NRCS
Natural Resources Conservation Service

NCSS
National Cooperative Soil Survey

USDA-NRCS Soil Data Resources

USDA
Natural
Resources
Conservation
Service

Presentation to:

2018 MOISST and NSMN Workshop

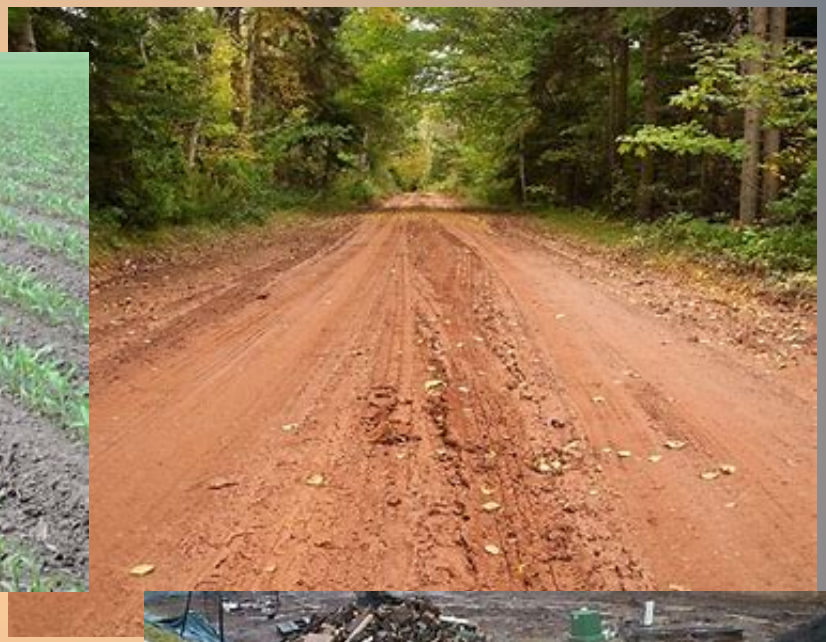
David Hoover, Director
National Soil Survey Center

AIR

WATER

SUNLIGHT

DIRT ???

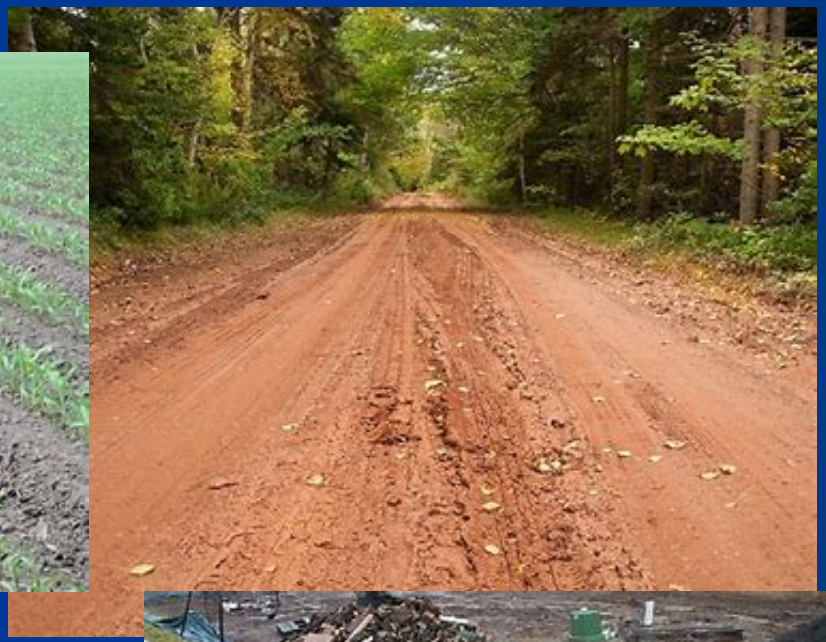


AIR

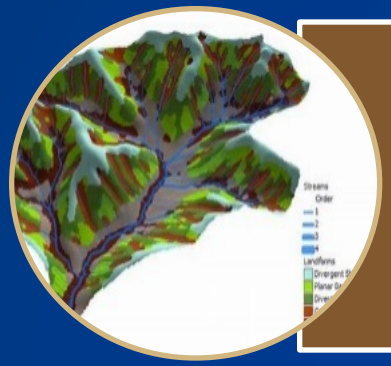
WATER

SUNLIGHT

DIRT



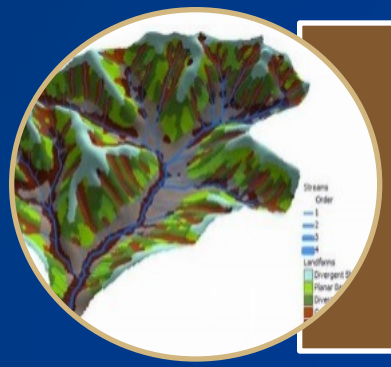
SOIL



Use of national soil survey data with in situ or remotely sensed soil monitoring data

Development of the national soil survey database

Types and sources of soil survey data



Use of national soil survey data with in situ or remotely sensed soil monitoring data

How to effectively combine 1:24000 scale polygonal data with site specific soil moisture monitoring sites?

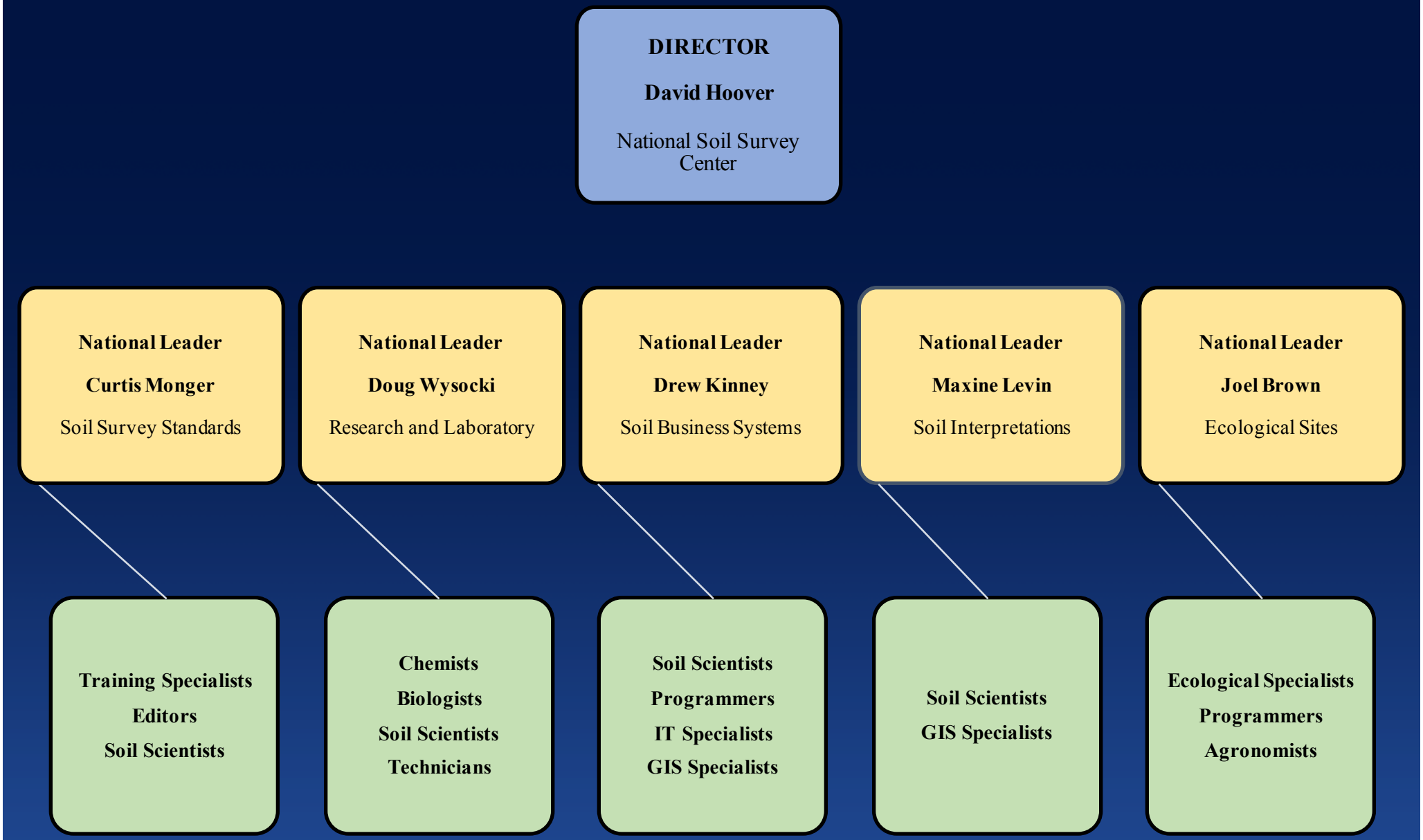
Uses of National Soil Survey Data

- Data validation
- Landscape knowledge
- Site selection
- Data extrapolation
- Paired studies
- Modeling

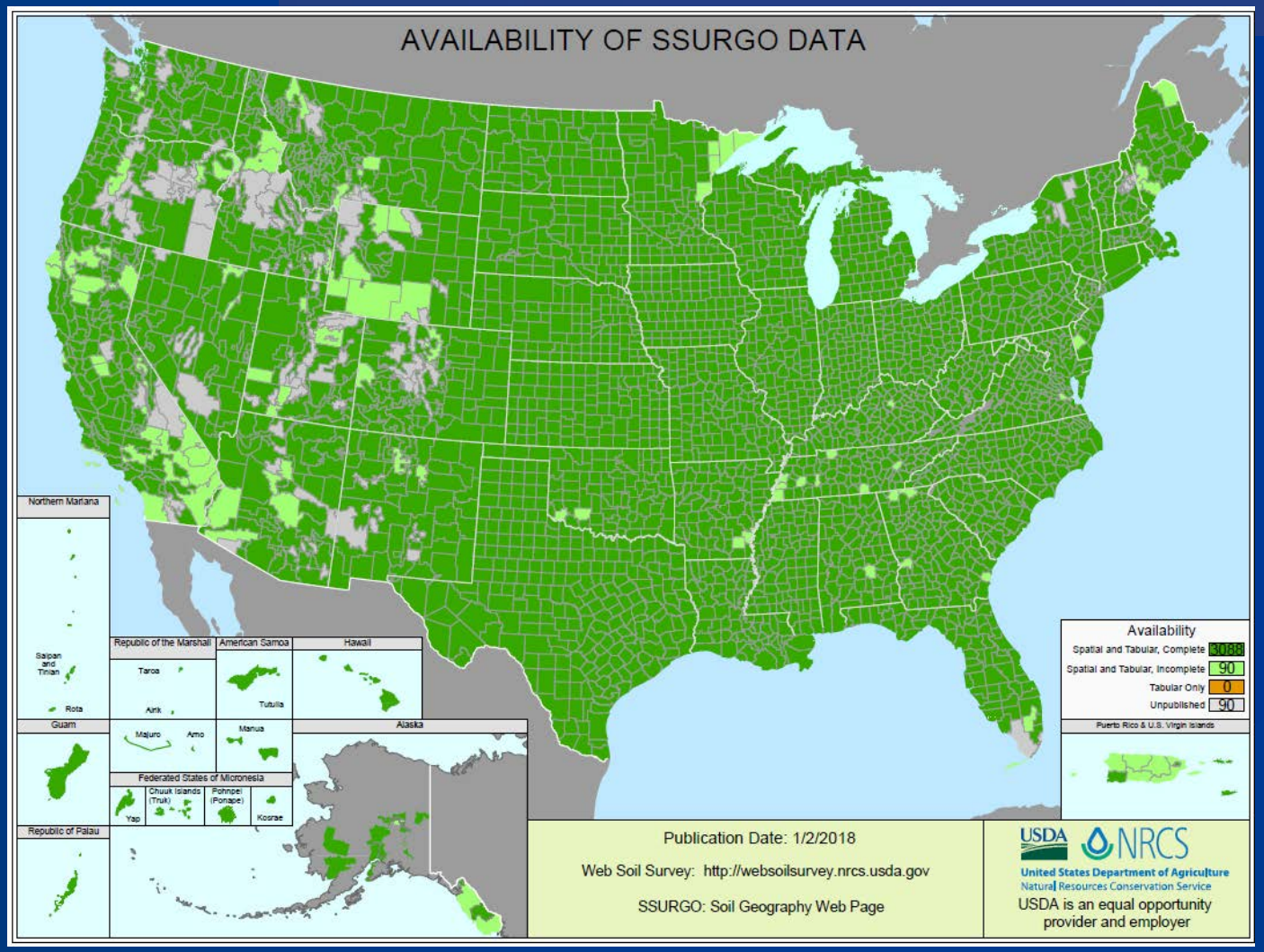
Development of the national soil survey database

USDA
United States Department of Agriculture

National Soil Survey Center

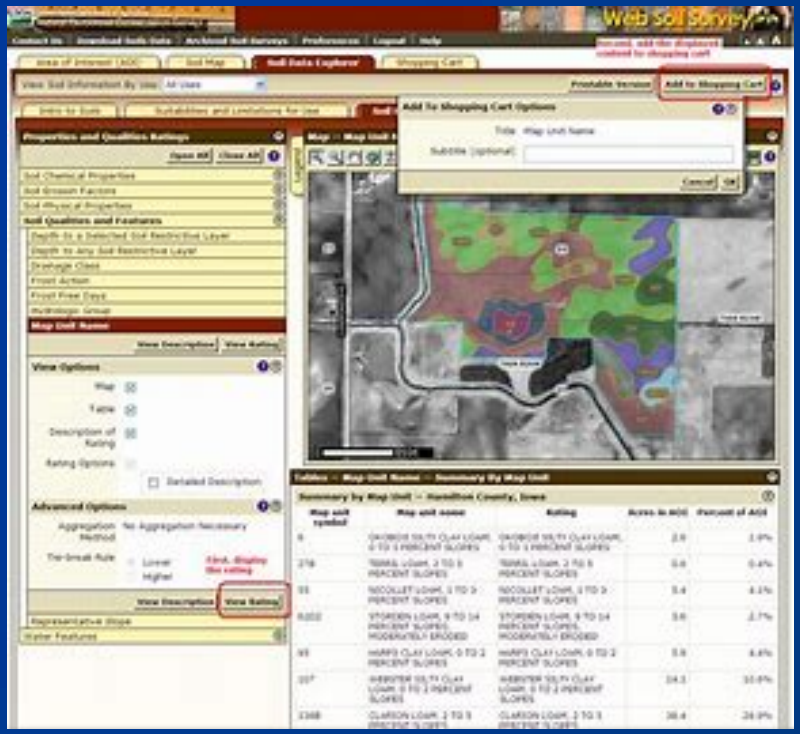


A National Investment

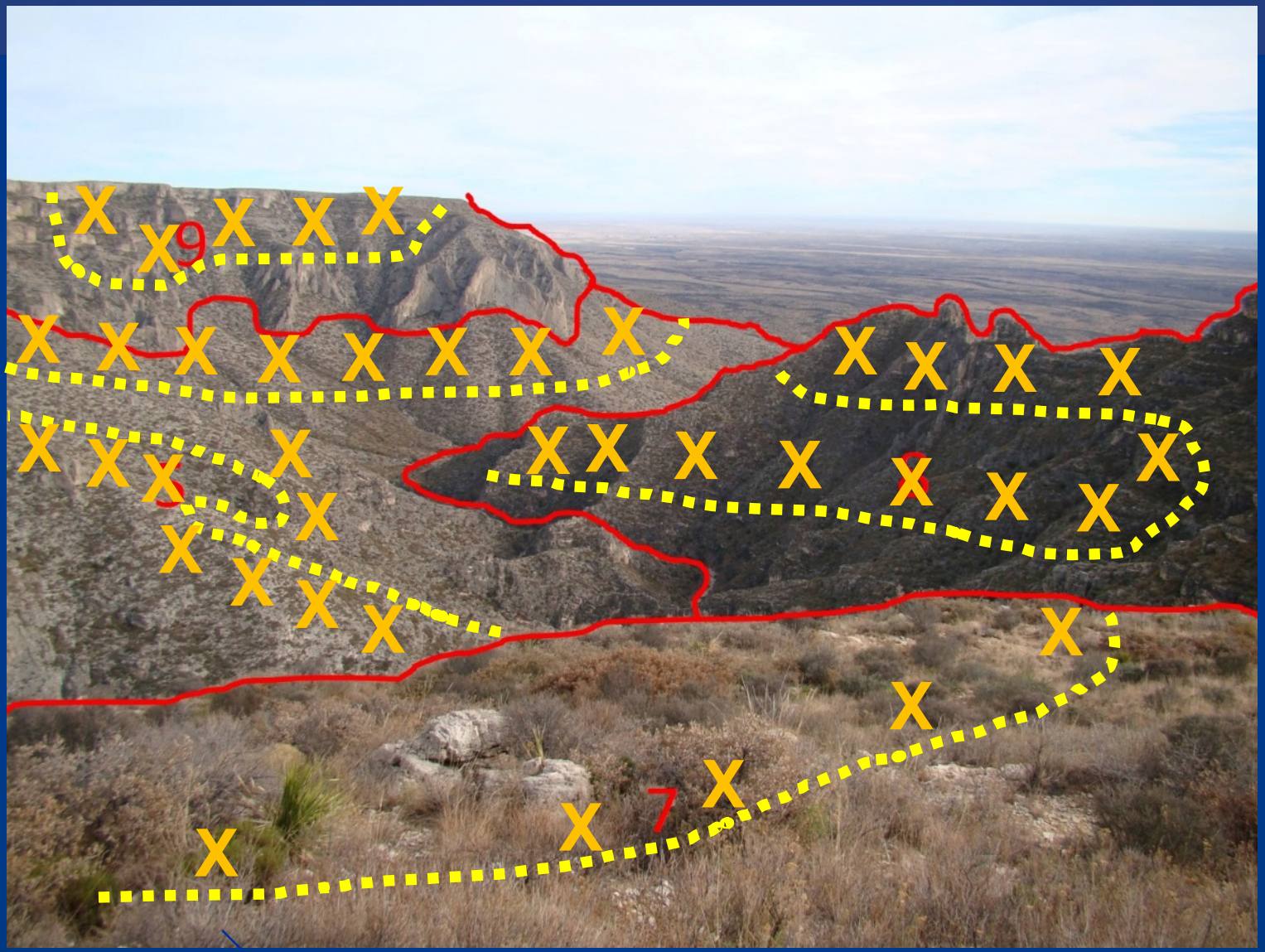


- A $22 Billion investment
- An $80 Million annual allocation

From Truck to Data Delivery



Assessing the Landscape

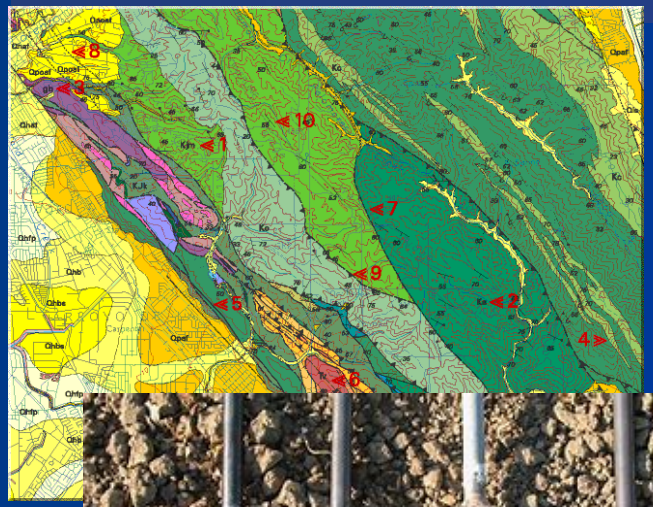


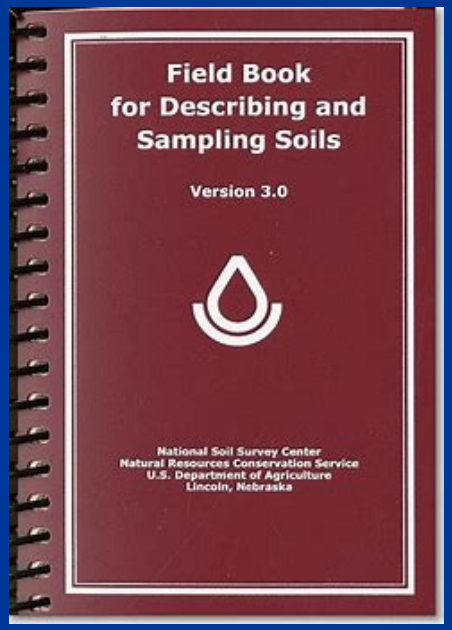
Assessing the Landscape

https://www.youtube.com/watch?v=uFhprCtrK2k

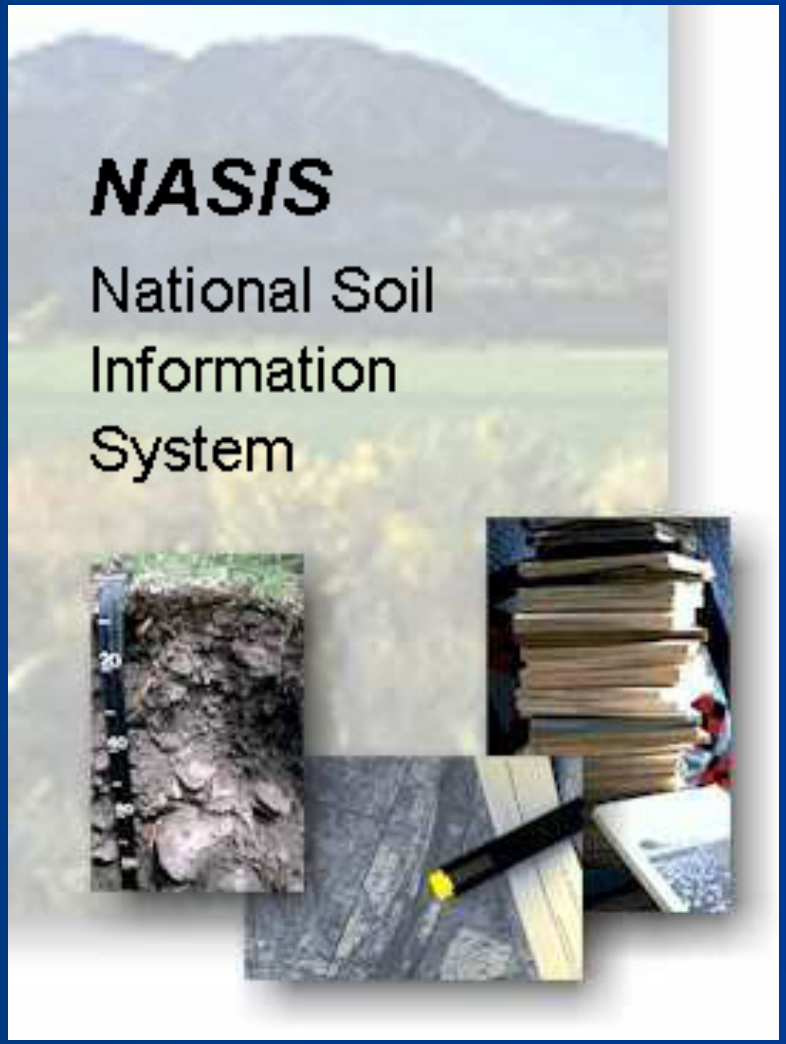
1:44

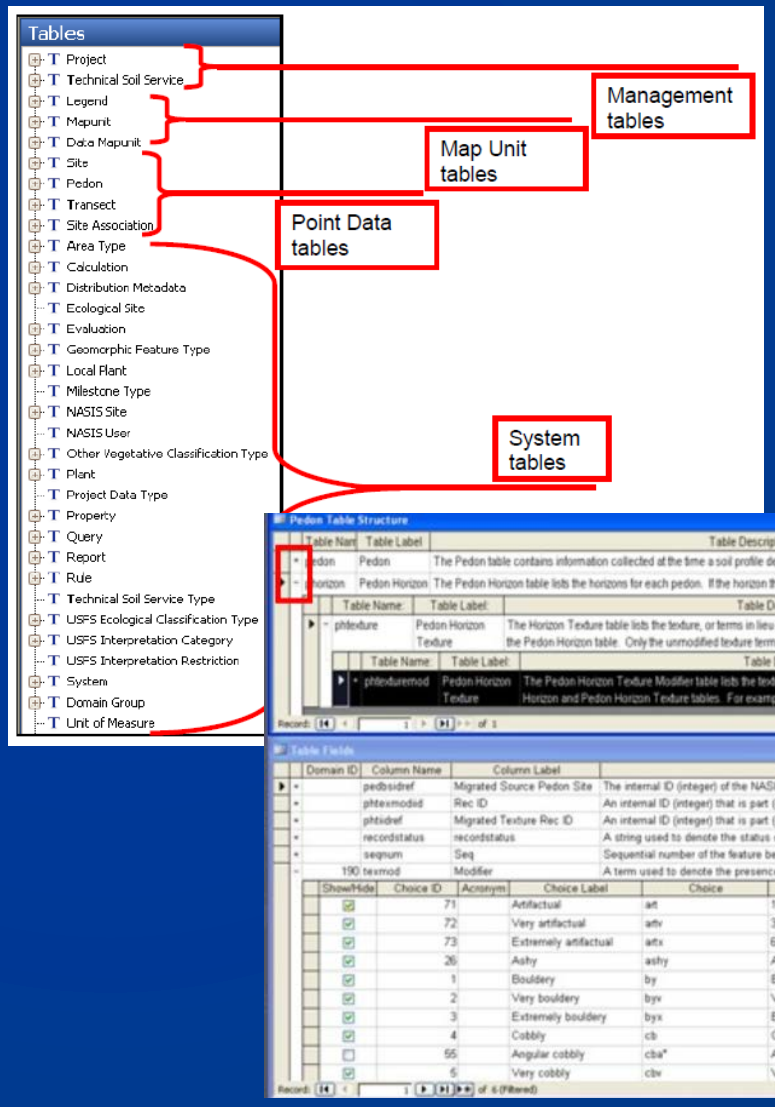
Selecting the Right Tools For the Day





Databases


NASIS
National Soil
Information
System

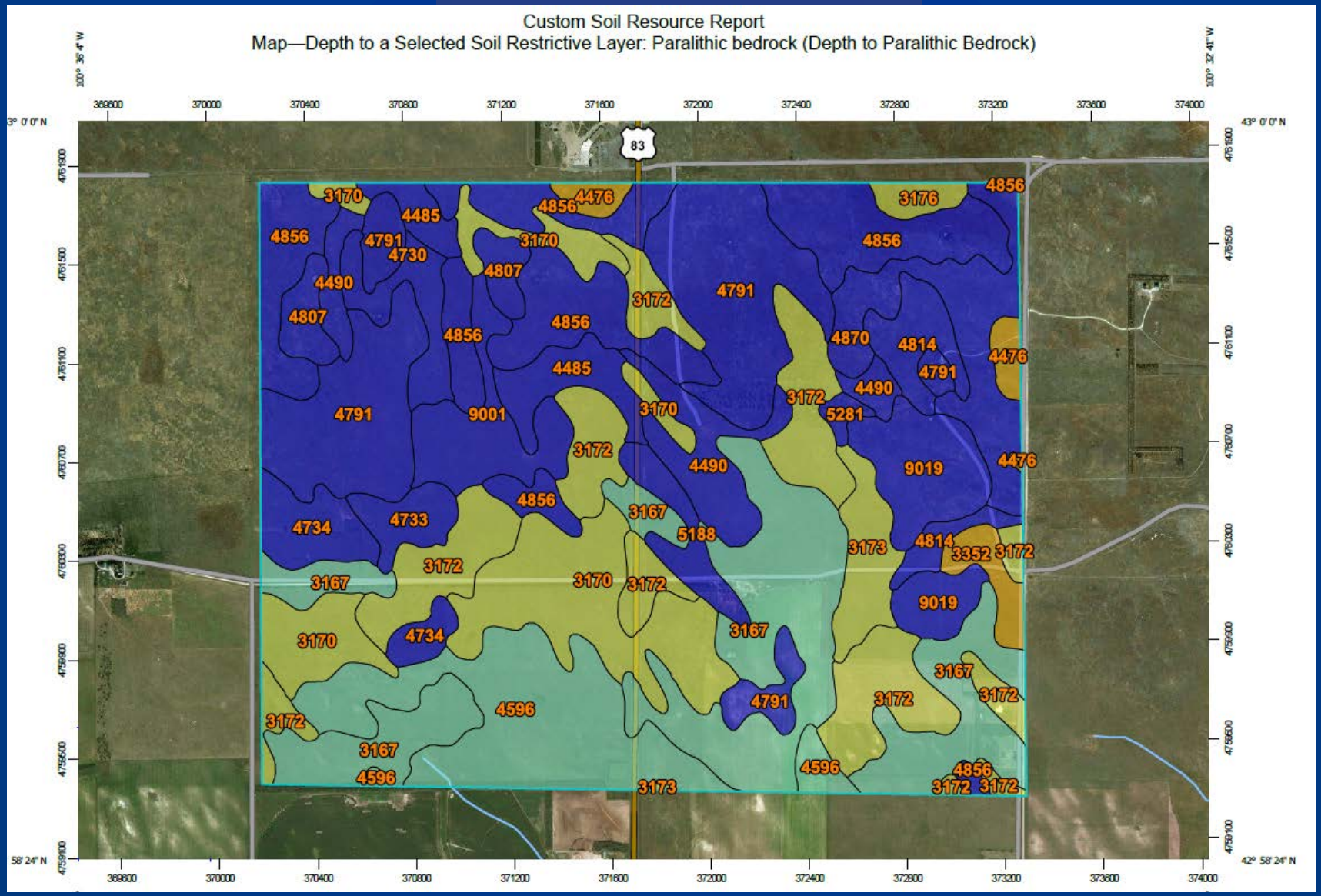

Tables
Project
Technical Soil Service
Legend
Mapunit
Data Mapunit
Site
Pedon
Transect
Site Association
Area Type
Calculation
Distribution Metadata
Ecological Site
Evaluation
Geomorphic Feature Type
Local Plant
Milestone Type
NASIS Site
NASIS User
Other Vegetative Classification Type
Plant
Project Data Type
Property
Query
Report
Rule
Technical Soil Service Type
USFS Ecological Classification Type
USFS Interpretation Category
USFS Interpretation Restriction
System
Domain Group
Unit of Measure
Management tables
Map Unit tables
Point Data tables
System tables

NRCS
Natural Resources Conservation Service

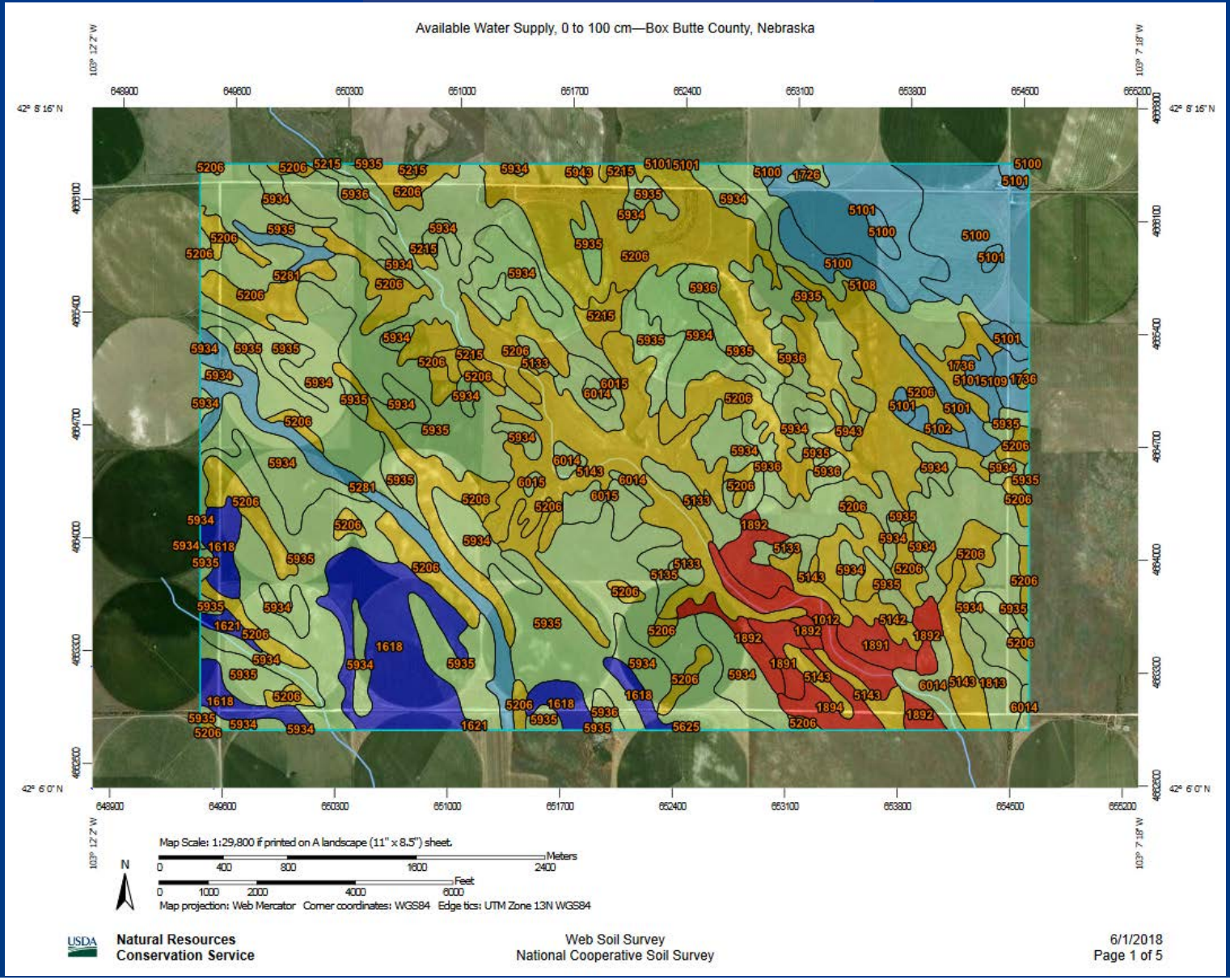
NCSS
National Cooperative Soil Survey

Types and sources of soil survey data

Delivering the Data
Web Soil Survey



Delivering the Data
Web Soil Survey



Delivering the Data
Web Soil Survey

Web Soil Survey

Properties and Qualities Ratings

Open All | Close All

- **Soil Chemical Properties**
  - Calcium Carbonate (CaCO3)
  - Cation-Exchange Capacity (CEC-7)
  - Effective Cation-Exchange Capacity (ECEC)
  - Electrical Conductivity (EC)
  - Gypsum
  - pH (1 to 1 Water)
  - Sodium Adsorption Ratio (SAR)
- **Soil Erosion Factors**
  - K Factor, Rock Free
  - K Factor, Whole Soil
  - T Factor
  - Wind Erodibility Group
  - Wind Erodibility Index
- **Soil Health Properties**
  - Soil Health - Organic Matter
- Soil Physical Properties
- Soil Qualities and Features
- **Water Features**
  - Depth to Water Table
  - Flooding Frequency Class
  - Ponding Frequency Class

Soil Physical Properties

- Available Water Capacity
- Available Water Storage
- Available Water Supply, 0 to 100 cm
- Available Water Supply, 0 to 150 cm
- Available Water Supply, 0 to 25 cm
- Available Water Supply, 0 to 50 cm
- Bulk Density, 15 Bar
- Bulk Density, One-Tenth Bar
- Bulk Density, One-Third Bar
- Linear Extensibility
- Liquid Limit
- Organic Matter
- Percent Clay
- Percent Sand
- Percent Silt
- Plasticity Index
- Saturated Hydraulic Conductivity (Ksat)
- Saturated Hydraulic Conductivity (Ksat), Standard Classes
- Surface Texture
- Water Content, 15 Bar
- Water Content, One-Third Bar

Delivering the Data
Web Soil Survey

Download Soils Data for...
Your AOI (SSURGO)

General Information

Link	Description of Soil Survey Geog
Download Contents	Tabular data, spatial data (if available
Spatial Data Format	ESRI Shapefile, Geographic WGS84

Soils Data Download Package for your AOI (SSURGO)

AOI Location
Box Butte County, Nebraska

Soil Survey Areas
Box Butte County, Nebraska (NE013)

Area in AOI
2,612 acres

Data Availability
Tabular and Spatial, complete

Version
Survey Area: Version 18, Oct 4, 2017
Tabular: Version 17, Oct 4, 2017
Spatial: Version 9, Oct 4, 2017

Template Database
State: NE
Microsoft Access Version: Access 2003
Template Database Version: 36
Template Database Name: soildb_NE_2003

Download Size
3.8 MB

Download Link
wss_aoi_2018-06-01_12-28-52.zip

Download either for smaller (<100,000 acres) AOI or for full Soil Survey Areas.

Download Soils Data for...
Your AOI (SSURGO)
Soil Survey Area (SSURGO)

General Information

Link	Description of Soil Survey Geographic (SSURGO) Database
Download Contents	Tabular data, spatial data (if available), template database (if selected), and FGDC metadata
Spatial Data Format	ESRI Shapefile, Geographic WGS84

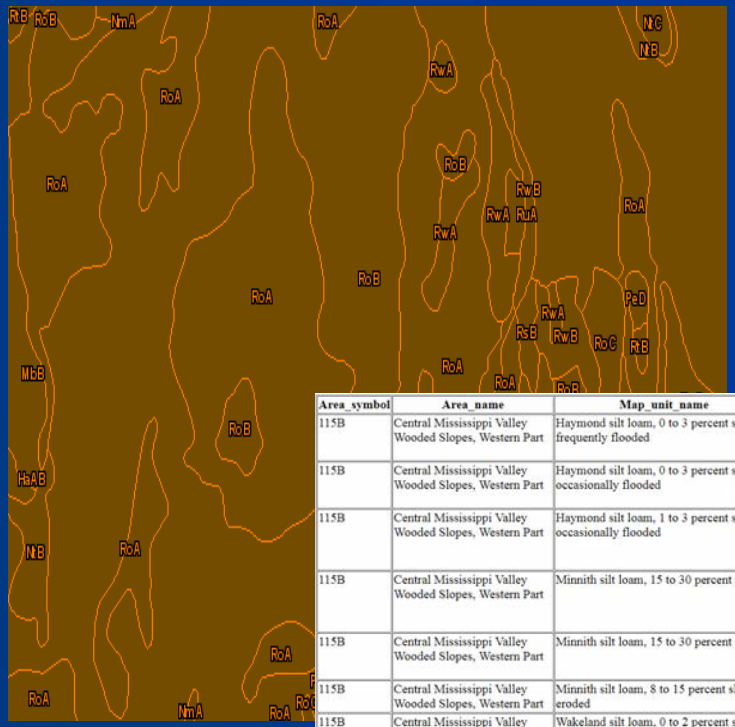
Options

State: Colorado
County (optional):
Only show Soil Survey Areas updated since...: Update Clear
Sort by...: Area Symbol
Include Template Database: ☑

Soil Survey Area (SSURGO) Download Links

Name	Area Symbol	Data Availability	Version	Template Database	Download Size	Download Link
Adams County Area, Parts of Adams and Denver Counties, Colorado	CO001	Tabular and Spatial, complete	Survey Area: Version 14, Oct 5, 2017 Tabular: Version 14, Oct 5, 2017 Spatial: Version 4, Sep 22, 2015	soildb_US_2003 Access 2003 Version 36	19.2 MB	wss_SSA_CO001_soildb_US_2003_[2017-10-05].zip

Delivering the Data
Soil Data Access Web Services
SQL and URL Tools for Soils Data and Information



Area_symbol	Area_name	Map_unit_name	MLRA_acres	Component_name	Ecosite_ID	Ecosite_name
115B	Central Mississippi Valley Wooded Slopes, Western Part	Haymond silt loam, 0 to 3 percent slopes, frequently flooded	202	Haymond	F115BY031MO	Loamy Floodplain Forest
115B	Central Mississippi Valley Wooded Slopes, Western Part	Haymond silt loam, 0 to 3 percent slopes, occasionally flooded	3188	Haymond	F116AY039MO	Loamy Floodplain Step Forest
115B	Central Mississippi Valley Wooded Slopes, Western Part	Haymond silt loam, 1 to 3 percent slopes, occasionally flooded	203	Haymond	F115BY028MO	Loamy/Gravelly Upland Drainageway Forest
115B	Central Mississippi Valley Wooded Slopes, Western Part	Minnith silt loam, 15 to 30 percent slopes	835	Minnith	F115BY006MO	Loamy Protected Backslope Forest
115B	Central Mississippi Valley Wooded Slopes, Western Part	Minnith silt loam, 15 to 30 percent slopes	835	Minnith	F115BY044MO	Loamy Exposed Backslope Woodland
115B	Central Mississippi Valley Wooded Slopes, Western Part	Minnith silt loam, 8 to 15 percent slopes, eroded	2270	Minnith	F115BY005MO	Loamy Upland Woodland
115B	Central Mississippi Valley Wooded Slopes, Western Part	Wakeland silt loam, 0 to 2 percent slopes, frequently flooded	2434	Wakeland	F109XY030MO	Loamy Floodplain Forest
115B	Central Mississippi Valley Wooded Slopes, Western Part	Wilbur silt loam, 0 to 2 percent slopes, frequently flooded	739	Wilbur	F115BY031MO	Loamy Floodplain Forest
115B	Central Mississippi Valley Wooded Slopes, Western Part	Wilbur silt loam, 1 to 3 percent slopes, frequently flooded	50	Wilbur	F115BY031MO	Loamy Floodplain Forest
115B	Central Mississippi Valley Wooded Slopes, Western Part	Winfield silt loam, 2 to 5 percent slopes	110	Winfield	F115BY001MO	Deep Loess Upland Woodland

Hydric Soil List by State

This scripts retrieves by State a list of soils that have a hydric rating of "yes".

Text highlighted in yellow in the example script can be changed for a particular area, e.g. 'MO123' can be substituted for 'NE109'. Also, you can use wildcards to get the entire State e.g., 'MO%' will extract the state of Missouri. More examples can be found on the Tips page.

Tips Page

Copy the example script below and paste it into the query page on the Soil Data Access site.

Soil Data Access Query Page

Example Script

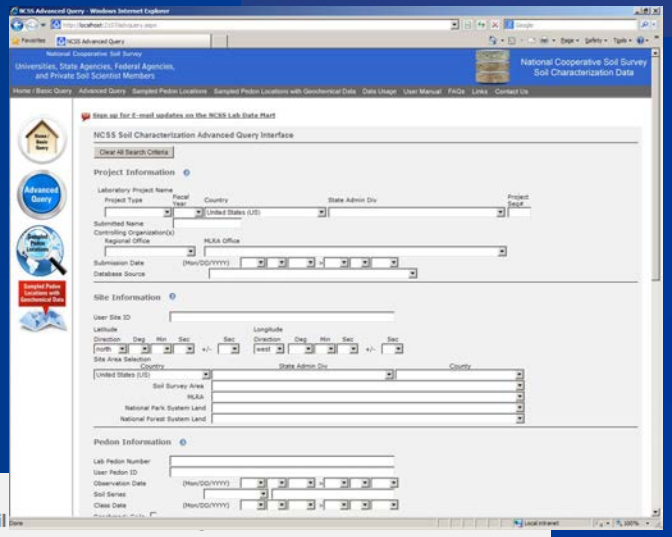
```
SELECT DISTINCT Compname AS Component_name
FROM legend AS l
INNER JOIN mapunit AS m ON l.lkey = m.lkey
LEFT OUTER JOIN component AS c ON m.mukey = c.mukey
WHERE hydricrating = 'yes' AND LEFT(l.areasymbol,2) LIKE 'WI'
GROUP BY Compname
ORDER BY Compname
```

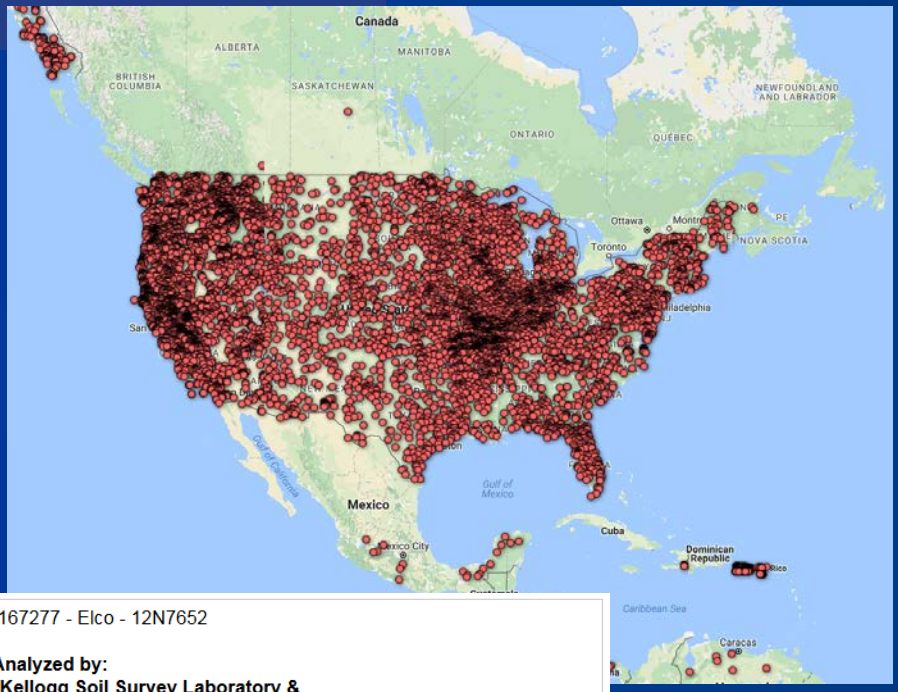
Example Table Output

Description of tables and columns can be found on this link: Table and Column Descriptions

Component_name
Ackmore
Adder
Adrain

Delivering the Data
Soil Lab Data Mart





NCSS Soil

Return Last Data Interface

Check All Bottom

	Lab Pedon Number	User Pedon ID	Sampled as Series	Correlated Series	rc
☐	40A2233	57NE057001	Bridgeport	Bridgeport	1
☐	40A2234	57NE057002	Bridgeport	Bridgeport	2
☐	40A2065	57NE057003	Bridgeport	(unnamed)	3
☐	40A2235	57NE057004	Bridgeport	Bridgeport	4
☐	89P0133	88NE057001	Colby	Sully	5
☐	89P0134	88NE057002	Duroc	Duroc	6
☐	89P0135	88NE057003	Duroc	Duroc	7
☐	89P0136	88NE057004	Keith	Ulysses	8
☐	89P0137	88NE057005	Ulysses	Ulysses	9
☐	89P0138	88NE057006	Keith	Ulysses	10
☐	89P0139	88NE057007	Colby	Sully	11

2011IL167277 - Elco - 12N7652

Soils Analyzed by:
NRCS Kellogg Soil Survey Laboratory &
Cooperating University Laboratories

Sampled As Series Name: Elco
Correlated Series Name: Elco
Country: United States
State: Illinois
County: Sangamon
MLRA: 108B
Latitude: 39.7185528
Longitude: -89.6069861

Lab Data Report
Pedon Description Report
Complete Pedon Index: 4

Delivering the Data GlobalSoilMap.net

North American Node Data

ArcGIS REST Services Directory

Home > services > GlobalSoilMap_v05

JSON | SOAP

Folder: GlobalSoilMap_v05

Current Version: 10.51

View Footprints In: ArcGIS Online map viewer

Services:

- GlobalSoilMap_v05/available_water_supply (MapServer)
- GlobalSoilMap_v05/clay (MapServer)
- GlobalSoilMap_v05/dbthirdbar (MapServer)
- GlobalSoilMap_v05/electric_conductivity (MapServer)
- GlobalSoilMap_v05/gravel (MapServer)
- GlobalSoilMap_v05/pH (MapServer)
- GlobalSoilMap_v05/sand (MapServer)
- GlobalSoilMap_v05/silt (MapServer)
- GlobalSoilMap_v05/soil_depth (MapServer)

Supported Interfaces: REST SOAP Sitemap Geo Sitemap

- Total Sand, g kg (0)
  - Total Sand, g kg, 0-5 cm depth (1)
  - Total Sand, g kg, 5-15 cm depth (2)
  - Total Sand, g kg, 15-30 cm depth (3)
  - Total Sand, g kg, 30-60 cm depth (4)
  - Total Sand, g kg, 60-100 cm depth (5)
  - Total Sand, g kg, 100-200 cm depth (6)
  - Total Sand, g kg, total depth prior to spline (7)
  - Total Sand, g kg, depth available to root zone (8)
  - Percent of Map Unit used for Weighted Avg Calculation (9)

https://nrcsgeoservices.sc.egov.usda.gov/arcgis/rest/services/GlobalSoilMap_v05

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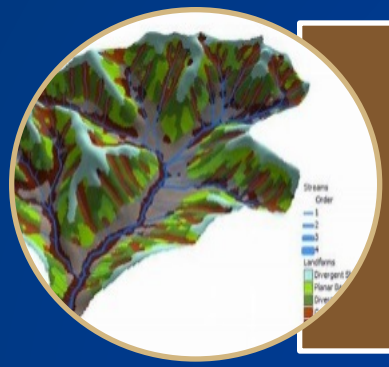

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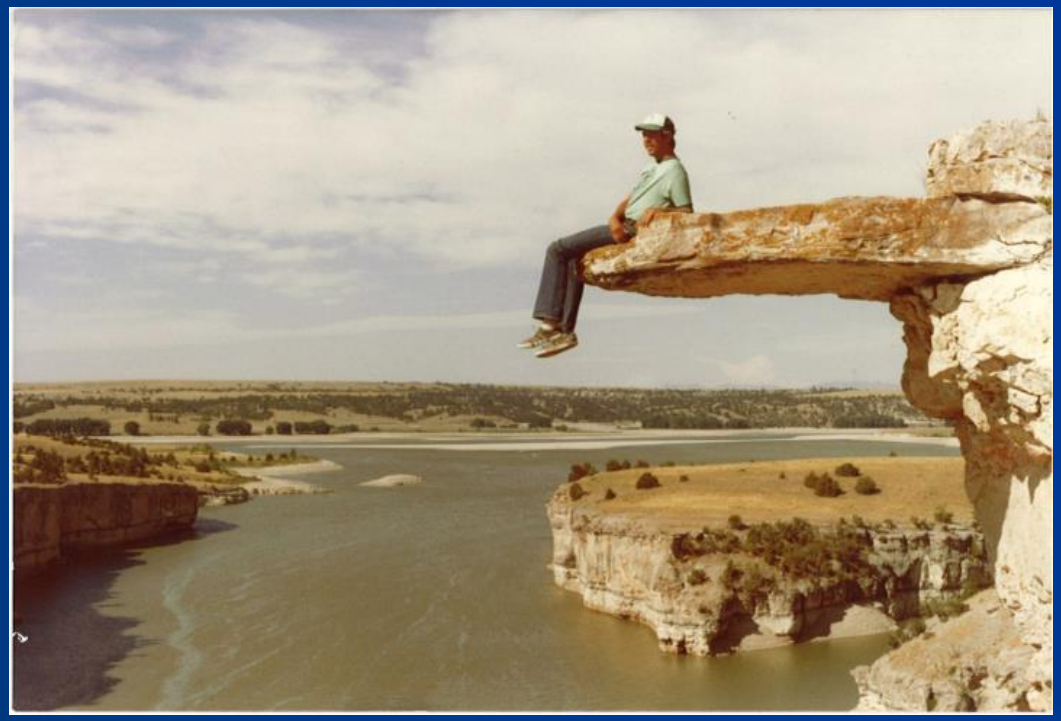
Questions?



USDA-NRCS
National Soil Survey Center
March 2018

David Hoover
Director

David.Hoover@lin.usda.gov
402-437-4013