

Data Management Plan

Rev. 0



US Finishing Removal Site Evaluation
TNA-05-003-0134

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1.0 Project Scope

The scope of the data management portion of the US Finishing Removal project is to gather existing historical data for the site, input the historical data to a Scribe database using EQuis Region 4 valid values, update historical data with any new data that is generated by the Removal Program and/or the Remedial Program, and present the data spatially using mapping software. A unique feature of this project will be the development of a project map site that will allow end-users to view and query project data stored in Scribe.NET using an interface similar to Google™ maps. An enterprise link between Scribe.NET and the project map site server will allow visualization of updated data as soon as new data is published to the Scribe.NET project database. START anticipates to warehouse project documents on the OSC.net site. In order to ensure that the project map site performs correctly, data utilized in the actual project map site will be stored on a secure non-EPA server access to which will be controlled by either the OSC and/or RPM. Access will be managed by the Data Manager as per OSC and/or RPM approvals.

URS has been engaged as a subcontractor to develop a way for end-users to easily view and query up to date project data. URS presented EPA with the following three options:

1. Create a tool that will produce custom kml files with up to date data and predefined queries to be opened using Google™ Earth.
2. Create a project map website that anyone with a browser and internet connection can use to view and query data using a familiar Google™ maps interface.
3. Create an Esri ArcGIS™ Server website that anyone with a browser and internet connection can use to view and query data using a customized ADF ArcGIS Server website.

EPA selected the second option. This option does not have any special special hosting requirements as the third option does. The second option is also available to more personnel as it does not require users to have Google Earth installed as the first option does.

In order to implement the second option, a phased approach to the development of the project map website will be used. Phase I will include the input of available historical data to the project Scribe database, and the set-up of the basic Google™ maps website and static project data display including but not limited to priority areas and sampling locations by matrix. The site will allow users to turn on and off each of these datasets and will include basic Google™ map functionality such as zoom, pan, etc. The target date for Phase I is August 1st, 2011 and will be available to users hosted on a private external webserver. Phases II and III would include the site automatically pulling up to date data from Scribe.NET once a day, querying capabilities, and a custom layout for displaying attribute data when a point is clicked. The completion dates for Phases II and III are to be determined.

A portion of the work will require synchronizing and moving data between EQuis and Scribe as the project involves both the Removal and Remedial EPA programs. The methods and steps to do this will be implemented in the early stages of the project prior to data input to Scribe. The OTIE data manager is currently coordinating with SEDS to this end.

2.0 DMP Purpose

This data management plan (DMP) is intended to provide guidance for data management activities. The data management practices presented in this plan are designed to ensure data integrity and consistency for all data collected and managed prior to and during the removal and remedial phases of work performed at the site. Listed in this DMP are data elements, data management processes, and end-use products appropriate for supporting the United States Environmental Protection Agency (EPA) Emergency Response and Removal Branch (ERRB) and the Superfund Remedial and Site Evaluation Branch (SRSEB) on the US Finishing project.

The data needs for this project will focus on, but not limited to, analytical and field monitoring data to assess site-related contamination at the site and surrounding areas.

The following types of data will be managed under this project:

- Organic and inorganic laboratory analytical results for soil, sediment, surface water, air, ground water, and bulk samples; and
- Ground water water quality parameters such as turbidity, dissolved oxygen (DO), and conductivity;

Future field investigations conducted at the site, including monitoring and sampling activities, will be described in the applicable Sampling and Analysis Plans (SAP) generated for each individual investigation. This DMP describes the management of data following sample collection and should be considered prior to SAP development.

3.0 General Information

The former US Finishing/Cone Mills site is located at 3555 Old Buncombe Road, approximately 3 miles north of downtown Greenville, South Carolina. The property shape resembles a 'V'. The property is approximately bounded by the Reedy River to the west and by Langston Creek and Highway 253 to the east. Within the 'V' exists former millworkers residential housing. Two reservoirs utilized by the facility are located to the north (the former Northern Reservoir) and northwest of the residential area (the former Northwestern Reservoir). Lakeview Middle School is directly across from the former Northern Reservoir. The former Northwestern Reservoir is not an area of interest because it was used as intake water for the water treatment plant and is not suspected to have contaminants of concern.

In 1890, the brothers Moses and Ceasar Cone formed the Cone Export & Commission Company of Greensboro, NC and had company offices at 61 Worth St. NYC, NY. They became part of the industrial revolution and mass production trend in the textile business. Prior to that time, the mills of the South confined their activities to limited clothing lines and catered almost exclusively to local markets with little attention to increasingly changing styles and fashions of the potentially large consumer base. The Cone Brothers, whose earlier career was as wholesale grocery merchants were quick to recognize and take advantage of the opportunities. Their first mill, the Proximity Manufacturing Company was founded at Greensboro, NC, in 1896. It was in 1899 that Mr. Cone, Mr. E. Sternberger, and associates opened the Revolution Cotton Mills in Greensboro NC. The most noted of the Greensboro group of mills founded by the Cone Brothers was the White Oak Mills. Construction was begun in 1903 and completed in 1905.

Operational details from 1903 through 1957 are not available although it is known that the White Oak Mill (facility) was expanded on several occasions. In 1947, the facility was sold to the

Aspinook Corporation and, in 1957, to the Cone Mills Corporation (Cone Mills). Cone Mills operated the facility until 1984 under the name Union Bleachery). American Fast Print, Ltd. (AFP) purchased the facility in May 1984 and operated under the name US Finishing until November 2003 when the main plant was partially destroyed by fire. AFP is the current property owner of a large portion of the facility. In July 2004, Piper Properties purchased approximately 19 acres along the Reedy River from Cone Mills. The facility property is currently in temporary receivership. The receiver minimally maintains the property.

3.1 *Project Background*

In May of 2011, OTIE-START began compiling 30 years of historical analytical data for the site in order to ascertain whether or not there were analytical results above Region 4 Removal Action Levels (RALs) for soil or sediments. Initial efforts led to the creation of a small KMZ webpage that showed most of the analytical results were below RALs.

In subsequent meetings with the OSC, it was determined in early June 2011 that the volume of data was very large and encompassed several assessments and three large removals. Therefore, OTIE-START would create a dynamic Scribe database that would link to the remedial programs EQuis database. Both of these databases would, in turn, be linked to a Google style viewer that would show areas of concern from previous investigations, analytical results for those areas, RAL exceedences for those results, and the ability to filter or query the data as needed by investigators.

In meetings with the OSC, it was decided that this website viewer would be constructed in a three phased approach; phase one - a static webpage that showed the historical areas of concern; phase two - a dynamic webpage linked to a Scribe database that dynamically links approved data to the webpage in near realtime updates; and phase three - combine EQuis and Scribe database from both the remedial and removal programs to the dynamic viewer. This viewer can be found at: <http://www.usfinishing-conemills.com>.

The viewer currently contains 1,263 sample locations with 22,714 sample results, and contains the following Assessments and Removals:

- 1991 Remedial Investigation/Feasibility Study (RI/FS)
- 1995 RMT Chrome Removal
- 2004 ESI
- 2004 Removal
- 2005 Site Assessment
- 2005 ESI Sampling
- 2006 RI/FS
- 2007 PCB Assessment
- 2007 PCB Removal
- 2010 ACM Assessment

3.2 *Special Considerations*

The clean-up for the US Finishing site is being carried out as a collaborative effort by both ERRB and SRSEB. The implementation of this DMP is critical to ensure that both branches are getting the data needed to achieve their respective goals for the clean-up of the site. Special considerations with the handling of data for this project are as follows:

- This project has the potential to involve residential sampling. Property owner information should be masked and sampling results should be flagged to prevent them from being made public.
- This project involves two distinct groups within EPA that use different database systems to manage site data. ERRB uses Scribe while SRSEB utilizes Region 4 EQuis. Fred Sloan of the Region 4 Science and Ecosystem Support Division (SESD) notified START on July 6, 2011 that data transfer from Scribe to Region 4 EQuis could be completed using a script within Scribe. He also confirmed that data input into Region 4 EQuis could be exported to Scribe. Scribe does not have valid values requirements but Region 4 EQuis does. Therefore, data will be input into Scribe using the Region 4 EQuis reference values. Data can then be transferred between the two data systems seamlessly. The project's designated Data Manager (DM) will facilitate future EQuis to Scribe data transfers.

3.3 *Summary of Revisions*

The following table lists the document revision history for this DMP.

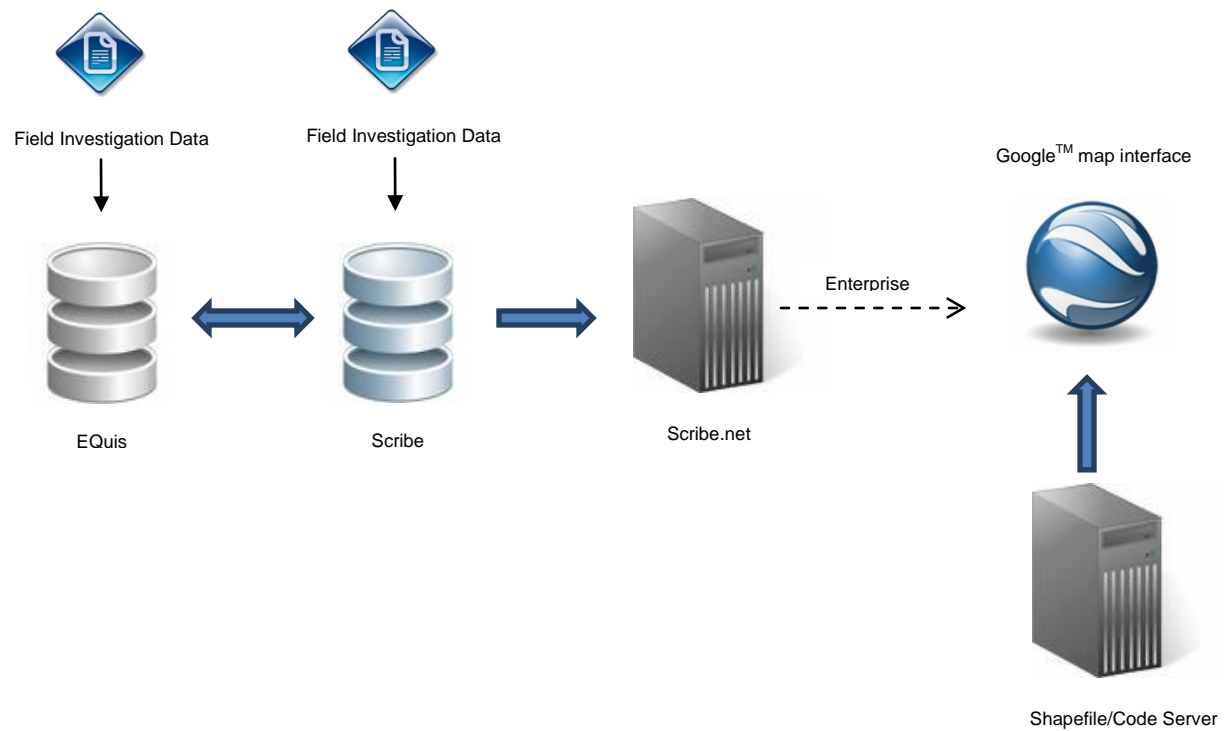
Document Revision History			
Revision	Date	Section	Description of Changes
Initial Release (Rev.0)			

4.0 Overall Workflow

Different data components for this project related to the Removal Program will be managed in Scribe, while the Remedial program data will be managed in EQuis. Since an enterprise with Scribe.NET will be used to feed the project map site, all sampling, monitoring, and analytical information input and stored in EQuis must be copied into the master Scribe database for the project for publication to Scribe.NET. An enterprise link to Scribe.NET will be created to the server storing the geospatial files and programming information. A Google Maps® interface will be used to present the information to the end-user. EPA OSC.net will be used to manage documents.

4.1 *Data Flow Diagram*

Note: the diagram depicts various field data collection techniques being used throughout; this may vary depending upon the type of field investigation performed.



4.2 *Roles and Responsibilities*

The roles and responsibilities of key data collection and management personnel is summarized as follows:

EPA OSC:

The EPA OSC directs the project and is responsible for ensuring that the work is completed in accordance with the requirements for the site, and for overseeing implementation of the work required under the TDD. The TM is also responsible for:

- Maintaining communications with the START PM regarding project status;
- Reviewing Monthly Progress Reports (MPRs);
- Reviewing/Approving START costs in the Removal Cost Management System (RCMS)
- Providing oversight of field efforts; and,
- Reviewing all project deliverables prepared by START.

The EPA OSC for this project is Mr. Leo Francendese.

START DEPUTY PROGRAM MANAGER (DPM):

The DMP is responsible for insuring overall project throughput and that contractual and budgetary requirements are met.

START PROJECT MANAGER (PM):

The START PM is responsible for project performance, budget, and schedule, and for ensuring the availability of necessary personnel, equipment, subcontractors, and services.. The START PM is selected based on technical experience, project needs, and previous START project experience. Additional responsibilities include:

- Ensuring timely resolution of project-related technical, quality, or safety issues;
- Functioning as primary interface with the EPA OSC, field and office personnel, and subcontractor points-of-contact;
- Coordinating and overseeing work performed by field and office technical staff;
- Coordinating and overseeing maintenance of all project records;
- Coordinating and overseeing review of project deliverables;
- Preparing and issuing final deliverables to the EPA; and,
- Approving the implementation of corrective action.

The START PM is Mr. Lou Von Oldenburg.

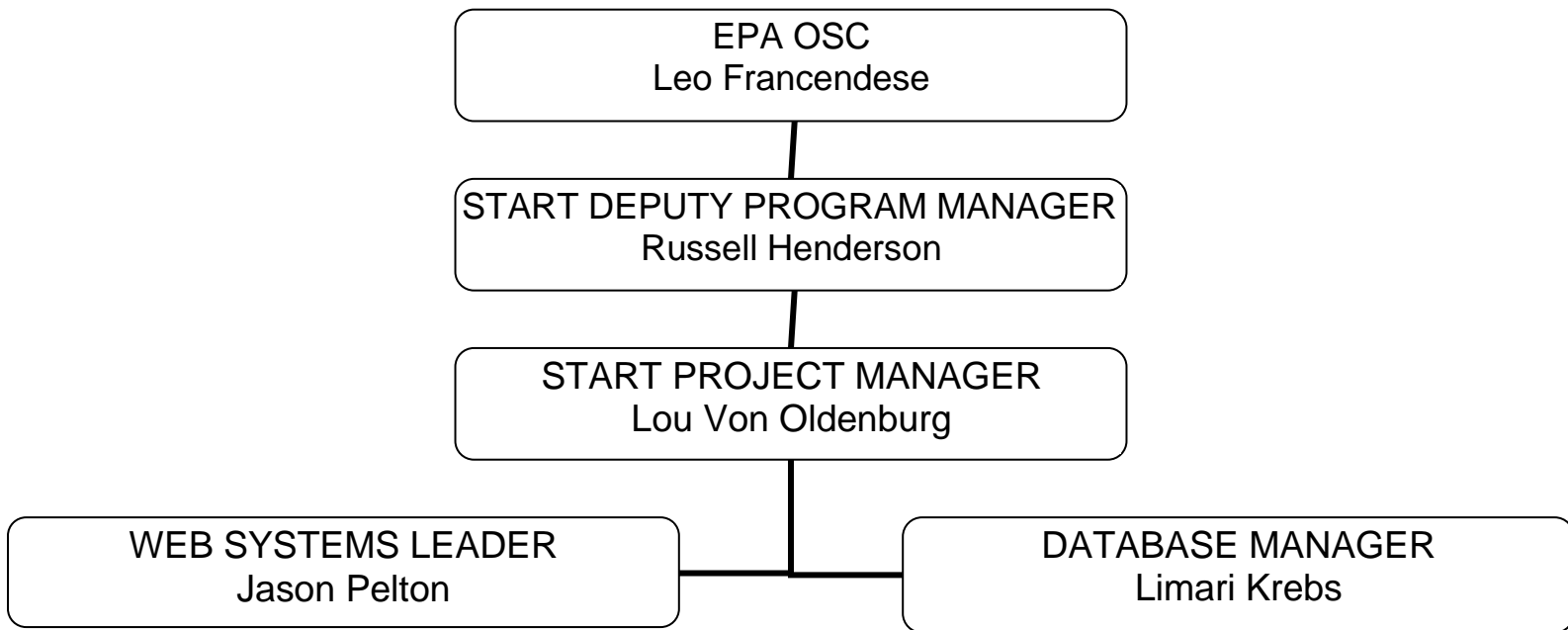
WEB SYSTEMS LEADER:

The Web Systems Leader will lead the development of the project map site working with OTIE and EPA to define the requirements and data of the site. This will include development of automatic database communication between the EQuis and Scribe databases to the website, querying abilities of the webpage, spatial referencing, and all associated sample data.

The Web Systems Leader is Mr. Jason Pelton from URS (Denver, Colorado location).

DATABASE MANAGER (DM):

The Database Manager is responsible for the overall quality of the data being collected and managed, as well as the process for which data is transferred from the field to the database. The DM will oversee implementation of the QAPP, EQuis to Scribe database communication, and all related functions. The DM will also insure that the webpage maintains automatic functions with no errors between initial database entry and display on the webpage.



4.3 *Previous Data*

The following description is a chronological summary of environmental enforcement:

- In **November 1980**, Cone Mills submitted a Hazardous Waste Permit Application.
- In **1981**, Cone Mills submitted a Notification of Hazardous Waste Site to EPA Region 4.
- From **1981 thru 1984**, investigations required under South Carolina Department of Health and Environmental Control (SCDHEC) oversight documented excessive chromium contamination in Langston Creek and groundwater beneath the main facility plant. SCDHEC entered into a Consent Decree in **May of 1984** with Cone Mills and AFP requiring the continued recovery and treatment of contaminated groundwater.
- In **December 1985**, SCDHEC completed a Preliminary Assessment (PA) for the Cone Mills Union Bleachery Plant documenting excessive chromium levels in groundwater.
- AFP completed the Remedial Investigation (RI) from **August 1990 to June 1991**. Extensive contamination (metals and organics) was documented at various concentrations in groundwater, sludge pits, aeration lagoon, Reedy River floodplain dump, main plant's basement and chromium and caustic storage areas.
- In **June 1993**, the SCDHEC Site Screening Section completed a Site Investigation (SI) for the Cone Mills Union Bleachery Plant. Additional documentation of chromium contamination was reported in previously documented source areas, surface waters and fish tissue downgradient of the facility. The site was assigned a medium priority under CERCLA. Enforcement strategy focused on the PRPs conducting remediation efforts.
- As part of a **1993** Settlement Agreement, Cone Mills conducted contaminated soils removal between **1993 and 1999** of approximately:

- 3500 tons of hydrocarbons affected soil
 - 7000 tons of chromium affected soil and
 - 3000 tons of caustic affected soil.
- A fire in **November 2003** destroyed much of the main facility. Fifteen to 25 million plus gallons of fire suppression water containing unknown constituents from the facility released to Langston Creek and the Reedy River.
- Due to an impending bankruptcy, Cone Mills removed the ground water recovery and treatment system from operation in **June 2004**, after 20 years of operation. The system of recovery wells and treatment was in place to prevent the chromium-contaminated ground water plume from entering Langston Creek and the Reedy River.
- In **2004**, SCDHEC completed an Expanded Site Inspection (ESI) for the Cone Mills Union Bleachery facility. Based on the elevated metals findings of the ESI, the facility was given a high priority for further action.
- Removal activities were performed at the facility between **October and December 2004** by contractors for AFP (US Finishing).
 - Soil removal activities were conducted at:
 - SW corner of main plant
 - Sediments from the maintenance shop
 - Soils adjacent to the elevated railroad bed
 - Brine pit contents removed
 - Former water treatment basin contents
 - Areas not addressed during the soil and sediment removal activities include:
 - Above areas when they encroached on building structures
 - The aeration lagoon
 - The former Northern Reservoir
 - Former sludge settling impoundment (sludge burial area)
 - Ground water remediation system treatment plant property
 - Reedy River floodplain dump area and
 - The area adjacent to the substation property leased by Duke Energy
- In **April 2005**, SCDHEC conducted site assessment activities to further evaluate the potential threat to human health and the environment.
- In **June 2005**, SCDHEC conducted an ESI Update sampling event.
- AFP, Duke Energy Corporation, and Piper Properties of Greenville, Limited Liability Corporation (LLC) (Piper Properties), (the Settling Parties), entered into a settlement agreement with SCDHEC as documented by a Consent Decree in **November 2006**.
 - Duke Energy conducted site removal of PCB contaminated sources
 - Neither AFP nor Piper Properties followed the RI/FS schedule as outlined in the Consent Decree; therefore, in **May 2008**, as a result of AFPs failure to pay its consultants and complete the sampling effort as approved in the Updated RI/FS work plan, SCDHEC petitioned the court to appoint a temporary receiver for property owned by AFP. Piper also failed to submit an RI Report, and SCDHEC petitioned the court to appoint a temporary receiver in **April 2009**.
- In **March 2011**, EPA proposed the site for the NPL on the strength of the surface migration pathway.
- In **May 2011**, EPA's Remedial Program referred the site to the Removal Program for a removal site evaluation (RSE).

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5.0 Data Collection

To be determined when future field investigations are identified.

5.1 *Data Deliverables*

To be determined as the project progresses

5.2 *Data Collection SOPs & Checklists*

To be determined as the project progresses

6.0 Data Management

This section describes the process for managing new and previous data.

Phases II and III of the project map site would include the site automatically pulling up to date data from Scribe.NET once a day, querying capabilities, and a custom layout for displaying attribute data when a point is clicked. The completion dates for Phases II and III may change based on feedback, but at this point are expected to be August 15th, 2011 and August 20th, 2011, respectively or earlier.

6.1 *Data Processing*

This section provides a description of the procedures and tools that are used to reformat or otherwise prepare the available historic data for import to Scribe. More information will be added to this section when future field investigations are scheduled for the site.

In general, all available data collected will reside in an Excel spreadsheet in a flat file format (i.e. one record for sample per analyte). The Data Management Team may then convert the Excel format to a comma-delimited format (CSV) for import into Scribe. Prescribed field mappings will be used in the Scribe Custom Import to properly map any spreadsheet fields that are named differently than Scribe fields. If manual data entry is necessary, the data entry specialist will create templates for field data entry prior to upload to Scribe. Specific data processing measures will be developed as the project progresses.

Data generated by the Remedial program and managed within EQuIS will be exported to the project Scribe database for publication to Scribe.net. The methods and frequency of copying EQuIS data into a Scribe database will be determined during the project and will be documented here. Data to be shown on the project map site must be uploaded to Scribe and then published to Scribe.NET to be accessible to the GoogleTM interface.

6.2 *Data Element Dictionary*

This section lists the data tables, data fields, formatting requirements, conditional requirements and valid values that are used to manage data in Scribe to support this project.

The Region 4 EQuIS valid values will be used to input data to Scribe. This will ensure that data transfer from Scribe to EQuIS will be seamless and without error. It will also ensure that the end-user data queries will provide consistent results.

6.3 *Entity Relationship Diagram*

To be determined as the project progresses.

6.4 *Data Management SOPs & Checklists*

The following section describes the specific step-by-step procedures and or protocols that are used to manage data.

In general, Scribe import procedures were followed in accordance with the U.S. EPA ERT Scribe Manual Part 3, Scribe Management and Advanced Features. Scribe procedures were also based on the applicable steps in the Draft Basic Scribe User Instructions.

7.0 Data Management Justification

This section provides the justifications that were used in determining the use of the Google Maps™ interface as the source to access up to date data throughout the project progression.

7.1 *Justification for the Google Maps™ interface map :*

The use of the Google Maps™ interface map requires a standard browser that should work with any modern browser and requires no additional software, unlike other viewer options, such as Adobe Flex© viewer and Microsoft Silverlight©, which require Adobe Flash and Microsoft Silverlight installations, respectively. Using a standard browser without the limitation to a specific browser, or the need for the supplemental software makes the use of the interface less hassle for the user.

The project map site allows for automatically accessing and viewing to-date data from Scribe.NET, therefore there is no interruption in accessibility to the interface map to update with current data. The project map site will integrate into the existing workflow by automatically pulling up to date data from Scribe.NET once an hour. The project map can be tailored, so data processing measures can be developed as the project progresses.

Data utilized in the project map site will be stored on a secure non-EPA server to which will be controlled by either the OSC and/or RPM. A non-EPA server was chosen over an EPA server initially to avoid the license cost of ArcGIS Server, or the additional time and effort to get a custom web application approved to be hosted on EPA servers, if at all possible.

The most influential difference between this data viewer and previous ones is that it has been customized, making the project map more flexible and able to be tailored to project specific needs. The previous implementations of other viewers on EPA resources only utilize 'out of the box' capability, and have thus far been limited to turning layers on and off. With the customized Google Maps™ interface map, a true query on the database is used to allow for every possible combination of available search fields. For example, rather than only being able to view all soil data, or all data within an area on a map, this viewer allows for viewing of soil, sediment, and surface water data at several but not all locations on the interface map.

7.2 *Example of Google Maps™ interface map capabilities:*

	Area 1	Area 2
Matrix 1		
Matrix 2		

Using this matrix as an example data set, previous viewers would only allow selection of 1 column or 1 row at a time, giving 4 unique combinations. This viewer would allow for example Matrix 1 in Area 1, Matrix 1 within Area 2, and all of Matrix 1, giving us 3 combinations per row/column for a total of 12 unique combinations. As the number of search fields and options per search field increase, the additional combinations available with this viewer over a layer on/off approach increase exponentially.

8.0 Data Verification

8.1 *Verification SOPs & Checklists:*

Specific step-by-step procedures and or protocols that are used to verify the quality and consistency of the data that is collected and managed in Scribe.

A QAPP will be developed prior to additional data collections. The SAPs will be part of the QAPP, and as such, the inclusion of any new data into the database will have to meet the standards of the QAPP.

8.2 *SQL Verification Queries*

SQL statements that can be run against the table structure(s) and data element(s) identified in the used to verify the quality and completeness of the data that is collected and managed in Scribe will be determined as the data is reviewed.

9.0 Data Analysis & Reporting

9.1 *Reporting Requirements*

The project map site will integrate into the existing workflow by automatically pulling up to date data from Scribe.NET once a day, so no additional steps are required for Scribe data. If an unscheduled update is required, contact site Administrators at (###)-###-####. If the project data displayed needs to be changed or updated, site administrators can log on to an admin page (username = xxxx, password = yyyy) to update existing project data (spatial files), or add new project data to be displayed by uploaded the data in an acceptable format. The acceptable formats include x, y, and z. If the data can't be converted to one of these formats, send it to the site administrator with a detailed description of the data, its spatial details (projection, coordinate fields, etc.), and how the site should be updated to include it.

Note: The site may still be partially in development in the early stages of the project and some data/capabilities may not be included in initial versions.

9.2 *Reporting SOPs & Procedures*

To be determined as the project progresses.

9.3 *SQL Reporting Queries*

To be determined as the project progresses.

9.4 *Data Warehousing*

Data utilized in the actual project map site will be stored on a secure non-EPA server access to which will be controlled by either the OSC and/or RPM. Access will be managed by the Data Manager as per OSC and/or RPM approvals.