The Electronic Deliverable Format™ (EDF)

Version 1.2i

The Laboratory Electronic Deliverable Format™ (LAB EDF) FORMAT SPECIFICATIONS

Prepared by

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Acronyms

ALI	ArsenaultLegg, Inc., Alaska
ASCII	American Standard Code (for) Information Interchange
CAS	Chemical Abstract Service
CL	Control Limit
COC	Chain-of-Custody
COC EDF	The Chain-of-Custody Electronic Deliverable Format™
COELT	U.S. Army Corps of Engineers Loading Tool
CSV	Comma Separated Values (AKA Comma/Quote Delimited)
EDCC	Electronic Deliverable Consistency Checker
EDD	Electronic Data Deliverable
EDF	The Electronic Deliverable Format™
FK	Foreign Key
LAB EDF	The Laboratory Electronic Deliverable Format™
LIMS	Laboratory Information Management System
NA	Not Applicable
NC	Non-Client
ND	Non-Detected
PK	Primary Key
QA	Quality Assurance
QC	Quality Control
RPD	Relative Percent Difference
VVL	Valid Value List

1 Introduction

The Electronic Deliverable Format™ (EDF) is a comprehensive data standard designed to facilitate the transfer of electronic data files between data producers and data users. Laboratories can produce the Laboratory Electronic Deliverable Format™ (LAB EDF) electronic data deliverable (EDD) (here after referred to as EDF) using the U.S. Army Corps of Engineers Loading Tool (COELT) software, or EDF may be produced with other programs outside of COELT.

The EDF data components include:

- Chain-of-Custody (COC) Information
  - – sample collection information
  - – administrative information
  - – preservatives added to the samples
  - – conditions of transport
- Laboratory Results Information
  - – tests performed
  - – parameters tested
  - – analytical results
- Quality Assurance (QA) Information (key to data verification)
  - – detection limits
  - – control limits for precision and accuracy
  - – narrative report explaining non-conformances
- Built-in Guidelines and Restrictions
- Valid Value Lists (VVLs)

The EDF may be used for the production of hard copy reports, electronic data review, or data summaries. The EDF is the absolute electronic reflection of the legally defensible hard copy laboratory report produced with COELT.

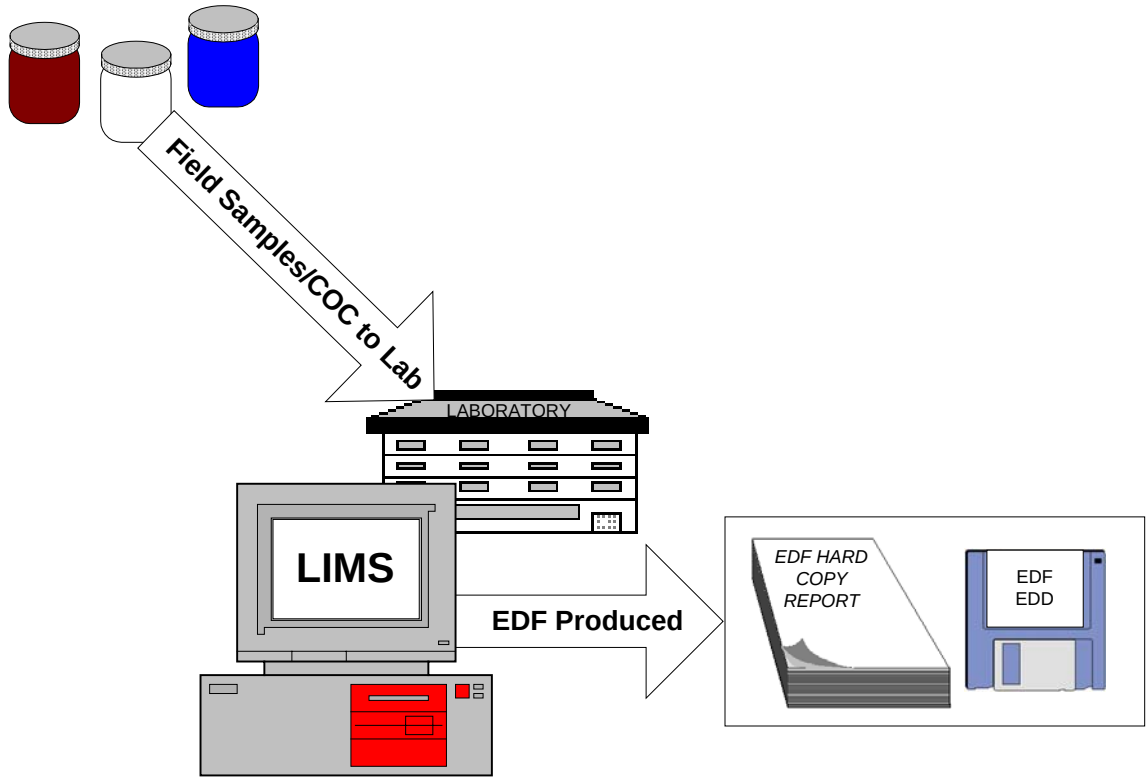


Figure 1: From Field to EDF

1.1 Key Concepts

The benefits of using the EDF data standard include:

- Provides a comprehensive data standard for analytical laboratories, allowing different laboratories to provide consistent reporting parameters.
- Provides an efficient industry-wide, universal standard for electronic analytical data.
- Promotes the highest potential of data for transfer, review, and interpretation by multiple parties associated with current and future projects.
- Eliminates laborious and costly manual re-entry of hard copy laboratory data, which often results in transcription errors.
- May be produced by entering data manually, or by importing data directly from a Laboratory Information Management System (LIMS).
- Provides guidelines and restrictions that help reduce data entry errors and inconsistencies.
- Legally defensible hard copy reports can be generated directly from the electronic data in a standardized format.
- Presents quality assurance/quality control (QA/QC) information for each laboratory report, that is the key to data verification.

- Provides guardianship of catalogued VVLs, assuring universal consistency among users.
- Provides an electronic project archive of known quality, with historical data that are easily accessible and efficiently reviewed by different parties, for use in future environmental projects.
- Promotes dynamic growth of institutional knowledge between laboratories, consultants, their clients, and agencies.

1.2 Document Conventions

This document presents the structure of the EDF and guidelines and restrictions for creating an EDF EDD. Each data file is discussed in a level of detail that assists a laboratory in creating an EDD that meets the criteria of the data standard. Included is a discussion of guidelines and restrictions that apply to files and those that apply to individual fields within a file. This is a very technical document. For more generalized information about EDF, please contact the EDF Help Desk, by phone at 800-506-3887, or by e-mail: edfhelp@enabl.com.

1.2.1 Figure Representation of Files

Each file discussion begins with a figure representing the fields in the file. Refer to Figure 2 as an example. The fields are listed in the order in which they exist within the structure, and primary key fields are underlined. “Primary key” means a selected field (or fields in combination) that makes a record unique in a database. (Refer to the Glossary in Appendix A for a technical definition of this and other terms.) The order of the fields in the figure **is** the order expected for delivery.

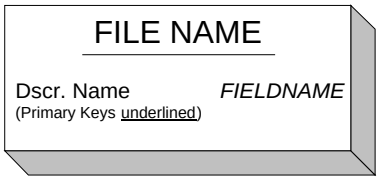


Figure 2: Example Figure Definition

1.2.2 Table Representation of EDF Files

The following table is an explanation of the tables in this document defining the files of the format.

Table 1: [File Name]

Field Name	Attrb	PK	FK	VVL	REQ	Dscr. Name	Definition
FIELD1	C18	Yes	Yes	Yes	Yes	Field 1	Field 1 is a character field with 18 available positions.
FIELD2	D8	Yes	No	No	Yes	Field 2	Field 2 is a date field with an expected format of YYYYMMDD.
FIELD3	N5	No	No	No	No	Field 3	Field 3 is a numeric field with a total of 5 spaces available for numbers and decimals, with no restriction on the number of digits to the right of the decimal point other than the overall field size.
FIELD4	L1	No	No	No	Yes	Field 4	Field 4 is a logic field with expected values of "T" (True) or "F" (False).

The **Field Name** is the actual structural name of the field. Primary key fields are distinguished by shading (e.g., *FIELD1* and *FIELD2* above). Foreign key fields are distinguished by bolding. If a field is both a primary and a foreign key, it is both bolded and shaded (e.g., *FIELD1* above). Fields are listed in their structural order within these tables.

The **Attrb** column describes the field's attributes (type and size). For example:

- C8 is an 8-character alphanumeric field.
- N5 is a numeric field with a total of 5 spaces available for numbers and decimals, with no restriction on the number of digits to the right of the decimal point other than the overall field size (e.g., 12345 or 123.4 or 1.234).
- D8 is a date field with an expected format of YYYYMMDD (i.e., 20020202).
- L1 is a logic field with expected values of "T" (True) or "F" (False).
- Time format is 4 digits using a 24-hour military clock without a colon (e.g., 1400 for 2:00 p.m.).

The **PK** column further identifies the primary key fields with a "Yes" or "No."

The **FK** column further identifies the foreign key fields with a "Yes" or "No." A "foreign key" is a primary key field in one file (a "parent file") shared with a related file ("child file") in a data file relationship. (Refer to the Glossary in Appendix B for technical definitions of this and other terms.)

The **VVL** column indicates with a "Yes" or "No" whether the data field requires a valid value code.

The **REQ** column indicates with a "Yes" or "No" whether entry into the field is required.

The **Dscr. Name** column gives the descriptive name of the field.

The **Definition** column provides a brief definition and/or explanation of the field and expectations for entry into the field.

1.2.3 Conventions for Text

Throughout this document, file names are capitalized (e.g., the EDFSAMP file), and field names are capitalized and italicized (e.g., the *SAMPID* field). The words "file" and "table" are used interchangeably.

Each file discussion is organized into guidelines and restrictions for the file as a whole ("File Guidelines and Restrictions"), and guidelines and restrictions for entry into fields within the file ("Field Guidelines and Restrictions" and "Special Considerations"). File guidelines and restrictions include such information as whether the file must be populated and how it relates to other files in the structure.

Included in the field guidelines and restrictions are lists of which fields require VVLs, which fields require entry for submission, and the file's primary and foreign keys. Any exceptions or special cases are listed under "Special Considerations."

1.3 Valid Values

Various data fields in the EDF require entry of valid values. VVLs are built-in codes that the format requires for certain fields, such as contractor names, matrices, and laboratories. The reason for using specific values for these fields is to standardize the data entry, to ensure data consistency and prevent errors. Freely entered data might contain extra spaces, commas, or dashes that would make meaningful data manipulation and thorough or accurate data searches impossible.

Most VVLs are abbreviations of common or proper names; hence selecting the correct code is generally straightforward. However, some VVLs are also used to link data properly (e.g., *QCCODE* is used to help link a laboratory replicate ["LR1"] to its original client sample ["CS"]). Up-to-date lists of the valid value codes and their definitions for each VVL field in the EDF can be downloaded from www.enabl.com.

New VVLs can be requested through the EDF Help Desk, by fax (907) 346-1577, or e-mail edfhelp@enabl.com.

2 Database Description

The EDF may be delivered in one of two data transfer standard formats: 1) the "relational format," consisting of five files, or 2) the "flat file format," consisting of two files. In each of the formats the files are related to one another through common (key) fields. These data files are described as relational because the information in one file is related to information in other files, linked through a group of fields called the primary key. The primary key fields collectively make a record unique within a file. A record is a line of data (a row) in a table or file made up of distinct fields (columns) of information. The primary key fields in one file record must be identical to the same fields in the linking file record in order to "relate" the data records in both files.

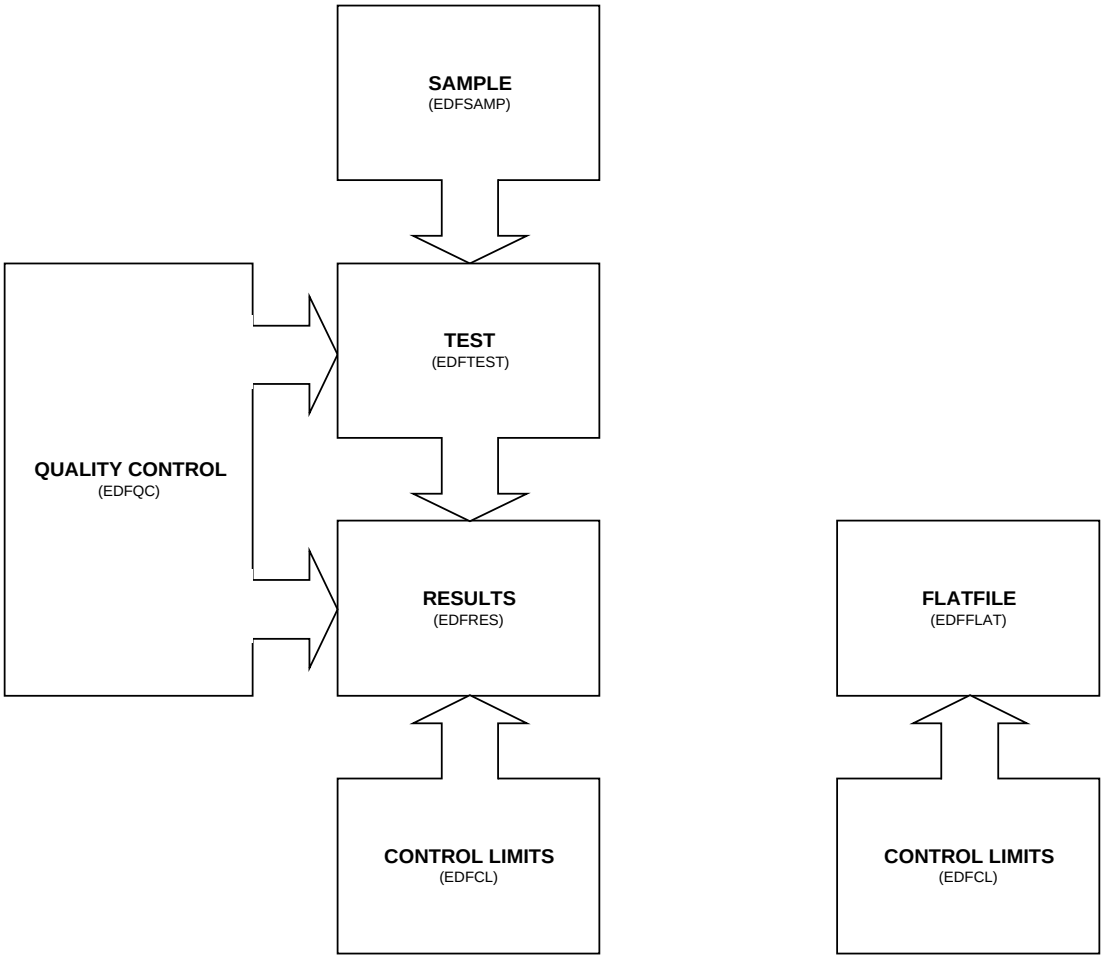


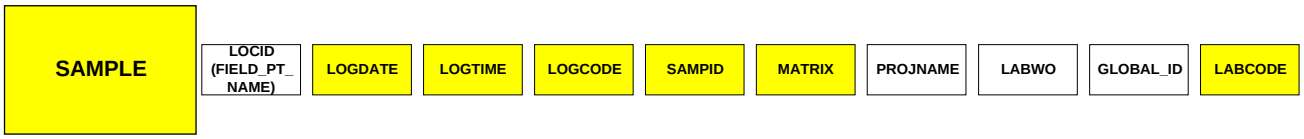
Figure 3: The Two Data Transfer Standard Formats of the EDF

2.1 The Relational Format

2.1.1 Sample Information

The EDFSAMP file (also referred to as the SAMPLE file) contains collection, location, and administrative information concerning field samples. Most of the information in this file should be available on the COC form. Only client samples appearing on the COC are to be entered into this file (i.e., no laboratory-generated samples should be entered into this file).

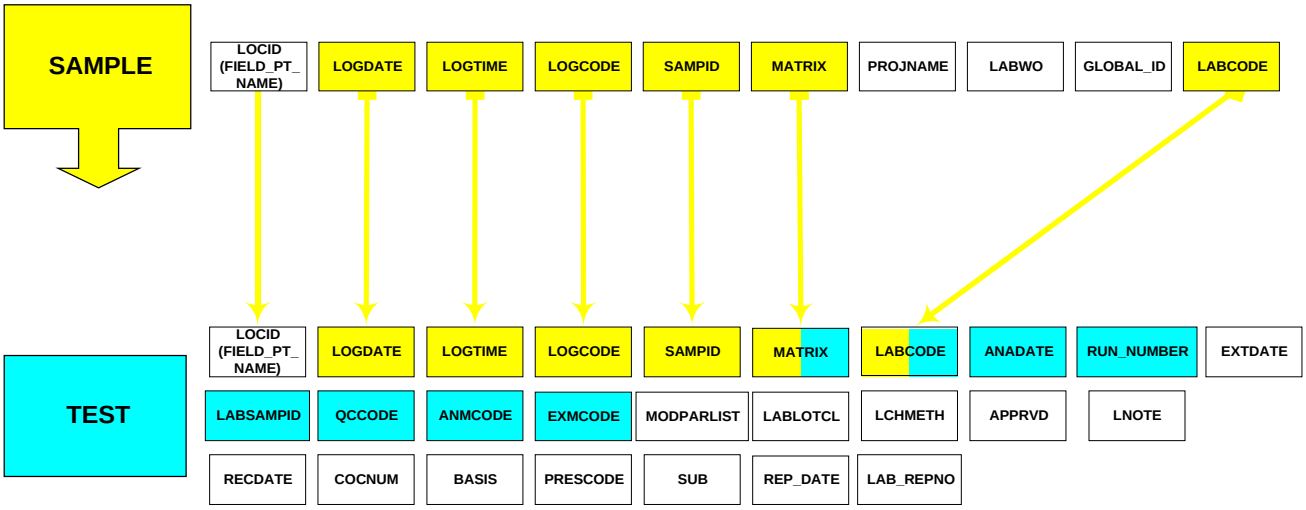
Non-required fields not shown in the diagram below include *USER_ADMIN_ID*, *COC_MATRIX*, and *DQO_ID* that provide a link with the COC EDF deliverable.



2.1.2 Test Information

The EDFTEST file (also referred to as the TEST file), containing information regarding analytical tests performed on samples, is related to the SAMPLE file by sample collection information and field sample number. There is a one-to-many relationship between the SAMPLE and TEST files, meaning one record in the SAMPLE file can link to many TEST records.

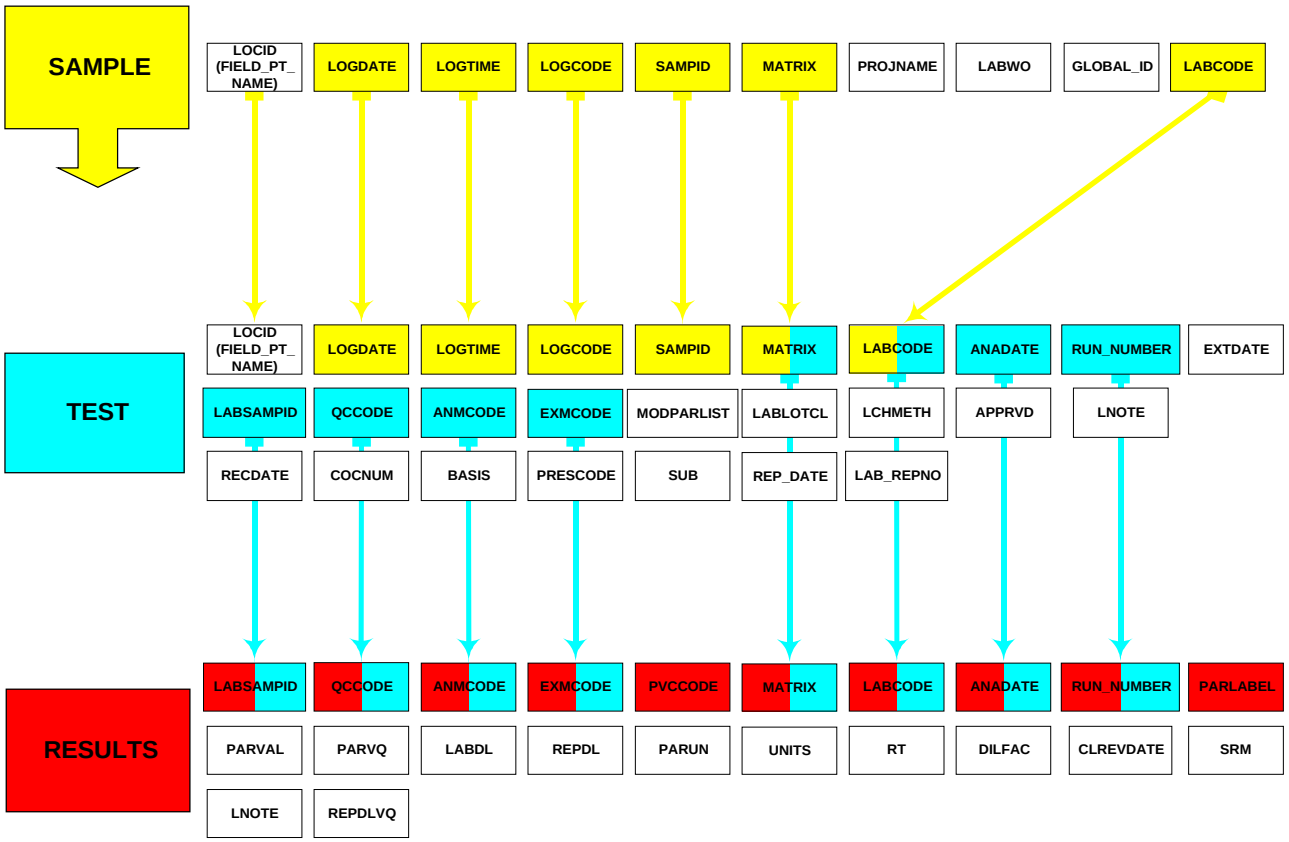
Non-required fields in the TEST file not shown in the diagram below include, *REQ_METHOD_GRP*, *PROCEDURE_NAME*, *LAB_METH_GRP*, *METH_DESIGN_ID*, and *CLEANUP*.



2.1.3 Results Information

The EDFRES file (also referred to as the RESULTS file) contains information on results generated by the laboratory. The TEST file relates to the RESULTS file through the laboratory sample ID and analytical information. There is also a one-to-many relationship between the TEST and RESULTS files, as noted above (i.e., there can be more than one result generated for a single test). Each RESULTS record contains information about a specific analytical result.

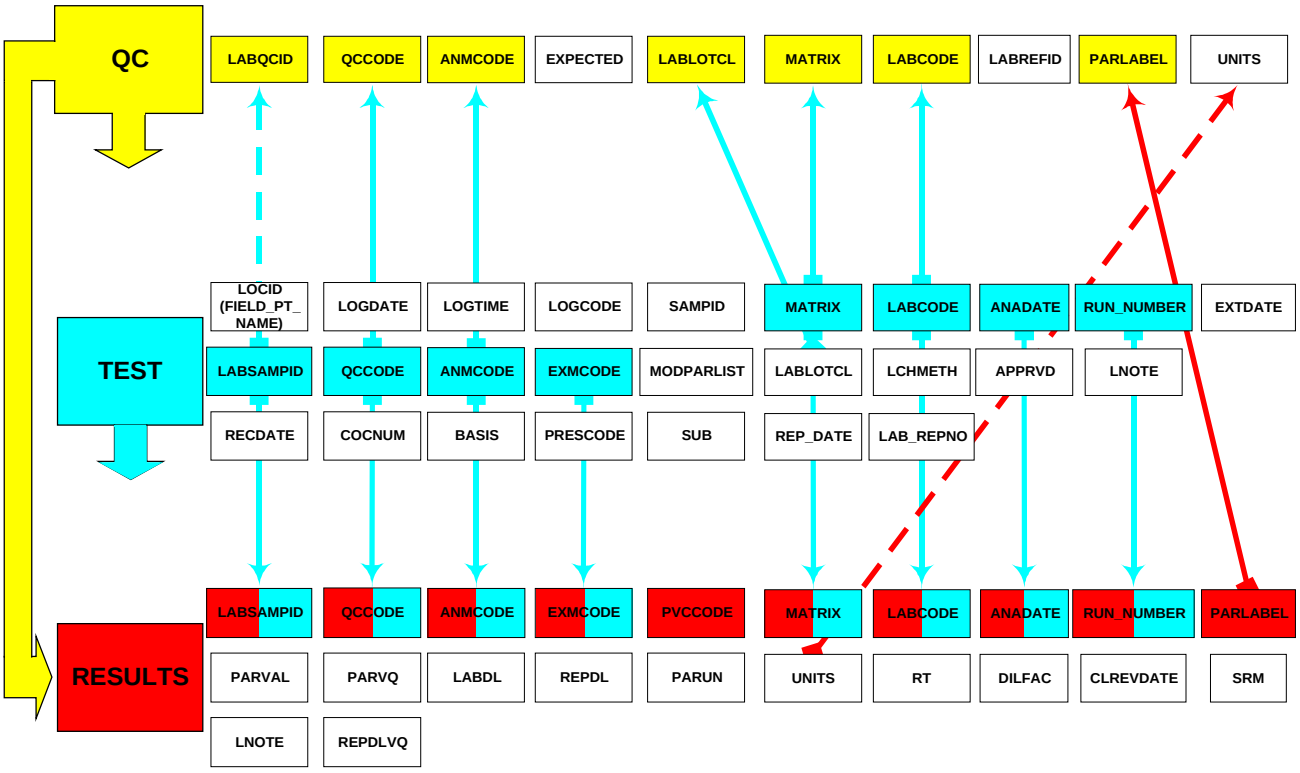
Non-required fields in the RESULTS file not shown in the diagram below include *PROCEDURE_NAME*, *LAB_METH_GRP*, *METH_DESIGN_ID*, and *FREE_FLD_1* through *FREE_FLD_5*.



2.1.4 Quality Control Information

The EDFQC file (also referred to as the QC file) contains data related to laboratory quality control (QC) samples. Each QC sample is identified as belonging to a particular QC batch that serves to relate the QC and TEST files. However, the actual result for a QC sample and its related reference sample (i.e., the original sample of a duplicate or a spike) is stored in the RESULTS file.

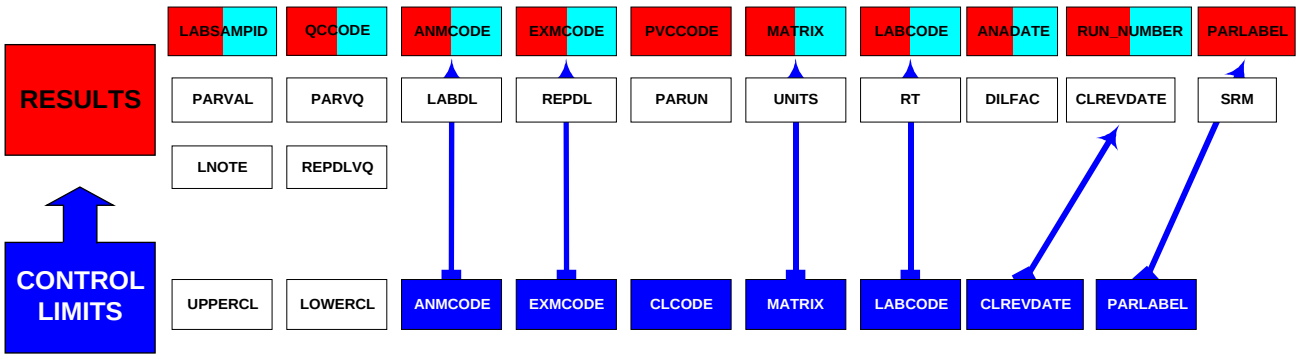
Non-required fields in the QC file not shown in the diagram below include *PROCEDURE_NAME*, *LAB_METH_GRP*, and *METH_DESIGN_ID*.



2.1.5 Control Limit Information

The EDFCL file (also referred to as the CL file) contains data associated with analytical control limits (CL). Each CL file record contains control limit information for a parameter analyzed by a particular analytical method. The CL and RESULTS files are related through the analytical method, parameter, and control limit revision date, collectively.

Non-required fields in the CL file not shown in the diagram below include *PROCEDURE_NAME*, *LAB_METH_GRP*, and *METH_DESIGN_ID*.



2.1.6 Narrative Information

The EDFNARR file (also referred to as the NARRATIVE file) provides a means to transfer descriptive information about analyses that do not easily fit in a standardized format. This file does not require a specific format but should be delivered as an ASCII file.

2.2 The Flat File Format

2.2.1 The Flat File

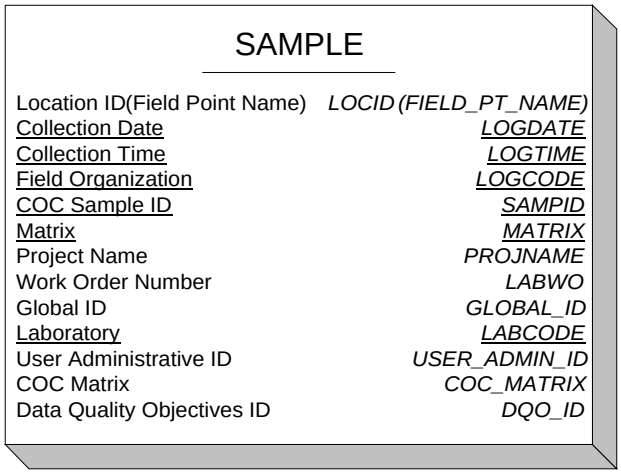
The EDFFLAT file (also referred to as the FLAT file) contains all of the data elements in the SAMPLE, TEST, RESULTS, and QC files of the relational format in one large “flat” file. The CL file links to the FLAT file through the primary key fields of the RESULTS file as illustrated in Section 2.1.5 above.

3 Relational Files Format

The following Chapter describes the fixed length relational files format, and guidelines and restrictions associated with each of the relational data files of EDF.

3.1 EDFSAMP: The Sample Information File

The purpose of the SAMPLE file is to track the administrative and field collection information associated with a sample. For every field-generated sample entering the laboratory, one record is added to this file. Most of the information in this file should be available on the COC and is to be entered exactly as it appears on that form. Table 2, on page 3, presents the SAMPLE file structure and field attributes.



3.1.1 File Guidelines and Restrictions:

- Primary Key Fields: *LOGDATE*, *LOGTIME*, *LOGCODE*, *SAMPID*, *MATRIX*, and *LABCODE* comprise the primary key.
- Non-Client (NC) and laboratory-generated QC samples (i.e., samples created in the laboratory) are **not** to be entered into this file. ("NC" samples are samples that do not originate from a client's sites but are used to generate QC results for a client's group of samples.) These types of samples do not have associated *LOGDATE*, *LOGTIME*, *LOGCODE*, and *SAMPID* values (i.e., most of the primary key fields for the SAMPLE file).

3.1.2 Field Guidelines and Restrictions:

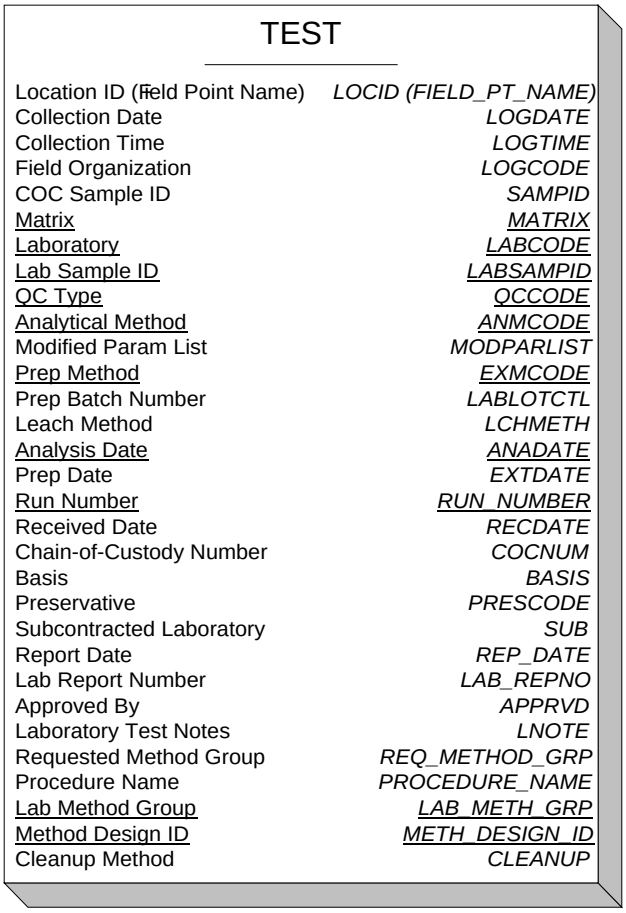
- Required Fields: *LOGDATE*, *LOGTIME*, *LOGCODE*, *SAMPID*, *MATRIX*, *PROJNAME*, *LABWO*, *GLOBAL_ID*, and *LABCODE* require entry.
- Valid Value Fields: *LABCODE*, *LOGCODE*, *MATRIX*, and *COC_MATRIX* require valid value entries. Up-to-date lists of valid value codes and their definitions can be downloaded from www.enabl.com.
- Non-Required Fields: *USER_ADMIN_ID*, *COC_MATRIX*, and *DQO_ID* may be omitted from the deliverable if using the COELT tool to produce EDF.
- *LOCID (FIELD_PT_NAME)* may be left blank if unknown.
- Entry of "NA" is recommended for *LABWO* and *GLOBAL_ID* when that information is not available or not applicable.
- *LABCODE* reflects the laboratory that received the sample and is responsible for generating the EDD.

Table 2: EDFSAMP (SAMPLE) Format

Field Name	Attrb	PK	FK	VVL	REQ	Dscr. Name	Definition
LOCID (FIELD_PT_NAME)	C10	No	No	No	No	Location ID (Field Point Name)	The unique identifier for the sample's location, as identified by the organization collecting the sample. This field may be used to enter a Field Point Name.
LOGDATE	D8	Yes	No	No	Yes	Collection Date	The date a field sample is collected.
LOGTIME	C4	Yes	No	No	Yes	Collection Time	The time that a field sample is collected, recorded using 24-hour military time.
LOGCODE	C4	Yes	No	Yes	Yes	Field Organization	The code identifying the company collecting the samples or performing field tests.
SAMPID	C25	Yes	No	No	Yes	COC Sample ID	The unique identifier representing a sample, assigned by the consultant, as submitted to the laboratory on a chain-of-custody.
MATRIX	C2	Yes	No	Yes	Yes	Matrix	The code identifying the sample matrix as determined by the laboratory (e.g., water, soil, etc.).
PROJNAME	C25	No	No	No	Yes	Project Name	The identification assigned to the project by the organization performing the work.
LABWO	C7	No	No	No	Yes	Work Order Number	A delivery order number associated with the contract.
GLOBAL_ID	C12	No	No	No	Yes	Global ID	The unique identifier for a regulated facility or site.
LABCODE	C4	Yes	No	Yes	Yes	Laboratory	The code identifying the laboratory that receives the sample.
USER_ADMIN_ID	C25	No	No	No	No	User Administrative ID	A user-defined administrative field.
COC_MATRIX	C2	No	No	Yes	No	COC Matrix	The code identifying the sample matrix as noted on the chain-of-custody (e.g., water, soil, etc.).
DQO_ID	C25	No	No	No	No	Data Quality Objectives ID	The unique identifier representing the data quality objectives.

3.2 EDFTEST: The Analysis (Test) Information File

The TEST file contains information concerning the analytical test associated with the sample. A test record is generated for each test performed that results in usable data. Five fields (*LOGDATE*, *LOGTIME*, *LOGCODE*, *SAMPID*, and *LABCODE*) from the SAMPLE file are carried over to the TEST file as foreign keys. Most of the information in the TEST file can be located at the top portion of a standard laboratory bench sheet. Table 3, on page 3, presents the TEST file structure and attributes.



TEST	
Location ID (Field Point Name)	*LOCID (FIELD_PT_NAME)*
Collection Date	*LOGDATE*
Collection Time	*LOGTIME*
Field Organization	*LOGCODE*
COC Sample ID	*SAMPID*
Matrix	*MATRIX*
Laboratory	*LABCODE*
Lab Sample ID	*LABSAMPID*
QC Type	*QCCODE*
Analytical Method	*ANMCODE*
Modified Param List	*MODPARLIST*
Prep Method	*EXMCODE*
Prep Batch Number	*LABLOTCTL*
Leach Method	*LCHMETH*
Analysis Date	*ANADATE*
Prep Date	*EXTDATE*
Run Number	*RUN_NUMBER*
Received Date	*RECDATE*
Chain-of-Custody Number	*COCNUM*
Basis	*BASIS*
Preservative	*PRESCODE*
Subcontracted Laboratory	*SUB*
Report Date	*REP_DATE*
Lab Report Number	*LAB_REPNO*
Approved By	*APPRVD*
Laboratory Test Notes	*LNOTE*
Requested Method Group	*REQ_METHOD_GRP*
Procedure Name	*PROCEDURE_NAME*
Lab Method Group	*LAB_METH_GRP*
Method Design ID	*METH_DESIGN_ID*
Cleanup Method	*CLEANUP*

3.2.1 File Guidelines and Restrictions:

- Primary Key Fields: *MATRIX*, *LABCODE*, *LABSAMPID*, *QCCODE*, *ANMCODE*, *EXMCODE*, *ANADATE*, and *RUN_NUMBER* comprise the primary key. (*LAB_METH_GRP* and *METH_DESIGN_ID* are non-required fields that act as primary key fields when populated.)
- Each TEST record must have associated SAMPLE and RESULTS records.
- All sample types must be entered into this file (i.e., client samples, non-client samples, and all QC sample types).

3.2.2 Field Guidelines and Restrictions:

- Required Fields: *LOGDATE*, *LOGTIME*, *LOGCODE*, *SAMPID*, *MATRIX*, *LABCODE*, *LABSAMPID*, *QCCODE*, *ANMCODE*, *MODPARLIST*, *EXMCODE*, *LABLOTCTL*, *ANADATE*, *EXTDATE*, *RUN_NUMBER*, *BASIS*, and *SUB* require entry.
- Valid Value Fields: *LABCODE*, *LOGCODE*, *MATRIX*, *QCCODE*, *ANMCODE*, *EXMCODE*, *LCHMETH*, *BASIS*, *PRESCODE*, *SUB*, *LNOTE*, and *CLEANUP* require valid value entries. Up-to-date lists of valid value codes and their definitions can be downloaded from www.enabl.com.
- Non-Required Fields: *REQ_METHOD_GRP*, *PROCEDURE_NAME*, *LAB_METH_GRP*, *METH_DESIGN_ID*, and *CLEANUP* may be omitted from the deliverable if using the COELT tool to produce EDF.
- *MODPARLIST* requires a "T" (true) entry if a parameter from the parameter list (refer to the actual method) is not reported. The parameter list is not considered modified if extra parameters are reported.
- *LABSAMPID* must be unique.
- *RUN_NUMBER* should have a value of one or greater.
- Multiple *PRESCODE*s may be used; commas without spaces separate the codes (e.g., "P08,P12"). If the no preservative was added, this field may be left blank.
- Multiple *LNOTE*s may be used; commas without spaces separate the codes (e.g., "AZ,B,CI"). If qualification is not required, this field may be left blank.
- *LABLOTCTL* must uniquely distinguish a group of samples that are prepared together.
- *LABCODE* reflects the laboratory that first receives the sample.
- Enter a *LABCODE* (other than "NA") in the *SUB* field if the lab performing the analysis is not the laboratory that received the sample. **"NA" must be entered into this field unless the test is subcontracted out.**
- *LOCID (FIELD_PT_NAME)*, *LOGDATE*, *LOGTIME*, *SAMPID*, *LOGCODE*, *LAB_REPNO*, *REP_DATE*, and *COCNUM* should be left blank for laboratory-generated and non-client samples (i.e., *QCCODE* is not "CS").
- *APPRVD* should be left blank for non-client samples (i.e., *QCCODE* is "NC").
- *RECDATE* may be left blank for non-client samples (i.e., QCCODE is "NC").

Table 3: EDFTEST (TEST) Format

Field Name	Attrb	PK	FK	VVL	REQ	Dscr. Name	Definition
LOCID (FIELD_PT_NAME)	C10	No	No	No	No	Location ID (Field Point Name)	The unique identifier for the sample's location, as identified by the organization collecting the sample. This field may be used to enter a Field Point Name.
LOGDATE	D8	No	Yes	No	Yes	Collection Date	The date a field sample is collected.
LOGTIME	C4	No	Yes	No	Yes	Collection Time	The time that a field sample is collected, recorded using 24-hour military time.
LOGCODE	C4	No	Yes	Yes	Yes	Field Organization	The code identifying the company collecting the samples or performing field tests.
SAMPID	C25	No	Yes	No	Yes	COC Sample ID	The unique identifier representing a sample, assigned by the consultant, as submitted to the laboratory on a chain-of-custody.
MATRIX	C2	Yes	Yes	Yes	Yes	Matrix	The code identifying the sample matrix as determined by the laboratory (e.g., water, soil, etc.).
LABCODE	C4	Yes	Yes	Yes	Yes	Laboratory	The code identifying the laboratory that receives the sample.
LABSAMPID	C12	Yes	No	No	Yes	Laboratory Sample ID	The unique identification number assigned to the sample by the laboratory.
QCCODE	C3	Yes	No	Yes	Yes	QC Type	The code identifying the type of sample (e.g., laboratory-generated, environmental, etc.).
ANMCODE	C7	Yes	No	Yes	Yes	Analytical Method	The code identifying the method of analysis.
MODPARLIST	L1	No	No	No	Yes	Modified Parameter List	A field indicating whether the parameter list of an analytical method has been modified.
EXMCODE	C7	Yes	No	Yes	Yes	Preparation Method	The code identifying the method of preparation.
LABLOTCTL	C10	No	No	No	Yes	Preparation Batch Number	The unique identifier for a preparation and handling batch.

Field Name	Attrb	PK	FK	VVL	REQ	Dscr. Name	Definition
LCHMETH	C10	No	No	Yes	No	Leach Method	The code identifying the method of leaching performed.
ANADATE	D8	Yes	No	No	Yes	Analysis Date	The date the sample (aliquot, extract, digest and/or leachate) is analyzed.
EXTDATE	D8	No	No	No	Yes	Preparation Date	The date that a sample is prepared for analysis.
RUN_NUMBER	N2	Yes	No	No	Yes	Run Number	The numeric code distinguishing multiple or repeat analysis of a sample by the same method on the same day.
RECDATE	D8	No	No	No	No	Received Date	The date the sample is received by the laboratory doing the analysis.
COCNUM	C16	No	No	No	No	Chain-of-Custody Number	The number assigned to the chain-of-custody.
BASIS	C1	No	No	Yes	Yes	Basis	The code used to distinguish whether a sample is reported as dry or wet weight, filtered or not filtered.
PRESCODE	C15	No	No	Yes	No	Preservative	The code identifying the type of preservative added to the sample.
SUB	C4	No	No	Yes	Yes	Subcontracted Laboratory	The code identifying the subcontracted laboratory.
REP_DATE	D8	No	No	No	No	Report Date	The date of the laboratory report.
LAB_REPNO	C20	No	No	No	No	Laboratory Report Number	The unique identifier for the laboratory report, assigned by the laboratory.
APPRVD	C3	No	No	No	No	Approved By	The initials of the individual approving the laboratory report.
LNOTE	C20	No	No	Yes	No	Laboratory Test Notes	The code identifying notes pertaining to analytical performance irregularities that apply to the entire test.
REQ_METHOD_GRP	C25	No	No	No	No	Requested Method Group	The unique identifier for the method or group of methods requested by the client for analysis of the sample.
PROCEDURE_NAME	C240	No	No	No	No	Procedure Name	The method title as defined by the analysis laboratory.

Field Name	Attrb	PK	FK	VVL	REQ	Dscr. Name	Definition
LAB_METH_GRP	C25	Yes	No	No	No	Lab Method Group	The unique identifier for a group of methods as defined by the laboratory.
METH_DESIGN_ID	C25	Yes	No	No	No	Method Design ID	The unique identifier for the design of an analytical method.
CLEANUP	C15	No	No	Yes	No	Cleanup Method	The code identifying the method of cleanup performed.

3.3 EDFRES: The Results Information File

The RESULTS file contains information concerning analytical results generated by the laboratory. Each record contains a parameter result. Parameter results are coded using the *PVCCODE* to distinguish whether they are primary results or supporting analytical data (i.e., second column confirmation). Results and detection limits are to be adjusted for dilution prior to data entry. Dilution adjustments are the only calculations necessary prior to entering values into the format. All other QC calculations are performed in the database receiving the EDD. **(NOTE: The exception to this is surrogates, which are reported in "PERCENT" *UNITS*.)** Table 4, on page 3, presents the RESULTS file structure and field attributes.

RESULTS	
Matrix	*MATRIX*
Laboratory	*LABCODE*
Lab Sample ID	*LABSAMPID*
QC Type	*QCCODE*
Analytical Method	*ANMCODE*
Prep Method	*EXMCODE*
Primary Value Type	*PVCCODE*
Analysis Date	*ANADATE*
Run Number	*RUN_NUMBER*
Parameter	*PARLABEL*
Parameter Value	*PARVAL*
Parameter Value Qualifier	*PARVQ*
Method Detection Limit	*LABDL*
Reporting Limit	*REPDL*
Reporting Limit Qualifier	*REPDLVQ*
Parameter Uncertainty	*PARUN*
Units of Measure	*UNITS*
Retention Time	*RT*
Dilution Factor	*DILFAC*
CL Revision Date	*CLREVDATE*
Standard Reference Material	*SRM*
Laboratory Result Notes	*LNOTE*
Procedure Name	*PROCEDURE_NAME*
Lab Method Group	*LAB_METH_GRP*
Method Design ID	*METH_DESIGN_ID*
Results Free Field 1	*RES_FF_1*
Results Free Field 2	*RES_FF_2*
Results Free Field 3	*RES_FF_3*
Results Free Field 4	*RES_FF_4*
Results Free Field 5	*RES_FF_5*

3.3.1 File Guidelines and Restrictions:

- Primary Key Fields: *MATRIX*, *LABCODE*, *LABSAMPID*, *QCCODE*, *ANMCODE*, *EXMCODE*, *PVCCODE*, *ANADATE*, *RUN_NUMBER*, and *PARLABEL* comprise the primary key. (*LAB_METH_GRP* and *METH_DESIGN_ID* are non-required fields that act as primary key fields when populated.)
- Each RESULTS record must have a corresponding TEST record.
- All sample types must be entered into this file (i.e., client samples, non-client samples, and all QC types).

3.3.2 Field Guidelines and Restrictions:

- Required Fields: *MATRIX*, *LABCODE*, *LABSAMPID*, *QCCODE*, *ANMCODE*, *EXMCODE*, *PVCCODE*, *ANADATE*, *RUN_NUMBER*, *PARLABEL*, *PARVAL*, *PARVQ*, *REPDLVQ*, *UNITS*, *DILFAC*, and *SRM* require entry.
- Valid Value Fields: *MATRIX*, *LABCODE*, *QCCODE*, *ANMCODE*, *EXMCODE*, *PVCCODE*, *PARLABEL*, *PARVQ*, *REPDLVQ*, *UNITS*, *SRM*, and *LNOTE* require valid value entries. Up-to-date lists of valid value codes and their definitions can be downloaded from www.enabl.com.
- Non-Required Fields: *PROCEDURE_NAME*, *LAB_METH_GRP*, *METH_DESIGN_ID*, and *RES_FF_1* through *RES_FF_5* may be omitted from the deliverable if using the COELT tool to produce EDF.
- *LABCODE* reflects the laboratory that receives the sample.
- *RUN_NUMBER* requires a value of one or greater.
- *PARVAL*s less than *REPDL* require a *PARVQ* of "ND."
- Multiple *LNOTE*s may be used; commas without spaces separate the codes (e.g., "AZ,B,CI"). If qualification is not required, this field may be left blank.
- *CLREVDATE* should be blank for environmental samples (i.e., *QCCODE* is "CS" or "NC"), laboratory-generated blanks (i.e., *QCCODE* is "LB" or "RS"), and non-spiked parameter results, except for surrogate results (i.e., *PARVQ* is "SU").
- *LABDL* and *REPDL* should be blank for parameters with *UNITS* of "PERCENT."
- *CLREVDATE* requires an entry when *QCCODE* is "MS/SD," "BS/BD," "RM/KD," "LR," "IC," or "CC."
- *CLREVDATE* requires an entry when *PARVQ* is "SU" or "IN."
- *PARVAL*, *LABDL*, and *REPDL* should be adjusted for dilution (*DILFAC*).

3.3.2.1 Special Considerations for Surrogate Compounds:

- *PARVQ* requires an entry of "SU."
- *UNITS* requires an entry of "PERCENT."
- *EXPECTED* requires an entry of "100."
- *LABDL* and *REPDL* should be blank. *REPDLVQ* and *SRM* require entry of "NA."

3.3.2.2 Special Considerations for Tentatively Identified Compounds (TICs):

- *PARVQ* requires an entry of "TI."
- Chemical Abstract Service (CAS) numbers may be used (**for TICs only**) instead of *PARLABEL*s to identify the parameter being reported. It is recommended that TICs without CAS numbers have *PARLABEL* valid values.
- *LABDL* and *REPDL* should be blank. *REPDLVQ* and *SRM* requires entry of "NA."
- *RT* is a recommended entry field for TIC results.

Table 4: EDFRES (RESULTS) Format

Field Name	Attrb	PK	FK	VVL	REQ	Dscr. Name	Definition
MATRIX	C2	Yes	Yes	Yes	Yes	Matrix	The code identifying the sample matrix as determined by the laboratory (e.g., water, soil, etc.).
LABCODE	C4	Yes	Yes	Yes	Yes	Laboratory	The code identifying the laboratory that receives the sample.
LABSAMPID	C12	Yes	Yes	No	Yes	Laboratory Sample ID	The unique identification number assigned to the sample by the laboratory.
QCCODE	C3	Yes	Yes	Yes	Yes	QC Type	The code identifying the type of sample (e.g., laboratory-generated, environmental, etc.).
ANMCODE	C7	Yes	Yes	Yes	Yes	Analytical Method	The code identifying the method of analysis.
EXMCODE	C7	Yes	Yes	Yes	Yes	Preparation Method	The code identifying the method of preparation.
PVCCODE	C2	Yes	No	Yes	Yes	Primary Value Type	The code identifying whether a sample result is a primary or a confirmatory value.
ANADATE	D8	Yes	Yes	No	Yes	Analysis Date	The date the sample (aliquot, extract, digest and/or leachate) is analyzed.
RUN_NUMBER	N2	Yes	Yes	No	Yes	Run Number	The numeric code distinguishing multiple or repeat analysis of a sample by the same method on the same day.
PARLABEL	C12	Yes	No	Yes	Yes	Parameter	The code identifying the analyte (parameter).
PARVAL	N14	No	No	No	Yes	Parameter Value	The analytical value for a compound, analyte, or physical parameter. (Formerly in the format N14,4 in EDF 1.2a.)
PARVQ	C2	No	No	Yes	Yes	Parameter Value Qualifier	The code identifying the qualifier of an analytical result (e.g., greater than, equal to, etc.).

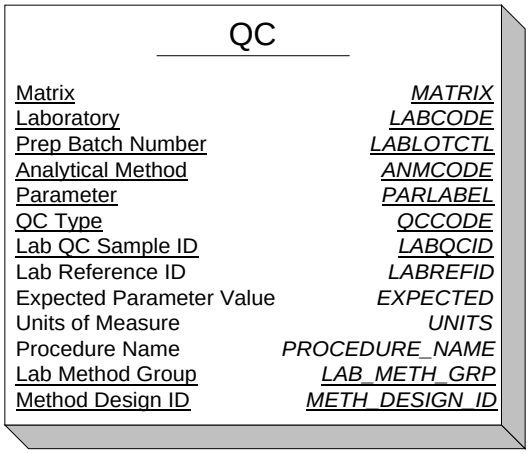
Field Name	Attrb	PK	FK	VVL	REQ	Dscr. Name	Definition
LABDL	N9	No	No	No	No	Method Detection Limit	The laboratory-established method detection limit, adjusted for the particular sample preparation (e.g., weight, volume, or dilution). (Formerly in the format N9,4 in EDF 1.2a.)
REPDL	N9	No	No	No	No	Reporting Limit	The laboratory-established reporting limit, adjusted for the particular sample preparation (e.g., weight, volume, or dilution). (Formerly in the format N9,4 in EDF 1.2a.)
REPDLVQ	C3	No	No	Yes	Yes	Reporting Limit Qualifier	The code identifying the type of reporting limit (e.g., practical quantitation limit, instrument detection limit, etc.).
PARUN	N12	No	No	No	No	Parameter Uncertainty	The uncertainty of a measured value due to a measuring technique (expressed as plus or minus some value). (Formerly in the format N12,4 in EDF 1.2a.)
UNITS	C10	No	No	Yes	Yes	Units of Measure	The units for the parameter value measurement.
RT	N7	No	No	No	No	Retention Time	The retention time of a tentatively identified compound (TIC), reported in minutes (min). (Formerly in the format N7,2 in EDF 1.2a.)
DILFAC	N10	No	No	No	Yes	Dilution Factor	The numeric factor indicating the level of sample dilution. (Formerly in the format N10,3 in EDF 1.2a.)
CLREVDATE	D8	No	No	No	No	Control Limit Revision Date	The date a control limit is established.
SRM	C12	No	No	Yes	Yes	Standard Reference Material	The code identifying the standard reference material used in the analysis.
LNOTE	C20	No	No	Yes	No	Laboratory Result Notes	The code identifying notes pertaining to analytical performance irregularities that apply to a single analyte.
PROCEDURE_NAME	C240	No	No	No	No	Procedure Name	The method title as defined by the analysis laboratory.

Field Name	Attrb	PK	FK	VVL	REQ	Dscr. Name	Definition
LAB_METH_GRP	C25	Yes	Yes	No	No	Lab Method Group	The unique identifier for a group of methods as defined by the laboratory.
METH_DESIGN_ID	C25	Yes	Yes	No	No	Method Design ID	The unique identifier for the design of an analytical method.
RES_FF_1	C25	No	No	No	No	Results Free Field 1	Results free-entry field 1.
RES_FF_2	C25	No	No	No	No	Results Free Field 2	Results free-entry field 2.
RES_FF_3	C25	No	No	No	No	Results Free Field 3	Results free-entry field 3.
RES_FF_4	C25	No	No	No	No	Results Free Field 4	Results free-entry field 4.
RES_FF_5	C25	No	No	No	No	Results Free Field 5	Results free-entry field 5.

3.4 EDFQC: The QC Information File

The quality assurance information in the QC file is associated with an analytical result contained in the RESULTS file. The QC records contain information on blanks, spikes, duplicates, and standard reference materials. No calculated results are required for this file. All QC calculations are performed by the database receiving the electronic deliverable.

QC samples are entered into the QC file based upon the QC batch (*LABLOTCTL*) with which they are associated. The *LABLOTCTL* allows the environmental samples to be grouped with their QC samples in order to evaluate the quality of the analytical results. The *LABLOTCTL* is an arbitrary number assigned by the laboratory to represent a group of samples prepared together, sharing the same QC samples. Table 5, on page 3, presents the QC file structure and field attributes.



3.4.1 File Guidelines and Restrictions:

- Primary Key Fields: *MATRIX*, *LABCODE*, *LABLOTCTL*, *ANMCODE*, *PARLABEL*, *QCCODE*, and *LABQCID* comprise the primary key. (*LAB_METH_GRP* and *METH_DESIGN_ID* are non-required fields that act as primary key fields when populated.)
- All spiked or split samples, and all laboratory-generated QC samples must be entered into this file.
- All QC data from subcontracted laboratories must be entered into this file.

3.4.2 Field Guidelines and Restrictions:

- Required Fields: *MATRIX*, *LABCODE*, *LABLOTCTL*, *ANMCODE*, *PARLABEL*, *QCCODE*, *LABQCID*, and *UNITS* require entry.
- Valid Value Fields: *MATRIX*, *LABCODE*, *QCCODE*, *ANMCODE*, *PARLABEL*, and *UNITS* require valid value entries. Up-to-date lists of valid value codes and their definitions can be downloaded from www.enabl.com.

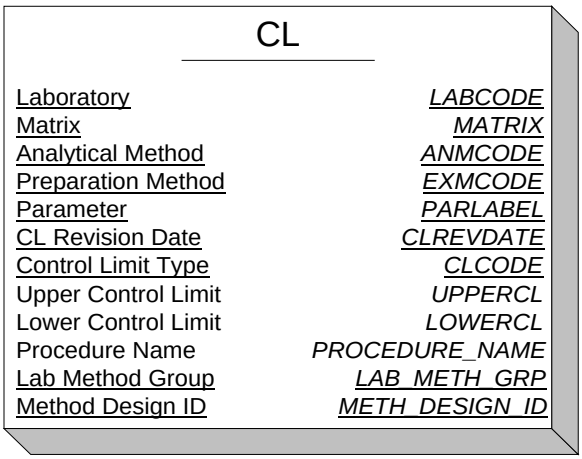
- Non-Required Fields: *PROCEDURE_NAME*, *LAB_METH_GRP*, and *METH_DESIGN_ID* may be omitted from the deliverable if using the COELT tool to produce EDF.
- The valid value entered into the *QCCODE* field is the *QCCODE* of the *LABQCID* sample.
- The *EXPECTED* value is the expected result of the *LABQCID* sample (i.e., **the *EXPECTED* field result for a matrix spike is the value of the spike plus the value of the original sample, *LABREFID***).
- *EXPECTED* should be blank for laboratory-generated blanks (i.e., *QCCODE* is "LB" or "RS").
- *LABREFID* should be blank for laboratory-generated blanks, reference materials, calibration standards, and spiked blanks (i.e., *QCCODE* is "LB," "RS," "RM/KD," "IC," "CC," or "BS/BD").
- *LABCODE* reflects the laboratory that receives the sample, even if the sample has been subcontracted out.

Table 5: EDFQC (QC) Format

Field Name	Attrb	PK	FK	VVL	REQ	Dscr. Name	Definition
MATRIX	C2	Yes	Yes	Yes	Yes	Matrix	The code identifying the sample matrix as determined by the laboratory (e.g., water, soil, etc.).
LABCODE	C4	Yes	Yes	Yes	Yes	Laboratory	The code identifying the laboratory that receives the sample.
LABLOTCTL	C10	Yes	No	No	Yes	Preparation Batch Number	The unique identifier for a preparation and handling batch.
ANMCODE	C7	Yes	Yes	Yes	Yes	Analytical Method	The code identifying the method of analysis.
PARLABEL	C12	Yes	Yes	Yes	Yes	Parameter	The code identifying the analyte (parameter).
QCCODE	C3	Yes	Yes	Yes	Yes	QC Type	The code identifying the type of sample (e.g., laboratory-generated, environmental, etc.).
LABQCID	C12	Yes	No	No	Yes	Laboratory QC Sample ID	The unique identification number assigned to the sample by the laboratory.
LABREFID	C12	No	No	No	No	Laboratory Reference ID	The laboratory sample ID of the quality control reference sample.
EXPECTED	N14	No	No	No	No	Expected Parameter Value	The target result for a quality control sample or surrogate spike. (Formerly in the format N14,4 in EDF 1.2a.)
UNITS	C10	No	No	Yes	Yes	Units of Measure	The units for the parameter value measurement.
PROCEDURE_NAME	C240	No	No	No	No	Procedure Name	The method title as defined by the analysis laboratory.
LAB_METH_GRP	C25	Yes	Yes	No	No	Lab Method Group	The unique identifier for a group of methods as defined by the laboratory.
METH_DESIGN_ID	C25	Yes	Yes	No	No	Method Design ID	The unique identifier for the design of an analytical method.

3.5 EDFCL: The Quality Control Limit Information File

This file contains control limit information concerning the QC results. The file does not have to be revised unless new control charts are generated. However, for tracking purposes, it must be submitted with each digital deliverable. Table 6, on page 3, presents the CL file structure and field attributes.



3.5.1 File Guidelines and Restrictions:

- Primary Key Fields: *MATRIX*, *LABCODE*, *ANMCODE*, *EXMCODE*, *PARLABEL*, *CLCODE*, and *CLREVDATE* comprise the primary key. (*LAB_METH_GRP* and *METH_DESIGN_ID* are non-required fields that act as primary key fields when populated.)
- All results with associated CL criteria require associated entry in this file.
- When control limit entry is required, both accuracy and precision limits must be entered, except in the case of calibrations and lab replicates (i.e., *QCCODE* is "IC," "CC," or "LR"), which require only precision limits.

3.5.2 Field Guidelines and Restrictions:

- Required Fields: *LABCODE*, *MATRIX*, *ANMCODE*, *EXMCODE*, *PARLABEL*, *CLREVDATE*, *CLCODE*, and *UPPERCL* require entry.
- Valid Value Fields: *MATRIX*, *LABCODE*, *CLCODE*, *ANMCODE*, *EXMCODE*, and *PARLABEL* require valid value entries. Up-to-date lists of valid value codes and their definitions can be downloaded from www.enabl.com.
- Non-Required Fields: *PROCEDURE_NAME*, *LAB_METH_GRP*, and *METH_DESIGN_ID* may be omitted from the deliverable if using the COELT tool to produce EDF.
- Use *UPPERCL* for relative percent difference (RPD) and upper accuracy recovery limit entries.

- *LOWERCL* should be zero for RPD (i.e., precision) entries.
- The *LABCODE* field reflects the laboratory that performed the analysis (i.e., if a subcontracted laboratory performed the analysis, the *LABCODE* would be the valid value for the subcontracted laboratory [*SUB*]).

Table 6: EDFCL (CL) Format

Field Name	Attrb	PK	FK	VVL	REQ	Dscr. Name	Definition
LABCODE	C4	Yes	Yes	Yes	Yes	Laboratory	The code identifying the laboratory that analyzes the sample.
MATRIX	C2	Yes	Yes	Yes	Yes	Matrix	The code identifying the sample matrix as determined by the laboratory (e.g., water, soil, etc.).
ANMCODE	C7	Yes	Yes	Yes	Yes	Analytical Method	The code identifying the method of analysis.
EXMCODE	C7	Yes	Yes	Yes	Yes	Preparation Method	The code identifying the method of preparation.
PARLABEL	C12	Yes	Yes	Yes	Yes	Parameter	The code identifying the analyte (parameter).
CLREVDATE	D8	Yes	Yes	No	Yes	Control Limit Revision Date	The date a control limit is established.
CLCODE	C6	Yes	No	Yes	Yes	Control Limit Type	The code identifying the type of quality control limit.
UPPERCL	N4	No	No	No	Yes	Upper Control Limit	The upper control limit of a quality control criterion.
LOWERCL	N4	No	No	No	No	Lower Control Limit	The lower control limit of a quality control criterion.
PROCEDURE_NAME	C240	No	No	No	No	Procedure Name	The method title as defined by the analysis laboratory.
LAB_METH_GRP	C25	Yes	No	No	No	Lab Method Group	The unique identifier for a group of methods as defined by the laboratory.
METH_DESIGN_ID	C25	Yes	No	No	No	Method Design ID	The unique identifier for the design of an analytical method.

3.6 EDFNARR: The Narrative File

The NARRATIVE file provides a means to transfer descriptive information about analyses that do not easily fit in a standardized format. This file does not require a specific format but should be delivered as an ASCII file.

It is recommended that a header record be included, containing the following information in comma/quote delimited format:

- Laboratory Report Number (*LAB_REPNO)*
- Laboratory (*LABCODE)*
- Laboratory Report Date (*REP_DATE)*
- EDD Version Number (*EDD_VERSION)* (e.g., EDF 1.2i)

An example NARRATIVE file might look like the following:

“LABREPORT#001”,“LAB1”, “01/11/2001”, “EDF 1.2i”

The following issues were encountered…

Signed By:
Title:
Date:

---

4 Flat File Format

The following Chapter describes the flat file format of EDF, which includes one large file of data results (EDFFLAT) that links to the CL file described in Section 3.5 and Table 6.

4.1 EDFFLAT: The Flat File

This file contains all of the data fields from the SAMPLE, TEST, RESULTS, and QC files of the relational format in one large "flat" file. This flat file links to the CL file through the same key fields with which the RESULTS file links to the CL file. The flat file may be in the fixed length, tab delimited, or CSV delimited formats as discussed in Chapter 4. For details on the CL file, please refer to Section 3.5.

EDFFLAT

Location ID (Field Point Name)	*LOCID (FIELD_PT_NAME)*
Collection Date	*LOGDATE*
Collection Time	*LOGTIME*
Field Organization	*LOGCODE*
COC Sample ID	*SAMPID*
Matrix	*MATRIX*
Project Name	*PROJNAME*
Work Order Number	*LABWO*
Global ID	*GLOBAL_ID*
Laboratory	*LABCODE*
Lab Sample ID	*LABSAMPID*
QC Type	*QCCODE*
Analytical Method	*ANMCODE*
Modified Parameter List	*MODPARLIST*
Preparation Method	*EXMCODE*
Prep Batch Number	*LABLOTCTL*
Leach Method	*LCHMETH*
Analysis Date	*ANADATE*
Preparation Date	*EXTDATE*
Run Number	*RUN_NUMBER*
Received Date	*RECDATE*
COC Number	*COCNUM*
Basis	*BASIS*
Preservative	*PRESCODE*
Subcontracted Laboratory	*SUB*
Report Date	*REP_DATE*
Lab Report Number	*LAB_REPNO*
Approved By	*APPRVD*
Laboratory Test Notes	*TLNOTE*
Primary Value Type	*PVCCODE*
Parameter	*PARLABEL*
Parameter Value	*PARVAL*
Parameter Value Qualifier	*PARVQ*
Method Detection Limit	*LABDL*
Reporting Limit	*REPDL*
Reporting Limit Qualifier	*REPDLVQ*
Parameter Uncertainty	*PARUN*
Units	*UNITS*
Retention Time	*RT*
Dilution Factor	*DILFAC*
CL Revision Date	*CLREVDATE*
Standard Ref. Material	*SRM*
Lab Reference ID	*LABREFID*
Expected Parameter Value	*EXPECTED*
Laboratory Result Notes	*RLNOTE*
User Administrative ID	*USER_ADMIN_ID*
COC Matrix	*COC_MATRIX*
Data Quality Objectives ID	*DQO_ID*
Requested Method Group	*REQ_METHOD_GRP*
Procedure Name	*PROCEDURE_NAME*
Method Design ID	*METH_DESIGN_ID*
Lab Method Group	*LAB_METH_GRP*
Cleanup Method	*CLEANUP*
Results Free Field 1	*RES_FF_1*
Results Free Field 2	*RES_FF_2*
Results Free Field 3	*RES_FF_3*
Results Free Field 4	*RES_FF_4*
Results Free Field 5	*RES_FF_5*

Table 7: EDFFLAT Format

Field Name	Attrb	PK	FK	VVL	REQ	Dscr. Name	Definition
LOCID (FIELD_PT_NAME)	C10	No	No	No	No	Location ID (Field Point Name)	The unique identifier for the sample's location, as identified by the organization collecting the sample. This field may be used to enter a Field Point Name.
LOGDATE	D8	Yes	No	No	Yes	Collection Date	The date a field sample is collected.
LOGTIME	C4	Yes	No	No	Yes	Collection Time	The time that a field sample is collected, recorded using 24-hour military time.
LOGCODE	C4	Yes	No	Yes	Yes	Field Organization	The code identifying the company collecting the samples or performing field tests.
SAMPID	C25	Yes	No	No	Yes	COC Sample ID	The unique identifier representing a sample, assigned by the consultant, as submitted to the laboratory on a chain-of-custody.
MATRIX	C2	Yes	No	Yes	Yes	Matrix	The code identifying the sample matrix as determined by the laboratory (e.g., water, soil, etc.).
PROJNAME	C25	No	No	No	Yes	Project Name	The identification assigned to the project by the organization performing the work.
LABWO	C7	No	No	No	Yes	Work Order Number	A delivery order number associated with the contract.
GLOBAL_ID	C12	No	No	No	Yes	Global ID	The unique identifier for a regulated facility or site.
LABCODE	C4	Yes	No	Yes	Yes	Laboratory	The code identifying the laboratory that receives the sample.
LABSAMPID	C12	Yes	No	No	Yes	Laboratory Sample ID	The unique identification number assigned to the sample by the laboratory.
QCCODE	C3	Yes	No	Yes	Yes	QC Type	The code identifying the type of sample (e.g., laboratory-generated, environmental, etc.).
ANMCODE	C7	Yes	No	Yes	Yes	Analytical Method	The code identifying the method of analysis.

Field Name	Attrb	PK	FK	VVL	REQ	Dscr. Name	Definition
MODPARLIST	L1	No	No	No	Yes	Modified Parameter List	A field indicating whether the parameter list of an analytical method has been modified.
EXMCODE	C7	Yes	No	Yes	Yes	Preparation Method	The code identifying the method of preparation.
LABLOTCTL	C10	Yes	No	No	Yes	Preparation Batch Number	The unique identifier for a preparation and handling batch.
LCHMETH	C10	No	No	Yes	No	Leach Method	The code identifying the method of leaching.
ANADATE	D8	Yes	No	No	Yes	Analysis Date	The date the sample (aliquot, extract, digest and/or leachate) is analyzed.
EXTDATE	D8	No	No	No	Yes	Preparation Date	The date that a sample is prepared for analysis.
RUN_NUMBER	N2	Yes	No	No	Yes	Run Number	The numeric code distinguishing multiple or repeat analysis of a sample by the same method on the same day.
RECDATE	D8	No	No	No	Yes	Received Date	The date the sample is received by the laboratory doing the analysis.
COCNUM	C16	No	No	No	No	Chain-of-Custody Number	The number assigned to the chain-of-custody.
BASIS	C1	No	No	Yes	Yes	Basis	The code used to distinguish whether a sample is reported as dry or wet weight, filtered or not filtered.
PRESCODE	C15	No	No	Yes	No	Preservative	The code identifying the type of preservative added to the sample.
SUB	C4	No	No	Yes	Yes	Subcontracted Laboratory	The code identifying the subcontracted laboratory.
REP_DATE	D8	No	No	No	No	Report Date	The date of the laboratory report.
LAB_REPNO	C20	No	No	No	No	Laboratory Report Number	The unique identifier for the laboratory report, assigned by the laboratory.
APPRVD	C3	No	No	No	No	Approved By	The initials of the individual approving the laboratory report.

Field Name	Attrb	PK	FK	VVL	REQ	Dscr. Name	Definition
TLNOTE	C20	No	No	Yes	No	Laboratory Test Notes	The code identifying notes pertaining to analytical performance irregularities that apply to the entire test.
PVCCODE	C2	Yes	No	Yes	Yes	Primary Value Type	The code identifying whether a sample result is a primary or a confirmatory value.
PARLABEL	C12	Yes	No	Yes	Yes	Parameter	The code identifying the analyte (parameter).
PARVAL	N14	No	No	No	Yes	Parameter Value	The analytical value for a compound, analyte, or physical parameter. (Formerly in the format N14,4 in EDF 1.2a.)
PARVQ	C2	No	No	Yes	Yes	Parameter Value Qualifier	The code identifying the qualifier of an analytical result (e.g., greater than, equal to, etc.).
LABDL	N9	No	No	No	No	Method Detection Limit	The laboratory-established method detection limit, adjusted for the particular sample preparation (e.g., weight, volume, or dilution). (Formerly in the format N9,4 in EDF 1.2a.)
REPDL	N9	No	No	No	No	Reporting Limit	The laboratory-established reporting limit, adjusted for the particular sample preparation (e.g., weight, volume, or dilution). (Formerly in the format N9,4 in EDF 1.2a.)
REPDLVQ	C3	No	No	Yes	Yes	Reporting Limit Qualifier	The code identifying the type of reporting limit (e.g., practical quantitation limit, instrument detection limit, etc.).
PARUN	N12	No	No	No	No	Parameter Uncertainty	The uncertainty of a measured value due to a measuring technique (expressed as plus or minus some value). (Formerly in the format N12,4 in EDF 1.2a.)
UNITS	C10	No	No	Yes	Yes	Units of Measure	The units for the parameter value measurement.
RT	N7	No	No	No	No	Retention Time	The retention time of a tentatively identified compound (TIC), reported in minutes (min).

Field Name	Attrb	PK	FK	VVL	REQ	Dscr. Name	Definition
DILFAC	N10	No	No	No	Yes	Dilution Factor	The numeric factor indicating the level of sample dilution. (Formerly in the format N10,3 in EDF 1.2a.)
CLREVDATE	D8	No	No	No	No	Control Limit Revision Date	The date a control limit is established.
SRM	C12	No	No	Yes	Yes	Standard Reference Material	The code identifying the standard reference material used in the analysis.
LABREFID	C12	No	No	No	No	Laboratory Reference ID	The laboratory sample ID of the quality control reference sample.
EXPECTED	N14	No	No	No	No	Expected Parameter Value	The target result for a quality control sample or surrogate spike. (Formerly in the format N14,4 in EDF 1.2a.)
RLNOTE	C20	No	No	Yes	No	Laboratory Result Notes	The code identifying notes pertaining to analytical performance irregularities that apply to a single analyte.
USER_ADMIN_ID	C25	No	No	No	No	User Administrative ID	A user-defined administrative field.
COC_MATRIX	C2	No	No	Yes	No	COC Matrix	The code identifying the sample matrix as noted on the chain-of-custody (e.g., water, soil, etc.).
DQO_ID	C25	No	No	No	No	Data Quality Objectives ID	The unique identifier representing the data quality objectives.
REQ_METHOD_GRP	C25	No	No	No	No	Requested Method Group	The unique identifier for the method or group of methods requested by the client for analysis of the sample.
PROCEDURE_NAME	C240	No	No	No	No	Procedure Name	The method title as defined by the analysis laboratory.
METH_DESIGN_ID	C25	Yes	No	No	No	Method Design ID	The unique identifier for the design of an analytical method.
LAB_METH_GRP	C25	Yes	No	No	No	Lab Method Group	The unique identifier for a group of methods as defined by the laboratory.

Field Name	Attrb	PK	FK	VVL	REQ	Dscr. Name	Definition
CLEANUP	C15	No	No	Yes	No	Cleanup Method	The code identifying the method of cleanup performed.
RES_FF_1	C25	No	No	No	No	Results Free Field 1	Results free-entry field 1.
RES_FF_2	C25	No	No	No	No	Results Free Field 2	Results free-entry field 2.
RES_FF_3	C25	No	No	No	No	Results Free Field 3	Results free-entry field 3.
RES_FF_4	C25	No	No	No	No	Results Free Field 4	Results free-entry field 4.
RES_FF_5	C25	No	No	No	No	Results Free Field 5	Results free-entry field 5.

5 File, Record, and Data Field Requirements

It is recommended that file, record, and data field requirements identified below are adhered to in order to generate acceptable EDDs.

5.1 File and Record Requirements

An EDD may be submitted as fixed length or comma separated value (CSV) delimited (also known as "comma/quote delimited") ASCII files. All files, regardless of the format, must have the file extension *.TXT to be valid.

Each line of data is equivalent to a single record in the data submission. Each record is made up of distinct fields of information. A record cannot be dependent on another record or field for data (i.e., each data record must be autonomous of other data records). Valid data must be entered in each record. Listed below are the file and record specifications for entering each record of data in its specified file.

- The column heading or field name is not required in an ASCII file. This information is not part of the file and should be omitted. Only authorized codes from the valid value list should be keyed into fields requiring valid values.
- Do not create left margins. In each file, every record starts in the farthest left position of "position number 1." If entering the data via a spreadsheet, set the left margin at zero and the right margin at the end position of the last field of the record. The first record or row in the file, and every subsequent record or row, must contain valid data. Blank or empty rows or records are not allowed in ASCII files.
- Every record within a file must be unique. If, for each key field, a record's data appears exactly the same in another record, these two records are considered to be duplicate records.

5.2 Data Field Requirements

When producing the fixed or CSV delimited formats, data element formats (attributes) must be strictly followed. Valid data must always be entered for every field. **Do not add, delete, or otherwise omit any field in any format (with the exception of optional fields that may be omitted).**

In the fixed length format, data fields in a file are limited to a certain number of spaces and the data must be in a specific position. Character data must be left justified within a field. Numeric data must be right justified within a field. If the information to be entered is shorter than the field width, insert blank spaces in the field's remaining positions. If the data to be entered is longer than the allowed field width, the data must be shortened to a unique identifier or significant value.

The start- and end-position numbers indicate the exact character locations where the applicable data must be placed in the file. There are some cases where the field is a single character wide. It, therefore, has the same start- and end-position number. The single character of data must be put in that position of the record.

For the CSV delimited format, field length is still important in that data cannot exceed the length of the field, but blank spaces do not need to be entered when a value is shorter than the field's length. For example, when entering a *LABSAMPID*, which is a C12 field, if the value to be entered is only C5, in the CSV delimited format it would look like:

"12345","next field entry"

In the fixed length format, it would look like:

12345…….next field entry
(where the dots represents 7 blank spaces before the next field).

5.3 EDD Submittal

EDDs should be submitted on a per laboratory report basis. Hence, as a laboratory report is completed and converted into the EDF, it is recommended that it be processed for submittal. Prior to submittal, the EDD must pass consistency checking using the Electronic Deliverable Consistency Checker (EDCC). The EDCC is a software program that checks each data submission for the proper EDF format, warns the user of potential formatting problems, and reports the results of the consistency check.

The recommended submittal process is as follows:

- Include an EDCC Error Report with each submittal.
- Each of the five files and the NARRATIVE file of the relational format require the following names: EDFSAMP.TXT, EDFTEST.TXT, EDFRES.TXT, EDFQC.TXT, EDFCL.TXT, and EDFNARR.TXT. The files of the flat file format require the names EDFFLAT.TXT and EDFCL.TXT.
- A hard copy of the laboratory report printed directly from the electronic data should be provided with the EDD delivery.
- EDDs may be submitted via e-mail, on CD, on disk, or other electronic media, or may be uploaded directly into the Web-based system.
  - For submittal via e-mail: Each report should be compressed with some version of Winzip®, have a "*.ZIP" file extension, be given the name of the *LAB_REPNO* as convention (e.g., "MYLABREPORT1.ZIP," MYLABREPORT2.ZIP," etc.), and be password protected. Multiple zip files may be sent in the same e-mail message.
  - For submittal via CD: Multiple laboratory reports may be placed on a single CD. It is recommended that each report be compressed with some version of Winzip®, have a "*.ZIP" file extension, and be given the name of the *LAB_REPNO* as convention (e.g.,

"MYLABREPORT1.ZIP," MYLABREPORT2.ZIP," etc.). The CD should be clearly labeled with the laboratory name, date, and the contents of the CD (i.e., each report number).

- For submittal via disk: Try to place all files associated with one laboratory report on a single diskette. If the files are too large, compress the files with some version of Winzip® and attempt to place the compressed file onto one diskette. Note, compressed files must be delivered with a "*.ZIP" file extension. It is recommended that each compressed file be given the name of the *LAB_REPNO* as convention (e.g., "MYLABREPORT.ZIP"). Use multiple diskettes only if the compressed file will not fit on a single diskette. Each diskette should be labeled with the laboratory name, date, the report number, and the names of the files supplied on that specific diskette if there are multiple disks. Write-protecting all disks before submittal is recommended.
- For submittal via direct upload into Web-based system: Data uploaded to a Web-based system should conform to the EDF 1.2i data format delivery requirements specified by that particular Web-based system.

Appendix A: Summary of Data Elements

Field Name	In Table(s)	Attrb	Null Allowed	VVL	Descr. Name	Definition	Guidelines & Restrictions
ANADATE	TEST RESULTS EDFFLAT	D8			Analysis Date	The date the sample (aliquot, extract, digest and/or leachate) is analyzed.	Must be in the format YYYYMMDD. Must be later than or equal to *EXTDATE*, *RECDATE*, *LOGDATE*, and earlier than or equal to *REP_DATE*.
ANMCODE	TEST RESULTS QC CL EDFFLAT	C7		Yes	Analytical Method	The code identifying the method of analysis.	Must contain a valid value.
APPRVD	TEST EDFFLAT	C3	Yes*		Approved By	The initials of the individual approving the laboratory report.	No entry for laboratory-generated QC and non-client samples.
BASIS	TEST EDFFLAT	C1		Yes	Basis	The code used to distinguish whether a sample is reported as dry or wet weight, filtered or not filtered.	Must contain a valid value. Valid values for soil samples are "W" or "D" or leachate codes; for water samples "F," "L," or "N."
CLCODE	CL	C6		Yes	Control Limit Type	The code identifying the type of quality control limit.	Must contain a valid value.
CLEANUP	TEST EDFFLAT	C15	Yes	Yes	Cleanup Method	The code identifying the method of cleanup performed.	Non-required field; may be omitted from EDD if using COELT. If populated, must contain a valid value.

Field Name	In Table(s)	Attrb	Null Allowed	VVL	Descr. Name	Definition	Guidelines & Restrictions
CLREVDATE	RESULTS CL EDFFLAT	D8	Yes*		Control Limit Revision Date	The date a control limit is established.	Must be in the format YYYYMMDD. No entry when *QCCODE* is "CS," "NC," "LB," or "RS," and non-spiked parameters (except when *PARVQ* is "SU" or "IN").
COC_MATRIX	SAMPLE EDFFLAT	C2	Yes	Yes	COC Matrix	The code identifying the sample matrix as noted on the chain-of-custody (e.g., water, soil, etc.).	Non-required field; may be omitted from EDD if using COELT. This field provides a link with the COC EDF, representing the sample matrix as identified by the field organization. If populated, must contain a valid value.
COCNUM	SAMPLE EDFFLAT	C16	Yes*		Chain-of-Custody Number	The number assigned to the chain-of-custody.	No entry for laboratory-generated QC and non-client samples.
DILFAC	RESULTS EDFFLAT	N10			Dilution Factor	The numeric factor indicating the level of sample dilution. (Formerly in the format N10,3 in EDF 1.2a.)	Must be greater than zero.
DQO_ID	SAMPLE EDFFLAT	C25	Yes		Data Quality Objectives ID	The unique identifier representing the data quality objectives.	Non-required field; may be omitted from EDD if using COELT. This field provides a link with the COC EDF.
EXMCODE	TEST RESULTS CL EDFFLAT	C7		Yes	Preparation Method	The code identifying the method of preparation.	Must contain a valid value. If no preparation performed enter "NONE." If preparation method is included in analysis method enter "METHOD."
EXPECTED	QC EDFFLAT	N14	Yes*		Expected Parameter Value	The target result for a quality control sample or surrogate spike. (Formerly in the format N14,4 in EDF 1.2a.)	No entry when *QCCODE* is "CS," "NC," "LB," or "RS." For matrix spikes, this value is the amount spiked plus the reference sample *PARVAL*. Enter "100" when *UNITS* are "PERCENT."

Field Name	In Table(s)	Attrb	Null Allowed	VVL	Descr. Name	Definition	Guidelines & Restrictions
EXTDATE	TEST EDFFLAT	D8			Preparation Date	The date that a sample is prepared for analysis.	Must be in the format YYYYMMDD.
GLOBAL_ID	SAMPLE EDFFLAT	C12			Global ID	The unique identifier for a regulated facility or site.	Enter “NA” if not applicable.
LAB_METH_GRP	TEST RESULTS QC CL EDFFLAT	C25	Yes		Lab Method Group	The unique identifier for a group of methods as defined by the laboratory.	Non-required field; may be omitted from EDD if using COELT. This field provides a link with the COC EDF, and acts as a primary key field when populated in EDF.
LAB_REPNO	TEST EDFFLAT	C20	Yes*		Laboratory Report Number	The unique identifier for the laboratory report, assigned by the laboratory.	No entry for laboratory-generated QC and non-client samples.
LABCODE	SAMPLE TEST RESULTS QC CL EDFFLAT	C4		Yes	Laboratory	The code identifying the laboratory that receives the sample.	This field represents the laboratory that receives the sample and is responsible for producing the electronic deliverable in all files except the CL file where it represents the laboratory that performs the analysis. Must contain a valid value.
LABDL	RESULTS EDFFLAT	N9			Method Detection Limit	The laboratory-established method detection limit, adjusted for the particular sample preparation (e.g., weight, volume, or dilution). (Formerly in the format N9,4 in EDF 1.2a.)	Enter zero when *UNITS* is "PERCENT" or *PARVQ* is "TI." Must be adjusted for dilution. Must be greater than or equal to zero.
LABLOTCTL	TEST QC EDFFLAT	C10			Preparation Batch Number	The unique identifier for a preparation and handling batch.	Must uniquely define a group of samples prepared together.

Field Name	In Table(s)	Attrb	Null Allowed	VVL	Descr. Name	Definition	Guidelines & Restrictions
LABQCID	QC	C12			Laboratory QC Sample ID	The unique identification number assigned to the sample by the laboratory.	This is equivalent to the *LABSAMPID*.
LABREFID	QC EDFFLAT	C12	Yes*		Laboratory Reference ID	The laboratory sample ID of the quality control reference sample.	This is the *LABSAMPID* of the reference sample. No entry unless *QCCODE* is "MS/SD" or "LR."
LABSAMPID	TEST RESULTS EDFFLAT	C12			Laboratory Sample ID	The unique identification number assigned to the sample by the laboratory.	Must be unique.
LABWO	SAMPLE EDFFLAT	C7			Work Order Number	A delivery order number associated with the contract.	Entry of "NA" is acceptable.
LCHMETH	TEST EDFFLAT	C10	Yes	Yes	Leach Method	The code identifying the method of leaching.	Must contain a valid value if populated.
LOCID (FIELD_PT_ NAME)	SAMPLE TEST EDFFLAT	C10	Yes		Location ID (Field Point Name)	The unique identifier for the sample's location, as identified by the organization collecting the samples. This field may be used to enter a Field Point Name.	No entry for laboratory-generated QC and non-client samples.
LOGCODE	SAMPLE TEST EDFFLAT	C4	Yes*	Yes	Field Organization	The code identifying the company collecting the samples or performing field tests.	Must contain a valid value. No entry for laboratory-generated QC and non-client samples.
LOGDATE	SAMPLE TEST EDFFLAT	D8	Yes*		Collection Date	The date a field sample is collected.	Must be in the format YYYYMMDD. No entry for laboratory-generated QC and non-client samples. Must be earlier than *RECDATE*, *EXTDATE*, *ANADATE*, and *REP_DATE*.

Field Name	In Table(s)	Attrb	Null Allowed	VVL	Descr. Name	Definition	Guidelines & Restrictions
LOGTIME	SAMPLE TEST EDFFLAT	C4	Yes*		Collection Time	The time that a field sample is collected, recorded using 24-hour military time.	Must be a valid time between 0000 and 2359. No entry for laboratory-generated QC and non-client samples.
LOWERCL	CL	N4			Lower Control Limit	The lower control limit of a quality control criterion.	Must be an integer greater than or equal to zero and less than *UPPERCL*. Enter zero for precision limit.
MATRIX	SAMPLE TEST RESULTS QC CL EDFFLAT	C2		Yes	Matrix	The code identifying the sample matrix as determined by the laboratory (e.g., water, soil, etc.).	This field represents the sample matrix as identified by the laboratory, and must contain a valid value.
METH_DESIGN_ID	TEST RESULTS QC CL EDFFLAT	C25	Yes		Method Design ID	The unique identifier for the design of an analytical method.	Non-required field; may be omitted from EDD if using COELT. This field provides a link with the COC EDF, and acts as a primary key field when populated.
MODPARLIST	TEST EDFFLAT	L1			Modified Parameter List	A field indicating whether the parameter list of an analytical method has been modified.	Must enter "T" (true) or "F" (false) if a parameter from the method parameter list is not reported. The parameter list is not considered modified if extra parameters are reported.
PARLABEL	RESULTS QC CL EDFFLAT	C12		Yes	Parameter	The code identifying the analyte (parameter).	Must contain a valid value.

Field Name	In Table(s)	Attrb	Null Allowed	VVL	Descr. Name	Definition	Guidelines & Restrictions
PARUN	RESULTS EDFFLAT	N12	Yes		Parameter Uncertainty	The uncertainty of a measured value due to a measuring technique (expressed as plus or minus some value). (Formerly in the format N12,4 in EDF 1.2a.)	No entry necessary for non-radiochemical results. If entered, must be greater than or equal to zero.
PARVAL	RESULTS EDFFLAT	N14			Parameter Value	The analytical value for a compound, analyte, or physical parameter. (Formerly in the format N14,4 in EDF 1.2a.)	
PARVQ	RESULTS EDFFLAT	C2		Yes	Parameter Value Qualifier	The code identifying the qualifier of an analytical result (e.g., greater than, equal to, etc.).	Must contain a valid value.
PRESCODE	TEST EDFFLAT	C15	Yes	Yes	Preservative	The code identifying the type of preservative added to the sample.	Must contain a valid value. Multiple codes may be entered, separated by commas (no spaces between values).
PROCEDURE_ NAME	TEST RESULTS QC CL EDFFLAT	C240	Yes		Procedure Name	The method title as defined by the analysis laboratory.	Non-required field; may be omitted from EDD if using COELT. This field may contain descriptive information necessary for the lab to identify a method.
PROJNAME	SAMPLE EDFFLAT	C25	Yes*		Project Name	The identification assigned to the project by the organization performing the work.	No entry for laboratory-generated QC and non-client samples.
PVCCODE	RESULTS EDFFLAT	C2		Yes	Primary Value Type	The code identifying whether a sample result is a primary or a confirmatory value.	Must contain a valid value. There may be only one "PR" result per *LABSAMPID*, *ANMCODE*, *EXMCODE*, and *PARLABEL*.

Field Name	In Table(s)	Attrb	Null Allowed	VVL	Descr. Name	Definition	Guidelines & Restrictions
QCCODE	TEST RESULTS QC EDFFLAT	C3		Yes	QC Type	The code identifying the type of sample (e.g., laboratory-generated, environmental, etc.).	Must contain a valid value.
RECDATE	TEST EDFFLAT	D8	Yes*		Received Date	The date the sample is received by the laboratory doing the analysis.	Must be in the format YYYYMMDD. For laboratory-generated QC samples enter date sample was created (e.g., *EXTDATE*). May be left blank for non-client samples.
REP_DATE	TEST EDFFLAT	D8	Yes*		Report Date	The date of the laboratory report.	Must be in the format YYYYMMDD. No entry for laboratory-generated QC and non-client samples.
REPDL	RESULTS EDFFLAT	N9			Reporting Limit	The laboratory-established reporting limit, adjusted for the particular sample preparation (e.g., weight, volume, or dilution).	Enter zero when *UNITS* is "PERCENT" or *PARVQ* is "TI." Must be adjusted for dilution. Must be greater than or equal to zero.
REPDLVQ	RESULTS EDFFLAT	C3		Yes	Reporting Limit Qualifier	The code identifying the type of reporting limit (e.g., practical quantitation limit, instrument detection limit, etc.).	Must contain a valid value. Enter "NA" when *UNITS* is "PERCENT" or *PARVQ* is "TI."
REQ_METHOD_ GRP	TEST EDFFLAT	C25	Yes		Requested Method Group	The unique identifier for the method or group of methods requested by the client for analysis of the sample.	Non-required field; may be omitted from EDD if using COELT. This field provides a link with the COC EDF.
RES_FF_1	RESULTS	C25	Yes		Results Free Field 1	Results table free-entry field 1.	Non-required field; may be omitted from EDD if using COELT.
RES_FF_2	RESULTS	C25	Yes		Results Free Field 2	Results table free-entry field 2.	Non-required field; may be omitted from EDD if using COELT.

Field Name	In Table(s)	Attrb	Null Allowed	VVL	Descr. Name	Definition	Guidelines & Restrictions
RES_FF_3	RESULTS	C25	Yes		Results Free Field 3	Results table free-entry field 3.	Non-required field; may be omitted from EDD if using COELT.
RES_FF_4	RESULTS	C25	Yes		Results Free Field 4	Results table free-entry field 4.	Non-required field; may be omitted from EDD if using COELT.
RES_FF_5	RESULTS	C25	Yes		Results Free Field 5	Results table free-entry field 5.	Non-required field; may be omitted from EDD if using COELT.
RLNOTE	RESULTS EDFFLAT	C20	Yes	Yes	Laboratory Result Notes	The code identifying notes pertaining to analytical performance irregularities that apply to a single analyte.	Must contain a valid value. Multiple codes may be entered, separated by commas (no spaces between values).
RT	RESULTS EDFFLAT	N7	Yes		Retention Time	The retention time of a tentatively identified compound (TIC), reported in minutes (min). (Formerly in the format N7,2 in EDF 1.2a.)	No entry necessary except when *PARVQ* is "TI." If entered must be greater than or equal to zero.
RUN_NUMBER	TEST RESULTS EDFFLAT	N2			Run Number	The numeric code distinguishing multiple or repeat analysis of a sample by the same method on the same day.	Must be an integer greater than or equal to 1.
SAMPID	SAMPLE TEST EDFFLAT	C25	Yes*		COC Sample ID	The unique identifier representing a sample, assigned by the consultant, as submitted to the laboratory on a chain-of-custody.	This field represents the sample ID as it appears on the COC. No entry for laboratory-generated QC and non-client samples.
SRM	RESULTS EDFFLAT	C12		Yes	Standard Reference Material	The code identifying the standard reference material used in the analysis.	Must contain a valid value. Enter "NA" if no reference material.

Field Name	In Table(s)	Attrb	Null Allowed	VVL	Descr. Name	Definition	Guidelines & Restrictions
SUB	TEST EDFFLAT	C4		Yes	Subcontracted Laboratory	The code identifying the subcontracted laboratory.	Must contain a valid value. Enter "NA" if no analyses are subcontracted.
TLNOTE	TEST EDFFLAT	C20	Yes	Yes	Laboratory Test Notes	The code identifying notes pertaining to analytical performance irregularities that apply to the entire test.	Must contain a valid value. Multiple codes may be entered, separated by commas (no spaces between values).
UNITS	RESULTS QC EDFFLAT	C10		Yes	Units of Measure	The units for the parameter value measurement.	Must contain a valid value.
UPPERCL	CL	N4			Upper Control Limit	The upper control limit of a quality control criterion.	Must be an integer greater than or equal to one and greater than *LOWERCL*.
USER_ADMIN_ID	SAMPLE EDFFLAT	C25	Yes		User Administra-tive ID	A user-defined administrative ID.	Non-required field; may be omitted from EDD if using COELT.

***** Null allowed under special conditions – refer to Guidelines & Restrictions column for details.

Appendix B: Glossary of Terms

Attributes - The format and size attributes of a database field. A field type of C8 is a field that can hold up to eight alphanumeric characters. An N5 field type has a total of 5 spaces available for numbers and decimals, with no restriction on the number of digits to the right of the decimal point other than the overall field size (e.g., 12345 or 123.4 or 1.234). A D8 field type is a date field, formatted as YYYYMMDD ([year][month][day]). An L1 field type is a logic field with expected values of T (True) or F (False).

Blank Spike - A laboratory-generated quality control sample with a known amount of spiked compound, prepared using the same glassware, reagents, solvents, etc., as the associated environmental samples. Blank spikes are used to monitor the laboratory's method accuracy (i.e., how close their result is to a known true value).

COC (Chain-of-Custody) - A form used to track sample custody from sample collection to receipt by the laboratory. Also includes request for analyses and other instructions to the laboratory. The COC is included in the container used to transport samples from the field to the laboratory.

COELT (U.S. Army Corps of Engineers Loading Tool) - A software tool designed for data entry, data export, data verification, and data reporting, used by analytical laboratories to generate EDF deliverables. The current version is 1.2a, and is available to anyone, free of charge.

Database – A collection of information arranged into tables of related data made up of records (rows) and fields (columns) for ease of sorting and manipulation. (Refer to Figure 6.)

Deliverable - A report, data, etc., that is "delivered" to another party, either electronically, or in hard copy format.

EDCC (The Electronic Deliverable Consistency Checker) - A software tool designed to verify LAB EDF deliverables for compliance to the EDF format specifications as described in this document. The current version is 1.2i, and is available to anyone, free of charge.

EDD (Electronic Data Deliverable) - Information stored in a defined format, accessible via a computer (e.g., stored on diskette, internal hard drive, CD ROM, magnetic tape, etc.).

EDF (The Electronic Deliverable Format™) - An electronic data format consisting of related text files in ASCII format. The current version is 1.2i. The EDF consists of multiple deliverables: COC EDF (containing chain-of-custody information), LAB EDF (containing laboratory analytical results information), and others. LAB EDF deliverables can be generated using the COELT software, or other database software. For detailed information on the various EDF formats visit www.enabl.com.

Field - An area of a table (a column) that contains a particular piece of information. One or more fields make a record. Fields are defined by the attributes of format and size. Refer to Figure 6.

File - A named group of electronic data in a defined format.

Foreign Key - A field in a child table that is a primary key field in the related parent table in a data table relationship.

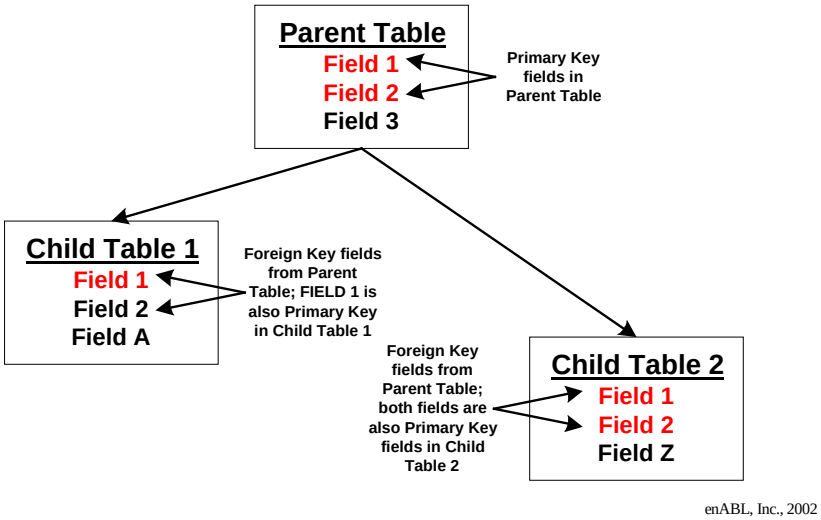


Figure 4: Foreign Key

Free-Entry Field – A field in a table for which there are no restrictions on data entry other than field size and type.

Guidelines and Restrictions - Information provided to the user regarding data entry, data performance, and data delivery expectations.

Hard Copy Report - The laboratory's written, signed report of analytical results for a group of samples in a project.

Location - A permanent, unique identifier assigned to the physical spot from where a field sample is collected, or measurements are taken for a project.

Matrix Spike - A laboratory-generated quality control sample made up of the same matrix as the environmental sample, plus a known quantity of a known substance (spike). Matrix spikes are used to assess matrix interference effects on method accuracy.

Parent-Child Relationship – In a relational database, the relationships between tables and records can be one-to-many (i.e., one record in the first table is related to many records in the second table), or one-to-one (i.e., one record in the first table relates to one record in the second table). In a one-to-many relationship, the record on the "one" end is called the parent, and the record on the "many" end is called the child. A parent record may have many child records, but each child

record has only one parent record. This relationship is called a one-to-many, or parent-child, relationship, as shown in Figure 5.

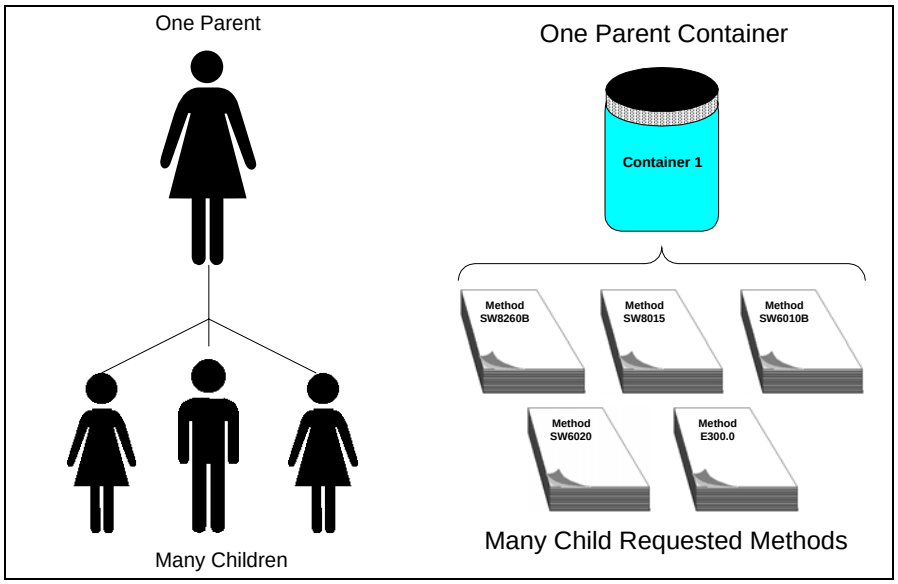


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Figure 5: One-to-Many Parent-Child Relationship

Primary Key – A field or set of fields within a database table that uniquely identifies a record.

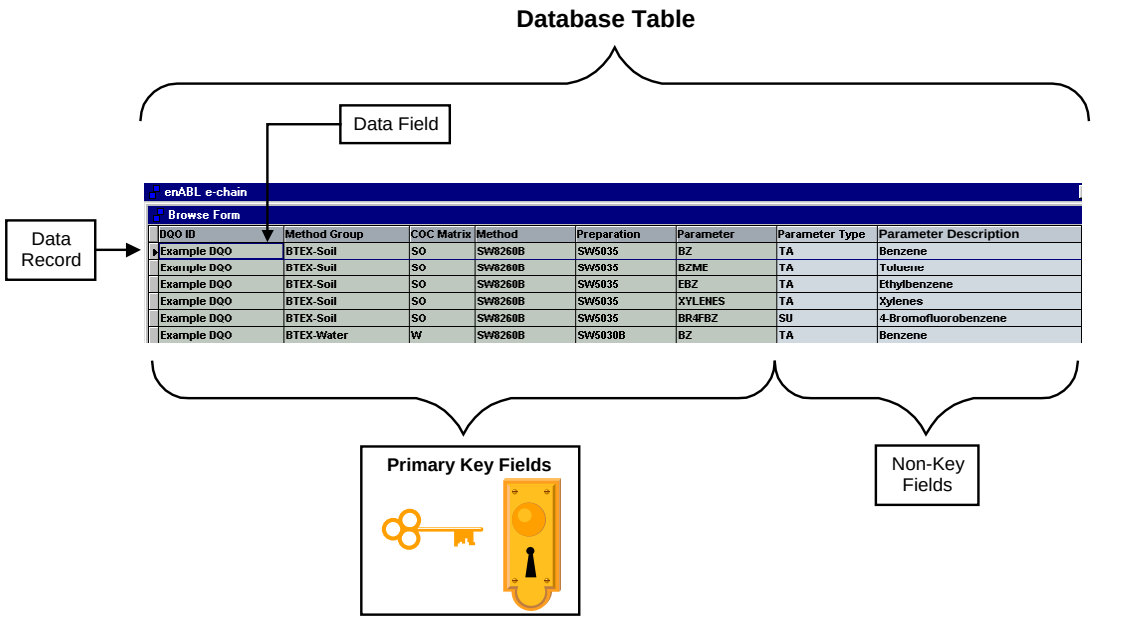

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Figure 6: Primary Key

Record - A line of data (a row) in a table or file made up of distinct fields of information. Refer to Figure 6.

Surrogate - A compound that is similar to the target analyte(s) in chemical composition, extraction, chromatography, and behavior in the analytical process, but that is not normally found in environmental samples. Samples are spiked with known amounts of surrogates as a check on method procedure accuracy. Percent recoveries are calculated for each surrogate and are an indication of the percent recovery of the analytes in the sample.

Table – A format for data that allows for data manipulation within a database. Tables are organized in columns (fields) and rows (records) of information. (Refer to Figure 6.)

Valid Value – A specially-assigned, standardized coded value designating an approved (i.e., "valid") value for entry into a field in a database. Up-to-date lists of valid value codes and their definitions can be downloaded from www.enabl.com.