Texas Environmental Data System

Instruction Manual for Data Providers

Executive Summary

This document provides an overview of the Texas Environmental Data System (TEDS). TEDS captures data for all sites in the TCEQ's remediation programs regardless of the program or rule under which the site is managed. Information submitted to TEDS includes much of the same information included in hardcopy reports, including general site information, spatial coordinates of sampling locations, drilling activities, lithology, well construction information, water levels, and analytical data.

The TCEQ is committed to assisting data providers in the use of TEDS. If you have questions after reviewing this document, please contact your TCEQ Project Manager for more information.

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1.0 Introduction

1.1 What is TEDS?

The TCEQ has launched the Texas Environmental Data System (TEDS) to capture analytical, geologic, and spatial data on remediation sites in Texas. The TCEQ is using software called EQuIS, from EarthSoft, Inc., as the data management system. EQuIS, in conjunction with companion software TCEQ will use to evaluate submitted data, is called the Texas Environmental Data System or TEDS.

TEDS will accept data on all types of remediation sites – Voluntary Cleanup Program, Petroleum Storage Tank program, Industrial and Hazardous Waste Corrective Action sites, Superfund sites, Dry Cleaner Remediation sites, and others.

1.2 Why is the TCEQ Implementing TEDS?

The purpose of TEDS is to provide a data management system whereby data submitted electronically to the TCEQ are then utilized and evaluated in mapping and modeling software applications to better manage remediation sites on both an individual basis and regionally. Use of TEDS will improve evaluation and decision making on contaminant release sites and reduce the time needed to extract information on sites, allow for regional and programmatic evaluation and comparison, allow the ability to perform custom queries and quickly view environmental and geographic data, and improve agency awareness of and response to environmental problems.

As more data is submitted, the more useful this information will be to consultants and the regulated community. Site assessors will be able to use information on surrounding areas to jump start the evaluation on their site and compare one facility with another one nearby.

Please note that submittal of data electronically does not take the place of hardcopy reports. Continue to submit hardcopy reports as directed by rule or guidance. Typically you will submit data to TEDS at the same time you submit the hardcopy report although in some cases, particularly on high priority sites, you may be asked to submit data electronically before the hardcopy report is finished.

1.3 Who do I Call for Help?

The TCEQ can assist you with the data submittal process if you have questions after reading this document. Please contact your TCEQ Project Manager at 512-239-2201 and if you need further assistant then e-mail TCEQ at teds@tceq.texas.gov .

2.0 Definitions

Following are definitions for terms used in this document. Note that these are not legal definitions defined in rule or statute, but are generalized terms used in the implementation of TEDS.

Area of Interest (AOI) – The area of interest may be either the entire facility, in which case there is only one area of interest, or a portion of the facility, typically defined by waste management units, resulting in several areas of interest. The responsible party or consultant defines the AOIs. For more explanation, see Section 4.1.

Central Registry - The Central Registry is a computer application that allows the TCEQ to use a single, centralized area to record common information, such as the company names, addresses, and telephone numbers of those we regulate.

Electronic Data Deliverable (EDD) – An EDD consists of tables of data in an electronic file. The file format can be a text file, a spreadsheet, or a database. Each EDD contains information for only one facility.

Electronic Data Processor (EDP) – The EDP is the application used to check EDDs to ensure the data are configured correctly.

EQuIS – EQuIS is the data management software used in TEDS. EQuIS is an acronym for Environmental Quality Information System and is sold by EarthSoft, Inc.

Facility – There is no legal definition of 'facility' for the purpose of formatting and submitting data to TEDS, but generally a facility (often called a 'site') is the area or property that is under investigation in a TCEQ remediation program and is identified by a TCEQ-assigned Program ID number (e.g., LPST ID number, Solid Waste Registration number, Dry Cleaners Remediation Program number). For more explanation, see 4.1.

Field – A field is a space in the database for data. A field is like a cell in a spreadsheet. Each field has constraints on the type of data (text, numeric) and on its length. Some fields have constraints on exactly which entries are accepted (Reference Values).

Field Name – The name of the field as defined by TEDS. Do not change these names or an error will occur and the data submittal will be rejected.

Format – Often refers to how the TEDS database is setup. The TEDS format is different from other formats used by EPA Regions or other states. Format can also be used to identify the type of file, such as a Microsoft Excel file format.

Location – Locations are distinct points identified by latitude and longitude and/or x,y coordinates. Some locations will also have an elevation (z) or an elevation interval (z1-z2) associates with it. Examples of locations are soil borings, monitoring wells, water wells, surface water sampling points, and other sampling points or points of interest. Each facility and each AOI will also have a point location that represents the facility or AOI as a whole. For more explanation, see Section 4.1.

Record – A record in a database holds the information for one piece of unique data. Similar to a spreadsheet, records are displayed as rows of data for each field in a table. For example, in the Sample table, a record includes the *sample_id, sample_name, sample_matrix_code,* and remaining fields of information for a particular sample.

Reference Value – Reference Values are a list of prescribed entries allowed for input into a field. Some fields are limited to specific reference values to provide consistent data entries and to facilitate searches and the compilation of data. The TEDS *format* specifies which fields are limited to certain reference values.

RN number – A Regulated Entity reference number (RN number) is a unique 11-digit identification number used to identify Regulated Entities in Central Registry. These identifiers begin with "RN" followed by a 9 digit number (e.g., RN123456789). Each Regulated Entity should have only one RN number.

Sign and Submit – The sign and submit process is part of the EDP and is used by the data provider to submit data to TEDS.

Texas Environmental Data System (TEDS) – TEDS consists of the data management software (EQuIS) and associated software applications used by TCEQ to manage remediation projects.

3.0 System Set Up

3.1 Download TEDS Files

Along with this guidance document, you will need the tools to format and submit data to TEDS. These tools are all free and available through the TEDS Format Download page (http://www.earthsoft.com/products/edp/edd-format-for-tceq/). Download and install the two main components to TEDS described below. Note that Microsoft Windows is necessary to run EDP and both a 32-bit and 64 bit version are available.

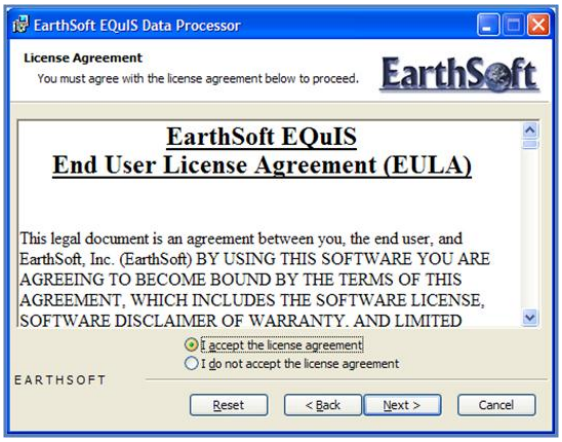
3.1.1 EQuIS Data Processor (EDP)

EDP is the software used to check and submit the data. Load EDP onto the computer you use to submit data via the Web. The EDP application performs a series of checks on the files and identifies records that have errors. This allows you to check and correct EDD files before submittal.

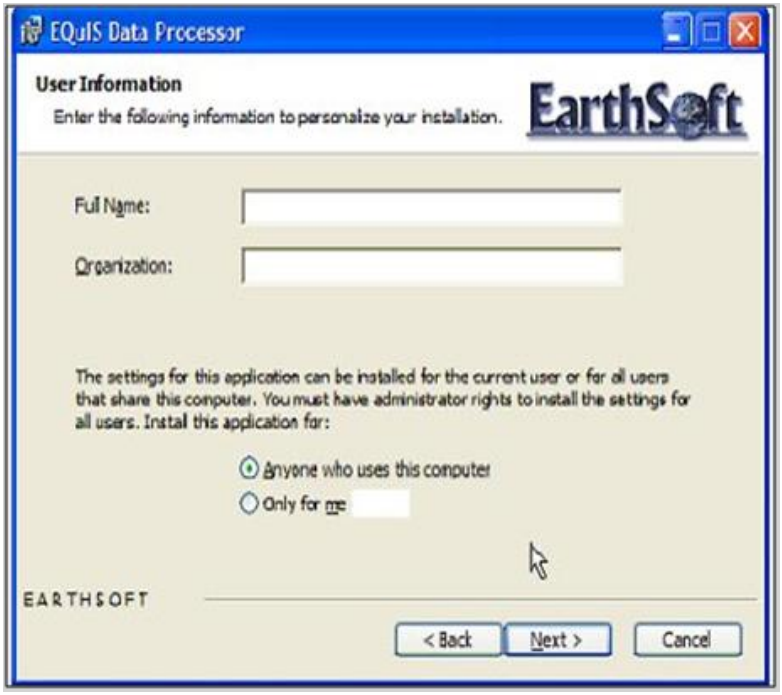
Download the EQuIS Data Processor (EDP) (http://www.earthsoft.com/products/edp/edd-format-for-tceq/). To install EDP now, choose Run. If you prefer, select Save to save the executable file and run the installation later.

Please note the TEDS format requires EDP v5.6. If you have an earlier version of EDP, uninstall it using Add/Remove Programs and install the newest version of EDP.

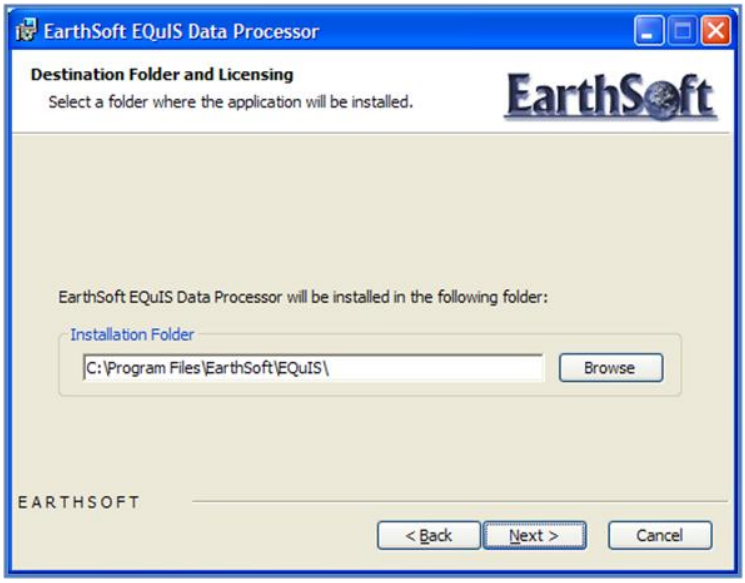
After downloading and during the installation process accept the license agreement and click "Next".



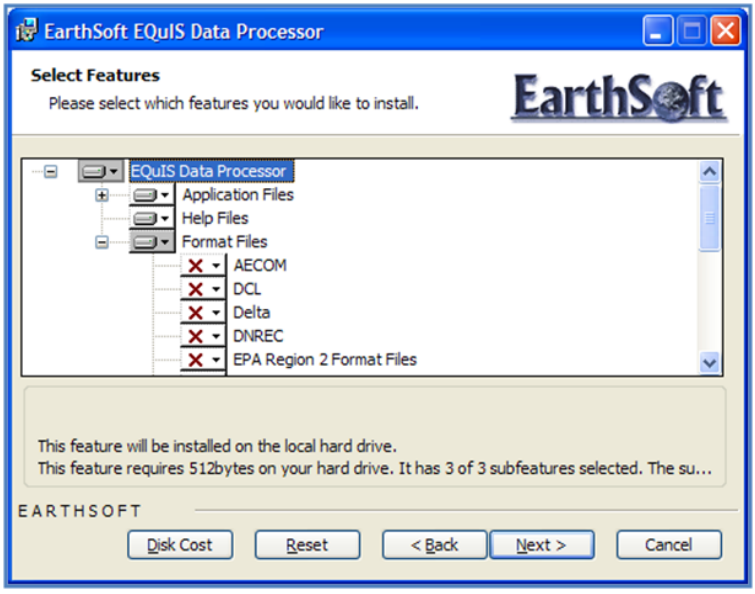
Complete the user information and click Next. This information is required sent to EarthSoft to ensure valid registrants.



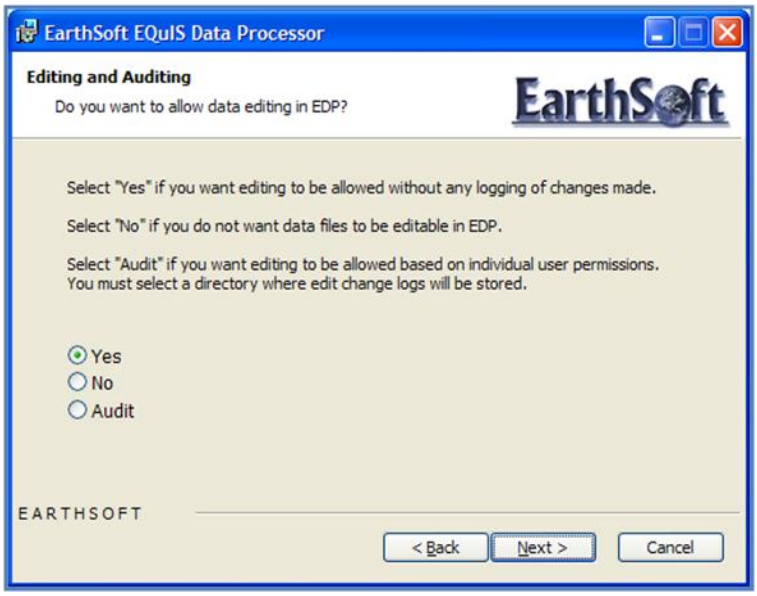
We recommend installing EDP in the default folder (example below is a Windows XP install).



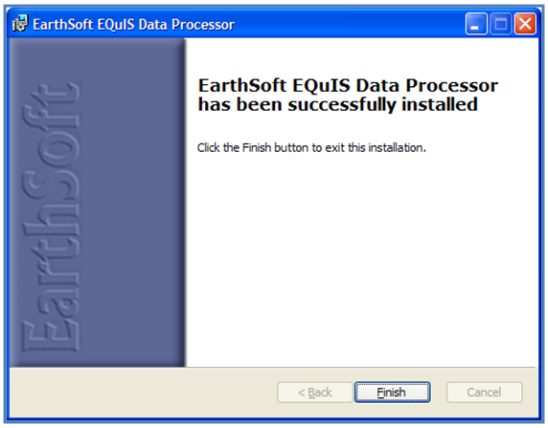
Select the features you would like to install. We recommend not modifying the defaults.



Select “Yes” to allow editing of data while in EDP(selecting “Audit” will create an external file that logs changes to an EDD while in EDP). Select Audit if you have a need for this function, otherwise choose Yes. If you choose No, you will not be able to modify data while in EDP and therefore we do not recommend this option.


EarthSoft EQuIS Data Processor
Editing and Auditing
Do you want to allow data editing in EDP?
EarthSoft
Select "Yes" if you want editing to be allowed without any logging of changes made.
Select "No" if you do not want data files to be editable in EDP.
Select "Audit" if you want editing to be allowed based on individual user permissions.
You must select a directory where edit change logs will be stored.
Yes
No
Audit
EARTHSOFT
< Back
Next >
Cancel


EarthSoft EQuIS Data Processor
Ready to Install the Application
Click Next to begin installation.
EarthSoft
Click the Back button to reenter the installation information or click Cancel to exit the wizard.
EARTHSOFT
< Back
Next >
Cancel


EarthSoft EQuIS Data Processor
EarthSoft
EarthSoft EQuIS Data Processor has been successfully installed
Click the Finish button to exit this installation.
< Back
Finish
Cancel

3.1.2 Install .NET Framework

EDP requires .NET on your computer. To determine if you already have .NET installed, click Start > Control Panel > Add or Remove Programs and compare your version to the one noted on the TEDS Download page. If you do not have .NET or need to upgrade it to the current version, download the latest version of .NET.

3.1.3 The TEDS Format

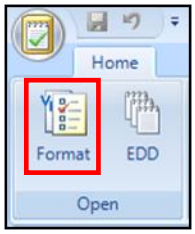
The TEDS format is the structure that specifies the data and business rules necessary for data submittal to the TEDS database. Loading the TEDS format the first time initiates the license registration process with EarthSoft. Once the registration is complete, you will then be able to load the TEDS format and submit EDDs.

Download the TEDS format file from the TEDS Download page, unzip the file, and place the files in the following directory: C:\Program Files\EarthSoft\EQuIS\Formats\TEDS. You may have to create this folder if it does not already exist or under Windows 7 it may be called the Program Files (x86) instead if you are installing 32-bit version

3.1.3.1 *Register the TEDS Format*

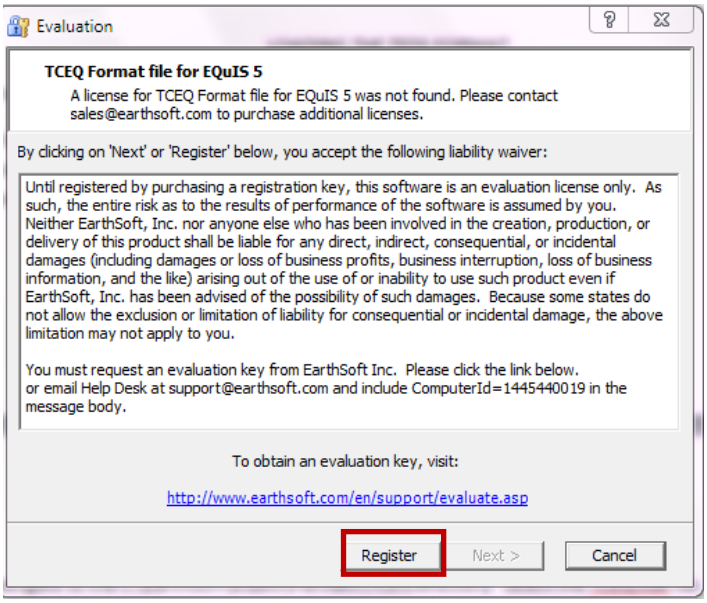
Click on your Start menu > All Programs > EarthSoft and select EQuIS Data Processor to open EDP.

Select Format from the upper left hand corner of EDP.

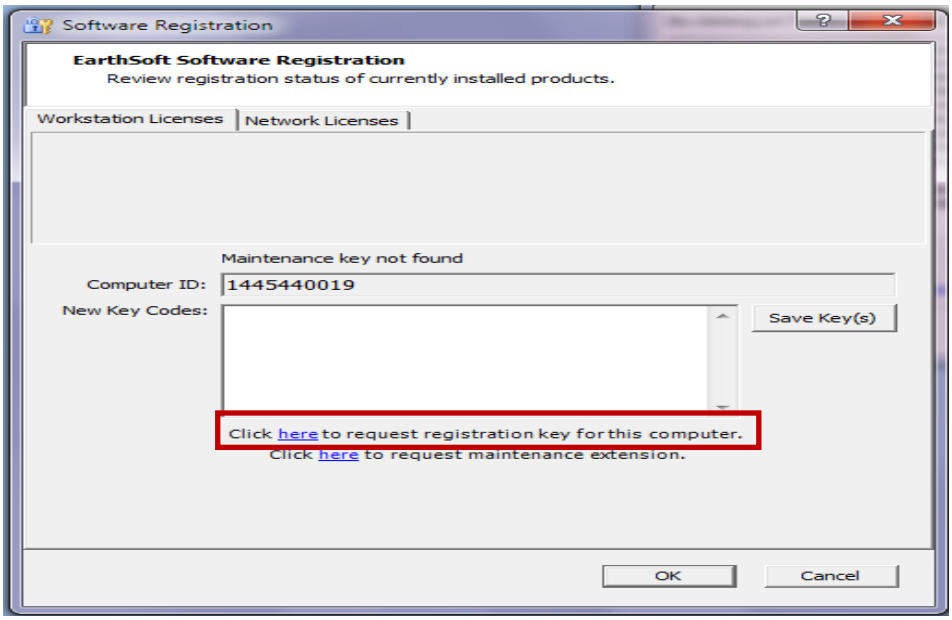


Navigate to the C:\Program Files\EarthSoft\EQuIS\Formats\TEDS directory. Select the TEDS.xse file.

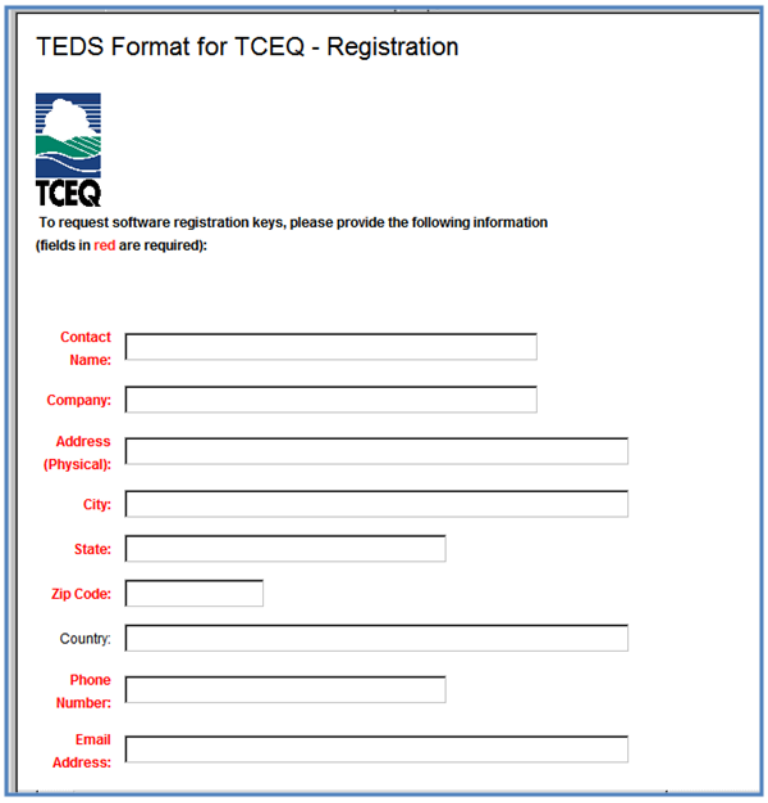
After selecting the TEDS.xse file, you will be prompted to register the format. In the evaluation screen, select the Register button.



Select here where it reads “Click here to request registration key for this computer.”



Complete the requested information in the Client Information window.



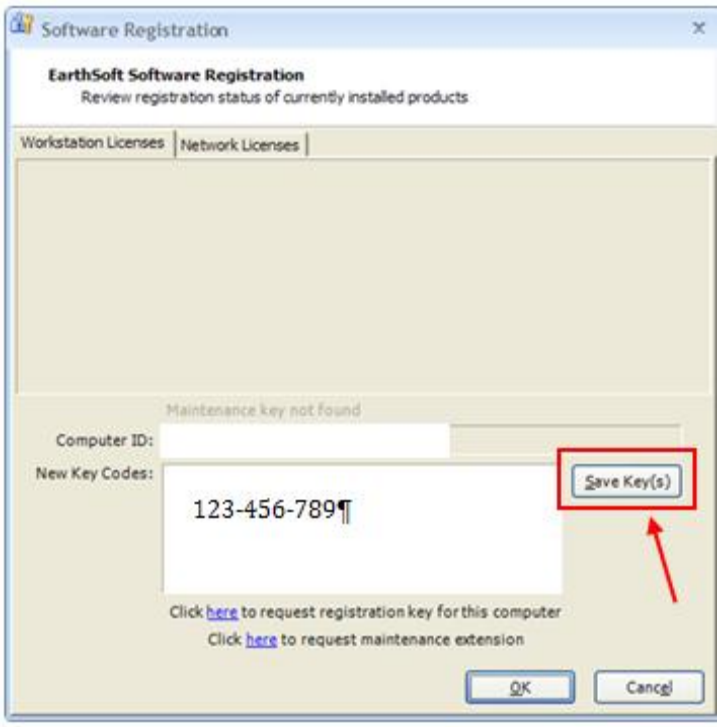
Scroll down to the Format(s) section. Select TCEQ Format File under the Format(s) section and Register Local License under License Type section.

Near the bottom of the registration page, select Submit Request(s).

Please note that you will receive a confirmation email automatically after submitting this form. If you do not receive the confirmation email, contact the EarthSoft Help Desk (support@earthsoft.com) for assistance. Please do not contact TCEQ about this issue.

EarthSoft will approve your registration and send an email with your registration keys.

Copy the registration codes into the New Key Codes box on the Work Station tab registration window of EDP. Then click Save Key(s).



Select OK.

You should see this screen:

If you receive an error message instead of Registration succeeded, reply to the email from EarthSoft and include the text of the error message.

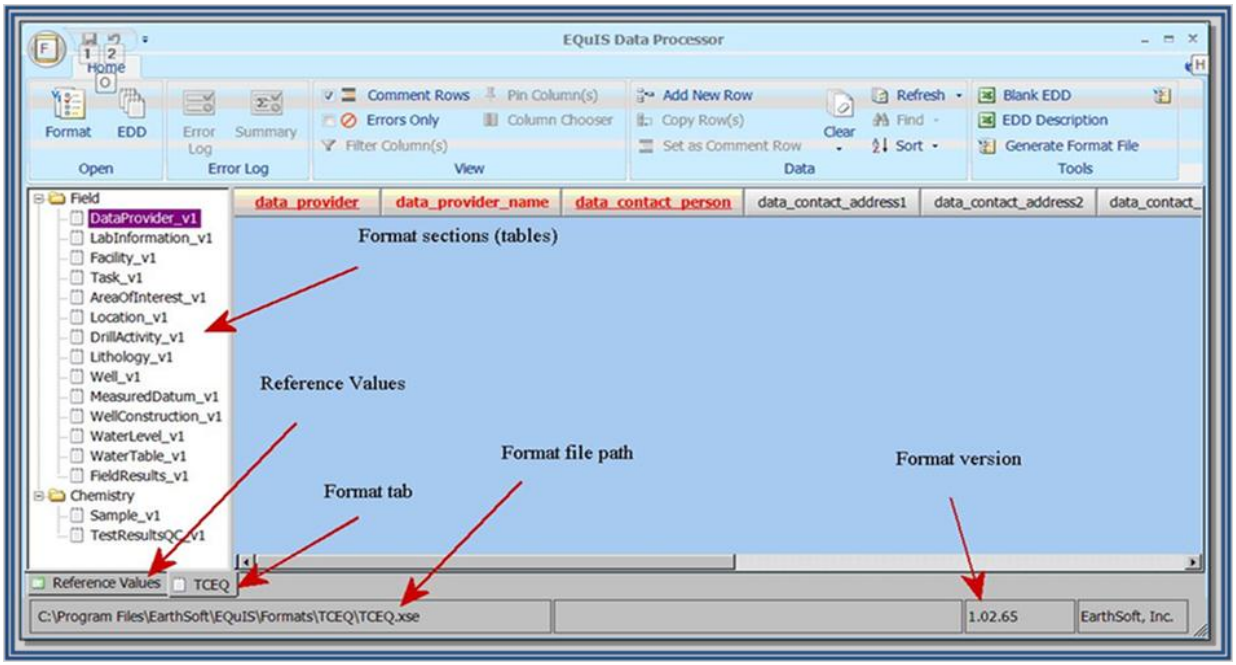
Now that the license registration process is complete, you will not have to do this again unless you later download a newer version of EDP.

3.1.3.2 *Load the TEDS Format*

In EDP, load the TEDS format by selecting Format from the upper left hand side of the window.

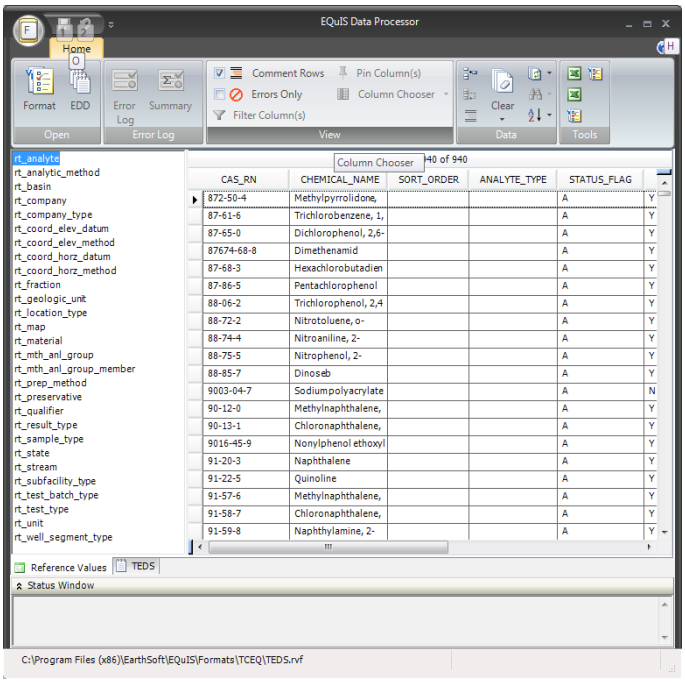
Navigate to your C:\Program Files\EarthSoft\EQuIS\Formats\TCEQ directory. Select the TEDS.xse file.

The TEDS format will now load into EDP. If prompted to open the reference file, select TEDS.rvf. Your EDP screen should look similar to the following with the format's sections listed in the left column.



Select the format tab "TEDS" to identify which format file and version is loaded. The path to the format file and the version are displayed in the bottom of the window.

Click the Reference Values tab to show the reference values used in the TEDS format. Note that enumerations, which are used in the same manner as reference values, are included in EDP as dropdown lists but are not listed in this Reference Values tab.



Now that the TEDS format file and reference values have been successfully loaded, EDP is ready to accept and check an EDD for errors.

3.2 Obtain an RN number for your facility

The TCEQ's master database (Central Registry) uses the Regulated Entity (RN) number to identify Regulated Entities, defined as the activity, site or thing that the TCEQ regulates. The RN number for your site is required for data submittal to TEDS. If you do not know the RN number, search for the RN for your facility, go to the Central Registry database (http://www12.tceq.texas.gov/crpub/) and click on "Regulated Entity Search" then use Option 2 to enter your search criteria. If the facility does not yet have an RN number, submit a Core Data Form (http://www.tceq.texas.gov/permitting/central_registry/guidance.html) to the cleanup program to have one assigned.

3.3 Talk to your Laboratory

Before conducting the assessment, contact your laboratory to ensure that they can output the analytical results in the TEDS format. Discuss this issue before you contract with the lab to do the analysis, and when you deliver the samples to them, make sure you specify that the results will be output electronically in the TEDS format.

3.4 Determine How You Will Collect Spatial Coordinates

In order to correctly locate positions in space, determine the spatial coordinates (latitude and longitude) of each location. You may know where Monitor Well #1 is at the site, but specific coordinates are necessary to relay that information to someone else or to mapping software. Submittals of assessment data to the Texas Environmental Data System (TEDS) must include spatial coordinates for specific site features, well and sample locations. Refer to the Location table of the TEDS Electronic Data Deliverable (EDD) for the specific spatial data that are to be collected and submitted. Note that even though many fields are not "required" by the EDD, it is important to complete all metadata fields to document the source of the coordinates and the accuracy limitations the source may have. Each location must have a unique *location_code* to differentiate one location from other locations at a facility. Note that although there are several choices in the reference table for the *horz_meth* field, most are not accurate enough to meet the guidelines.

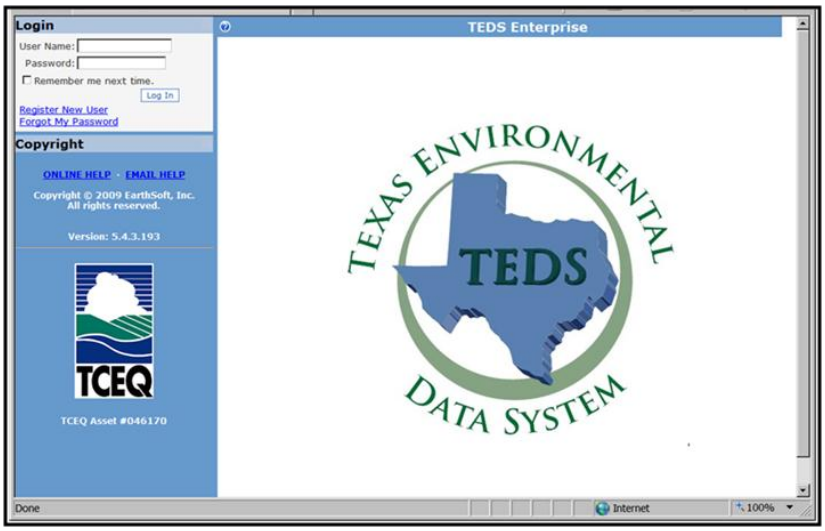
Latitude and Longitude in decimal degrees to six decimal places is required for all locations. Locations can also be submitted in x, y coordinates and zones, using a NAD83 UTM (preferred) and State Plane (feet) geographical coordinated systems. Including these x, y coordinates for sampling and well locations is highly recommended because other applications in TEDS rely on these type coordinates to plot the locations.

3.5 Determine your Software Needs

Preparing the EDD does not require the use of EQuIS or other specialized software. You will however use some type of software application like a spreadsheet (Microsoft Excel is preferred), database (such as Microsoft Access), or text editor (such as Notepad) to complete the EDD. Microsoft Excel provides a better data input platform and the EQuIS EDP will let you create a blank preformatted MS Excel EDD file. Otherwise you would have to create your own design format that exactly matches the blank MS Excel EDD template. Identify the software you have available and determine if another application is needed or desired.

3.6 Sign up for a TEDS Account

Each person who submits data directly to TEDS (not laboratories) must register for a TEDS account by going to the Enterprise version of TEDS. The web address for TEDS is http://teds.tceq.texas.gov/equis/welcome.aspx and register as a new user. Note that data is submitted through the EDP application and not the Enterprise version. Also, note that the requested information is for the individual who is submitting the data, not the consulting firm. Although the facility owner or responsible party may be a data provider, the typical data provider is an individual employed by the consulting firm that conducted the assessment. Each individual who submits data must have a separate account.

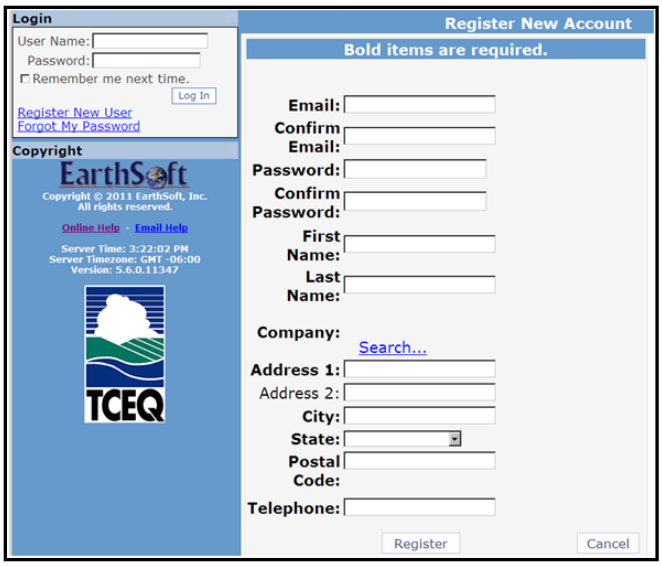


Enter your email address, your chosen password for TEDS, and other required information, then click Register. Passwords must be at least eight characters long and contain at least 2 non-numeric characters. Be sure to make note of your password because, although you can reset your password, we cannot retrieve your password if you forget it.

Use the Search function to find your company code. If your company name is not on the list, send the following information in an attached Microsoft Word table or Excel spreadsheet as formatted below to teds@tceq.texas.gov. The TCEQ will add your company to the company list and reply back when you can complete the registration process.

Table 1 - Data Provider information

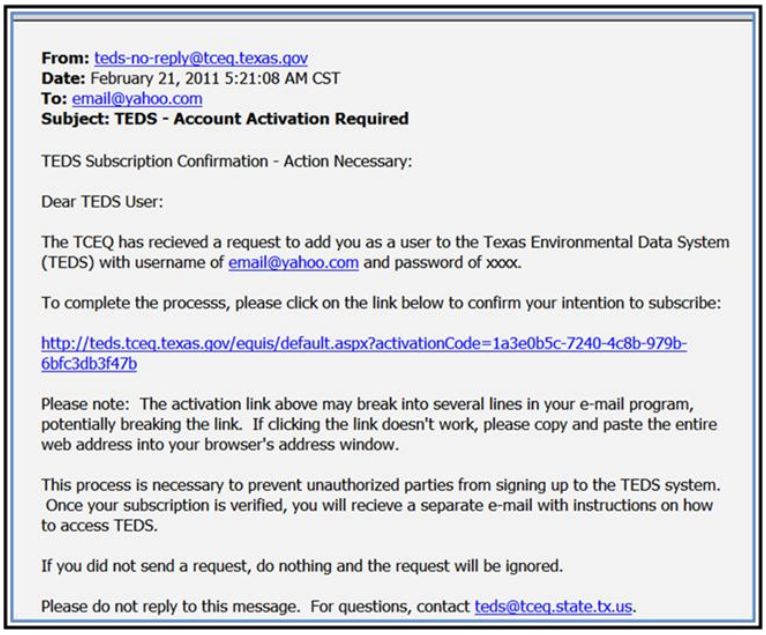
Company name	Contact Person	Address 1	Address 2	City	State	Zip	Contact Email	Contact Phone	Contact Fax



Note that the requested information is for the individual, typically the consultant, who is submitting the data, not the facility owner or responsible party. Each individual data provider must have a separate account. If there are two people in one consulting firm with the same name, be sure to make each person unique (i.e., John Smith and Johnny Smith).

After submitting your information, you will see this screen.

A confirmation message will be sent to the email address you provided. Click on the link in the email to confirm your registration. This extra step is necessary to ensure that the registration is legitimate. Keep this email as a reminder of your username and password.



From: teds-no-reply@tceq.texas.gov
Date: February 21, 2011 5:21:08 AM CST
To: email@yahoo.com
Subject: TEDS - Account Activation Required

TEDS Subscription Confirmation - Action Necessary:

Dear TEDS User:

The TCEQ has recieved a request to add you as a user to the Texas Environmental Data System (TEDS) with username of email@yahoo.com and password of xxxx.

To complete the processs, please click on the link below to confirm your intention to subscribe:

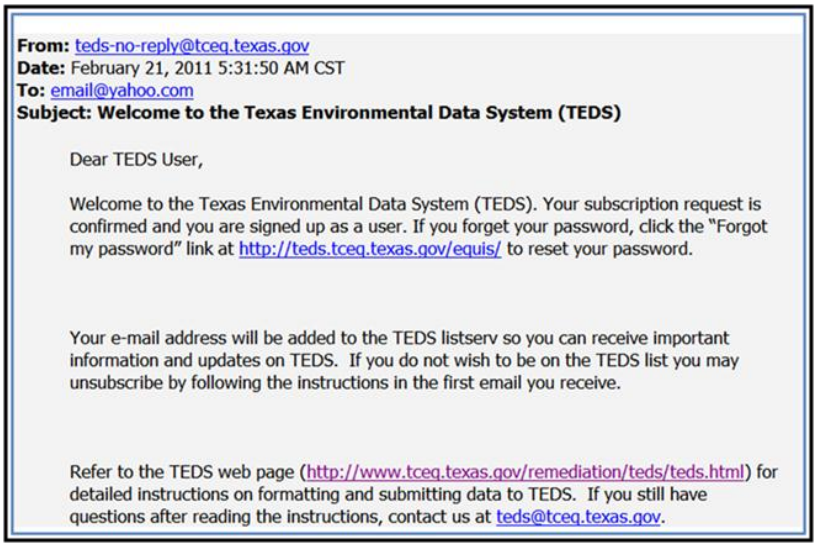
http://teds.tceq.texas.gov/equis/default.aspx?activationCode=1a3e0b5c-7240-4c8b-979b-6bfc3db3f47b

Please note: The activation link above may break into several lines in your e-mail program, potentially breaking the link. If clicking the link doesn't work, please copy and paste the entire web address into your browser's address window.

This process is necessary to prevent unauthorized parties from signing up to the TEDS system. Once your subscription is verified, you will recieve a separate e-mail with instructions on how to access TEDS.

If you did not send a request, do nothing and the request will be ignored.

Please do not reply to this message. For questions, contact teds@tceq.state.tx.us.



From: teds-no-reply@tceq.texas.gov
Date: February 21, 2011 5:31:50 AM CST
To: email@yahoo.com
Subject: Welcome to the Texas Environmental Data System (TEDS)

Dear TEDS User,

Welcome to the Texas Environmental Data System (TEDS). Your subscription request is confirmed and you are signed up as a user. If you forget your password, click the "Forgot my password" link at http://teds.tceq.texas.gov/equis/ to reset your password.

Your e-mail address will be added to the TEDS listserv so you can receive important information and updates on TEDS. If you do not wish to be on the TEDS list you may unsubscribe by following the instructions in the first email you receive.

Refer to the TEDS web page (http://www.tceq.texas.gov/remediation/teds/teds.html) for detailed instructions on formatting and submitting data to TEDS. If you still have questions after reading the instructions, contact us at teds@tceq.texas.gov.

After creating an account, you can review the information in the My Account screen. Unfortunately the system will not allow you to change this information (other than resetting your password if needed) until after you have submitted your first EDD.

4.0 Data Collection

The use of TEDS requires some additional data collection for spatial coordinates but does not alter existing program or rule requirements on how to conduct assessment or remediation activities. Continue to follow the normal course of action for an assessment. When submitting samples to a laboratory, it is the responsibility of the consultant or other entity that is contracting with the laboratory to specify to lab personnel to output data in the TEDS EDD format. Laboratories should also ask about the desired output format before accepting the job.

One addition to the assessment process, if it is not already being done, is the collection of spatial coordinates for each sampling point or other point of interest using a Global Positioning System (GPS) device. Many consultants are already doing this, but if this is new to you, you can either purchase or rent the appropriate equipment and become proficient at using it to obtain accurate positions or hire a surveyor or someone else who is certified in the use of a professional GPS unit to obtain this information. The TCEQ does not dictate which GPS unit to use, but your unit and the data collection techniques must meet the specified accuracy and other criteria. Note that most recreational GPS units are not accurate enough for determining sampling locations. For details on the spatial data requirements, see Appendix A - Geographic Data Collection Standards for Remediation Sites.

After conducting the field work, compile the test results and site investigation results into the appropriate written report. Additionally, enter the laboratory data and field data (geology, water levels, etc) into the TEDS EDD format.

The next step is to check the data in the EDDs using the EQuIS Data Processor and then submit the EDD electronically to the TCEQ. The electronic submittal to TEDS is in addition to the hardcopy report and does not substitute for that report.

4.1 Definition of Facility, Area of Interest, and Location

To submit error-free EDDs, and to plan the naming of locations when starting a site assessment, it is important to understand the definitions of a facility, area of interest (AOI), and location for the purpose of submitting data to TEDS.

4.1.1 Facility

For the purpose of formatting and submitting data to TEDS, a facility (or site) is the area or property that is under investigation in a TCEQ remediation program. Facilities may be small, like a vacant lot or a gasoline station, or large like a chemical plant. There is no legal definition as to what is considered a facility for the purpose of submitting data to TEDS, but it will usually be equivalent to the area or property identified by a TCEQ-assigned Program ID number (e.g., LPST ID number, Solid Waste Registration number, or Dry Cleaners Remediation Program number).

4.1.2 Area of Interest

The TEDS database can distinguish between the entire facility and portions of the facility, called areas of interest. An area of interest (AOI) is a subset of a facility. Areas of interest are typically defined by waste management units or areas of a large facility with differing contaminant sources, particularly if the individual areas are addressed in separate assessment and remediation projects. If there are no subsets of the facility, then the entire facility is considered an area of interest. It is the data provider's decision whether to subdivide the facility into areas of interest. Assign a unique number or name, called an *area_of_interest_name*, for each area of interest within a facility. Please refer to Figure 1 for a graphical illustration of areas of interest.

4.1.3 Location

Locations are distinct points of interest, such as soil borings, monitoring wells, water wells, and surface water sampling points, and are defined by latitude and longitude coordinates. Each location within a facility is identified by a unique *location_code*.

In addition to locations such as borings and monitor wells, each facility and each AOI will also have one location that represents the facility or AOI as a whole. This location is the horizontal reference point (*horz_ref* in the Location table) and can be located at any logical, identifiable point within the facility or area of interest. Detailed instructions for entering data on horizontal reference points are included in Section 5.6 on the Location Table.

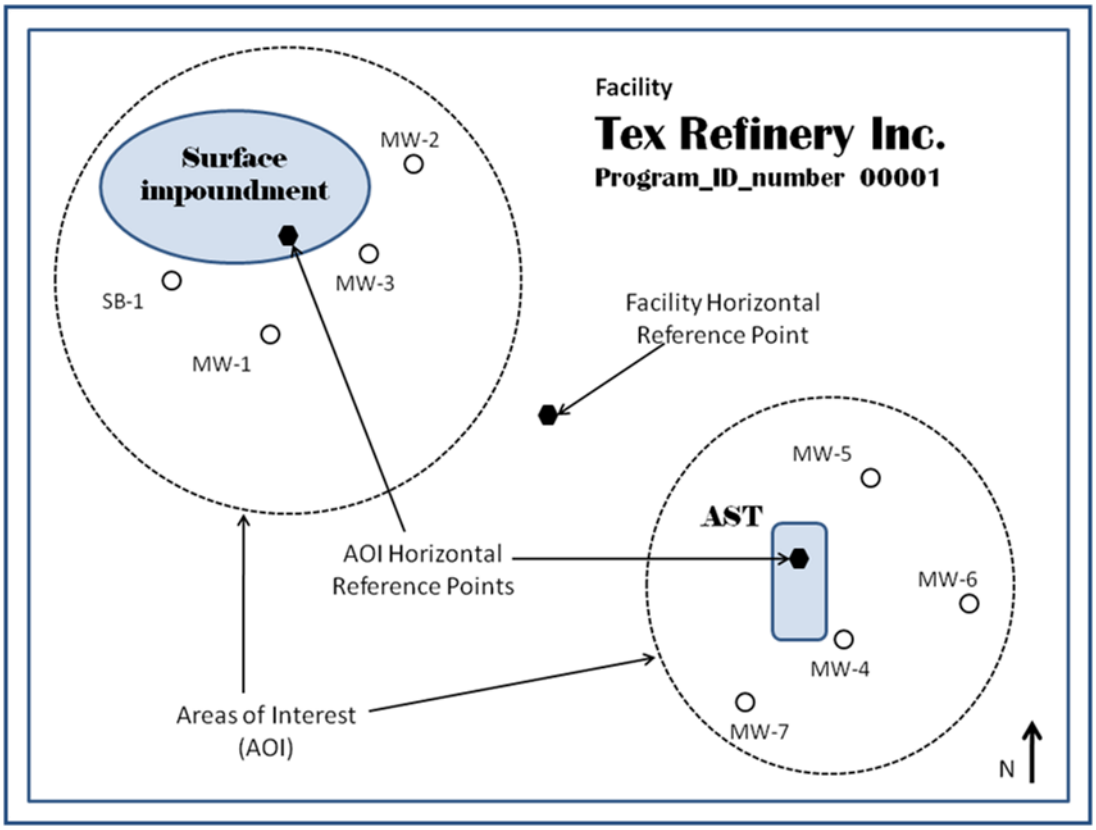


Figure 1: Relationship between Facility, Areas of Interest, and Locations.

4.2 Naming Samples

The *sample_id* (in the Sample table) must be unique and must not change once the sample information is submitted to TEDS. Other than the 40-character limit, TEDS does not prescribe how to name the sample, but we suggest that the name include the *location_code* and any additional information as needed to distinguish the sample from all others collected at the facility.

For instance, the sample depth is useful to distinguish between samples collected at the same location, such as when multiple soil samples are collected at varying depths from the same boring. When several samples will be collected over time from one location, such as

groundwater samples from a monitor well, include the collection date (MM/DD/YY) in the *sample_id*. Add in the collection time if needed to distinguish multiple samples from the same depth or location.

For example, the *sample_id* of VCP1234.B-2 would identify the only sample collected from Boring #2 at VCP site #1234. *The sample_id* for one of many samples collected from one monitor well could be: VCP1234.MW-1.040311.9:00, which denotes a sample collected at 9 am from Monitor Well #1 on April 3, 2011 at VCP facility #1234.

Even blanks and duplicates must have a unique name. Duplicates can be denoted using 'dup' at the end of the name, and trip blanks can use TB at the end, such as VCP1234.B-1.040311.9:00.dup and VCP1234.B-1.040311.9:00.TB, respectively.

5.0 TEDS EDD Tables

As you read through this section, please refer to the TEDS EDD Description. The EDD Description is used as a reference, not to enter data, and is generated by clicking on the button labeled EDD Description in the EQuIS Data Processor (EDP) or by downloading from the TEDS download page.

When entering data, fill in as much information as you have available on the facility. Carefully read the descriptions in the Comments section for each field for details on how to enter the data. Most of the tables will be completed when monitor wells are installed at the site, but some, such as the Field Results table, are optional. If no monitor wells were installed and no water level measurements collected then leave the following tables blank: Well, Well Construction, Water Table, and Water Level.

5.1 Table Header Definitions

5.1.1 Field Name

This is the name of the field as recognized by TEDS. Do not change these names or an error will occur.

5.1.2 Data Type

The data type indicates the type of field (text, numeric, date/time) and the field length limit. You cannot enter more characters, including spaces, than indicated for each field.

If you use a spreadsheet like Excel to input your data, make sure that the software does not change the information you enter. One common problem to be aware of is that Excel may inadvertently change dates to another number or CAS numbers to dates (in particular, the CAS numbers for chemicals Mancozeb, Picloram, Potassium, and Sodium polyacrylate have been noted to change). We have also noted a problem with Excel changing the *location_major_basin* field in the Location table to some other number. To keep these problems from occurring, modify the cell format or place an apostrophe (') in front of the entered value.

5.1.3 Key

Key fields denote primary keys in the database that are required for the database to function correctly.

5.1.4 Required

Note that there are required fields in each table. 'Required' means the fields must be populated for the database to insert the data correctly, and if these fields are left blank the EDP will show an error and you will not be able to submit the data. It does not mean that the non-required fields are not essential. Fields not listed as required are still important – if the information is available the TCEQ expects it to be included.

5.1.5 Default

Default values, as specified in the EDD Description, are automatically entered into the database. If your information differs from the default, enter your site-specific information.

5.1.6 Parent

Information entered into a field with a designated Parent must be the same as the Parent. For example, the *location_code* in the Drill Activity table must match a *location_code* in the Location table.

5.1.7 Lookup

A notation in this column means that you must use the established list of Reference Values or Enumerations in this field. If a Reference Value or Enumeration fits your data, or if it is close, please use the existing value. If you must use a different Reference Value, send an email to teds@tceq.texas.gov with the information specified in Section 6.7 to request a new Reference Value.

5.2 Data Provider Table

The Data Provider table defines the contact information of the company, typically the consulting firm, responsible for submitting the data. The Data Provider is not the Responsible Party, or Person as defined in TRRP, unless the Responsible Party or Person gathers and submits the data without the help of an outside consultant.

The *data_provider* field is a code defined by the TCEQ. First, review the list of data providers on the TEDS Web page (http://www.tceq.texas.gov/remediation/teds/teds.html). If your company name is not on the list, send the following information in an attached Microsoft Word table or Excel spreadsheet as formatted below to teds@tceq.texas.gov:

Table 2 - Data Provider information

Company name	Contact Person Name	Address 1	Address 2	City	State	Zip	Contact Email	Contact Phone	Contact Fax

5.3 Lab Information Table

Use this table to provide information on the lab used to analyze the samples in this submittal. If your submittal includes data generated by more than one lab, submit each lab's information on a separate row and be sure to use the correct *lab_name_code* in the TestResultsQC table to identify which lab conducted the analysis. Enter the actual lab name in the *lab_name* field. Leave this table blank if there was no lab (mobile or fixed) involved in the data collection and analysis.

The *lab_name_code* field is a code defined by the TCEQ. First, review the list of labs on the TEDS Web page (http://www.tceq.texas.gov/remediation/teds/teds.html). If your laboratory's name is not on the list, send the following information in an attached table as defined below to teds@tceq.texas.gov:

Table 3 - Lab Information –Facility table

Lab name	Lab certification number	Lab contact person	Address 1	Address2	City	State	Zip code	email	Phone	Fax

This table contains information on the facility/site. The Regulated Entity (RN) number is used in the TCEQ's master database (Central Registry) to identify Regulated Entities, which are defined as the activity, site or thing that the TCEQ regulates. The RN number is required for submittal of data to TEDS. If the facility does not yet have an RN number, submit a Core Data Form to the cleanup program to have one assigned. If you are unsure of the correct RN for your facility, search the Central Registry database.

Important! Enter the *Program_ID_number* exactly as it is shown in the Central Registry database.

5.4 Task Code Table

Task codes are used to categorize sampling events. An example of a task code could be Q2_2009 to denote samples collected during the second quarter sampling event of 2009. Enter each task code you wish to use in a separate row. Task codes (and this table) are optional, but if a task code is defined in this table, then the appropriate *task_code* must also be included in the Water Level, Field Results, and the Sample tables.

5.5 Area of Interest Table

The Area of Interest table provides detailed information about the areas of interest (AOIs) at the site/facility. An area of interest may be either the entire facility or a portion of the facility. If there is only one Program ID number for the facility, such as an LPST site, then the entire facility is considered an AOI. In this instance use the *facility_name* from the Facility table as the *area_of_interest_name* in the Area of Interest table. Please refer to Figure 1 for a graphical illustration of areas of interest.

Larger facilities, such as a petroleum refinery or a military base, will often have several AOIs. List each Area of Interest in a row in the table and be sure each AOI has a unique *area_of_interest_name*.

Some information in this table, such as institutional controls or remedy standards, may not be available at the time you submit the EDD. Enter information into the *institutional_control and remedy_standard* fields only if there is an approved institutional control or remedy, otherwise leave the field blank.

5.6 Location Table

Use the Location table to define the sampling/monitoring locations and other points of interest at a facility/site. Complete the table by listing each location in a separate row in the table.

5.6.1 Location Codes

Each location must have a unique *location_code* to differentiate one location from other locations at a facility. Therefore, it is important to plan the assessment so that there is only one MW-1 or one B-2. Continue using the same *location_code* for the life of the project.

It is very important the locations be represented by accurate latitude/longitude coordinates in accordance with the guidelines in Appendix A - Geographic Data Collection Standards for Remediation Sites. Note that although there are several choices in the reference table for the *horz_meth* field, most are not accurate enough to meet the guidelines.

Each row of the Location table contains a unique location. If there are multiple wells in one borehole, enter each well on a separate row and assign a unique *location_code* to each well. Do not create locations for samples such as field blanks and trip blanks that are not associated with a location.

5.6.2 Horizontal Reference Code

In addition to locations such as monitor wells, each facility and each AOI within a facility will also have one location that represents the facility or AOI as a whole, known as the horizontal reference point (*horz_ref*). Often the center of the facility/AOI is designated as the horizontal reference point, otherwise it may be defined as a specific identifiable location such as a major building or front entrance. As an example in Figure 1, each AOI and the facility as a whole are assigned a horizontal reference point. The *horz_ref* codes for

the reference points illustrated in Figure 1 would be RELEASE (Point of release/spill) for the two AOIs, and FAC_CEN (Land parcel/facility/site/AOI – center of) for the facility.

In the *location_type* field, designate the horizontal reference point as either FAC_PT for the facility or AOI_PT for an Area of Interest. If the entire facility is considered an Area of Interest, enter only one point with *location_type* of FAC_PT.

5.6.3 Quarter Quad Names

Note the field labeled *qtr_quad*. The input for this field is the name of the Digital Ortho Quarter-Quadrangle (DOQQ) in which each location resides. Digital ortho-photographs are aerial photos that have been geometrically corrected to remove distortions. To locate the appropriate DOQQ, go to the Web page referenced in the Comments, then search on County and locate the quad for your facility. Each quad is divided into quarters (NE, SE, SW, and NW). Locate your facility/location and choose the appropriate quarter quad name from the drop-down list in the EDD. TEDS will compare the locations' latitude and longitude to the DOQQ and will indicate an error if the coordinated do not lie within the respective DOQQ that is listed. It is possible that some of your site's locations or even the facility itself will be in more than one quarter quad.

5.6.4 Dealing with Duplicate Location Codes

At existing remediation sites you may encounter the situation where duplicate location names, e.g., two locations named SB1, already exist. If that is the case, and you do not want to rename one of the locations, you can maintain uniqueness by assigning a unique *location_code* for each one and use SB1 for the *loc_name*.

5.6.5 Anchor Points

In order to tie reference points for groundwater depth measurements to a datum, an anchor point is chosen and is either surveyed from an established benchmark or assigned an arbitrary elevation (e.g., 100 ft). Enter the anchor point as a location, specifying the *location_type* as "ANCHOR".

5.6.6 Site-Wide Samples

If an analysis is done for an entire site (such as ambient temperature), create a location for the entire site by specifying the *location_type* as "SITE".

5.7 Drill Activity Table

Use the drill activity file to provide boring or monitor well drilling information. List each boring or monitor well in a separate row in the table.

5.8 Lithology Table

Use this table to describe the general lithology from the terms in reference table *rt_material* that was encountered in the boring or other sampling point which entered under the *lithology_type* field. Data submitted in this table should, at the least, provide general descriptions that best match the reference values. The reason for the restricted entries in the *lithology_type* field is to keep consistency among the facility and other facilities in TEDS.

Include a complete record (row) for each lithologic unit. This is extremely important information used to create boring logs and cross sections and is necessary for correct geologic interpretation. Enter the more detailed descriptions f core and cuttings in the *remark1* and *remark2* fields. Enter just as much detail and match the boring log information included in the hardcopy report.

5.9 Well Table

This table provides information on monitor wells and water wells. The datum information in this table describes the datum when the well is first completed. If the datum changes at some future time, use the ChangeTOC table to record the revised datum information. Use feet, not meters, for elevations and depths.

5.10 Change TOC Table

The purpose of this table to provide an easy means of submitting revised monitor well datum information should the need arise. If a monitor well is damaged and resurveyed after repair, use this table to submit the new top of casing datum information. Enter data into this table **ONLY** if the top of casing datum has changed.

5.11 Well Construction Table

This table supplies monitor well and water well construction data, including the type of construction materials and depth.

Entries in the Well Construction table must include both the well construction (casing, screen, etc.) and the annulus materials (surface plug, filter pack, etc). List each segment in a separate row and specify their start and end depths. In the following example, the well construction segments include PVC casing from 0 to 23 feet and PVC screen from 23 to 30 feet. The annular space consists of a surface plug from 0 to 0.5 ft., annular backfill from 0.5 to 20 ft., and a filter pack from 20 to 30 ft.

Note that Table 3 is an example for illustration purposes only and is not intended to represent an actual well. Do not use this example in your EDD. Do not use this information to complete an actual well.

Table 4 - Well Construction Table

location _code	segment _type	material _type_code	start_ depth	end_ depth	depth _unit	slot_ size	slot_size _unit	perf_ length	screen _type	remark
MW-1	CASING	PVC	0	23	ft					
MW-1	SCREEN	PVC	23	30	ft	.02	in		SLOTTED	
MW-1	ANNULAR SEAL	CEMENT	0	.5	ft					
MW-1	ANNULAR BACKFILL	BENTONITE SLURRY	.5	20	ft					
MW-1	FILTER PACK	SAND PACK	20	30	ft					

5.12 Water Level Table

Use this table to report groundwater level measurements collected from water wells and monitor wells during sampling or monitoring activities after the wells are completed. Enter each water level measurement on a separate row. Do not use this table to report groundwater levels encountered during drilling.

If a task code associated with the water level measurements was entered in the Task Code table, enter the corresponding task code in this table.

5.13 Water-Table Table

This table provides information on the occurrence of groundwater while drilling. If depth to groundwater while drilling was recorded, enter each boring on a separate row. If depth to groundwater while drilling was not recorded for any locations, leave this table blank (but do not remove the sheet from the spreadsheet). Do not use this table to record water level measurements collected during later sampling or monitoring activities.

5.14 Field Results Table

This table is optional but can be used to submit field sampling and measurement results. Do not use this table for laboratory analysis, even if the lab is mobile and on-site.

If a task code associated with the field sampling or measuring was entered in the Task Code table, the corresponding task code must be included in this table.

Important! Do not enter "ND" or "<" in the *result_value* field to signify nondetected results. Enter only an appropriate numeric value.

5.15 Sample Table

This table is used to describe the sample. A sample can be from an environmental medium (soil, groundwater, surface water, sediment, air) or from another material such as a waste, animal tissue, or other substance of interest. Include one record for each sample and be sure that each sample in an Area of Interest has a unique *sample_id*.

Important! The *sample_id* in this table must match the *sample_id* in the Test Results QC table in order to link the analytical results to the correct sample.

5.16 Test Results QC Table

This is the table for analytical results and QA/QC information. Most of this information will be sent electronically from the laboratory to the consultant in this format, but consultants and responsible parties will need to review the lab's information, validate it and add data where needed before submitting the EDD to TEDS.

The *sample_id* in this table must match the *sample_id* in the Sample table in order to link the analytical results to the correct sample. That means that if the lab outputs data in this format with a *sample_id* that is different from the *sample_id* used by the consultant, the consultant will have to correct the *sample_id* numbers in the Test Results table.

Important! Do not enter "ND" or "<" in the *result_value* field to signify nondetected results. Enter only an appropriate numeric value.

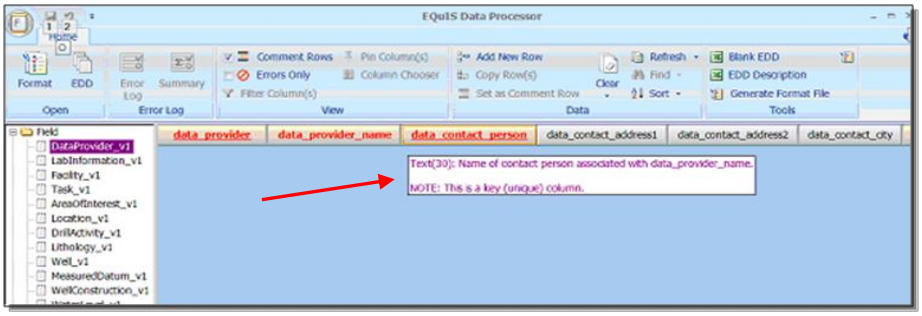
6.0 Populate the EDD with Data

The file that contains the data is referred to as Electronic Data Deliverable (EDD). The EDD must be in an electronic format with sections and column headers as specified by the TEDS format. Always check the TEDS download page to ensure you have the most recent version of the format and reference values.

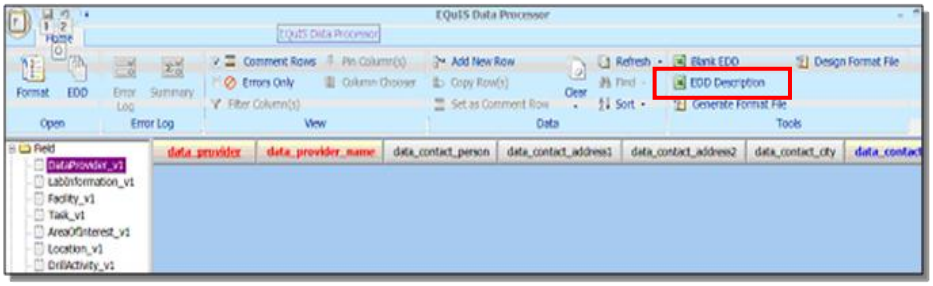
6.1 Review Data Requirements

Before entering data into the EDD, review the format in detail so you will understand how to complete the EDD.

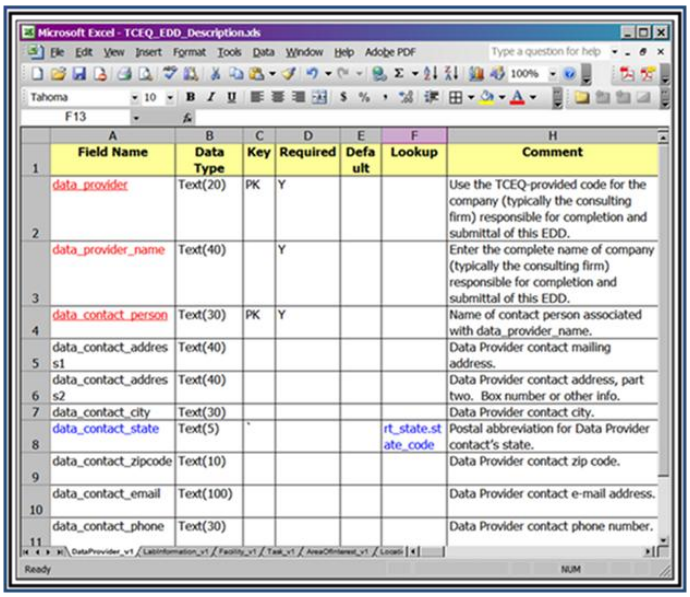
Important! Be sure to read the comments (instructions) for each data field. To see the comments in EDP, hover your mouse pointer over the field name.



An easier method of reviewing data requirements and instructions for each data field is to download an EDD Description. Create an EDD Description by clicking on the EDD Description button in EDP.



EDD Description:



Microsoft Excel - TCEQ_EDD_Description.xls

	Field Name	Data Type	Key	Required	Default	Lookup	Comment
2	data_provider	Text(20)	PK	Y			Use the TCEQ-provided code for the company (typically the consulting firm) responsible for completion and submittal of this EDD.
3	data_provider_name	Text(40)		Y			Enter the complete name of company (typically the consulting firm) responsible for completion and submittal of this EDD.
4	data_contact_person	Text(30)	PK	Y			Name of contact person associated with data_provider_name.
5	data_contact_address1	Text(40)					Data Provider contact mailing address.
6	data_contact_address2	Text(40)					Data Provider contact address, part two. Box number or other info.
7	data_contact_city	Text(30)					Data Provider contact city.
8	data_contact_state	Text(5)				rt_state.state_code	Postal abbreviation for Data Provider contact's state.
9	data_contact_zipcode	Text(10)					Data Provider contact zip code.
10	data_contact_email	Text(100)					Data Provider contact e-mail address.
11	data_contact_phone	Text(30)					Data Provider contact phone number.

Field names in red are required fields, and those that are both red and underlined are primary key fields. Fields in blue have associated reference values. Fields with enumerations (as specified in the EDD Description) also have reference values but are not marked in blue.

6.2 Entering Data

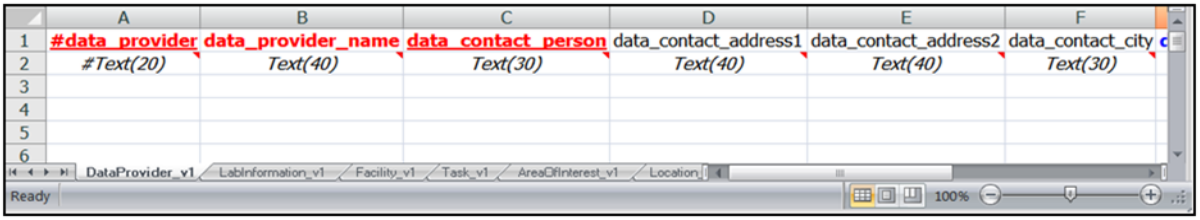
There are two methods for entering data into the EDD. The first is to type or copy data directly into EDP. The second is to enter data into a Blank EDD template, which is an Excel spreadsheet. Both EDP and the Blank EDD template (if using Excel 2007 or later) have dropdown lists in fields with Reference Values and enumerations. You can output a Blank EDD using EDP or the Enterprise version.

Each EDD contains information for only one facility, which may include off-site sampling points. Do not combine data from more than one facility in an EDD. To avoid transcription errors, copy data from original sources into each field of the appropriate table.

6.2.1 Enter Data using Excel

To load data using Excel, download the Blank EDD from Enterprise (go to the Enterprise EDP tab) or the TEDS Format page. Use Excel 2007 or later to maintain the functionality of dropdown lists for constrained fields. Copy or type data into each field and save your document as an Excel spreadsheet.

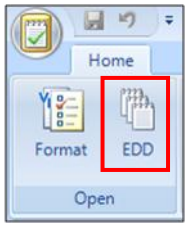
The Blank EDD template looks like this:



6.2.1.1 *Load EDD into EDP*

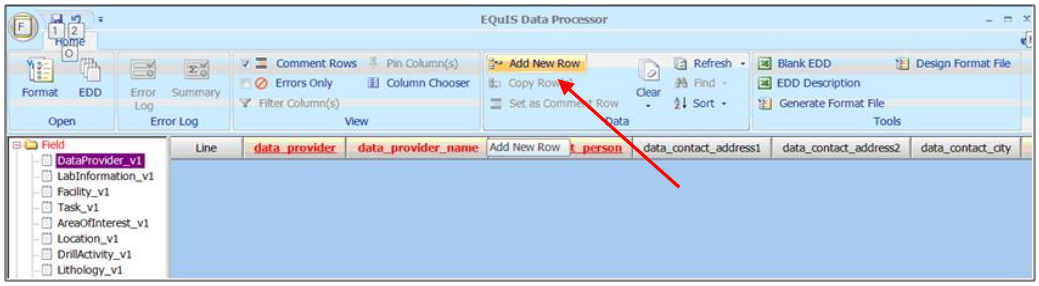
The next step after entering data into a Blank EDD template is to load the EDD into EDP.

If your EDD is open, close it first. Then click the EDD button, browse to your EDD and click Open. Your EDD will appear in EDP where you can review the data and note any errors as described in Section 7.1 on Finding and Resolving Errors.



6.2.2 Enter Data using EDP

To load data directly into EDP, choose the section you wish to complete, click on Add New Row or right-click in the blank main screen and select Add New Row to add rows as needed, then copy or type data into each field. This method is useful for adding a small amount of information but may be too cumbersome for loading an entire EDD.



6.2.3 Enter Data using other Applications

You can also create an EDD using an Access database or even a text editor. The resulting .mdb, .txt, or .zip file can be loaded into EDP as long as the sections and fields are included with the correct name and in the correct order. If you plan to use one of these methods be sure you are proficient in the software applications as the TCEQ cannot assist you with creating EDDs by these methods.

6.3 Data Types

Pay attention to the type of information allowed for each field. First, check the field length to note the maximum number of characters the field can contain. Second, identify the type of information that can be entered. For example, data in date/time fields must match the

specified format and numeric fields will accept only numbers. Third, determine whether the field is restricted to just the drop down lists (Reference Values) that limit the choices to just those values. The least restrictive fields are Text fields, which can be completed with any appropriate combination of text and numbers.

Enter date fields in the U.S. conventional format of MM/DD/YYYY. When entering dates in Excel, set the format of those cells by right-clicking on the cells and selecting Format Cells, and under the Number tab, select Date, and under Locale, select English (United States). Do not use the European date format of DD/MM/YYYY because doing so will result in incorrect dates and errors.

6.4 Data Entry

Important! Leave the field blank if the information does not exist and the field is not required by the database. Do NOT use "NA," "unknown" or other entry to signify that the information is not available. Also, do not use "ND" or "<" for nondetected analytes. On the other hand, if the data exist, include it in the EDD.

6.5 Table Completion

The submitted EDD always includes all the tables, but some tables may be left empty depending on the type of information available and the stage of the project. For example, if no groundwater level measurements were collected, then the Water Level table will be blank. See Section 5.0 for complete descriptions of each table and requirements on their use.

6.6 Required Fields

Certain fields in the EDD are "required" by the database in order for the data to be correctly entered into the database. However, completing just the required fields is not sufficient. Most other fields, although not required by the database, are still of utmost importance to the understanding of the site and to usability of the data. If the information was collected for your site, consider those fields required and fill them out accordingly. Read the Comments in the EDD for details as to when it is appropriate to leave a field blank.

6.7 Reference Values and Enumerations

In order to provide consistency with data input, some fields are limited to just the choices provided as Reference Values or enumerations. The Reference Values and enumerations are included in EDP and in the Blank EDD template (if using Excel 2007 or later) and are described in the Comments field of the EDD Description and on the TEDS Web page.

Always be sure you are using the most current version of the Reference Values. Check the TEDS Download page and compare the date of the Reference value table (.rvf) to the one on your computer.

Although we cannot do this for every unique piece of data, we may be able to add new values to the standard reference value list if the value is important enough and would be of use to the majority of data providers. To request the addition of a value to the Reference

Values tables, send an e-mail to teds@tceq.texas.gov and include the name of the field for which the value is needed, the proposed value, a detailed description of the value, and the reason why a standard reference value is necessary. To avoid redundancy, please check the current tables thoroughly to be sure that the value you are requesting is not already included or that an existing value will suffice.

6.8 Preventing Errors

Regardless of the method for entering data, it is recommended that you copy and paste data from the original source rather than retyping to avoid transcription errors. Many errors, as for example if depth to groundwater is entered as 5 ft rather than the correct value of 50 ft, will not be recognized by TEDS. However, once the error becomes evident, it will be more considerably more difficult to correct the data than to ensure it is entered correctly the first time. The TCEQ will not fix the entry for you – see Section 8.2 for instructions on submitting corrected EDDs.

6.9 Save the EDD

If entering data into the Blank EDD template, save the EDD as an Excel spreadsheet (.xls or .xlsx) using a file name that identifies the site, date, and any other information necessary to later recognize the file and maintain your records. If you use another application to create a text EDD, make sure that the same number of fields are included in each section of the format and that fields containing no information (null values) are represented by two tabs or commas.

7.0 Load EDD and Check Data Integrity

Once the EDD is completed with site data, you will load the EDD into EDP to check the data and then submit the EDD to TEDS.

7.1 Finding and Resolving Errors

Check for errors after loading the EDD into EDP. If the data conform to the database's business rules, the Section names will be highlighted green. If any of the Section names are red, click on that section and find the red row number(s) which indicate errors in that row. Hover your mouse cursor over the shaded fields to read the error message. The EDD cannot be submitted until all errors are corrected and all of the table names are green in EDP.

The EDP mainly looks at these types of checks:

Validity: Some fields are constrained to a list of Reference Values or enumerations. Reference Values are provided in EDP and in the Blank EDD template when outputted from EDP or Enterprise and using Excel 2007 or later. Choose the correct reference values using the dropdown list.

Row distinctiveness: This verifies that no two rows of information contain exactly the same values. Some fields, called primary keys in database terminology, must be unique for

each row. An example of a primary key is the *location_code* in the Location table. Each row in the Location table must have a unique *location_code*. Some tables have more than one primary key. In that case, only one of the primary keys must be unique.

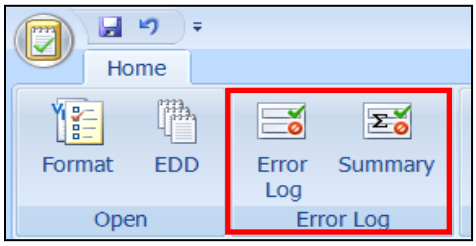
Row integrity and orphan rows: Checks the relationship of records within the tables. For example: the *sample_id* in the Test Results QC table must match a *sample_id* in the Sample table in order for the data to be linked together. If the sample is not listed in the Sample table, the test results row will show an orphan row error.

Required fields: "Required" means the field must be populated for the database to insert the data correctly. If a required field is left blank an error is indicated and you will not be able to submit the EDD.

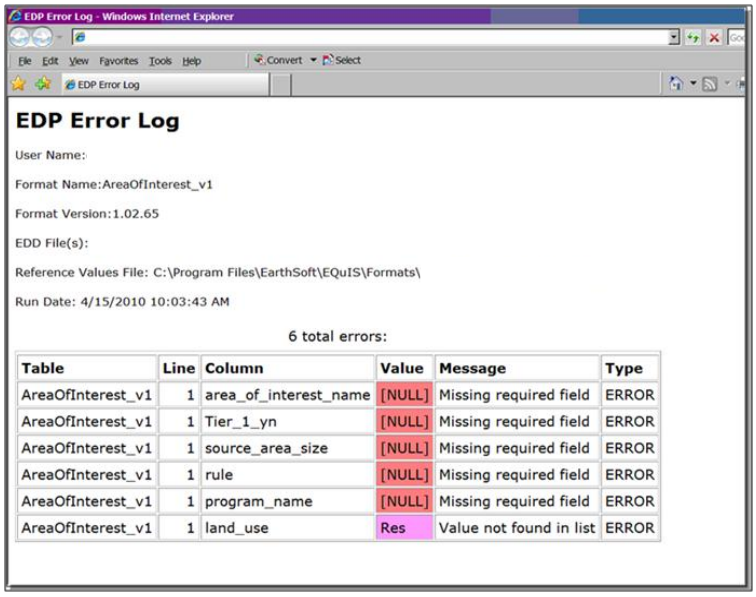
Data types, valid dates, and field length: The data type indicates the type of data (text, numeric, and date/time) that can be entered into each field. Fields are also constrained to a certain length. These constraints on data type and length are noted for each field.

7.1.1 Error Log Reports

If you have a significant number of errors or just want a list of errors, run an Error Report by choosing either Error Log or Summary from the menu. The reports are saved as HTML files and open automatically in your default browser. To open the report in Excel, browse to the saved report, right click on the file name, select Open With, then select Microsoft Excel.



The Error Log Report shows each individual error.



EDP Error Log - Windows Internet Explorer

File Edit View Favorites Tools Help

EDP Error Log

EDP Error Log

User Name:

Format Name:AreaOfInterest_v1

Format Version:1.02.65

EDD File(s):

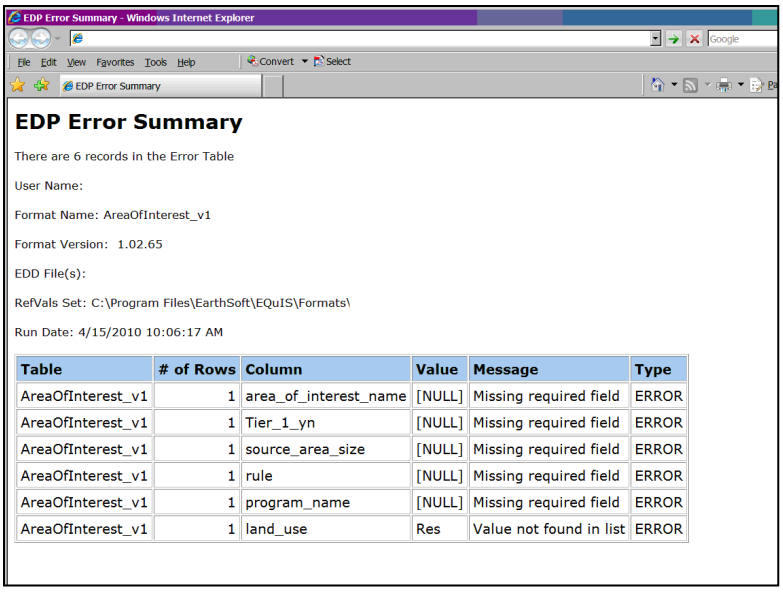
Reference Values File: C:\Program Files\EarthSoft\EQuIS\Formats\

Run Date: 4/15/2010 10:03:43 AM

6 total errors:

Table	Line	Column	Value	Message	Type
AreaOfInterest_v1	1	area_of_interest_name	[NULL]	Missing required field	ERROR
AreaOfInterest_v1	1	Tier_1_yn	[NULL]	Missing required field	ERROR
AreaOfInterest_v1	1	source_area_size	[NULL]	Missing required field	ERROR
AreaOfInterest_v1	1	rule	[NULL]	Missing required field	ERROR
AreaOfInterest_v1	1	program_name	[NULL]	Missing required field	ERROR
AreaOfInterest_v1	1	land_use	Res	Value not found in list	ERROR

The Error Summary Report indicates the number of rows where the specified error occurred in each section of the format.



EDP Error Summary - Windows Internet Explorer

File Edit View Favorites Tools Help

EDP Error Summary

EDP Error Summary

There are 6 records in the Error Table

User Name:

Format Name: AreaOfInterest_v1

Format Version: 1.02.65

EDD File(s):

RefVals Set: C:\Program Files\EarthSoft\EQuIS\Formats\

Run Date: 4/15/2010 10:06:17 AM

Table	# of Rows	Column	Value	Message	Type
AreaOfInterest_v1	1	area_of_interest_name	[NULL]	Missing required field	ERROR
AreaOfInterest_v1	1	Tier_1_yn	[NULL]	Missing required field	ERROR
AreaOfInterest_v1	1	source_area_size	[NULL]	Missing required field	ERROR
AreaOfInterest_v1	1	rule	[NULL]	Missing required field	ERROR
AreaOfInterest_v1	1	program_name	[NULL]	Missing required field	ERROR
AreaOfInterest_v1	1	land_use	Res	Value not found in list	ERROR

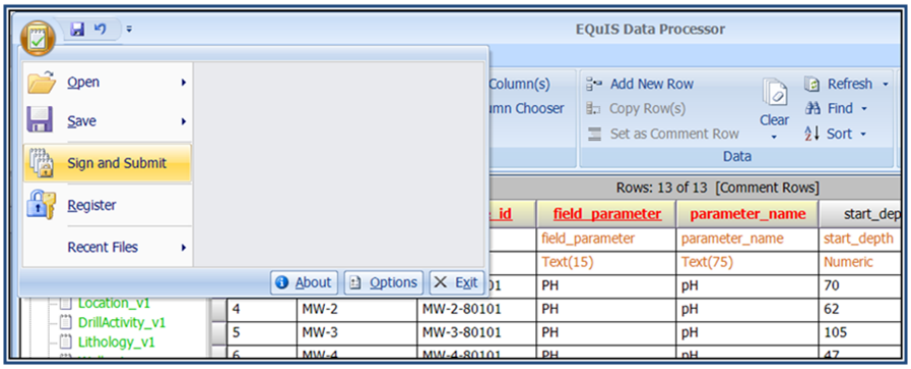
7.1.2 Error Resolution

It is recommended that you fix the errors in your EDD template, save the file, and then reload the EDD. Alternatively, it is possible to correct data errors within EDP if the Auditing feature was enabled during installation of EDP. Note that edits made to data files within EDP are not automatically saved. Save the data file by clicking the EDP icon and selecting Save > EDD.

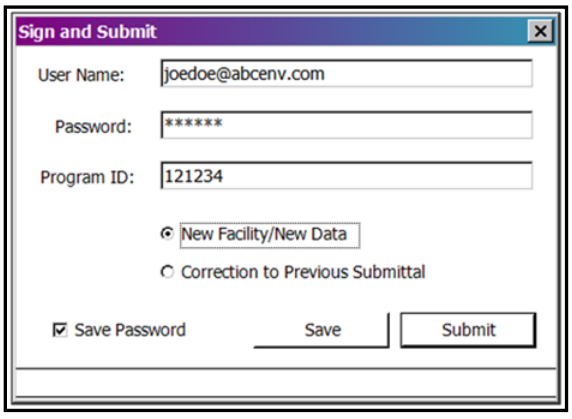
8.0 Submit the EDD to TEDS

8.1 Submit the EDD

Once the data are error-free, it is time to submit the EDD to TEDS. Submit the EDD using the Sign and Submit function in EDP by clicking on the icon in the upper left corner of EDP and choosing Sign and Submit.



If you do not already have the EDD open in EDP, first be sure you know where your EDD file is stored so you can browse to it, and note the Program ID Number as entered in the Facility table. Enter your email address and password that you set up when you signed up for your TEDS account. Enter the Program ID number of the facility/site you are submitting exactly as it is listed in the EDD, highlight the button for New Facility/New Data, and click Submit.



Always use the New Facility/New Data submittal button for the first submittal on a site and for subsequent submittals of newly acquired data, such as later rounds of drilling, sampling, or monitoring.

You will receive an email letting you know the status of the submittal. If the data were formatted correctly, the email will specify that the submittal is complete. It is possible that there could be additional errors in your data that were not caught by the EDP. In that case, you will receive an email with a zipped file attached describing the errors. Make the necessary corrections and resubmit the EDD using the New Facility/New Data button.

If you select Save instead of Submit, it will save the zipped EDD file to your computer for reference or to submit at a later time, but the EDD will not be submitted. If you intend to submit the EDD as well as save it, open the Sign and Submit window again and click Submit.

8.2 Correcting Previously Submitted Data

There may be a situation in which you successfully submitted data but later found that some of the information was entered incorrectly. To replace the incorrect data, resubmit the EDD with the corrected data. Make the correction in your original EDD file (you may want to rename it at that point) and submit it using the Sign and Submit function. However, instead of clicking the New Facility/New Data button, highlight the Correction to Previous Submittal button before clicking Submit. After submitting the EDD, check for an email message that will tell you the status of your submittal.

8.3 Adding New Data

The first EDD will typically be submitted at the same time the Affected Property Assessment Report or other assessment report is sent to the Remediation Division. If additional assessment is conducted later, or if monitor wells are resampled, submit the new information using the New Facility/New Data option in the Sign and Submit window. To submit new data, add the new information to the original EDD by adding rows of data to the appropriate tables and leaving the existing data as is, and submit the revised EDD. Be sure to click New Facility/New Data in Sign and Submit. New rows of data will be added to the database and any non-null values will replace existing data.

Appendix A

Geographic Data Collection Standards for Remediation Sites

Introduction

Acquisition of horizontal and vertical spatial coordinates is essential to orient sampling locations in space and to use locations in a Geographic Information System (GIS) or other mapping or modeling application. Spatial data consist of latitude and longitude coordinates along with associated metadata information such as the accuracy of the data, the receiver type, and other technical details. Accurate spatial coordinates are typically determined using a hand-held Global Positioning System (GPS) unit or surveying equipment.

This guidance document outlines the standards for collecting spatial data using Global Positioning Systems (GPS) and reporting the results to the Remediation Division. In addition to this guidance, review TCEQ's general guidelines, Geographic Information Systems Positional Data.

Spatial Data

Submittal of Spatial Data to the Texas Environmental Data System

Submittals of assessment data to the Texas Environmental Data System (TEDS) must include spatial coordinates for specific site locations. Refer to the Location table of the TEDS Electronic Data Deliverable (EDD) for the specific spatial data that are to be collected and submitted. Note that even though many fields are not "required" by the EDD, it is important to complete all metadata fields to document that the spatial coordinates are accurate and correctly defined from all types of sources.

Horizontal Coordinates

In order to locate the site and sampling points, we are asking for coordinates (latitude/longitude plus metadata) for two general kinds of data points. The first kind is a point that represents the facility/site and/or the area of interest (AOI) as a whole. This point may be near the center of the site or at some other clearly recognizable location. The second type are points for sampling locations such as borings, monitor wells, surface water samples, and other sampling points or points of interest.

Report coordinates in decimal degrees with an accuracy of 1 meter (6 decimal places). Collect a minimum of 60 readings at each point. Use the standard North American Datum of 1983 (NAD83) for all latitude and longitude measurements. (Note that NAD83 is nearly identical to the WGS84 datum within the conterminous US).

Elevation Measurements

Elevations are normally collected for datums used to measure depth to groundwater, such as the ground surface or top-of-casing of monitor wells. Hand-held GPS units typically measure elevations with a high degree of inaccuracy and are not accurate enough to provide useful elevation measurements.

For the purpose of measuring groundwater depths, use only survey grade GPS equipment capable of determining elevations of top-of-casing or other elevation datum points to the nearest 0.01 feet. Use the North American Vertical Datum of 1988 (NAVD88) for vertical measurements.

Data Collection Standards for GPS Devices

GPS units used to collect data must meet the minimum qualifications outlined in this section. At a minimum, GPS receivers used to collect data should be accurate to 2-5 meters or less, and submeter (< 1 meter) for well and sampling point locations with differential correction in real time or post processed. GPS units that do not meet this standard are not acceptable (Note: Recreational GPS receivers do not comply with these standards).

A GPS receiver can be either a standalone unit or a GPS module plugged into a portable computer. The GPS receiver should:

- Have six channel parallel reception or better.
- Employ these processing parameters:
- Position acquisition rate - 1/second or better
- Position mode - 3D (uses 4 satellites)
- Maximum PDOP - 6 or less
- Minimum Elevation - User-selectable
- Have the ability to store at least 180 raw position measurements for the purpose of post processing differential correction.
- Have the ability to electronically transfer position data to a personal computer.
- Include software to perform real-time differential correction, point data averaging, and conversion to common formats.

The Real-time correction receiver should receive correction data from a recognized, reliable source, and which is appropriate for real-time correction in the geographic area in which the GPS measurements will be made.

GPS units used to collect data must meet the minimum qualifications outlined in TCEQ's OPP 8.12. At a minimum, GPS point data must be accurate to less than 5 meters when differentially corrected and should be less than 1 meter, differentially corrected, for well and sample point locations. State contractors for the Remediation Division are required to follow the contractual technical SOP 17.1–GPS Data Collection and Submission. All GPS point locations submitted to TEDS must all include the minimum attributes required in the TCEQ format EDD submission "Location" tab and relevant information required in SOP 17.1.

Dilution of Precision (DOP)

Do not collect GPS data when the Position Dilution of Precision (PDOP) value equals or exceeds 6.0. The can be done by setting the maximum PDOP acceptable to 6.0 in the GPS unit. Do not use DOPs other than PDOP when collecting GPS data.

Offset/Centroid Measurement

It is sometimes impossible, or impractical, to place a GPS receiver immediately on top of or adjacent to the location being positioned. In this case it may be necessary to obtain a GPS position using one of two different methods:

Offset - Offset locations are collected at a nearby point with a measured offset (X/Y or Bearing/ Range/Declination) from the desired location. In these cases, potential error associated with the offset measurement must be added to the potential error associated with the GPS measurement in order to determine the accuracy of the location position. Describe in reports the method for obtaining the offset measurement (such as using a laser rangefinder).

Centroid - Collect a minimum of 15 positions at each of the vertices of an imaginary box surrounding the location. These positions are then automatically averaged by the GPS receiver to produce a centroid level location. In these cases, add the potential error associated with the offset measurement to the potential error associated with the GPS measurement in order to determine the accuracy of the site position.

Differential Correction

Differentially correct all GPS data by post processing or by real-time differential correction before submitting to the TCEQ. Include the differential correction status information in the data submittal. Uncorrected data cannot be used. There are only three options available:

- Differential Correction - Indicates that the record has been differentially corrected.
- Real-time Corrected - Indicates that the record has been real-time differentially corrected.

- Uncorrected - Indicates that the record has not been differentially corrected is suspect to errors and unacceptable accuracy. Uncorrected data are not of value and cannot be used.

GPS Certification and Training

TCEQ staff and TCEQ state contractors must become certified GPS data collectors prior to submitting data to the TCEQ (see SOP 17.1–GPS Data Collection and Submission). Independent consultants who are not submitting data under contract to the TCEQ are not required to be certified, but must still follow these data standards. TCEQ contractors may contact the TCEQ's GPS Coordinator at gpsdata@tceq.state.tx.us for further details on obtaining GPS certification.

Training is strongly encouraged to ensure accurate data collection. Obtain GPS certification from a manufacturer-certified GPS trainer or other third-party trainer. The TCEQ only offers GPS training to TCEQ employees.