ROCKY FLATS
ENVIRONMENTAL TECHNOLOGY SITE

PRO-1058-ASD-005
REVISION 0

ENVIRONMENTAL DATA MANAGEMENT

Responsible Organization: K-H ESH&Q Programs/ESS

Effective Date: April 12, 2001

APPROVED BY Kaiser-Hill Vice President, /
Title Date

Dave Shelton /
Print Name Approval Signature

Virgene Ideker
Print Name of Responsible Manager (NA if RM is Approval Authority)

The Responsible Manager Has Determined The Following Organizations' Review Is Required. Review Documentation Is Contained In The Document History File:

Kaiser-Hill, ESH&Q, ESS, Analytical Services Division
Kaiser-Hill, RISS, Environmental Restoration
Kaiser-Hill, RISS, Drinking Water
Kaiser-Hill, RISS, Water Programs
Kaiser-Hill, ESH&Q, ESS, Environmental Media Management

IMPORTANT NOTES

Periodic Review Frequency	Documents Superceded (if any)-
1 Year	Portions of 4-B-ER-OPS-FO.14, Revision 3
ISR Review: N/A	SES/USQD Review: N/A

Reviewed for Classification
By Roger S. Cichorz U/NU
Date April 12, 2001

ADMIN RECORD

1/32

LIST OF EFFECTIVE PAGES

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1-32	April 12, 2001	

Total number of pages: 32

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1. PURPOSE

This procedure establishes the administrative instructions for environmental data collection, management, and archiving within the Analytical Services Division (ASD) at Rocky Flats Environmental Technology Site (RFETS). Roles and responsibilities of those involved in the ASD environmental data management processes are described below.

This procedure is intended to guide environmental data users, collectors, recorders, and administrators how to enter, organize, and obtain electronic environmental data to ensure current and future data usability. Following this procedure will greatly facilitate the timely and proper use of environmental data, provide a process to identify and correct errors in electronic environmental data, and minimize or prevent the introduction of errors into the electronic environmental data systems.

2. SCOPE

This procedure is applicable to all RFETS employees and subcontractors working with environmental sampling activities that result in collection of environmental data that supports regulatory reporting, other regulatory requirements for long term storage of data, or is intended for use as the data set for Site Closure per The Rocky Flats Cleanup Agreement (RFCA) (DOE, 1996). This procedure covers activities involving use of the following ASD environmental data systems (either current versions or successor systems):

- Analytical Services Toolkit (AST)
- EDDPlus – electronic data deliverable (EDD) checker
- Staged Result Table (SRT) and associated tables
- Data Validation and Verification Application
- Soil Water Database (SWD)
- Geographic Information System (GIS)

ASD provides management support and procures computer database support to administer and manage the RFETS Soil Water Database (SWD), Analytical Services ToolKit (AST), the Geographic Information System (GIS), and other ancillary computer systems/applications used to support environmental data management. Site personnel who perform data entry for environmental sampling and field measurement activities **SHALL** be required to understand and follow this procedure. All Site personnel who perform environmental data management or data extraction activities are also required to understand the requirements set forth by this procedure.

This procedure primarily describes instructions for planning, handling, and storing electronic data collected in conjunction with environmental media sampling events that include, but are not limited to, the following media: surface soil; subsurface soil; surface water; groundwater; drinking water, and sediment. This procedure does not pertain to waste, industrial hygiene, bioassay, Waste Isolation Pilot Plant (WIPP)-related data, or Decommissioning and Demolition (D&D) radiological survey data. Ambient and effluent air monitoring programs are required to follow all parts of this procedure except areas that pertain to collecting and recording field data in ASD environmental data systems (defined above). Environmental restoration (ER) data management requirements are being determined to support ER closure activities and will be appended upon completion of the ER Data Management Plan.

The Environmental Data Management procedure addresses the following topics:

1. Planning environmental data collection events using ASD environmental data systems
2. Setting up projects in ASD environmental data systems
3. Collecting samples (as it pertains to electronic data management)
4. Recording field data in ASD environmental data systems
5. Adding survey coordinate and region location code data in ASD environmental data systems
6. Adding electronic analytical data to ASD data systems
7. Adding verification and/or validation qualifiers to ASD electronic data
8. Using ASD electronic environmental data
9. Adding "user" information to soil water database (SWD) data
10. Maintaining ASD environmental data in SWD

This document identifies the responsible parties, states the responsibilities of each party involved with the preparation, data entry, storage, and retrieval of data, and provides instructions for implementation. This procedure **does not** describe field sampling methodologies or protocols, nor detail the specific steps involved in using and maintaining ASD environmental data systems. However, appropriate references are provided to allow the reader to refer to companion documents for additional detail when necessary. Field sampling information shall be obtained from project-specific work-control documents (e.g., technical procedures, sampling procedures, Sampling and Analysis Plans, Integrated Work Control Program Packages, or Operations Orders), which may reference this procedure as providing supplementary/complementary information.

This procedure is written to comply with *MAN-001-SDRM*, Site Documents Requirements Manual, *INS-816-DM-02*, Writing Instruction Guide, *PRO-815-DM-01*, Developing, Maintaining, and Controlling Documents, and is controlled through *MAN-063-DC*, Site Document Control Program Manual.

3. RESPONSIBILITIES

3.1. Environmental Project Manager

3.1.1. Implements environmental data management responsibilities as described below.

3.1.2. Ensures that adequate time and resources are allotted for data management.

3.1.3. Appoints an environmental project data management lead (DML).

3.1.4. Ensures DML is appropriately trained on ASD environmental data systems.

3.1.5. Ensures that an adequate quality control program is in place to result in accurate data entry and reporting.

3.1.6. Ensures that SWD location codes are captured, quality checked and entered into the database for all environmental sampling locations in accordance with this procedure.

3.1.7. Ensures that project field environmental data (non-analytical) are entered into the appropriate ASD data system in accordance to requirements specified in this procedure.

3.1.8. Ensures that identified data errors are communicated to ASD database management (ASD Data System Lead).

3.1.9. Ensures that all applicable project environmental sampling data are stored in SWD and appropriately coded, as applicable, prior to conclusion of the project.

> **NOTE**: The RISS-ER PM will ensure that all electronic data critical for the ER projects decision-making are submitted to the SWD in a format compatible for SWD uploads.

3.2. Environmental Project Data Management Lead (DML)

> **NOTE**: The project DML can assign a designee to complete portions of their responsibilities. Regardless if a designee is assigned, the DML remains responsible for completion of their defined activities.

3.2.1. Sets up and tracks project analytical and field samples within the ASD Data Systems.

3.2.2. Assigns new and repeat location codes for environmental sample locations.

3.2.3. Performs environmental database data entry for project setup and non-analytical field-derived data, **OR** assigns designee to perform data entry activities if desired.

3.2.4. Performs environmental database data entry for final data coding, as applicable.

3.2.5. Coordinates with ASD data system lead (DSL) to ensure that all environmental data are properly loaded into ASD environmental data systems, and any corrections, if required, are performed and data are reloaded.

3.3. Analytical Services Division Project Lead

3.3.1. Interfaces with Project Manager (PM), project DML, and/or Subject Matter Experts (SMEs) to determine their environmental data needs and to follow-up with the data as a point of contact for the project.

3.3.2. Performs responsibilities in accordance with *PRO-543-ASD-002, Initiation, Preparation, and Implementation of Chain-of-Custody Forms (Current Version)*.

3.3.3. Assigns and inputs project codes and task codes into AST in accordance with this procedure.

3.3.4. Coordinates electronic data corrections with Project Manager, project DML, and ASD Data System Lead (DSL).

3.3.5. Examines analytical laboratory data package upon receipt from the laboratory in accordance with ASD *General Guidelines for Data Verification and Validation , DA-GR01 (Current Version)*.

3.3.6. Acts as primary lead with project manager and project DML, as needed or requested, regarding the status of their data.

3.3.7. Reviews Data Quality Assessment Reports for problems associated with customer data and then forwards copies of reports to customers.

3.3.8. Acts as lead to ensure project analytical data issues are resolved to meet customer's requirements.

3.4. Analytical Services Division Data System Lead (DSL)

3.4.1. Trains personnel on the environmental data management procedures set forth herein, with the exception of Geographic Information Systems processes and procedures.

3.4.2. SHALL be responsible for the maintenance of this procedure. Periodic review of this procedure SHALL be required at a minimum of a one-year period from its effective date.

3.4.3. Administers and maintains ASD environmental data systems in accordance with RFETS *Computer Software Management Manual, 1-MAN-004-CSMM* and ASD environmental data system operating procedures.

3.4.4. Processes, loads and corrects EDDs in accordance with ASD *EDDPlus User's Guide (Current Version)*.

3.4.5. Modifies ASD environmental data systems according to user and administrator requirements.

3.4.6. Performs and tracks data system modifications in accordance with RFETS *Computer Software Management Manual, 1-MAN-004*-CSMM (*Current Version*) and ASD data system operating procedures.

3.4.7. Assists RFETS personnel with access and use of ASD environmental data systems.

3.4.8. Enhances and upgrades ASD environmental data systems as needed to maintain data integrity, improve system performance, and enhance data usability.

3.5. Analytical Services Division Data Validator (DV)

3.5.1. Performs data assessment in accordance with *ASD Data Verification and Validation Guidelines (Current Version)* for environmental analytical data.

3.5.2. Enters approved validation and/or verification codes into ASD data validation/verification data system in accordance with *ASD Data Verification and Validation Application Users Guide (Current Version)*.

3.6. Geographical Information Systems (GIS) Data Lead (GDL)

3.6.1. Trains RFETS personnel and subcontractors on GIS-related data management procedures set forth by this SOP.

3.6.2. Organizes and maintains GIS per *RFETS Spatial Data Map Control, PRO-1130-ASD-006 (Current Version).*

3.6.3. Works with the project manager or project DML and GPS/surveying personnel to generate location code survey coordinates for environmental sample locations.

3.6.4. Uploads final project DML reviewed and approved location code survey coordinates into SWD.

3.6.5. Works with the project manager or the project DML to identify all region attributes using GIS overlay analysis for environmental sample locations.

3.6.6. Uploads final project DML reviewed and approved region attributes into SWD.

3.7. Project Samplers

3.7.1. Collect environmental samples per approved sampling plans or work control documents as directed by the Project Manager or designee.

3.7.2. Record field data measurements using project-approved field data recording mechanisms.

3.7.3. Provide final field data to project DML at completion of sampling.

4. DEFINITIONS AND GLOSSARY

4.1. Definitions

ASD Analytical Services Division - a centralized group responsible for procuring analytical services for Rocky Flats projects and managing the ASD environmental data systems. ASD provides management support and procures computer database support to administer and manage the RFETS Soil Water Database (SWD), Analytical Services ToolKit (AST), the Geographic Information System (GIS), and other ancillary computer systems/applications used to support environmental data management.

AST Analytical Services Toolkit – the ASD data system that records and tracks analytical sample requests and analyses, and non-analytical field data.

Attribute A characteristic of a map feature. Attributes of a river might include its name, length, average depth, and so on. A desktop GIS stores attributes in tables and links them to the map features they describe.

COC Form Chain-of-Custody Form (an official COC Form is maintained for any sampling event, providing a documented trail of all persons who had custody of the samples from their origin to final disposition).

Data Package The hard-copy or electronic version of the hard copy record of sample analysis from the analytical laboratory [includes sample information (RIN identifiers and customer identifiers), analysis results, COC Forms, a case narrative, laboratory quality-control documentation, etc., as specified by Program, Project, and/or Site Statement-of-Work requirements].

EDD Electronic Data Deliverable – laboratory submittal of analytical results in electronic form in a specified format.

GIS Geographic Information System - an organized collection of computer hardware, software, and geographic data designed for capturing, storing, updating, manipulating, analyzing, and displaying all forms of geographically referenced information in the forms of maps and reports.

IA Industrial Area - defined as that area of the Site per RFCA Attachment 2 and generally described as roughly the 350 acres at the geographic center of the Site which is occupied by 400 buildings, other structures, roads and utilities where the bulk of the Site's mission activities occurred between 1951 and 1989.

IHSS Individual Hazardous Substance Site - defined as specific locations where solid wastes, hazardous substances, pollutants, contaminants, hazardous wastes, or hazardous constituents may have been disposed or released to the environment at RFETS.

Line Item Code A Line Item Code (LIC), included on the COC or other documentation received with sample(s), designates the requested analyses and analysis method requirements.

NLR No Longer Representative - defined as a code in SWD used to label sample locations that have had their contaminant source removed and the data are therefore no longer representative of current site conditions.

Other Location In AST, the computer field used to select existing locations from a link with the SWD location table. The location table allows database users to

	characterize the location where an environmental sample was collected. Primarily used for mapping with the RFETS GIS.
OWNER ID	In AST, the OWNER ID field Identifies the receiver database for the electronic data (EDDs) associated with a project.
PAC	Potential Area of Concern - defined as qualitative spatial representations of particular hazardous sites as identified in the Historical Release Report (HRR).
Pick List	In ASD environmental data systems, a drop down list of values the user can select to fill in a particular field. For example, selecting "project" in AST would result in a drop down list of all available project names from which the user can select.
Point Location	A shape defined by a single set of survey coordinates. Point locations represent objects that have discrete locations and are too small to be depicted as areas, such as groundwater, surface water, surface soil, borehole, and sediment sample locations.
Region	As they relate to underlying areas below environmental sample data locations, the region attribute can include one or more of the following: IA Grouping, IHSS, PAC, underground building contamination or "whitespace". Region designations are subject to change and are provided for information only to data users to assist in data management and reporting. Region locations are derived from the most current update of the RFETS Historical Release Report.
RIN	Report Identification Number – an identifier assigned by ASD through AST for each sampling event or sampling project. May also be referred to as the Reporting Delivery Group under Basic Ordering Agreements with analytical laboratories.
SARF	Sampling and Analysis Request Form – a form used to initiate a sampling and/or analysis project at RFETS. See SOP document titled *"PRO-543-ASD-002, Initiation, Preparation, and Implementation of Chain-of-Custody Forms"* (*Current Version*) for a complete explanation of the purpose of the SARF and directions on how to implement them. The SARF is also available electronically on the ASD intranet web site.

SME	Subject Matter Expert - a person identified by the project manager who is able to make determinations regarding a particular set of data, how it is stored, communicated, or reported.
Spatial Data	The locations and shapes of geographic features. One of the three basic kinds of geographic data (image and tabular data are the others).
SWD	Soil Water Database – a database used by RFETS for long-term storage of environmental analytical and field data, primarily surface soil, subsurface soil, groundwater, sediment, and surface water sample results.
UBC	Underground Building Contamination - defined as qualitative spatial representations of particular hazardous sites associated with buildings as identified in the Historical Release Report (HRR).
Survey Coordinates	Horizontal (northing [latitude] and easting [longitude]) coordinates using UTM and the State Plane Coordinate system and vertical (elevation [altitude]) datum in reference to NAD 27 CONUS. Also referred to as a spatial data set, point location, and/or survey coordinate data.

4.2. Acronyms

D&D	Decommissioning and Demolition
DML	Data Management Lead
DSL	Data Systems Lead
DV	Data Validator
ER	Environmental Restoration
GDL	Geographic Information Systems Data Lead
GPS	Global Positioning System
HRR	Historical Release Report
ID	Identification
PM	Project Manager
QA	Quality Assurance
QC	Quality Control
RFETS	Rocky Flats Environmental Technology Site
SRT	Stage Result Table
V&V	Validation and/or Verification
WIPP	Waste Isolation Pilot Plant

5. INSTRUCTIONS

NOTE: The following instructions are summarized in the Analytical Services Division Environmental Data Check-List for Environmental Projects, which is available on the ASD Intranet web page, and included herein as Appendix A.

5.1. Step 1 – Project Planning

Step 1 summarizes the project planning activities required for environmental data collection using ASD Electronic Data Systems.

5.1.1. Assign Project DML

5.1.1.1. Project manager assigns project data management lead (DML)

5.1.1.2. Project manager ensures project DML is trained in ASD environmental data systems, this procedure, and familiar with the following procedures:

- *PRO-947-LOCATION/SURVEYING, Location Code and Surveying Control*
- *PRO-543-ASD-002, Initiation, Preparation, and Implementation of Chain-of-Custody Forms*
- *PRO-908-ASD-004, On-Site Transfer and Off-Site Shipment of Samples.*

5.1.2. Plan Sampling and Analysis Events in AST

5.1.2.1. Based on the projects' approved work documents, the following information is entered by the DML or provided to the ASD project lead, via the ASD intranet web SARF, and then entered into the ASD AST system:

- Project/Task Names - The project/task name clearly defines the RFETS project/task for which the sampling is conducted. It must be clear and obvious to both project members and non-project members and is based on the RFETS charge number schema (Project Description/Cost Account Description. For example, "Engr, Environ, Safety & Quality Programs Project" and a task name of "GW - Environmental Media Management" are an acceptable project name/task name. Task names can be modified as necessary and used to sort and search for electronic data, and, therefore, it is important to be accurate and consistent in

use of project/task names. Task names selection, if new, **SHALL** be coordinated with DSL.

> **NOTE:** The thoughtful use of task names can significantly help environmental data users find their data in ASD environmental data systems. Once data are defined by project and task, they can always be found using "project" or "task" as a computer database sorting criteria.

- Charge number – RFETS charge number associated with analytical and/or labor services for the sampling event.
- Administrative Information - The responsible project manager's name, building number, phone number, sample manager and/or data manager's name, building number, and phone number.
- Sampling Activities Scope - To include expected analyses, projected start and end date, type of analyses and required detection limits, number of samples, and number of samples expected per week.

5.2. Step 2 – Project Set Up

Step 2 summarizes activities required to set up environmental data collection using ASD's AST System.

5.2.1. Create or Select Location Codes

> **NOTE**: Step 5.2.1 of this procedure does not pertain to the air monitoring program, which use their own data system to collect environmental data. Steps 5.2.1.3 and 5.2.1.4 should be considered optional in the use of GIS to prepare proposed sample location maps and is intended to provide users with the means to more accurately control sample location designations prior to and during sample collection activities.

5.2.1.1. DML reviews proposed sampling locations and determines if any sampling locations have previously been sampled and have an existing location code (for example a fixed sampling location such as a groundwater well).

5.2.1.2. DML creates new location codes for planned sample locations that do not have an existing location code. The DML reviews and incorporates

Standard Location Code Nomenclature Convention (provided in Appendix B) for any new proposed location codes.

5.2.1.3. DML and/or GIS Data Lead creates a draft GIS map of the proposed sampling area showing proposed sampling locations.

5.2.1.4. DML assigns location codes to proposed sample locations on proposed sample location map(s), which are provided by the GIS Department.

5.2.1.5. DML enters each new location code to be used for the project in the ASD AST database. A link from the AST database to the SWD database must be in place to perform this function per ASD *AST User's Guide (Current Version)*. The SWD location code table is accessed via the lower AST Functions toolbar and selecting Location Table per ASD *AST User's Guide (Current Version)*.

DML may also select an existing location code, if the sample to be collected is at a fixed routine sampling location (e.g., a specific outfall, a specific well, etc.).

New location codes are required by the SWD program to be unique and the SWD system will not allow creation of a duplicate location code. Each new location code entry requires a physical description of the location code (e.g., SOUTHEAST CORNER B779). Each location code must be set to "active" or "inactive" via the AST program active sampling location indicator. For each new location code, provide a sample location description, and set the indicator to **YES.** The location description (e.g., NORTH OF B771, etc) **SHALL** be filled in for each new location code. Inactive locations are considered "frozen" and no field measurement collection or sampling and analysis activity can be associated with the inactive location. The "inactive" indicator is primarily used to designate "retired" locations.

5.2.2. Prepare field measurement templates (Optional)

> **NOTE**: Field measurement templates are optional tools in AST to help users streamline field data entry. Use of the field measurement template function in AST is recommended but not required for environmental sampling events. Because the ambient and effluent air monitoring program maintains a separate data system, those environmental data activities are not required to use AST's field data collection feature.

5.2.2.1. DML or designee prepares field measurement templates in AST to meet the project's specific field sampling requirements per ASD *AST User's Guide (Current Version)*. Refer to project-specific work plans and approved procedures for field data collection requirements. A Report Identification Number (RIN) and event are assigned to each field event where a field measurement is the only data collected from a location code. Refer to the ASD *AST Users Guide (Current Version)* for more information on RIN and event descriptions and numbering and *ASD-003-Indetification System for Reports and Samples (Current Version)*.

> **NOTE**: New SWD location codes are selected from the **"other location"** pick list in AST. Refer to the ASD *AST User's Guide (Current Version)* for directions on selecting and using location codes.

5.2.3. Create proposed sampling events in AST

> **NOTE:** The sampling event may be created in AST by the ASD Project Lead, the DML or the DML's designee. Regardless of the author, all required information must be entered per ASD *AST User's Guide (Current Version)*.

5.2.3.1. ASD Project Lead **OR** DML creates proposed sampling events in AST.

5.2.3.2. ASD Project Lead **OR** DML defines **"media" type** based on existing AST pick list. Media type is an important parameter that identifies the type of environmental media that is sampled, such as: SW = surface water, GW = groundwater, SS = surface soil (per RFCA sample depth 0-6 inches),

BH = subsurface soil (per RFCA sample depth greater than 6 inches), SED = sediment, and TP = tap water. For a complete list of AST pick list media types and descriptions see ASD *SWD User's Guide (Current Version).*

5.2.3.3. **OWNER ID** identifies which site database that will receive the data. For environmental samples the **OWNER ID** assigned is SWD (based on existing AST pick list).

5.2.3.4. ASD Project Lead **OR** DML identifies **quality control (QC) samples** and **bottle types and preservation requirements** in accordance with project sampling plans and guidance in *AST User's Guide (Current Version).*

5.2.3.5. ASD Project Lead **OR** DML assigns the SWD location code to the sample event.

> **NOTE**: New SWD location codes are selected from the **"other location"** pick list in AST. Refer to the ASD *AST User's Guide (Current Version)* for directions on selecting and using location codes. Remember, if the data owner is SWD (**OWNER ID = SWD)** use the **"other location"** table in AST.

5.2.3.6. ASD Project Lead **OR** DML completes additional project-specific sample set up per requirements outlined in the *AST Users Guide (Current Version).*

5.2.4. Prepare chain-of custody (COC)

5.2.4.1. DML **OR** ASD Project Lead initiates the COC and labels per PRO-543-ASD-002, Initiation, Preparation, and Implementation of Chain-of-Custody Forms (Current Version).

5.2.4.2. DML ensures that assigned <u>active</u> location codes for a specific sample location are entered into the "Location" block on the COC form.

5.3. <u>Step 3- Collecting Environmental Samples</u>

Step 3 only addresses the electronic data management aspects of environmental field sampling using ASD's AST System.

NOTE: Refer to the appropriate project/program specific procedures or work control documents for environmental field sampling for additional guidance and instructions on project-specific field sampling.

5.3.1. DML, their designee (who may be the Project Samplers) or the Project Lead prints the COC and sample labels from the AST system.

5.3.2. Project samplers collect samples per approved Sampling and Analysis Plan or other work control documents.

5.3.3. Project sampler's record non-analytical field results on field data forms or project supplied field data collection logs/forms. Samplers record disposition of all scheduled samples including samples that were not collected.

NOTE: Different RFETS projects and programs have developed various field data entry forms based on specific project needs. Results of environmental field data collection that are used for decision-making purposes are required to be entered in AST. Entry of ancillary field data is at the discretion of the project manager.

5.4. Step 4 – Recording Environmental Field Data in AST

Step 4 summarizes the necessary actions required to enter field measurement and/or sample collection data in AST per ASD *AST User's Guide (Current Version)*. Once the field measurement and sample collection data is entered into AST and the field event information is checked for accuracy the data is uploaded via the AST field measurement SRT into SWD.

NOTE: Step 4 of this procedure does not pertain to the air monitoring program, which use their own data system to collect environmental field data. Results of environmental field data collection that are used for decision-making purposes are required to be entered in AST. If a separate data system is used to collect environmental field data, the format SHALL be consistent with AST and SWD for ease of data upload.

5.4.1. DML or designee receives completed field data forms and corresponding COC's from RFETS samplers at the end of field measurement and/or sampling activities.

5.4.2. DML or designee resolves any discrepancies with field sampling personnel and notes any changes, corrections, or insertions made as a result of the review.

Discrepancies with the COC are immediately communicated by the DML to the ASD Project Lead for correction in AST.

5.4.3. DML or designee **SHALL** upload all applicable field data results into AST within 14 working days of sample or field measurement or sample collection. DML **SHALL** ensure that all field modifications are recorded in AST and the final field event electronic information is true and correct based on actual reported field conditions and events. Field data results shall include identification of **sample disposition**, and **field measurement units and equipment** as defined *in AST User's Guide (Current Version).*

5.4.4. DML **SHALL** ensure the accuracy of electronic data entry within 14 working days after initial field data entry per *AST User's Guide (Current Version).* The AST System documents that the quality control has been accomplished. The QA/QC of the sample event/measurements and bottles in AST is required to allow the field event data to be uploaded into the SWD.

> **NOTE**: The ER environmental data management system can directly upload field event and field measurement data directly to SWD without going through AST.

5.5. Step 5- Adding Location Code Data in ASD Environmental Data Systems

Step 5 summarizes the necessary actions required to enter location code survey coordinate data and region data to SWD.

> **NOTE**: This section describes the methodology to identify region attributes that will be added to SWD environmental data. Storing accurate location attributes for SWD environmental sample data allows data users to prepare maps and perform analysis of environmental sample data. This section does not pertain to RFETS projects/programs that do not store their data in SWD.

5.5.1. DML or designee ensures that project environmental sampling locations are surveyed in accordance with *PRO-947-Location/Surveying, Location Code and Surveying Code (Current Version).*

5.5.2. DML reviews surveyed sample location codes, adds media type, and revises location code descriptions, as necessary.

5.5.3. DML submits survey results to GIS Department in electronic format.

5.5.4. GIS Data Lead (GDL) generates point locations in GIS system based on survey coordinates provided by DML. GDL creates draft location map(s) for the DML to review in accordance with *PRO-1130-ASD-006, Spatial Data Map Control (Current Version).*

5.5.5. DML reviews the location maps, ensures location data are accurate, and documents discrepancies or final approval in writing to the GDL.

5.5.6. GDL performs computer analysis routine to identify region data associated with the survey coordinates point location.

> **NOTE**: Approved region locations are ***qualitative*** descriptions of regions at RFETS. Examples of region locations include Area Designation, Industrial Area (IA) Grouping, IHSS, PAC, UBC, and White Space, and other designations as needed. Region designations are subject to change and are provided for information only to environmental data users to assist in data management and reporting. Region locations are derived from the most current update of the RFETS Historical Release Report and are subject to change on an annual basis .

5.5.7. GDL SHALL upload the final approved survey coordinate and region location code data set to the SWD within five working days of project approval of data set per *Spatial Data Map Control (Current Version).*

5.5.8. GDL updates region attributes in SWD at least annually based on modifications to the HRR.

> **NOTE**: The ER environmental data management system can directly upload field event and field measurement data directly to SWD without going through AST.

5.6. Step 6 - Adding Electronic Analytical Data

Step 6 summarizes the necessary actions required to add electronic environmental analytical data to ASD Data Systems (AST and SWD).

5.6.1. DSL receives electronic data deliverables (EDDs) of analytical data from analytical laboratories according to established contractual statements of work.

NOTE: Analytical results from environmental data collection activities that are used for decision-making purposes are required to be entered in ASD Data Systems (AST and SWD). If a separate data system is used to collect environmental field measurement and/or analytical data, the EDD format SHALL be consistent with AST and SWD for ease of data upload.

5.6.2. DSL reviews EDDs for errors using both manual and electronic means in accordance with the ASD *EDDPlus User's Guide (Current Version)*.

NOTE: EDDPlus performs a preliminary check of the electronic data for format, simple errors, date anomalies and other types of format-related errors. The ASD validation/verification process looks more closely at the content of the EDD to characterize the quality of the analytical data submittal.

5.6.3. DSL corrects errors if found (with written permission from the analytical laboratory) or requests re-submittal of EDDs.

5.6.4. DSL loads checked EDDs to the ASD AST Staged Results Table (SRT) within 24-hours of receipt during RFETS normal business hours.

5.6.5. DSL loads the EDDs (daily or more frequently as conditions warrant) from the SRT to the RFETS SWD, in accordance with the *Soil Water Database User's Guide, Current Version.*

5.6.6. Project managers using data systems other than SWD for storing data, download their project data directly from the ASD AST SRT based on defined **OWNER ID**. Download frequency for this type of transaction is determined by the individual project manager and project reporting requirements.

5.7. Step 7 - Adding V&V Qualifiers to ASD Electronic Data

Step 7 summarizes the necessary actions required to add analytical data validation and/or verification (V&V) qualification codes to the ASD Data Systems (AST and SWD).

5.7.1. Data Validators review analytical data in accordance with *ASD General Guidelines for Data Verification and Validation DA-GR01* (*Current Version)* and apply validation and verification codes to EDDs in the Analytical Results SRT in accordance with *ASD Data Management Data Verification and Data Validation Process and Data System User's Guide, Current Version.*

NOTE: Validation provides a complete check of the analytical results portion of the EDD to the complete laboratory data package, and verification provides a random check of less the total number of results on the EDD to the complete data package. Validation or verification occurs on 100 percent of the environmental analytical data.

5.7.2. DSL loads validation-coded EDDs to the SWD on a daily basis (during normal business hours) in accordance the *Soil Water Database User's Guide, Current Version*.

NOTE: SWD is designed to accept revisions to EDDs by overwriting the original version of the record with the current and corrected version and providing a journal copy of the original record. Periodically, the SWD journal tables are archived for performance reasons; however, the journal data remain available upon request from the DSL. Refer to other receiver data systems documentation for information on how they address updates to electronic analytical data records.

5.7.3. Project managers using data systems other than SWD for storing data; download their validated/verified project data directly from the SRT based on defined **OWNER ID**. Download frequency for this type of transaction is determined by the individual project manager and project reporting requirements.

5.8. Step 8 - Using Electronic Environmental Data

Step 8 summarizes the necessary actions required to use ASD electronic environmental data in SWD or for use with other Data Systems.

5.8.1. DML accesses SWD or other project-specific data system.

5.8.2. DML retrieves projects electronic environmental data for analysis and reporting.

5.8.3. DML identifies and inactivates (i.e., changes active indicator to NO) in AST any unused project-created location codes.

5.9. Step 9 – Adding User Information to SWD Data

Step 9 summarizes the necessary actions required to add project specific user information to SWD electronic analytical data. Project Managers are required by RFCA (DOE, 1996) to identify data that is No Longer Representative (NLR) and therefore no longer representative

of current site conditions. The IA filter code is another example of project specific user information that can be added to the SWD.

> **NOTE:** SWD allows specified users to apply coding to analytical environmental data to assist projects in using data for regulatory analysis and reporting. **Such coding is the responsibility of the project manager/SME and its accuracy is the responsibility of the Environmental Project Manager**. Data coding is performed in accordance with the following process. Any coding schemes must be documented and approved by the DSL before coding can take place. Individual data coding is different from application of GIS region information discussed in Section 5.5, which is the responsibility of the GDL.

5.9.1. DML requests and subsequently receives SWD database permissions from the DSL to enter codes to SWD data.

5.9.2. DML codes (or oversees coding if performed electronically by database programmers) SWD data, based on direction of the environmental project manager.

> **NOTE**: The SWD creates a journal entry for each record changed or updated in SWD. In addition, the journal entry also records the date and the user ID.

5.9.3. DML ensures that all data are coded prior to completion of project and that data codes are quality checked and documented to ensure accurate coding.

5.9.4. DML informs DSL when data coding is complete.

5.9.5. DSL removes SWD database permissions for DML to code data at completion of project in accordance with *SWD User's Guide (Current Version)*, or in the absence of written verification that coding is complete, the DSL will automatically rescind SWD database coding permissions 30 days after activation.

5.10. Step 10 - Maintaining ASD Environmental Data in SWD

Step 10 summarizes the necessary actions required to maintain the ASD Environmental Data in SWD.

5.10.1. DSL maintains functionality, configuration control, data security, and access control of the SWD in accordance with *SWD User's Guide (Current Version)* and

requirements outlined in with *RFETS Computer Software Management Manual, 1-MAN-004-CSMM* (*Current Version*)

5.10.2. DML reviews all project-related data loaded in SWD for accuracy, completeness and errors.

5.10.3. DML notifies DSL in writing if errors are found in EDDs in SWD, or if data are missing from SWD.

5.10.4. DSL resolves identified errors or missing EDDs according to *the SWD User's Guide, Current Version.*

5.10.5. DSL reloads corrected or previously missing EDD records into SWD.

6. RECORD PROCESSING INSTRUCTIONS

6.1. ASD Electronic Environmental Records

NOTE: Most of the ASD environmental data systems do not contain original records; but rather; they contain electronic copies of hard copy or approved electronic data package records, which are managed under separate procedures.

6.1.1. DSL ensures that ASD environmental electronic data and data systems are managed and archived in accordance with *PRO-447-ERM-001 Electronic Information System Retirement Procedure (Current Version).*

6.1.2. DSL ensures that ASD environmental data systems are properly documented and provided to designated parties in accordance with site closure requirements.

6.1.3. Non-Electronic ASD environmental analytical records management is not within the scope of this procedure. Refer to Source One Management, *Analytical Services Group, Procedure Manual (Current Version)* for non-electronic environmental data records management requirements.

6.1.4. Non-electronic field data forms/records management is not within the scope of this procedure. Refer to individual project plans for quality control and record keeping requirements.

6.1.5. Records associated with this procedure are processed according to the following table:

1. ASD AST Users Guide	non-QA Record	Completed non-QA Records: Responsible Managers SHALL implement a reasonable level of protection to prevent loss and/or degradation. Records SHALL be stored in standard office filing cabinets	non-QA Record: When inactive (as defined in 1-V41-RM-001), transfer to Site Records Management in accordance with 1-V41-RM-001
2. SWD User's Guide	non-QA Record	Completed non-QA Records: Responsible Managers SHALL implement a reasonable level of protection to prevent loss and/or degradation. Records SHALL be stored in standard office filing cabinets	non-QA Record: When inactive (as defined in 1-V41-RM-001), transfer to Site Records Management in accordance with 1-V41-RM-001
2. EDDPlus User's Guide	non-QA Record	Completed non-QA Records: Responsible Managers SHALL implement a reasonable level of protection to prevent loss and/or degradation. Records SHALL be stored in standard office filing cabinets	non-QA Record: When inactive (as defined in 1-V41-RM-001), transfer to Site Records Management in accordance with 1-V41-RM-001
3. Procedure Development Package (Document History File), which includes: • Master Copy of the procedure, including superseded or inactive copies • Review Comment Sheets with Comments Resolution	QA Record	Site Document Control implements a level of protection to prevent loss and/or degradation of Master Copy and Document History File. Controlled document(s) SHALL be maintained by custodians in accordance with Site Document Control custody requirements.	When inactive (as defined in 1-V41-RM-001), the record will be transferred to Site Records Management in accordance with 1-V41-RM-001.

7. REFERENCES

1-V41-RM-001, Records Management Guidance for Records Sources

1-MAN-004-CSMM , Computer Software Management Manual

PRO-543-ASD-002, Initiation, Preparation, and Implementation of Chain-of-Custody Forms

ASD-003 Kaiser-Hill, Analytical Services Division Identification System for Reports and Samples

PRO-447-ERM-001, Electronic Information System Retirement Procedure

PRO-908-ASD-004, On-Site Transfer and Off-Site Shipment of Samples

PRO-1130- ASD-006, Spatial Data Map Control

PRO-947-LOCATION/SURVEYING, Location Code and Surveying Control

Kaiser-Hill, Analytical Services Division, AST User's Guide

Kaiser- Hill, Analytical Services Division, EDDPlus User's Guide

DA-GR01, General Guidelines for Data Verification and Validation, Kaiser Hill Analytical Services Division

Kaiser-Hill, Analytical Services Division, Data Verification and Validation Application Users Guide

Kaiser-Hill, Analytical Services Division, Soil Water Database (SWD) User's Guide

Source One Management, Analytical Services Group, Procedure Manual for Non-electronic Environmental Data Records Management Requirements

MAN-001-SDRM, Site Documents Requirements Manual

PRO-815-DM-01, Developing, Maintaining, and Controlling Documents

INS-816-DM-02, Writing Instruction Guide

RF/RMRS-99-428.UN, Annual Update for the Historical Release Report,

Appendix A
Analytical Services Division
Electronic Data Check-List For Environmental Projects

	Action Steps	Responsible Party
❑	Assign project Data Management Lead (DML)	Environmental Project Manager
❑	Request sampling events with ASD Sampling and Analysis Request Form (SARF) submitted to ASD Project Lead: • Project Name • Task Name • Charge Number • Administrative information • Sampling event information	Project DML
❑	Create proposed sampling location map with assistance from the GIS Department (Optional)	Project DML and GIS Department
❑	Assign location codes in AST and set "active indicator" to "YES". Follow location code instructions in ASD-005 and AST to create location codes.	Project DML and or ASD Project Lead
❑	Prepare field templates in AST for field sampling events (Field Data Forms in AST)	Project DML and or ASD Project Lead
❑	Enter preliminary sample and field event information in AST per AST User Guide. Assign database "Owner ID", sample event "Media Type", and SWD "location code" to sample event.	Project DML and or ASD Project Lead
❑	Prepare Chain of Custody and sample labels per *PRO-543- ASD-002*	Project DML and or ASD Project Lead
❑	Print out sampling chain-of-custody forms and sample labels	Project DML and or ASD Project Lead or designee
❑	Collect samples or field measurements per approved Sampling Analysis Plan or other work control documents	Project samplers
❑	Record field data results from completed Field Data Forms into AST within 14 working days of completion of sample collection.	Project DML or designee
❑	Check all data entries for accuracy and "✓" the QC'd box in AST within 14 working days of completion of initial field data result entry to complete data entry and allow transfer of data to SWD.	Project DML or designee
❑	Arrange to have all sampled locations surveyed per *PRO-947 – Location/Surveying, Location*	Project DML

	Action Steps	Responsible Party
	Code and Surveying Control procedure.	
☐	Survey environmental sample locations per *PRO-947 – Location/Surveying, Location Code and Surveying Control procedure.*	Survey Contractor
☐	Review survey locations and add media type, project and task codes and location descriptions to survey results	Project DML
☐	Submit survey results to GIS department in electronic form	Project DML
☐	Prepare "draft" map" of sample locations	GIS Department
☐	Review and Approve "draft" map of project sample locations	Project DML
☐	Finalize location maps, and add approved "region" designations to locations (i.e., IHSS, PAC, UBC, etc)	GIS Department
☐	Transmit final locations and region designations to SWD	GIS Department
☐	Receive sample analytical results from laboratories as electronic data deliverables (EDDs) and hard-copy data packages	ASD Data System Lead ASD Project Lead
☐	Examine hard copy analytical data per Analytical Services *General Guidelines for Data Verification and Validation , DA-GR01 Current Version* for errors	ASD Project Lead
☐	Review, correct (if necessary) and process EDDs to the ASD staging result table (SRT) within 24 hours of receipt	ASD Data System Lead
☐	Load EDDs to SWD daily or more frequently as conditions warrant. **NOTE**: Non-SWD data system users shall follow the appropriate instructions for their individual data systems.	ASD Data System Lead
☐	Perform data assessment in accordance with Analytical Services *General Guidelines for Data Verification and Validation , DA-GR01 Current Version.*	ASD Data Validators
☐	Add data qualifiers to EDD in the Staged Results Table using ASD's Data Validation and Verification Application	ASD Data Validators
☐	Load "qualified" EDDs to SWD, overwriting older non-qualified EDDs in SWD daily or more frequently as conditions warrant.	ASD Data System Lead
☐	For non-SWD users, follow non-SWD system instructions for loading validated/verified data into the selected data system.	DML or non-SWD Data System Lead
☐	Access SWD (requires RFETS Oracle password)	Project DML and other data users

	Action Steps	Responsible Party
❑	Download project data to desktop for analysis and reporting	Project DML and other data users
❑	Notify ASD Data System Lead regarding any missing EDDs or incorrect EDD	Project DML
❑	Obtain missing EDDs or fix incorrect EDDs and reload data to SWD.	ASD Data System Lead
❑	Request permission in writing from ASD Data System Lead to add user data to SWD.	Project DML
❑	Add codes to SWD data per project manager direction (i.e., no longer representative data, or other codes as established by the SWD User Guide). Add codes for each sample event and/or each analyte that requires coding.	Project DML
❑	Quality review of SWD user data entry, approve, and email ASD Data System Lead that project is complete and data are coded.	Project DML
❑	Remove permission for user data update in SWD permissions table.	ASD Data System Lead

APPENDIX B
STANDARD LOCATION CODE NOMENCLATURE CONVENTION FOR ENVIRONMENTAL DATA

LOCATION CODES - GENERAL

A location code identifies where an environmental sample was collected. All location codes are to comply with the Standard Location Code Nomenclature Conventions outlined herein. Subject Matter Experts from RISS-Environmental Restoration and Environmental Media Management (Water Programs and Water Operations) should be consulted if there are any questions regarding naming new location codes versus existing location codes to prevent multiple location codes for the same environmental media sample location.

The following sections define the standard location code nomenclature conventions used at RFETS. Existing location codes in the soil water database (SWD) may or may not follow the nomenclature listed below, as in many cases, standards were not established on historical locations.

(a) As established with this procedure, A location code may contain up to 15 characters, which can be a mix of alpha and numeric characters. **Note**: Avoid using "0" or "O" as a prefix.

(b) Environmental media location code **should** contain a two-digit suffix representing the year the location was scheduled to be sampled (i.e., sample start date). However, in cases where the two-digit identifier conflicts with current year (such as when a project extends across more than one year), either year may be selected in accordance with the environmental Project Manager's wishes. If the environmental Project Manager deems the sample start date is not acceptable for the location code, then the environmental Project Manager is responsible for reassignment of any location codes selected prior to sample completion. If reassignment is deemed necessary, the project's Data Management Lead (DML) must submit a list of the unused location codes to the ASD Data System Lead (DSL) who will remove the unused codes from the AST system. The DML enters the new location codes into AST.

LOCATION CODES - NEW GROUNDWATER WELLS AND BOREHOLE LOCATION CODES

(a) One location code number is assigned to a new borehole if a groundwater well is installed.

(b) The groundwater well, piezometer, well point, or other monitoring device is installed in the borehole; the location code number remains the same as that of the borehole.

(c) Multiple completion wells in the in the same borehole are numbered on a case-by-case basis, as determined by Water Operations and the Environmental Project Manager.

(d) The well and borehole location code numbering system consists of five to seven characters. The first three to five characters represent a number from a block of sequential numbers, followed by a two digit suffix representing the year the borehole was scheduled to be drilled. No spaces, slashes, or dashes are permitted in borehole or well location codes.

(e) The alpha numeric characters BH can be used to differentiate between boreholes and monitoring wells within a block of sequential numbers.

(f) Location codes for monitoring wells **SHALL** be determined or approved by Environmental Media Management (Water Operations) in accordance with 1-K92-RFP-94-001, *Well Control Program (Current Version)*.

(g) An example of a borehole or well location code is "60699" with a description of "EASTERN INDUSTRIAL AREA PLUME W. SIDE BLDG 707".

(h) An example for borehole locations codes: during the calendar year 2001, a sampling project requires ten boreholes to characterize and area. The project Manager/DML selects location code numbers 20101 to 21001. Note the suffix represents the year the borehole is proposed. The DML enters the location code numbers into AST, provides a physical description of the area the borehole is located, and sets the AST location indicator to "YES". The project proceeds with the characterization and identifies a contaminated area that requires for more boreholes. The Project Manager/DML can then select the next sequence of location codes numbers (e.g., 21101 to 21401), which are then entered into AST. The same methodology is used for monitoring wells. Any unused locations codes must be inactivated in AST by setting the location code active indicator to NO within 5 days of field work completion.

LOCATION CODE - SURFACE SOIL LOCATIONS

(a) One location code number is assigned to each new surface soil sample location, which is defines as the first six inches of soil.

(b) The surface soil location code numbering system generally consists of seven to eight digits. The alphanumeric characters "SS "**SHALL** be used as a two-digit prefix to identify the location as a surface soil sample location. The next three to four digits represent a number from a block of sequential numbers, followed by a two-digit suffix representing the year the location was scheduled to be sampled.

(c) No spaces, slashes, or dashes are permitted in surface soil location codes.

(d) An example of a surface soil location code is "SS001195" with a description of "N B828 S TANK T-27".

LOCATION CODES - SURFACE WATER

(a) One location code number is assigned to a new surface water sample location.

(b) The surface water location code numbering system consists of five digits. The alphanumeric characters "SW" **SHALL** be used as a two-digit prefix to identify the location as a surface water sample location. The next three digits represent a number from a block of sequential numbers.

(c) Personnel from Environmental Media Management (Water Operations) **SHALL** be consulted prior to naming new surface water sample locations.

(d) No spaces, slashes, or dashes are permitted in surface water location codes.

(e) An example of a surface water sampling location code is "SW098" with the description of "EAST END OF LANDFILL POND AT CENTER OF DAM".

LOCATION CODES - SEDIMENT LOCATIONS

(a) One location code number is assigned to each new sediment sample location.

(b) The sediment location code numbering system generally consists of seven digits. The alphanumeric characters "SED" **SHALL** be used as a three-digit prefix to identify the location as a sediment sample location. The next three digits represent a number from a block of sequential numbers, followed by a two-digit suffix representing the year the location was scheduled to be sampled.

(c) No spaces, slashes, or dashes are permitted in sediment location codes.

(d) An example of a sediment sample location is "SED42500" with the description of "SOUTH WALNUT CREEK".

LOCATION CODES – SAFE DRINKING WATER SAMPLE LOCATIONS

(a) One location code number is assigned to each new safe drinking water sample location.

(b) The safe drinking water sample location code numbering system generally consists of seven digits. The building number **SHALL** be used as a three-digit prefix to identify the building location where the safe drinking water sample was collected. The next three digits after a dash represent a room number to identify the location where the safe drinking water sample was collected.

(c) No spaces or slashes are permitted in safe drinking water sample location codes.

(d) An example of a tap water sample location is "115TAP-104" with the description of "BUILDING 115, ROOM 104 TAP WATER".