

Submitting soil samples to the Kellogg Soil Survey Laboratory

Part 2, documentation, analysis selection, and
shipping

Submitting soil samples to the Kellogg Soil Survey Laboratory (part 2, documentation and shipping)

- Sample submission is made easier by:
 - 1. Correct sampling techniques – Part 1 Webinar, March 3.
 - 2. Complete and correct documentation
 - Sample submission spreadsheets
 - NASIS population and maintenance
 - 3. Correct packaging and shipping

Download the most up-to-date version of the sample submission documents.

- http://www.nrcs.usda.gov/wps/PA_NRCSConsumption/download?cid=nracs142p2_052597&ext=zip

- Alternatively:

Navigate to NRCS home page and select 'Soils' from the 'Topics' menu:

The screenshot shows the NRCS website interface. At the top, the USDA logo and 'Natural Resources Conservation Service' are displayed, along with navigation links for 'About NRCS', 'Careers', 'National Centers', and 'State Websites'. A search bar is located on the right. Below the header, a navigation menu includes 'Topics', 'Programs', 'Newsroom', and 'Contact Us'. The 'Topics' dropdown menu is open, listing various categories: Technical Resources, Land Use, Soils, Water, Air, Plants & Animals, Energy, Climate Change, People, and Conservation Client Gateway. A yellow arrow points to the 'Soils' option. Below the menu, a large banner features the text 'Improving the Quality of America's Rivers and Streams' over a landscape image. To the right, a 'Popular Topics' section lists 'Financial Assistance', 'Technical Assistance', 'Field Office Technical Guide', 'Soils', and 'Plants & Animals'. Social media icons for Facebook, Twitter, YouTube, and Flickr are visible, along with an email sign-up field. The bottom of the page is divided into sections: 'In the News' with a list of recent updates, 'Latest Blogs', 'Top Views This Week' with a list of popular content, and 'Get Started with NRCS' with a '5' icon. A '2014 Farm Bill' section is also present.

Select 'Technical References' from 'Topics' dropdown menu on the 'Soils' page.

The screenshot shows the NRCS Soils website interface. At the top, the USDA Natural Resources Conservation Service logo is visible, along with navigation links for 'About Us', 'Soil Survey Releases', 'National Centers', and 'State Websites'. Below the logo, the text 'United States Department of Agriculture' is displayed. A main navigation bar includes 'Topics', 'Soil Survey', 'Soil Health', and 'Contact Us'. The 'Topics' dropdown menu is open, showing a list of options: 'Soil Use', 'Soil Research and Laboratory', 'Soil Education', 'Technical References', and 'International Year of Soils'. A yellow arrow points to the 'Technical References' option. To the right of the dropdown, there is a search bar and links for 'Browse By Audience', 'A-Z Index', and 'Help'. Below the navigation bar, a large banner features a map of Nebraska with red and yellow areas, labeled 'Nebraska Sand Hills' and 'Central Nebraska Loess Hills'. The banner text reads 'FY2016 gSSURGO Release'. To the right of the banner, a 'Popular Topics' section lists: 'Nat'l Cooperative Soil Survey', 'Soil Surveys by State', 'Soil Education', 'Soil Classification', and 'Soil Research and Laboratory'. Below this, there are social media icons for Facebook, Twitter, YouTube, and Flickr, along with a 'Sign up for email updates' field. The bottom of the page features a 'Soil Survey Releases' section with a list of survey dates: February, January, December, November, and October. To the right, a 'Helping People Understand Soils' section lists resources like 'Web Soil Survey', 'Official Soil Series Descriptions (OSD)', 'Soil Data Access', 'Soil Data Viewer', 'Soil Lab Data', and 'SoilWeb: An Online Soil Survey Browser'. Further right, there are sections for 'Video -- Water Movement in Soil', 'Ecological Site Descriptions and Ecological Site Inventory', and 'Dynamic Soil'. The Windows taskbar at the bottom shows the date as 3/1/2016 and the time as 11:57 AM.

Quick Links

- [National Soil Survey Handbook](#)
- [Soil Survey Manual](#)
- [Soil Taxonomy](#)
- [Keys to Soil Taxonomy](#)
- [Land Resource Regions and Major Land Resource Areas of the U.S.](#)
- [Field Book for Describing and Sampling Soils](#)
- [Field Indicators of Hydric Soils](#)
- [Soil Survey Laboratory Methods Manual](#)
- [Soil Survey Laboratory Information Manual](#)
- [NASIS](#)

Technical References

 [Sign up for E-mail updates on Technical References](#)

Policy and Procedure



[Technical Soil Services Handbook](#) - operational and procedural policy and guidance for technical soil services within NRCS.

[National Soil Survey Handbook](#) - policy, definitions, and procedures for conducting soil survey.

[Soil Survey Manual](#) - major principles and practices for soil surveys. — [Updates to the Soil Survey Manual](#)

[Soil Change Guide - Procedures for Soil Survey and Resource Inventory](#) - designed for soil survey, vegetation, and ecological site or unit inventory work in order to help soil scientists and other inventory specialists collect interpretable data about soil change.

[Land-Capability Classification \(Ag Handbook 210; 1961\)](#) (PDF; 782 KB) - Since soil surveys are based on all of the characteristics of soils that influence their use and management, interpretations are needed for each of the many uses. Among these interpretations the Land Capability Classification is one of the most important. It groups soils into capability units, subclasses, and classes. This grouping serves as an introduction of the soil map to farmers, other land users, land use planners, people in agribusiness, elected officials and others. The grouping explains the limitations and hazards for a specific agricultural use.

[Technical Notes](#) - specific technical subjects for soil scientists.

Scroll down to 'Laboratory Methods and Information' on 'Technical References' page and click on 'Soil Sample Submission Worksheets'.

Technical References | NRC...

> Material Safety Data Sheets (MSDS) and recommended chemical disposal procedure (10-23-09; PDF; 3.2 MB)

Laboratory Methods and Information

Lab Methods Manual - soil laboratory methodology and reference for the laboratory analyst.

Soil Survey Laboratory Information Manual - Companion reference to the *Laboratory Methods Manual*, SSIR No. 42. Sampling methodology, descriptions of KSSL data sheets, and other information to help users of lab data.

Testing Methods for Phosphorus and Organic Matter

Soil Sample Submission Protocol for the KSSL (9-25-15; PDF; 1.61 MB) - Documentation and worksheets (below) necessary for KSSL sample submission.

Soil Sample Submission Worksheets (6-17-15; ZIP; 292 KB)

Geomorphic Description System

These documents provide a descriptive method and a technical guide for applying and understanding geomorphic and geologic concepts and terms for soil inventory in the USA National Cooperative Soil Survey (NCSS) Program.

Geomorphic Description System, version 4.2 (PDF; 2.5 MB)

Glossary of Landform and Geologic Terms (Part 629 of the National Soil Survey Handbook) (DOC; 1.1 MB)

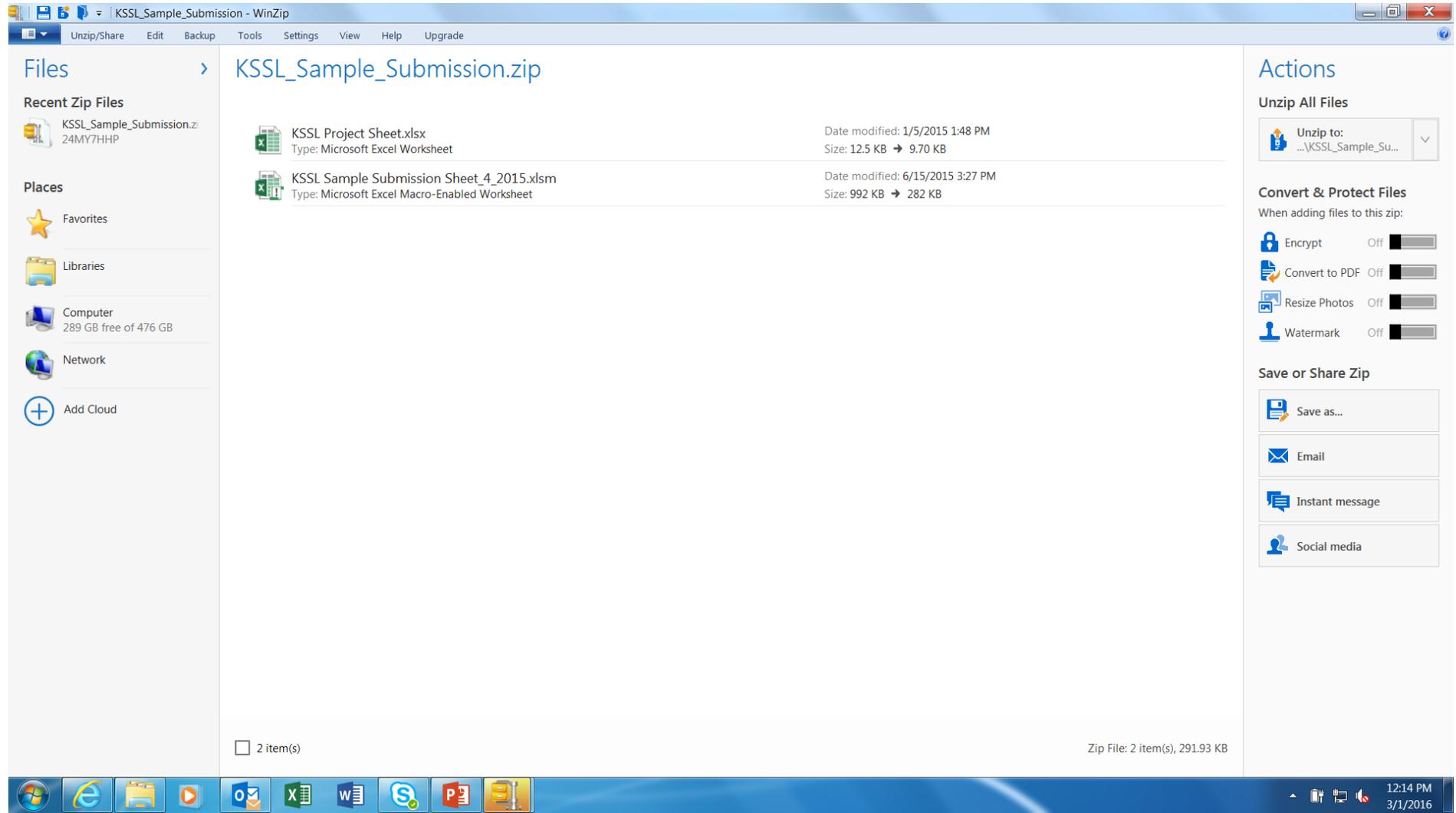
Installing Monitoring Wells in Soils

This document provides general guidance on how to install and use piezometers and water-table wells to investigate soil water regimes under conditions commonly encountered in Soil Survey and hydrogeology studies.

Installing Monitoring Wells in Soils, version 1.0 (PDF; 1.9 MB)

12:08 PM
3/1/2016

Download zip file containing spreadsheets.



Sample Submission Sheet.xlsm

- Two parts
 - Pedon Field Sheet
 - Requests for Analysis

SECURITY WARNING Some active content has been disabled. Click for more details. [Enable Content](#)

KSSL Pedon Field Sheet																		
Soil Name ==>			User Pedon ID ==>				Sampled Date ==>											
Tax Class			Datum ==>				Lat ==>		Long ==>									
Ctrl Sect Top >			Ctrl Sect Bot >		MLRA Code >		SSA Code ==>		NASIS Pedon Record ID ==>									
Field Observations					Quantity of Samples				Volume	Weight (lb or kg)		Volume % (estimated)						
Field #	Horizon Depth		Hzn #	Horizon Desig	Field Texture	Number of Bulk Sample Bags	Number of Bulk Density clods (3)	Number of Natural Fabric Clods (2)	Number of Other samples e.g. core, compliant cavity	Bulk density core or compliant cavity cm ³	Weight (lb or kg)		Fine gravel 2-5mm	Medium gravel 5-20mm	Channers 2-150mm (0.1-6 in)	Flagstones 150-380mm (6-15.5 in)	Stones 380-600mm (15.5-25 in)	Boulders >600mm (>25 in)
	Top (cm)	Bottom (cm)									Co gravel 20-76mm (3/4-3 in)	Cobbles 76-250mm (3-10in)			Stones 250-600mm (10-25 in)	Boulders >600mm (>25 in)		
	0		1															
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			14															
			15															
			16															
Reason For Sampling:																		

SECURITY WARNING Some active content has been disabled. Click for more details. [Enable Content](#)

	A	B	C	D	E	F	G	H	I
1									
2	Datum:	The preferred Datum is WGS84. If it is not possible to collect the data in WGS84 please note							
3	SSA Code:	The Soil Survey code in the form County FIPS:SSA number							
4	Field #	This a sequential number, unique within this sampling project. Label tags, bulk bags, and clod bags with this number in addition to the standard label information.							
5									
6	# of Bulk Sample bags	Some analysis require a certain weight of < 2mm soil material. For low bulk density layers or layers with a lot of rock fragments it may be necessary to send more than one bulk sample bag.							
7									
8	Vol est 2-5	Field estimate of the 2-5 mm fraction to be included in the horizon/layer description pending laboratory results							
9									
10	Vol est 5-20	Field estimate of the 5-20 mm fraction to be included in the horizon/layer description pending laboratory results							
11									
12	< 20 mm (<3/4 in) less tare	Used to convert the 20 mm – 75 mm to a weight percent on the < 75 mm base. Water content is determined in the laboratory so seal the bag well.							
13									
14	20-75mm (3/4-3 in) less tare	Weight of the 20-75 mm fraction used to convert to a weight percent on a < 75 mm base.							
15									
16	20-75mm (3/4-3 in)	Estimate for the 20-75mm (coarse gravel). Note: The 2-20mm fraction (fine and medium gravel) is measured by the KSSL from the bulk bag of soil.							
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37									

Mouse over shaded cells for instructions

KSSL Pedon Field Sheet

1	Soil Name ==> Holdrege																		User Pedon ID ==> S2016NE109001			Sampled Date ==> 2/29/2016		
2	Tax Class	Fine-silty, mixed, superactive, mesic, typic, Argiustolls								Datum ==>		WGS 84		Lat ==> 51d 30' 12.27" n		Long ==> 0d 7' 39.33"w								
3		Ctrl Sect Top > 30		Ctrl Sect Bot > 61		MLRA Code > 102A		SSA Code ==> NE109		NASIS Pedon Record ID ==> 2690343														
4	Field Observations					Quantity of Samples				Volume		Weight (lb or kg)		Volume % (estimated)										
5	Field #	Horizon Depth		Hzn #	Horizon Desig	Field Texture	Number of Bulk Sample Bags	Number of Bulk Density clods (3)	Number of Natural Fabric Clods (2)	Number of Other samples e.g. core, compliant cavity etc.	Bulk density core or compliant cavity cm³	< 20 mm (<3/4 in) less tare	20-76mm (3/4-3 in) less tare	Fine gravel 2-5mm	Medium gravel 5-20mm	Channers 2-150mm (0.16 in)	Flagstones 150-380mm (6-15.5 in)	Stones 380-600mm (15.5-25 in)	Boulders >600mm (>25 in)					
6		Top (cm)	Bottom (cm)													Co gravel 20-76mm (3/4 3 in)	Cobbles 76-250mm (3-10in)	Stones 250-600mm (10-25 in)	Boulders >600mm (>25 in)					
7	1	0	15	1	Ap	SiL	1			1	635													
8	2	15	30	2	A	SiL	1	3																
9	3	30	38	3	Bt1	SiCL	1	3																
10	4	38	61	4	Bt2	SiCL	1	3																
11	5	61	203	5	BC	SiL	1	3																
12	6	203		6	C	SiL	1	3				46.7kg	3.5kg	6	7	14	3	0	0					
13				7																				
14				8																				
15				9																				
16				10																				
17				11																				
18				12																				
19				13																				
20				14																				



FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW ACROBAT

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
11	4	38	61	4	Bt2	SiCL		1	3									
12	5	61	203	5	BC	SiL		1	3									
13	6	203		6	C	SiL		1	3				46.7kg	3.5kg	6	7	14	3
14				7														
15				8														
16				9														
17				10														
18				11														
19				12														
20				13														
21				14														
22				15														
23				16														

24 Reason For Sampling: representative pedon

25

26 Notes/Local Pedon ID:

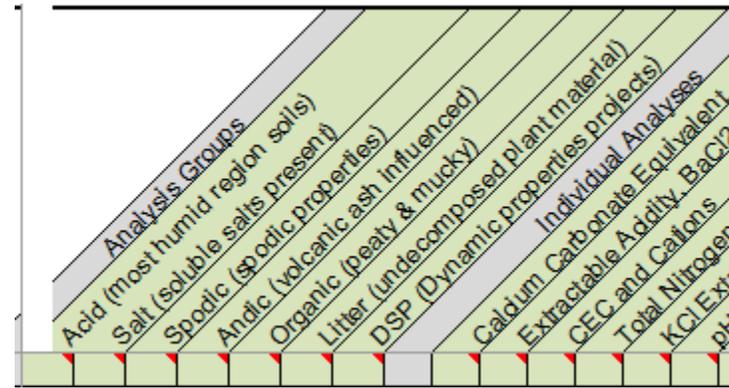
27

28

29

Analytical Requests

Analysis Groups



Entering Analysis Requests

- Check an analysis group (except grab samples)
- Check additional analyses, if needed
- Type (in rightmost column) requests for analyses not on the spreadsheet

Requests vs. Resources

- Total requests typically exceed KSSL analytical capacity
- Technician FTEs currently are the limit on analytical throughput
- The next few slides cover situations where we may ask you to consider adjusting the type/quantity of your analytical requests

Note: We sometimes add a few analytical requests to those sent in, to facilitate use of the data for other purposes (ex. building models) later.

Don't Request Analyses Inappropriate for the Material

Examples

- PSDA on O horizons
- Clay mineralogy on O and A horizons
- Clay mineralogy if soil is <1% clay
- Grain counts (optical) on O horizons
- Clod Db on horizons coarser than sandy loam
- Water content at tensions <2 bars on sieved sample if texture is finer than loamy sand
- New Zealand P Retention on O horizons

Don't Request Analyses Inappropriate for the Material (Cont.)

Examples

- Fiber on other than O horizons
- Glass counts on other than volcanic influenced

Note: Running peaty, mucky, or similar high-organic materials requires a soil:solution ratio change for several chemistry analyses – results may not be strictly comparable.

Phosphorous

- Olsen P is only appropriate for calcareous systems
- Mehlich P is most appropriate for acid systems, but is of limited utility in calcareous systems
- Bray P – if you have prior Bray data and want to continue
- P analysis typically requested on upper 50cm of a pedon

Some Analyses are Only Needed for “Selected” Horizons

Examples

- Clay mineralogy (partial control section; parent material change)
- Sand/silt mineralogy (optical, grain counts) (partial control section; parent material change)
- Grain counts on more than one size fraction are strongly discouraged

Note: Glass tends to be highest in coarse silt

- Fine clay – Bt and overlying horizon

“Only Occasionally Useful” Analyses

- Field water content
- X-ray of powdered whole soil
- Thin section
- Moist PSDA

Analyses Run Depending on Other Analytical Results

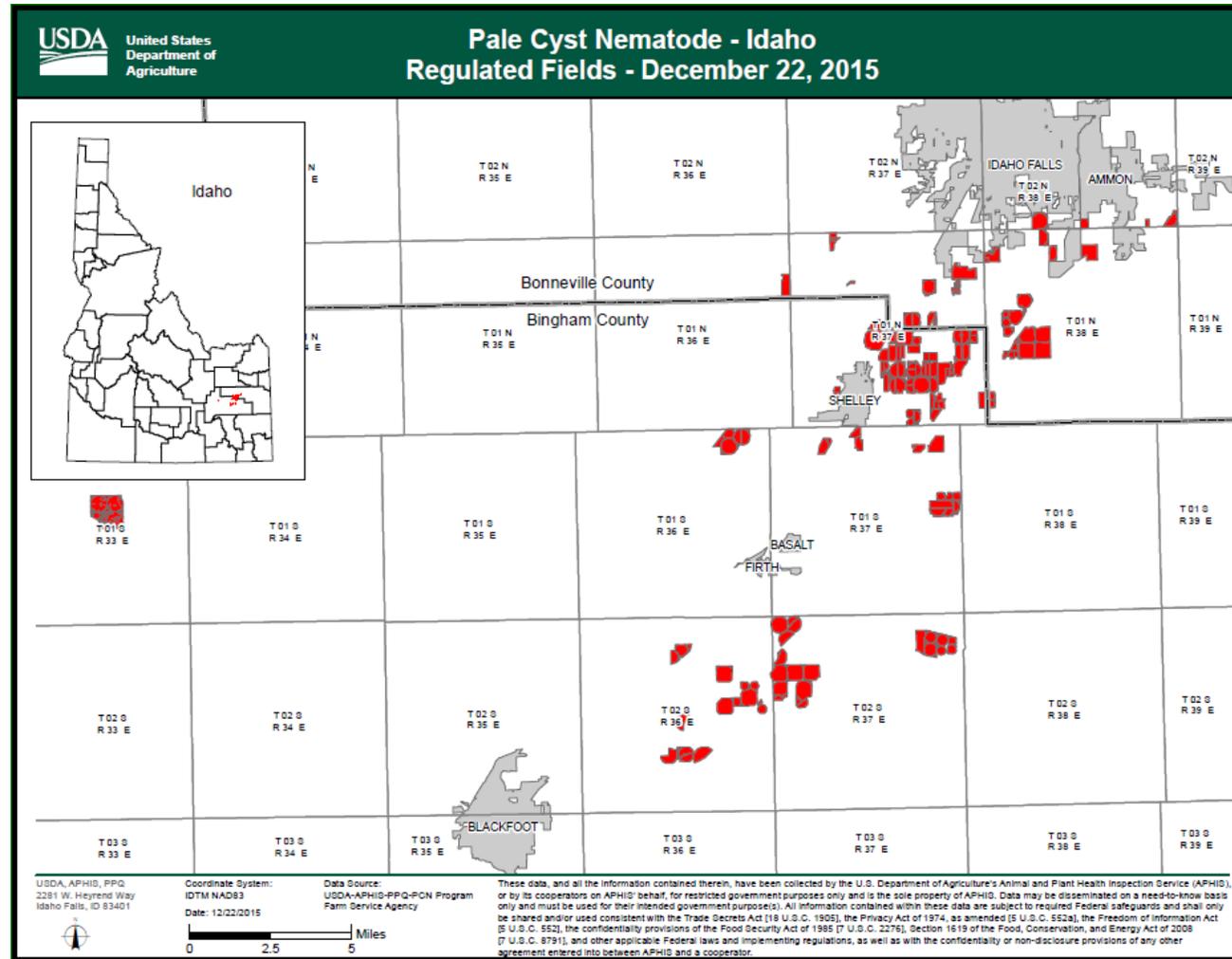
- Carbonates (effervescence, pH)
- KCl Al, Mn (CaCl₂ pH)
- Saturated paste (EC (predict))
- Carbonate clay (effervescence)
- Extractable acidity (effervescence)
- Gypsum (EC (predict))

APHIS CONSIDERATIONS WHEN SHIPPING SAMPLES INTO THE KSSL

- *Soil Quarantines by APHIS are in effect**
- *Some we may receive in the KSSL**
- *Some we may not receive**
- *Check Sample Submission Document on
Soils Website for latest information
or**
- *Rich Ferguson or Larry Arnold at the NSSC**

Pale Cyst Nematode (7 CFR 301.86)*

http://www.aphis.usda.gov/wps/portal/aphis/ourfocus/importexport?1dmy&urile=wcm%3apath%3a%2Faphis_content_library%2Fsa_our_focus%2Fsa_plant_health%2Fsa_domestic_pests_and_diseases%2Fsa_pests_and_diseases%2Fsa_nematode%2Fsa_potato%2Fct_pcn-maps



*Soil compliance agreement **does not** authorize movement from quarantined area.

Quarantine areas change over time. Always refer to the indicated web site to determine the current status.

Fruit Fly (7 CFR 301.32)* [see maps on the following slides for details]

http://www.aphis.usda.gov/wps/portal/aphis/resources/permits?1dmy&urile=wcm%3apath%3a%2Faphis_content_library%2Fsa_our_focus%2Fsa_plant_health%2Fsa_domestic_pests_and_diseases%2Fsa_pests_and_diseases%2Fsa_insects%2Fsa_fruit_flies%2Fct_quarantine

Plant Health	<h3>Fruit Flies Quarantine Information</h3> <p>Last Modified: Feb 10, 2016</p> <hr/> <h4>Mexican Fruit Fly</h4> <p><u>Quarantine Areas Description(s)</u></p> <ul style="list-style-type: none">• Texas<ul style="list-style-type: none">◦ Brownsville, Cameron County◦ Harlingen, Cameron County <p><u>Quarantine Areas Map(s)</u></p> <ul style="list-style-type: none">• Texas<ul style="list-style-type: none">◦ Brownsville, Cameron County◦ Harlingen, Cameron County <h4>Oriental Fruit Fly</h4> <p><u>Quarantine Areas Description(s)</u></p> <ul style="list-style-type: none">• California<ul style="list-style-type: none">◦ Inglewood, Los Angeles County• Florida<ul style="list-style-type: none">◦ Redland, Dade County <p><u>Quarantine Areas Map(s)</u></p> <ul style="list-style-type: none">• California<ul style="list-style-type: none">◦ Inglewood, Los Angeles County• Florida<ul style="list-style-type: none">◦ Redland, Dade County
Program Overview	
Pests and Diseases	
Import into the U.S.	
Export from the U.S.	
International	
Manuals	

*Soil compliance agreement **does not** authorize movement from quarantined area.

Quarantine areas change over time. Always refer to the indicated web site to determine the current status.

**PROPER LABELING PACKAGING AND SHIPPING
ARE CRITICAL TO YOUR SUCCESS AND OUR
ABILITY TO FULFILL YOUR EXPECTATIONS**

- *Follow Sample Submission Protocol for the KSSL**
- *We will provide you with what you need except tape and markers**
- *All locations need to follow these directions regardless of regulated status**
- *We will arrange for shipping via UPS**
- *Contact the KSSL for questions**



Soil Pawnee
Horizon Ap1
Pedon S2014 NE
019001-1
Depth 0 to 14
Field # ①

S2014 NE
019001-1
Ap1
0-14



4A63
Ryde
14716D
Field # 229.683

14716D

4A63

14716D

8

Field # 9
14716D

14716D

14716D

18" x 18" x 12"
box







7

229.760



9

229.762



10

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Di

39cm →

0e1'

13

229.766



15

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16

229.768



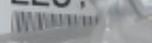
0e2

160-192cm

END

19

229.770



21

229.774



~~22~~





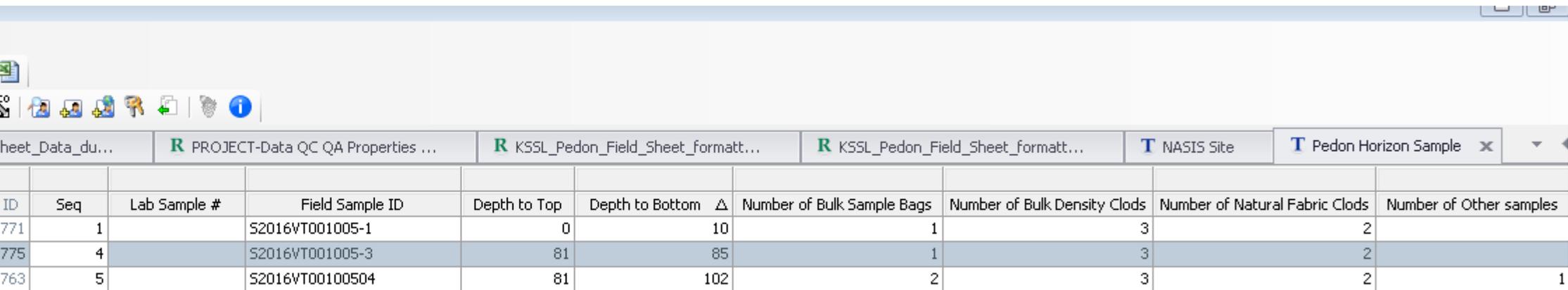


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Using NASIS in the Submission of Samples to the KSSL Laboratory

Henry Ferguson, soil scientist NSSC

New columns have been added to the Pedon Horizon Sample table



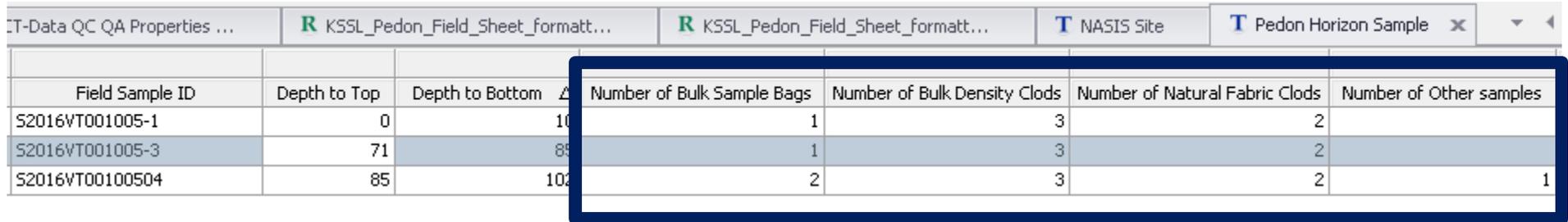
ID	Seq	Lab Sample #	Field Sample ID	Depth to Top	Depth to Bottom	Δ	Number of Bulk Sample Bags	Number of Bulk Density Clods	Number of Natural Fabric Clods	Number of Other samples
771	1		S2016VT001005-1	0	10		1	3	2	
775	4		S2016VT001005-3	81	85		1	3	2	
763	5		S2016VT00100504	81	102		2	3	2	1

Sampling the entire horizon and using the horizon top and bottom depths are strongly encouraged.

Field Sample ID	Depth to Top	Depth to Bottom	Number of Bulk Sample Bags	Number of Bulk Density Clods	Number of Natural Fabric Clods	Number of Other samples
S2016VT001005-1	0	10	1	3	2	
S2016VT001005-3	71	85	1	3	2	
S2016VT00100504	85	102	2	3	2	1

The number of bags and samples are not required fields for old projects!!!

..



Field Sample ID	Depth to Top	Depth to Bottom	Number of Bulk Sample Bags	Number of Bulk Density Clods	Number of Natural Fabric Clods	Number of Other samples
S2016VT001005-1	0	10	1	3	2	
S2016VT001005-3	71	85	1	3	2	
S2016VT00100504	85	100	2	3	2	1

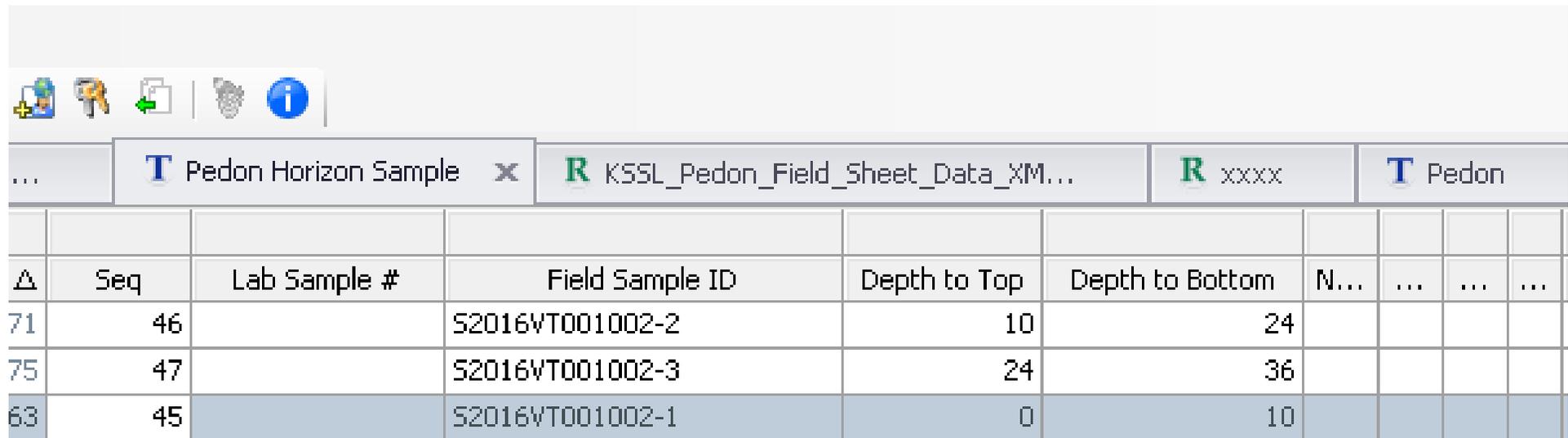
The fields for the number of bags and samples are provided for future use. The system to use them is under development.

Field Sample ID	Depth to Top	Depth to Bottom	Number of Bulk Sample Bags	Number of Bulk Density Clods	Number of Natural Fabric Clods	Number of Other samples
S2016VT001005-1	0	10	1	3	2	
S2016VT001005-3	71	85	1	3	2	
S2016VT00100504	85	100	2	3	2	1

Populating all of the fields is not necessary unless you wish to participate in the development of a more efficient submission process.

R KSSL_Pedon_Field_Sheet_formatt...		T Pedon Horizon Sample								
Phorizon Rec ID	Seq	Lab Sample #	Field Sample ID Δ	N...	
936771	1		S2016VT001005-1	0	10	1	3	2		03
936775	4		S2016VT001005-3	71	85	1	3	2		03
4190763	5		S2016VT00100504	85	102	2	3	2	1	03

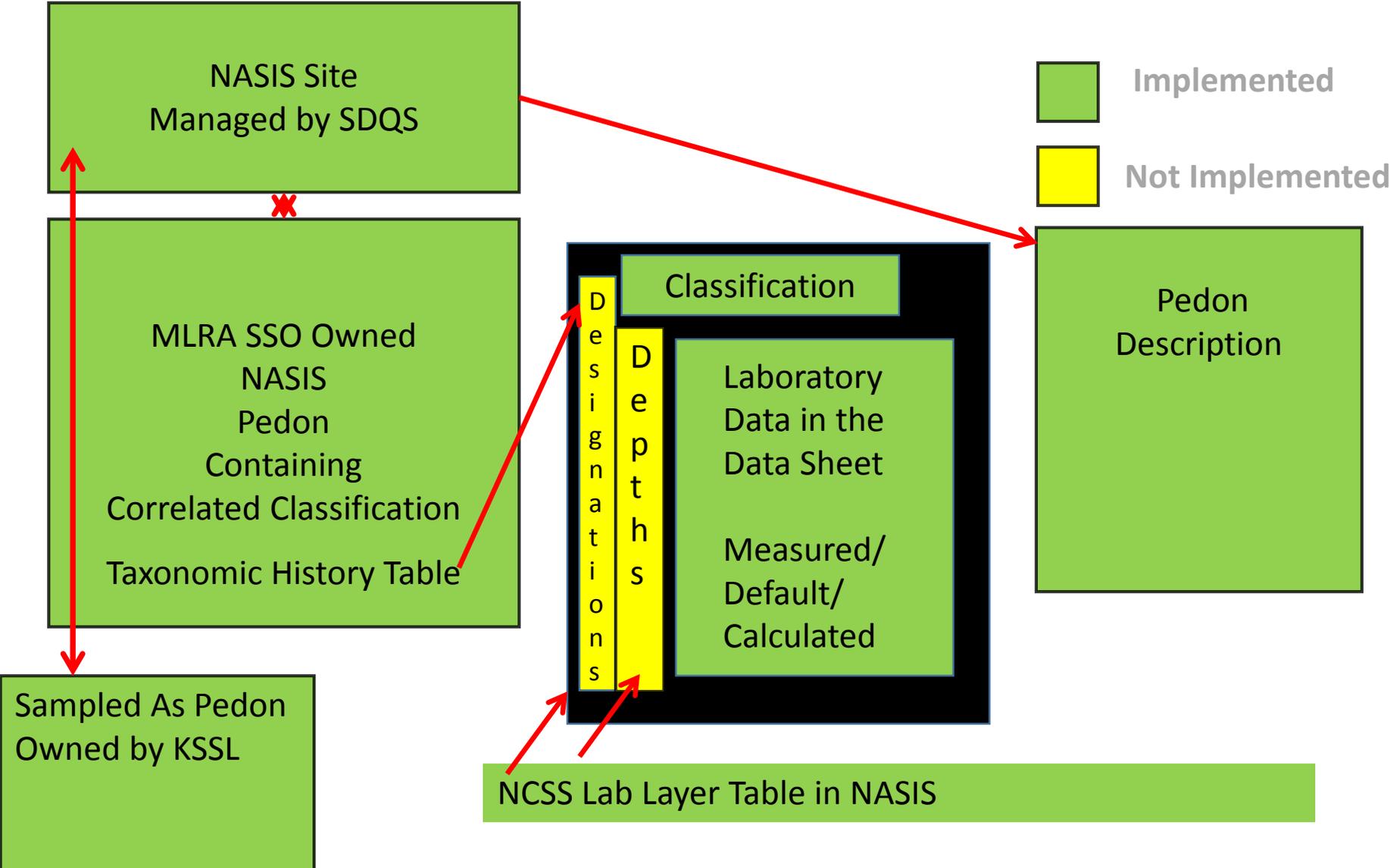
The most important fields to populate are Sequence Number, Field Sample ID, Depth to top and Depth to Bottom



The screenshot shows a software interface with a toolbar at the top containing icons for a globe, a key, a plus sign, a cluster of grapes, and an information icon. Below the toolbar is a window title bar with four tabs: 'Pedon Horizon Sample', 'KSSL_Pedon_Field_Sheet_Data_XM...', 'xxxx', and 'Pedon'. The main area displays a table with the following data:

	Seq	Lab Sample #	Field Sample ID	Depth to Top	Depth to Bottom	N...
71	46		S2016VT001002-2	10	24				
75	47		S2016VT001002-3	24	36				
63	45		S2016VT001002-1	0	10				

Diagram of the Data Mining Process



Populate the Lab Sample # in the Pedon Horizon Sample Table

T Pedon Horizon Sample x	
Lab Sample # Δ ▾	Field Sample ID
95P03521	S1995MN137537-1
95P03522	S1995MN137537-2
95P03523	S1995MN137537-3
95P03524	S1995MN137537-4

T NCSS Layer Lab Data x		Local Database	
		Lay...	Lab Sample #
▶		1	95P03521
		2	95P03522
		3	95P03523
		4	95P03524

Horizon Designations and Depths

*** Primary Characterization Data ***
(Windham, Vermont)

Pedon ID: 79VT025002

Sampled as on Jun 01, 1979 :

Marlow ; Thixotropic Cryic or Typic Fragiorthod

Revised to correlated on Oct 01, 1984 :

Mundal ; Coarse-loamy, mixed, frigid Typic Haplorthod

SSL - Project CP79VT199

WINDHAM COUNTY

- Site ID 79VT025002

Lat: 42° 58' 30.00" north Long: 72° 50' 15.00" west MLRA: 144B

- Pedon No. 79P0281

- General Methods 1B1A, 2A1, 2B

Layer	Horizon	Orig Hzn	Depth (cm)	Field Label 1	Field Label 2	Field
79P01493	Bh	B21H	8-20			
79P01494	Bhs	B22HIR	20-41			
79P01495	Bs	B3IR	41-64			
79P01496	Bx	BX	64-145			
79P01497	C	C	145-226			

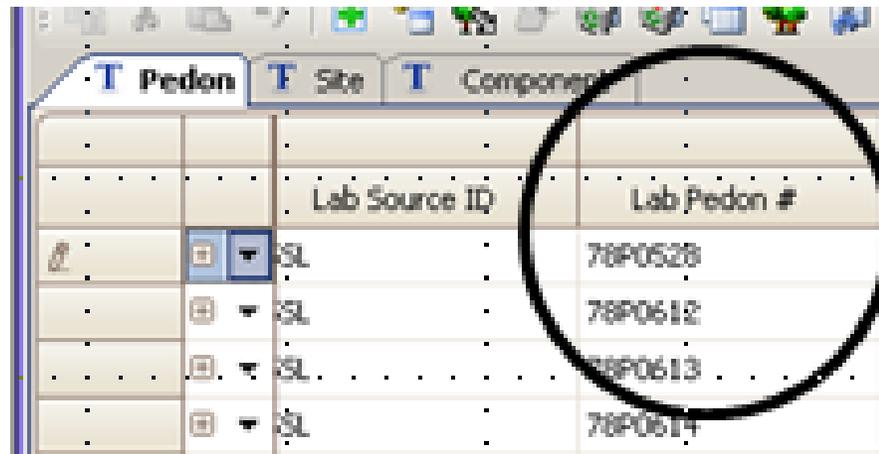
How to modify the horizon designations and depths

- 👉 NCSS_Lab_Layer_hznamecurrent_update
- 👉 NCSS_Lab_Layer_hznameoriginal_update
- 👉 NCSS_Layer_laboratory_table_depths_update

henry.Ferguson@lin.usda.gov

Data Mining Reports in NASIS

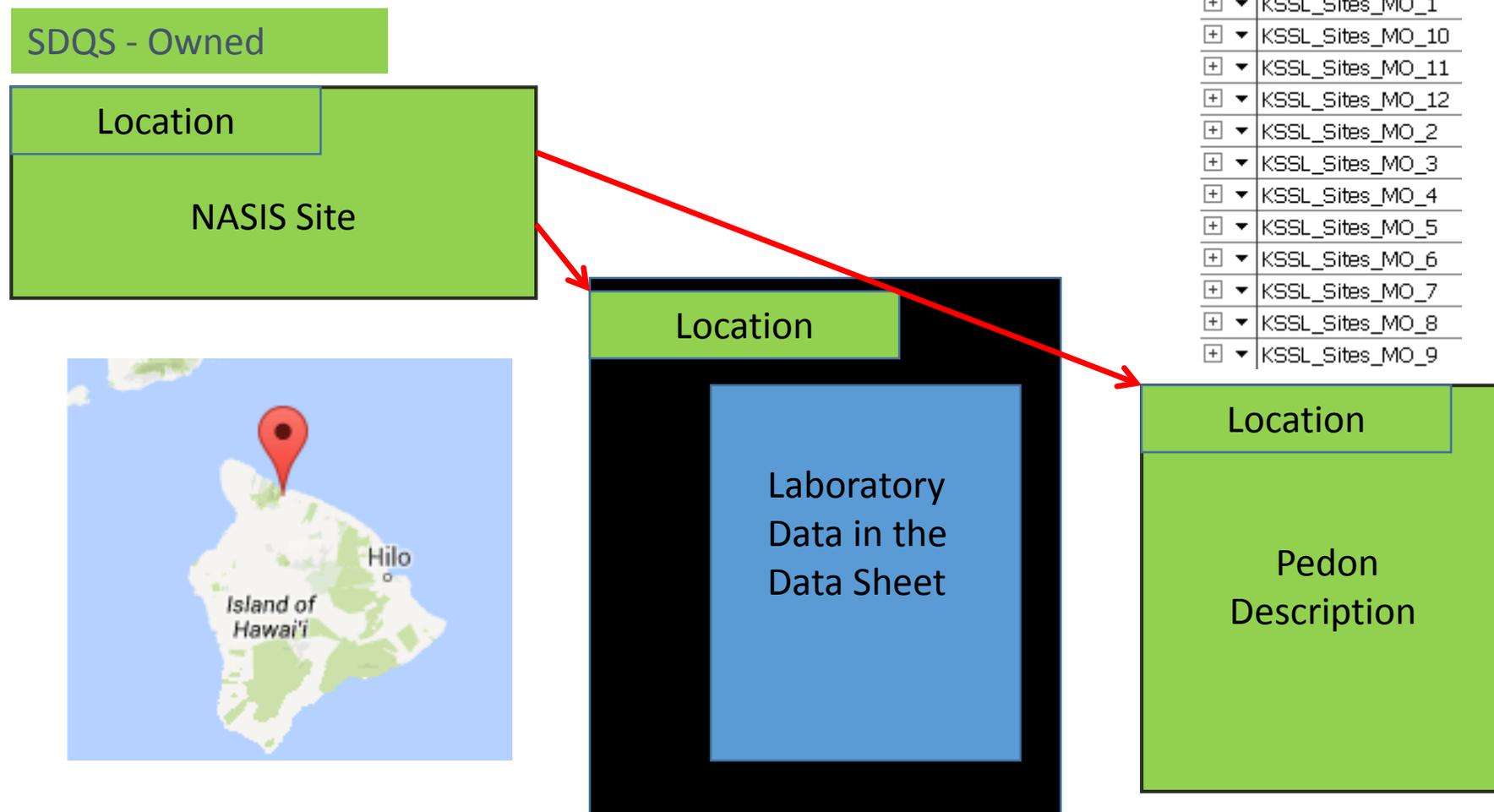
- 👉 Site_Laboratory_Locations_Overlaps_Classifications
- 👉 Update_NCSS_Lab_Pedon_recordIDS_from_NASIS



The screenshot shows a data table with two columns: 'Lab Source ID' and 'Lab Pedon #'. The 'Lab Pedon #' column is circled in black. The table contains four rows of data, all with 'SL' in the 'Lab Source ID' column and numerical values in the 'Lab Pedon #' column.

	Lab Source ID	Lab Pedon #
🔍	SL	78P0628
⊕	SL	78P0612
⊕	SL	78P0613
⊕	SL	78P0614

A Single Location (WGS84 STD Decimal Degrees)



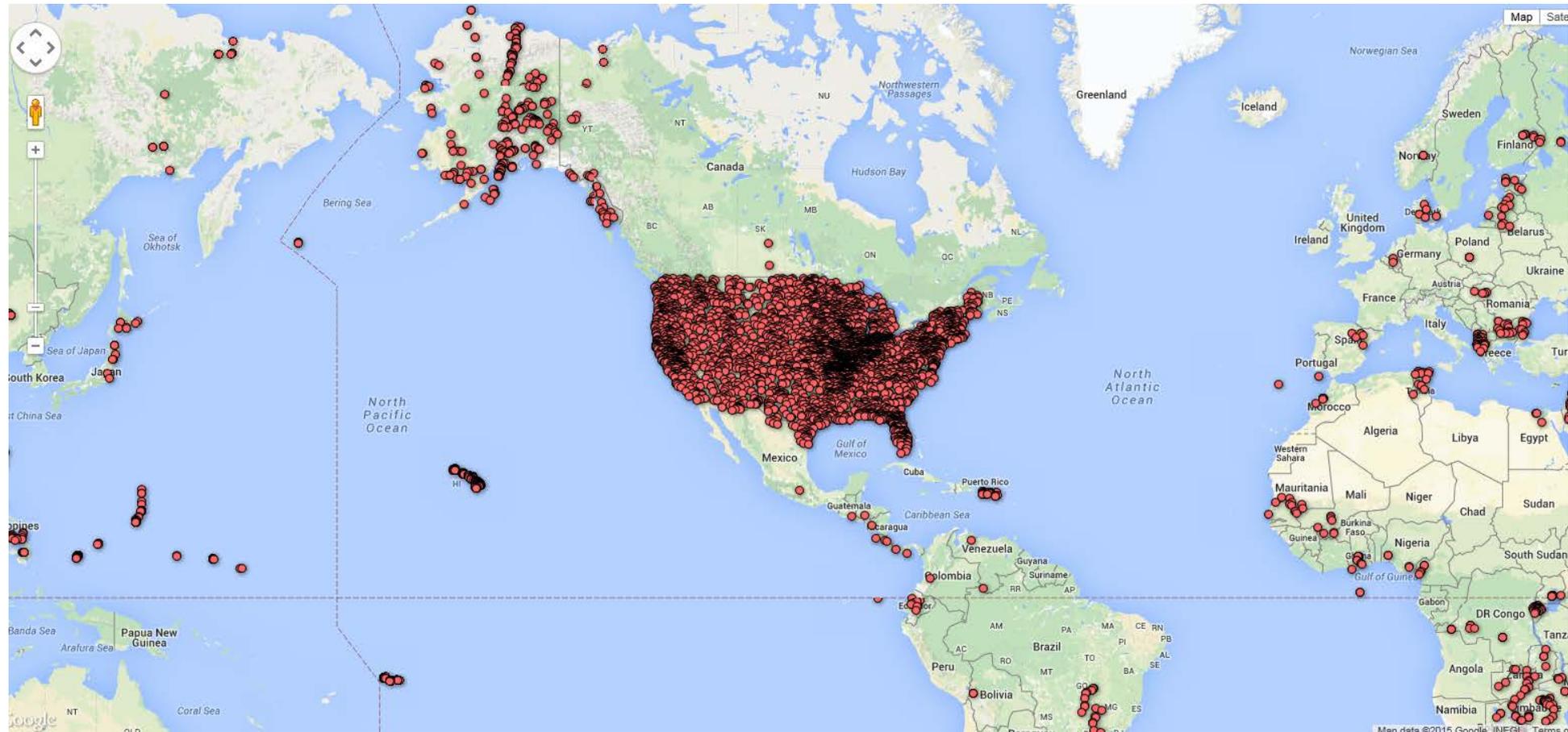
Jason Nemecek added the map to the laboratory pedon description report. You can immediately see if the correction you made to a location in NASIS makes sense by running the pedon description report.



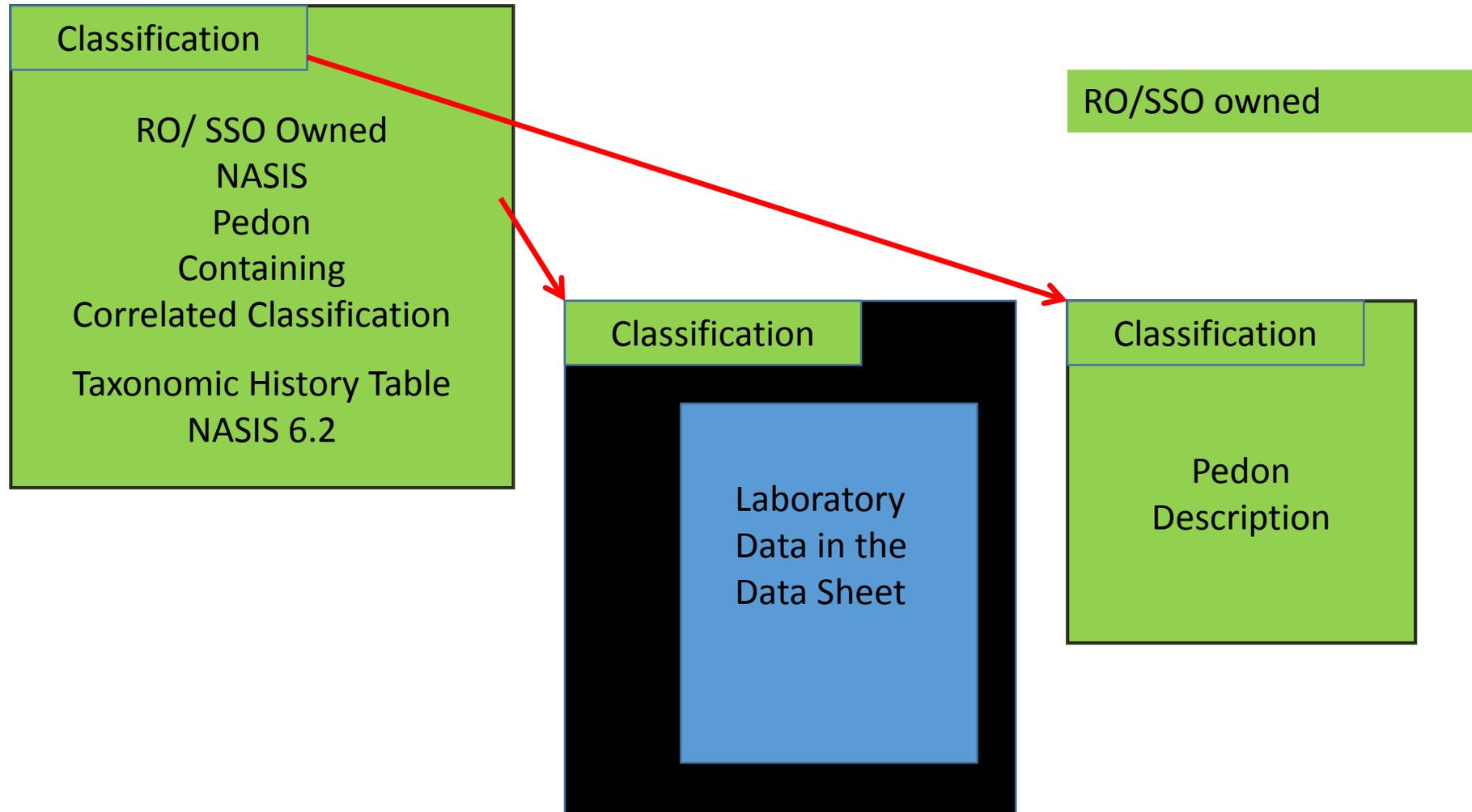
Locations Corrected in Two Weeks Post Google Fusion Update/Release



- Where the points were
- Where they were moved to



The Latest Classification Available



How often is the Laboratory Database synchronized with NASIS?

- It depends upon the number of projects moving through the laboratory.
- The goal is once every 3 months or less
- Up until now it has been every 6 months or more

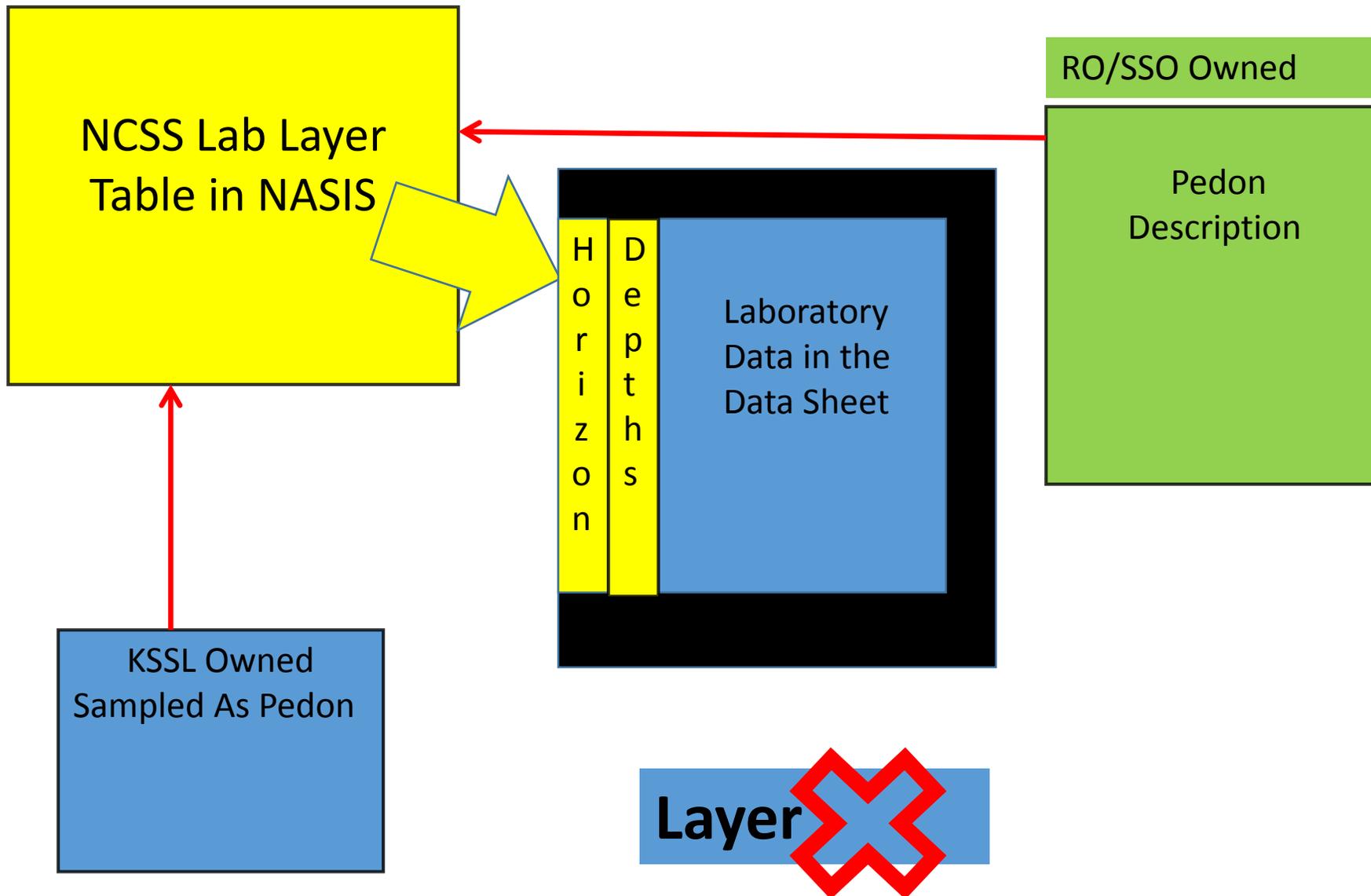
What products are updated?

- 1. The National Cooperative Soil Survey Web Site location and classification Tables
- 2. The Google Fusion Map of the locations
- 3. The ACCESS database (File Geodatabase being added June 2015)
- 4. The NASIS NCSS Lab Pedon and NASIS NCSS Lab Layer tables

What is left to do?

- Better capture the original horizon designations and current horizon designations
- Better capture the standardized sample depths based upon the post 1995 pedon description standards

Current Horizon Designations from MLRA SSO Pedon





Current Horizon Designations from MLRA SSO Pedon

NCSS Database		
Total layers	394006	
Missing Current horizon designation	43,831	
Missing Original horizon designation	48,331	
NASIS		
Total layers	383473	
Missing Current horizon designation	7376	25000
Missing Original horizon designation	11468	26000

Distribution Products

NCSS Soil Characterization Data

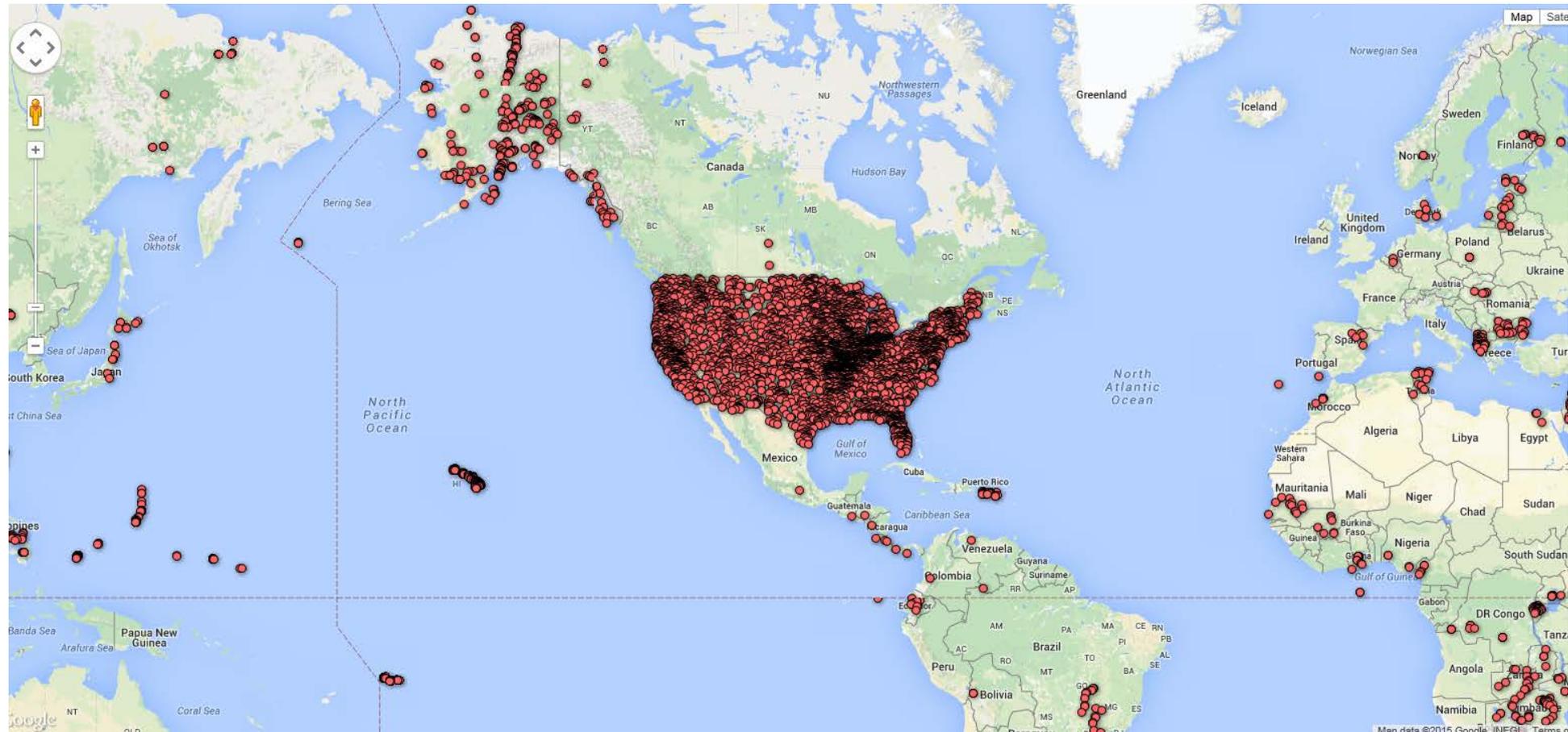
Web Site Released Feb 10, 2015, 7:00 PM

The screenshot shows a web browser window displaying the NCSS Soil Characterization Data website. The browser's address bar shows the URL <http://ncsslabdatamart.sc...>. The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The website's header features the text "National Cooperative Soil Survey Universities, State Agencies, Federal Agencies, and Private Members" and "National Cooperative Soil Survey Soil Characterization Data". A navigation menu includes links for Home / Basic Query, Advanced Query, Sampled Pedon Locations, Sampled Pedon Locations with Geochemical Data, Data Usage, User Manual, FAQs, Links, and Contact Us. The main content area has a "Welcome" section with a paragraph: "Welcome to the website for the National Cooperative Soil Survey (NCSS) Soil Characterization Database. This application allows you to generate, print, Survey Center (NSSC) Kellogg Soil Survey Laboratory (KSSL) and cooperating laboratories. The data are stored and maintained by the NSSC-KSSL. D other applications." Below this is a link: "Sign up for E-mail updates on the NCSS Lab Data Mart". The "NCSS Soil Characterization Basic Query" section includes a "Clear All Search Criteria" button and a "Site Information" section with dropdown menus for "Country", "State or Other Administrative Division", and "County". A left sidebar contains three circular icons: "Home / Basic Query", "Advanced Query", and "Sampled Pedon Locations".

Footnotes added to Supplemental Characterization Sheet Tier 2

Tier 2				-26-	-27-	-28-	-29-	-30-	-31-	-32-	-33-	-34-	-35-	-36-	-37-	-38-	-39-	-40-	-41-	-42-	-43-	-44-	-45-	
Layer	Depth (cm)	Horz	Prep	----- Weight Fractions -----											----- Weight Per Unit Volume -----									
				Whole Soil (mm)							<75 mm Fraction				Whole Soil			<						
				>2	250	250	75	75	20	5	75	75	20	5	Soil Sur	Engineering	Soil S	33	15					
(----- % of Whole Soil -----)	(----- % of <75 mm -----)	kPa	-dry	-ated	kPa	kPa																		
40A10064	0-18	Ap	S	-	-	-	-	-	-	-	100	-	-	-	-	100								1.45 ¹
40A10065	18-26	Bhs1	S	-	-	-	-	-	-	-	100	-	-	-	-	100								1.45 ¹
40A10066	26-36	Bhs2	S	-	-	-	-	-	-	-	100	-	-	-	-	100								1.45 ¹
40A10067	36-47	Bs1	S	-	-	-	-	-	-	-	100	-	-	-	-	100								1.45 ¹
40A10068	47-64	Bs2	S	-	-	-	-	-	-	-	100	-	-	-	-	100								1.45 ¹
40A10069	64-180	C	S	-	-	-	-	-	-	-	100	-	-	-	-	100								1.45 ¹

¹The whole-soil bulk density was not measured. It was calculated using 1.45 g/cc as the 1/3-bar bulk density of the less-than-2-mm fraction for mineral soils.



A Complete Copy of the National Database is Available in Microsoft ACCESS format from the Laboratory Website

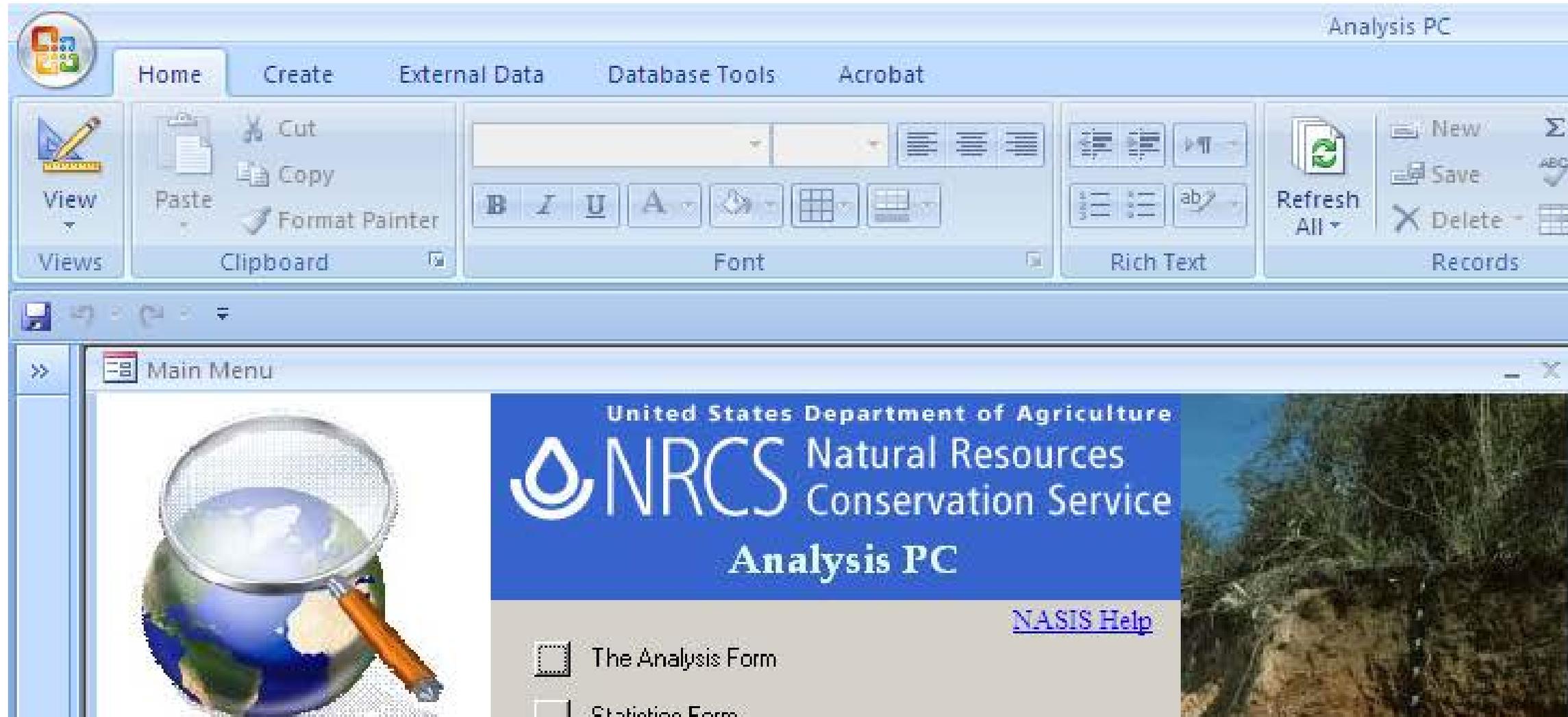
National Cooperative Soil Survey Microsoft Access Database

A Microsoft Access database that contains the most commonly requested data from the National Cooperative Soil Survey. In addition to commonly requested data, the Access database includes metadata tables that describe the data. The database contains common columns. Users that wish to obtain the original data, which is separated by method, should visit the [Soil Characterization Database](#) (Zip file; 1.1 MB).

NCSS Lab Pedon and Layer

T NCSS Layer Lab Data		T NCSS Pedon Lab Data								
	Taxon Name	Layer...	Lab Sample #	<i>Top Depth</i>	<i>Bottom...</i>	Lab Text...	VC Sand - ...	Co. Sand - ...	Med. Sand - ...	Fine Sand - ...
	tifton	17	11N00278	0	2	s	0.8	9.0	34.2	31.9
	tifton	18	11N00279	2	10	ls	1.8	8.7	30.8	33.3
	tifton	19	11N00280	10	30	ls	1.2	7.4	31.0	34.1
	tifton	20	11N00281	30	45	fsl	1.3	9.4	21.6	34.2
▶	tifton	1	11N00263	0	0	ls	1.4	4.8	29.4	36.7
	tifton	2	11N00264	0	0	s	1.6	7.5	26.0	37.0
	tifton	3	11N00265	0	0	ls	1.4	7.3	27.0	37.4
	tifton	4	11N00266	0	0	fsl	1.0	6.1	18.3	37.8
	tifton	5	11N00267	0	0	scl	1.4	4.5	17.8	25.1
	tifton	6	11N00268	0	0	scl	1.5	6.8	22.4	26.1
	tifton	7	11N00269	0	0	scl	2.2	9.5	25.3	23.4
	tifton	8	11N00270	0	2	ls	0.7	6.0	23.9	40.1
	tifton	9	11N00271	2	16	ls	1.0	7.2	27.6	35.8
	tifton	10	11N00272	16	26	ls	1.7	7.8	23.7	36.1
	tifton	11	11N00273	26	45	ls	1.4	6.9	19.6	40.7
	tifton	13	11N00274	0	2	ls	1.4	5.9	29.5	35.3
	tifton	14	11N00275	2	18	ls	1.6	8.3	26.8	35.9
	tifton	15	11N00276	18	29	ls	1.7	8.9	30.1	33.6
	tifton	16	11N00277	29	45	fsl	1.1	7.2	20.4	35.1

Morphological Data in Analysis PC



The screenshot displays the Analysis PC software interface. The top ribbon includes tabs for Home, Create, External Data, Database Tools, and Acrobat. The Home ribbon is active, showing groups for Views, Clipboard, Font, Rich Text, and Records. The main menu area features a globe icon with a magnifying glass, the NRCS logo, and the text "United States Department of Agriculture Natural Resources Conservation Service Analysis PC". A "NASIS Help" link is visible, along with a list of menu items including "The Analysis Form" and "Statistic Form".

Analysis PC

Home Create External Data Database Tools Acrobat

View Views

Paste Clipboard

Cut Copy Format Painter

Font

Rich Text

Records

Main Menu

United States Department of Agriculture
NRCS Natural Resources Conservation Service
Analysis PC

[NASIS Help](#)

- The Analysis Form
- Statistic Form

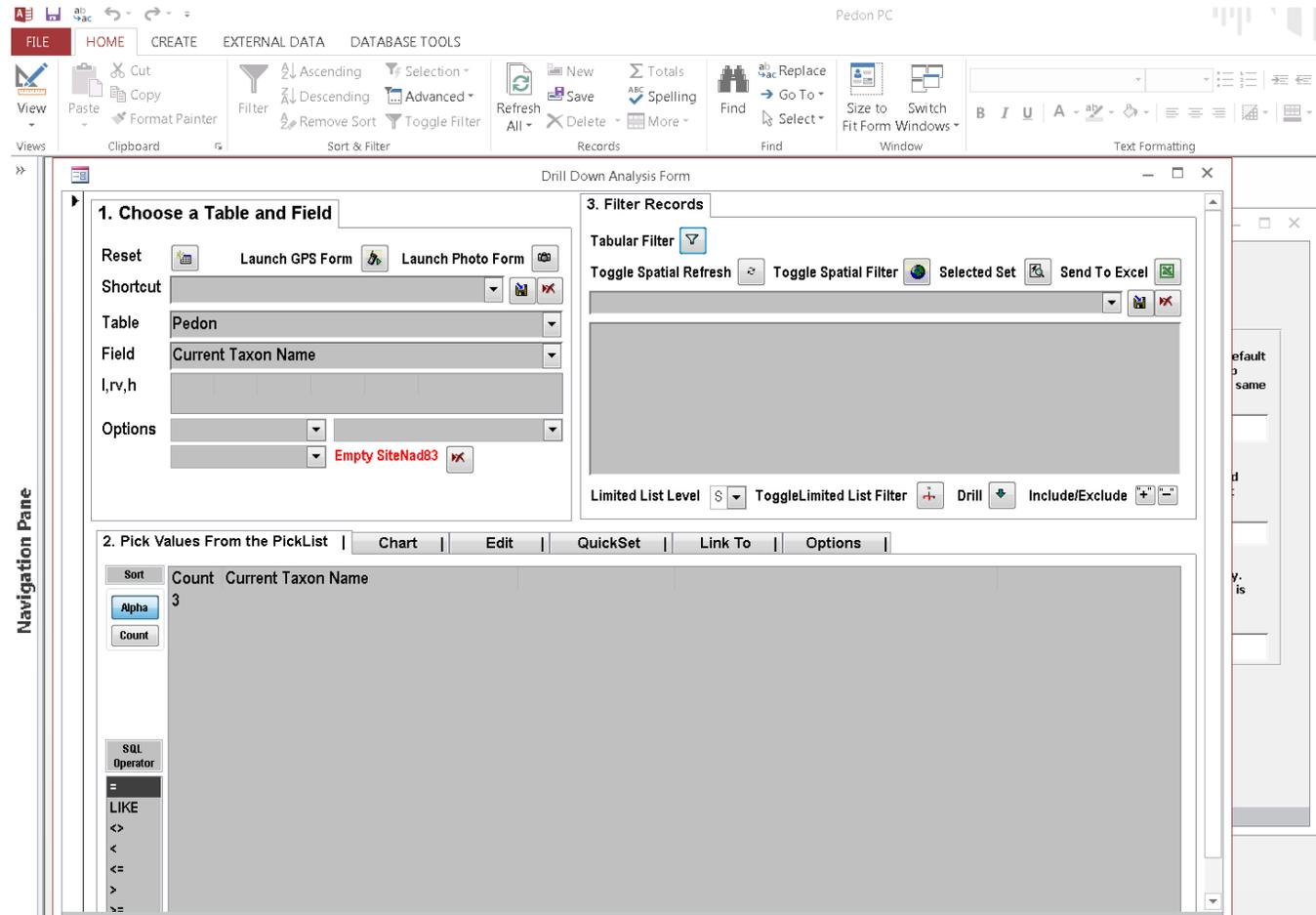


Reports

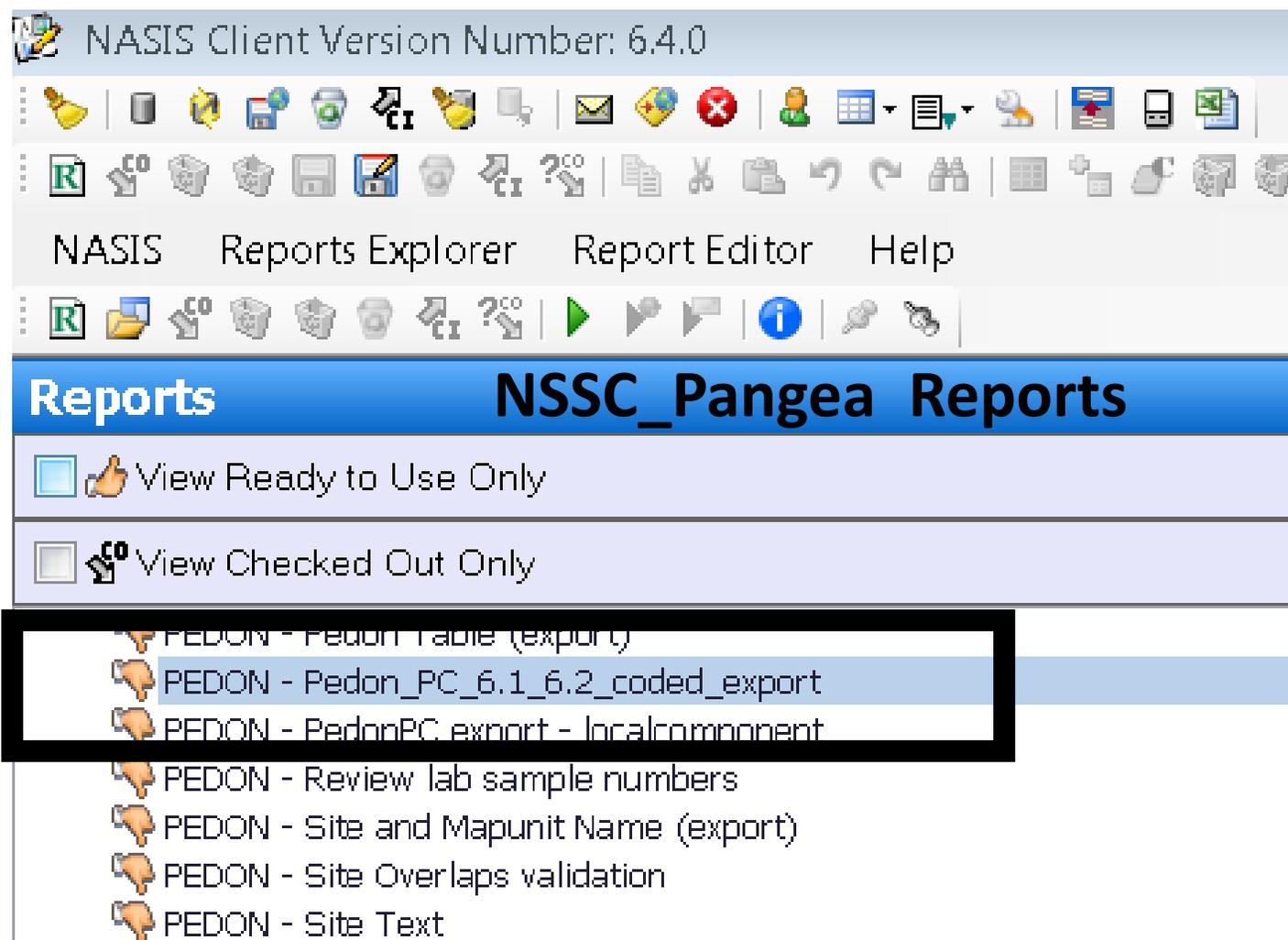
- View Ready to Use Only
- View Checked Out Only

- thumbs-up NHQ - State FY Progress by Reporting Category HTML
- thumbs-up NOTES - Component Text
- NSSC Pangea Reports**
- thumbs-up NOTES - Horizon Text Edit Notes by area symbol
- thumbs-up OLD - UTIL - NASIS OBSOLETE Users with group membership
- thumbs-up PEDON - AnalysisPC uncoded DataDump with placeholder**
- thumbs-up PEDON - AnalysisPC uncoded DataDump with support data**
- thumbs-up PEDON - Color - count**
- thumbs-up PEDON - Compare Lab Pedon Num vs Lab Hz Num
- thumbs-up PEDON - Component Pedons within a Legend and DMUs (REAL)
- thumbs-up PEDON - Count pedons by site
- thumbs-up PEDON - DATA DUMP (limited aggregation w/ est. clay, sand)
- thumbs-up PEDON - Description, table format
- thumbs-up PEDON - Horizon level analysis data dump
- thumbs-up PEDON - Pedon Desc (eng) w/format & unformat notes

The Analysis tools from Pedon PC Plus have been included in Pedon PC



The report to populate Pedon PC is in NSSC Pangea

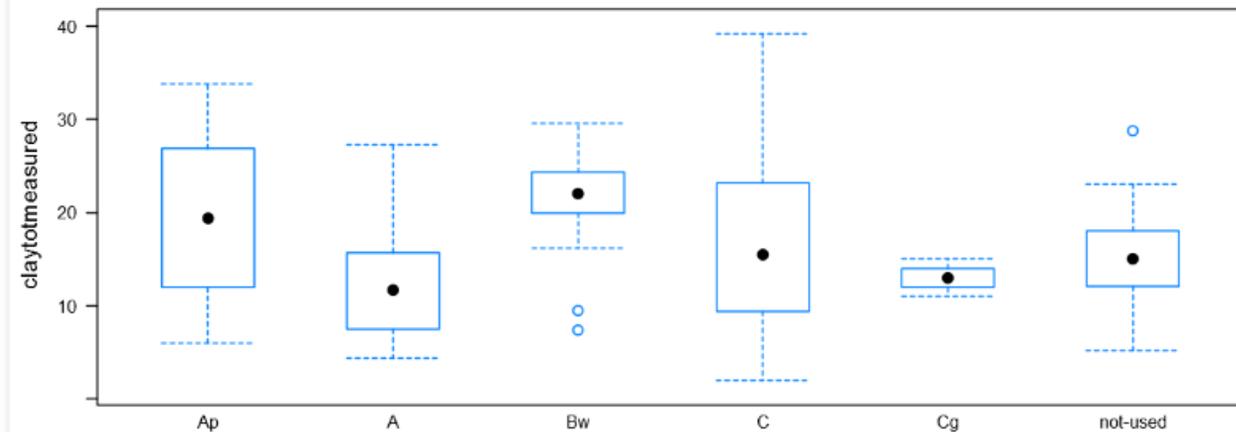


Summarizing labdata with R

```
quantile(lh$claytotmeasured, na.rm=TRUE)
```

```
0% 25% 50% 75% 100%  
2.0 10.9 16.9 23.3 39.2
```

```
bwplot(claytotmeasured~genhz, data=lh)
```



Documentation - On-Line User's Manual

http://ncsslabsdata.nrcs.sc.egov.usda.gov/rptgen.aspx

File Edit View Favorites Tools Help

NRCS Soils D3.js - Data-Driven Docu... 5.0 Test (2) 5.0 Test tracker Bugs USDA Web Services Log-In

National Cooperative Soil Survey
Universities, State Agencies,
Federal Agencies, and Private Members

Home / Basic Query Advanced Query Sampled Pedon Locations Sampled Pedon Locations with Geochemical Data Data Usage User Manual FAQs Links Contact Us

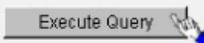
-
-
-
-

Nine Steps to Report Creation

- Click on the "Advanced Query" link, which is on the menu in the top left corner of this page. The link goes to the NCSS Soil Characterization Advanced Data Query Interface, which can be used to search the available data using one or more of over 50 search criteria. [Advanced Query](#)
- Once the page is fully loaded, select or enter the search criteria for the categories desired.

Notes concerning search criteria entry:

- In the Project Information section, the choice list for State or Other Administrative Division contains entries specific to the selection in the Country choice list. Selecting a different country will reload the page with a different choice list for State or Other Administrative Division. In the Site Information section, selecting a different country will reload the page with revised choice lists for State or Other Administrative Division, County, and Soil Survey Area. All other data entered will be retained when the page is reloaded.
- When selecting any date as a criterion, at least one year must be provided. If a year is provided only on the left side of the date range, the search will return all data with date values greater than January 1st of the year provided. If a year is provided only on the right side, the search will return all data matching the criteria with dates less than December 31st of the year provided. Also, if a month is provided without an exact day, the search engine will assume either the first day of the month for the left side of the range or the last day of the month for the right side.
- All text entry fields are case insensitive and are automatically considered to be wildcard searches. For example: If you enter "urban soils" in the box for Submitted Name under Project Information, both "Urban Soils Study Part 1" and "Urban Soils Study Part 2" would result in a positive match.



- Once all the desired criteria are entered, click the "Execute Query" button located at the bottom of the page to retrieve a list of pedons from the database.
- If the query does not return any pedons or does not return the desired pedons, use the "Return to Last Data Interface" button at the top of the page to return to the query interface. All the previously selected criteria will be retained by the interface. Select different criteria to change the search.

- The "Check All" button at the top of page selects the entire list of pedons returned from a search. Pedons can be included or excluded individually by clicking on or off the individual check boxes. If you select all of the pedons in the list, the "Check All" button changes into an "Uncheck All" button. The "rc" column is the row number and record

	Lab Pedon Number	User Pedon ID	Sampled as Series	Correlated Series	Lab Project Name	rc
<input type="checkbox"/>	83P0280	82DE003001	Matapeake		RP83DE062	1
<input type="checkbox"/>	83P0279	82DE005001	Atsion	Atsion	RP83DE062	2

File Edit View Favorites Tools Help

NRCS Soils D3js - Data-Driven Docu... 5.0 Test (2) 5.0 Test tracker Bugs US

National Cooperative Soil Survey
Universities, State Agencies,
Federal Agencies, and Private Members

Home / Basic Query Advanced Query Sampled Pedon Locations Sampled Pedon Locations with Geochemical Data Data Usage Us



Links

The Kellogg Soil Survey Laboratory (KSSL) at the National Soil Survey Center (NSSC) is responsible for p
Cooperative Soil Survey (NCSS). The KSSL data are provided in reports (for example, Primary and Suppl
analytical system and are a means to transmit information to the users of the data. It follows that these re

**[Soil Survey Laboratory Methods Manual
Soil Survey Laboratory Investigations Report No. 42](#)**

The "Soil Survey Laboratory Methods Manual" (SSIR 42) describes the methods used by the Kellogg Soil S
in the NCSS Soil Characterization Database.

**[Soil Survey Laboratory Information Manual
Soil Survey Laboratory Investigations Report No. 45](#)**

The "Soil Survey Laboratory Information Manual" (SSIR 45) follows the same topical outline as the "Soil S
detailed discussions of the use and application of the resulting data.

Soil survey data, including pedon characterization data, are used more appropriately when the operations
characterization data reports and thereby maximizes user understanding of the data. This document is not

**[Soil Survey Field and Laboratory Methods Manual
Soil Survey Laboratory Investigations Report No. 51](#)**

The "Soil Survey Field and Laboratory Methods Manual" (SSIR 51) serves as a reference for scientists in a
analysts. The combined documentation of standard operating procedures ensures continuity in the analyt
analyses.

TABLE TOOLS repo_template

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS FIELDS TABLE

View Paste Copy Format Painter Filter Ascending Descending Remove Sort Selection Advanced Toggle Filter Refresh Save Delete More Totals Spelling More Find Go To Select Replace Go To Select Size to Fit Form Windows Switch Windows Calibri B I U A

Views Clipboard Sort & Filter Records Find Window Text

All Access Objects

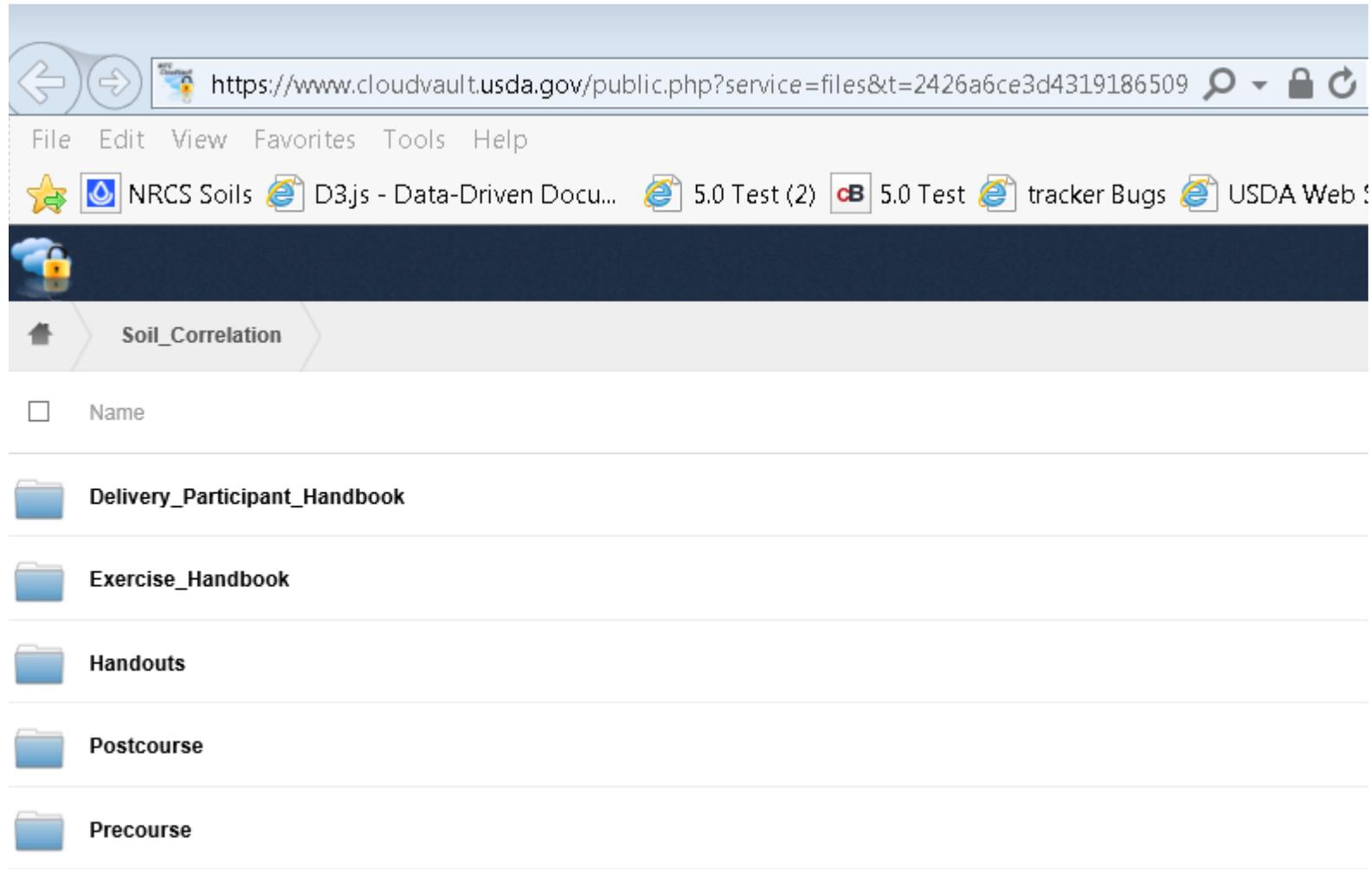
- Andic_Soil_Properties
- Bulk_Density_and_Moisture
- Carbon_and_Extractions
- CEC_and_Bases
- Major_Elements
- Mineralogy_Glass
- Mineralogy_Petro
- Mineralogy_Thermal
- Mineralogy_Xray
- Miscellaneous_Data
- NCSS_Analysis_procedure**
- NCSS_Analyte
- NCSS_Data_Dictionary_Data_Tier
- NCSS_Data_Dictionary_Layer_Pedon_Taxono...
- NCSS_Layer
- NCSS_Pedon_Calc
- NCSS_Pedon_Taxonomy

NCSS_Analysis_procedure

procedure_al	procedur	SSIR_42_v_5_Page_number	URL_to_SSIR_42_v_5
AGGSTAB	3F1a1a	213	http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/ste
ATTERBERG	3H	218	http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/ste
DBH2ORET	DbWR1	138	http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/ste
DBH2ORETCO	3B6	138	http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/ste
DBRECON	3B2	125	http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/ste
DBCOMPCAV	3B3	130	http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/ste
DBFLDSTATE	3B1a	101	http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/ste
DBRECON_M	DbRec1		
DBREWET	3B1d	119	http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/ste
BlkSmpPrep			
CACO3	4E1a1a1a1	370	http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/ste
CACO3_20	4E1a1a1a2	370	http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/ste
CACO3_20	6E4	370	http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/ste
TOTC	6A2e	713	http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/ste
OXAL	4G2	432	http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/ste
DITH	4G1	426	http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/ste
KCL	4B3a1a	254	http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/ste
PYRO	4G3	440	http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/ste
CECCL	4B1b1a	236	http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/ste
CECNH4	4B1a1	230	http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/ste
DSC910S	7A3a		

Record: 1 of 629 No Filter Search

• NSSC Soil Correlation Course



Job Aids Page

Job Aids | NRCS Soils - Windows Internet Explorer

File Edit View Favorites Tools Help

http://www.soils.usda.gov/education/training/job_aids.html#correlation

Job Aids | NRCS Soils

Correlation

- Analysis PC
 - [Setup](#) (PDF; 422 KB)
 - [Add or Modify a Query](#) (PDF; 313 KB)
- Similar/Dissimilar Guide for Mapunit Components
 - [Guidelines for MO14](#)
 - [Guidelines for MO10](#)
- Soil Catenas
 - [Connecticut example of a soils key](#) (PDF; 92 KB)
 - [New Hampshire example of a soils key](#) (PDF; 88 KB)
- Populating Map Unit Data: Taxonomic Classes and Map Unit Components
 - [Soil Survey Technical Note No. 4](#) (DOC; 642 KB)

Interpretations



Ask NSSC or your local MO for
Assistance

- Questions?