

Implementation of a Web Portal for Managing and Sharing Environmental Data

Prepared for:



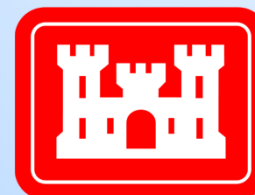
2011 DoD Environmental Monitoring & Data Quality Workshop

Presented by:



Jason Samus

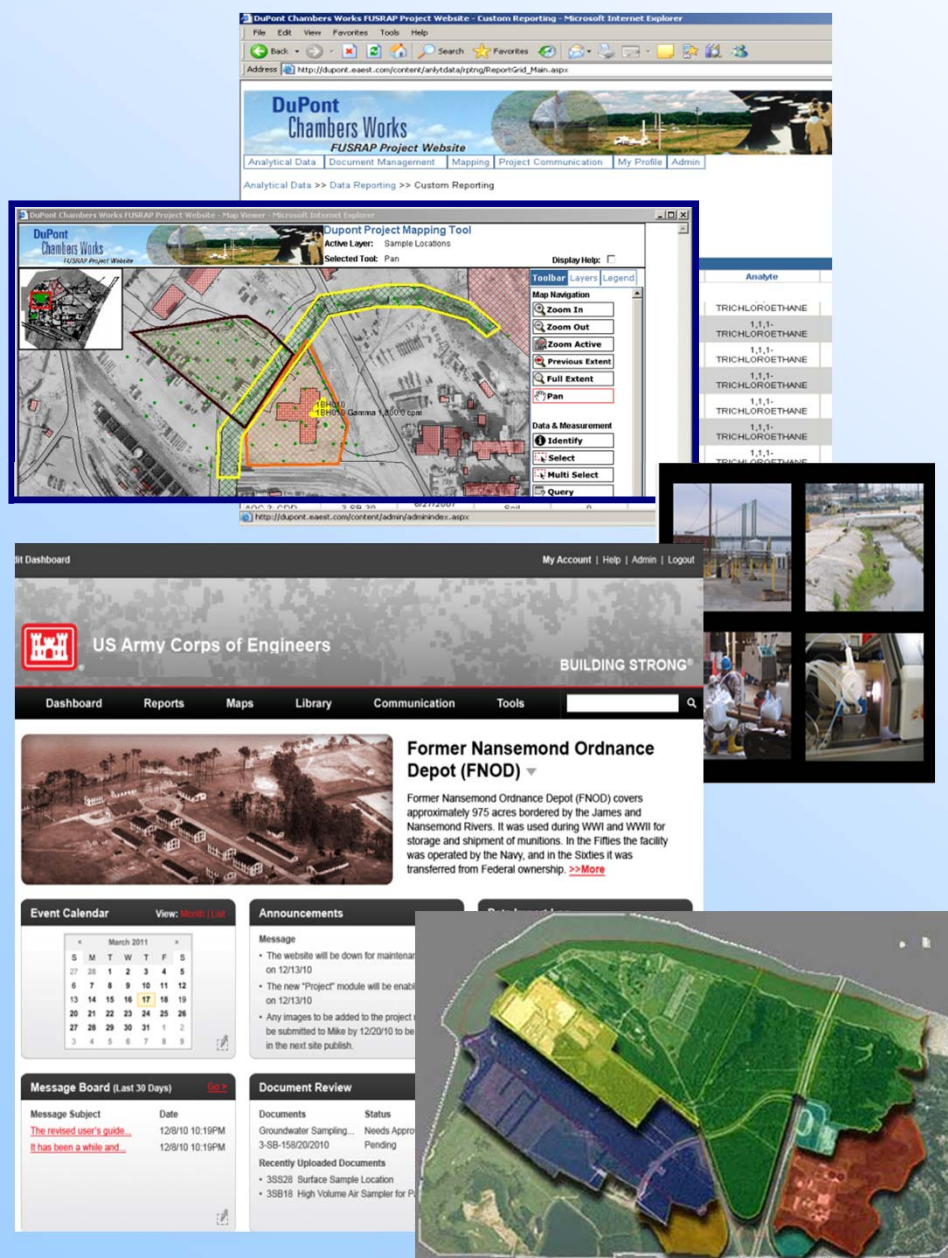
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Baltimore District

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Agenda

- Introduction
- USACE Philadelphia FUSRAP Web Portal
- USACE Baltimore Project Management Portal
- Questions



Introduction

- **Environmental Restoration Programs**
 - Generate a large volume of data to be analyzed
 - Technically and geographically diverse project teams
- **Programs have associated challenges for managing information**
 - Data Collection, Analysis & Reporting
 - Team Communication & Collaboration
- **Technology can help solve these challenges**
 - Centralized Web Portal
 - Discuss 2 Examples



USACE Philadelphia FUSRAP Web Portal

Background

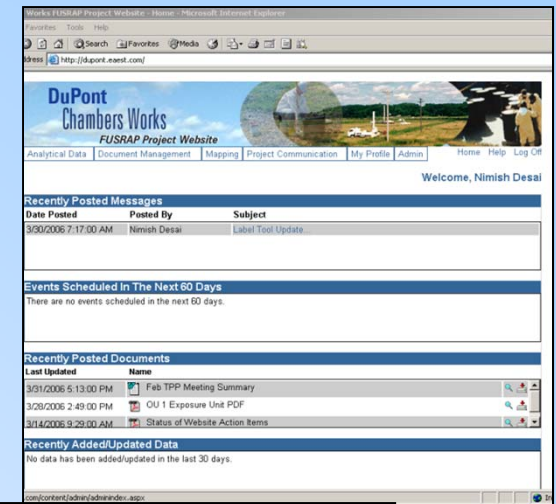
- **DuPont Chambers Works FUSRAP Site**
 - Project Site in New Jersey with ongoing data collection
- **Diverse Project Team**
 - Multi-disciplinary technical team
 - Team members located across the country
 - Unique data analysis needs
 - Coordination of input from team members critical



USACE Philadelphia FUSRAP Web Portal

Web Portal

- Implemented in 2004
- Centralized Project Management Portal
 - Environmental Data Reporting
 - Document Management
 - Mapping
 - Team Communication Tools
- Associated Public Outreach Website
 - Project Background
 - Public Meeting Announcements and Minutes



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USACE Philadelphia FUSRAP Web Portal Environmental Data Reporting

- **Custom Reporting**
 - Standardized Chemical Data
 - User-Defined Query Criteria
- **Data Exporting**
 - Export Data in Multiple Formats
 - Used in External Applications (MS Excel, MS Access)
- **Standard Reports**
 - Quickly Generate Report Ready Chemical Tables

The screenshot displays two web browser windows. The top window shows the 'Custom Reporting' interface with a table of analytical data. The bottom window shows the 'Standard Reports' interface with a table of geochemical parameters for unfiltered groundwater.

Analytical Data Report (Top Window)

Area Of Concern	Location	Sample Date	Matrix	Start Depth	End Depth	Analyte
AUC 2: F Parking	2-SB-10	6/27/2007 12:00:00 AM	Soil	2.00	3.00	1,1,1-TRICHLOROETHANE
AOC 3: CDD	3-MW-13B	8/11/2005 12:00:00 AM	Groundwater			1,1,1-TRICHLOROETHANE
AOC 3: CDD	3-MW-14B	8/11/2005 12:00:00 AM	Groundwater			1,1,1-TRICHLOROETHANE
AOC 3: CDD	3-SB-30	6/27/2007 12:00:00 AM	Groundwater	12.00	13.00	1,1,1-TRICHLOROETHANE
AOC 3: CDD	3-SB-30	6/27/2007 12:00:00 AM	Soil	5.00	6.00	1,1,1-TRICHLOROETHANE
AOC 3: CDD	3-SB-30	6/27/2007 12:00:00 AM	Groundwater	12.00	13.00	1,1,1-TRICHLOROETHANE
AOC 3: CDD	3-SB-30					

Geochemical Parameters of Unfiltered Groundwater (Bottom Window)

Boring	pH	Conductivity (µS/cm)	Temperature (°C)	ORP (mV)	Turbidity (NTU)	Dissolved Oxygen (mg/L)
3-SB-01	8.7	0.95	18.6	219		1.91
3-SB-02	7.6	0.53	21.8	186		2.87
3-SB-03	7.0	0.47	19.7	177		4.24
3-SB-04	7.0	0.87	20.2	166		2.55
3-SB-05	7.3	0.76	21.2	150		3.86
3-SB-06	8.7	1.68	22.4	322		1.19
3-SB-07	7.3	3.65	19.7	219		2.48
3-SB-08	7.1	1.00	21.6	87.4		14.6
3-SB-09	6.6	1.44	21.5	86.7		5.9
3-SB-10	6.9	1.32	22.4	175.8		74.3
3-SB-11	5.3	1.88	20.6	222		77.4
3-SB-12	6.6	1.44	20.8	220		591
3-SB-13	6.4	2.93	19.2	201		99.9
3-SB-14	5.2	0.26	22.0	202		7.8
3-SB-15	4.9	3.34	19.6	193		99.9
3-SB-17	6.7	4.01	23.7	234		99.9
3-SB-18	6.4	2.42	23.0	228		99.9
3-SB-20	7.6	1.20	22.0	172		99.9
3-SB-21	7.6	1.41	26.1	154		99.9
3-SB-25	6.6	4.21	19.9	33		207
3-SB-31	7.7	2.61	12.2	125		25.9



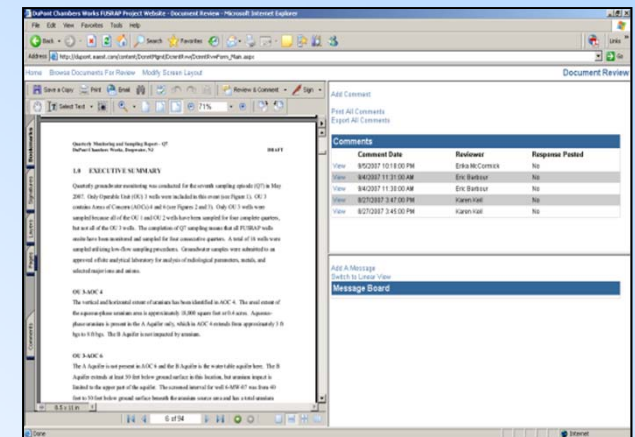
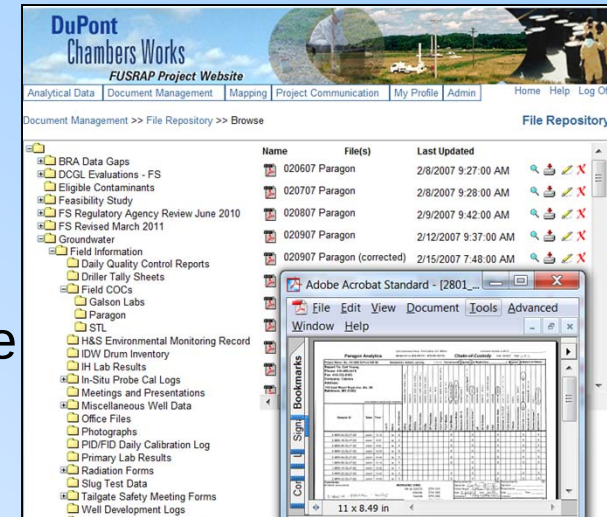
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USACE Philadelphia FUSRAP Web Portal

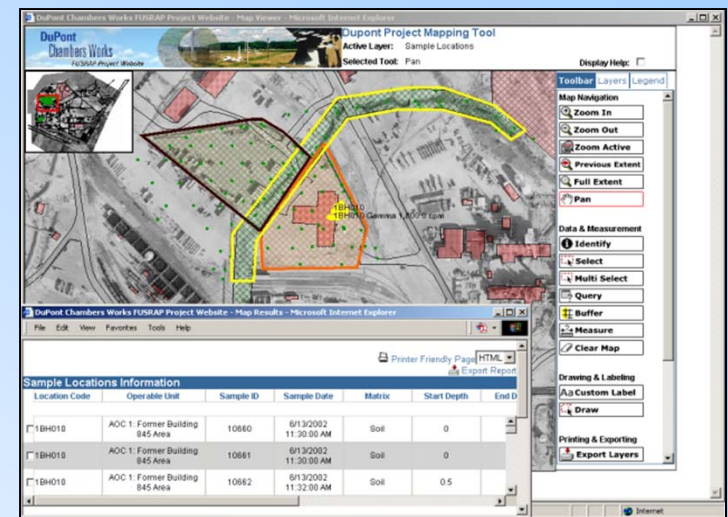
Document Management

- **Central Repository for Project Documentation**
 - Browse by hierarchical folder structure
 - Full text, keyword search
- **Facilitated Document Review**
 - Assign reviewers and track comments
 - Capture all comments and responses in central location



USACE Philadelphia FUSRAP Web Portal Mapping

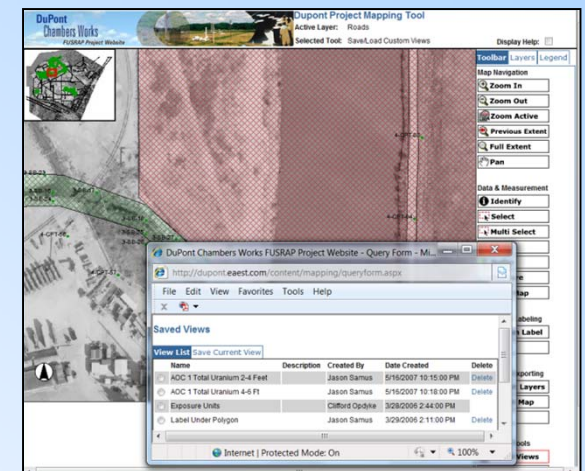
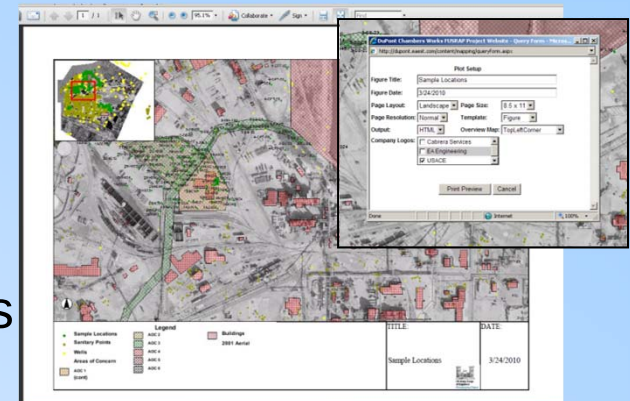
- **Basic Map Generation & Viewing**
 - User-Friendly Interface
 - No GIS Experience
 - Built on ESRI ArcIMS Technology
- **Basic Spatial Analysis**
 - Ability to Query & Display Chemical Data Results
 - Generate Maps Based on User Defined Criteria



USACE Philadelphia FUSRAP Web Portal

Mapping (Cont.)

- **Figure Generation**
 - Generate printer-friendly PDF Figures
 - Multiple layouts and Figure/Paper Sizes
- **Team Collaboration**
 - Save custom maps for sharing with Team Members



USACE Philadelphia FUSRAP Web Portal

Team Communication Tools

- **Team Directory**
 - Listing of All Team Members
- **Message Board**
 - Collaboration among Team Members on complex analysis, project reports and deliverables
- **Calendar of Events**
 - All Project Events, Milestones captured on Project Calendar

The screenshot displays the USACE Philadelphia FUSRAP Web Portal. The top section is the 'Team Directory' table, listing team members with their names, organizations, email addresses, and phone numbers. Below this is the 'Message Board' section, which includes a 'Project Communication' link and a 'View Messages' button. The 'Message Board' itself shows a list of messages, including 'Chem RA Group' and 'Draft Data Summary Report, Phase I Remedial Investigation, OU 3, DuPont Chambers Works FUSRAP Site (Document Review)'. The bottom of the screenshot shows the 'DuPont Chambers Works FUSRAP Project Website' banner and navigation links.

Name	Organization	Email Address	Phone Number
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Valrie Hames	Cabrera Services	valrie.hames@cabreraservices.com	

Message Board

Project Communication >> Message Board >> View Messages

Switch to Linear View

Topic: [All Topics]

Message Board

Chem RA Group Topic Permissions

Subject	Date Posted	Posted By
Test Message	9/26/2005 3:27:00 PM	George Bock
Re-connecting	9/26/2005 11:02:00 AM	Vince Grassi

Document Reviews Topic Permissions

Subject	Date Posted	Posted By
TPP May 09	4/21/2009 1:31:00 PM	Ann Johnson
Draft Feasibility Study for USACE Review	3/17/2009 1:37:00 PM	Ann Johnson
Draft Final RIR Backcheck Comments	3/6/2009 2:19:00 PM	Ann Johnson
Sitewide RIR	2/10/2009 5:38:00 PM	Ann Johnson
Baseline Risk Assessment	8/19/2008 11:47:00 AM	Ann Johnson
Draft BRA Appendices	7/30/2008 2:50:00 PM	Ann Johnson
Sitewide RI review comments	7/10/2008 2:55:00 PM	Ann Johnson
Sitewide RI review period extended	6/10/2008 11:22:00 AM	Ann Johnson
RI Review Package Delivery	3/25/2008 10:40:00 AM	Ann Johnson
Sitewide Review Schedule - Revision	3/18/2008 10:47:00 AM	Ann Johnson
OU3 Soils Investigation Figures	3/23/2007 10:18:00 AM	Glen Stevens
Sitewide RI review schedule - Revised	2/20/2007 3:23:00 PM	Ann Johnson

Draft Data Summary Report, Phase I Remedial Investigation, OU 3, DuPont Chambers Works FUSRAP Site (Document Review) Topic Permissions

Subject	Date Posted	Posted By
	3/12/2007 10:13:00 AM	Glen Stevens



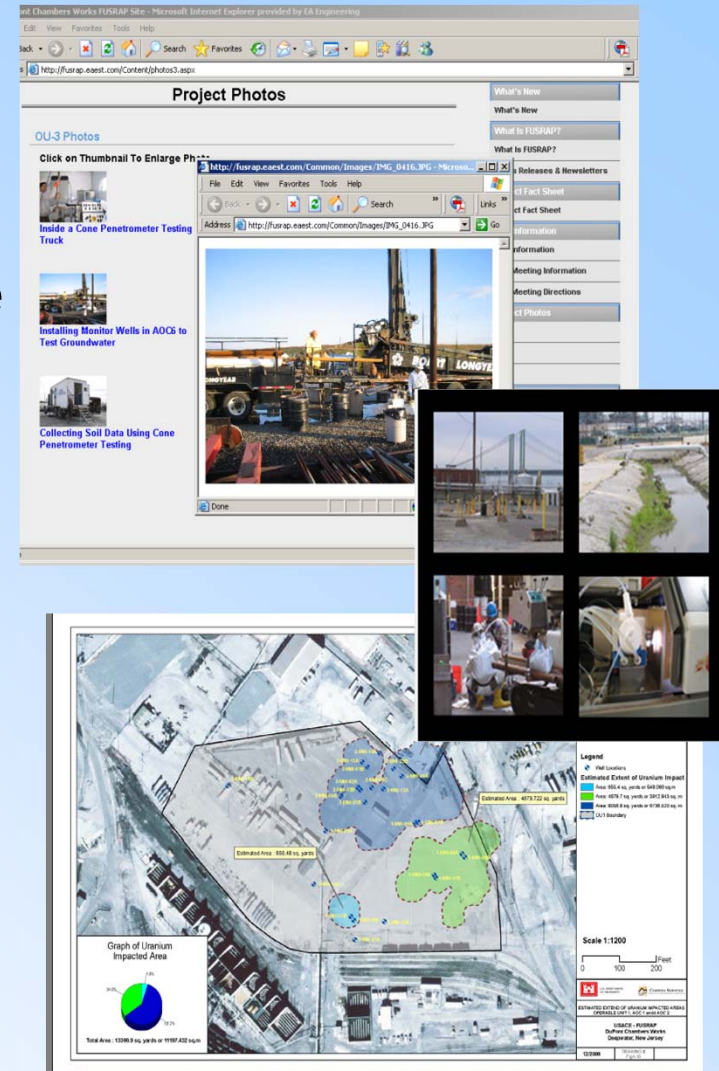
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USACE Philadelphia FUSRAP Web Portal

Public Site

- **Public Information Portal**
 - Provides information intended for the general public
 - Project Background
 - Meeting Announcements & Minutes
 - Project Status
 - Project Photos



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USACE Baltimore Project Management Portal

Background

● Two FUDS Program Sites

■ Former Nantuxent Ordnance Depot NPL Site

- 20 years of historical analytical data in varying formats (hard copy, pdf, Word, Excel and Access).
- Approximately 320,000 rows of analytical data
- 18 GB of GIS data consisting of base map, historical aerial imagery, digital elevation model data and contours.
- Approximately 800 individual historical files, as well as, 100 working files in various formats (Word, Excel, PDF).



■ NASA Wallops Flight Facility

- 18 years of historical analytical data in varying formats (hard copy, pdf, Word, Excel and Access)
- Approximately 200,000 rows of analytical data
- 12 GB of GIS data consisting of base map, historical aerial imagery, digital elevation model data and contours.
- Approximately 400 individual historical files, as well as, 80 working files in various formats (Word, Excel, PDF).



USACE Baltimore Project Management Portal

Background

- **Components**

- Analytical Data Repository
 - Central database for all chemical, geological, and geophysical data
- File Repository
 - Documents, files and data of varying formats
- Mapping
 - Web-based GIS mapping for displaying environmental compliance information
- Document Review
 - Web-based document review to capture and track comments on reports and documents



USACE Baltimore Project Management Portal

Background

- **Components (cont.)**
 - **Project Communication**
 - Project team coordination and communication tools including a Message Board, Team Directory, Calendar of Events
 - **Home Page Dashboard**
 - Automatically updated to display the status of data and recent updates to information.
 - **Admin Record File**
 - **Public Outreach Website**
 - Public access to specific files and documents stored in the File Repository



USACE Baltimore Project Management Portal

Background

- **Components (cont.)**
 - Automated Email Notifications
 - Automated alerts and reminders sent to system users via email
 - Online Help
 - Easy to use online help including detailed instructions on the use of each module
 - System Administration
 - Ability to administer users, permissions and configurations



USACE Baltimore Project Management Portal

Background

- **Additional Standards**
 - Standardized Data Structure – SEDD 5.2 for analytical data
 - ADR.NET - analytical data
 - SDSFIE 3.0 - GIS data
 - GeologyEDD and Geophysical EDD – field data
 - State and EPA environmental standards



USACE Baltimore Project Management Portal

Background

- **Additional Features**
 - GMS - groundwater modeling
 - gINT - boring logs and well construction diagrams
 - Oasis Montaj Viewer - geophysical data
- **Integration with existing USACE systems**
 - FUDS Record Management System
 - CorpsMap



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Web Portal

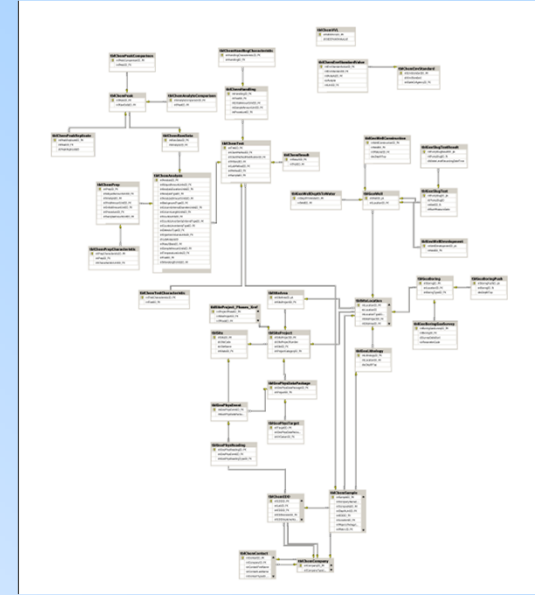
- Similar needs to FUSRAP project team
 - Central repository for data & documents
- Building on FUSRAP Portal Functionality
 - Document Repository, Communication Tools
- Additional, Unique Needs
 - Support multiple sites and projects
 - Robust data visualization and analysis
 - Expanded environmental data QA/QC and reporting
 - Integration with external tools
 - Expanded mapping capabilities



USACE Baltimore Project Management Portal

Environmental Data QA/QC

- **Standardized Data Structure**
 - Analytical Data - SEDD 5.2, Stage 2a/2b
 - Geologic and Geophysical data
- **EDD Import**
 - SEDD Stage 2a/2b, ADR.NET, GeoEDD
 - Perform standard checks – format, data types, etc.
- **Data QA/QC**
 - ADR.NET for Analytical Data
 - Custom for Geologic Data



	A	B	C	D	E
	Field Name	Format	Description	Reference Table	Required (Y/N)
1	SiteCode	Text	Unique code identifying the site. Example: WFF, FNO0		Y
2	ProjectCode	Text	Unique code identifying the project. Example: SA 01		Y
3	PhaseCode	Limited List	Project phase. Example: RI/FS	refLocationType	Y
4	AreaCode	Text	Unique code identifying the area within a site such as a building #, an area #, or MRS #. Example: MRS1		Y
5	LocationCode	Text	Location identifier assigned to a location. Example: MW-1, SB-1		Y
6	LocationName	Text	Full and/or descriptive name of location. Example: Monitoring Well #1, Soil Boring #1		Y
7	LocationType	Limited List	Describes the type of sampling that will occur at the location (ie monitoring well, soil boring). See valid values table.	refLocationType	
8	SurveyorName	Text	Name of the surveyor		
9	SurveyDateStart	Date	Date the site survey was completed or if completed over a range of dates, this is the start date (YYYY-MM-DDTh:mm:ss.STZD)		
10	SurveyDateEnd	Date	Date survey was completed if started over a range of dates (YYYY-MM-DDTh:mm:ss.STZD)		
11	SurveyMethodHorizontal	Limited List	Equipment/method used for completing the horizontal survey. See valid values table. Additional information should be included in the Remark field.	refSurveyMethod	
12	SurveyMethodElevation	Limited List	Equipment/method used for completing the elevation survey. See valid values table. Additional information should be included in the Remark field.	refSurveyMethod	
13	Latitude	Numeric	Latitude of sampling location in decimal degrees (dd.xxxxx)		
14	Longitude	Numeric	Longitude of sampling location in decimal degrees. Must be negative for western hemisphere (-ddd.xxxxx)		
15	AlternateXCoordinate	Numeric	X state plane or UTM NAD83 coordinate		
16	AlternateYCoordinate	Numeric	Y state plane or UTM NAD83 coordinate		
17	AlternateDatumCode	Text	List State Plane or UTM utilized		
18	AlternateDatumCode	Limited List	Use codes in alternate datum valid value table	refDatumCode	
19	SurfaceElevation	Numeric	Elevation of the ground surface, or if location is for surface water samples, water surface elevation		
20	TopOfCasingElevation	Numeric	Elevation of the top of casing for the boring		
21	ElevationUnit	Limited List	Unit of measurement for elevations. Units must be in feet	refUnit	
22	HorizontalAccuracyValue	Numeric	Accuracy range (+/-) of the latitude and longitude. Only the least accurate measurement should be reported, regardless if it is for latitude or longitude.		
23	HorizontalAccuracyUnit	Limited List	Unit of measurement for horizontal accuracy. Units must be in feet		



USACE Baltimore Project Management Portal

Environmental Data Reporting

- **Custom & Standard Reporting**
 - Similar custom reporting for Analytical Data
 - Incorporate custom reporting for Geologic & Geophysical
 - Include a series of standard reports
- **Comparison to Environmental Standards**
 - Standards for 13 states and EPA
- **Trending & Graphing**
 - Ability to generate user-defined charts and graphs

Sample ID	Depth Interval	Soil	Specific Gravity	Moisture Content	Liquid Limit	Plastic Limit	Atterberg Classification	Percent Sand & Clay	Percent Silt & Clay
3.00-01.0-0.04	0.00 - 0.00	CL	2.65	30.1	35.2	19.3	CL*	99.1	99.1
3.00-07.0-0.03	0.00 - 0.00	CL	2.72	34.9	30.9	17.3	CL	63.0	17.3
3.00-14.0-0.01	0.00 - 0.00	CL	2.71	30.2	37.8	19.9	CL	92.4	19.9
3.00-16.0-0.01	0.00 - 0.00	CL	2.76	16.3	27.6	14.2	CL	51.7	14.2
5.00-05.0-0.03	0.00 - 0.00	CL	2.68	16.1	18.0	10.0	CL	24.6	10.0
5.00-10.0-0.04	0.00 - 0.00	CL	2.64	17.3	28.9	18.7	CL	43.0	18.7
5.00-10.0-0.04	0.00 - 0.00	CL	2.64	17.3	28.9	18.7	CL	43.0	18.7



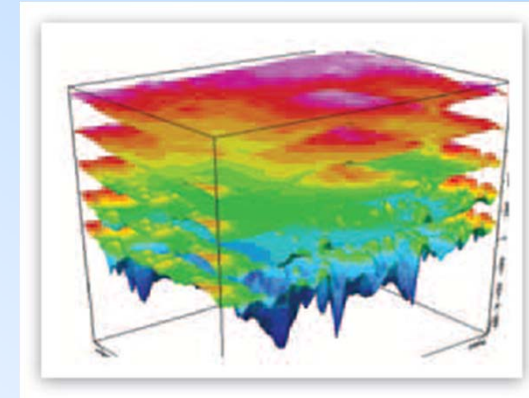
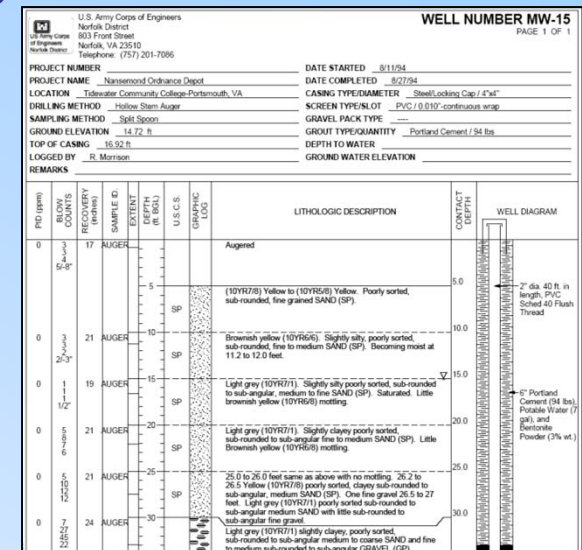
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USACE Baltimore Project Management Portal

Integration With External Tools

- **Provide Extended Functionality**
 - Seamless integration with the Portal
- **GMS**
 - 2D, 3D, flow modeling and visualization
- **gINT**
 - Bore Logs, Well Construction Diagrams
- **Montaj Viewer**
 - Additional mapping, analysis and visualization functionality



USACE Baltimore Project Management Portal

Expanded Mapping Capabilities

- **ArcGIS Server Platform**
 - Industry Standard GIS Platform
 - Robust Spatial Visualization & Analysis
- **Remote Data Editing**
 - Ability to utilize sophisticated, desktop based GIS software to manage & analyze data
- **Simplified User Interface**
 - User-friendly web interface designed for non-GIS users



USACE Baltimore Project Management Portal

Integrated Public Facing Website

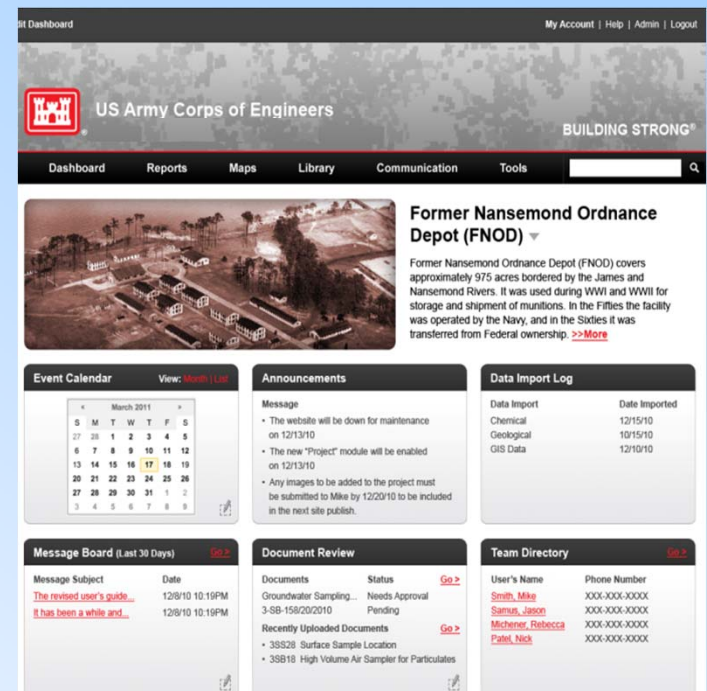
- **Standardized Website Implementation**
 - Site Specific Website(s)
 - Dynamically generated through Web Portal
 - Site/Project Background, Documents, Photos, etc.
- **Data Automatically Available**
 - Linked to portal data and documents “flagged” for public viewing
 - Easy/Low maintenance; Dynamic content automatically included/removed



USACE Baltimore Project Management Portal

Other Features

- **Dashboard**
 - Site specific dashboard
 - Recent & important data summarized for quick access
- **Future Integration with Existing USACE Systems**
 - Designed for future integration to streamline data maintenance
 - FUDS Record Management System, CorpsMap



Summary

- **Environmental Restoration Programs**
 - Generate a large volume of data to be analyzed
 - Technically and geographically diverse project teams
- **Programs have associated challenges for managing information**
 - Data Collection, Analysis & Reporting
 - Team Communication & Collaboration
- **Technology can help solve these challenges**
 - Centralized Web Portal



Questions ?

