MTDEQ e-TREADS Electronic Data Deliverable (EDD) Guidance Manual

Information and Technical Services Section

Waste Management and Remediation Division

Montana Department of Environmental Quality

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# Introduction

## About This Document

The purpose of this guidance manual is to provide instructions on how to report environmental data electronically to the Montana Department of Environmental Quality (MTDEQ) Contaminated Site Cleanup, Federal Superfund, Abandoned Mine Lands, and Underground Storage Tank (UST) programs. Data submitted to these MTDEQ programs will be stored in the EQuIS for Tracking Remedial and Environmental Actions Data System (e-TREADS). Some of the types of data that can be reported electronically to e-TREADS include:

* Data generated during site characterization and investigation phases
* Data recorded when installing monitoring wells
* Data generated during long term monitoring events and treatment system performance samples
* Analytical and field data routinely collected from a variety of media.

e-TREADS is DEQ’s primary repository for all field and sample data associated with the Contaminated Site Cleanup, Federal Superfund, Abandoned Mine Lands, and UST programs.

This manual describes both the procedural and formatting requirements for creating and submitting Electronic Data Deliverables (EDDs) to e-TREADS and consists of four key sections:

1. **Initial Set-up** – This section covers the initial steps that data providers need to take to get established in our database to submit data to e-TREADS.
2. **EDD Development** – This section focuses on formatting EDDs. It covers general reporting requirements and includes tables that describe each EDD worksheet in detail.
3. **EDD Verification** – This section covers EDD verification and focuses on the EQuIS Data Processor (EDP), which each data provider will be required to use prior to submitting an EDD.
4. **EDD Submittal Process** – This section introduces the e-TREADS Validation Form and the data package required for each submittal to e-TREADS. An overview of the EDD submittal process is shown in Figure 1-1.

🡺 All e-TREADS materials referenced in this guidance manual are available from DEQ’s e-TREADS support website located at [http://deq.mt.gov/Land/rem/etreads](http://deq.mt.gov/REM/datamgmt/e-TREADS.mcpx).

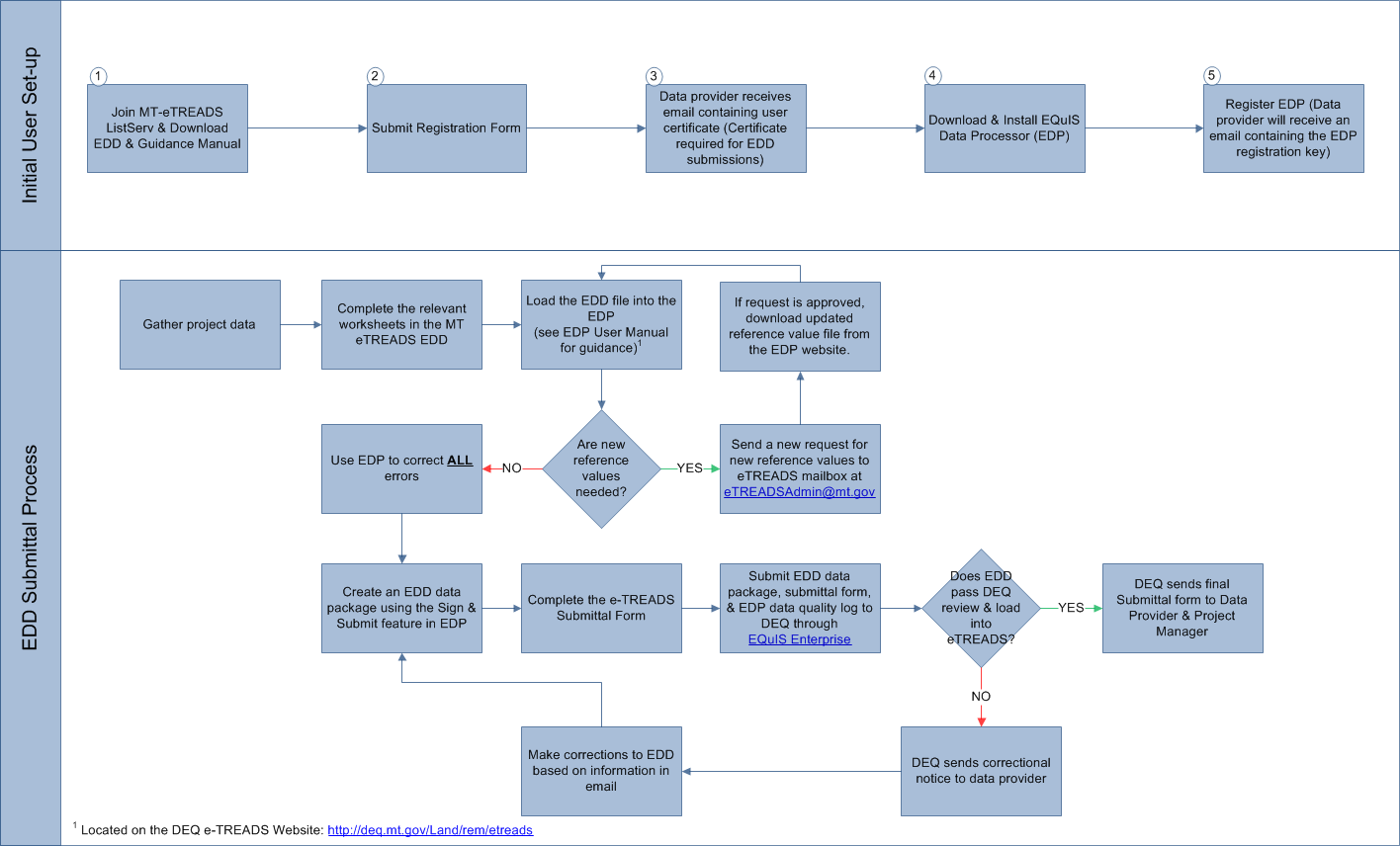


Figure 1.1: Electronic Data Deliverable (EDD) Submittal Process

## Document Control

This document is controlled by Document Number and Version Number, with Version 1.0 representing the first major release.

## Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Date | Name | Description |
| 0.1 | 02/02/2016 | Staci Stolp | Initial document |
| 0.2 | 10/05/2016 | Staci Stolp | Revised based on feedback received from Kim Wells. |
| 0.3 | 06/12/2017 | Staci Stolp | Revised based on revised workflows |
| 0.4 | 07/26/2017 | Staci Stolp | Revised test regarding use of qualifiers |
| 0.5 | 07/31/2017 | Staci Stolp | Revised table 3.13 adding RPD for MS/MSD |

## Terms and Acronyms

|  |  |
| --- | --- |
| **Term** | **Definition** |
| AML | Abandoned Mines Lands |
| CALA | Controlled Allocation of Liability Act |
| CIO | Chief Information Officer |
| COTS | Commercial Off-the-Shelf |
| CSCB | Contaminated Site Cleanup Bureau |
| DEQ | Montana Department of Environmental Quality |
| DSMOA | Defense/State Memorandum of Agreement |
| EDD | Electronic Data Deliverable |
| EDP | EQuIS Data Processor |
| EPA | Environmental Protection Agency |
| CPRS | Cleanup, Protection, and Redevelopment Section |
| FSB | Federal Superfund Bureau |
| GUI | Graphical User Interface |
| LUST | Leaking Underground Storage Tanks |
| PTC | Petroleum Tank Cleanup Section |
| QA | Quality Assurance |
| RDBMS | Relational Database Management System |
| SAP | Sampling and Analysis Plan |
| SITSD | State Information Technology Services Division of the Montana Department of Administration |
| SSU | State Superfund Unit |
| TREADS | Tracking Remedial and Environmental Actions Data System |
| UST | Underground Storage Tank |
| VCRA | Voluntary Cleanup and Redevelopment Act |
| WMRD | Waste Management and Remediation Division |
| WUTMB | Waste Underground Tank Management Bureau |

# Initial Coordination and Software Setup

The four steps at the top of Figure 1-1 are required for initial set-up only. These are important steps that will register you with the e-TREADS system and save you time when you’re ready to validate and submit your EDDs.

## Join e-TREADS ListServ

It is important to stay informed about e-TREADS. Sign-up for the ListServ and receive important updates about e-TREADS, including when updated reference value lists are posted, anticipated outages for maintenance, or training opportunities. To register for the e-TREADS ListServ:

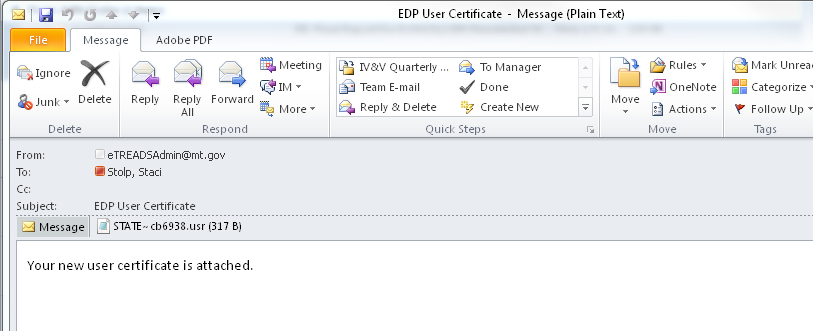
1. Click the ‘[e-TREADS ListServ’](http://svc.mt.gov/deq/ListServe/AllListsStep1.asp) link on DEQ’s [e-TREADS support website](http://deq.mt.gov/Land/rem/etreads).
2. Enter your name and email address and select ‘Submit Query’.
3. Verify the box is checked on the next screen and select ‘Submit Query’.
4. You should receive an email with a link to confirm your subscription. Click on the link in the email to confirm your subscription.

## Register for an EQuIS Enterprise Account

EQuIS Enterprise is a web application that tracks EDDs submitted to e-TREADS. It is necessary to create an Enterprise user account in order to receive your user certificate, which assigns the correct permissions to the e-TREADS database.

To request an EQuIS Enterprise account:

1. Go to “Step 3: Submit Your EDD” on the [e-TREADS support page](http://deq.mt.gov/Land/rem/etreads).
2. Complete and submit the [TREADS Registration](http://deq.mt.gov/Portals/112/Land/WMRD/DataInformationResources/EQUIS/Documents/TREADSRegistrationform_DynamicPub(6)_distributed.pdf) Form to eTREADSAdmin@mt.gov.
3. After your account is registered, you’ll receive a confirmation email from MTDEQ that contains your Enterprise user certificate.



A user certificate is emailed after an Enterprise user account has been registered and activated by DEQ. The user certificate provides the data provider permission to load data into e-TREADS, so it must be included in each EDD submission to e-TREADS. If the Sign and Submit feature in EDP is used to create the EDD data package, the user certificate will be automatically included. Your user certificate should be saved on your computer for easy access if it’s needed.

## Register for an EPASS Montana Account

ePASS will be used to support the data submittal process when issues arise with a dataset and MTDEQ needs to send large files to you.

If you do not yet have an ePass Montana account, you must create one.

1. Go to www.epass.mt.gov.
2. Select ‘Login’ under the ePass Montana Login section.
3. Select ‘Create an Account’. Enter all required information including a username and password. Note: State of Montana employees should not create an ePass Montana account, login with your state network login credentials.

## Download and Install the EQuIS Data Processor (EDP)

The EQuIS Data Processor (EDP) is a standalone application that must be used by data providers to check their EDD files prior to submission to e-TREADS. The EDP performs a series of formatting checks on the EDD and then identifies any records that have errors.

To use the EDP application, the following four steps must be completed in the order shown:

1. Download and install the EDP application
2. Download the Montana DEQ e-TREADS Format
3. Download the Montana DEQ e-TREADS Reference Values
4. Register the EDP Application

Detailed guidance for the above four steps can be found in Section 2.0 of the EDP Quick Start Guide, available from the [e-TREADS support website](http://deq.mt.gov/Land/rem/etreads).

# EDD Data Tables Organization & Requirements

## EDD Groupings and Data Submittal Types

Data providers can use EarthSoft’s EQuIS Electronic Data Processor (EDP) to create a Microsoft Excel based blank EDD template file and an EDD format description file that matches the MTDEQ e-TREADS EDD format file structure. The EDD format description file defines the tables; and file structure for each data table. It is available on the “EarthSoft-for-MTDEQ” website: <http://www.earthsoft.com/products/edp/edp-e-treads-format-for-the-montana-department-of-environmental-quality/>.

The EDD format description file and EDD template file each consist of 25 individual tables/worksheets that comprise the individual sections within an EDD. Sections are organized into groupings that create distinct EDDs which are submitted to MTDEQ. These EDD Groups are:

1. Initial
2. Field
3. Vapor Intrusion
4. Lab

The complete EDD, as well as, smaller “sub-EDDs” are available on the [e-TREADS support website](http://deq.mt.gov/Land/rem/etreads) to assist data providers that are submitting comprehensive or specific datasets. The “sub-EDDs” include:

1. Initial and Field EDD for Groundwater
2. Initial and Field EDD for Surface Water, Sediment, and Soil
3. Initial and Field Vapor Intrusion EDD
4. Laboratory EDD

Data providers and project managers should discuss what specific information is required for project-specific needs. The following subsections describe the specific requirements for each EDD section. Instructions for checking and processing the data submittal are presented in Section 4. MTDEQ will continue to re-evaluate the EDD requirements and update both the format and guidance documents periodically as the use of e-TREADS expands.

## Initial EDD Group

The “Initial” EDD group provides information about the data provider, the subfacility (area within a site), and its monitoring locations. The Initial EDD group needs to be submitted prior to, or in conjunction with, the first field, vapor intrusion, or lab EDDs. The Initial EDD group consists of 10 tables represented as worksheets in the MS Excel version of the e-TREADS EDD (Table 3.1):

1. Data Provider\_v1
2. Subfacility\_v1
3. Location\_v1
4. SubfacilityLocation\_v1
5. Task\_v1
6. COC\_v1
7. SDG\_v1
8. Equipment\_v1
9. EquipmentParameter\_v1
10. Files\_v1

| Table 3.1: General Information on the Initial EDD Sections | | | | |
| --- | --- | --- | --- | --- |
| Table Name Format | Description | Completed By | Submission Frequency | Data Requirements |
| Data Provider\_v1  A detailed description of the data format for the Data Provider\_v1 EDD Worksheet can be viewed in the Lab EDD Group Sections Appendix A 8.3 | Provides general information about the data provider and the organization’s site contact. This table must only be submitted once for each data provider. All subsequent EDD submissions to MTDEQ for any site by the same data provider will reference the Data Provider information originally submitted.  If a data provider is submitting an EDD with data from a site that is influenced by or is influencing the groundwater of another site (i.e., the plume is a result of multiple releases from more than one site), then refer to Section 7 for additional guidance regarding data reporting. | Data Provider | Initial | The following fields in this section are needed for the EDD to load:  **company\_code** – A code to be added to MTDEQ valid value table rt\_company  **company\_type** – Lookup value describing the type of company (e.g., Laboratory, consultant, agency)  **company\_name** – Full company or organization name of the data provider  **contact\_name** – Name of site contact at the data provider organization  **address1** – Address of contact at data provider organization  **city** – City of contact at data provider organization  **state** – State of contact at data provider organization  **postal\_code** – Zip code of contact at data provider organization  **phone\_number** – Phone number of contact at data provider organization  **email\_address** – e-mail address of contact at data provider organization |
| Subfacility\_ v1 | Includes information about a site (site code, type of facility, and location address). In the EQuIS relational database, the term “facility” is analogous to “site,” and “subfacility” is analogous with a site Operable unit (OU), Area of concern (AOC), Release, etc., if one has been specified for the site. If a site/facility has multiple OUs or subfacilities, then a separate record must be created in the subfacility data file for each. A typical subfacility code for a site is “OU1” to designate operable unit.  Note: Subfacility is required only to describe collection at a subfacility level such as buildings for vapor intrusion. The table can be left blank if this level of detail is not required for a sampling event | Non-laboratory Data Provider | Initial and if appropriate | The following fields in this section are needed for the EDD to load:  **subfacility\_code** – A code representing the subfacility such as “OU1” or “Site-wide” if no subfacility exists.  **subfacility\_type** – Lookup value describing the type of subfacility such as: Building, Basin, Operable Unit, Area of Concern, Release, etc.  The appropriate subfacility names and task codes for the subfacility should be discussed with the MTDEQ PM. |
| Location\_v1 | Contains a record for each of the sampling locations for a Subfacility. A location table needs to be submitted for any and all locations that will have samples, water levels, well information, or any other EDD section requiring the use of a location ID. This section may be submitted multiple times for a site if new locations are added to the site, or if additional information is added for existing locations. | Data Provider Field Personnel | Initial  and for all NEW sample locations | The location term is defined as a unique point on the surface of the earth. Each location is a distinct point defined by longitude and latitude (based on the World Geodetic System of 1984 datum, i.e. WGS84) reported in decimal degrees (i.e., -73.809542 for x\_coord and 42.855490 for y\_coord). The longitude must be reported as negative for locations in the western hemisphere. Examples of locations include soil borings, monitoring wells, and other sampling locations. Each subfacility can contain one or more locations. Each location identifier (sys\_loc\_code) must be unique for a location in the subfacility. Location codes cannot be the same as sample codes. Please do not use special characters (e.g. #, ‘, “, @!). Inclusion of such characters in the sys\_loc\_codes can be problematic for the database.  The location (sys\_loc\_code) field should be left null for samples that are not associated with a specific location. Examples include equipment blanks (EB), field blanks (FB) and trip blanks (TB).  It is beneficial to place enough leading zeros in the sys\_loc\_code in order for them to sort numerically and prevent MW-1 and MW-11 from lining up in order alphabetically in the database.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Sys\_sample\_code | Sample\_type  \_code | Sample\_ source | Parent\_sample  \_code | Sample\_date | Sys\_loc\_code | | MW-001-20090518 | N | Field |  | 05/18/2009  12:00 PM | MW-001 | | Trip Blank- 20090518 | TB | Field |  | 05/18/2009  7:00 AM |  | | LABBLANK20100 625 | LB | Lab |  | 06/25/2010  7:10 AM |  | | WC20120813 | WC | Field |  | 08/13/2012  9:13 PM |  |   The MTDEQ PM should be consulted for any questions on how to identify locations in a subfacility.  If the data provider is also providing alternative coordinates in state plane or some other coordinate system, those should be included in the alt\_x\_coord and alt\_y\_coord coordinate fields and also include PRIMARY as the alt\_identifier\_code and SP as the alt\_coord\_type\_code for State Plane.  If working with historical data, and the coordinates are not available for the sampling locations, contact the MTDEQ PM to determine a method to record the locations. |
| SubfacilityLocation\_v1 | Associates each subfacility to sampling locations. | Data Provider | Initial  And for all NEW sample locations | The following fields in this section are needed for the EDD to load:  **sys\_loc\_code** – A code representing the subfacility such as “OU1” or “Site-wide.”  **subfacility\_code** – Unique identifier for the subfacility or building at the facility. |
| Task\_v1 | Provides details regarding the task(s) under which samples were collected. This field should identify the DEQ-approved sampling plan that was followed to collect the samples. | Data Provider | Initial and for all new tasks. |  |
| COC\_v1 | Lists the various chains of custody used when describing field samples. | Data Provider | Used for every sampling event. | If there are 5 different COC associated with a sampling event the numbering could be 1 – 5 for the COC code |
| SDG\_v1 | Contains information associated with each sample delivery group (SDG). A SDG is a group of samples associated with a COC. There may be multiple SDG’s associated with a COC or all the samples can be in one SDG. An SDG is also referred to as a Work Order. | Data Provider | Used for every sampling event. |  |
| Equipment\_v1 | Contains attributes associated with equipment used during a sampling event. | Data Provider | Used for every sampling event. | The following fields are needed for the EDD to load:  **equipment\_code** – unique identifier for the equipment  **equipment\_type** – type of equipment (provided by reference values file) |
| EquipmentParameter\_v1 | Contains parameters collected by each piece of equipment and information on who collected the data. | Data Provider | Used for every sampling event. | The following fields in this section are needed for the EDD to load:  **equipment\_code** – unique identifier for the equipment  **param\_code** – the equipment parameter  **measurement\_date** – The date and time of the parameter measurement  **param\_value** – The value of the parameter measured  **person\_name** – The name of the person measuring the parameter |
| Files\_ v1 | Allows for multiple documents to be attached to the EDD as supplemental information. When attaching documents, please use the following naming convention: site acronym, abbreviated document description, and date of document (YYYYMMDD). Examples include: ABCsite\_SAP\_20170601; and ABCsite\_COC\_SamplesMW01-MW10\_20170705. | Data Provider | Initial |  |

A detailed description of the data fields in each of the Initial EDD Group Sections can be found in Appendix A.

## Field EDD Group

The field EDD group consists of data tables for data obtained during subsurface investigations and other field activities at a site. The field EDD consists of 10 data tables (Table 3.2):

1. DrillActivity\_v1
2. DownholePoint\_v1
3. Lithology\_v1
4. WellConstruction\_v1
5. WaterTable\_v1
6. WaterLevel\_v1
7. ExtractionInjectionWells\_v1
8. FieldSample\_v1
9. FieldResults\_v1

| Table 3.2: General Information on the Field EDD Sections | | | | |
| --- | --- | --- | --- | --- |
| Table Name | Description | Completed By | Submission Frequency | Data Requirements |
| DrillActivity\_v1 | Contains general information pertaining to all drilling activities (well construction, soil borings, or other) that take place at a project site. | Data Providers Field Personnel | Once per location | The sys\_loc\_code and drill\_event fields need to be populated for each drilling activity event. |
| DownholePoint\_v1 | Contains data consisting of a depth, a parameter, and a reading, which are collected during drilling, direct push sampling, borehole logging, or some other means of downhole data collection. Examples of downhole point data include photoionization detector (PID) readings from soil samples, cone penetrometer test data, direct push electrical conductivity logs, membrane interface probe readings and borehole geophysical logs such as natural gamma, fluid conductivity and fluid temperature. Logs that consist of multiple readings per depth, such as acoustic and optical televiewer logs, should not be stored in the Downhole Point EDD. Associate the files to the EDD use the Files tab of the EDD. When attaching documents, please use the following naming convention: site acronym, abbreviated document description, and date of document (YYYYMMDD). Examples include: ABCsite\_SAP\_20170601; and ABCsite\_COC\_SamplesMW01-MW10\_20170705. | Data Providers Field Personnel | Once per location or when subsequent logs are run in a well installed at the location | All fields in this EDD section are needed for the EDD to load (sys\_loc\_code, depth, param, param\_value, param\_unit, and measurement date). |
| Lithology\_v1 | Contains lithologic data collected from soil samples, rock core, or drill cuttings generated during drilling of borings or collection of rock cores. For soil classification, please use the Unified Soil Classification System (USCS). Rock should be described using standard geologic terms for the rock type encountered in the borehole. | Data Providers Field Personnel | Once per location | The sys\_loc\_code and start\_depth fields are needed for the EDD to load in this section. |
| Well\_ v1 | Contains basic information for each well and is required if the location EDD contains wells. Important information captured in this EDD include the well owner, measuring point elevation, depth of the well, whether or not the well includes a pump, pump information, stickup height, driller, and installation date. | Data Providers Field Personnel | Once per location | This EDD will include all wells installed at the site and should be submitted when well installation is complete and when the datum value of the well is changed. For example, if a well is converted from stickup to flush-mount and the inside casing is cut down, then the datum value (top of casing elevation in this case) has been changed and the Well EDD would be submitted to document this change. Following is a description of the fields in this section: |
| WellConstruction\_v1 | Contains well construction information, such as casing length, screened interval, backfill information, and other construction details. Note: If attaching the well log, please use the Initial EDD subsection, File\_v1 to document that the well log was included with the submission. Include the well log file as part of the final EDD package. | Data Providers Field Personnel | Once per location or when the surface completion or top of casing elevation or datum value is changed | For each well on the Well\_v1 EDD section multiple records describing the components of a well, such as the collar, casing, screen and materials used can be placed in the WellConstruction\_v1 EDD section at their respective depths for each well. The following fields are needed for documenting well construction details in the WellConstruction\_v1 EDD section so that the EDD will load:  **sys\_loc\_code** – Sample location id for a well that must be unique within a facility  **segment\_type** – A code from the rt\_well\_segment\_type valid value table describing the individual section of the well, such as “FILTER PACK”.  **material\_type\_code** – A code from rt\_well\_segment\_type valid value table describing the material used in an individual section of a well, such as “SAND PACK”.  **start\_depth** – The depth, in feet below ground surface (bgs) for the top of the well segment.  **end\_depth** – The depth, in feet bgs for the bottom of the well segment.  **depth\_unit** – The unit of depth measurement for start and end depth in feet.  **inner\_diameter** – A value representing the inner diameter of the segment\_type.  **outer\_diameter** – A value representing the outer diameter of the segment\_type.  **diameter\_unit** – The unit of measure for the inner and outer diameter measurements.  **slot\_type** – The type of well screen slots in the well screen such as bridge, shutter, and continuous.  **slot\_size** – The width of the slots in the well screen.  **slot\_size\_unit** – The unit of measure for the slot size measurement.  **perf\_length** – The length of the well screen.  **screen\_type** – The type of well screen used such as pipe based screen, rod based screen, “v” wire, slotted, or perforated plate. |
| WaterLevel\_v1 | Contains information on groundwater levels measured during sampling activities, synoptic rounds of water level measurements, or other groundwater monitoring events. | Data Providers Field Personnel |  | The fields listed below need to be populated for the EDD to load:  **sys\_loc\_code** – Sample location ID for a well that must be unique within a facility.  **measurement\_date** – The date and time a water level measurement was collected at a well.  **historical\_reference\_elev** – The elevation of the reference point from which water level depth measurements were taken.  **water\_level\_depth** – The depth of water below the reference point.  **water\_level\_elev** – The elevation of the water level calculated by subtracting the water\_level\_depth from the historic\_reference\_elev.  **measured\_depth\_of\_well** – The depth, in feet, of the bottom of the well.  **depth\_unit** – The units used for measuring the water\_level\_depth, water\_level\_elev, and depth of a well.  **Technician** – The name of person collecting the water level measurements.  **dry\_indicator\_yn** – Enter “N” if you are able to obtain a water level measurement or “Y” if the well is dry.  **measurement\_method** – The method of measuring the water table depth (e.g. water level indicator).  Note: feet msl is the preferred elevation unit for elevation data provided to DEQ. |
| WaterTable\_v1 | Contains information to document the first encounter with the water table and subsequent stabilization during drilling of a boring. | Data Providers Field Personnel | Once per location | The fields listed below need to be populated for the EDD to load:  **sys\_loc\_code** – Sample location ID for a well that must be unique within a facility  **type** – The type of aquifer encountered such as “upper,” “lower,” “unconfined” etc.  **sequence** – Enter either “Stabilized” or “Unstabilized” depending on the water level conditions at the time of measurement.  **depth** – The depth, in feet, of the water table below the reference point  **flowing\_yn** – Enter “Y” for yes, water is flowing (artesian), or “N” for no, water is not flowing.  **measurement\_method** – The method of measuring the water table depth (e.g. water level indicator)  **reference point** - Description of the reference point from which the water table depth was taken. (e.g. “ground surface elevation”)  **reference elevation** – The elevation of the reference point from which depth measurements were taken.  Note: feet msl is the preferred elevation unit for elevation data provided to DEQ. Depth measurements should be taken to the nearest 100th (e.g., 15.10 feet). |
| ExtractionInjection Wells\_v1 | Contains data specific to extraction and injection wells, such as pumping rates, period of pumping, and volume pumped. These data relate to any extraction wells operating as part of an interim or remedial action, and the information is used to track the operations and maintenance (O&M) of treatment systems. | Data Providers Field Personnel | Whenever well extraction or injection data are collected and provided to MTDEQ. | The fields listed below need to be populated for the EDD to load:  **sys\_loc\_code** – Sample location ID for a well that must be unique within a facility.  **start\_measure\_date** – Date and time that the extraction/injection measurements began.  **end\_measure\_**date – Date and time that the extraction/injection measurements concluded.  **ave\_pump\_rate** – Average extraction/injection rate.  **pump\_rate\_unit** – Unit of measure for the extraction/injection rate.  **operating\_mode** – Mode in which the well was operating during the reported interval.  **design\_rate** – Extraction/injection rate specified in the DEQ-approved remedial design to fully capture the site’s contamination.  **design\_rate\_unit** – Unit of measure for the design extraction/injection rate. |
| FieldSample\_v1 | Contains detailed information on the samples collected during a sampling event including types of samples, sample matrix, date and location of the sample. | Data Providers Field Personnel | Whenever sample data are collected and provided to MTDEQ. | The fields listed below need to be populated for the EDD to load:  **sys\_sample\_code -** The unique identifier of the sample. Each sample at a facility needs a unique value, including spikes and duplicates.  **sample\_matrix\_code** - Matrix code representing the sample matrix as defined in the field.  **sample\_type\_code -** The code which distinguishes between different types of samples. For example, normal field samples should be distinguished from laboratory method blank samples, etc.  **sample\_source** – This fild identifies where the sample came from, either Field or Lab. In this section of the EDD, this value should always be Field.  **sample\_date** - The date and time the sample was collected (in MM/DD/YYYY HH:MM:SS format).  **composite\_yn** – “Y” if the sample is a composite sample, "N" if not. |
| FieldResults\_v1 | Contains field parameters collected during sampling events, such as groundwater quality parameters, including turbidity, temperature, specific conductance, pH, Eh, and dissolved oxygen. Field test kit results for parameters, such as ferrous iron, which are analyzed in the field, may also be entered into this EDD. | Data Providers Field Personnel | Whenever field investigation data are collected and provided to MTDEQ. | The fields listed below need to be populated for the EDD to load:  **data\_provider** – Valid value from rt\_company or data provider EDD section for organization collecting the field results.  **sys\_loc\_code** – The sample location ID where field results were taken.  **sys\_sample\_code** – The sample that is associated with the field results collected.  **field\_paramete**r – The CAS number code from rt\_analyte representing the field parameter collected.  **start\_depth** – The start depth below ground surface or water surface of the sample interval. Typically this field is only used for soil samples. In the event that the data provider has a multilevel groundwater sample see Appendix A  **end\_depth** – The end depth below ground surface or water surface of the sample interval. Typically this field is only used for soil samples. Typically this field is only used for soil samples. In the event that the data provider has a multilevel groundwater sample see Appendix A  **depth\_unit** – The sample start and end depth unit.  **result\_date** – The date the field parameter measurement was taken.  **result\_time** – The time the field parameter measurement was taken.  **result\_value** – The numeric value of the field parameter result or reading. Or a text value indicating NR for no reading or ND for non-detect.  **result\_unit** – The unit of measurement pertaining to the field parameter result collected.  **quantitation\_limit or reporting limit** – The concentration level above which results can be measured by the instrument.  **task\_code** –. This field should identify the DEQ-approved sampling plan that was followed to collect the samples.  **sample\_matrix\_code** – The matrix valid value code representing the field sample matrix.  **qualifier** – A field parameter qualifier to denote detections and non-detects.  **sampling\_company\_code** – Company code for company collecting the sample.  **sampling\_method** – The sampling method used when collecting the field parameter reading.  **reportable\_result** – Enter “Yes” for usable results considered reportable and “No” for results collected that are not useable and not reportable. Non-reportable results for field parameters may be caused by equipment malfunction or improper field procedures.  **value\_type** – Enter how the final field parameter result was derived as either “Actual,” “Calculated,” or “Estimated.”  **detect\_flag** - May be either "Y" for detected analytes or "N" for non\_detects or "TR" for trace. Use "Y" for estimated values (above detection limit but below the quantitation limit).  **fraction** - Must be either "D" for dissolved or filtered [metal] concentration, "T" for total or undissolved, or "N" for anything else. It is expected that in most cases this field will be N.  **analytical\_method** - The analytic method used to obtain the result value.  **analysis\_location** - Must be either "FI" for field instrument or probe, "FL" for mobile field laboratory analysis, or "LB" for fixed\_based laboratory analysis.  **column\_number** - Values include either "1C" for first column analyses, "2C" for second column analyses or "NA" for tests for which this distinction is not applicable.  **result\_type\_code** - The type of result. Must be either "TRG" for a target or regular result, "TIC" for tentatively identified compounds, "SUR" for surrogates, "IS" for internal standards or "SC" for spiked compounds.  **test\_type** - The type of test. Valid values include "INITIAL", "REEXTRACT1", "REEXTRACT2", "REEXTRACT3", "REANALYSIS", "DILUTION1", "DILUTIONS2", and "DILUTIONS3". |

A detailed description of the data fields in each of the Field EDD Group sections can be found in Appendix A.

## Vapor Intrusion EDD Group

The vapor intrusion EDD group consists of data tables for inventorying buildings and structures; cataloging factors that impact air quality within structures and for the location; and sample and chemistry results for soil vapor, indoor air and ambient outdoor air samples collected. The vapor intrusion EDD consists of three data tables (Table 3.3):

1. VI\_BuildingInspection\_v1
2. VI\_TaskParameters\_v1
3. VI\_Samples\_v1

| Table 3.3: General Information on the Vapor Intrusion Group EDD Sections | | | | |
| --- | --- | --- | --- | --- |
| Table Name | Description | Completed By | Submission Frequency | Data Requirements |
| VI\_BuildingInspection\_v1 | Contains data that inventories buildings and structures, and cataloging factors that impact air quality within structures. | Data Providers Vapor Intrusion Team | Once per building inspection | The fields listed below need to be populated for the EDD to load:  **building\_code**– For each building, this building code must be unique  **building\_name**– This can be a more descriptive name for the building.  **inspection\_date** – The date the building inspection was conducted.  **task\_code** – This field should identify the DEQ-approved sampling plan that was followed to collect the samples. |
| VI\_TaskParameters\_v1 | Contains data specific to the VI task, for example start/end weather, start/end atmospheric pressure, etc. | Data Providers Vapor Intrusion Team | Anytime structure sampling data are collected and provided to MTDEQ | The fields listed below need to be populated for the EDD to load:  **task\_code** – This field should identify the DEQ-approved sampling plan that was followed to collect the samples.  **parameter\_code** – The task parameter. |
| VI\_Samples\_v1 | Contains sample information collected from ambient air, indoor air, and subslab soil vapor sampling forms | Data Providers Vapor Intrusion Team | Anytime structure sampling data are collected and provided to MTDEQ | The fields listed below need to be populated for the EDD to load:  **data\_provider** - The unique identifier of the company or agency submitting the data.  **sys\_sample\_code** - The unique identifier of the sample. Each sample at a facility must have a unique value, including spikes and duplicates. You have considerable flexibility in the methods used to derive and assign unique sample identifiers, but uniqueness throughout the database is the only restriction enforced by EQuIS®.  **sample\_name** - Additional sample identification information as necessary. Is not required to be unique (i.e. duplicates are OK).  **sample\_matrix\_code** - The code which distinguishes between different types of sample matrix. For example, subslab soil vapor samples must be distinguished from indoor samples, etc.  **sample\_type\_code** - The code which distinguishes between different types of samples. For example, normal field samples must be distinguished from laboratory method blank samples, etc.  **sample\_source** - This field identifies where the sample came from, either Field or Lab.  **sample\_start\_date** - The beginning date and time of sample collection (in MM/DD/YYYY HH:MM:SS format).  **sample\_end\_date** - The end date and time of sample collection (in MM/DD/YYYY HH:MM:SS format).  **sys\_loc\_code** - The unique identifier of the location at which the sample was collected. Must be a valid code for the facility and reported value in the sys\_loc\_code field of the Location section.  **sampler** - The name or initials of the sampler.  **sampling\_company\_code** - The unique identifier of the sampling company. |

A detailed description of the data fields in each of the vapor intrusion EDD group sections can be found in Appendix A. Guidance for conducting vapor intrusion investigations can be found at: <http://deq.mt.gov/Land/StateSuperfund/resources> under guidance.

## Lab EDD Group

The lab EDD group consists of data tables for analytical samples collected at a subfacility and associated locations. The lab EDD consists of three data tables (Table 3.4):

1. Sample\_v1
2. TestResultsQC\_v1
3. Batch\_v1

| Table 3.4: General Information on the Lab Group EDD Sections | | | | |
| --- | --- | --- | --- | --- |
| Table Name | Description | Completed By | Submission Frequency | Data Requirements |
| Sample\_v1 | Contains sample matrix, collection date and time, sample type, etc. | Data Providers with input from Field Personnel | Whenever analytical data are collected and provided to MTDEQ | The fields listed below need to be populated for the EDD to load:  **data\_provider** - The unique identifier of the company or agency submitting the data.  **sys\_sample\_code** - The unique identifier of the sample. Each sample at a facility must have a unique value, including spikes and duplicates. You have considerable flexibility in the methods used to derive and assign unique sample identifiers, but uniqueness throughout the database is the only restriction enforced by EQuIS®.  **sample\_matrix\_code** - The code which distinguishes between different types of sample matrix. For example, soil samples must be distinguished from ground water samples, etc.  **sample\_type\_code** - The code which distinguishes between different types of samples. For example, normal field samples must be distinguished from laboratory method blank samples, etc.  **sample\_source** - This field identifies where the sample came from, either Field or Lab.  **sample\_date** - The date and time sample was collected (in MM/DD/YYYY HH:MM:SS format)  **sampling\_company\_code** - The unique identifier of the sampling company.  **sample\_method** - The method of sample collection.  **task\_code** - This field should identify the DEQ-approved sampling plan that was followed to collect the samples.  **composite\_yn** - Y" if the sample is a composite sample, "N" if not.  For Soil and Groundwater samples, the following fields are also required as part of the Sample section:  start\_depth  end\_depth  depth\_unit |
| TestResultsQC\_v1 | Contains analytical results, methods, detection limits, reporting limits, etc. This table also contains laboratory and validator quality control (QC) data. | Data Providers with input from Analytical Laboratory and Data Validators | Whenever analytical data are collected and provided to MTDEQ | The fields listed below need to be populated for the EDD to load:  **sys\_sample\_code** - The unique identifier of the sample.  **lab\_anl\_method\_name** - The laboratory analytical method name or description, for example "SW8260B", "E130.1", etc.  **analysis\_date** - The date and time of sample analysis in "MM/DD/YYYY HH:MM:SS" format. May refer to either beginning or end of the analysis as required.  **fraction** – Please refer to reference values file. Examples of valid values include: “Dissolved”, “Filterable”, “TCLP” and “SPLP.”  **column\_number** - Values include either "1C" for first column analyses, "2C" for second column analyses or "NA" for tests for which this distinction is not applicable.  **test\_type** - The type of test. Valid values include "INITIAL", "REEXTRACT1", "REEXTRACT2", "REEXTRACT3", "REANALYSIS", "DILUTION1", "DILUTIONS2", and "DILUTIONS3".  **lab\_matrix\_code** - The code which distinguishes between different types of sample matrix. For example, soil samples must be distinguished from ground water samples, etc. The matrix of the sample as analyzed may be different from the matrix of the sample as retrieved (e.g. leachates), so this field is available at both the sample and test level.  **analysis\_location** - Must be either "FI" for field instrument or probe, "FL" for mobile field laboratory analysis, or "LB" for fixed\_based laboratory analysis.  **basis** - Denotes reporting basis. Must be either “Dry" for dry weight basis reporting, or "NA" for tests for which this distinction is not applicable.  **dilution\_factor** - The effective test dilution factor, for example "5", "10", "50". If no dilution, enter "1".  **lab\_name\_code** - The unique identifier of the laboratory.  **qc\_level** - The analysis type. For screening analysis input "SCREEN”; for quantitative analysis input "QUANT".  **lab\_sample\_id** - The LIMS sample identifier. If necessary, a field sample may have more than one LIMS lab\_sample\_id (maximum one per each test event)  **cas\_rn** - The unique identifier of the analyte being measured.  **chemical\_name** - The name of the analyte being measured.  **result\_type\_code** - Must be either "TRG" for a target or regular result, "TIC" for tentatively identified compounds, "SUR" for surrogates, "IS" for internal standards, or "SC" for spiked compounds.  **reportable\_result** - Must be either "Yes" for results which are considered to be reportable, or "No" for other results. This field has many purposes. For example, it can be used to distinguish between multiple results where a sample is retested after dilution. It can also be used to indicate which of the first or second column result should be considered primary. The proper value of this field in both of these two examples should be provided by the laboratory (only one result should be flagged as reportable).  **detect\_flag** - May be either "Y" for detected analytes or "N" for non\_detects or "TR" for trace. Use "Y" for estimated values (above detection limit but below the quantitation limit).  **validated\_yn** - Y" if the result has been validated, "N" if not.  **lab\_sdg** - The unique identifier of the sample delivery group (SDG) or work order. A single sample may be assigned to multiple SDGs based on different analysis. |
| Batch\_v1 | Contains data that relate the individual samples to their laboratory sample batch identifiers and laboratory sample delivery groups. The fields in this section need to match the data entered in corresponding fields in the TestResultQC\_v1 section. | Data Provider’s Analytical Laboratory | Whenever analytical data are collected and provided to MTDEQ | The fields listed below need to be populated for the EDD to load:  **sys\_sample\_code** - The unique identifier of the sample.  **lab\_anl\_method\_name** - The laboratory analytical method name or description, for example "SW8260B", "E130.1", etc.  **analysis\_date** - The date and time of sample analysis in "MM/DD/YYYY HH:MM:SS" format. May refer to either beginning or end of the analysis as required.  **fraction** - Please refer to reference values file. Examples of valid values include: “Dissolved”, “Filterable”, “TCLP” and “SPLP.”  **column\_number** - Values include either "1C" for first column analyses, "2C" for second column analyses or "NA" for tests for which this distinction is not applicable.  **test\_type** - The type of test. Valid values include "INITIAL", "REEXTRACT1", "REEXTRACT2", "REEXTRACT3", "REANALYSIS", "DILUTION1", "DILUTIONS2", and "DILUTIONS3".  **test\_batch\_type** - The analysis batch type. Valid values include "Prep", "Analysis", "Leach", and "Run". This is a required field for all batches.  **test\_batch\_id** - The unique identifier of the analysis batch. |

A detailed description of the data fields in each of the lab EDD group sections can be found in Appendix A

### Reporting Re-Tests

All analytes for initial tests and subsequent retests should be reported. When a retest is performed on a sample, the result that is considered the reportable result should be indicated with a “Yes” in the reportable\_result field. The initial test result, or any retest result not considered reportable, will have “No” in the reportable\_result field. Table 3.5 provides an example of reporting a re-tested result.

| Table 3.5: Example of Reporting Re-Test Results | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Type | Analyte | CAS No. | Result Value | Detect Flag | Lab Qualifiers | Reportable Results | Result Comments |
| Initial | Benzene | 71-43-2 | 1000 | Y | E | No | Exceeds Calibration |
| Initial | Toluene | 108-88-3 | 8.2 | N |  | Yes | Not detected |
| Dilution1 | Benzene | 71-43-2 | 650 | Y |  | Yes | Quantitated |

Y = yes N = no E= Exceeds the calibration range of the instrument

### Reporting Selected Ion Monitoring Results

In order to attain lower detection limits some samples may be analyzed using selected ion monitoring (SIM) analyses. SIM is a method where the mass spectrometer is programmed to scan for only those ions significant for the identification of compounds of interest while ignoring unrelated ions. Samples, therefore, may have two results that the laboratories considers reportable (reportable\_result yes/no flag = “Yes”).

The following guidance is suggested for determining which result should be identified as reportable when both a standard and SIM result in provided:

* If the standard method has a detected reportable result above the reporting detection or quantitation limit then a SIM result does not need to be reported because the standard method produced a usable result.
* If a standard result was detected but below the reporting detection or quantitation limit and a SIM result is present, the standard result should be flagged as not reportable and the SIM result will be reportable and used.
* If the standard result is a non-detect and a SIM result is present either as a detected result or non-detect, then the standard result is not reportable and the SIM result is reportable. In each of these cases only one result should be reportable (reportable result flag Yes/No = “Yes”).

In all cases, the data provider should determine the best result to identify as reportable.

### Reporting Results Analyzed From Multiple Columns

Samples analyzed by gas chromatography-mass spectrometry may produce results from multiple columns. The column\_number data field is required for this purpose. The default value for column number is NA, for not applicable, and results analyzed under multiple columns will have 1C and 2C, respectively, to denote first column or second column analyses results. Data providers must indicate which result is to be considered the reportable result.

Version 1 of the MTDEQ EDD format has a check to find samples that contain more than one reportable result for the same chemical. In these instances one result must have the reportable result flag set to “No.”

### Reporting Non-Detects

When reporting non-detect results, the detect flag field should be populated with an “N” and the Lab\_Qualifier or Validation\_Qualifier field should be populated with a “U”, whichever is applicable. The reporting detection limit field is the primary field used by EQuIS to report non detect results and, therefore, the reporting detection limit and detection unit field must be populated with actual reporting limit values. The result value field must be null for non-detect results.

The EDD includes three sets of “limit” values: the reporting detection limit, method detection limit, and the quantitation limit.

* The method detection limit (MDL) is the lowest concentration that can be detected by an instrument with correction for the effects of sample matrix and method-specific parameters such as sample preparation. MDLs are explicitly determined as set forth in 40 CFR Part 136. They are defined as three times the standard deviation of replicate spiked analyses. This represents 99% confidence that the analyte concentration is greater than zero.  
    
  The organic methods in the EPA 500 series, EPA 600 series, and standard methods all give typical MDLs for clean water samples. Generally these clean-water MDLs are used for reporting limits, but the laboratory may use MDLs that it has generated. MDLs generated by the laboratory using the sample matrix of interest are the most reliable. If the clean-water MDLs are used, remember that they do not include all of the upward correction necessary to account for the effects of sample matrix.
* The reporting detection limit is the concentration level above which results can be quantified with confidence. It must reflect conditions such as dilution factors and moisture content, and is required for all results for which such a limit is appropriate. The reporting\_detection\_limit column needs to be reported as the sample specific detection limit. This is the primary field used by EQuIS to report non-detect results with a U qualifier.
* The quantitation limit refers to a minimum concentration of an analyte that can be measured within specified limits of precision and accuracy. They are generally 5-10 times the detection limit. Thus, when quantitation limits are used as reporting limits, the laboratory is saying that the analyte is not present in a sufficient amount to be reliably quantified (i.e., at a concentration above the quantitation limit). It may be present and even positively identified or "seen" at a lower concentration.

If the detect flag is “N” (No), indicating that the chemical was non-detect, then the result field should be null and the reporting limit field populated. In contrast, if the detect flag is “Y” (Yes), indicating that the chemical is detected, then the result field would be populated.

Should a detected result provided in the result field need to be adjusted to a non-detect as a result of data validation, the detect Y/N flag should be changed from a “Y” to a “N”, the result removed from the result field (result field to become null), the appropriate reporting limit provided in the reporting limit field (if not already present), and a “U" (and any other relevant qualifiers) provided in the validator field by the data provider. To negate a result at the value detected and reported by the laboratory, when that result is changed to a non-detect during review or validation, the result value must be removed and may be placed as the reporting detection limit so that when reported the non-detect value will be reported at the value detected instead of the original detection limit.

In the event that the validator qualifies a result, a summary of the rationale should be provided in the Result Comment field. Populating the method detection limit, reporting limit and quantitation limit fields ensures that the original limits are presented and MTDEQ or other end users of the data may understand the results of the validation process in the database. The data provider is responsible for ensuring these fields are populated correctly. The changes to the data that should be identified in an EDD resulting from data validation are described in more detail in Section 3.5.11.2 Table 3.6 is an example of reporting non-detected results.

| Table 3.6: Example of Reporting Non-Detects | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **CAS No.** | **Result Value** | **Detect Flag** | **Reporting Detection Limit** | **Detection Limit Unit** | **Result Comment** | **Laboratory qualifiers** |
| 71-43-2 | 0.15 | Y | 0.005 | ug/ml |  |  |
| 71-43-2 |  | N | 0.005 | ug/ml | non-detect | U |

Y = yes N = no ug/ml = micrograms per milliliter U = not detected

### Toxicity Characteristic Leaching Procedure (TCLP)/Synthetic Precipitation Leaching Procedure (SPLP) Result Reporting

For soil samples that go through toxicity characteristic leaching procedure (TCLP) or synthetic precipitation leaching procedure (SPLP) analysis and are changed from a solid matrix to an aqueous matrix in the laboratory, a fraction code should be applied - “TCLP” or “SPLP.” This helps distinguish results from soil samples that are reported out in an aqueous unit rather than a solid unit. Table 3.7 is an example of reporting TCLP/SPLP results.

| Table 3.7: Example of Reporting TCLP/SPLP Results | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Method Code** | **Fraction** | **Test Type** | **CAS No.** | **Result** | **Detect Flag** | **Reporting Detection Limit** | **Unit** | **Laboratory qualifiers** |
| SW6010 | T | INITIAL | 7439-92-1 | 510 | Y | 500 | ug/kg |  |
| SW6010 | TCLP | INITIAL | 7439-92-1 |  | N | 0.050 | ug/ml | U |

Y = yes N = no ug/ml = micrograms per milliliter ug/kg micrograms per kilogram U = not detected T = total TCLP = toxicity characteristic leaching potential

### Ignitability Result Reporting

Ignitable and non-ignitable results should be reported in the EDD. Depending upon the laboratory analytical method used, results may be reported at the temperature at which the media became ignitable or the amount of combustion that propagates along a 200 millimeter (mm) strip of material within a specified time. For positively ignitable results, the result value should indicate the temperature at which the sample became ignitable or the distance at which combustion propagated along the burning strip. For non-detect results (non-ignitable), data providers should provide a “U” qualifier, leaving the result value blank and setting the reporting detection limit to the temperature at which the media was tested or use 200 mm to indicate the burning strip method was used during testing. Results and reporting detection limits for ignitability should have units indicating degrees (deg) Centigrade (C) or deg Fahrenheit (F), respectively for temperature or mm for burning strip distance.

### Tentatively Identified Compounds (TIC) Reporting

TICs detected by the laboratory should be reported in the EDD. The naming of TICs should be applied in a cascade fashion. The TIC should be identified to analyte name if possible. If this is not possible, then the class, such as isomer or functional groups of the TIC, should be entered. The goal is to identify or define the TIC to the extent possible. If neither an analyte name nor a class can be identified, the TIC should be identified as Unknown. The MTDEQ EDD only allows for reporting up to 10 TICs. Only the 10 with the highest detected concentrations, or the most relevant TICs should be reported. Table 3.9 shows examples of the nomenclature for TICs. As an example, if a sample has three unknown hydrocarbons, then the TICs are labeled UnkHydrocarb1, UnkHydrocarb2, and UnkHydrocarb3. TIC names are to be reported in the cas\_rn field, Pos #28, of the TestResultQC\_v1 EDD section (Appendix A). In addition, the result\_type\_code, Pos # 32 in the TestResultQC\_v1 EDD section should have “TIC” for all TIC records and tic\_retention\_time, Pos #44 in the TestResultsQC\_v1 EDD sections need to be populated.

| Table 3.9: Example of Nomenclature for Unknown TIC Reporting | |
| --- | --- |
| TIC Name | Reported Name in cas\_rn |
| Unknown | Unknown1 – Unknown10 |
| Unknown Hydrocarbon | UnkHydrocarb1 - UnkHydrocarb10 |
| Unknown PAHs | UnkPAH1 - UnkPAH10 |
| Unknown Aromatics | UnkAromatic1 - UnkAromatic10 |
| Unknown VOC | UnkVOC1 - UnkVOC10 |
| Unknown SV | UnkSV1 - UnkSV10 |

PAH = polycyclic aromatic hydrocarbon VOC = volatile organic compound

SV = semi-volatile

### QC Reporting for Analytical Data

The TestResultsQC\_v1 EDD Section contains fields for laboratories to report quality control information regarding industry standards, surrogate results, duplicate results, and spiked compounds pertaining to certain analytical methods. The following subsections define the format and data fields required when reporting QC data for analytical data.

QC fields for a normal sample (e.g., Sample\_type\_code = N, TB, equipment blank (EB), etc.) would all be left blank (Null) because they are only applicable for laboratory quality control samples. Table 3.10 provides a partial list of the QC fields in a TestResultsQC\_v1 EDD section for a normal field sample.

| Table 3.10: Quality Control Fields for a Normal Sample | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CAS  No. | Result value | result unit | result type code | qc spike measured | qc spike recovery | qc dup original conc | qc dup spike added | qc dup spike measured | qc dup spike recovery |
| 93-76-5 | 1.56 | mg/L | TRG |  |  |  |  |  |  |
| 94-75-7 | 3.17 | mg/L | TRG |  |  |  |  |  |  |
| 94-82-6 | 2.31 | mg/L | TRG |  |  |  |  |  |  |

mg/L = milligrams per liter TRG = target

QC fields for a normal sample with surrogates (e.g. Sample\_type\_code = N, TB, EB, etc.) are left blank (Null) except on surrogate rows designated by the result type “SUR” because they are only applicable for laboratory quality control samples Data providers will need to complete the qc\_spike\_added, qc\_spike\_ measured, and qc\_spike\_recovery data fields. Table 3.11 provides a partial list of the fields in a TestResultQC\_v1 EDD section for a normal sample with surrogates.

| Table 3.11: Quality Control Fields in a Normal Sample with Surrogates | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| CAS No. | result value | result unit | result type code | qc original conc | qc spike added | qc spike measured | qc spike recovery |
| 93-76-5 | 1.56 | mg/L | TRG |  |  |  |  |
| 94-75-7 | 3.17 | mg/L | TRG |  |  |  |  |
| PHEN2BR246 | 12.9 | mg/L | SUR |  | 12.5 | 12.9 | 103 |

mg/L = milligrams per liter TRG = target SUR = surrogate

QC fields for a MS (i.e., Sample\_type\_code = MS) required to be completed by data providers are the qc\_original\_conc, qc\_spike\_added, qc\_spike\_measured, and the qc\_spike\_recovery fields. Table 3.12 provides a partial list of the QC fields in a TestResultsQC\_v1 EDD section for a MS.

| Table 3.12: Quality Control Fields for a Matrix Spike (MS) | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CAS  No. | result value | result unit | qc original conc | qc spike added | qc spike measured | qc spike recovery | qc dup original conc | qc dup spike added | qc dup spike measured | qc dup spike recovery |
| 93-76-5 | 5.36 | mg/L | 1.56 | 4.18 | 5.36 | 90.9 |  |  |  |  |
| 94-75-7 | 7.15 | mg/L | 3.17 | 4.18 | 7.15 | 95.2 |  |  |  |  |
| 94-82-6 | 5.66 | mg/L | 2.31 | 4.22 | 5.66 | 79.3 |  |  |  |  |

mg/L = milligrams per liter

QC fields for a MSD (i.e., Sample\_type\_code = MSD) required to be completed by data providers are the qc\_dup\_original conc, qc\_dup\_spike\_conc, qc\_dup\_spike\_measured, qc\_dup\_spike\_recovery and qc\_rpd fields. Table 3.13 provides a partial list of the QC fields in a TestResultsQC\_v1 EDD section file for a MSD.

| Table 3.13: Quality Control Fields for a Matrix Spike Duplicate (MSD) | | | | | | | | | | |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CAS  No. | result value | result unit | qc original conc. | qc spike added | qc spike measured | qc spike recovery | qc dup original conc. | qc dup spike added | qc dup spike measured | qc dup spike recovery | RPD for MS/MSD[[1]](#footnote-1) |
| 93-76-5 | 5.7 | mg/L |  |  |  |  | 1.56 | 4.23 | 5.70 | 97.8 | 6.15% |
| 94-75-7 | 7.62 | mg/L |  |  |  |  | 3.17 | 4.23 | 7.62 | 105 | 6.36% |
| 94-82-6 | 5.33 | mg/L |  |  |  |  | 2.31 | 4.13 | 5.33 | 73.1 | 6.01% |

mg/L = milligrams per liter

QC fields for a Laboratory Control Sample (LCS) (e.g. Sample\_type\_code = BS, BD, LB etc.) follow MS and MSD reporting procedures described previously. LCS blank spike samples (i.e., sample\_type\_code = BS) require the same fields as QC fields for a MS. LCS blank spike duplicate samples (i.e., Sample\_type\_code = BD) require the same fields as QC fields for a MSD.

### QC Spike Status

QC spikes, spike duplicates, surrogate compounds, LCS and any spiked sample results can sometimes be outside the control limits. An asterisk (\*) is used to indicate that the QC spike recovery, QC duplicate spike recovery, and/or QC relative percent difference were outside control limits. The asterisk should be placed in the qc\_spike\_status, qc\_dup\_spike\_status, and qc\_rpd\_status fields of the EDD respectively. It should not be used as an interpreted qualifier.

Table 3.14 provides a partial list of the QC fields in a TestResultsQC\_v1 EDD section showing the QC status fields.

| Table 3.14: Quality Control Status Fields for a Matrix Spike Duplicate | | | | |
| --- | --- | --- | --- | --- |
| CAS  No. | result value | qc spike status | qc dup spike status | qc rpd status |
| 93-76-5 | 5.36 | \* |  |  |
| 93-76-5 | 5.7 |  | \* |  |
| 94-75-7 | 7.62 |  |  | \* |

### Data Validation Fields for Analytical Data

Data validation results can be reported and qualified in the EDD using the validator\_qualifiers field. The lab\_qualifier field should be filled out for all results with qualifiers as originally reported by the laboratory. The validator field should be used when applicable. When the laboratory qualifier is an asterisk (\*), the validator must resolve the \* by placing the correct qualifier in the validator qualifier field; this will most likely be a J. The \* indicating the sample has a QC result outside the control limits should have the \* placed in the appropriate QC status field as described in section 3.5.10 above. All qualifiers populated in the validator qualifiers field must match one of the MTDEQ valid values on the rt\_qualifier reference table for the EDD to load, and the rationale for the qualifier should be provided in the validators result remark field. The table below displays the only qualifiers that should be used in the validator qualifier and the interpreted qualifier fields of the EDD, labs may have additional qualifiers that they may use.

| qualifier | status\_flag | organic\_desc | organic\_hit | organic\_reject | inorganic\_desc | inorganic\_hit | inorganic\_reject | flag\_position |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| C | A | Confirmed by GC/MS. | Y | N |  | N | N | after |
| J | A | Estimated value. | Y | N | Estimated value. | Y | N | after |
| J\* | A | LCS/LCSD recovery outside the control limit or RPD value outside the control limit; estimated value |  |  |  |  |  |  |
| J+ | A | Estimated value, may be biased high | N | N | Estimated value, may be biased high | N | N | after |
| J- | A | Estimated value, may be biased low | N | N | Estimated value, may be biased low | N | N | after |
| NJ | A | Tentatively Identified, poor resolution, est. | Y | N | combination. | Y | N | after |
| R | A | Rejected. | Y | Y | Rejected. | Y | Y | after |
| U | A | Compound was analyzed but not detected. | N | N | Analyte was analyzed for but not detected. | N | N | after |
| UJ | A | Not Detected, Limit is estimated. | N | N | Not detected, estimated quantitation limit. | N | N | after |
| X | A | Pesticide and Arachlor results attempted using GC/MS, but unsuccessful | N | N |  | N | N | after |

Category B deliverables and the validated results provided in a data usability summary report (DUSR) would include the validator\_qualifier and interpreted\_qualifier fields entered. Data providers are required to populate the validated\_yn field with a “Y” for yes if the data have been validated or “N” for no the data have not been validated. For each result where the validated\_yn field is populated with a “Y,” the validation\_level field must also be populated using one of the following validation levels:

| Validation Level | Definition |
| --- | --- |
| Raw | Screening level analysis, not QC’d by the lab |
| DUSR | Checked/validated against on-going laboratory precision and recovery analyses; is within lab QC ( typically what should be provided to DEQ) – Check on the difference between DUSR and Category A with EarthSoft |
| Category A | Laboratory deliverable with limited data and only a data review is possible. No calibration data are provided. |
| Category B | Laboratory deliverable with all data necessary for a full data validation. |

The result value field should be left null when data validation qualifiers indicate non-detect (U) and may be left null when data are rejected (R). When laboratory or validator qualifiers (or both) are reported in an EDD, additional fields on the dt\_result tab should be populated. The MTDEQ PM will review the data validation report and may re-assign the interpreted qualifier results. MTDEQ will communicate any changes made to the Interpreted Qualifiers for an EDD submission.

If it is determined that the data will be submitted into the database, the data provider should provide the rationale for the validator qualification in the Result Comment field. The following subsections describe examples of validation qualifiers that can be presented in EDDs.

#### R (Rejected) Qualified Data

If an R value is provided as a qualifier based on the results of data validation (from the validator qualifier result field), then the reportable result column should be populated appropriately. The use of rejected data is determined by the MTDEQ PM on a case-by-case basis. This may also require discussion with the validator as these results typically are considered to be not reportable (NO in the reportable result = YES/NO field), but project-specific information may indicate the result should remain YES, reportable.

The R qualified data can be provided a number of different ways in the EDD, including the following:

1. No value in the result field, an R in one or more of the qualifier fields, and reportable (YES in the reportable result field). If the value was detected, the detect flag will be Y for Yes; the original detected value was provided in the result field by the laboratory but removed so the data would be reported as rejected but not impact data analysis, since the result value is removed.
2. No value in the result field, an R in one or more of the qualifier fields, and not reportable (NO in the reportable result field) indicates a non-detect that is rejected and won’t be considered usable.

#### Validation Data Qualifiers

If data validation confirms that qualification provided in the laboratory can remain as provided, then the same qualifier presented in the lab qualifier field is presented in the validator qualifier field (Example 1 in Table 3.15 below).

If the validation confirms that qualification provided in the laboratory can remain as provided but additional qualification is necessary, then the qualifier is presented in the lab qualifier field and in the validator qualifier field (Example 7 in Table 3.15 below).

If the MTDEQ PM provides a U or UJ as the Interpreted Qualifiers, then the detect flag should be N, indicating that No, the chemical was not detected. If a chemical is not detected, then the result field should be null and the reporting limit field populated (Example 3 in Table 3.15 below).

#### Qualification Action Based on Blank Contamination

The following are examples of qualification that may be required as a result of contamination of the blank.

* If a chemical is reported as an estimated value below the reporting limit (a value is present in the result field and is qualified with a J value by the laboratory) and it is not detected in the blank, then the value remains a value in the result field and is estimated below the reporting limit (J qualifier remains in the laboratory qualifier column and is added to the Validator Qualifier column) (Example 4 in Table 3.15 below).
* If a chemical is detected in the blank, then a blank action limit (BAL) is calculated by the validator. The BAL is calculated and applied based on the requirements of the data validation protocol for example a BAL might be set at 5 or 10 times the concentration reported in the associated blank. If the reported value (value in the result field) is an estimated value below the reporting limit (J value in the laboratory qualifier column) and below the BAL, then the result is qualified as non-detect (value is removed from the results field) and raised to the reporting limit (reporting limit field is populated and U is placed in Interpreted Qualifier field). For example: BAL = 12 micrograms per Liter (ug/L) and Reporting Limit = 5 ug/L, a reported value of 2 J ug/L becomes 5 U ug/L (Example 5 in Table 3.15 below).
* If a chemical is detected in the blank and the reported concentration (value in result field) is greater than the reporting limit, but less than the BAL, then the result becomes non-detect at the reported concentration. Thus, the result is moved to the reporting limit field, the result field is null, and a U is entered in the Validator Qualifier and Interpreted Qualifier fields. For example: BAL = 12 ug/L and Reporting Limit = 5 ug/L, a reported value of 8 ug/L becomes 8 U ug/L (Example 6 in Table 3.15 below).
* If a chemical is detected in the blank and the reported concentration is greater than the BAL, then no qualification is required. Thus, the data provided in the result and qualifier fields remain unchanged (Example 2 in Table 3.15 below).

Table 3.15 provides an additional example of validated and non-validated data.

| Table 3.15: Data Validation Fields for Analytical Data | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CAS No. | Chemical name (example number) | Result value | Result type | Reportable result | Detect flag | Method detection limit | Reporting Detection Limit | Quantitation Limit | Lab qualifiers | Validator qualifiers | Interpreted qualifier | Validated yn |
| 93-76-5 | Benzene(1) | 2.0 | TRG | Yes | Y | 1.00 | 5.00 | 5.0 | J | J | J | Y |
| 94-75-7 | Toluene(2) | 81 | TRG | Yes | Y | 1.00 | 5.00 | 5.0 |  |  |  | Y |
| 94-82-6 | Xylenes(3) |  | TRG | Yes | N | 1.00 | 5.00 | 5.0 | U |  | U | N |
| 93-76-5 | Benzene(4) | 3.1 | TRG | Yes | Y | 1.00 | 5.00 | 5.0 | J | J | J | Y |
| 94-75-7 | Toluene(5) |  | TRG | Yes | N | 1.00 | 5.00 | 5.0 | J | U | U | Y |
| 94-82-6 | Xylenes(6) |  | TRG | Yes | N | 1.00 | 8.00 | 5.0 |  | U | U | Y |
| UNKVOC1 | Unknown VOC(7) | 1.1 | TRG | Yes | Y | 1.00 | 5.00 | 5.0 | J | N | NJ | Y |

VOC = volatile organic compound TRG = target

Y = yes N = no

U = not detected J = estimated

N = Indicates presumptive evidence of a compound. Usually associated with a TIC.

Note: the superscripted values provided in the chemical name column of the table above reference the example number described above in Sections 3.5.11.2 and 3.5.11.3.

If the analytical data results within an EDD are validated, then the laboratory qualifiers become the Validator Qualifier unless revised by the validator. If the validator provides additional qualification or revisions to the laboratory qualification, then the validator’s rationale should be included in the comments field and the data validation report. MTDEQ will review the validation report and may re-assign the Interpreted Qualifiers for reporting and evaluation. MTDEQ will communicate any changes made to the Interpreted Qualifiers for an EDD submission.

# EDD Verification

To ensure accurate data is being migrated into e-TREADS, data providers are required to check their data prior to submittal. There are two main data checks that must occur, first a quality control step that reviews the raw data and then a verification step that ensures the EDD is formatted correctly.

## Quality Control (QC)

Prior to import, all location metadata should be verified for correct latitude, longitude and Hydrologic Unit Code (HUC).

The raw analytical data should go through a complete quality control process to verify the EDD matches the hardcopy results and appropriate result qualifiers have been added. The minimum QC requirements to follow are:

1. Perform a QC data overview and check for obvious errors.
2. Are reported values within reason for each method?
3. Ensure reported values have the same number of decimal places as the detection limit and limit the result to three significant figures.
4. Ensure analytical units are correct.
5. Ensure detection limits are correct and reported.
6. Ensure correct analytical methods are reported.
7. Ensure analysis dates are reported.
8. Ensure results less than the detection limit are reported as less than the method detection limit. Exception is when lab uses J flag reporting for results between the MDL and detection limit (reporting limit).
9. Check for holding time exceedance.
10. Calculate field duplicate precision (RPD’s). J flag associated samples with exceedances.
11. Determine if field blanks are reported =/> the detection limit (method detection limit). A B flag is associated with data that is =/< 10x the blank hit.
12. Compare lab reports to reported data.
    1. Ensure lab sample IDs match the sys\_sample\_code
    2. Compare reported results with EDD results.
13. Review lab generated QC. Flag appropriate data if lab controls are exceeded.

For questions involving quality assurance and quality control of your raw data, contact Aimee Reynolds at [areynolds@mt.gov](mailto:areynolds@mt.gov).

## The EQuIS Data Processor

After all the appropriate worksheets in the e-TREADS EDD have been populated with data, the EDD is ready for data checking using the EQuIS Data Processor (EDP). The EDP is a standalone application that data providers use to check their EDD files prior to submission to ensure they are formatted as described in this guidance manual. If the EDP detects errors, the errors will be identified and can be corrected directly within the EDP. After the errors are corrected, the EDP needs to be re-run to ensure that no errors remain. An EDD will not load into TREADS unless it is error free.

Information on using the EDP can be found within the EDP Quick Start Guide available from the [e-TREADS support website](http://deq.mt.gov/Land/rem/etreads).

# EDD Submittal Process

After an EDD has passed through the EDP application error-free, it is ready to be submitted to MTDEQ. In order to submit an EDD, the EDD needs to be in a compressed file format and a completed ‘External e-TREADS Submittal Form’ provided. Figure 5-1 details the actions external data providers and MTDEQ are responsible for when submitting and processing an EDD.

## The Data Package

After an EDD has passed through the EDP with no errors, the data provider is ready to create the final data package. The data package is a single .zip file that consists of the EDD, any attached documents referenced in the EDD, and the data provider’s user certificate. The easiest way to create the EDD data package is use the Sign and Submit feature in EDP, although data packages can also be created manually.

Detailed guidance for creating a data package can be found in Section 3.7 of the EDP Quick-start Guide available from the [e-TREADS support website](http://deq.mt.gov/Land/rem/etreads).

## External e-TREADS Data Validation Form

The external e-TREADS data validation form is available from the [e-TREADS Support Webpage](http://deq.mt.gov/Land/rem/etreads) and must be submitted along with each EDD to e-TREADS (note: submission of an equivalent form is acceptable). The data validation form includes information about the data submitter and about the data being submitted and also verifies that proper quality control was followed. After the data in the EDD has been successfully migrated to e-TREADS, MTDEQ will send the completed form back to the data provider as proof of submittal.

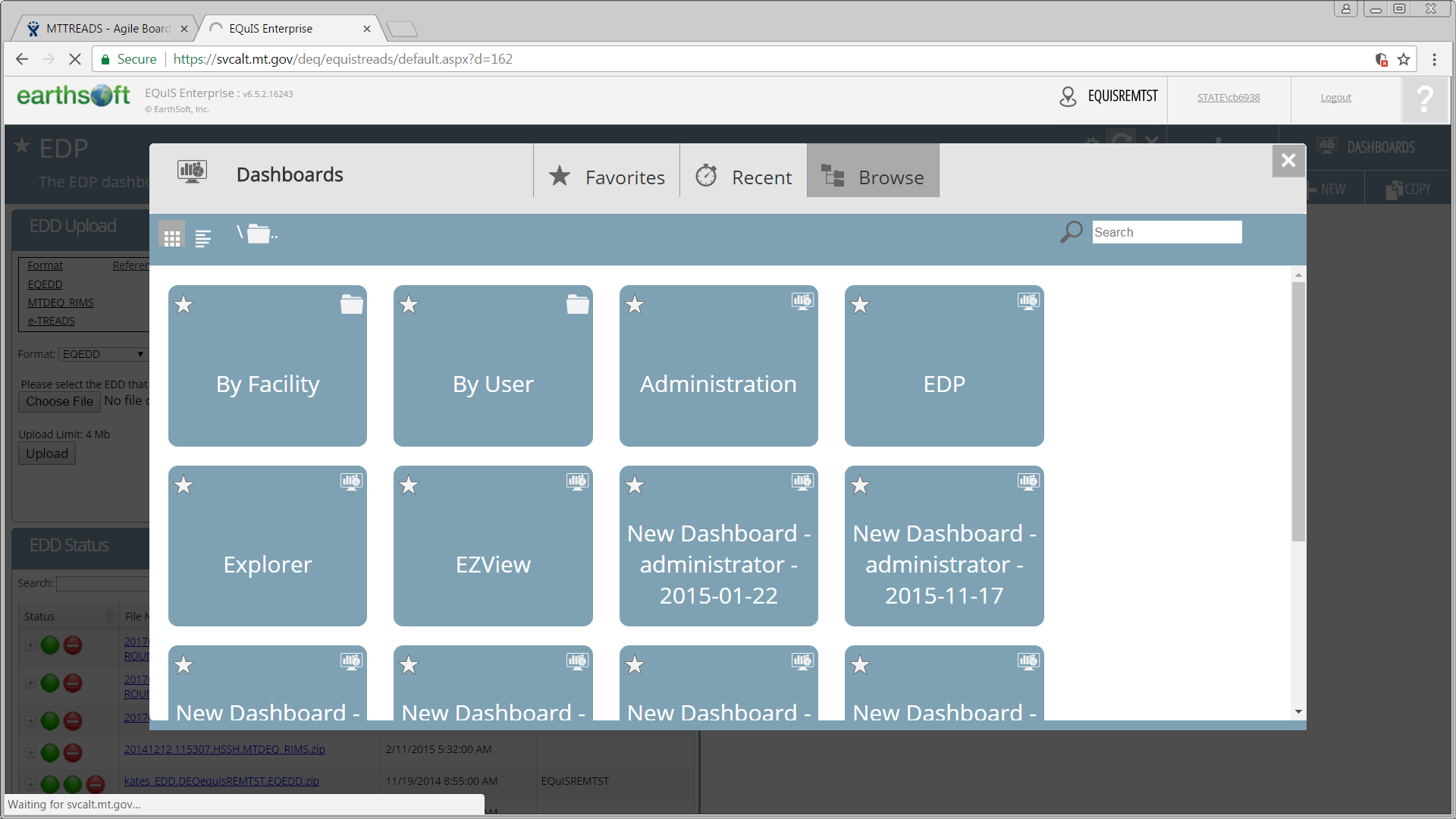
To complete the form, select the ‘[e-TREADS Data Validation Form’](http://deq.mt.gov/Portals/112/Land/WMRD/DataInformationResources/EQUIS/Documents/2015-12-15%20DV%20Guidance%20Checklist%20PDF%20Version%201.0%20Distributed%20(1).pdf) link under Step 3 on the [e-TREADS support website](http://deq.mt.gov/Land/rem/etreads). The form is a pdf form, so enter your information directly into the form. Save the file to your computer where you can access it for the next step, submitting your EDD to e-TREADS.

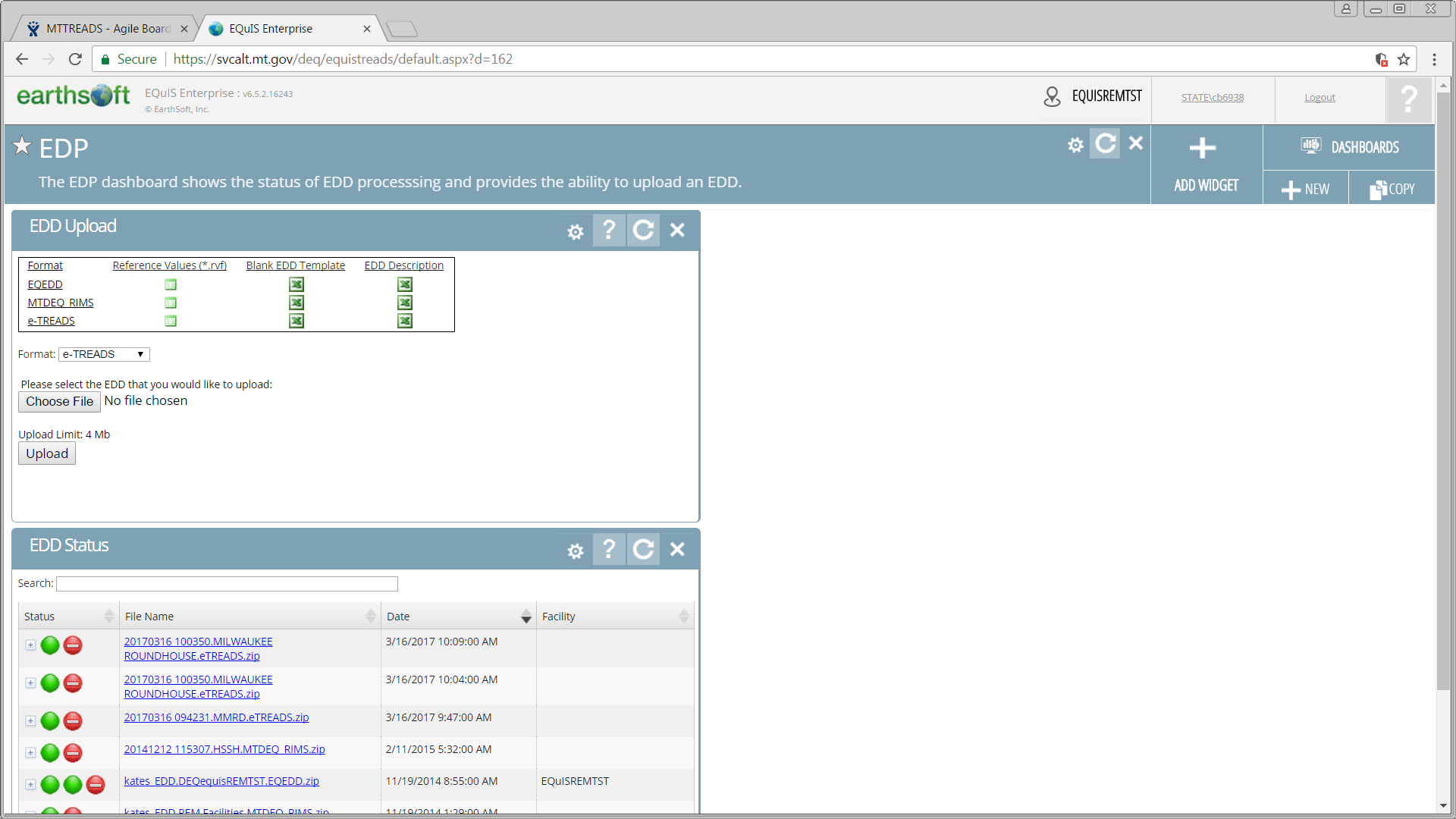
## Submitting EDDs to MTDEQ

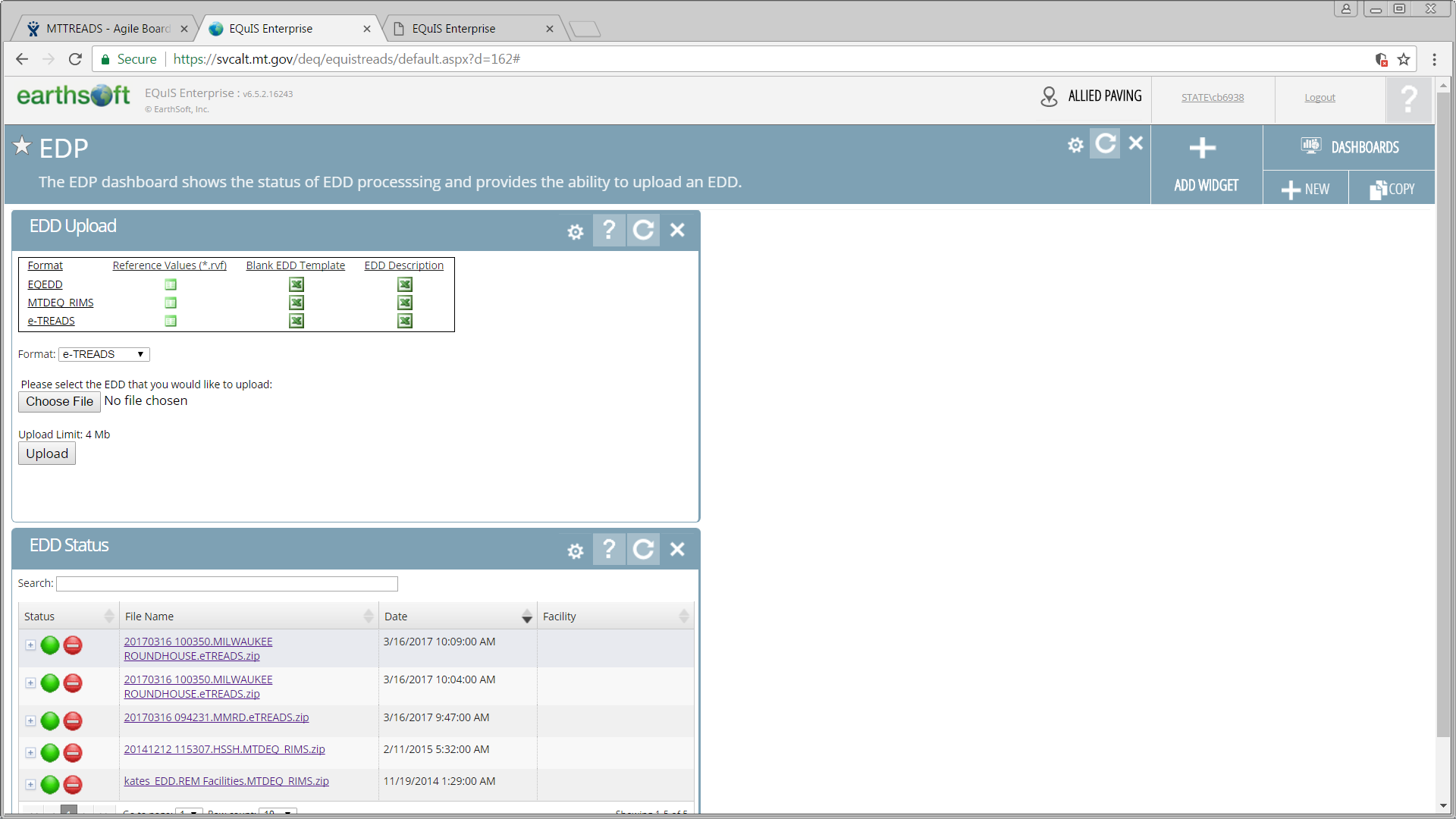
The data package, submittal form, and data validation report must be submitted through e-TREADS. e-TREADS is accessible via the following URL: <https://svcalt.mt.gov/deq/equistreads>. Instructions for registering for e-TREADS can be found in Section 2.3.

To submit an EDD to e-TREADS:

1. Login to e-TREADS
2. Navigate to the EDP Dashboard



1. Navigate to the EDD Upload Widget   
   



**d.)**

**b.)**

**c.))**

**a.)**

* 1. Select Facility in the ‘**Facility Chooser**’ at the top of the Enterprise page.
  2. Select the e-TREADS ‘**Format**’
  3. Click on the ‘**Choose File’** Button and select the EDD file you want to upload
  4. Click on the ‘**Upload**’ button to upload your file.

Note: The final EDD name needs to use the naming convention of <unique ID>.<facility code>.<format name>.zip for it to pass the file validation process. If the file name does not contain the facility code, format name, or user certificate, they will automatically be added when uploading through the EDD Upload Widget. If the facility code is missing from the file name, the format name must also be missing for the facility code to be added.

After you send your data package through e-TREADS, the application will attempt to load the data package into e-TREADS. If the EDD was checked in the EDP prior to submission, there should be no errors and the data should load into e-TREADS successfully. The data provider will receive an email confirming successful import into the database and the final e-TREADS Data Validation Form will be attached. The validation form is proof the data was loaded into e-TREADS. If there were errors upon import into e-TREADS, the data provider will receive an email indicating what needs to be corrected. The errors will need to be corrected and the EDD will need to be resubmitted.

### Original EDD submittal

An original EDD submittal contains data being submitted for the first time to MTDEQ. MTDEQ will only accept the EDD submittal if it has been processed by the EDP. If there are no errors at the final verification step, MTDEQ will load the data to the permanent database. An original submittal could consist of an initial EDD containing DataProvider\_v1, Subfacility\_v1, Location\_v1, Sample\_v1, and TestResultQC\_v1 tables. Subsequent EDDs for the same subfacility and locations would only need the Sample\_v1 and TestResultQC\_v1 tables, but would still be considered an original submittal. If the EDD contains any errors, MTDEQ will send the data provider an email specifying the errors that need to be corrected. The email correspondence between the data provider and MTDEQ should state that it is an original submittal in the subject line and in the body of the email.

### Update EDD submittal

In the case where previous information was provided to and accepted by MTDEQ and updated through the course of a project (e.g., location re-surveyed or updated x, y coordinates), the EDD submittal should contain only the data for the records being updated. Prior to submitting the EDD to MTDEQ, the data provider should check the file(s) with the EDP, and then submit the updated EDD. The files of an updated EDD submittal should follow the normal naming convention of an EDD submittal and contain only data for the records being updated. The email should state that it is an update submittal in the subject line (e.g. insert and update or insert and replace) and in the body of the email. The reason and details of what was updated should also be provided within the body of the email to aid in the upload.

For example, if a site is resurveyed and it is discovered that three of the locations’ coordinate information have changed due to increased accuracy, a new location file containing data for only those three locations would be submitted as an update. Note: All required fields need to be populated for the three locations regardless of whether or not these fields were updated.

### Handling excessively large EDDs

When trying to submit all the data collected at a single site over many years, EDD files tend to grow very large. In order to control the size of EDDs, it is important to submit the EDD in sections following the organization of the EDD format. Submitting the initial EDD with all data provider information, subfacility, and location information as a single file is usually not very large. Submitting the subsurface investigation EDD section, with all lithology, well, and well construction information and submitting the field results EDD sections are generally not very large when submitted as separate files. For soil vapor intrusion and general soil, groundwater, and other matrices laboratory results, it is recommended to generate EDD files based on project task, phase, or sampling event in order to keep the TestResultsQC EDD section below 100,000 records.

### Additional Considerations for EDD Submittals

The following are additional items that should be considered by the data provider when submitting EDDs to MTDEQ so that the data are accepted and loaded into the database without errors. Since these are frequent issues with EDD submittals observed by MTDEQ, these issues and specific guidance are provided below.

* The Location \_v1 and FieldResults\_v1 should be submitted separately so that presentation of information for duplicate locations does not present errors for the database.
* The analysis date and time should be consistent between the Test Result QC file and the Batch\_v1 file because of relationships between these two sections of an EDD.
* When providing both the sample date and time and an associated analysis date and time, the analysis date and time should not precede the sample date and time. This can occur when the analysis occurs on the same date as the sample collection and no specific analysis time is provided by the laboratory, resulting in presentation of a default analysis time.
* If a test type is flagged as a dilution, the dilution factor field should not have a factor of 1 presented. A factor greater than 1 should be provided and both the dilution and initial result should be presented in the appropriate fields.
* MTDEQ uses the task\_code field to should identify the DEQ-approved sampling plan that was followed to collect the samples. This field should then be populated by the data provider in the Sample\_v1 and Field Results\_v1 sections of an EDD.

Please refer to Appendix B for a complete final QC checklist data providers should follow prior to submitting an EDD to MTDEQ.

# Valid values requests

## Valid Values

Valid values, also known as reference or look-up values, govern the content of some fields in the data files. In other words, some fields may only be populated with data that exactly match one of the choices listed in the MTDEQ’s valid values file available on the “EarthSoft-for-MTDEQ” website: <http://earthsoft.com/products/edp/edp-e-treads-format-for-the-montana-department-of-environmental-quality/>

Each data field in the MTDEQ format description file requiring a valid value is denoted by blue text in the field name column, and the ‘Lookup’ column references the valid value table (and the field within the table) where the actual valid values can be found. For example, cas\_rn is in column A (Field Name), row 29 of the TestResultsQC\_v1 format description table. In that same row, under the Lookup column (column G), is rt\_analyte.cas\_rn. In this example, “rt\_analyte” refers to the “RT\_ANALYTE” valid value table, and “cas\_rn” refers to the specific field (CAS\_RN) in the “RT\_ANALYTE” valid value table. The CAS\_RN field contains the actual list of acceptable valid values that should be used to populate the cas\_rn field (column AB) in the TestResultsQC\_v1 table in the EDD.

If data providers cannot find an appropriate matching value in the current MTDEQ valid value list, they can request an addition to the valid values list by sending an email to the MTDEQ e-TREADS Administrator at [eTREADSAdmin@mt.gov](mailto:eTREADSAdmin@mt.gov). In the subject line of the email, include “Valid Value Request;” in the body include the proposed new value, the valid value table for it to be added, and a description of the value and why it needs to be added. The MTDEQ valid value spreadsheet can be used as a template by clearing the current table and pulling in the values you want to request be added to a table and submitting that along with the email request. Only the table with the requested valid values should be included and as many columns as possible should be populated. If accepted, MTDEQ will update the appropriate reference value table and notify data providers when an updated version of the EDP format file has been posted. This updated reference value file will allow the EDP to recognize the new value as valid. MTDEQ will notify via email all registered TREADS data providers when new reference values have been posted on the EarthSoft-for-MTDEQ” website. Because valid values are updated periodically, data providers should download the MTDEQ valid value file frequently.

## Analyte Requests

In order for the water level EDD section to utilize a chemical CAS number as an analyte for a light non-aqueous phase liquid (LNAPL), e-TREADS needs to contain certain properties about the chemical used. These properties are necessary to calculate the NAPL’s effect on the groundwater level measured in the well due to the thickness of the NAPL sitting on top of groundwater. These chemical properties are stored in EQuIS on the RT\_ANALYTE\_DETAIL table.

When using a CAS number in the LNAPL\_CASRN field on the WaterLevel\_v1 EDD section, check the reference table RT\_ANALYTE\_DETAIL to see if you’re chemical’s properties have been added to the reference table. If not, you need to provide a valid value request e-mail to [eTREADSAdmin@mt.gov](mailto:eTREADSAdmin@mt.gov). Valid values requests for chemicals to be used on the WaterLevel\_v1 EDD section as a chemical related to LNAPL require the following fields to be submitted:

* **cas\_rn** – CAS Registry Number, or other analyte identifying code.
* **specific\_gravity** – The ratio of the density of a given solid or liquid substance to the density of water at a specific temperature and pressure.
* **formula\_weight** – The formula weight of the analyte being referenced.
* **acidic\_yn** – Indicates if an organic parameter is acidic (“Y”) or basic (“N”).
* **standard\_unit** – The standard unit used for a respective analyte.
* **equivalent\_weight** – The weight of an analyte that contains one equivalent of a proton, for acids, or one equivalent of a hydroxide, for bases. Also known as gram equivalent.
* **half\_life\_years** – The number of years for an analyte to decay to half of its original amount following an exponential decay.

# Process for submitting data for plumes with multiple contributing sites or areas

Many sites within MTDEQ’s environmental remediation programs are located next to each other and may have co-mingled plumes or source areas. These sites may also have multiple potentially responsible parties conducting different investigations or collecting environmental data simultaneously. MTDEQ needs to ensure that the data collected by multiple parties or in a co-mingled plume is properly managed and not duplicated within the EQuIS database. Therefore, EDDs that contain data for multiple sites or co-mingled areas need to include the information contained in the following sections.

It is the responsibility of the data provider to coordinate with the MTDEQ PM to ensure that the data collected are submitted under the correct Facility ID.

## Samples Collected on a Neighboring Remedial Program Site

If data are collected within the actual site boundary of a neighboring remedial program site, the data should be submitted using the Facility ID associated with the sampling event. For example, Site A is located next to Site B and Site A collects a sample on Site B. The data associated with the Site B sample will be submitted under the Facility ID for Site A. The data provider will clarify that the specific sample location is associated with a neighboring remedial program site, and will specify which site in the remark field. The Site A data provider will use the latitude and longitude information that is recorded for the Site B sample location. In the event that the Site A data provider believes that the Site B location information is inaccurate, the data provider will notify the MTDEQ PM and MTDEQ will resolve the issue.

* **Example 1** – In the well\_v1 section of the MTDEQ EDD format, the well owner listed is the party financially responsible for the monitoring well installation regardless of the facility/property on which the well was installed. An example of this would be if Site A pays to install a well on Site B. The data collected from this well would be submitted under Site A’s Facility ID, and the owner of the well would be listed as Site A as they are financially responsible for the well. The sample location information will geospatially place the well within Site B’s property, and the Site A data provider will clarify in the remark field that the well was placed within Site B’s property.
* **Example 2** – Another example may be where Site A coordinates a sampling event with Site B. Site B is conducting a quarterly groundwater monitoring event for a petroleum release, and Site A wants to collect samples from the same wells but analyze for a different substance. The Site A samples should be handled in the same way as split samples; however, the analyses will be different from the Site B petroleum analyses. When Site A is ready to load its laboratory EDD, it will rely on the Site B field results EDD to populate the data for the field and location information at the Site B wells. Site A will indicate in the remark field that it collected the samples concurrently with the specific Site B sampling event. The sample location and sample date will be the same; however, the sample number and sample time will be different and that will distinguish it from the Site B data set. The sample number should include an identifier indicating it is a Site B well. For instance, a typical naming convention for monitoring wells is to label them according to the order in which they were installed at a site. Site A may have a monitoring well labelled MW-01, and Site B may have a monitoring well labelled MW-01. When Site A collects a sample from Site B’s MW-01, it should include a sample number that carries a Site B identifier; for example, SBMW-01.

The examples above also apply to location and geophysical sections of the EDD format, including the initial, field activities, and subsurface field investigation EDD as outlined in subsequent sections of this Manual. Sample location based queries will allow data from both Site A and Site B investigations to be retrieved and evaluated as appropriate.

NOTE: In the Well\_v1 section of the MTDEQ EDD format the well owner listed is the party financially responsible for the monitoring well installation regardless of the facility/property on which the well was installed.

# Appendix A: MTDEQ e-TREADS EDD Formats

## Definition of the Data Format tables

* Field names cannot be omitted and their order cannot change.
* Field Name: the name of the data element for each column of the data table.
* Required Field: Indicates if a data element is required to be entered into the field.
* Description: Explains the data elements for each column.
* Data Type:
* DateTime: Date format is MM/DD/YYYY Time format is 24-hour (military) HH:MM
* Numeric: Decimal number.
* Text: characters and numbers. Length restrictions are indicated in parentheses
* Valid Values: Indicates data requirement either described as text or is a required valid value from the valid value file indicated by <worksheet name>.<column name>.
* The header row for each table is color-coded as follows:
* **Red, Bold**: Required
* Red, Underlined: Required, Part of the primary key
* Blue, Bold: Look-up table

## Custom EDD Checks

| **Check Description** | **Section and Field** |
| --- | --- |
| If a coordinate field is populated then coord\_identifier and coord\_type\_code are required. | Location\_v1.coord\_type\_code  Location\_v1.coord\_identifier  Location\_v1.x\_coord  Location\_v1.y\_coord  Location\_v1.observation\_date  Location\_v1.surf\_elev  Location\_v1.elev\_unit  Location\_v1.source\_scale  Location\_v1.subcontractor\_name\_code  Location\_v1.horz\_accuracy\_value  Location\_v1.horz\_accuracy\_unit  Location\_v1.horz\_datum\_code  Location\_v1.horz\_collect\_method\_code  Location\_v1.elev\_accuracy\_value  Location\_v1.elev\_accuracy\_unit  Location\_v1.elev\_datum\_code  Location\_v1.elev\_collect\_method\_code  Location\_v1.verification\_code  Location\_v1.reference\_point  Location\_v1.geometric\_type\_code  Location\_v1.rank |
| If param value = 'Other' then remark field is required. | VI\_BuildingInspection\_v1.occupant\_status  VI\_BuildingInspection\_v1.occupant\_status\_remark  VI\_BuildingInspection\_v1.building\_type  VI\_BuildingInspection\_v1.building\_type\_remark  VI\_BuildingInspection\_v1.foundation\_type  VI\_BuildingInspection\_v1.foundation\_type\_remark  VI\_BuildingInspection\_v1.building\_const  VI\_BuildingInspection\_v1.building\_const\_remark  VI\_BuildingInspection\_v1.foundation\_const  VI\_BuildingInspection\_v1.foundation\_const\_remark  VI\_BuildingInspection\_v1.basement\_room\_use  VI\_BuildingInspection\_v1.basement\_room\_use\_remark  VI\_BuildingInspection\_v1.basement\_floor\_const  VI\_BuildingInspection\_v1.basement\_floor\_const\_remark  VI\_BuildingInspection\_v1.basement\_wall\_const  VI\_BuildingInspection\_v1.basement\_wall\_const\_remark  VI\_BuildingInspection\_v1.basement\_other  VI\_BuildingInspection\_v1.basement\_other\_remark  VI\_BuildingInspection\_v1.basement\_moisture  VI\_BuildingInspection\_v1.basement\_moisture\_remark  VI\_BuildingInspection\_v1.wash\_dry\_loc  VI\_BuildingInspection\_v1.wash\_dry\_loc\_remark  VI\_BuildingInspection\_v1.heat\_fuel\_type  VI\_BuildingInspection\_v1.heat\_fuel\_type\_remark  VI\_BuildingInspection\_v1.heat\_system\_type  VI\_BuildingInspection\_v1.heat\_system\_type\_remark  VI\_BuildingInspection\_v1.air\_cond\_type  VI\_BuildingInspection\_v1.air\_cond\_remark  VI\_BuildingInspection\_v1.pesticide\_use  VI\_BuildingInspection\_v1.pesticide\_use\_remark  VI\_BuildingInspection\_v1.water\_heat\_type  VI\_BuildingInspection\_v1.water\_heat\_remark  VI\_BuildingInspection\_v1.water\_heat\_loc  VI\_BuildingInspection\_v1.water\_heat\_loc\_remark  VI\_BuildingInspection\_v1.cook\_type  VI\_BuildingInspection\_v1.cook\_type\_remark  VI\_BuildingInspection\_v1.indoor\_hobby  VI\_BuildingInspection\_v1.indoor\_hobby\_remark  VI\_BuildingInspection\_v1.weekly\_cleaning  VI\_BuildingInspection\_v1.weekly\_cleaning\_remark |
| If param value = 'Y' then remark is required. | VI\_BuildingInspection\_v1.recent\_remodel\_yn  VI\_BuildingInspection\_v1.recent\_remodel\_remark  VI\_BuildingInspection\_v1.recent\_carpet\_yn  VI\_BuildingInspection\_v1.recent\_carpet\_remark |
| Reporting\_detection\_limit cannot be negative unless one of the radiological fields (minimum\_detectable\_conc, counting\_error, uncertainty, critical\_value) are populated. | TestResultQC\_v1.reporting\_detection\_limit  TestResultQC\_v1.minimum\_detectable\_conc  TestResultQC\_v1.counting\_error  TestResultQC\_v1.uncertainty  TestResultQC\_v1.critical\_value |
| If x\_coord or y\_coord is populated then the other are required. | Location\_v1.x\_coord  Location\_v1.y\_coord |
| If the value or unit is populated then the other is required. | Location\_v1.surf\_elev  Location\_v1.elev\_unit  Location\_v1.horz\_accuracy\_value  Location\_v1.horz\_accuracy\_unit  Location\_v1.elev\_accuracy\_value  Location\_v1.elev\_accuracy\_unit  Location\_v1.total\_depth  Location\_v1.depth\_unit |
| Date cannot precede sample\_date. | TestResultQC\_v1.analysis\_date  TestResultQC\_v1.prep\_date  TestResultQC\_v1.leachate\_date |
| If method\_detection\_limit, reporting\_detection\_limit, or quantitation\_limit is populated then detection\_limit\_unit is required. | TestResultQC\_v1.method\_detection\_limit  TestResultQC\_v1.reporting\_detection\_limit  TestResultQC\_v1.quantitation\_limit  TestResultQC\_v1.detection\_limit\_unit |
| Parent record must exist in the TestResultsQC section. | Batch\_v1 |
| If sample\_matrix\_code='SO' or 'WG' and sample\_type\_code='N' or 'FD' then start\_depth, end\_depth and depth\_unit are required. | BasicChemistry\_v1.sample\_matrix\_code  BasicChemistry\_v1.sample\_type\_code  BasicChemistry\_v1.start\_depth  BasicChemistry\_v1.end\_depth  BasicChemistry\_v1.depth\_unit  Sample\_v1.sample\_matrix\_code  Sample\_v1.sample\_type\_code  Sample\_v1.start\_depth  Sample\_v1.end\_depth  Sample\_v1.depth\_unit |
| If validated\_yn='Y' then validation\_level is required. | TestResultQC\_v1.validated\_yn  TestResultQC\_v1.validation\_level |
| If result\_value is populated then result\_unit is required. | TestResultQC\_v1.result\_value  TestResultQC\_v1.result\_unit |
| Samples with more than one result with the same cas\_rn cannot have reportable\_result='Yes'. | TestResultQC\_v1.reportable\_result  TestResultQC\_v1.sys\_sample\_code  TestResultQC\_v1.lab\_anl\_method\_name  TestResultQC\_v1.fraction  TestResultQC\_v1.cas\_rn |
| Allow value to exist in either the VI section or Equipment section. | Equipment\_v1.equipment\_code  EquipmentParameter\_v1.equipment\_code  VI\_Samples\_v1.canister\_id  VI\_Samples\_v1.flow\_controller\_id  VI\_Samples\_v1.vac\_gauge\_id |
| If result\_type\_code='TIC' then tic\_retention\_time is required. | TestResultQC\_v1.result\_type\_code  TestResultQC\_v1.tic\_retention\_time |
| Sys\_loc\_code is required where sample\_type\_code=N. | VI\_Samples\_v1.sys\_loc\_code  VI\_Samples\_v1.sample\_type\_code |
| Parent\_sample\_code is required where sample\_type\_code=BD, FD, FR, FS, LR, SD, SPD, RD, or MSD. | Sample\_v1.parent\_sample\_code  Sample\_v1.sample\_type\_code |
| If detect\_flag='Y' and result\_type\_code='TRG' or 'TIC' then result\_value is required. | TestResultQC\_v1.detect\_flag  TestResultQC\_v1.result\_type\_code  TestResultQC\_v1.result\_value |
| If detect\_flag='N' and result\_type\_code='SC', 'TRG' or 'TIC' then reporting\_detection\_limit is required. | TestResultQC\_v1.result\_type\_code  TestResultQC\_v1.detect\_flag  TestResultQC\_v1.reporting\_detection\_limit |
| If analysis\_location does not equal 'FI', then lab\_name\_code, qc\_level, lab\_sample\_id, lab\_matrix\_code and dilution\_factor are required. | TestResultQC\_v1.analysis\_location  TestResultQC\_v1.lab\_name\_code  TestResultQC\_v1.qc\_level  TestResultQC\_v1.lab\_sample\_id  TestResultQC\_v1.lab\_matrix\_code  TestResultQC\_v1.dilution\_factor |
| If detect\_flag='N' then result\_value should be null. | TestResultQC\_v1.detect\_flag  TestResultQC\_v1.result\_value |
| If any of the fields datum\_value, datum\_unit, step\_or\_linear, datum\_collection\_method\_code or datum\_desc are populated then datum\_start\_date is made a required field. | Location\_v1.datum\_value  Location\_v1.datum\_unit  Location\_v1.step\_or\_linear  Location\_v1.datum\_collection\_method\_code  Location\_v1.datum\_desc  Location\_v1.datum\_start\_date |
| Interpreted\_qualifiers is required if validator\_qualifiers is populated or if lab\_qualifiers is populated, validator\_qualifier is null and validated\_yn='N'. If lab\_qualifiers is populated and interpreted\_qualifiers is populated and validated\_yn='Y' then validator\_qualifiers is required. | TestResultQC\_v1.lab\_qualifiers  TestResultQC\_v1.validator\_qualifiers  TestResultQC\_v1.interpreted\_qualifiers  TestResultQC\_v1.validated\_yn |
| If counting\_error is populated then uncertainty (1 sigma or 2 sigma) is required. | TestResultQC\_v1.counting\_error  TestResultQC\_v1.uncertainty |
| Populate chemical\_name when cas\_rn is changed | TestResultQC\_v1.cas\_rn  TestResultQC\_v1.chemical\_name |

## DataProvider\_v1

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| **company\_code** | Text(40) | PK | Y |  |  | rt\_company.company\_code |  | The unique identifier of the company or agency responsible for completion and submittal of any part of this EDD. |  |
| **company\_type** | Text(20) |  | Y | SUBCONTRACTOR |  | rt\_company\_type.company\_type | rt\_company.company\_type | The type of company. |  |
| **company\_name** | Text(255) |  | Y |  |  |  | rt\_company.company\_name | The name of the data provider. May be more descriptive than company\_code. |  |
| contact\_name | Text(50) |  |  |  |  |  | rt\_company.contact\_name | The name of the data provider contact. |  |
| license\_nbr | Text(50) |  |  |  |  |  | rt\_company.license\_nbr | The license number held by the data provider. Not required. |  |
| address\_1 | Text(40) |  |  |  |  |  | rt\_company.address\_1 | The street address of the data provider, line one. |  |
| address\_2 | Text(40) |  |  |  |  |  | rt\_company.address\_2 | The street address of the data provider, line two. |  |
| city | Text(30) |  |  |  |  |  | rt\_company.city | The city of the data provider. |  |
| county | Text(50) |  |  |  |  |  | rt\_company.county | The county of the data provider. |  |
| **state** | Text(10) |  |  | MT |  | rt\_state.state\_code | rt\_company.state | The state of the data provider. |  |
| country | Text(50) |  |  | USA |  |  | rt\_company.country | The country of the data provider. |  |
| postal\_code | Text(30) |  |  |  |  |  | rt\_company.postal\_code | The zip code of the data provider. |  |
| phone\_number | Text(30) |  |  |  |  |  | rt\_company.phone\_number | The phone number of the data provider. |  |
| alt\_phone\_number | Text(30) |  |  |  |  |  | rt\_company.alt\_phone\_number | The alternate phone number of the data provider. |  |
| email\_address | Text(100) |  |  |  |  |  | rt\_company.email\_address | The email address of the data provider. |  |
| custom\_field\_1 | Text(255) |  |  |  |  |  | rt\_company.custom\_field\_1 | A custom field. |  |
| custom\_field\_2 | Text(255) |  |  |  |  |  | rt\_company.custom\_field\_2 | A custom field. |  |
| custom\_field\_3 | Text(255) |  |  |  |  |  | rt\_company.custom\_field\_3 | A custom field. |  |
| custom\_field\_4 | Text(255) |  |  |  |  |  | rt\_company.custom\_field\_4 | A custom field. |  |
| custom\_field\_5 | Text(255) |  |  |  |  |  | rt\_company.custom\_field\_5 | A custom field. |  |
| remark | Text(2000) |  |  |  |  |  | rt\_company.remark | Any additional information about the data provider. |  |
| **timezone\_code** | Text(10) |  |  |  |  | rt\_timezone.timezone\_code | rt\_company.timezone\_code | The timezone of the data provider. |  |

## Subfacility\_v1

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| **subfacility\_code** | Text(20) | PK | Y |  |  |  | dt\_subfacility.subfacility\_code | The unique identifier of the subfacility. For vapor instrusion sampling, this represents the building in which the sampling is conducted. |  |
| **subfacility\_type** | Text(20) |  |  |  |  | rt\_subfacility\_type.subfacility\_type | dt\_subfacility.subfacility\_type | The type of subfacility. |  |
| subfacility\_name | Text(60) |  |  |  |  |  | dt\_subfacility.subfacility\_name | The name of the subfacility. May be more descriptive than subfacility\_code. |  |
| task\_code | Text(40) |  |  |  |  |  | dt\_subfacility.task\_code | The task associated with the subfacility, if any. Leave null if the subfacility will be involved in multiple tasks. |  |
| remark\_1 | Text(2000) |  |  |  |  |  | dt\_subfacility.remark\_1 | The description of the subfacility. |  |
| remark\_2 | Text(2000) |  |  |  |  |  | dt\_subfacility.remark\_2 | Any additional information about the subfacility. |  |
| contact\_name | Text(50) |  |  |  |  |  | dt\_subfacility.contact\_name | The name of the subfacility contact. |  |
| address\_1 | Text(40) |  |  |  |  |  | dt\_subfacility.address\_1 | The street address of the subfacility, line one. |  |
| address\_2 | Text(40) |  |  |  |  |  | dt\_subfacility.address\_2 | The street address of the subfacility, line two. |  |
| city | Text(30) |  |  |  |  |  | dt\_subfacility.city | The city of the subfacility. |  |
| county | Text(50) |  |  |  |  |  | dt\_subfacility.county | The county of the subfacility. |  |
| **state** | Text(10) |  |  |  |  | rt\_state.state\_code | dt\_subfacility.state | The state of the subfacility. |  |
| country | Text(50) |  |  |  |  |  | dt\_subfacility.country | The country of the subfacility. |  |
| postal\_code | Text(230) |  |  |  |  |  | dt\_subfacility.postal\_code | The postal code of the subfacility. |  |
| phone\_number | Text(30) |  |  |  |  |  | dt\_subfacility.phone\_number | The phone number of the subfacility. |  |
| alt\_phone\_number | Text(30) |  |  |  |  |  | dt\_subfacility.alt\_phone\_number | The alternate phone number of the subfacility. |  |
| fax\_number | Text(30) |  |  |  |  |  | dt\_subfacility.fax\_number | The fax number of the subfacility. |  |
| email\_address | Text(100) |  |  |  |  |  | dt\_subfacility.email\_address | The email address of the subfacility. |  |
| parent\_subfacility\_code | Text(20) |  |  |  |  |  | dt\_subfacility.parent\_subfacility\_code | The unique identifier of the parent subfacility, if applicable. |  |
| custom\_field\_1 | Text(255) |  |  |  |  |  | dt\_subfacility.custom\_field\_1 | A custom field. |  |
| custom\_field\_2 | Text(255) |  |  |  |  |  | dt\_subfacility.custom\_field\_2 | A custom field. |  |
| custom\_field\_3 | Text(255) |  |  |  |  |  | dt\_subfacility.custom\_field\_3 | A custom field. |  |
| custom\_field\_4 | Text(255) |  |  |  |  |  | dt\_subfacility.custom\_field\_4 | A custom field. |  |
| custom\_field\_5 | Text(255) |  |  |  |  |  | dt\_subfacility.custom\_field\_5 | A custom field. |  |

## Location\_v1

| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **data\_provider** | Text(20) |  |  |  |  | rt\_company.company\_code | rt\_company.company\_name  dt\_location.data\_provider | The unique identifier of the company or agency submitting the data. |  |
| **sys\_loc\_code** | Text(20) | PK | Y |  |  |  | dt\_location.sys\_loc\_code  dt\_coordinate.sys\_loc\_code  dt\_measure\_datum.sys\_loc\_code | The unique identifier of the location. |  |
| x\_coord | Numeric |  |  |  |  |  | dt\_coordinate.x\_coord | The X coordinate of the location. | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required.  If x\_coord or y\_coord is populated then the other are required. |
| y\_coord | Numeric |  |  |  |  |  | dt\_coordinate.y\_coord | The Y coordinate of the location. | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required.  If x\_coord or y\_coord is populated then the other are required. |
| surf\_elev | Numeric |  |  |  |  |  | dt\_coordinate.elev | The ground surface elevation of the location. | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required.  If the value or unit is populated then the other is required. |
| **elev\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_coordinate.elev\_unit | The unit of measurement of the elevation of the location. | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required.  If the value or unit is populated then the other is required. |
| **coord\_type\_code** | Text(20) |  |  |  |  | rt\_coord\_type.coord\_type\_code | dt\_coordinate.coord\_type\_code | The type of the location coordinates. | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required. |
| observation\_date | DateTime |  |  |  |  |  | dt\_coordinate.observation\_date | The coordinate observation date and time. | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required. |
| coord\_identifier | Text(20) |  |  | PRIMARY |  |  | dt\_coordinate.identifier | The identifier of the coordinates. Typical values include "PRIMARY", "SECONDARY" or "1", "2" | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required. |
| **horz\_collect\_method\_code** | Text(20) |  |  |  |  | rt\_coord\_horz\_method.horz\_collect\_method\_code | dt\_coordinate.horz\_collect\_method\_code | The method used to collect the coordinates. | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required. |
| horz\_accuracy\_value | Text(20) |  |  |  |  |  | dt\_coordinate.horz\_accuracy\_value | The horizontal accuracy range (+/-) of the coordinates. | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required.  If the value or unit is populated then the other is required. |
| **horz\_accuracy\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_coordinate.horz\_accuracy\_unit | The unit of measurement of the horizontal accuracy of the coordinates. | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required.  If the value or unit is populated then the other is required. |
| **horz\_datum\_code** | Text(20) |  |  |  |  | rt\_coord\_horz\_datum.horz\_datum\_code | dt\_coordinate.horz\_datum\_code | The reference datum of the coordinates. | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required. |
| **elev\_collect\_method\_code** | Text(20) |  |  |  |  | rt\_coord\_elev\_method.elev\_collect\_method\_code | dt\_coordinate.elev\_collect\_method\_code | The method used to collect the ground surface elevation. | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required. |
| elev\_accuracy\_value | Text(20) |  |  |  |  |  | dt\_coordinate.elev\_accuracy\_value | The vertical accuracy range (+/-) of the ground surface elevation. | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required.  If the value or unit is populated then the other is required. |
| **elev\_accuracy\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_coordinate.elev\_accuracy\_unit | The unit of measurement of the vertical accuracy of the ground surface elevation. | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required.  If the value or unit is populated then the other is required. |
| **elev\_datum\_code** | Text(20) |  |  |  |  | rt\_coord\_elev\_datum.elev\_datum\_code | dt\_coordinate.elev\_datum\_code | The reference datum of the ground surface elevation. | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required. |
| source\_scale | Text(1) |  |  |  |  | (Enumeration: source\_scale) | dt\_coordinate.source\_scale | The scale of the source used to determine the coordinates, if derived from a hard or soft copy source. | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required. |
| **subcontractor\_name\_code** | Text(20) |  |  |  |  | rt\_company.company\_code | rt\_company.company\_name  dt\_coordinate.company\_code | The unique identifier of the company or agency collecting the coordinates. | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required. |
| verification\_code | Text(20) |  |  |  |  |  | dt\_coordinate.verification\_code | The verification code of the coordinates. | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required. |
| reference\_point | Text(50) |  |  |  |  |  | dt\_coordinate.reference\_point | The reference point used to collect the coordinates. | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required. |
| **geometric\_type\_code** | Text(20) |  |  |  |  | rt\_coord\_geometric\_type.geometric\_type\_code | dt\_coordinate.geometric\_type\_code | The geometric type code of the coordinates. | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required. |
| rank | Numeric |  |  |  |  |  | dt\_coordinate.rank | Rank | If a coordinate field is populated then coord\_identifier and coord\_type\_code are required. |
| loc\_name | Text(40) |  |  |  |  |  | dt\_location.loc\_name | The name of the location. |  |
| loc\_desc | Text(255) |  |  |  |  |  | dt\_location.loc\_desc | The description of the location. |  |
| **loc\_type** | Text(20) |  |  |  |  | rt\_location\_type.location\_type\_code | dt\_location.loc\_type | The type of location. |  |
| loc\_purpose | Text(19) |  |  |  |  | (Enumeration: loc\_purpose) | dt\_location.loc\_purpose | The purpose of the location. |  |
| subfacility\_code | Text(20) |  |  |  | Subfacility\_v1.subfacility\_code |  | dt\_subfacility.subfacility\_code  dt\_location.subfacility\_code | The unique identifier of the subfacility or building in which the location resides, if only one. If more than one, use the SubfacilityLocation section. |  |
| within\_facility\_yn | Text(1) |  |  | Y |  | (Enumeration: yes\_no\_values) | dt\_location.within\_facility\_yn | Indicates whether this location is within facility boundaries, "Y" for yes or "N" for no. |  |
| loc\_county\_code | Text(30) |  |  |  |  |  | dt\_location.loc\_county\_code | The county of the location. |  |
| loc\_district\_code | Text(20) |  |  |  |  |  | dt\_location.loc\_district\_code | The district of the location. |  |
| **loc\_state\_code** | Text(10) |  |  |  |  | rt\_state.state\_code | dt\_location.loc\_state\_code | The state of the location. |  |
| **loc\_major\_basin** | Text(20) |  |  |  |  | rt\_basin.basin\_code | dt\_location.loc\_major\_basin | The major basin of the location. |  |
| loc\_minor\_basin | Text(20) |  |  |  |  |  | dt\_location.loc\_minor\_basin | The minor basin of the location. |  |
| remark\_1 | Text(2000) |  |  |  |  |  | dt\_location.remark\_1 | Any additional information about the location. |  |
| remark\_2 | Text(2000) |  |  |  |  |  | dt\_location.remark\_2 | Any additional information about the location. |  |
| total\_depth | Numeric |  |  |  |  |  | dt\_location.total\_depth | The total depth below ground surface of the location. | If the value or unit is populated then the other is required. |
| **depth\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_location.units | The unit of measurement of the depth. | If the value or unit is populated then the other is required. |
| datum\_value | Numeric |  |  |  |  |  | dt\_measure\_datum.datum\_value | The measured elevation of datum used to reference water level measurements. | If any of the fields datum\_value, datum\_unit, step\_or\_linear, datum\_collection\_method\_code or datum\_desc are populated then datum\_start\_date is made a required field. |
| **datum\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_measure\_datum.datum\_unit | The unit of measure of the datum value. | If any of the fields datum\_value, datum\_unit, step\_or\_linear, datum\_collection\_method\_code or datum\_desc are populated then datum\_start\_date is made a required field. |
| step\_or\_linear | Text(6) |  |  |  |  | (Enumeration: step\_or\_linear) | dt\_measure\_datum.step\_or\_linear | Denotes whether the measure datum has been added or removed ("step") or if nothing has changed since the previous survey ("linear"). | If any of the fields datum\_value, datum\_unit, step\_or\_linear, datum\_collection\_method\_code or datum\_desc are populated then datum\_start\_date is made a required field. |
| datum\_collection\_method\_code | Text(20) |  |  |  |  |  | dt\_measure\_datum.datum\_collect\_method\_code | The identifying code that specifies the method in which the datum was collected, for example "GPS". | If any of the fields datum\_value, datum\_unit, step\_or\_linear, datum\_collection\_method\_code or datum\_desc are populated then datum\_start\_date is made a required field. |
| datum\_desc | Text(255) |  |  |  |  |  | dt\_measure\_datum.datum\_desc | A brief description of the purpose of the datum collection, for example "Initial Observation." | If any of the fields datum\_value, datum\_unit, step\_or\_linear, datum\_collection\_method\_code or datum\_desc are populated then datum\_start\_date is made a required field. |
| datum\_start\_date | DateTime |  |  |  |  |  | dt\_measure\_datum.start\_date | The date and time from which the datum applies. | If any of the fields datum\_value, datum\_unit, step\_or\_linear, datum\_collection\_method\_code or datum\_desc are populated then datum\_start\_date is made a required field. |
| geologist | Text(50) |  |  |  |  |  | dt\_location.geologist | The geologist associated with the location. |  |
| inspector | Text(50) |  |  |  |  |  | dt\_location.inspector | The inspector of the location. |  |
|  |  |  |  |  |  |  |  |  |  |
| **Method Mappings** |  |  |  |  |  |  |  |  |  |
|  |  |  |  | CompanyType\_SUBCONTRACTOR | |  | rt\_company.company\_type |  |  |
|  |  |  |  | CompanyType\_SUBCONTRACTOR | |  | rt\_company.company\_type |  |  |

## SubfacilityLocation\_v1

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| **sys\_loc\_code** | Text(20) | PK | Y |  | Location\_v1.sys\_loc\_code |  | at\_subfacility\_location.sys\_loc\_code | The unique identifier of the location. |  |
| **subfacility\_code** | Text(20) | PK | Y |  | Subfacility\_v1.subfacility\_code |  | at\_subfacility\_location.subfacility\_code | The unique identifier of the subfacility or building. |  |

## Task\_v1

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| **task\_code** | Text(40) | PK | Y |  |  |  | dt\_task.task\_code | The unique identifier of the task. |  |
| task\_desc | Text(255) |  |  |  |  |  | dt\_task.task\_desc | The description of the task. |  |
| start\_date | DateTime |  |  |  |  |  | dt\_task.start\_date | The start date and time of the task. |  |
| end\_date | DateTime |  |  |  |  |  | dt\_task.end\_date | The end date and time of the task. |  |
| delivery\_order | Text(20) |  |  |  |  |  | dt\_task.delivery\_order | The delivery order associated with the task. |  |
| client | Text(50) |  |  |  |  |  | dt\_task.client | The client associated with the task. |  |
| custom\_field\_1 | Text(255) |  |  |  |  |  | dt\_task.custom\_field\_1 | A custom field. |  |
| custom\_field\_2 | Text(255) |  |  |  |  |  | dt\_task.custom\_field\_2 | A custom field. |  |
| custom\_field\_3 | Text(255) |  |  |  |  |  | dt\_task.custom\_field\_3 | A custom field. |  |
| custom\_field\_4 | Text(255) |  |  |  |  |  | dt\_task.custom\_field\_4 | A custom field. |  |
| custom\_field\_5 | Text(255) |  |  |  |  |  | dt\_task.custom\_field\_5 | A custom field. |  |

## COC\_v1

| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **chain\_of\_custody** | Text(40) | PK | Y |  |  |  | dt\_chain\_of\_custody.chain\_of\_custody | The unique identifier of the COC. |  |
| **lab\_code** | Text(40) |  |  |  |  | rt\_company.company\_code | dt\_chain\_of\_custody.lab\_code | The name of the laboratory processing the COC. |  |
| shipping\_date | DateTime |  |  |  |  |  | dt\_chain\_of\_custody.shipping\_date | The shipping date. |  |
| **shipping\_company** | Text(40) |  |  |  |  | rt\_company.company\_code | dt\_chain\_of\_custody.shipping\_company | The shipping company. |  |
| shipping\_tracking\_number | Text(50) |  |  |  |  |  | dt\_chain\_of\_custody.shipping\_tracking\_number | The shipping tracking number. |  |
| project\_manager | Text(50) |  |  |  |  |  | dt\_chain\_of\_custody.project\_manager | The manager of the project associated with the COC. |  |
| project\_ID | Text(50) |  |  |  |  |  | dt\_chain\_of\_custody.project\_ID | The ID of the project associated with the COC. |  |
| po\_number | Text(50) |  |  |  |  |  | dt\_chain\_of\_custody.po\_number | The purchase order number associated with the COC. |  |
| quote\_number | Text(50) |  |  |  |  |  | dt\_chain\_of\_custody.quote\_number | The quote number associated with the COC. |  |
| department | Text(50) |  |  |  |  |  | dt\_chain\_of\_custody.department | The department or company associated with the COC. |  |
| sampler\_1 | Text(50) |  |  |  |  |  | dt\_chain\_of\_custody.sampler\_1 | The name of the sampler. |  |
| sampler\_2 | Text(50) |  |  |  |  |  | dt\_chain\_of\_custody.sampler\_2 | The name of the sampler. |  |
| sampler\_3 | Text(50) |  |  |  |  |  | dt\_chain\_of\_custody.sampler\_3 | The name of the sampler. |  |
| relinquished\_by | Text(100) |  |  |  |  |  | dt\_chain\_of\_custody.relinquished\_by | The relinquishing party. |  |
| relinquished\_date | DateTime |  |  |  |  |  | dt\_chain\_of\_custody.relinquished\_date | The date relinquished. |  |
| email\_invoice\_to | Text(100) |  |  |  |  |  | dt\_chain\_of\_custody.email\_invoice\_to | The party to receive emailed invoices pertaining to the COC. |  |
| email\_report\_to | Text(100) |  |  |  |  |  | dt\_chain\_of\_custody.email\_report\_to | The party to receive emailed reports pertaining to the COC. |  |
| turnaround\_time | Text(50) |  |  |  |  |  | dt\_chain\_of\_custody.turn\_around\_time | The turnaround time for the samples associated with the COC. |  |
| cooler\_id | Text(10) |  |  |  |  |  | dt\_chain\_of\_custody.cooler\_id | The identifier of the cooler. |  |
| cooler\_count | Numeric |  |  |  |  |  | dt\_chain\_of\_custody.cooler\_count | The number of coolers associated with the COC. |  |
| cooler\_desc | Text(255) |  |  |  |  |  | dt\_chain\_of\_custody.cooler\_desc | The description of the coolers associated with the COC. |  |
| cooler\_temp | Numeric |  |  |  |  |  | dt\_chain\_of\_custody.cooler\_temp | The temperature of the cooler when sealed. |  |
| lab\_receipt\_date | DateTime |  |  |  |  |  | dt\_chain\_of\_custody.lab\_receipt\_date | The date the COC is received by the laboratory. |  |
| lab\_cooler\_count | Numeric |  |  |  |  |  | dt\_chain\_of\_custody.lab\_cooler\_count | The number of coolers received by the laboratory. |  |
| lab\_cooler\_desc | Text(255) |  |  |  |  |  | dt\_chain\_of\_custody.lab\_cooler\_desc | The description of the coolers received by the laboratory. |  |
| lab\_cooler\_temp | Text(50) |  |  |  |  |  | dt\_chain\_of\_custody.lab\_cooler\_temp | The temperature of the cooler when received by the laboratory. |  |
| lab\_security\_seal | Text(20) |  |  |  |  |  | dt\_chain\_of\_custody.lab\_security\_seal | The state of the security seal when received by the laboratory. |  |
| contact\_name\_1 | Text(50) |  |  |  |  |  | dt\_chain\_of\_custody.contact\_name\_1 | The party to contact regarding the COC. |  |
| contact\_name\_2 | Text(50) |  |  |  |  |  | dt\_chain\_of\_custody.contact\_name\_2 | The party to contact regarding the COC. |  |
| complete\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_chain\_of\_custody.complete\_yn | Y if the COC is complete, N if the COC is not complete. |  |
| custom\_field\_1 | Text(255) |  |  |  |  |  | dt\_chain\_of\_custody.custom\_field\_1 | A custom field. |  |
| custom\_field\_2 | Text(255) |  |  |  |  |  | dt\_chain\_of\_custody.custom\_field\_2 | A custom field. |  |
| custom\_field\_3 | Text(255) |  |  |  |  |  | dt\_chain\_of\_custody.custom\_field\_3 | A custom field. |  |
| custom\_field\_4 | Text(255) |  |  |  |  |  | dt\_chain\_of\_custody.custom\_field\_4 | A custom field. |  |
| custom\_field\_5 | Text(255) |  |  |  |  |  | dt\_chain\_of\_custody.custom\_field\_5 | A custom field. |  |
| remark | Text(2000) |  |  |  |  |  | dt\_chain\_of\_custody.remark | Any additional information about the COC. |  |

## SDG\_v1

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| **sdg\_name** | Text(20) | PK | Y |  |  |  | dt\_sdg.sdg\_name | The unique identifier of the sample delivery group (SDG) or work order. |  |
| sdg\_desc | Text(255) |  |  |  |  |  | dt\_sdg.sdg\_desc | The description of the SDG. |  |
| sdg\_date | DateTime |  |  |  |  |  | dt\_sdg.sdg\_date | The date and time the SDG was generated. |  |
| **lab\_code** | Text(40) |  |  |  |  | rt\_company.company\_code | dt\_sdg.lab\_code | The laboratory processing the SDG. |  |
| lab\_contact | Text(50) |  |  |  |  |  | dt\_sdg.lab\_contact | The laboratory contact for the SDG. |  |
| sdg\_status | Text(9) |  |  | NEW |  | (Enumeration: sdg\_status) | dt\_sdg.sdg\_status | The status of the SDG. |  |
| data\_review\_date | Text(255) |  |  |  |  |  | dt\_sdg.data\_review\_date | The review date for the data associated with the SDG. |  |
| data\_review\_company | Text(40) |  |  |  |  |  | dt\_sdg.data\_review\_company | The review company for the data associated with the SDG. |  |

## Equipment\_v1

| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **equipment\_code** | Text(60) | PK | Y |  |  |  | dt\_equipment.equipment\_code | The unique identifier of the equipment. | Allow value to exist in either the VI Section or Equipment section. |
| **equipment\_type** | Text(30) |  |  |  |  | rt\_equipment\_type.equipment\_type | dt\_equipment.equipment\_type | The type of equipment. |  |
| equipment\_desc | Text(255) |  |  |  |  |  | dt\_equipment.equipment\_desc | The description of the equipment. |  |
| sys\_loc\_code | Text(20) |  |  |  |  |  | dt\_equipment.sys\_loc\_code | The location at which the equipment is permanently installed, used, or with which it is associated, if applicable. |  |
| model\_number | Text(50) |  |  |  |  |  | dt\_equipment.model\_number | The model number of the equipment. |  |
| catalog\_number | Text(50) |  |  |  |  |  | dt\_equipment.catalog\_number | The catalog number of the equipment. |  |
| manufacturer | Text(50) |  |  |  |  |  | dt\_equipment.manufacturer | The manufacturer of the equipment. |  |
| owner | Text(50) |  |  |  |  |  | dt\_equipment.owner | The owner of the equipment. |  |
| operation\_status | Text(20) |  |  |  |  |  | dt\_equipment.operation\_status | The operational status of the equipment. |  |
| install\_date | DateTime |  |  |  |  |  | dt\_equipment.install\_date | The date and time of equipment installation. |  |
| last\_service\_date | DateTime |  |  |  |  |  | dt\_equipment.last\_service\_date | The date and time the equipment was last serviced. |  |
| next\_service\_date | DateTime |  |  |  |  |  | dt\_equipment.next\_service\_date | The date and time the equipment is scheduled to be serviced next. |  |
| purchase\_date | DateTime |  |  |  |  |  | dt\_equipment.purchase\_date | The date and time of equipment purchase. |  |
| purchase\_price | Text(20) |  |  |  |  |  | dt\_equipment.purchase\_price | The cost of the equipment. |  |
| material | Text(50) |  |  |  |  |  | dt\_equipment.material | The main material of the equipment. |  |
| size | Text(20) |  |  |  |  |  | dt\_equipment.size | The size of the equipment. |  |
| **size\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_equipment.size\_unit | The unit of measure of the equipment size. |  |
| remark | Text(2000) |  |  |  |  |  | dt\_equipment.remark | Any additional information about the equipment. |  |

## EquipmentParameter\_v1

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| **equipment\_code** | Text(60) | PK | Y |  |  | dt\_equipment.equipment\_code | dt\_equipment\_parameter.equipment\_code | The unique identifier of the equipment. | Allow value to exist in either the database or Equipment section. |
| **param\_code** | Text(20) | PK | Y |  |  | rt\_equipment\_param\_type.param\_code | dt\_equipment\_parameter.param\_code | The equipment parameter. |  |
| **measurement\_date** | DateTime | PK |  |  |  |  | dt\_equipment\_parameter.measurement\_date | The date and time of parameter measurement. |  |
| param\_value | Text(20) |  |  |  |  |  | dt\_equipment\_parameter.param\_value | The value of the parameter measured. |  |
| person\_name | Text(20) |  |  |  |  |  | dt\_equipment\_parameter.person\_name | The name of the person measuring the parameter. |  |
| remark | Text(2000) |  |  |  |  |  | dt\_equipment\_parameter.remark | Any additional information if necessary. |  |
| fld\_qualifier | Text(20) |  |  |  |  |  | dt\_equipment\_parameter.fld\_qualifier | Field qualifier if required. |  |
| fld\_qualifier\_note | Text(255) |  |  |  |  |  | dt\_equipment\_parameter.fld\_qualifier\_note | Field qualifier note if required. |  |

## Files

| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **file\_name** | Text(255) | PK | Y |  |  |  | dt\_file.file\_name | The name of the file. |  |
| **file\_type** | Text(20) |  | Y |  |  | rt\_file\_type.file\_type | dt\_file.file\_type | The type of the file, for example ".jpg" or ".pdf". |  |
| file\_date | DateTime |  |  |  |  |  |  | The date and time of the file. |  |
| title | Text(255) |  |  |  |  |  | dt\_file.title | The title of the file. |  |
| author | Text(255) |  |  |  |  |  | dt\_file.author | The author of the file. |  |
| confidential\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_file.confidential\_yn | Y" if the file is confidential, "N" if the file is not confidential. |  |
| remark | Text(255) |  |  |  |  |  | dt\_file.remark | Any additional information about the file. |  |
| place\_type | Text(15) |  |  |  |  | (Enumeration: place\_type) | dt\_file.place\_type | The type of identifier associated with this file, for example "sys\_loc\_code" for files associated with locations or "sys\_sample\_code" for files associated with samples. |  |
| place\_code | Text(50) |  |  |  |  |  | dt\_file.place\_code | The unique identifier associated with the file. This may be a specific sys\_loc\_code for files associated with locations or a specific sys\_sample\_code for files associated with samples. |  |
| place\_subcode | Text(50) |  |  |  |  |  | dt\_file.place\_subcode | The subcode/identifier of associated with the file if applicable. |  |
| content |  |  |  |  |  |  | dt\_file.content | The file content. |  |
|  |  |  |  |  |  |  |  |  |  |
| **Method Mappings** |  |  |  |  |  |  |  |  |  |
|  |  |  |  | GetFileDate | |  | dt\_file.file\_date |  |  |

## DrillActivity\_v1

| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **sys\_loc\_code** | Text(20) | PK | Y |  | Location\_v1.sys\_loc\_code | | dt\_drill\_activity.sys\_loc\_code | The unique identifier of the location. Must be a valid code for the facility and reported value in the sys\_loc\_code field of the Location section. |  |
| **drill\_event** | Text(20) | PK | Y |  |  |  | dt\_drill\_activity.drill\_event | The identifier of the drilling event at this location. Examples of drilling events could be "INITIAL" for initial drilling or "SECOND" for a subsequent drilling at the same location. |  |
| start\_depth | Numeric |  |  |  |  |  | dt\_drill\_activity.start\_depth | The start depth below ground surface of the drilling activity. |  |
| end\_depth | Numeric |  |  |  |  |  | dt\_drill\_activity.end\_depth | The end depth below ground surface of the drilling activity. |  |
| drill\_start\_date | DateTime |  |  |  |  |  | dt\_drill\_activity.start\_date | The date and time the drilling activity began. |  |
| drill\_end\_date | DateTime |  |  |  |  |  | dt\_drill\_activity.end\_date | The date and time the drilling activity ended. |  |
| diameter | Numeric |  |  |  |  |  | dt\_drill\_activity.diameter | The diameter of the boring. |  |
| **diameter\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_drill\_activity.diameter\_unit | The unit of measure of the diameter. |  |
| drill\_method | Text(50) |  |  |  |  |  | dt\_drill\_activity.drill\_method | The drilling method used. |  |
| fluid | Text(50) |  |  |  |  |  | dt\_drill\_activity.fluid | The description of fluid used during the drilling activity. |  |
| viscosity | Text(50) |  |  |  |  |  | dt\_drill\_activity.viscosity | The viscosity of the drilling fluid. |  |
| hammer\_wt | Text(50) |  |  |  |  |  | dt\_drill\_activity.hammer\_wt | The weight of hammer used during the drilling activity. |  |
| hammer\_fall | Text(50) |  |  |  |  |  | dt\_drill\_activity.hammer\_fall | The distance of hammer fall during the drilling activity. |  |
| hammer\_desc | Text(50) |  |  |  |  |  | dt\_drill\_activity.hammer\_desc | The description of the hammer used during the drilling activity. |  |
| lift\_mechanism | Text(50) |  |  |  |  |  | dt\_drill\_activity.lift\_mechanism | The type of mechanism used to lift the hammer. |  |
| new\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_drill\_activity.new\_yn | Y" if this is a new drilling activity at the location or boring, "N" if not. |  |
| repair\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_drill\_activity.repair\_yn | Y" if the purpose of the drilling activity is to repair an existing boring, "N" if not. |  |
| deepen\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_drill\_activity.deepen\_yn | Y" if the purpose of the drilling activity is to deepen an existing boring, "N" if not. |  |
| abandon\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_drill\_activity.abandon\_yn | Y" if the boring has been abandoned, "N" if not. |  |
| replace\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_drill\_activity.replace\_yn | Y" if the purpose of the drilling activity is to replace an existing boring, "N" if not. |  |
| public\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_drill\_activity.public\_yn | Y" if the drilled location is for public use, "N" if not. |  |
| purpose | Text(70) |  |  |  |  |  | dt\_drill\_activity.purpose | The descriptive purpose of the drilling activity. |  |
| rig\_desc | Text(50) |  |  |  |  |  | dt\_drill\_activity.rig\_desc | The description of the drilling rig. |  |
| auger\_desc | Text(50) |  |  |  |  |  | dt\_drill\_activity.auger\_desc | The description of the auger used during the drilling activity. |  |
| rod\_desc | Text(50) |  |  |  |  |  | dt\_drill\_activity.rod\_desc | The description of the rod used during the drilling activity. |  |
| bit\_desc | Text(50) |  |  |  |  |  | dt\_drill\_activity.bit\_desc | The description of the bit used during the drilling activity. |  |
| drilling\_pressure | Text(50) |  |  |  |  |  | dt\_drill\_activity.drilling\_pressure | The drilling pressure. |  |
| sampler\_desc | Text(50) |  |  |  |  |  | dt\_drill\_activity.sampler\_desc | The description of the sampling equipment used. |  |
| **drilling\_subcontractor** | Text(40) |  |  |  |  | rt\_company.company\_code | dt\_drill\_activity.custom\_field\_1 | The unique identifier of the drilling company. |  |
| driller | Text(50) |  |  |  |  |  | dt\_drill\_activity.custom\_field\_2 | The name of the driller. |  |
| remark | Text(2000) |  |  |  |  |  | dt\_drill\_activity.remark | Any additional information about the drilling activity. |  |
| custom\_field\_3 | Text(255) |  |  |  |  |  | dt\_drill\_activity.custom\_field\_3 | A custom field. |  |
| custom\_field\_4 | Text(255) |  |  |  |  |  | dt\_drill\_activity.custom\_field\_4 | A custom field. |  |
| custom\_field\_5 | Text(255) |  |  |  |  |  | dt\_drill\_activity.custom\_field\_5 | A custom field. |  |
| task\_code | Text(40) |  |  |  |  |  | dt\_task.task\_code  dt\_drill\_activity.task\_code | The unique identifier of the task associated with the drilling activity. |  |

## DownholePoint\_v1

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| **sys\_loc\_code** | Text(20) | PK | Y |  | Location\_v1.sys\_loc\_code |  | dt\_downhole\_point\_data.sys\_loc\_code | The unique identifier of the location. Must be a valid code for the facility and reported value in the sys\_loc\_code field of the Location section. |  |
| **depth** | Numeric | PK | Y |  |  |  | dt\_downhole\_point\_data.depth | The measurement depth below ground surface. |  |
| **param** | Text(20) | PK | Y |  |  | rt\_downhole\_point\_param\_type.param | dt\_downhole\_point\_data.param | The parameter being measured such as tip stress, resistivity, or pore pressure. |  |
| param\_value | Text(255) |  |  |  |  |  | dt\_downhole\_point\_data.param\_value | The measured value of the parameter. |  |
| **param\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_downhole\_point\_data.param\_unit | The unit of measure of the parameter. |  |
| measurement\_date | DateTime |  |  |  |  |  | dt\_downhole\_point\_data.measurement\_date | The date and time of parameter measurement. |  |
| measurement\_method | Text(50) |  |  |  |  |  | dt\_downhole\_point\_data.measurement\_method | The method of parameter measurement. |  |
| remark | Text(2000) |  |  |  |  |  | dt\_downhole\_point\_data.remark | Any additional information about the downhole point data. |  |
| custom\_field\_1 | Text(255) |  |  |  |  |  | dt\_downhole\_point\_data.custom\_field\_1 | A custom field. |  |
| custom\_field\_2 | Text(255) |  |  |  |  |  | dt\_downhole\_point\_data.custom\_field\_2 | A custom field. |  |
| custom\_field\_3 | Text(255) |  |  |  |  |  | dt\_downhole\_point\_data.custom\_field\_3 | A custom field. |  |
| custom\_field\_4 | Text(255) |  |  |  |  |  | dt\_downhole\_point\_data.custom\_field\_4 | A custom field. |  |
| custom\_field\_5 | Text(255) |  |  |  |  |  | dt\_downhole\_point\_data.custom\_field\_5 | A custom field. |  |

## Lithology\_v1

| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **sys\_loc\_code** | Text(20) | PK | Y |  | Location\_v1.sys\_loc\_code | | dt\_lithology.sys\_loc\_code | The unique identifier of the location. Must be a valid code for the facility and reported value in the sys\_loc\_code field of the Location section. |  |
| **start\_depth** | Numeric | PK | Y |  |  |  | dt\_lithology.start\_depth | The start depth of the lithologic layer. |  |
| **material\_name** | Text(40) |  |  |  |  | rt\_material.material\_name | dt\_lithology.material\_name | The type of material that composes the lithologic unit. Must be used in all cases except when a depth specific comment is being made. |  |
| **geo\_unit\_code\_1** | Text(20) |  |  |  |  | rt\_geologic\_unit.geologic\_unit\_code | dt\_lithology.geo\_unit\_code\_1 | The interpretation of the hydrogeologic unit present at this lithologic unit, for example "aquifer 1", "aquitard 1", "aquifer 2", "upper clay unit", etc. |  |
| **geo\_unit\_code\_2** | Text(20) |  |  |  |  | rt\_geologic\_unit.geologic\_unit\_code | dt\_lithology.geo\_unit\_code\_2 | The alternate geologic unit grouping if applicable. This can be a sub-classification of geologic\_unit\_code\_1 or a layer used for groundwater flow/transport computer modelling that contains the lithologic unit. |  |
| remark1 | Text(2000) |  |  |  |  |  | dt\_lithology.remark\_1 | Any additional information about the lithologic unit. |  |
| remark2 | Text(2000) |  |  |  |  |  | dt\_lithology.remark\_2 | Any additional information about the lithologic unit. |  |
| moisture | Text(9) |  |  |  |  | (Enumeration: moisture) | dt\_lithology.moisture | The amount of water observed in the lithologic unit. |  |
| permeable | Text(20) |  |  |  |  |  | dt\_lithology.permeable | The permeability of the lithologic unit, such as "impervious", "semi", "pervious," or "very". |  |
| consolidated\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_lithology.consolidated\_yn | Y" if the lithologic unit was consolidated, "N" if not. |  |
| color | Text(13) |  |  |  |  | (Enumeration: color) | dt\_lithology.color | The color of the lithologic unit. |  |
| observation | Text(255) |  |  |  |  |  | dt\_lithology.observation | General observations of the lithologic unit. |  |
| consistency | Text(20) |  |  |  |  |  | dt\_lithology.consistency | The consistency of the lithologic unit such as "very soft", "soft, "firm", "hard" or "very hard". |  |
| sorting | Text(4) |  |  |  |  | (Enumeration: sorting) | dt\_lithology.sorting | The grain size distribution of the lithologic unit. Use "poor" for soil with a wide range of particle sizes or "well" for soil with a narrow range of particle sizes. |  |
| angularity | Text(20) |  |  |  |  |  | dt\_lithology.angularity | The angularity of the lithologic unit. |  |
| cementation | Text(20) |  |  |  |  |  | dt\_lithology.cementation | The cementation of the lithologic unit. |  |
| grainsize | Text(20) |  |  |  |  |  | dt\_lithology.grainsize | The grain size of the lithologic unit. |  |
| odor | Text(9) |  |  |  |  | (Enumeration: odor) | dt\_lithology.odor | The odor of the lithologic unit. |  |
| density | Text(7) |  |  |  |  | (Enumeration: density) | dt\_lithology.custom\_field\_1 | The density of the lithologic unit. |  |
| custom\_field\_2 | Text(255) |  |  |  |  |  | dt\_lithology.custom\_field\_2 | A custom field. |  |
| custom\_field\_3 | Text(255) |  |  |  |  |  | dt\_lithology.custom\_field\_3 | A custom field. |  |
| custom\_field\_4 | Text(255) |  |  |  |  |  | dt\_lithology.custom\_field\_4 | A custom field. |  |
| custom\_field\_5 | Text(255) |  |  |  |  |  | dt\_lithology.custom\_field\_5 | A custom field. |  |

## Well\_v1

| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **sys\_loc\_code** | Text(20) | PK | Y |  | Location\_v1.sys\_loc\_code |  | dt\_well.sys\_loc\_code | The unique identifier of the location. Must be a valid code for the facility and reported value in the sys\_loc\_code field of the Location section. |  |
| well\_id | Text(30) |  |  |  |  |  | dt\_well.well\_id | The ID of the well. |  |
| well\_desc | Text(255) |  |  |  |  |  | dt\_well.custom\_field\_1 | The description of the well. |  |
| well\_owner | Text(50) |  |  |  |  |  | dt\_well.well\_owner | The name of the well owner. |  |
| well\_purpose | Text(20) |  |  |  |  |  | dt\_well.well\_purpose | The purpose of the well. |  |
| well\_status | Text(20) |  |  |  |  |  | dt\_well.well\_status | The status of the well. |  |
| top\_casing\_elev | Numeric |  |  |  |  |  | dt\_well.top\_casing\_elev | The top of casing elevation of the well. |  |
| depth\_of\_well | Numeric |  |  |  |  |  | dt\_well.depth\_of\_well | The total depth of the well below ground surface. |  |
| **depth\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_well.depth\_unit | The unit of measurement of the depth. |  |
| depth\_measure\_method | Text(20) |  |  |  |  |  | dt\_well.depth\_measure\_method | The method of depth measurement. |  |
| stickup\_height | Text(8) |  |  |  |  |  | dt\_well.stickup\_height | The height of the casing above ground surface. |  |
| **stickup\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_well.stickup\_unit | The unit of measure of the stickup height. |  |
| sump\_length | Text(20) |  |  |  |  |  | dt\_well.sump\_length | The length of the sump. |  |
| **sump\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_well.sump\_unit | The unit of measure of the sump length. |  |
| installation\_date | DateTime |  |  |  |  |  | dt\_well.installation\_date | The date and time of well installation. |  |
| construct\_start\_date | DateTime |  |  |  |  |  | dt\_well.construct\_start\_date | The date and time the well construction began. |  |
| construct\_complete\_date | DateTime |  |  |  |  |  | dt\_well.construct\_complete\_date | The date and time the well construction finished. |  |
| **construct\_contractor** | Text(40) |  |  |  |  | rt\_company.company\_code | rt\_company.company\_name  dt\_well.construct\_contractor | The name of the contractor that installed well. |  |
| pump\_type | Text(20) |  |  |  |  |  | dt\_well.pump\_type | The type of pump used at the well, such as centrifugal, propeller, jet, helical, rotary, etc. |  |
| pump\_capacity | Text(6) |  |  |  |  |  | dt\_well.pump\_capacity | The capacity of the pump. |  |
| **pump\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_well.pump\_unit | The unit of measure of the pump capacity and yield. |  |
| pump\_yield | Text(6) |  |  |  |  |  | dt\_well.pump\_yield | The yield of the pump. |  |
| pump\_yield\_method | Text(20) |  |  |  |  |  | dt\_well.pump\_yield\_method | The method used for the pump yield. |  |
| weep\_hole | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_well.weep\_hole | Y" if the well has a weep hole, "N" if not. |  |
| head\_configuration | Text(50) |  |  |  |  |  | dt\_well.head\_configuration | The well head configuration. |  |
| access\_port\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_well.access\_port\_yn | Y" if the well has an access port, "N" if not. |  |
| casing\_joint\_type | Text(50) |  |  |  |  |  | dt\_well.casing\_joint\_type | The type of casing joint, such as threaded, flush, or solvent welded. |  |
| perforator\_used | Text(50) |  |  |  |  |  | dt\_well.perforator\_used | The description of well perforation, such as slotted, drilled, or wound. |  |
| intake\_depth | Numeric |  |  |  |  |  | dt\_well.intake\_depth | The depth of the well intake below ground surface. |  |
| disinfected\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_well.disinfected\_yn | Y" if the well was disinfected, "N" if not. |  |
| historical\_reference\_elev | Numeric |  |  |  |  |  | dt\_well.historical\_reference\_elev | The historical reference elevation. |  |
| geologic\_unit\_code | Text(20) |  |  |  |  |  | rt\_geologic\_unit.geologic\_unit\_code  dt\_well.geologic\_unit\_code | The geologic unit in which the well intake is installed. |  |
| remark | Text(2000) |  |  |  |  |  | dt\_well.remark | Any additional information about the well. |  |
| custom\_field\_2 | Text(255) |  |  |  |  |  | dt\_well.custom\_field\_2 | A custom field. |  |
| custom\_field\_3 | Text(255) |  |  |  |  |  | dt\_well.custom\_field\_3 | A custom field. |  |
| custom\_field\_4 | Text(255) |  |  |  |  |  | dt\_well.custom\_field\_4 | A custom field. |  |
| custom\_field\_5 | Text(255) |  |  |  |  |  | dt\_well.custom\_field\_5 | A custom field. |  |

## Well Construction

| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **sys\_loc\_code** | Text(20) | PK | Y |  | Location\_v1.sys\_loc\_code |  | dt\_well\_segment.sys\_loc\_code | The unique identifier of the location. Must be a valid code for the facility and reported value in the sys\_loc\_code field of the Location section. |  |
| **segment\_type** | Text(20) | PK | Y |  |  | rt\_well\_segment\_type.segment\_type | rt\_well\_segment\_type.segment\_type  dt\_well\_segment.segment\_type | The type of well segment, such as protective casing, well casing, screen, etc. |  |
| **material\_type\_code** | Text(20) | PK | Y |  |  | rt\_well\_segment\_type.material\_type\_code | rt\_well\_segment\_type.material\_type\_code  dt\_well\_segment.material\_type\_code | The material of the well segment. |  |
| **start\_depth** | Numeric | PK | Y |  |  |  | dt\_well\_segment.start\_depth | The depth of the top of the well segment below ground surface. |  |
| **end\_depth** | Numeric |  | Y |  |  |  | dt\_well\_segment.end\_depth | The depth of the bottom of the well segment below ground surface. |  |
| **depth\_unit** | Text(15) |  | Y | ft |  | rt\_unit.unit\_code | dt\_well\_segment.depth\_unit | The unit of measurement of the depth. |  |
| inner\_diameter | Numeric |  |  |  |  |  | dt\_well\_segment.inner\_diameter | The inner diameter of the well segment. |  |
| outer\_diameter | Numeric |  |  |  |  |  | dt\_well\_segment.outer\_diameter | The outer diameter of the well segment. |  |
| **diameter\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_well\_segment.diameter\_unit | The unit of measurement of the diameter. |  |
| thickness | Numeric |  |  |  |  |  | dt\_well\_segment.thickness | The thickness of the well segment. |  |
| **thickness\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_well\_segment.thickness\_unit | The unit of measurement of the thickness. |  |
| slot\_type | Text(20) |  |  |  |  |  | dt\_well\_segment.slot\_type | The type of slots in the well segment, such as bridge, shutter, and continuous. |  |
| slot\_size | Numeric |  |  |  |  |  | dt\_well\_segment.slot\_size | The width of the slots. |  |
| **slot\_size\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_well\_segment.slot\_size\_unit | The unit of measurement of the slot size. |  |
| perf\_length | Numeric |  |  |  |  |  | dt\_well\_segment.perf\_length | The length of the perforated portion of the screen. |  |
| screen\_type | Text(15) |  |  |  |  |  | dt\_well\_segment.screen\_type | The type of screen. |  |
| material\_quantity | Text(20) |  |  |  |  |  | dt\_well\_segment.material\_quantity | The quantity of material used. Applicable to annular seal/fill material. |  |
| material\_density | Text(20) |  |  |  |  |  | dt\_well\_segment.material\_density | The density of the material used. |  |
| remark | Text(2000) |  |  |  |  |  | dt\_well\_segment.remark | Any additional information about the well segment. |  |

## WaterLevel\_v1

| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **sys\_loc\_code** | Text(20) | PK | Y |  | Location\_v1.sys\_loc\_code |  | dt\_water\_level.sys\_loc\_code | The unique identifier of the location. Must be a valid code for the facility and reported value in the sys\_loc\_code field of the Location section. |  |
| **measurement\_date** | DateTime | PK | Y |  |  |  | dt\_water\_level.measurement\_date | The date and time of the water level measurement. |  |
| equipment\_code | Text(60) |  |  |  |  |  | dt\_equipment.equipment\_code  dt\_water\_level.equipment\_code | The unique identifier of the equipment used to measure the water level. |  |
| historical\_reference\_elev | Numeric |  |  |  |  |  | dt\_water\_level.historical\_reference\_elev | The historical reference elevation value. Used for the elevation of past reference points. |  |
| water\_level\_depth | Numeric |  |  |  |  |  | dt\_water\_level.water\_level\_depth | The depth of the water level. |  |
| water\_level\_elev | Numeric |  |  |  |  |  | dt\_water\_level.water\_level\_elev | The elevation of the water level. |  |
| corrected\_depth | Numeric |  |  |  |  |  | dt\_water\_level.corrected\_depth | The depth of the water level after any necessary corrections. For example, corrections may be necessary if free product was encountered. |  |
| corrected\_elev | Numeric |  |  |  |  |  | dt\_water\_level.corrected\_elevation | The elevation of the water level after any necessary corrections. For example, corrections may be necessary if free product was encountered. |  |
| measured\_depth\_of\_well | Numeric |  |  |  |  |  | dt\_water\_level.measured\_depth\_of\_well | The depth below ground surface to the bottom of the well. |  |
| **depth\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_water\_level.depth\_unit | The unit of measure of the depths. |  |
| technician | Text(50) |  |  |  |  |  | dt\_water\_level.technician | The name of the technician measuring the water level. |  |
| dry\_indicator\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_water\_level.dry\_indicator\_yn | Y" if the well is dry, "N" if not. |  |
| measurement\_method | Text(20) |  |  |  |  |  | dt\_water\_level.measurement\_method | The method used to measure the water level. |  |
| batch\_number | Text(10) |  |  |  |  |  | dt\_water\_level.batch\_number | The batch of the water level measurement. |  |
| **dip\_or\_elevation** | Text(9) |  | Y | dip |  | (Enumeration: dip\_or\_elevation) | dt\_water\_level.dip\_or\_elevation | dip" if the water level is below the measurement datum, "elevation" if the water level is above the measurement datum (i.e. an artesian well). |  |
| remark | Text(2000) |  |  |  |  |  | dt\_water\_level.remark | Any additional information about the water level measurement. |  |
| **lnapl\_cas\_rn** | Text(15) |  |  |  |  | rt\_analyte.cas\_rn | dt\_water\_level.lnapl\_cas\_rn | The identifier of the LNAPL analyte. |  |
| lnapl\_depth | Numeric |  |  |  |  |  | dt\_water\_level.lnapl\_depth | The depth to LNAPL. |  |
| **dnapl\_cas\_rn** | Text(15) |  |  |  |  | rt\_analyte.cas\_rn | dt\_water\_level.dnapl\_cas\_rn | The identifier of the DNAPL analyte. |  |
| dnapl\_depth | Numeric |  |  |  |  |  | dt\_water\_level.dnapl\_depth | The depth to DNAPL. |  |
| task\_code | Text(40) |  |  |  |  |  | dt\_task.task\_code  dt\_water\_level.task\_code | The unique identifier of the task associated with the water level measurement. |  |
| **approval\_code** | Text(10) |  |  |  |  | rt\_valid\_code.accept\_code | dt\_water\_level.approval\_code | The approval code for the water level measurement. |  |
| custom\_field\_1 | Text(255) |  |  |  |  |  | dt\_water\_level.custom\_field\_1 | A custom field. |  |
| custom\_field\_2 | Text(255) |  |  |  |  |  | dt\_water\_level.custom\_field\_2 | A custom field. |  |
| custom\_field\_3 | Text(255) |  |  |  |  |  | dt\_water\_level.custom\_field\_3 | A custom field. |  |
| custom\_field\_4 | Text(255) |  |  |  |  |  | dt\_water\_level.custom\_field\_4 | A custom field. |  |
| custom\_field\_5 | Text(255) |  |  |  |  |  | dt\_water\_level.custom\_field\_5 | A custom field. |  |
| **reportable\_yn** | Text(1) |  | Y | Y |  | (Enumeration: yes\_no\_values) | dt\_water\_level.reportable\_yn | Y" if the water level measurement is reportable, "N" if not. This field can be used to distinguish between multiple water level readings where only the final reading would be used for reporting. |  |

## WaterTable\_v1

| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **sys\_loc\_code** | Text(20) | PK | Y |  | Location\_v1.sys\_loc\_code |  | dt\_water\_table.sys\_loc\_code | The unique identifier of the location. Must be a valid code for the facility and reported value in the sys\_loc\_code field of the Location section. | |
| **type** | Text(20) | PK | Y |  |  |  | dt\_water\_table.type | The aquifer designation, such as unconfined1, confined1, or confined2. |  |
| **sequence** | Text(12) | PK | Y |  |  | (Enumeration: sequence) | dt\_water\_table.sequence | The designation of when the water level measurement was taken. For example, measurement taken before water stabilized would be "unstabilized" and measurement taken after stabilization would be "stabilized". |  |
| **depth** | Numeric |  | Y |  |  |  | dt\_water\_table.depth | The depth of the water table below the reference point. |  |
| flowing\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_water\_table.flowing\_yn | Y" if water is flowing, "N" if not. |  |
| measurement\_method | Text(50) |  |  |  |  |  | dt\_water\_table.measurement\_method | The method of water table depth measurement. |  |
| capped\_pressure | Numeric |  |  |  |  |  | dt\_water\_table.capped\_pressure | The hydrostatic pressure of the confined aquifer. |  |
| **capped\_pressure\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_water\_table.capped\_pressure\_unit | The unit of measure of the capped pressure. |  |
| reference\_point | Text(50) |  |  |  |  |  | dt\_water\_table.reference\_point | The reference point from which depth was measured. |  |
| reference\_elevation | Numeric |  |  |  |  |  | dt\_water\_table.reference\_elevation | The elevation of the reference point. |  |
| temperature | Numeric |  |  |  |  |  | dt\_water\_table.temperature | The temperature of the water in the water table. |  |
| **temperature\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_water\_table.temperature\_unit | The unit of measure of the temperature. |  |

## ExtractionInjectionWells\_v1

| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **sys\_loc\_code** | Text(20) | PK | Y |  | Location\_v1.sys\_loc\_code |  | dt\_location.sys\_loc\_code  dt\_well.sys\_loc\_code  dt\_pump\_rate.sys\_loc\_code | The unique identifier of the location. Must be a valid code for the facility and reported value in the sys\_loc\_code field of the Location section. |  |
| **start\_measure\_date** | DateTime | PK | Y |  |  |  | dt\_pump\_rate.start\_measure\_date | The date and time that the measurement begain. |  |
| end\_measure\_date | DateTime |  |  |  |  |  | dt\_pump\_rate.end\_measure\_date | The date and time that the measurement ended. |  |
| pump\_rate | Numeric |  |  |  |  |  | dt\_pump\_rate.pump\_rate | The average pumping rate. This can be calculated by dividing the total volume pumped by the difference between end\_measure\_date and start\_measure\_date. |  |
| **pump\_rate\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_pump\_rate.pump\_rate\_unit | The unit of measure of the pump rate. |  |
| pct\_operating\_time | Numeric |  |  |  |  |  | dt\_pump\_rate.pct\_operating\_time | The numeric percentage of the measurement time interval that the well was operating, from 0 to 100. Can include decimals. Do not enter a % symbol. |  |
| operating\_mode | Text(13) |  |  |  |  | (Enumeration: operating\_mode) | dt\_pump\_rate.operating\_mode | The mode in which well was operating during the measurement time interval. |  |
| design\_rate | Numeric |  |  |  |  |  | dt\_pump\_rate.expected\_pump\_rate | The pumping rate specified in the design document or work plan to fully capture the site's contamination. |  |
| **design\_rate\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_pump\_rate.expected\_pump\_rate\_unit | The unit of measure of the expected pump rate. |  |
| rate\_measurement\_type | Text(9) |  |  |  |  | (Enumeration: rate\_measurement\_type) | dt\_pump\_rate.rate\_measurement\_type | The type of measurement used for calculating the pump rate. |  |
| static\_depth | Text(14) |  |  |  |  |  | dt\_pump\_rate.static\_depth | The static depth. |  |
| pump\_depth | Text(14) |  |  |  |  |  | dt\_pump\_rate.pump\_depth | The pump depth. |  |
| recovery\_depth | Text(14) |  |  |  |  |  | dt\_pump\_rate.recovery\_depth | The recovery depth. |  |
| recovery\_time | Text(10) |  |  |  |  |  | dt\_pump\_rate.recovery\_time | The recovery time. |  |
| sounding | Text(14) |  |  |  |  |  | dt\_pump\_rate.sounding | The echo-sounding value. |  |
| suction | Numeric |  |  |  |  |  | dt\_pump\_rate.suction | The vacuum in the well or well casing in equivalent feet of water. |  |
| measured\_by | Text(50) |  |  |  |  |  | dt\_pump\_rate.measured\_by | The name of the person collecting the measurement. |  |
| remark | Text(2000) |  |  |  |  |  | dt\_pump\_rate.remark | Any additional information about the pumping. |  |

## FieldSample\_v1

| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **sys\_sample\_code** | Text(40) | PK | Y |  |  |  | dt\_sample.sys\_sample\_code  dt\_static\_props.sys\_sample\_code | The unique identifier of the sample. Each sample at a facility must have a unique value, including spikes and duplicates. You have considerable flexibility in the methods used to derive and assign unique sample identifiers, but uniqueness throughout the database is the only restriction enforced by EQuIS®. |  |
| sample\_name | Text(50) |  |  |  |  |  | dt\_sample.sample\_name | Additional sample identification information as necessary. Is not required to be unique (i.e. duplicates are OK). |  |
| **sample\_matrix\_code** | Text(10) |  | Y |  |  | rt\_matrix.matrix\_code | rt\_matrix.matrix\_desc  dt\_sample.matrix\_code | The code which distinguishes between different types of sample matrix. For example, soil samples must be distinguished from ground water samples, etc. |  |
| **sample\_type\_code** | Text(20) |  | Y |  |  | rt\_sample\_type.sample\_type\_code | rt\_sample\_type.sample\_type\_desc  dt\_sample.sample\_type\_code | The code which distinguishes between different types of samples. For example, normal field samples must be distinguished from laboratory method blank samples, etc. |  |
| **sample\_source** | Text(5) |  | Y | FIELD |  | (Enumeration: sample\_source) | dt\_sample.sample\_source | This field identifies where the sample came from, either Field or Lab. In this section this value should always be Field. |  |
| parent\_sample\_code | Text(40) |  |  |  | FieldSample\_v1.sys\_sample\_code |  | dt\_sample.parent\_sample\_code | The unique identifier (sys\_sample\_code) that uniquely identifies the sample from which this sample was derived or to which this sample is associated. For example, the value of this field for a duplicate sample would identify the normal sample of which this sample is a duplicate. |  |
| sample\_delivery\_group | Text(20) |  |  |  |  |  | dt\_SDG.sdg\_name  dt\_field\_sample.field\_sdg | The unique identifier of the sample delivery group (SDG) or work order. |  |
| **sample\_date** | DateTime |  | Y |  |  |  | dt\_sample.sample\_date | The date and time the sample was collected (in MM/DD/YYYY HH:MM:SS format). |  |
| sys\_loc\_code | Text(20) |  |  |  | Location\_v1.sys\_loc\_code |  | dt\_sample.sys\_loc\_code | The unique identifier of the location at which the sample was collected. Must be a valid code for the facility and reported value in the sys\_loc\_code field of the Location section. |  |
| start\_depth | Numeric |  |  |  |  |  | dt\_sample.start\_depth | The beginning depth (top) of the sample below ground surface. Leave null for most ground water samples from monitoring wells, as the database will derive this information from the start/end depth of the well screen field located in another data table. Only enter as value for groundwater samples if discrete samples are taken at different depth elevations from a single well (i.e. multiple well packer samples). |  |
| end\_depth | Numeric |  |  |  |  |  | dt\_sample.end\_depth | The end depth (bottom) of sample below ground surface. Leave null for most ground water samples from monitoring wells, as the database will derive this information from the start/end depth of the well screen field located in another data table. Only enter as value for groundwater samples if discrete samples are taken at different depth elevations from a single well, i.e. multiple well packer samples. |  |
| **depth\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_sample.depth\_unit | The unit of measurement of the depth. |  |
| **geologic\_unit\_code** | Text(20) |  |  |  |  | rt\_geologic\_unit.geologic\_unit\_code | dt\_static\_props.geologic\_unit\_code | The geologic unit (e.g. stratigraphy) from which the sample was taken. |  |
| chain\_of\_custody | Text(40) |  |  |  |  |  | dt\_chain\_of\_custody.chain\_of\_custody  dt\_field\_sample.chain\_of\_custody | The chain of custody identifier. A single sample may be assigned to only one chain of custody. |  |
| sent\_to\_lab\_date | DateTime |  |  |  |  |  | dt\_field\_sample.sent\_to\_lab\_date | The date and time that the sample was sent to the laboratory. |  |
| sample\_receipt\_date | DateTime |  |  |  |  |  | dt\_field\_sample.sample\_receipt\_date | The date and time that the sample was received by the laboratory. |  |
| sampler | Text(50) |  |  |  |  |  | dt\_field\_sample.sampler | The name or initials of the sampler. |  |
| **sampling\_company\_code** | Text(40) |  |  |  |  | rt\_company.company\_code | rt\_company.company\_name  dt\_field\_sample.sampling\_company\_code | The unique identifier of the sampling company. |  |
| sampling\_reason | Text(30) |  |  |  |  |  | dt\_field\_sample.sampling\_reason | The reason for the sampling event. |  |
| **sampling\_method** | Text(40) |  |  |  |  | rt\_sample\_method.method\_code | dt\_sample.sample\_method | The method of sample collection. |  |
| task\_code | Text(40) |  |  |  |  |  | dt\_task.task\_code  dt\_sample.task\_code | The unique identifier of the SAP/work plan under which the field sample was collected. |  |
| collection\_quarter | Text(5) |  |  |  |  |  | dt\_field\_sample.collection\_quarter | Enter the quarter of the year for samples collected (i.e. Q1, Q2, Q3, or Q4). |  |
| **composite\_yn** | Text(1) |  | Y |  |  | (Enumeration: yes\_no\_values) | dt\_field\_sample.composite\_yn | Y" if the sample is a composite sample, "N" if not. |  |
| composite\_desc | Text(255) |  |  |  |  |  | dt\_field\_sample.composite\_desc | The description of composite sample (if composite\_yn is "Yes"). Example: "Composite sample from soil stock pile." or "Composite sample from individual samples SB-001, SB-005, and SB-009." |  |
| sample\_class | Text(10) |  |  |  |  |  | dt\_sample.sample\_class | The class code for the sample type: NF - Normal Field Sample, FQ - Field Quality Control Sample, or LQ - Lab Quality Control Sample. |  |
| **medium** | Text(20) |  |  |  |  | rt\_medium.medium\_code | dt\_sample.medium\_code | The medium of the sample. This is typically more general than matrix, for example "soil" or "water". |  |
| sample\_desc | Text(255) |  |  |  |  |  | dt\_sample.sample\_desc | Additional sample description information as necessary. Is not required to be unique (i.e. duplicates are OK). |  |
| filter\_type | Text(20) |  |  |  |  |  | dt\_field\_sample.filter\_type | The filter type. |  |
| equipment\_code | Text(60) |  |  |  |  |  | dt\_equipment.equipment\_code  dt\_field\_sample.equipment\_code | The unique identifier of the equipment used to collect the sample. |  |
| equipment\_cal\_date | DateTime |  |  |  |  |  | dt\_field\_sample.equipment\_cal\_date | The date and time the equipment was calibrated. |  |
| air\_volume | Numeric |  |  |  |  |  | dt\_field\_sample.air\_volume | The volume of air collected with the sample. |  |
| **air\_volume\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_field\_sample.air\_volume\_unit | The unit of measurement of the air volume. |  |
| custom\_field\_1 | Text(255) |  |  |  |  |  | dt\_sample.custom\_field\_1 | A custom field. |  |
| custom\_field\_2 | Text(255) |  |  |  |  |  | dt\_sample.custom\_field\_2 | A custom field. |  |
| custom\_field\_3 | Text(255) |  |  |  |  |  | dt\_sample.custom\_field\_3 | A custom field. |  |
| custom\_field\_4 | Text(255) |  |  |  |  |  | dt\_sample.custom\_field\_4 | A custom field. |  |
| custom\_field\_5 | Text(255) |  |  |  |  |  | dt\_sample.custom\_field\_5 | A custom field. |  |
| remark | Text(2000) |  |  |  |  |  | dt\_sample.remark  dt\_field\_sample.remark | Any additional information about the sample. |  |

## FieldResults\_v1

| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **data\_provider** | Text(40) |  |  |  |  | rt\_company.company\_code | dt\_sample.data\_provider | The unique identifier of the company or agency submitting the data. |  |
| **sys\_loc\_code** | Text(20) |  | Y |  | Location\_v1.sys\_loc\_code |  | dt\_sample.sys\_loc\_code | The unique identifier of the location at which the sample was collected. Must be a valid code for the facility and reported value in the sys\_loc\_code field of the Location section. |  |
| **sys\_sample\_code** | Text(40) | PK | Y |  | FieldSample\_v1.sys\_sample\_code |  | dt\_sample.sys\_sample\_code  dt\_sample.sample\_name | The unique identifier of the sample. |  |
| **cas\_rn** | Text(15) | PK | Y |  |  | rt\_analyte.cas\_rn | dt\_result.cas\_rn | The unique identifier of the analyte being measured. |  |
| chemical\_name | Text(255) |  |  |  |  |  | rt\_analyte.chemical\_name | The name of the analyte being measured. |  |
| start\_depth | Numeric |  |  |  |  |  | dt\_sample.start\_depth | The beginning (top) of the sample below ground surface. |  |
| end\_depth | Numeric |  |  |  |  |  | dt\_sample.end\_depth | The end (bottom) of the sample below ground surface. |  |
| depth\_unit | Text(15) |  |  |  |  |  | dt\_sample.depth\_unit | The unit of measurement of the depth. |  |
| **result\_date** | DateTime | PK | Y |  |  |  | dt\_sample.sample\_date  dt\_test.analysis\_date | The date and time the sample was collected. |  |
| **result\_value** | Text(19) |  | Y |  |  |  | dt\_result.result\_text | The measured value of the analyte in appropriate significant digits. |  |
| **result\_unit** | Text(15) |  | Y |  |  | rt\_unit.unit\_code | dt\_result.result\_unit | The unit of measurement of the result value. |  |
| quantitation\_limit | Text(20) |  |  |  |  |  | dt\_result.quantitation\_limit | The quantitation limit of the result value. |  |
| task\_code | Text(40) |  |  |  |  |  | dt\_task.task\_code  dt\_task.task\_desc  dt\_sample.task\_code | The unique identifier of the SAP/work plan under which the field sample was collected. |  |
| **sample\_matrix\_code** | Text(10) |  | Y |  |  | rt\_matrix.matrix\_code | rt\_matrix.matrix\_desc  dt\_sample.matrix\_code | The code which distinguishes between different types of sample matrix. For example, soil samples must be distinguished from ground water samples, etc. |  |
| **qualifier** | Text(20) |  |  |  |  | rt\_qualifier.qualifier | dt\_result.interpreted\_qualifiers | The unique identifier of the sampling company. |  |
| **sampling\_company\_code** | Text(40) |  |  |  |  | rt\_company.company\_code | dt\_field\_sample.sampling\_company\_code | The reason for the sampling event. |  |
| sampling\_reason | Text(30) |  |  |  |  |  | dt\_field\_sample.sampling\_reason | The reason for the sampling event. |  |
| sampling\_method | Text(40) |  |  |  |  |  | rt\_sample\_method.method\_code  dt\_sample.sample\_method | The method of sample collection. |  |
| **reportable\_result** | Text(3) |  | Y | Yes |  | (Enumeration: reportable\_result) | dt\_result.reportable\_result | Y" if the result value is reportable, "N" if not. |  |
| value\_type | Text(10) |  |  | ACTUAL |  | (Enumeration: value\_type) | dt\_result.value\_type | The type of value, either ACTUAL, CALCULATED, or ESTIMATED. |  |
| remark | Text(2000) |  |  |  |  |  | dt\_result.remark | Any additional information about the result value. |  |
| **detect\_flag** | Text(2) |  | Y | Y |  | (Enumeration: detect\_flag) | dt\_result.detect\_flag | May be either "Y" for detected analytes or "N" for non\_detects or "TR" for trace. Use "Y" for estimated values (above detection limit but below the quantitation limit). |  |
| **fraction** | Text(10) | PK | Y | N |  |  | dt\_test.fraction | Must be either "D" for dissolved or filtered [metal] concentration, "T" for total or undissolved, or "N" for anything else. |  |
| **analytic\_method** | Text(20) |  | Y | Field Measure |  |  | dt\_test.analytic\_method | The analytic method used to obtain the result value. |  |
| **analysis\_location** | Text(2) |  | Y | FI |  | (Enumeration: analysis\_location) | dt\_test.analysis\_location | Must be either "FI" for field instrument or probe, "FL" for mobile field laboratory analysis, or "LB" for fixed\_based laboratory analysis. |  |
| **column\_number** | Text(2) | PK | Y | NA |  |  | dt\_test.column\_number | Values include either "1C" for first column analyses, "2C" for second column analyses or "NA" for tests for which this distinction is not applicable. |  |
| **result\_type\_code** | Text(10) |  | Y | TRG |  |  | dt\_result.result\_type\_code | The type of result. Must be either "TRG" for a target or regular result, "TIC" for tentatively identified compounds, "SUR" for surrogates, "IS" for internal standards, or "SC" for spiked compounds. |  |
| **test\_type** | Text(10) | PK | Y | INITIAL |  |  | dt\_test.test\_type | The type of test. Valid values include "INITIAL", "REEXTRACT1", "REEXTRACT2", "REEXTRACT3", "REANALYSIS", "DILUTION1", "DILUTIONS2", and "DILUTIONS3". |  |
| field\_lab\_name\_code | Text(20) |  |  |  |  |  | dt\_test.lab\_name\_code | The name or initials of the on-site field lab (not controlled vocabulary). |  |
|  |  |  |  |  |  |  |  |  |  |
| **Default Mappings** |  |  |  |  |  |  |  |  |  |
|  |  |  |  | N |  |  | dt\_sample.sample\_type\_code |  |  |
|  |  |  |  | FIELD |  |  | dt\_sample.sample\_source |  |  |
|  |  |  |  |  |  |  |  |  |  |
| **Method Mappings** |  |  |  |  |  |  |  |  |  |
|  |  |  |  | GetSampleId |  |  | dt\_field\_sample.sample\_id |  |  |

## VI\_BuildingInspection\_v1

| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **building\_code** | Text(20) | PK | Y |  |  |  | dt\_subfacility.subfacility\_code  dt\_subfacility\_parameter.subfacility\_code | The unique identifier of the building. |  |
| **building\_name** | Text(60) |  | Y |  |  |  | dt\_subfacility.subfacility\_name | The name of the building. |  |
| **inspection\_date** | DateTime | PK | Y |  |  |  | dt\_subfacility\_parameter.measurement\_date | The date the building inspection was conducted. |  |
| **task\_code** | Text(40) |  | Y |  |  |  | dt\_task.task\_code  dt\_subfacility\_parameter.param\_value | The Task Code associated with the building inspection. |  |
| contact\_name | Text(50) |  |  |  |  |  | dt\_subfacility.contact\_name | The primary occupant of the building. |  |
| address1 | Text(40) |  |  |  |  |  | dt\_subfacility.address\_1 | Building street address line 1. |  |
| address2 | Text(40) |  |  |  |  |  | dt\_subfacility.address\_2 | Building street address line 2. |  |
| city | Text(30) |  |  |  |  |  | dt\_subfacility.city | Building city. |  |
| **state** | Text(2) |  |  | MT |  | rt\_state.state\_code | dt\_subfacility.state | Building state. |  |
| zip\_code | Text(10) |  |  |  |  |  | dt\_subfacility.postal\_code | Building postal code. |  |
| **county** | Text(50) |  |  |  |  | rt\_county.county\_code | dt\_subfacility.county | Building county. |  |
| phone\_number | Text(30) |  |  |  |  |  | dt\_subfacility.phone\_number | Occupant home phone number. |  |
| alt\_phone\_number | Text(30) |  |  |  |  |  | dt\_subfacility.alt\_phone\_number | Occupant work/alternate phone number. |  |
| email\_address | Text(100) |  |  |  |  |  | dt\_subfacility.email\_address | Occupant email address. |  |
| fax\_number | Text(30) |  |  |  |  |  | dt\_subfacility.fax\_number | Occupant fax number. |  |
| building\_remark\_1 | Text(2000) |  |  |  |  |  | dt\_subfacility.remark\_1 | Additional information about the building or occupant. |  |
| building\_remark\_2 | Text(2000) |  |  |  |  |  | dt\_subfacility.remark\_2 | Additional information about the building or occupant. |  |
| best\_contact\_time | Text(255) |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | The best time to contact the occupant. |  |
| best\_contact\_number | Text(14) |  |  |  |  | (Enumeration: best\_contact\_number) | dt\_subfacility\_parameter.param\_value | The best phone number to use to contact the occupant. |  |
| occupant\_status | Text(6) |  |  |  |  | (Enumeration: occupant\_status) | dt\_subfacility\_parameter.param\_value | The status of the occupant, for example "Owner" or "Renter". If "Other", please provide details in occupant\_status\_remark. | If param value = 'Other' then remark field is required. |
| occupant\_status\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Additional information about the occupant status. | If param value = 'Other' then remark field is required. |
| owner\_contact\_details | Text(255) |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | Building owner contact details, if different from occupant contact details. |  |
| nb\_of\_occupants | Numeric |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | The number of individuals occupying the building. |  |
| nb\_of\_children | Numeric |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | The number of children occupying the building. |  |
| occupant\_ages | Text(255) |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | The ages of the building occupants. |  |
| occupant\_duration | Text(255) |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | Duration of current occupancy. |  |
| building\_type | Text(18) |  |  |  |  | (Enumeration: building\_type) | dt\_subfacility\_parameter.param\_value | The type of building. If "Other", please provide details in building\_type\_remark. | If param value = 'Other' then remark field is required. |
| building\_type\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Additional information about the building type. | If param value = 'Other' then remark field is required. |
| building\_size | Text(6) |  |  |  |  | (Enumeration: building\_size) | dt\_subfacility\_parameter.param\_value | The size of the building. |  |
| nb\_floors | Numeric |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | The number of floors in the building. |  |
| attached\_garage\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_subfacility\_parameter.param\_value | Does the building have an attached garage? |  |
| foundation\_type | Text(39) |  |  |  |  | (Enumeration: foundation\_type) | dt\_subfacility\_parameter.param\_value | The foundation type, for example "Basement", "Crawlspace", etc. If "Other", please provide details in foundation\_type\_remark. | If param value = 'Other' then remark field is required. |
| foundation\_type\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Additional information about the foundation type, including % of each type if multiple. | If param value = 'Other' then remark field is required. |
| structure\_age | Text(255) |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | The age of the structure. |  |
| building\_const | Text(38) |  |  |  |  | (Enumeration: building\_construction) | dt\_subfacility\_parameter.param\_value | The general above-ground home/structure construction material. If "Other", please provide details in building\_const\_remark. | If param value = 'Other' then remark field is required. |
| building\_const\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Additional information about the building construction. | If param value = 'Other' then remark field is required. |
| foundation\_const | Text(73) |  |  |  |  | (Enumeration: foundation\_construction) | dt\_subfacility\_parameter.param\_value | The foundation construction material, for example "Concrete Slab", "Fieldstone", etc. If "Other", please provide details in foundation\_const\_remark. | If param value = 'Other' then remark field is required. |
| foundation\_const\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Additional information about the foundation construction. | If param value = 'Other' then remark field is required. |
| water\_source | Text(20) |  |  |  |  | (Enumeration: water\_source) | dt\_subfacility\_parameter.param\_value | The water source for the building. |  |
| water\_source\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Location, use, current condition, and additional information regarding the water source. |  |
| septic\_system | Text(8) |  |  |  |  | (Enumeration: septic\_system) | dt\_subfacility\_parameter.param\_value | Does the building have a septic system? |  |
| septic\_const | Text(255) |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | If the building has a septic system, indicate the construction type. |  |
| septic\_location | Text(255) |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | If the building has a septic system, indicate the location. |  |
| septic\_last\_svc\_date | DateTime |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | If the building has a septic system, indicate the date it was last serviced. |  |
| septic\_degreaser\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_subfacility\_parameter.param\_value | If the building has a septic system, indicate whether or not degreaser is used or has ever been used for the septic system. |  |
| standing\_water\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_subfacility\_parameter.param\_value | Is there standing water outside of the home, for example a pond or ditch? |  |
| basement\_finished\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_subfacility\_parameter.param\_value | Is the basement finished? |  |
| basement\_nb\_rooms | Numeric |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | If finished, indicate the number of rooms in the basement. |  |
| basement\_room\_use | Text(34) |  |  |  |  | (Enumeration: basement\_room\_use) | dt\_subfacility\_parameter.param\_value | If finished, indicate the use of the rooms. If "Other", please provide details in basement\_room\_use\_remark. | If param value = 'Other' then remark field is required. |
| basement\_room\_use\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Additional information about the basement room use. | If param value = 'Other' then remark field is required. |
| basement\_floor\_const | Text(28) |  |  |  |  | (Enumeration: basement\_floor) | dt\_subfacility\_parameter.param\_value | The basement floor construction material, for example "Concrete", "Tile", etc. If "Other", please provide details in basement\_floor\_const\_remark. | If param value = 'Other' then remark field is required. |
| basement\_floor\_const\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Additional information about the basement floor construction. | If param value = 'Other' then remark field is required. |
| basement\_wall\_const | Text(51) |  |  |  |  | (Enumeration: basement\_wall\_construction) | dt\_subfacility\_parameter.param\_value | The basement wall construction material, for example "Poured Concrete", "Cement Block", etc. If "Other", please provide details in basement\_wall\_const\_remark. | If param value = 'Other' then remark field is required. |
| basement\_wall\_const\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Additional information about the basement wall construction. | If param value = 'Other' then remark field is required. |
| basement\_moisture | Text(33) |  |  |  |  | (Enumeration: basement\_frequency) | dt\_subfacility\_parameter.param\_value | Does the basement have a moisture problem? | If param value = 'Other' then remark field is required. |
| basement\_moisture\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | The description of the basement moisture problem, if any. | If param value = 'Other' then remark field is required. |
| basement\_flood | Text(33) |  |  |  |  | (Enumeration: basement\_frequency) | dt\_subfacility\_parameter.param\_value | Does the basement ever flood? |  |
| sump\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_subfacility\_parameter.param\_value | Does the building have a sump? |  |
| basement\_other | Text(64) |  |  |  |  | (Enumeration: basement\_other) | dt\_subfacility\_parameter.param\_value | Indicate if any of the following are present in the basement: Floor Cracks, Wall Cracks, Sump, Floor Drain, Other Hole/Opening in the Floor. If other, please provide details in basement\_other\_remark. | If param value = 'Other' then remark field is required. |
| basement\_other\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Additional information about other basement details. | If param value = 'Other' then remark field is required. |
| basement\_material\_storage | Text(181) |  |  |  |  | (Enumeration: basement\_material\_storage) | dt\_subfacility\_parameter.param\_value | Indicate if any of the following are stored in the basement: Paint, Paint Stripper/Remover, Paint Thinner, Metal Degreaser/Cleaner, Gasoline, Diesel Fuel, Solvents, Glue, Laundry Spot Removers, Drain Cleaners, Pesticides, Other Equipment with Fuel Tanks. |  |
| recent\_remodel\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_subfacility\_parameter.param\_value | Has any painting or remodeling been done in the building within the last six months? If yes, please provide details in recent\_remodel\_remark. | If param value = 'Y' then remark is required. |
| recent\_remodel\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Additional information about any recent remodeling. | If param value = 'Y' then remark is required. |
| recent\_carpet\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_subfacility\_parameter.param\_value | Has new carpeting been installed in the building within the last year? If yes, indicate when and where in recent\_carpet\_remark. | If param value = 'Y' then remark is required. |
| recent\_carpet\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Additional information about any recent carpeting. | If param value = 'Y' then remark is required. |
| dry\_cleaning | Text(33) |  |  |  |  | (Enumeration: dry\_cleaning) | dt\_subfacility\_parameter.param\_value | Do you regularly use or work in a dry cleaning service? |  |
| solvents\_at\_work\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_subfacility\_parameter.param\_value | Does anyone in the building use solvents at work? |  |
| solvents\_at\_work\_nb | Numeric |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | The number of occupants who use solvents at work, if any. |  |
| work\_clothes\_wash\_home\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_subfacility\_parameter.param\_value | If occupants use solvents at work, are the work clothes washed at home? |  |
| wash\_dry\_loc | Text(62) |  |  |  |  | (Enumeration: wash\_dry\_loc) | dt\_subfacility\_parameter.param\_value | The location of the washer and dryer. If "Other", please provide details in wash\_dry\_loc\_remark. | If param value = 'Other' then remark field is required. |
| wash\_dry\_loc\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Additional information about the washer and dryer location. | If param value = 'Other' then remark field is required. |
| dryer\_vented\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_subfacility\_parameter.param\_value | If you have a dryer, is it vented to the outdoors? |  |
| heat\_fuel\_type | Text(32) |  |  |  |  | (Enumeration: heat\_fuel\_type) | dt\_subfacility\_parameter.param\_value | The type of heating fuel used in the building. Check all that apply. If "Other", please provide details in heat\_fuel\_type\_remark. | If param value = 'Other' then remark field is required. |
| heat\_fuel\_type\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Additional information about the heating fuel used in the building. | If param value = 'Other' then remark field is required. |
| heat\_system\_type | Text(96) |  |  |  |  | (Enumeration: heat\_system\_type) | dt\_subfacility\_parameter.param\_value | The type of heating conveyance in the building. If "Other", please provide details in heat\_system\_type\_remark. | If param value = 'Other' then remark field is required. |
| heat\_system\_type\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Additional information about the heating conveyance in the building. | If param value = 'Other' then remark field is required. |
| fuel\_storage | Text(25) |  |  |  |  | (Enumeration: fuel\_storage) | dt\_subfacility\_parameter.param\_value | Indicate types of fuel storage tanks currently or formerly present at the building, if any. |  |
| fuel\_storage\_loc | Text(255) |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | If fuel storage tanks are currently or were formerly present at the building, indicate the location(s). |  |
| fuel\_storage\_fill | Text(255) |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | If fuel storage tanks are currently or were formerly present at the building, indicate the fill method(s). |  |
| fuel\_storage\_stain\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_subfacility\_parameter.param\_value | If fuel storage tanks are currently or were formerly present at the building, indicate "Y" if there is staining near the tank. |  |
| air\_cond\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_subfacility\_parameter.param\_value | Does the building have air conditioning? |  |
| air\_cond\_type | Text(20) |  |  |  |  | (Enumeration: air\_cond\_type) | dt\_subfacility\_parameter.param\_value | The type(s) of air conditioning in the building, if any. If "Other", please provide details in air\_cond\_remark. | If param value = 'Other' then remark field is required. |
| air\_cond\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Additional information about the air conditioning in the building. | If param value = 'Other' then remark field is required. |
| fan\_usage | Text(32) |  |  |  |  | (Enumeration: fan\_usage) | dt\_subfacility\_parameter.param\_value | The type(s) of fan used in the building, if any. |  |
| fan\_only\_vent\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_subfacility\_parameter.param\_value | Do you ventilate using the fan-only mode of your central air conditioning or forced air heating system? |  |
| pesticide\_use | Text(7) |  |  |  |  | (Enumeration: pesticide\_use) | dt\_subfacility\_parameter.param\_value | Has the building had termite or other pesticide treatment? | If param value = 'Other' then remark field is required. |
| pesticide\_use\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | If the building has had termite or other pesticide treatment, indicate the type of pest control. | If param value = 'Other' then remark field is required. |
| pesticide\_use\_date | DateTime |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | If the building has had termite or other pesticide treatment, indicate the approximate date of last service. |  |
| radon\_mitigation\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_subfacility\_parameter.param\_value | Has there been any radon mitigation in the building? |  |
| water\_heat\_type | Text(26) |  |  |  |  | (Enumeration: water\_heat\_type) | dt\_subfacility\_parameter.param\_value | The type of water heater in the building, if any. If "Other", please provide details in water\_heat\_remark. | If param value = 'Other' then remark field is required. |
| water\_heat\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Additional information about the water heater in the building. | If param value = 'Other' then remark field is required. |
| water\_heat\_loc | Text(43) |  |  |  |  | (Enumeration: water\_heat\_loc) | dt\_subfacility\_parameter.param\_value | The location of the water heater. If "Other", please provide details in water\_heater\_loc\_remark. | If param value = 'Other' then remark field is required. |
| water\_heat\_loc\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Additional inforamtion about the water heater location. | If param value = 'Other' then remark field is required. |
| cook\_type | Text(18) |  |  |  |  | (Enumeration: cook\_type) | dt\_subfacility\_parameter.param\_value | The type of cooking appliance(s) in the building, if any. If "Other", please provide details in cook\_type\_remark. | If param value = 'Other' then remark field is required. |
| cook\_type\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Additional information about the cooking appliances in the building. | If param value = 'Other' then remark field is required. |
| exhaust\_hood\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_subfacility\_parameter.param\_value | Is there a stove exhaust hood present? |  |
| exhaust\_hood\_vent\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_subfacility\_parameter.param\_value | If there is a stove exhaust hood present, does it vent to the outdoors? |  |
| smoking | Text(40) |  |  |  |  | (Enumeration: smoking\_frequency) | dt\_subfacility\_parameter.param\_value | Indicate the amount of smoking in the home. |  |
| smoking\_type | Text(28) |  |  |  |  | (Enumeration: smoking\_type) | dt\_subfacility\_parameter.param\_value | If there is smoking in the home, indicate the type(s) of smoke. |  |
| air\_freshener\_yn | Text(1) |  |  |  |  | (Enumeration: yes\_no\_values) | dt\_subfacility\_parameter.param\_value | Do you regularly use air fresheners? |  |
| indoor\_hobby | Text(76) |  |  |  |  | (Enumeration: indoor\_hobby) | dt\_subfacility\_parameter.param\_value | Indicate if any of the following materials or activities are used for indoor home hobbies or crafts: Heating, Soldering, Welding, Model Glues, Paints, Spray Paint, Wood Finishing, Other. If "Other", please provide details in indoor\_hobby\_remark. | If param value = 'Other' then remark field is required. |
| indoor\_hobby\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Additional information about the materials and activities used for indoor home hobbies or crafts. | If param value = 'Other' then remark field is required. |
| spray\_deoderant | Text(12) |  |  |  |  | (Enumeration: product\_frequency) | dt\_subfacility\_parameter.param\_value | How often are spray-on deoderants used in the building? |  |
| aerosol\_deodorizer | Text(12) |  |  |  |  | (Enumeration: product\_frequency) | dt\_subfacility\_parameter.param\_value | How often are aerosol deodorizers used in the building? |  |
| insecticide | Text(12) |  |  |  |  | (Enumeration: product\_frequency) | dt\_subfacility\_parameter.param\_value | How often are insecticides used in the building? |  |
| disinfectant | Text(12) |  |  |  |  | (Enumeration: product\_frequency) | dt\_subfacility\_parameter.param\_value | How often are disinfectants used in the building? |  |
| window\_cleaner | Text(12) |  |  |  |  | (Enumeration: product\_frequency) | dt\_subfacility\_parameter.param\_value | How often are window cleaners used in the building? |  |
| nail\_polish\_remover | Text(12) |  |  |  |  | (Enumeration: product\_frequency) | dt\_subfacility\_parameter.param\_value | How often is nail polish remover used in the building? |  |
| hair\_spray | Text(12) |  |  |  |  | (Enumeration: product\_frequency) | dt\_subfacility\_parameter.param\_value | How often are hair sprays used in the building? |  |
| candle | Text(12) |  |  |  |  | (Enumeration: product\_frequency) | dt\_subfacility\_parameter.param\_value | How often are candles used in the building? |  |
| incense | Text(12) |  |  |  |  | (Enumeration: product\_frequency) | dt\_subfacility\_parameter.param\_value | How often is incense used in the building? |  |
| weekly\_cleaning | Text(86) |  |  |  |  | (Enumeration: weekly\_cleaning) | dt\_subfacility\_parameter.param\_value | Indicate the weekly household cleaning practices, if any. If "Other", please provide details in weekly\_cleaning\_remark. | If param value = 'Other' then remark field is required. |
| weekly\_cleaning\_remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Additional information about weekly household cleaning practices. | If param value = 'Other' then remark field is required. |
| remark | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Other comments. |  |
| chemical\_inventory | Text(2000) |  |  |  |  |  | dt\_subfacility\_parameter.remark | Indicate any chemicals or chemical products (consumer name) in the building and the amount present of each. |  |
| custom\_field\_1 | Text(255) |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | A custom field. |  |
| custom\_field\_2 | Text(255) |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | A custom field. |  |
| custom\_field\_3 | Text(255) |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | A custom field. |  |
| custom\_field\_4 | Text(255) |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | A custom field. |  |
| custom\_field\_5 | Text(255) |  |  |  |  |  | dt\_subfacility\_parameter.param\_value | A custom field. |  |

## VI\_TaskParameters\_v1

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| **task\_code** | Text(40) | PK | Y |  |  |  | dt\_task.task\_code  dt\_task\_parameter.task\_code | The unique identifier of the SAP/workplan. |  |
| **param\_code** | Text(20) | PK | Y |  |  | rt\_task\_param\_type.param\_code | dt\_task\_parameter.param\_code | The task parameter. |  |
| task\_desc | Text(255) |  |  |  |  |  | dt\_task.task\_desc | The description of the task. |  |
| measurement\_date | DateTime |  |  |  |  |  | dt\_task\_parameter.measurement\_date | The date and time of parameter measurement. |  |
| param\_value | Text(255) |  |  |  |  |  | dt\_task\_parameter.param\_value | The value of the parameter measured. |  |
| **param\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_task\_parameter.param\_unit | The unit of measure of the parameter. |  |
| remark | Text(2000) |  |  |  |  |  | dt\_task\_parameter.remark | Any additional information about the task. |  |

## VI\_Samples\_v1

| **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Text(40) |  | Y |  |  | rt\_company.company\_code | rt\_company.company\_name  dt\_sample.data\_provider | The unique identifier of the the company or agency submitting the data. |  |
| Text(40) | PK | Y |  |  |  | dt\_sample.sys\_sample\_code | The unique identifier of the sample. Each sample at a facility must have a unique value, including spikes and duplicates. You have considerable flexibility in the methods used to derive and assign unique sample identifiers, but uniqueness throughout the database is the only restriction enforced by EQuIS®. |  |
| Text(50) |  | Y |  |  |  | dt\_sample.sample\_name | Additional sample identification information as necessary. Is not required to be unique (i.e. duplicates are OK). |  |
| Text(10) |  | Y |  |  | rt\_matrix.matrix\_code | rt\_matrix.matrix\_desc  dt\_sample.matrix\_code | The code which distinguishes between different types of sample matrix. For example, soil samples must be distinguished from ground water samples, etc. |  |
| Text(20) |  | Y |  |  | rt\_sample\_type.sample\_type\_code | rt\_sample\_type.sample\_type\_desc  dt\_sample.sample\_type\_code | The code which distinguishes between different types of samples. For example, normal field samples must be distinguished from laboratory method blank samples, etc. | Sys\_loc\_code is required where sample\_type\_code=N. |
| Text(5) |  | Y |  |  | (Enumeration: sample\_source) | dt\_sample.sample\_source | This field identifies where the sample came from, either Field or Lab. |  |
| Text(40) |  |  |  |  |  | dt\_sample.parent\_sample\_code | The unique identifier (sys\_sample\_code) that uniquely identifies the sample from which this sample was derived or to which this sample is associated. For example, the value of this field for a duplicate sample would identify the normal sample of which this sample is a duplicate. |  |
| Text(20) |  |  |  |  |  | dt\_SDG.sdg\_name  dt\_field\_sample.field\_sdg | The unique identifier of the sample delivery group (SDG) or work order. |  |
| DateTime |  | Y |  |  |  | dt\_sample.sample\_date | The beginning date and time of sample collection (in MM/DD/YYYY HH:MM:SS format). |  |
| DateTime |  |  |  |  |  | dt\_sample.sample\_end\_date | The end date and time of sample collection (in MM/DD/YYYY HH:MM:SS format). |  |
| Text(20) |  |  |  |  |  | dt\_sample.sys\_loc\_code | The unique identifier of the location at which the sample was collected. Must be a valid code for the facility and reported value in the sys\_loc\_code field of the Location section. | Sys\_loc\_code is required where sample\_type\_code=N. |
| Text(100) |  |  |  |  |  | dt\_field\_sample.sampler | The name or initials of the sampler. |  |
| Text(20) |  | Y |  |  | rt\_company.company\_code | rt\_company.company\_name  dt\_field\_sample.sampling\_company\_code | The unique identifier of the sampling company. |  |
| Text(30) |  |  |  |  |  | dt\_field\_sample.sampling\_reason | The reason for the sampling event. |  |
| Text(40) |  |  |  |  | rt\_sample\_method.method\_code | dt\_sample.sample\_method | The method of sample collection. |  |
| Text(40) |  |  |  |  |  | dt\_task.task\_code  dt\_sample.task\_code | The unique identifier of the task under which the field sample was collected. |  |
| Text(60) |  |  |  |  | dt\_equipment.equipment\_code | dt\_field\_sample.canister\_id | The ID of the canister used. | Allow value to exist in either the database or Equipment section. |
| Text(60) |  |  |  |  | dt\_equipment.equipment\_code | dt\_field\_sample.flow\_controller\_id | The ID of the flow controller used. | Allow value to exist in either the database or Equipment section. |
| Text(60) |  |  |  |  | dt\_equipment.equipment\_code | dt\_field\_sample.vac\_gauge\_id | The ID of the vacuum gauge used. | Allow value to exist in either the database or Equipment section. |
| Numeric |  |  |  |  |  | dt\_field\_sample.vac\_gauge\_initial | The initial vacuum gauge reading. |  |
| Numeric |  |  |  |  |  | dt\_field\_sample.vac\_gauge\_final | The final vacuum gauge reading. |  |
| Text(15) |  |  |  |  |  | dt\_field\_sample.vac\_gauge\_unit | The unit of vacuum gauge reading. |  |
| Text(20) |  |  |  |  |  | dt\_field\_sample.pre\_sample\_indoor\_air\_temp | The indoor air temperature immediately prior to the sampling event. |  |
| Text(20) |  |  |  |  |  | dt\_field\_sample.post\_sample\_indoor\_air\_temp | The indoor air temperature immediately following the sampling event. |  |
| Text(40) |  |  |  |  |  | dt\_chain\_of\_custody.chain\_of\_custody  dt\_field\_sample.chain\_of\_custody | The chain of custody identifier. A single sample may be assigned to only one chain of custody. |  |
| DateTime |  |  |  |  |  | dt\_field\_sample.sent\_to\_lab\_date | The date and time that the sample was sent to the laboratory. |  |
| DateTime |  |  |  |  |  | dt\_field\_sample.sample\_receipt\_date | The date and time that the sample was received by the laboratory. |  |
| Text(2000) |  |  |  |  |  | dt\_field\_sample.remark | Any additional information about the sample. |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  | N |  |  | dt\_field\_sample.composite\_yn |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  | CompanyType\_SUBCONTRACTOR | | | rt\_company.company\_type |  |  |
|  |  |  | CompanyType\_SUBCONTRACTOR | | | rt\_company.company\_type |  |  |

## Sample\_v1

| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **data\_provider** | Text(40) |  | Y |  |  | rt\_company.company\_code | rt\_company.company\_name  dt\_sample.data\_provider | The unique identifier of the the company or agency submitting the data. |  |
| **sys\_sample\_code** | Text(40) | PK | Y |  |  |  | dt\_sample.sys\_sample\_code | The unique identifier of the sample. Each sample at a facility must have a unique value, including spikes and duplicates. You have considerable flexibility in the methods used to derive and assign unique sample identifiers, but uniqueness throughout the database is the only restriction enforced by EQuIS®. |  |
| sample\_name | Text(50) |  |  |  |  |  | dt\_sample.sample\_name | Additional sample identification information as necessary. Is not required to be unique (i.e. duplicates are OK). |  |
| **sample\_matrix\_code** | Text(10) |  | Y |  |  | rt\_matrix.matrix\_code | rt\_matrix.matrix\_desc  dt\_sample.matrix\_code | The code which distinguishes between different types of sample matrix. For example, soil samples must be distinguished from ground water samples, etc. |  |
| **sample\_type\_code** | Text(20) |  | Y |  |  | rt\_sample\_type.sample\_type\_code | rt\_sample\_type.sample\_type\_desc  dt\_sample.sample\_type\_code | The code which distinguishes between different types of samples. For example, normal field samples must be distinguished from laboratory method blank samples, etc. | Parent\_sample\_code is required where sample\_type\_code=BD, FD, FR, FS, LR, SD, SPD, RD, or MSD. |
| **sample\_source** | Text(5) |  | Y |  |  | (Enumeration: sample\_source) | dt\_sample.sample\_source | This field identifies where the sample came from, either Field or Lab. |  |
| parent\_sample\_code | Text(40) |  |  |  | Sample\_v1.sys\_sample\_code |  | dt\_sample.parent\_sample\_code | The value of "sys\_sample\_code" that uniquely identifies the sample that was the source of this sample. For example, the value of this field for a duplicate sample would identify the normal sample of which this sample is a duplicate. | Parent\_sample\_code is required where sample\_type\_code=BD, FD, FR, FS, LR, SD, SPD, RD, or MSD. |
| **sample\_date** | DateTime |  | Y |  |  |  | dt\_sample.sample\_date | The date and time sample was collected (in MM/DD/YYYY HH:MM:SS format) |  |
| sys\_loc\_code | Text(20) |  |  |  | Location\_v1.sys\_loc\_code |  | dt\_sample.sys\_loc\_code | The unique identifier of the location at which the sample was collected. Must be a valid code for the facility and reported value in the sys\_loc\_code field of the Location section. |  |
| start\_depth | Numeric |  |  |  |  |  | dt\_sample.start\_depth | The beginning depth (top) of the sample below ground surface. Leave null for most ground water samples from monitoring wells, as the database will derive this information from the start/end depth of the well screen field located in another data table. Only enter as value for groundwater samples if discrete samples are taken at different depth elevations from a single well (i.e. multiple well packer samples). |  |
| end\_depth | Numeric |  |  |  |  |  | dt\_sample.end\_depth | The end depth (bottom) of sample below ground surface. Leave null for most ground water samples from monitoring wells, as the database will derive this information from the start/end depth of the well screen field located in another data table. Only enter as value for groundwater samples if discrete samples are taken at different depth elevations from a single well, i.e. multiple well packer samples. |  |
| **depth\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_sample.depth\_unit | Unit of measurement for the sample begin and end depths |  |
| sampler | Text(100) |  |  |  |  |  | dt\_field\_sample.sampler | The name or initials of the sampler. |  |
| **sampling\_company\_code** | Text(40) |  | Y |  |  | rt\_company.company\_code | rt\_company.company\_name  dt\_field\_sample.sampling\_company\_code | The unique identifier of the sampling company. |  |
| sampling\_reason | Text(30) |  |  |  |  |  | dt\_field\_sample.sampling\_reason | The reason for the sampling event. |  |
| **sample\_method** | Text(40) |  | Y |  |  | rt\_sample\_method.method\_code | dt\_sample.sample\_method | The method of sample collection. |  |
| **task\_code** | Text(40) |  | Y |  |  |  | dt\_task.task\_code  dt\_sample.task\_code | The unique identifier of the task under which the field sample was collected. |  |
| collection\_quarter | Text(5) |  |  |  |  |  | dt\_field\_sample.collection\_quarter | Enter the quarter of the year for samples collected (i.e. Q1, Q2, Q3, or Q4). |  |
| **composite\_yn** | Text(1) |  | Y | N |  | (Enumeration: yes\_no\_values) | dt\_field\_sample.composite\_yn | Y" if the sample is a composite sample, "N" if not. |  |
| composite\_desc | Text(255) |  |  |  |  |  | dt\_field\_sample.composite\_desc | The description of composite sample (if composite\_yn is "Yes"). Example: "Composite sample from soil stock pile." or "Composite sample from individual samples SB-001, SB-005, and SB-009." |  |
| sample\_class | Text(10) |  |  |  |  |  | dt\_sample.sample\_class | The class code for the sample type: NF - Normal Field Sample, FQ - Field Quality Control Sample, or LQ - Lab Quality Control Sample. |  |
| chain\_of\_custody | Text(40) |  |  |  |  |  | dt\_chain\_of\_custody.chain\_of\_custody  dt\_field\_sample.chain\_of\_custody | The chain of custody identifier. A single sample may be assigned to only one chain of custody. |  |
| sent\_to\_lab\_date | DateTime |  |  |  |  |  | dt\_field\_sample.sent\_to\_lab\_date | The date and time that the sample was sent to the laboratory. |  |
| sample\_receipt\_date | DateTime |  |  |  |  |  | dt\_field\_sample.sample\_receipt\_date | The date and time that the sample was received by the laboratory. |  |
| sample\_delivery\_group | Text(20) |  |  |  |  |  | dt\_SDG.sdg\_name  dt\_field\_sample.field\_sdg | The laboratory sample delivery group or work order. |  |
| custom\_field\_1 | Text(255) |  |  |  |  |  | dt\_sample.custom\_field\_1 | A custom field. |  |
| custom\_field\_2 | Text(255) |  |  |  |  |  | dt\_sample.custom\_field\_2 | A custom field. |  |
| custom\_field\_3 | Text(255) |  |  |  |  |  | dt\_sample.custom\_field\_3 | A custom field. |  |
| custom\_field\_4 | Text(255) |  |  |  |  |  | dt\_sample.custom\_field\_4 | A custom field. |  |
| custom\_field\_5 | Text(255) |  |  |  |  |  | dt\_sample.custom\_field\_5 | A custom field. |  |
| remark | Text(2000) |  |  |  |  |  | dt\_sample.remark  dt\_field\_sample.remark | Any additional information pertaining to the sample. |  |
|  |  |  |  |  |  |  |  |  |  |
| **Method Mappings** |  |  |  |  |  |  |  |  |  |
|  |  |  |  | CompanyType\_SUBCONTRACTOR | |  | rt\_company.company\_type |  |  |
|  |  |  |  | CompanyType\_SUBCONTRACTOR | |  | rt\_company.company\_type |  |  |
|  |  |  |  | MatrixClass\_FIELD | |  | rt\_matrix.matrix\_class |  |  |

## TestResultQC\_v1

| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **sys\_sample\_code** | Text(40) | PK | Y |  | Sample\_v1.sys\_sample\_code |  |  | The unique identifier of the sample. | Samples with more than one result with the same cas\_rn cannot have reportable\_result='Yes'. |
| **lab\_anl\_method\_name** | Text(35) | PK | Y |  |  | rt\_analytic\_method.analytic\_method | dt\_test.analytic\_method | The laboratory analytical method name or description, for example "SW8260B", "E130.1", etc. | Samples with more than one result with the same cas\_rn cannot have reportable\_result='Yes'. |
| **analysis\_date** | DateTime | PK | Y |  |  |  | dt\_test.analysis\_date | The date and time of sample analysis in "MM/DD/YYYY HH:MM:SS" format. May refer to either beginning or end of the analysis as required. | Date cannot precede sample\_date. |
| **fraction** | Text(10) | PK | Y |  |  | rt\_fraction.fraction | dt\_test.fraction | Please refer to reference values file. Examples of valid values include: “Dissolved”, “Filterable”, “TCLP” and “SPLP.” | Samples with more than one result with the same cas\_rn cannot have reportable\_result='Yes'. |
| **column\_number** | Text(2) | PK | Y | NA |  | (Enumeration: column\_number) | dt\_test.column\_number | Values include either "1C" for first column analyses, "2C" for second column analyses or "NA" for tests for which this distinction is not applicable. |  |
| **test\_type** | Text(10) | PK | Y | INITIAL |  | rt\_test\_type.test\_type | dt\_test.test\_type | The type of test. Valid values include "INITIAL", "REEXTRACT1", "REEXTRACT2", "REEXTRACT3", "REANALYSIS", "DILUTION1", "DILUTIONS2", and "DILUTIONS3". |  |
| **lab\_matrix\_code** | Text(10) |  | Y |  |  | rt\_matrix.matrix\_code | rt\_matrix.matrix\_desc  dt\_test.lab\_matrix\_code | The code which distinguishes between different type of sample matrix. For example, soil samples must be distinguished from ground water samples, etc. The matrix of the sample as analyzed may be different from the matrix of the sample as retrieved (e.g. leachates), so this field is available at both the sample and test level. | If analysis\_location does not equal 'FI', then lab\_name\_code, qc\_level, lab\_sample\_id, lab\_matrix\_code and dilution\_factor are required. |
| **analysis\_location** | Text(2) |  | Y |  |  | (Enumeration: analysis\_location) | dt\_test.analysis\_location | Must be either "FI" for field instrument or probe, "FL" for mobile field laboratory analysis, or "LB" for fixed\_based laboratory analysis. | If analysis\_location does not equal 'FI', then lab\_name\_code, qc\_level, lab\_sample\_id, lab\_matrix\_code and dilution\_factor are required. |
| **basis** | Text(3) |  | Y | NA |  | (Enumeration: basis) | dt\_test.basis | Denotes reporting basis. Must be either "Dry" for dry\_weight basis reporting, or "NA" for tests for which this distinction is not applicable. |  |
| container\_id | Text(30) |  |  |  |  |  | dt\_test.container\_id | Laboratories can report individual container IDs for samples that are in multiple containers. Only one container ID can be provided per analytical method code. |  |
| **dilution\_factor** | Numeric |  | Y |  |  |  | dt\_test.dilution\_factor | The effective test dilution factor, for example "5", "10", "50". If no dilution, enter "1". | If analysis\_location does not equal 'FI', then lab\_name\_code, qc\_level, lab\_sample\_id, lab\_matrix\_code and dilution\_factor are required. |
| **prep\_method** | Text(20) |  |  |  |  | rt\_prep\_method.prep\_method | dt\_test.prep\_method | The sample preparation method name or description. |  |
| prep\_date | DateTime |  |  |  |  |  | dt\_test.prep\_date | The beginning date and time of sample preparation in MM/DD/YYYY HH:MM:SS format. | Date cannot precede sample\_date. |
| leachate\_method | Text(15) |  |  |  |  |  | dt\_test.leachate\_method | The leachate generation method name or description. The method name should be sufficient to reflect operation of the laboratory. |  |
| leachate\_date | DateTime |  |  |  |  |  | dt\_test.leachate\_date | The beginning date and time of leachate preparation in MM/DD/YYYY HH:MM:SS format. | Date cannot precede sample\_date. |
| **lab\_name\_code** | Text(20) |  | Y |  |  | rt\_company.company\_code | rt\_company.company\_name  dt\_test.lab\_name\_code | The unique identifier of the laboratory. | If analysis\_location does not equal 'FI', then lab\_name\_code, qc\_level, lab\_sample\_id, lab\_matrix\_code and dilution\_factor are required. |
| **qc\_level** | Text(6) |  | Y |  |  | (Enumeration: qc\_level) | dt\_test.qc\_level | The analysis type. For screening analysis input "SCREEN" ; for quantitaive analysis input "QUANT". | If analysis\_location does not equal 'FI', then lab\_name\_code, qc\_level, lab\_sample\_id, lab\_matrix\_code and dilution\_factor are required. |
| **lab\_sample\_id** | Text(40) |  | Y |  |  |  | dt\_test.lab\_sample\_id | The LIMS sample identifier. If necessary, a field sample may have more than one LIMS lab\_sample\_id (maximum one per each test event) | If analysis\_location does not equal 'FI', then lab\_name\_code, qc\_level, lab\_sample\_id, lab\_matrix\_code and dilution\_factor are required. |
| percent\_moisture | Text(5) |  |  |  |  |  | dt\_test.percent\_moisture | The numeric percentage of moisture in the sample portion used in this test, from 0 to 100. This value may vary from test to test for any sample. Can include decimals. Do not enter a % symbol. |  |
| subsample\_amount | Text(14) |  |  |  |  |  | dt\_test.subsample\_amount | The amount of the sample used for the analysis. |  |
| **subsample\_amount\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_test.subsample\_amount\_unit | The unit of measure of the subsample amount. |  |
| analyst\_name | Text(30) |  |  |  |  |  | dt\_test.analyst\_name | The name or initials of the laboratory technician conducting the analysis. |  |
| instrument\_id | Text(50) |  |  |  |  |  | dt\_test.instrument\_id | The ID or name of the instrument used to conduct the analysis. |  |
| remark | Text(255) |  |  |  |  |  | dt\_test.remark | Any additional information about the test. |  |
| **preservative** | Text(20) |  |  |  |  | rt\_preservative.preservative | dt\_test.preservative | The sample preservative used. |  |
| final\_volume | Numeric |  |  |  |  |  | dt\_test.final\_volume | The final volume of the sample after sample preparation. Include all dilution factors. |  |
| **final\_volume\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_test.final\_volume\_unit | The unit of measure of the final sample volume. |  |
| **cas\_rn** | Text(15) | PK | Y |  |  | rt\_analyte.cas\_rn | rt\_analyte.cas\_rn  dt\_result.cas\_rn  dt\_result\_qc.cas\_rn | The unique identifier of the analyte being measured. | Samples with more than one result with the same cas\_rn cannot have reportable\_result='Yes'.  Populate chemical\_name when cas\_rn is changed |
| **chemical\_name** | Text(75) |  | Y |  |  | rt\_analyte.chemical\_name | rt\_analyte.chemical\_name  dt\_result.custom\_field\_1 | The name of the analyte being measured. | Populate chemical\_name when cas\_rn is changed |
| result\_value | Numeric |  |  |  |  |  | dt\_result.result\_text  dt\_result.result\_numeric | The measured value of the analyte in appropriate significant digits. May be null for non-detects only. | If result\_value is populated then result\_unit is required.  If detect\_flag='Y' and result\_type\_code='TRG' or 'TIC' then result\_value is required.  If detect\_flag='N' then result\_value should be null. |
| result\_error\_delta | Text(20) |  |  |  |  |  | dt\_result.result\_error\_delta | The error range applicable to the result value; typically used only for radiochemistry results. |  |
| **result\_type\_code** | Text(10) |  | Y | TRG |  | rt\_result\_type.result\_type\_code | dt\_result.result\_type\_code | Must be either "TRG" for a target or regular result, "TIC" for tentatively identified compounds, "SUR" for surrogates, "IS" for internal standards, or "SC" for spiked compounds. | If result\_type\_code='TIC' then tic\_retention\_time is required.  If detect\_flag='Y' and result\_type\_code='TRG' or 'TIC' then result\_value is required.  If detect\_flag='N' and result\_type\_code='SC', 'TRG' or 'TIC' then reporting\_detection\_limit is required. |
| **reportable\_result** | Text(3) |  | Y | Yes |  | (Enumeration: reportable\_result) | dt\_result.reportable\_result | Must be either "Yes" for results which are considered to be reportable, or "No" for other results. This field has many purposes. For example, it can be used to distinguish between multiple results where a sample is retested after dilution. It can also be used to indicate which of the first or second column result should be considered primary. The proper value of this field in both of these two examples should be provided by the laboratory (only one result should be flagged as reportable). | Samples with more than one result with the same cas\_rn cannot have reportable\_result='Yes'. |
| **detect\_flag** | Text(2) |  | Y | Y |  | (Enumeration: detect\_flag) | dt\_result.detect\_flag | May be either "Y" for detected analytes or "N" for non\_detects or "TR" for trace. Use "Y" for estimated values (above detection limit but below the quantitation limit). | If detect\_flag='Y' and result\_type\_code='TRG' or 'TIC' then result\_value is required.  If detect\_flag='N' and result\_type\_code='SC', 'TRG' or 'TIC' then reporting\_detection\_limit is required.  If detect\_flag='N' then result\_value should be null. |
| lab\_qualifiers | Text(10) |  |  |  |  |  | dt\_result.lab\_qualifiers | Qualifier flags assigned by the laboratory. | Interpreted\_qualifiers is required if validator\_qualifiers is populated or if lab\_qualifiers is populated, validator\_qualifier is null and validated\_yn='N'. If lab\_qualifiers is populated and interpreted\_qualifiers is populated and validated\_yn='Y' then validator\_qualifiers is required. |
| validator\_qualifiers | Text(10) |  |  |  |  |  | dt\_result.validator\_qualifiers | Qualifier flags assigned by the validator. | Interpreted\_qualifiers is required if validator\_qualifiers is populated or if lab\_qualifiers is populated, validator\_qualifier is null and validated\_yn='N'. If lab\_qualifiers is populated and interpreted\_qualifiers is populated and validated\_yn='Y' then validator\_qualifiers is required. |
| **interpreted\_qualifiers** | Text(10) |  |  |  |  | rt\_qualifier.qualifier | dt\_result.interpreted\_qualifiers | Final qualifier flags assigned by the validator, for example, if the validator adds a "J" flag to a sample result that is laboratory qualified as "D", "DJ" would be the value entered. DEQ may adjust the interpreted qualifier as part of their review. | Interpreted\_qualifiers is required if validator\_qualifiers is populated or if lab\_qualifiers is populated, validator\_qualifier is null and validated\_yn='N'. If lab\_qualifiers is populated and interpreted\_qualifiers is populated and validated\_yn='Y' then validator\_qualifiers is required. |
| **validated\_yn** | Text(1) |  | Y | N |  | (Enumeration: yes\_no\_values) | dt\_result.validated\_yn | Y" if the result has been validated, "N" if not. | If validated\_yn='Y' then validation\_level is required.  Interpreted\_qualifiers is required if validator\_qualifiers is populated or if lab\_qualifiers is populated, validator\_qualifier is null and validated\_yn='N'. If lab\_qualifiers is populated and interpreted\_qualifiers is populated and validated\_yn='Y' then validator\_qualifiers is required. |
| method\_detection\_limit | Text(20) |  |  |  |  |  | dt\_result.method\_detection\_limit | The lowest concentration that can be detected by an instrument with correction for the effects of sample matrix and method-specific parameters such as sample preparation.  Method detection limits (MDLs) are explicitly determined as set forth in 40 CFR Part 136. They are defined as three times the standard deviation of replicate spiked analyses. This represents 99% confidence that the analyte concentration is greater than zero.  The organic methods in the EPA 500 series, EPA 600 series, and Standard Methods all give typical MDLs for clean water samples. Generally these clean-water MDLs (corrected for %moisture, sample size, and dilution) are used for reporting limits, but the laboratory may use MDLs that they have generated. MDLs generated by the laboratory using the sample matrix of interest are the most reliable. If the clean-water MDLs are used, remember that they do not include all of the upward correction necessary to account for the effects of sample matrix. This is important to remember especially for risk assessments and highly contaminated samples. | If method\_detection\_limit, reporting\_detection\_limit, or quantitation\_limit is populated then detection\_limit\_unit is required. |
| reporting\_detection\_limit | Numeric |  |  |  |  |  | dt\_result.reporting\_detection\_limit | The concentration level above which results can be quantified with confidence. It must reflect conditions such as dilution factors and moisture content. Required for all results for which such a limit is appropriate. The reporting\_detection\_limit column must be reported as the sample-specific detection limit. | Reporting\_detection\_limit cannot be negative unless one of the radiological fields (minimum\_detectable\_conc, counting\_error, uncertainty, critical\_value) are populated.  If method\_detection\_limit, reporting\_detection\_limit, or quantitation\_limit is populated then detection\_limit\_unit is required.  If detect\_flag='N' and result\_type\_code='SC', 'TRG' or 'TIC' then reporting\_detection\_limit is required. |
| quantitation\_limit | Text(20) |  |  |  |  |  | dt\_result.quantitation\_limit | The quantitation limit refers to a minimum concentration of an analyte that can be measured within specified limits of precision and accuracy. It is generally 5-10 times the detection limit.  Thus, when quantitation limits are used as reporting limits, the laboratory is saying that the analyte is not present in a sufficient amount to be reliably quantified (i.e. at a concentration above the quantitation limit).  It may be present and even positively identified or "seen" at a lower concentration. | If method\_detection\_limit, reporting\_detection\_limit, or quantitation\_limit is populated then detection\_limit\_unit is required. |
| **result\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_result.result\_unit | The unit of measurement of the result value. | If result\_value is populated then result\_unit is required. |
| **detection\_limit\_unit** | Text(15) |  |  |  |  | rt\_unit.unit\_code | dt\_result.detection\_limit\_unit | The unit of measurement of the the detection limit(s). This field is required if a reporting\_detection\_limit is reported. | If method\_detection\_limit, reporting\_detection\_limit, or quantitation\_limit is populated then detection\_limit\_unit is required. |
| tic\_retention\_time | Text(8) |  |  |  |  |  | dt\_result.tic\_retention\_time | The retention time, in seconds, for tentatively identified compounds. | If result\_type\_code='TIC' then tic\_retention\_time is required. |
| minimum\_detectable\_conc | Numeric |  |  |  |  |  | dt\_result.minimum\_detectable\_conc | For radiological results: Minimum detectable concentration or activity. This value must be in the same units as the result\_value. | Reporting\_detection\_limit cannot be negative unless one of the radiological fields (minimum\_detectable\_conc, counting\_error, uncertainty, critical\_value) are populated. |
| counting\_error | Numeric |  |  |  |  |  | dt\_result.counting\_error | For radiological results: Counting error as reported by the laboratory. This value must be in the same units as the result\_value. | Reporting\_detection\_limit cannot be negative unless one of the radiological fields (minimum\_detectable\_conc, counting\_error, uncertainty, critical\_value) are populated.  If counting\_error is populated then uncertainty is required. |
| uncertainty | Text(7) |  |  |  |  | (Enumeration: uncertainty) | dt\_result.uncertainty | For radiological results: The uncertainty of the counting error, valid values include "1 sigma" or "2 sigma". This field is required if the counting\_error field is populated. | Reporting\_detection\_limit cannot be negative unless one of the radiological fields (minimum\_detectable\_conc, counting\_error, uncertainty, critical\_value) are populated.  If counting\_error is populated then uncertainty is required. |
| critical\_value | Numeric |  |  |  |  |  | dt\_result.critical\_value | For radiological results: The critical value. | Reporting\_detection\_limit cannot be negative unless one of the radiological fields (minimum\_detectable\_conc, counting\_error, uncertainty, critical\_value) are populated. |
| validation\_level | Text(10) |  |  |  |  | (Enumeration: validation\_level) | dt\_result.custom\_field\_2 | Validation level. Use one of the following: Raw, DUSR, Category A, Category B, or Unknown. | If validated\_yn='Y' then validation\_level is required. |
| custom\_field\_3 | Text(255) |  |  |  |  |  | dt\_result.custom\_field\_3 | A custom field. |  |
| custom\_field\_4 | Text(255) |  |  |  |  |  | dt\_result.custom\_field\_4 | A custom field. |  |
| custom\_field\_5 | Text(255) |  |  |  |  |  | dt\_result.custom\_field\_5 | A custom field. |  |
| result\_remark | Text(255) |  |  |  |  |  | dt\_result.remark | Any additional information about the result. |  |
| qc\_original\_conc | Numeric |  |  |  |  |  | dt\_result\_qc.qc\_original\_conc | The concentration of the analyte in the original (unspiked) sample. Might be required for spikes and spike duplicates (depending on user needs). Not necessary for surrogate compounds or LCS samples (where the original concentration is assumed to be zero). |  |
| qc\_spike\_added | Numeric |  |  |  |  |  | dt\_result\_qc.qc\_spike\_added | The concentration of the analyte added to the original sample. Might be required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample (depending on user needs). |  |
| qc\_spike\_measured | Numeric |  |  |  |  |  | dt\_result\_qc.qc\_spike\_measured | The measured concentration of the analyte. Use zero for spiked compounds that were not detected in the sample. Might be required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample (depending on user needs). |  |
| qc\_spike\_recovery | Numeric |  |  |  |  |  | dt\_result\_qc.qc\_spike\_recovery | The percent recovery calculated as specified by the laboratory QC program. Always required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as percentage multiplied by 100 (e.g., report "120%" as "120"). |  |
| qc\_dup\_original\_conc | Numeric |  |  |  |  |  | dt\_result\_qc.qc\_dup\_original\_conc | The concentration of the analyte in the original (unspiked) sample. Might be required for spike or LCS duplicates only (depending on user needs). Not necessary for surrogate compounds or LCS samples (where the original concentration is assumed to be zero). |  |
| qc\_dup\_spike\_added | Numeric |  |  |  |  |  | dt\_result\_qc.qc\_dup\_spike\_added | The concentration of the analyte added to the original sample. Might be required for spike or LCS duplicates, surrogate compounds, and any spiked and duplicated sample (depending on user needs). Use zero for spiked compounds that were not detected in the sample. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Also complete the qc-spike-added field. |  |
| qc\_dup\_spike\_measured | Numeric |  |  |  |  |  | dt\_result\_qc.qc\_dup\_spike\_measured | The measured concentration of the analyte in the duplicate. Use zero for spiked compounds that were not detected in the sample. Might be required for spike and LCS duplicates, surrogate compounds, and any other spiked and duplicated sample (depending on user needs). Also complete the qc-spike-measured field. |  |
| qc\_dup\_spike\_recovery | Numeric |  |  |  |  |  | dt\_result\_qc.qc\_dup\_spike\_recovery | The duplicate percent recovery calculated as specified by the laboratory QC program. Always required for spike or LCS duplicates, surrogate compounds, and any other spiked and duplicated sample. Also complete the qc-spike-recovery field. Report as percentage multiplied by 100 (e.g., report "120%" as "120"). |  |
| qc\_rpd | Text(8) |  |  |  |  |  | dt\_result\_qc.qc\_rpd | The relative percent difference calculated as specified by the laboratory QC program. Required for duplicate samples as appropriate. Report as percentage multiplied by 100 (e.g., report "30%" as "30"). |  |
| qc\_spike\_lcl | Text(8) |  |  |  |  |  | dt\_result\_qc.qc\_spike\_lcl | Lower control limit for spike recovery. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as percentage multiplied by 100 (e.g., report "60%" as "60"). |  |
| qc\_spike\_ucl | Text(8) |  |  |  |  |  | dt\_result\_qc.qc\_spike\_ucl | Upper control limit for spike recovery. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as percentage multiplied by 100 (e.g., report "60%" as "60"). |  |
| qc\_rpd\_cl | Text(8) |  |  |  |  |  | dt\_result\_qc.qc\_rpd\_cl | Relative percent difference control limit. Required for any duplicated sample. Report as percentage multiplied by 100 (e.g., report "25%" as "25"). |  |
| qc\_spike\_status | Text(1) |  |  |  |  | (Enumeration: spike\_status) | dt\_result\_qc.qc\_spike\_status | Used to indicate whether the spike recovery was within control limits. Use the "\*" character to indicate failure, otherwise leave blank. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. |  |
| qc\_dup\_spike\_status | Text(1) |  |  |  |  | (Enumeration: spike\_status) | dt\_result\_qc.qc\_dup\_spike\_status | Used to indicate whether the duplicate spike recovery was within control limits. Use the "\*" character to indicate failure, otherwise leave blank. Required for any spiked and duplicated sample. |  |
| qc\_rpd\_status | Text(1) |  |  |  |  | (Enumeration: spike\_status) | dt\_result\_qc.qc\_rpd\_status | Used to indicate whether the relative percent difference was within control limits. Use the "\*" character to indicate failure, otherwise leave blank. Required for any duplicated sample. |  |
| **lab\_sdg** | Text(20) |  | Y |  |  |  | dt\_sdg.sdg\_name  dt\_test.lab\_sdg | The unique identifier of the sample delivery group (SDG) or work order. A single sample may be assigned to multiple SDGs based on different analysis. |  |
|  |  |  |  |  |  |  |  |  |  |
| **Method Mappings** |  |  |  |  |  |  |  |  |  |
|  |  |  |  | CompanyType\_SUBCONTRACTOR | |  | rt\_company.company\_type |  |  |
|  |  |  |  | GetSampleId |  |  | dt\_test.sample\_id |  |  |
|  |  |  |  | GetTestID |  |  | dt\_result.test\_id |  |  |
|  |  |  |  | GetTestID |  |  | dt\_result\_qc.test\_id |  |  |

## Batch\_v1

| **Field Name** | **Data Type** | **Key** | **Required** | **Default** | **Parent** | **Lookup** | **Database Mapping(s)** | **Comment** | **Checks** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **sys\_sample\_code** | Text(40) | PK | Y |  |  |  |  | The unique identifier of the sample. |  |
| **lab\_anl\_method\_name** | Text(35) | PK | Y |  |  | rt\_analytic\_method.analytic\_method |  | The laboratory analytical method name or description, for example "SW8260B", "E130.1", etc. |  |
| **analysis\_date** | DateTime | PK | Y |  |  |  |  | The date and time of sample analysis in "MM/DD/YYYY HH:MM:SS" format. May refer to either beginning or end of the analysis as required. |  |
| **fraction** | Text(10) | PK | Y | T |  | rt\_fraction.fraction |  | Please refer to reference values file. Examples of valid values include: “Dissolved”, “Filterable”, “TCLP” and “SPLP.” |  |
| **column\_number** | Text(2) | PK | Y |  |  |  |  | Values include either "1C" for first column analyses, "2C" for second column analyses or "NA" for tests for which this distinction is not applicable. |  |
| **test\_type** | Text(10) | PK | Y | INITIAL |  | rt\_test\_type.test\_type |  | The type of test. Valid values include "INITIAL", "REEXTRACT1", "REEXTRACT2", "REEXTRACT3", "REANALYSIS", "DILUTION1", "DILUTIONS2", and "DILUTIONS3". |  |
| **test\_batch\_type** | Text(10) | PK | Y |  |  | rt\_test\_batch\_type.test\_batch\_type | rt\_test\_batch\_type.test\_batch\_desc  dt\_test\_batch.test\_batch\_type  at\_test\_batch\_assign.test\_batch\_type | The analysis batch type. Valid values include "Prep", "Analysis", "Leach", and "Run". This is a required field for all batches. |  |
| **test\_batch\_id** | Text(20) |  | Y |  |  |  | dt\_test\_batch.test\_batch\_id  at\_test\_batch\_assign.test\_batch\_id | The unique identifier of the analysis batch. |  |
|  |  |  |  |  |  |  |  |  |  |
| **Section Checks** |  |  |  |  |  |  |  |  |  |
| Parent record must exist in the TestResultQC section. | | | | | | | | | |
|  |  |  |  |  |  |  |  |  |  |
| **Method Mappings** |  |  |  |  |  |  |  |  |  |
|  |  |  |  | GetTestID |  |  | at\_test\_batch\_assign.test\_id | |  |

# Appendix B: Final Checklist for Submissions of EDDs to MTDEQ e-TREADS

In order to reduce the amount of resubmittals, e‐mails, and phone calls required to obtain the correct information in EDD’s, this checklist was created in attempt to clearly state what data is necessary for the data providers to submit in an EDD submittal.

## Initial EDD Section

### DataProvider\_v1

If the Data Provider tab is populated, ensure that all companies used in the EDD are present (Data\_Provider, Subcontractor\_Name\_Code, Lab\_Name\_Code, Sampling\_Company\_Code).

### Subfacility\_v1

* Be sure to include subfacility address information that references key parcel information for operable units and areas of concern.

### Location\_v1

* Locations for field and laboratory quality samples should not be present in the Location\_v1 tab. For example, trip blanks, and equipment blanks do not require a sys\_loc\_code in the Sample\_v1 EDD section and therefore shouldn’t have a sys\_loc\_code designated on the Location\_v1 tab.
* No special characters, with the exception of the hyphen (-) or underscore (\_) are to be used in the sys\_loc\_code. For example, $, #, ‘, “, / are not acceptable. The x- and y- coordinates should have as many digits as available in order to output the sample location properly using ArcGIS.
* Confirm horizontal collection method code, horizontal accuracy value, horizontal accuracy unit, and horizontal datum codes are all populated correctly and consistently per valid values in the database.
* The horizontal\_accuracy\_value should be numeric. The EDP format states the following values:
* “Accuracy range (+/-) of the latitude and longitude. Use ‘0.1’ for professional survey, ‘100’ for site centroid, and ‘10’ for all other methods.”
* For samples from which the elevation was collected, confirm elevation collection method code, elevation accuracy value, elevation accuracy unit, and elevation datum codes are all populated correctly and consistently per valid values in the database.
* The elevation\_accuracy\_value should be numeric. The EDP contains the following guidance:
* “Accuracy range (+/-) of the ground elevation. Use ‘0.1’ for professional survey, ‘1’ for all other methods.”
* The Subcontractor\_Name\_Code should contain the code of the surveying company who collected the coordinates and elevation data. Company codes are available in rt\_company table and can be added to the database per request to [eTREADSAdmin@mt.gov](mailto:eTREADSAdmin@mt.gov).
* Any soil boring location type should have the total\_depth field populated.
* Any well location type is required to populate the Well\_v1 and WellConstruction\_v1 EDD sections with all required fields in the EDD Manual. This includes: depth\_to\_top\_of\_screen, depth\_to\_bottom\_of\_screen, top\_casing\_elev, datum\_value, datum\_unit, step\_or\_linear, datum\_collect\_method\_code and datum\_desc fields.
* Although not required by EDP also populate the following columns: loc\_county\_code, loc\_state\_code, loc\_basin\_code, loc\_minor\_basin, remark, and, MT\_drainage\_basin\_code.
* Source scale, verification point, and reference point fields are required if coordinates were generated from an existing map or surveyed in the field using a benchmark survey.

## Lab EDD Section

### Sample\_v1

* Sample matrix codes should be populated with appropriate valid values based on sample\_type\_code and sample\_source. Please see rt\_matrix for more information on matrices.
* Confirm that sample type codes correspond to the sample source. For example sample type of N, FB, FD, RB, EB, and TB would have a sample source of “FIELD” if generated by the field sampling team and submitted with field sample results.
* Confirm that all laboratory QC samples (sample\_type\_codes IB, LCS, PE, BD, BS, KD, LB, LR, MS, MSD, RM, and SD, SPD, RD or MSD) have a sample source of “LAB.
* The sample\_type\_class in rt\_sample\_type indicates the sample\_source: FQ = FIELD, LQ= LAB.
* Confirm MS, MSD, FD, FR, SD, BD, FS, and LR sample types have parent sample codes. The table rt\_sample\_type contains a column “needs\_parent\_sample” for your reference. Soil matrix samples and groundwater samples (if available) should have start depths, end depths, and depth units populated.
* The composite\_yn field needs to be flagged as “Y” for composite samples.
* Although not required by EDP also populate the following columns provided you have the information: sampler, sampling reason, sampling technique, and collection quarter.

### TestResultsQC\_v1

* Confirm that the fraction column is populated with Total, Dissolved, SPLP, TCLP, or NA (Not Applicable) as appropriate.
* Confirm that column number is populated with a default value of NA if multiple columns are not used in the analyses. Use 1C and 2C for column numbers to differentiate the results if two columns were used.
* Test type is populated correctly per rt\_test\_type.
* Where the test type is “DILUTION#”, “REEXTRACT#”, or “REANALYSIS”, confirm that only one test type’s results are flagged Reportable Result “Yes”. All other test types shall be Reportable Result “No”.
* Lab matrix code is populated correctly.
* Confirm that analysis location is populated with LB for lab or FI for field. Typically, the analysis location is lab for TestResultsQC\_v1 and field for FieldResults\_v1.
* Confirm that the basis is populated with either Dry, or NA (Not Applicable).
* Confirm that dilution factors are present for all samples. Please use a dilution factor of 1 for samples not diluted.
* Confirm the lab name code is populated with valid values from the rt\_company table.
* Confirm that the qc\_level column is populated with either “QUANT” for quantifiable or “SCREEN” for screening level results.
* Confirm that the lab sample id column is populated consistently.
* Confirm CAS numbers match values in the valid value list of rt\_analyte and that chemical names are spelled correctly.
* Confirm that the result value column is not populated where detect flag is set to No.
* Confirm that the result value column is populated where the detect flag is set to Y for the result\_type\_codes TRG and TIC. Verify that the result\_unit is populated where the result value is populated.
* Confirm that reportable result (Yes/No) column is populated consistently to identify which results should be reported when samples are reanalyzed or diluted.
* Confirm the detect Y/N flag is correctly set to N where the interpreted qualifier contains “U”. Otherwise, the detect Y/N should be set to Y and a value should be present in the result value column.
* Confirm that lab qualifiers and validator qualifiers (For Validated Y) are populated consistently. Confirm that reporting\_detection\_limit is consistently populated for samples flagged detect N. Verify that the detect\_limit\_unit is also populated. Confirm that the validation level is populated with “RAW”, “DUSR”, “CATEGORY A”, “CATEGORY B”, or “UNKNOWN” for results flagged validated Y.
* Confirm that the qc sections are populated for the result\_type\_codes SC and SUR. Confirm that the TIC retention time is populated when reporting TICs

1. MS Result = QC spike measured obtained from Table 3.12 [↑](#footnote-ref-1)