundance table, as well as the actual grab event table.

Section 1: Identification Information

1 Identification Information -- basic information about the data set.

1.1 Citation -- information to be used to reference the data set.

1.2 Description -- a characterization of the data set, including its intended use and limitations.

1.2.1 Abstract -- a brief narrative summary of the data set.

1.2.2 Purpose -- a summary of the intentions with which the data set was developed.

1.2.3 Supplemental Information -- other descriptive information about the data set.

1.3 Time Period of Content -- time period(s) for which the data set corresponds to the currentness reference.

1.3.1 Currentness Reference -- the basis on which the time period of content information is determined.

1.4 Status -- the state of and maintenance information for the data set.

1.4.1 Progress -- the state of the data set.

1.4.2 Maintenance and Update Frequency -- the frequency with which changes and additions are made to the data set after the initial data set is completed.

1.5 Spatial Domain -- the geographic areal domain of the data set.

BDP1.5.1 Description of Geographic Extent-- Short description of the geographic areal domain of the data set.

BDP1.5.2 Bounding Altitudes-- the limits of coverage of a data set expressed by altitude.

BDP1.5.2.1 Altitude Minimum-- the minimum altitude extent of coverage.

BDP1.5.2.2 Altitude Maximum- the maximum elevation extent of coverage.

BDP1.5.2.3 Altitude Distance Units -- units in which altitudes are recorded.

1.5.1 Bounding Coordinates-- the limits of coverage of a data set expressed by latitude and longitude values in the order western-most, eastern-most, northern-most, and southern-most. For data sets that include a complete band of latitude around the earth, the West Bounding Coordinate shall be assigned the value -180.0, and the East Bounding Coordinate shall be assigned the value 180.0

1.5.1.1 West Bounding Coordinate -- western-most coordinate of the limit of coverage expressed in longitude.

1.5.1.2 East Bounding Coordinate -- eastern-most coordinate of the limit of coverage expressed in longitude.

1.5.1.3 North Bounding Coordinate -- northern-most coordinate of the limit of coverage expressed in latitude.

1.5.1.4 South Bounding Coordinate -- southern-most coordinate of the limit of coverage expressed in latitude.

1.5.2 Data Set G-Polygon -- coordinates defining the outline of an area covered by a data set. Repeat as needed.

Data Set G-Polygon Outer G-Ring -- the closed nonintersecting boundary of an interior area.

1.5.2.1.1 G-Ring Point -- a single geographic location.

1.5.2.1.1.1 G-Ring Latitude -- the latitude of a point of the g-ring.

1.5.2.1.1.2 G-Ring Longitude -- the longitude of a point of the g-ring.

1.5.2.1.2 G-Ring -- a set of ordered pairs of floating-point numbers, separated by commas, in which the first number in each pair is the longitude of a point and the second is the latitude of the point. Longitude and latitude are specified in decimal degrees with north latitudes positive and south negative, east longitude positive and west negative

1.5.2.2 Data Set G-Polygon Exclusion G-Ring -- the closed nonintersecting boundary of a void area (or "hole" in an interior area). G-Ring Latitude--the latitude of a point of the exclusionary boundary. G-Ring Longitude--the longitude of a point of the exclusionary boundary.

1.6 Keywords -- words or phrases summarizing an aspect of the data set.

1.6.1 Theme -- subjects covered by the data set (for a list of some commonly-used thesauri, see Part IV: Subject/index term sources in Network Development and MARC Standards Office, 1988, USMARC code list for relators, sources, and description conventions: Washington, Library of Congress). Repeat as needed.

Standard Data Exchange Format Requirements: minimally the key words must include the permit number, the event type, and all of the table names referred to in this document.

1.6.1.1 Theme Keyword Thesaurus -- reference to a formally registered thesaurus or a similar authoritative source of theme keywords.

Standard Data Exchange Format Requirements: Reported as "None"

1.6.1.2 Theme Keyword -- common-use word or phrase used to describe the subject of the data set.
Repeat as needed.

1.6.2 Place -- geographic locations characterized by the data set. Repeat as needed.

1.6.2.1 Place Keyword Thesaurus -- reference to a formally registered thesaurus or a similar authoritative source of place keywords.

1.6.2.2 Place Keyword -- the geographic name of a location covered by a data set. Repeat as needed.

1.6.3 Stratum -- layered, vertical locations characterized by the data set. Repeat as needed.

1.6.3.1 Stratum Keyword Thesaurus -- reference to a formally registered thesaurus or a similar authoritative source of stratum keywords.

1.6.3.2 Stratum Keyword -- the name of a vertical location used to describe the locations covered by a data set. Repeat as need.

1.6.4 Temporal -- time period(s) characterized by the data set. Repeat as needed.

1.6.4.1 Temporal Keyword Thesaurus -- reference to a formally registered thesaurus or a similar authoritative source of temporal keywords.

1.6.4.2 Temporal Keyword -- the name of a time period covered by a data set. Repeat as needed.

BDP1.7 Taxonomy Information--on the taxa (1 or more) included in the data set, including keywords, taxonomic system and coverage information, and taxonomic classification system.

BDP1.7.1. Keywords/Taxon--Taxonomic ranks or common groups characterized by the data set. Repeat as needed.

BDP1.7.1.1 Taxonomic Keyword Thesaurus--Reference to a formally registered thesaurus or similar authoritative source of taxonomic keywords.

BDP1.7.1.2 Taxonomic Keywords--Common-use words or phrases describing the taxonomy covered by the data set. Repeat as needed.

BDP1.7.2 Taxonomic System--Documentation of taxonomic sources, procedures, and treatments.
Repeat as needed.

BDP1.7.2.1 Classification System/Authority--Information about the classification system or authority used.

BDP1.7.2.1.1 Classification System Citation--A citation for the classification system or authority used, this might include monographs (e.g., a regional flora) or on-line data sets (e.g., the USDA PLANTS database), etc.

BDP1.7.2.1.2 Classification System Modifications--A description of any modifications or exceptions made to the classification system or authority used.

BDP1.7.2.2 Identification Reference--Information on any non-authoritative materials (e.g. field guides) useful for reconstructing the actual identification process. Repeat as needed.

BDP1.7.2.3 Identifier--Information about the individual(s) responsible for the identification(s) of the specimens or sightings, etc. Repeat as needed.

BDP1.7.2.4 Taxonomic Procedures--Description of the methods used for the taxonomic identification. Could include specimen processing, comparison with museum materials, keys and key characters, chemical or genetic analyses, etc.

BDP1.7.2.5 Taxonomic Completeness--Information concerning the proportions and treatment of unidentified materials (i.e. materials sent to experts, and not yet determined); estimates of the importance, and identities of misidentifications, uncertain determinations, synonyms or other incorrect usages; taxa not well treated or requiring further work; and expertise of field workers

BDP1.7.2.6 Vouchers--Information on the types of specimen, the repository, and the individuals who identified the vouchers. Repeat as needed.

BDP1.7.2.6.1 Specimen--A word or phrase describing the type of specimen collected (e.g. herbarium specimens, blood samples, photographs, individuals, or batches).

BDP1.7.2.6.2 Repository--Information about the curator or contact person and/or agency responsible for the specimens.

BDP1.7.3 General Taxonomic Coverage--A description of the range of taxa addressed in the data set or collection. For example, "all vascular plants were identified to family or species, mosses and lichens were identified as moss or lichen."

Standard Data Exchange Format Requirements: For surveys use a general description, not including the taxonomy of all species encountered.

BDP1.7.4 Taxonomic Classification--Information about the range of taxa addressed in the data set or collection. It is recommended that one provide information starting from the taxonomic rank of kingdom, to a level that reflects the data set or collection being documented. The levels of Kingdom, Division/Phylum, Class, Order, Family, Genus, and Species should be included as ranks as appropriate.

Standard Data Exchange Format Requirements: Use this section when the study is targeting a particular species or group of species, for example bioaccumulation.

For example, if the data set deals with the species "red maple" or *Acer rubrum* var. *rubrum*, then the contents might look like the following:

Taxonomic Classification:
Taxon Rank Name: Kingdom
Taxon Rank Value: Plantae
Applicable Common Name: plants
Taxonomic Classification:
Taxon Rank Name: Division
Taxon Rank Value: Magnoliophyta
Taxonomic Classification:
Taxon Rank Name: Class
Taxon Rank Value: Magnoliopsida
Taxonomic Classification:
Taxon Rank Name: Subclass
Taxon Rank Value: Rosidae
Taxonomic Classification:
Taxon Rank Name: Order
Taxon Rank Value: Sapindales
Taxonomic Classification:
Taxon Rank Name: Family
Taxon Rank Value: Aceraceae
Applicable Common Name: maples
Taxonomic Classification:
Taxon Rank Name: Genus
Taxon Rank Value: *Acer*
Applicable Common Name: maples
Taxonomic Classification:
Taxon Rank Name: Species
Taxon Rank Value: *Acer rubrum* var. *rubrum*

If the data set pertains to many species, then the Taxonomic Classification structure can be built by adding additional families under the Taxonomic Classification rank of order. If the taxon of interest is undefined at any taxonomic rank, omit that rank from the structure. (One authority for this information is the Integrated Taxonomic Information System (ITIS) located at: "<http://www.itis.usda.gov/plantproj/itis/>").

BDP1.7.4.1 Taxon Rank Name--The name of the taxonomic rank for which the Taxon Rank Value is provided. See the example included in the definition of Taxonomic Classification.

BDP1.7.4.2 Taxon Rank Value--The name representing the taxonomic rank of the taxon being described. See the example included in the definition of Taxonomic Classification.

BDP1.7.4.3 Applicable Common Name--Specification of applicable common names. These common names may be general descriptions of a group of organisms if appropriate (e.g. insects, vertebrate, grasses, waterfowl, vascular plants, etc.) Repeat as needed.

1.7 Access Constraints -- restrictions and legal prerequisites for accessing the data set. These include any access constraints applied to assure the protection of privacy or intellectual property, and any special restrictions or limitations on obtaining the data set.

1.8 Use Constraints -- restrictions and legal prerequisites for using the data set after access is granted. These include any use constraints applied to assure the protection of privacy or intellectual property, and any special restrictions or limitations on using the data set.

Standard Data Exchange Format Requirements: Include a description of the current state of taxonomy for this data set.

1.9 Point of Contact -- contact information for an individual or organization that is knowledgeable about the data set.

1.10 Browse Graphic -- a graphic that provides an illustration of the data set. The graphic should include a legend for interpreting the graphic.

1.10.1 Browse Graphic File Name -- name of a related graphic file that provides an illustration of the data set.

1.10.2 Browse Graphic File Description -- a text description of the illustration.

1.10.3 Browse Graphic File Type -- graphic file type of a related graphic file.

1.11 Data Set Credit -- recognition of those who contributed to the data set.

1.12 Security Information -- handling restrictions imposed on the data set because of national security, privacy, or other concerns.

1.12.1 Security Classification System -- name of the classification system.

1.12.2 Security Classification -- name of the handling restrictions on the data set.

1.12.3 Security Handling Description -- additional information about the restrictions on handling the data set.

1.13 Native Data Set Environment -- a description of the data set in the producer's processing environment, including items such as the name of the software (including version), the computer operating system, file name (including host-, path-, and filenames), and the data set size.

Standard Data Exchange Format Requirements: **the software and version containing the data at the originating agency.**

1.14 Cross Reference -- information about other, related data sets that are likely to be of interest.

BDP1.15. Analytical Tool--Tools, models, or statistical procedures that the data set is intrinsically bound to and are available for use in analyzing the data set. Examples include reconstructions of phylogenies, population viability analyses, community ordinations, most atmospheric and hydrological transport analyses, and inferences on the effects of climate change on forest composition and productivity. Enough information should be included such that a potential data user can easily determine why they might wish to acquire the analytical tool, and the methodology to acquire it. Repeat as needed.

BDP1.15.1 Analytical Tool Description--Description of the analytical tool, model, or statistical procedure.

BDP1.15.2 Tool Access Information--Information on the steps required to access the tool. Repeat as needed.

BDP1.15.2.1 Tool Access Instructions--Instructions on the steps required to access the tool, model, or statistical procedure.

BDP1.15.2.2 Tool Computer and Operating System--The brand of computer and its operating system that the tool, model, or statistical procedure requires.

BDP1.15.3 Tool Contact--The party from whom the tool, model, or statistical procedure may be obtained.

BDP1.15.3.4 Tool Citation--Citation information about the tool, model, or statistical procedure.

Section 2: Data Quality Information

2 Data Quality Information -- a general assessment of the quality of the data set. (Recommendations on information to be reported and tests to be performed are found in "Spatial Data Quality," which is chapter 3 of part 1 in Department of Commerce, 1992, Spatial Data Transfer Standard (SDTS) (Federal Information Processing Standard 173): Washington, Department of Commerce, National Institute of Standards and Technology.)

2.1 Attribute Accuracy -- an assessment of the accuracy of the identification of entities and assignment of attribute values in the data set.

2.1.1 Attribute Accuracy Report -- an explanation of the accuracy of the identification of the entities and assignments of values in the data set and a description of the tests used.

Standard Data Exchange Format Requirements: From field methods manual

2.1.2 Quantitative Attribute Accuracy Assessment -- a value assigned to summarize the accuracy of the identification of the entities and assignments of values in the data set and the identification of the test that yielded the value. Repeat as necessary.

2.1.2.1 Attribute Accuracy Value -- an estimate of the accuracy of the identification of the entities and assignments of attribute values in the data set.

2.1.2.2 Attribute Accuracy Explanation -- the identification of the test that yielded the Attribute Accuracy Value.

2.2 Logical Consistency Report -- an explanation of the fidelity of relationships in the data set and tests used.

Standard Data Exchange Format Requirements: Describe related tables included in this data set.

2.3 Completeness Report -- information about omissions, selection criteria, generalization, definitions used, and other rules used to derive the data set.

2.4 Positional Accuracy -- an assessment of the accuracy of the positions of spatial objects.

2.4.1 Horizontal Positional Accuracy -- an estimate of accuracy of the horizontal positions of the spatial objects.

2.4.1.1 Horizontal Positional Accuracy Report -- an explanation of the accuracy of the horizontal coordinate measurements and a description of the tests used.

2.4.1.2 Quantitative Horizontal Positional Accuracy Assessment -- numeric value assigned to summarize the accuracy of the horizontal coordinate measurements and the identification of the test that yielded the value.

2.4.1.2.1 Horizontal Positional Accuracy Value -- an estimate of the accuracy of the horizontal coordinate measurements in the data set expressed in (ground) meters.

2.4.1.2.2 Horizontal Positional Accuracy Explanation -- the identification of the test that yielded the Horizontal Positional Accuracy Value.

2.4.2 Vertical Positional Accuracy -- an estimate of accuracy of the vertical positions in the data set.

2.4.2.1 Vertical Positional Accuracy Report -- an explanation of the accuracy of the vertical coordinate measurements and a description of the tests used.

2.4.2.2 Quantitative Vertical Positional Accuracy Assessment -- numeric value assigned to summarize the accuracy of vertical coordinate measurements and the identification of the test that yielded the value.

2.4.2.2.1 Vertical Positional Accuracy Value -- an estimate of the accuracy of the vertical coordinate measurements in the data set expressed in (ground) meters.

2.4.2.2.2 Vertical Positional Accuracy Explanation -- the identification of the test that yielded the Vertical Positional Accuracy Value.

2.5 Lineage -- information about the events, parameters, and source data which constructed the data set, and information about the responsible parties. Repeat as needed.

BDP2.5.1 Methodology--Information about a single step of field and/or laboratory work. Repeat as needed.

BDP2.5.1.1 Methodology Type--The type of methodology being documented, such as field or laboratory methodology separately.

Standard Data Exchange Format Requirements: include field and laboratory methodology.

BDP2.5.1.2 Methodology Identifier--Keywords or phrases summarizing the field or laboratory methods used. Repeat as needed.

BDP2.5.1.2.1 Methodology Keyword Thesaurus--Reference to a formally registered thesaurus or a similar authoritative source of methodology keywords.2.5.1 Source Information -- list of sources and a short discussion of the information contributed by each. Repeat as needed.

BDP2.5.1.2.2 Methodology Keyword--The name of a method used in the field or laboratory work. Repeat as needed.

BDP2.5.1.3 Methodology Description--Equivalent to "Materials and Methods" in a journal article.

Describe the physical methods used to gather data, the experimental design, sample frequency, treatments or strata, statistical and spatial design of the sampling, and sample completeness, representativeness, and biases. For example, in a bird survey, relevant elements would include the methods used to detect species occurrences (casual sightings, transects, focal point surveys, vocalizations, mist nets), whether or not evidence of breeding activity was required, descriptions of the habitat strata in a stratified design, and known biases (e.g., non-territorial birds were under sampled, and some juveniles could not be identified to species.)

Standard Data Exchange Format Requirements: describe application of methods

BDP2.5.1.4 Methodology Citation-- Information referencing the methods used.

2.5.1 Source Information-- List of sources and a short discussion of the information contributed by each. Repeat as needed.

Standard Data Exchange Format Requirements: Report as "None"

2.5.1.1 Source Citation -- reference for a source data set.

2.5.1.2 Source Scale Denominator -- the denominator of the representative fraction on a map (for example, on a 1:24,000-scale map, the Source Scale Denominator is 24000). Repeat as needed.

2.5.1.3 Type of Source Media -- the medium of "digital database file" "field notes" "photographic print" "printed table" "visually observed or measured"

2.5.1.4 Source Time Period of Content -- time period(s) for which the source data set corresponds to the ground.

2.5.1.4.1 Source Currentness Reference -- the basis on which the source time period of content information of the source data set is determined.

2.5.1.5 Source Citation Abbreviation -- short-form alias for the source citation.

2.5.1.6 Source Contribution -- brief statement identifying the information contributed by the source to the data set.

2.5.2 Process Step -- information about a single event. Repeat as needed.

2.5.2.1 Process Description -- an explanation of the event and related parameters or tolerances.

Standard Data Exchange Format Requirements: Report as "None" or "Not Applicable"

2.5.2.2 Source Used Citation Abbreviation -- the Source Citation Abbreviation of a data set used in the processing step. Repeat as needed.

2.5.2.3 Process Date -- the date when the event was completed.

Standard Data Exchange Format Requirements: Report as "Unknown"

2.5.2.4 Process Time -- the time when the event was completed.

2.5.2.5 Source Produced Citation Abbreviation -- the Source Citation Abbreviation of an intermediate data set that (1) is significant in the opinion of the data producer, (2) is generated in the processing step, and (3) is used in later processing steps. Repeat as needed.

2.5.2.6 Process Contact -- the party responsible for the processing step information.

2.6 Cloud Cover -- area of a data set obstructed by clouds, expressed as a percentage of the spatial extent.

Section 3: Spatial Data Organization Information

Standard Data Exchange Format Requirements: This section is not used.

Section 4: Spatial Reference Information

Standard Data Exchange Format Requirements: This section is not used.

Section 5: Entity and Attribute Information

5 Entity and Attribute Information -- details about the information content of the data set, including the entity types, their attributes, and the domains from which attribute values may be assigned.

5.1 Detailed Description -- description of the entities, attributes, attribute values, and related characteristics encoded in the data set.

5.1.1 Entity Type -- the definition and description of a set into which similar entity instances are classified.

5.1.1.1 Entity Type Label -- the name of the entity type.

Standard Data Exchange Format Requirements: the name of the table from the Southern California Marine Monitoring Standard Data Transfer Formats.

5.1.1.2 Entity Type Definition -- the description of the entity type.

Standard Data Exchange Format Requirements: reported as “table”

5.1.1.3 Entity Type Definition Source -- the authority of the definition.

Standard Data Exchange Format Requirements: reported as
“Southern California Marine Monitoring Standard Data Transfer Formats.”

5.1.2 Attribute -- a defined characteristic of an entity. Repeat as needed.

Standard Data Exchange Format Requirements: Spreadsheet, database, ASCII,

5.1.2.1 Attribute Label -- the name of the attribute.

Standard Data Exchange Format Requirements: the name of the field

5.1.2.2 Attribute Definition -- the description of the attribute

Standard Data Exchange Format Requirements: the description of the field from the Southern California Marine Monitoring Standard Data Transfer Formats

5.1.2.3 Attribute Definition Source -- the authority of the definition.

Standard Data Exchange Format Requirements: Reported as “Southern California Marine Monitoring Standard Data Transfer Formats”

5.1.2.4 Attribute Domain Values -- the valid values that can be assigned for an attribute. Repeat as needed.

5.1.2.4.1 Enumerated Domain -- the members of an established set of valid values. Repeat as needed.

5.1.2.4.1.1 Enumerated Domain Value -- the name or label of a member of the set.

5.1.2.4.1.2 Enumerated Domain Value Definition -- the description of the value.

5.1.2.4.1.3 Enumerated Domain Value Definition Source -- the authority of the definition.

5.1.2.4.2 Range Domain -- the minimum and maximum values of a continuum of valid values. Repeat as needed.

5.1.2.4.2.1 Range Domain Minimum -- the least value that the attribute can be assigned.

5.1.2.4.2.2 Range Domain Maximum -- the greatest value that the attribute can be assigned.

5.1.2.4.3 Codeset Domain -- reference to a standard or list which contains the members of an established set of valid values. Repeat as needed.

5.1.2.4.3.1 Codeset Name -- the title of the codeset.

5.1.2.4.3.2 Codeset Source -- the authority for the codeset.

5.1.2.4.4 Unrepresentable Domain -- description of the values and reasons why they cannot be represented. Repeat as needed.

5.1.2.5 Attribute Units of Measure -- the standard of measurement for an attribute value.

5.1.2.6 Attribute Measurement Resolution -- the smallest unit increment to which an attribute value is measured.

5.1.2.7 Beginning Date of Attribute Values -- earliest or only date for which the attribute values are current. In cases when a range of dates are provided, this is the earliest date for which the information is valid.

5.1.2.8 Ending Date of Attribute Values -- latest date for which the information is current. Used in cases when a range of dates are provided.

5.1.2.9 Attribute Value Accuracy Information -- an assessment of the accuracy of the assignment of attribute values.

5.1.2.9.1 Attribute Value Accuracy -- an estimate of the accuracy of the assignment of attribute values.

5.1.2.9.2 Attribute Value Accuracy Explanation -- the definition of the Attribute Value Accuracy measure and units, and a description of how the estimate was derived.

5.1.2.10 Attribute Measurement Frequency -- the frequency with which attribute values are added.

5.2 Overview Description -- summary of, and citation to detailed description of, the information content of the data set.

5.2.1 Entity and Attribute Overview -- detailed summary of the information contained in a data set.

5.2.2 Entity and Attribute Detail Citation -- reference to the complete description of the entity types, attributes, and attribute values for the data set.

Section 6: Distribution Information

6 Distribution Information -- information about the distributor of and options for obtaining the data set.

6.1 Distributor -- the party from whom the data set may be obtained.

6.2 Resource Description -- the identifier by which the distributor knows the data set.

6.3 Distribution Liability -- statement of the liability assumed by the distributor.

6.4 Standard Order Process -- the common ways in which the data set may be obtained or received, and related instructions and fee information. Repeat as needed.

6.4.1 Non-digital Form -- the description of options for obtaining the data set on non-computer-compatible media.

6.4.2 Digital Form -- the description of options for obtaining the data set on computer-compatible media. Repeat as needed.

6.4.2.1 Digital Transfer Information -- description of the form of the data to be distributed.

6.4.2.1.1 Format Name -- the name of the data transfer format.

6.4.2.1.2 Format Version Number -- version number of the format.

6.4.2.1.3 Format Version Date -- date of the version of the format.

6.4.2.1.4 Format Specification -- name of a subset, profile, or product specification of the format.

BDP6.4.2.1.5 ASCII File Structure-- Information about the content and format of an ASCII data file.

BDP6.4.2.1.5.1 Record Delimiter--The character(s) which indicate the end of a record.

BDP6.4.2.1.5.2 Number Header Lines--The number of lines at the beginning of the file before the data content actually begins.

BDP6.4.2.1.5.3 Description of Header Content- Description of the information content of the header lines.

BDP6.4.2.1.5.4 Orientation--Definition of the direction of information content as represented in the ASCII file. Typical data sets are represented in column-major format, where each attribute in the data set is represented as a column and each observation is a row. In contrast, row-major data sets represent attributes as rows and observations as columns. For example, if one has 3 observations (1,2,3) of two attributes (A,B), in column-major format the first record of the datafile would contain the first observation for both attributes (values A1,B1), but in row-major format the first record would contain all of the observations for only attribute A (values A1,A2,A3).

BDP6.4.2.1.5.5 Case Sensitive--If the content of the data set is encoded in case-sensitive ASCII (the capital and small letters have meaning), then this element should contain "y" or "Y", otherwise this element should contain "n" or "N".

BDP6.4.2.1.5.6 Authentication--Information allowing verification of file contents to ensure accurate transmission of the file. This is generally a named checksum that uses a standard algorithm or a cryptographic signature. For example, a MD5 checksum could be provided and, if it matches a MD5 checksum calculated for the received file, one would conclude that the file is identical to the original.

BDP6.4.2.1.5.7 Quote Character--Character used to quote fields in the data representation so that the field delimiter can be used as part of the field value. This character is typically a single quote mark or double quote mark. For example, in a field representing a person's name, one might use double quotes around the field (e.g., "Johnson, M.") to indicate that the embedded comma in the text string is not a field delimiter.

BDP6.4.2.1.5.8 Data Field Information--describing the individual data fields (this would be equivalent to columns in most databases). Repeat as needed.

BDP6.4.2.1.5.8.1 Data Field Name -- of the data field. This name should be the same as an Attribute Label documented in Section 5.1.2 Attribute (within Detailed Description which is itself within Entity and Attribute Information). The definition, domain, units of measure, and measurement resolution are all important pieces of information for ASCII file use.

BDP6.4.2.1.5.8.1.2 Missing Value Code-- The code which represents missing data.

BDP6.4.2.1.5.8.1.3 Data Field Width Delimiter--The character which indicates the end of the data field contents.

BDP6.4.2.1.5.8.1.4 Data Field Width The number-- of characters of the data field.

6.4.2.1.5 Format Information Content -- description of the content of the data encoded in a format.

File Decompression Technique -- recommendations of algorithms or processes (including means of obtaining these algorithms or processes) that can be applied to read or expand data sets to which data

6.4.2.1.7 Transfer Size -- the size, or estimated size, of the transferred data set in megabytes.

6.4.2.2 Digital Transfer Option -- the means and media by which a data set is obtained from the distributor.

6.4.2.2.1 Online Option -- information required to directly obtain the data set electronically.

6.4.2.2.1.1 Computer Contact Information -- instructions for establishing communications with the distribution computer.

6.4.2.2.1.1.1 Network Address -- the electronic address from which the data set can be obtained from the distribution computer.

6.4.2.2.1.1.1.1 Network Resource Name -- the name of the file or service from which the data set can be obtained.

6.4.2.2.1.1.1.2 Dialup Instructions -- information required to access the distribution computer remotely through telephone lines.

6.4.2.2.1.1.1.2.1 Lowest BPS -- lowest or only speed for the connection's communication, expressed in bits per second.

6.4.2.2.1.1.1.2.2 Highest BPS -- highest speed for the connection's communication, expressed in bits per second. Used in cases when a range of rates are provided.

6.4.2.2.1.1.1.2.3 Number DataBits -- number of data bits in each character exchanged in the communication.

6.4.2.2.1.1.1.2.4 Number StopBits -- number of stop bits in each character exchanged in the communication.

6.4.2.2.1.1.1.2.5 Parity -- parity error checking used in each character exchanged in the communication.

6.4.2.2.1.1.1.2.6 Compression Support -- data compression available through the modem service to speed data transfer.

6.4.2.2.1.1.1.2.7 Dialup Telephone -- the telephone number of the distribution computer. Repeat as needed.

6.4.2.2.1.1.1.2.8 Dialup File Name -- the name of a file containing the data set on the distribution computer. Repeat as needed.

6.4.2.2.1.2 Access Instructions -- instructions on the steps required to access the data set.

6.4.2.2.1.3 Online Computer and Operating System -- the brand of distribution computer and its operating system.

6.4.2.2.2 Offline Option -- information about media-specific options for receiving the data set.

6.4.2.2.2.1 Offline Media -- name of the media on which the data set can be received.

6.4.2.2.2.2 Recording Capacity -- the density of information to which data are written. Used in cases where different recording capacities are possible.

6.4.2.2.2.2.1 Recording Density -- the density in which the data set can be recorded. Repeat as needed.

6.4.2.2.2.2.2 Recording Density Units -- the units of measure for the recording density.

6.4.2.2.2.3 Recording Format -- the options available or method used to write the data set to the medium. Repeat as needed.

Compatibility Information -- description of other limitations or requirements for using the medium.

6.4.3 Fees -- the fees and terms for retrieving the data set.

6.4.4 Ordering Instructions -- general instructions and advice about, and special terms and services provided for, the data set by the distributor.

6.4.5 Turnaround -- typical turnaround time for the filling of an order.

6.5 Custom Order Process -- description of custom distribution services available, and the terms and conditions for obtaining these services.

6.6 Technical Prerequisites -- description of any technical capabilities that the consumer must have to use the data set in the form(s) provided by the distributor.

6.7 Available Time Period -- the time period when the data set will be available from the distributor.

Section 7: Metadata Reference Information

7 Metadata Reference Information -- information on the currentness of the metadata information, and the responsible party.

7.1 Metadata Date -- the date that the metadata were created or last updated.

7.2 Metadata Review Date -- the date of the latest review of the metadata entry.

7.3 Metadata Future Review Date -- the date by which the metadata entry should be reviewed.

7.4 Metadata Contact -- the party responsible for the metadata information.

7.5 Metadata Standard Name -- the name of the metadata standard used to document the data set.

7.6 Metadata Standard Version -- identification of the version of the metadata standard used to document the data set.

Standard Data Exchange Format Requirements: FGDC-STD-001-1998 March 30, 2001

7.7 Metadata Time Convention -- form used to convey time of day information in the metadata entry. Used if time of day information is included in the metadata for a data set.

7.8 Metadata Access Constraints -- restrictions and legal prerequisites for accessing the metadata. These include any access constraints applied to assure the protection of privacy or intellectual property, and any special restrictions or limitations on obtaining the metadata.

7.9 Metadata Use Constraints -- restrictions and legal prerequisites for using the metadata after access is granted. These include any metadata use constraints applied to assure the protection of privacy or intellectual property, and any special restrictions or limitations on using the metadata.

7.10 Metadata Security Information -- handling restrictions imposed on the metadata because of national security, privacy, or other concerns.

7.10.1 Metadata Security Classification System -- name of the classification system for the metadata.

7.10.2 Metadata Security Classification -- name of the handling restrictions on the metadata.

7.10.3 Metadata Security Handling Description -- additional information about the restrictions on handling the metadata.

7.11 Metadata Extensions -- a reference to extended elements to the standard which may be defined by a metadata producer or a user community. Extended elements are elements outside the Standard, but needed by the metadata producer. If extended elements are created, they must follow the guidelines in Appendix D, Guidelines for Creating Extended Elements to the Content Standard for Digital Geospatial Metadata.

7.11.1 Online Linkage -- the name of an online computer resource that contains the metadata extension information for the data set. Entries should follow the Uniform Resource Locator convention of the Internet.

7.11.2 Profile Name -- the name given to a document that describes the application of the Standard to a specific user community.

Section 8: Citation Information

8 Citation Information -- the recommended reference to be used for the data set. (Note: this section provides a means of stating the citation of a data set, and is used by other sections of the metadata standard. This section is never used alone.)

8.1 Originator -- the name of an organization or individual that developed the data set. If the name of editors or compilers are provided, the name must be followed by "(ed.)" or "(comp.)" respectively. Repeat as needed.

8.2 Publication Date -- the date when the data set is published or otherwise made available for release.

8.3 Publication Time -- the time of day when the data set is published or otherwise made available for release.

8.4 Title -- the name by which the data set is known.

8.5 Edition -- the version of the title.

8.6 Geospatial Data Presentation Form -- the mode in which the geospatial data are represented.

Standard Data Exchange Format Requirements: tabular digital data

8.7 Series Information -- the identification of the series publication of which the data set is a part.

8.7.1 Series Name -- the name of the series publication of which the data set is a part.

8.7.2 Issue Identification -- information identifying the issue of the series publication of which the data set is a part.

8.8 Publication Information -- publication details for published data sets.

8.8.1 Publication Place -- the name of the city (and state or province, and country, if needed to identify the city) where the data set was published or released.

8.8.2 Publisher -- the name of the individual or organization that published the data set.

8.9 Other Citation Details -- other information required to complete the citation.

8.10 Online Linkage -- the name of an online computer resource that contains the data set. Entries should follow the Uniform Resource Locator convention of the Internet.

8.11 Larger Work Citation -- the information identifying a larger work in which the data set is included.

Section 9: Time Period Information

9 Time Period Information -- information about the date and time of an event. (Note: this section provides a means of stating temporal information, and is used by other sections of the metadata standard. This section is never used alone.)

9.1 Single Date/Time -- means of encoding a single date and time.

9.1.1 Calendar Date -- the year (and optionally month, or month and day).

9.1.2 Time of Day -- the hour (and optionally minute, or minute and second) of the day.

BDP9.1.1 Geologic Age

BDP9.1.1.1 Geologic Time Scale

BDP9.1.1.2 Geologic Age Estimate

BDP9.1.1.3 Geologic Age Uncertainty

BDP9.1.1.4 Geologic Age Explanation

BDP9.1.1.5 Geologic Citation

9.2 Multiple Dates/Times -- means of encoding multiple individual dates and times. Repeat as needed.

9.2.1 Calendar Date -- the year (and optionally month, or month and day).

9.2.2 Time of Day -- the hour (and optionally minute, or minute and second) of the day.

BDP9.2.1 Geologic Age

BDP9.2.1.1 Geologic Time Scale

BDP9.2.1.2 Geologic Age Estimate

BDP9.2.1.3 Geologic Age Uncertainty

BDP9.2.1.4 Geologic Age Explanation

BDP9.2.1.5 Geologic Citation

9.3.1 Range of Dates/Times -- means of encoding a range of dates and times.

9.3.1.1 Beginning Date -- the first year (and optionally month, or month and day) of the event.

9.3.1.2 Beginning Time -- the first hour (and optionally minute, or minute and second) of the day for the event.

9.3.1.3 Ending Date -- the last year (and optionally month, or month and day) for the event.

9.3.1.4 Ending Time -- the last hour (and optionally minute, or minute and second) of the day for the event.

BDP9.3.1. Beginning Geologic Age

BDP9.3.1.1 Geologic Age

BDP9.3.1.1.1 Geologic Time Scale

BDP9.3.1.1.2 Geologic Age Estimate

BDP9.3.1.1.3 Geologic Age Uncertainty

BDP9.3.1.1.4 Geologic Age Explanation

BDP9.3.1.1.5 Geologic Citation

BDP9.3.2 Ending Geologic Age

BDP9.3.2.1 Geologic Age

BDP9.3.1.2.1 Geologic Time Scale

BDP9.3.1.2.2 Geologic Age Estimate

BDP9.3.1.2.3 Geologic Age Uncertainty

BDP9.3.1.2.4 Geologic Age Explanation

BDP9.3.1.2.5 Geologic Citation

Section 10: Contact Information

10 Contact Information -- Identity of, and means to communicate with, person(s) and organization(s) associated with the data set. (Note: this section provides a means of identifying individuals and organizations, and is used by other sections of the metadata standard. This section is never used alone.)

10.1 Contact Person Primary -- the person, and the affiliation of the person, associated with the data set. Used in cases where the association of the person to the data set is more significant than the association of the organization to the data set.

10.1.1 Contact Person -- the name of the individual to which the contact type applies.

Standard Data Exchange Format Requirements: Name and Position of responsible individual.

10.1.2 Contact Organization -- the name of the organization to which the contact type applies.

10.2 Contact Organization Primary -- the organization, and the member of the organization, associated with the data set. Used in cases where the association of the organization to the data set is more significant than the association of the person to the data set.

10.3 Contact Position -- the title of individual.

10.4 Contact Address -- the address for the organization or individual.

10.4.1 Address Type -- the information provided by the address.

10.4.2 Address -- an address line for the address. Repeat as needed.

10.4.3 City -- the city of the address.

10.4.4 State or Province -- the state or province of the address.

10.4.5 Postal Code -- the ZIP or other postal code of the address.

10.4.6 Country -- the country of the address.

10.5 Contact Voice Telephone -- the telephone number by which individuals can speak to the organization or individual. Repeat as needed.

10.6 Contact TDD/TTY Telephone -- the telephone number by which hearing-impaired individuals can contact the organization or individual. Repeat as needed.

- 10.7 Contact Facsimile Telephone -- the telephone number of a facsimile machine of the organization or individual. Repeat as needed.
- 10.8 Contact Electronic Mail Address -- the address of the electronic mailbox of the organization or individual. Repeat as needed.
- 10.9 Hours of Service -- time period when individuals can speak to the organization or individual.
- 10.10 Contact Instructions -- supplemental instructions on how or when to contact the individual or organization.

Appendix 3. Acronym Glossary

AIM - Agency Information Management coordinator

FGDC - Federal Geographic Data Committee

IMO - Project Information Management Officer

IMS - Information Management System

luList - Look Up list - contains a constrained list of values allowable in the specified field

SDTP – Standard Data Transfer Protocol

QA/QC - Quality Assurance / Quality Control

TBL - table

TSC - Technical Subcommittee Chairs