Soil Data Viewer
&
Web Soil Survey

Christiane Roy, GIS Specialist
christiane.roy@mn.usda.gov
Peter Hartman, Area Soil Scientist
Peter.hartman@mn.usda.gov
NRCS, Rochester, MN

Soil Data Viewer

Acquiring soil characteristics with OR without spatial data

Without spatial data as a “stand alone”

generate soils reports like those found in the soil survey reports

With spatial data through ArcMap

generate soils reports and a soil map of a selected area

Soil Data Viewer

Links the tabular data to the spatial data (SSURGO lines) in ArcMap to produce a SPATIAL representation of various soil properties.

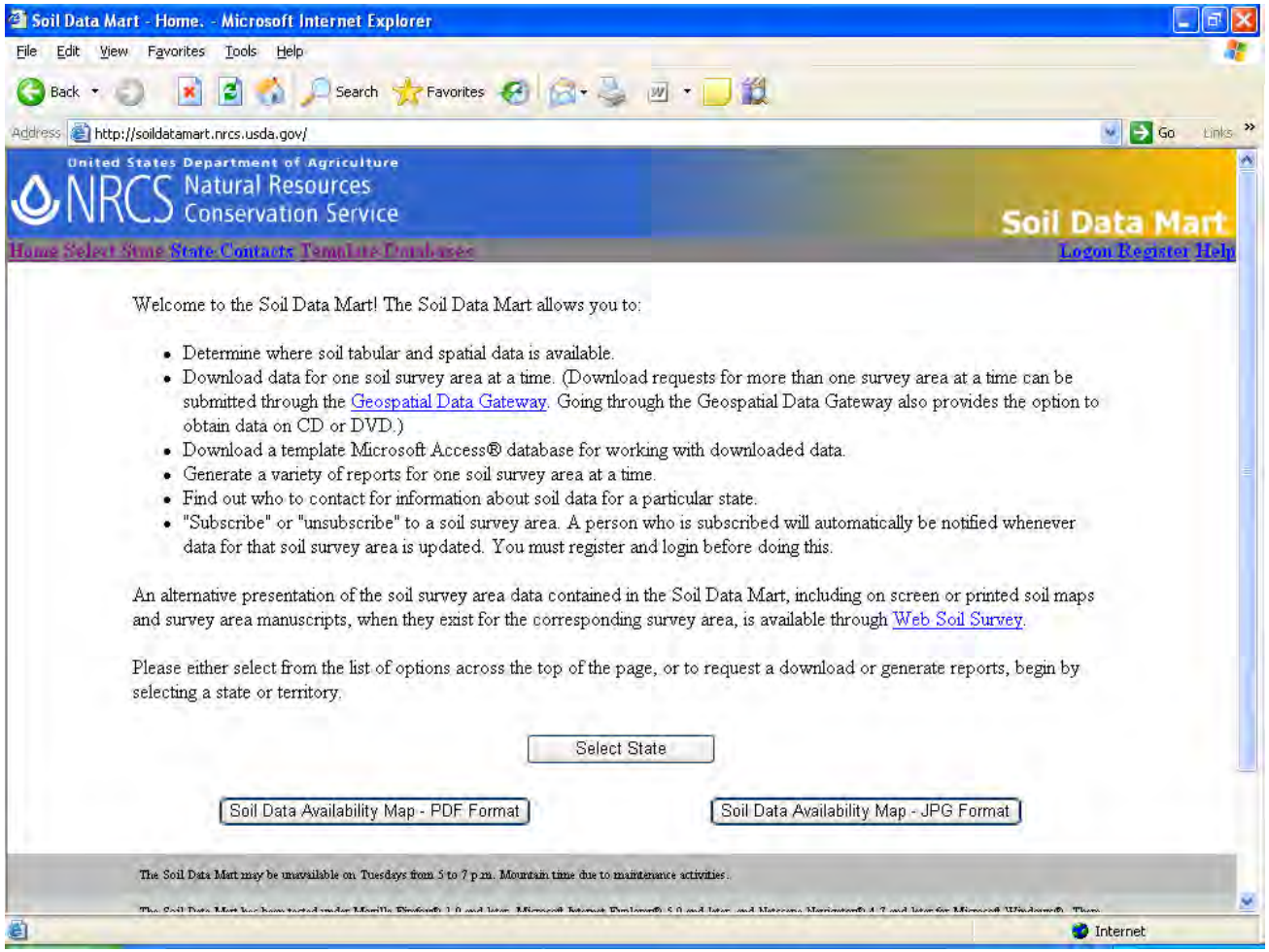
First Step is to acquire the SSURGO data from the Soil Data Mart:

http://soildatamart.nrcs.usda.gov/

Soil Data Mart

- Allows you to:
  - Determine what tabular and spatial data is available
  - Download data for one soil survey at a time
  - Download a template Microsoft Access database for working with downloaded data
  - Generate a variety of soil reports online
  - Acquire contact information about soil data
  - Subscribe to be notified whenever data is updated

Soil Data Mart



Soil Data Mart - Select State or Territory. - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Media

Address http://soildatamart.nrcs.usda.gov/State.aspx Go

United States Department of Agriculture
NRCS Natural Resources Conservation Service

Minnesota

Soil Data Mart

Home Select State State Contacts Template Databases Logon/Register Help

Please select a state or territory with at least one survey area:

State or Territory Code	State or Territory Name	Available Survey Areas
KY	Kentucky	76
LA	Louisiana	56
ME	Maine	9
MD	Maryland	24
MA	Massachusetts	12
MI	Michigan	56
MN	Minnesota	76
MS	Mississippi	25
MO	Missouri	106
MT	Montana	54
NE	Nebraska	92
NV	Nevada	32
NH	New Hampshire	2
NJ	New Jersey	9
NM	New Mexico	27
NY	New York	46
NC	North Carolina	100
ND	North Dakota	52
OH	Ohio	46

Select County Select Survey Area

▲ Back to Top

Disclaimer | Privacy Policy | Freedom of Information Act | Accessibility | Contact Us
FirstGov | Welcome to the USDA | USDA | NRCS

Internet

Soil Data Mart - Select County or Parish. - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Media

Address http://soildatamart.nrcs.usda.gov/County.aspx?State=MN Go

United States Department of Agriculture
NRCS Natural Resources Conservation Service

Minnesota

Soil Data Mart

Home Select State State Contacts Template Databases Logon/Register Help

Please select a county or parish with at least one survey area:

	County Code	County Name	Available Survey Areas
	MN103	Mcleod	1
	MN105	Nobles	1
	MN107	Norman	1
	MN109	Olmsted	1
▶	MN111	Otter Tail	1
	MN113	Pennington	1
	MN115	Pine	1
	MN117	Pipestone	1
	MN119	Polk	1
	MN121	Pope	1
	MN123	Ramsey	1
	MN125	Red Lake	1
	MN127	Redwood	1
	MN129	Renville	1
	MN131	Rice	1
	MN133	Rock	1
	MN135	Roseau	1
	MN137	St Louis	0

Select Survey Area

Select State

▲ Back to Top

Disclaimer | Privacy Policy | Freedom of Information Act | Accessibility | Contact Us
FirstGov | Welcome to the USDA | USDA | NRCS

Internet

Soil Data Mart - Select Soil Survey Area. - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Media

Address http://soildatamart.nrcs.usda.gov/Survey.aspx?County=MN111 Go

United States Department of Agriculture
NRCS Natural Resources Conservation Service

Otter Tail County
Minnesota

Soil Data Mart

Home Select State State Contacts Template Databases Logon/Register Help

Please select a soil survey area:

Survey Area Symbol	Survey Area Name	Available Data
MN111	Otter Tail County, Minnesota	Tabular and Spatial

View Metadata | Download Data | Generate Reports | Subscribe

Select State | Select County

▲ Back to Top

Disclaimer | Privacy Policy | Freedom of Information Act | Accessibility | Contact Us
FirstGov | Welcome to the USDA | USDA | NRCS

Internet

Soil Data Mart - Download Soil Survey Area Data. - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

Address http://soildatamart.nrcs.usda.gov/Download.aspx?Survey=MN111&UseState=MN Go Links McAfee SiteAdvisor

United States Department of Agriculture
NRCS Natural Resources Conservation Service

MN111 - Otter Tail County, Minnesota
Otter Tail County
Minnesota

Soil Data Mart

Home | Select State | State Contacts | Template Databases | SSURGO Metadata | Status Map | US General Soil Map | Logon/Register | Help

Please select the class of data you wish to download: *(Survey Area Version 5 , Tabular Version 4 , Spatial Version 1)*

- Tabular Data Only
- Tabular and Spatial Data
- Spatial Data Only
- Template Database Only

Reset Default

Please select a spatial format: ArcView Shapefile

Please select a coordinate system: UTM Zone 15, Northern Hemisphere (NAD 83)

Clear Selection

Please select a template database (optional):

State	MS Access Version	Template DB Version	Template DB Name	Size
IA	Access 2002	32.1	soildb_IA_2002	1.8M
IA	Access 2002	31_3	soildb_IA_2002	1.4M
MI	Access 2002	32	soildb_MI_2002	1.7M
MN	Access 2002	33.3	soildb_MN_2003	1.8M

Description: Custom Access Template Version 33.3 for Minnesota.
This template includes the following locally developed reports:
-Forage Suitability Groups (MN)
-Conservation Tree/Shrub Suitability Groups (MN)
-Soil Moisture, Ponding, and Flooding (MN)
-Wildlife Habitat (MN)
-Map Unit Description (MN)

Please enter your e-mail address:

If the e-mail account entered above is protected by spam blocking software, you will need to authorize e-mail from SoilDataMart@nrcs.usda.gov in order to receive e-mail notification once your request has been processed.

Submit Request | See Disclaimer
Select Survey Area | View Metadata | Generate Reports | Subscribe

▲ Back to Top

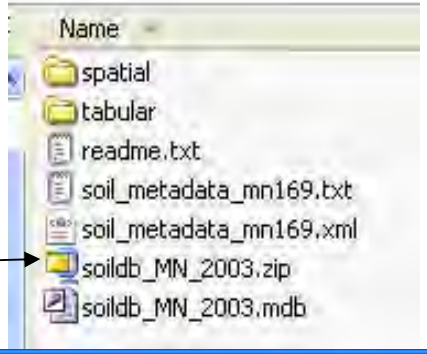
FOIA | Information Quality | Accessibility Statement | Privacy Policy | Non-Discrimination Statement
White House | USA.gov | USDA | NRCS | NRCS Soils | Disclaimer | Contact Us

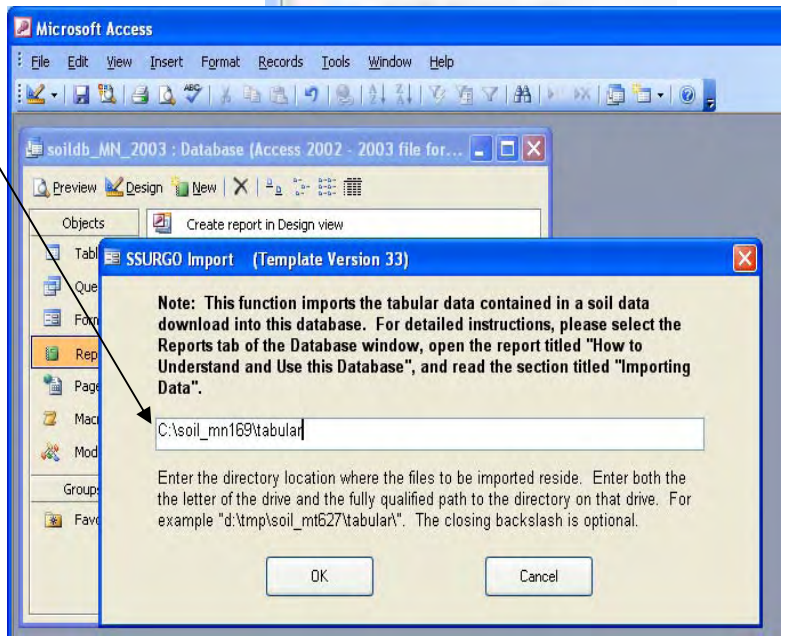
Done Trusted sites

Extracting Soil Data Mart zip

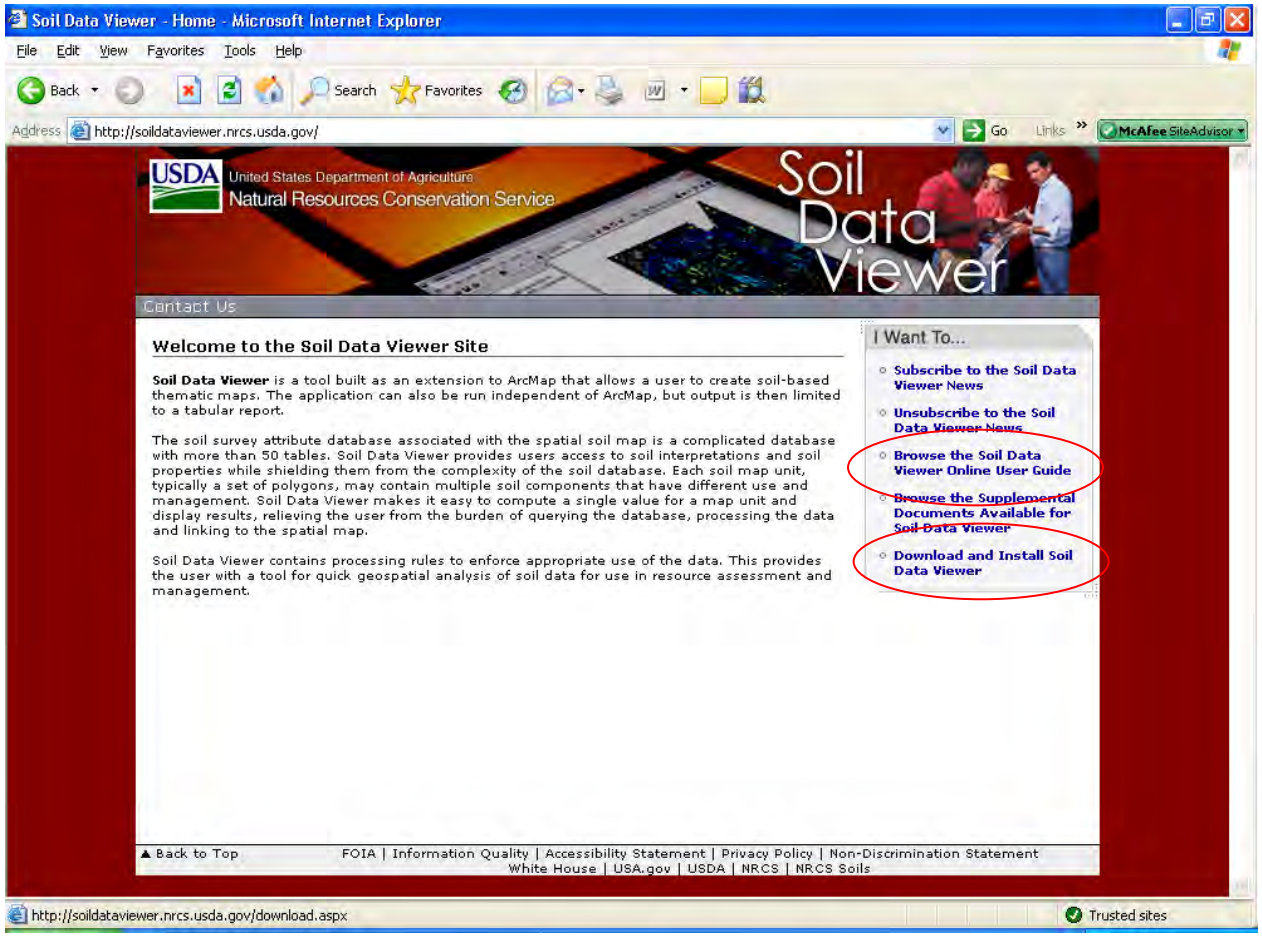
- Soil data mart zip file is in the form soil_[State][Fips].zip (e.g soil_mn169.zip)
- Unzip the file open the folder extracted.
- Unzip the template. The MN Template is soildb_MN_2003.zip
- Open the Template in Access and type the path to the tabular folder

This will populate all the tables and reports with the tabular data from the Soil data mart you extracted.

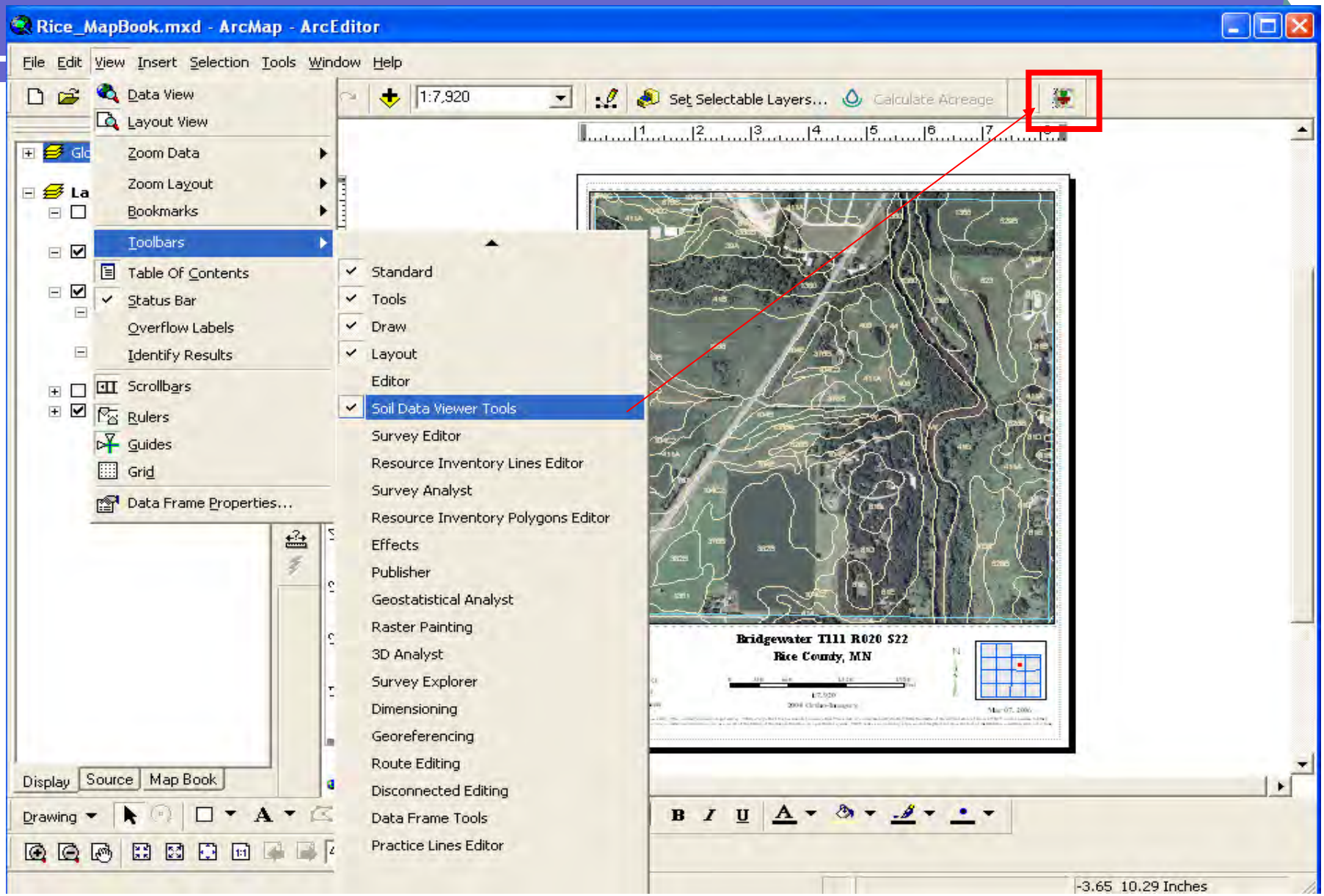




Installing Soil Data Viewer



In ArcMAP, Add SDV tool



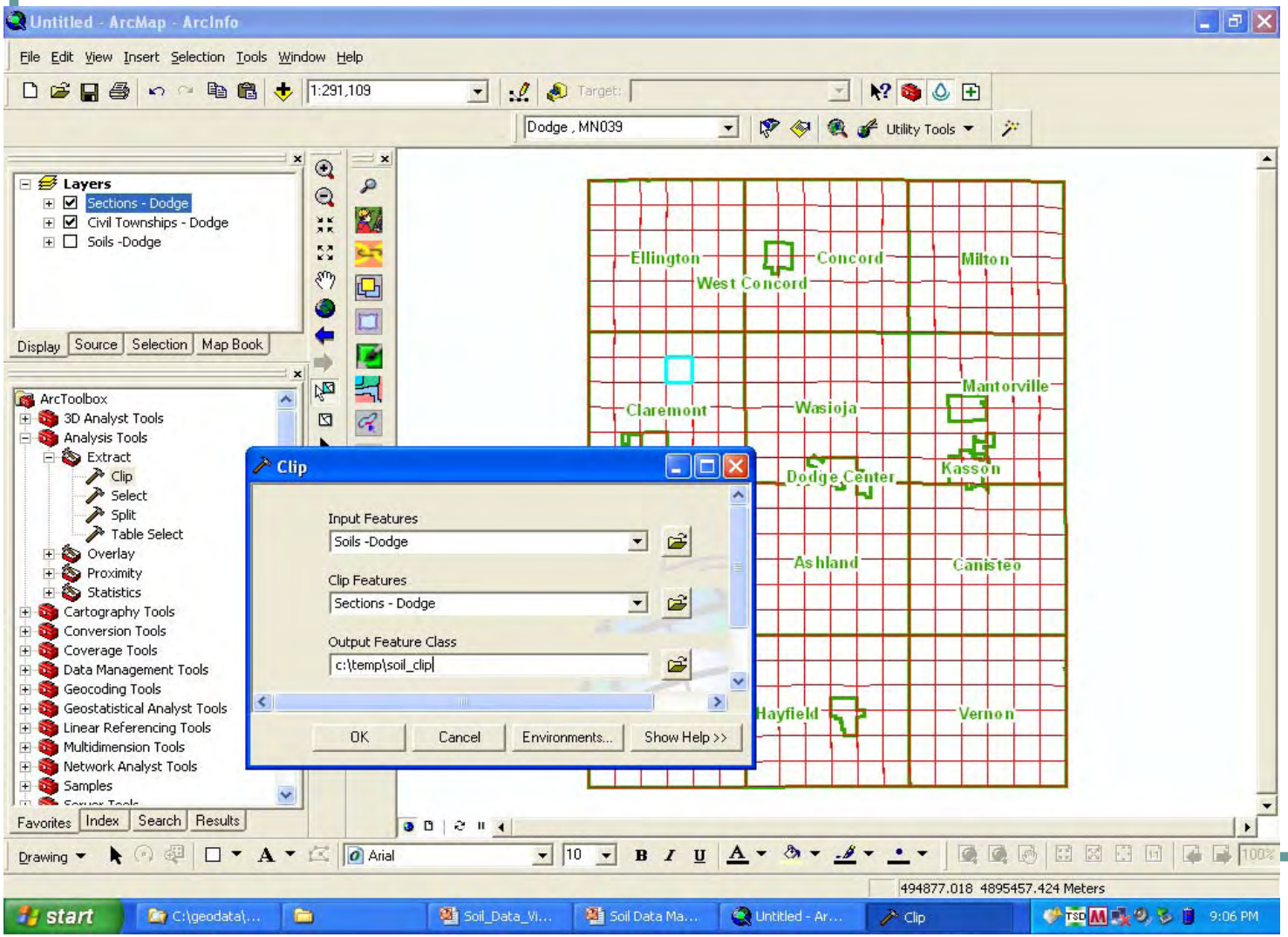
Find Area of Interest (AOI)

SDV requires a soil layer present with specific attributes (soil data mart spatial data)

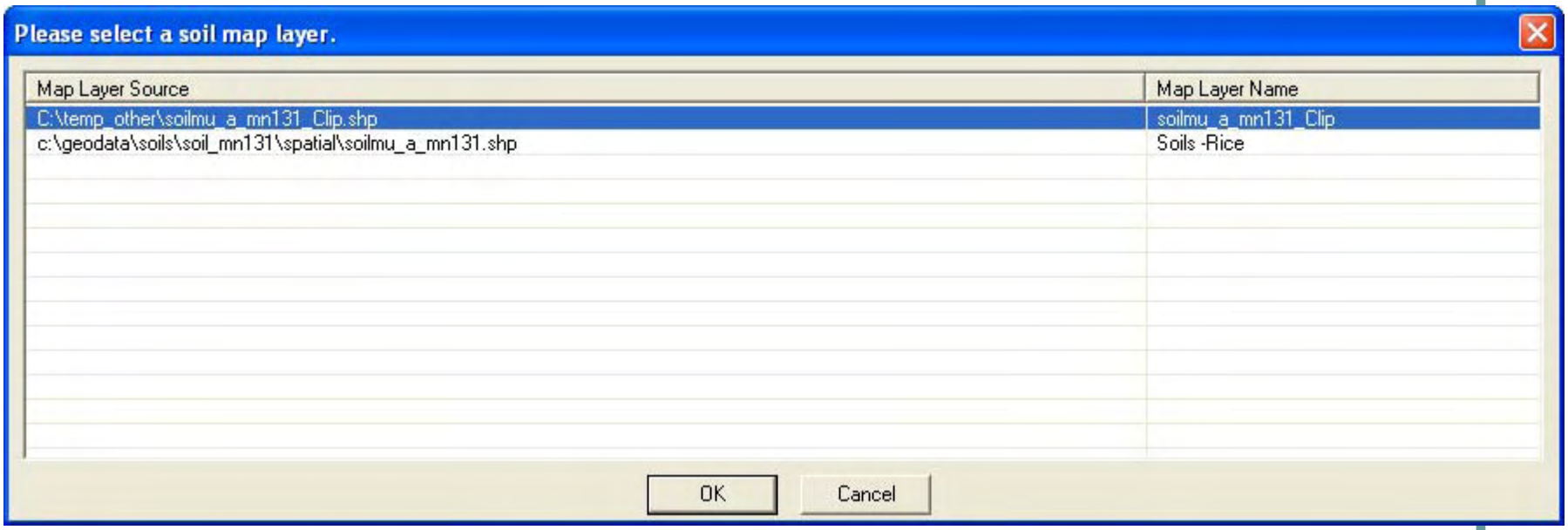
AOI can be

- County soil layer
- Selection by attribute (e.g. parcel)
- Any shapefile

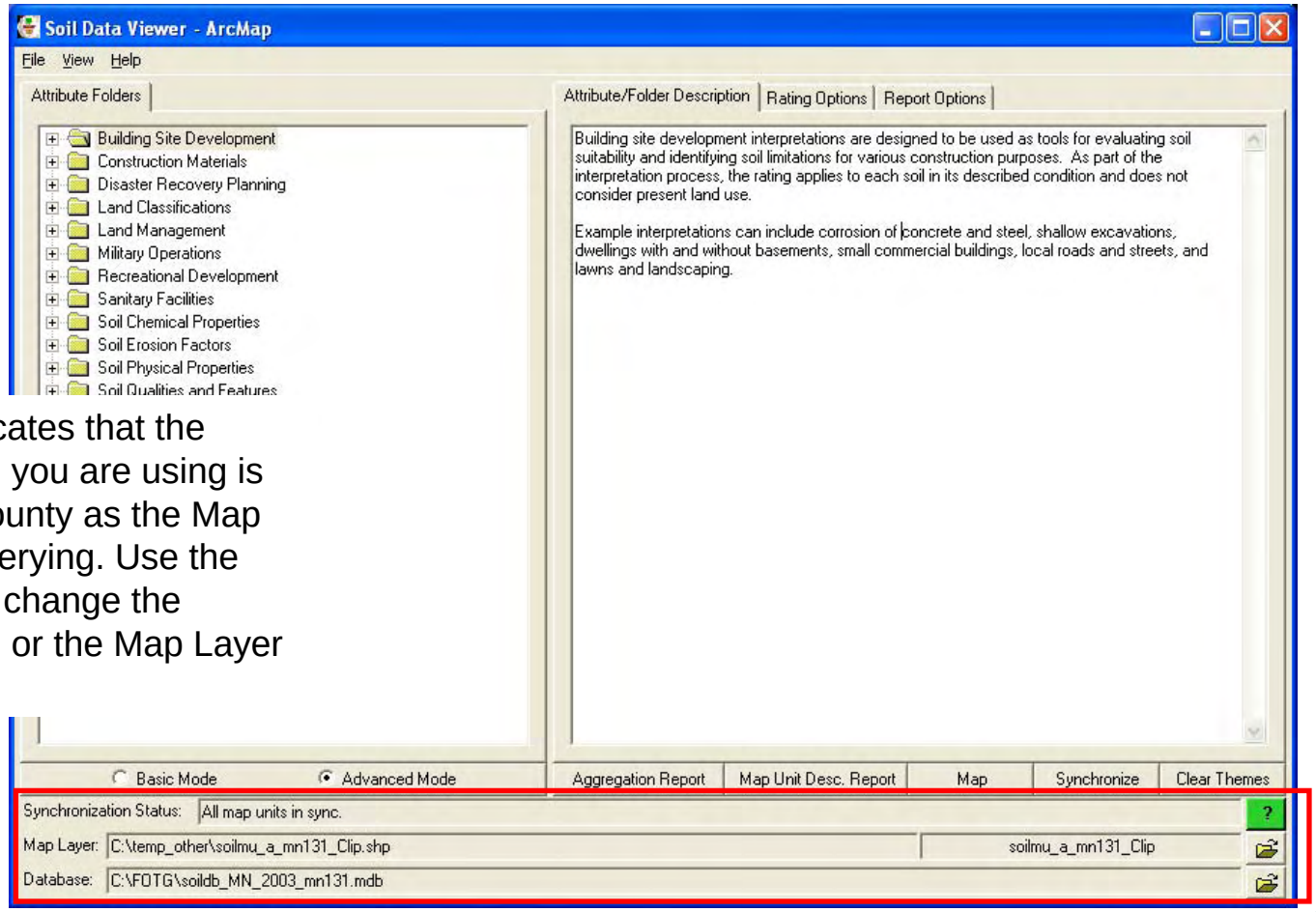
Once AOI is created
Clip soils



Once the Soil is clip for the AOI
Open the SDV and select your clipped soils

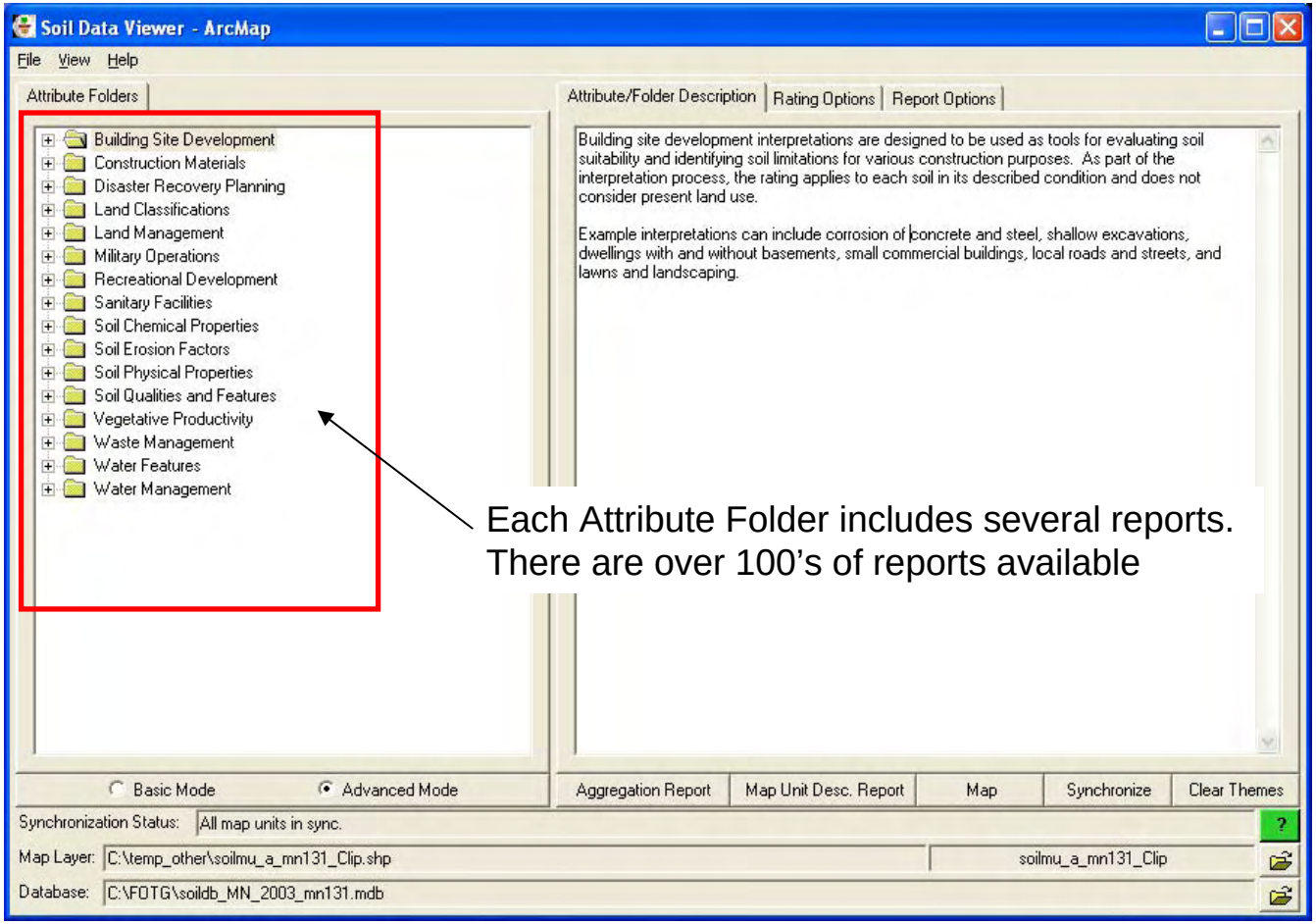


SDV Map layers and Database



The green ? Indicates that the Access database you are using is from the same county as the Map Layer you are querying. Use the browse button to change the Access database or the Map Layer as needed

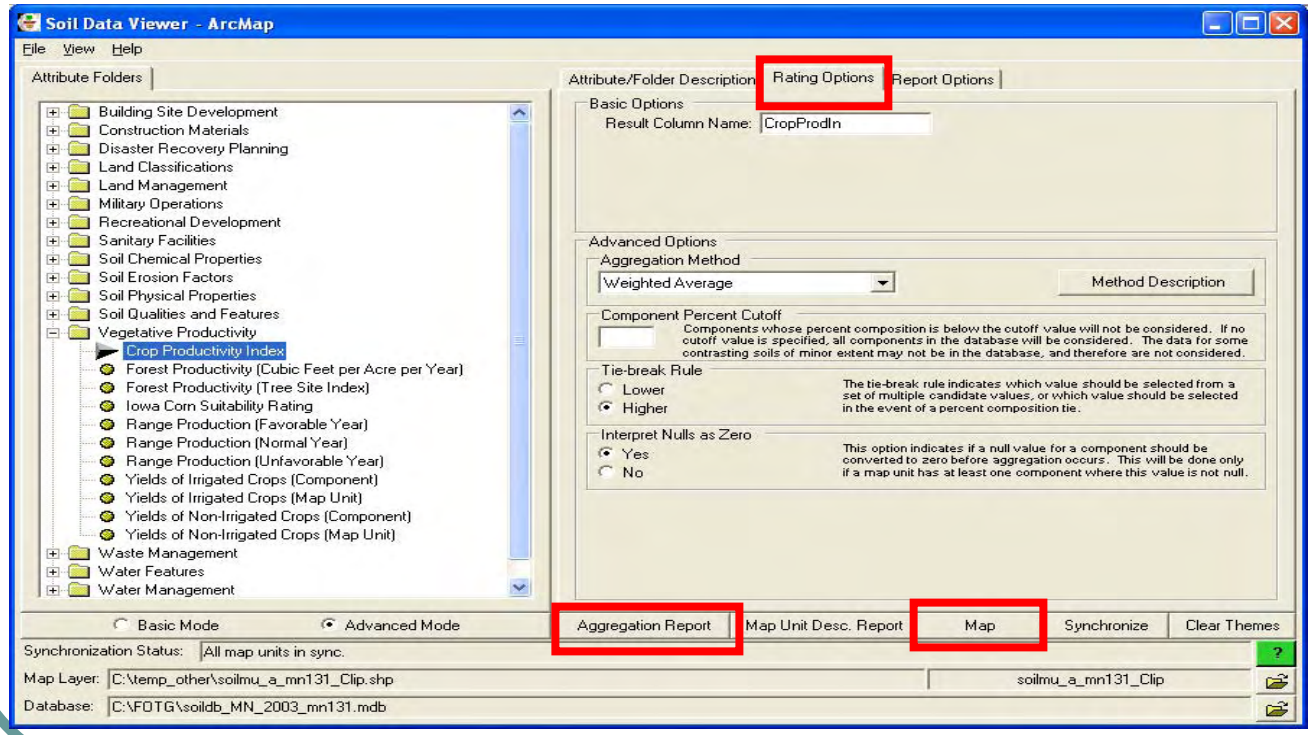
SDV Reports



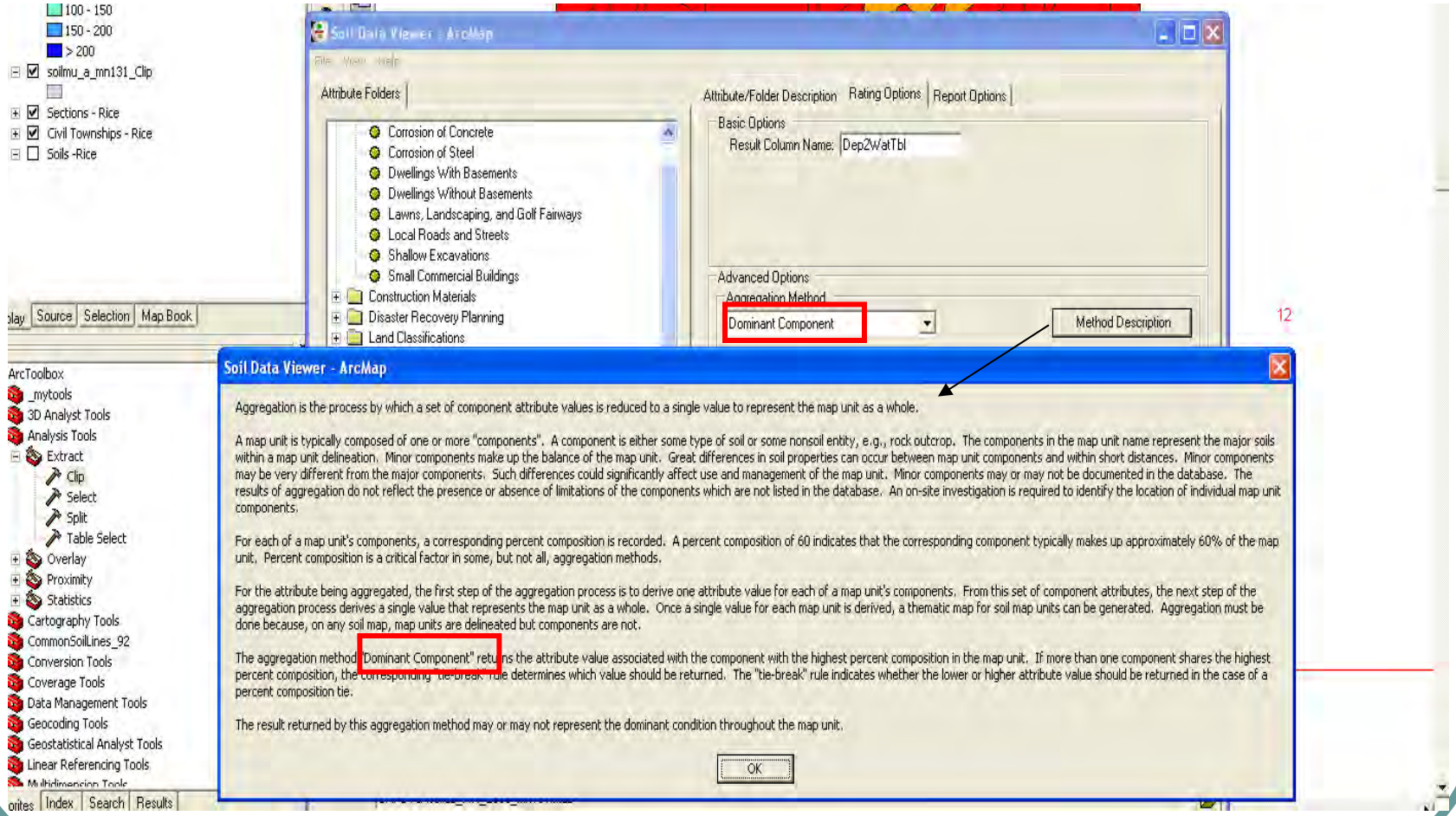
Each Attribute Folder includes several reports.
There are over 100's of reports available

Report Options

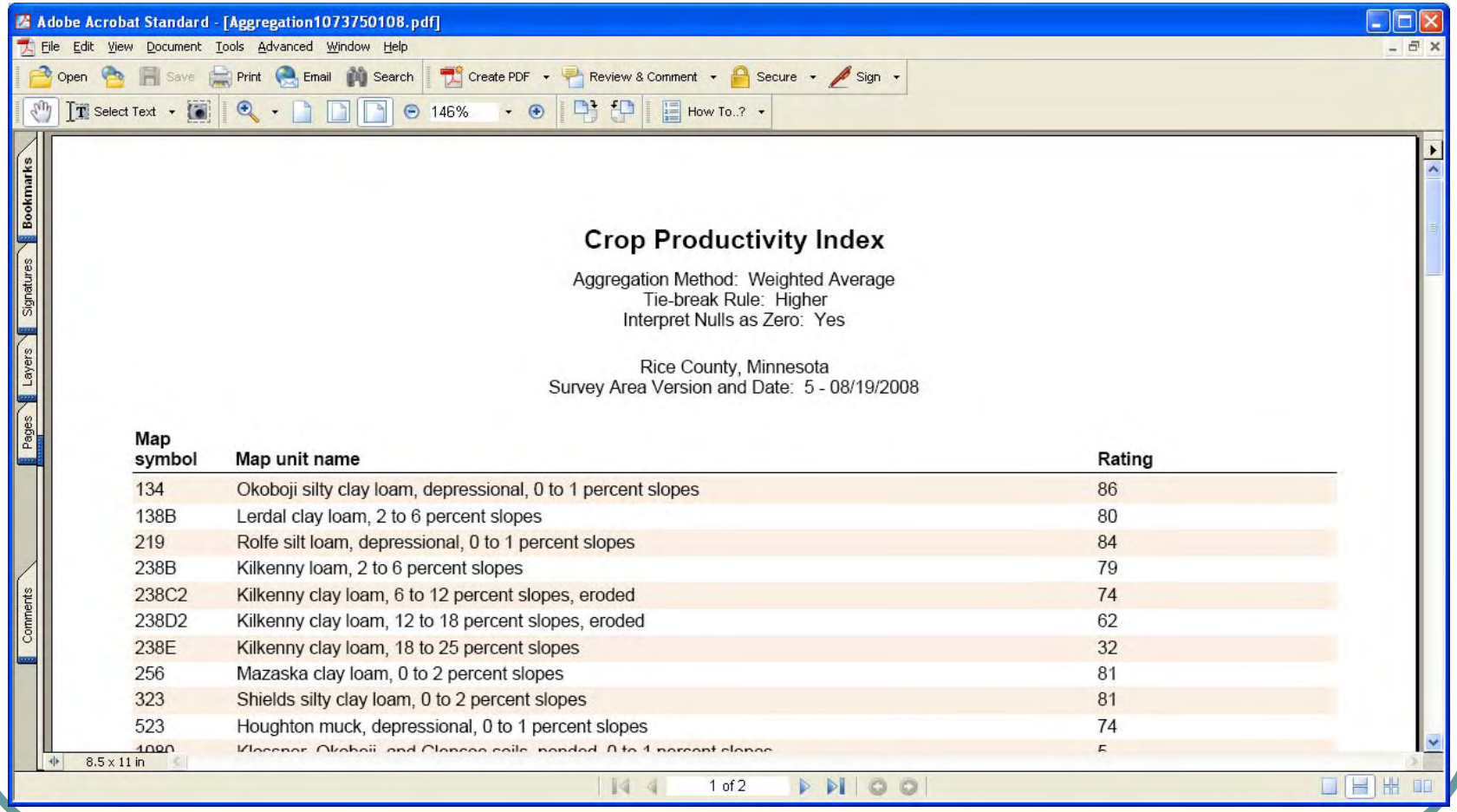
The Advanced mode will allow you to change options in the Rating Options tab and also add more report choices. The Aggregation Report button will create a print out of your report and the Map button will create a thematic map of the report.



Advanced Options Description



Report – unfortunately does not provide acres. Future Upgrdades of SDV will include acres

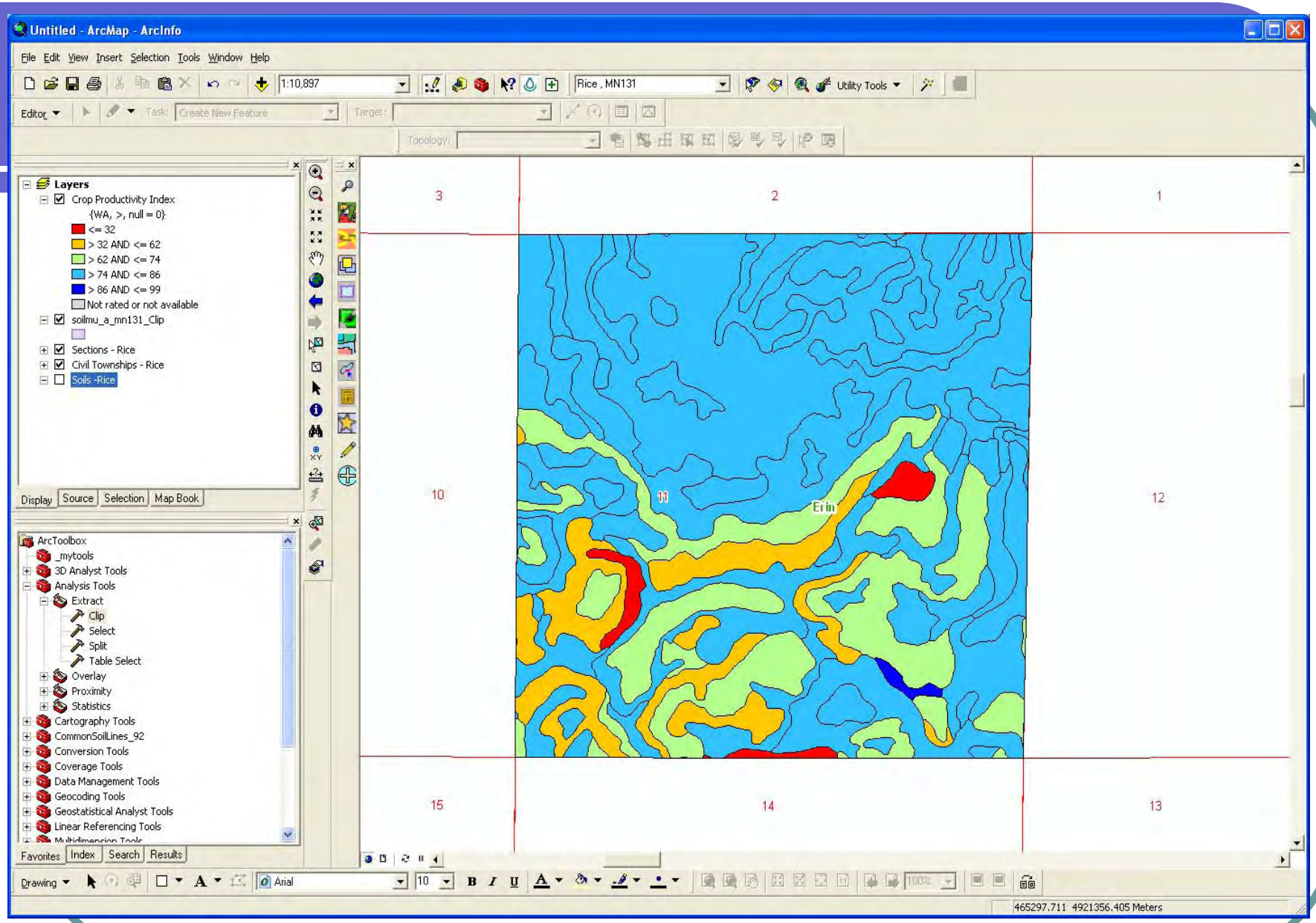


Crop Productivity Index

Aggregation Method: Weighted Average
Tie-break Rule: Higher
Interpret Nulls as Zero: Yes

Rice County, Minnesota
Survey Area Version and Date: 5 - 08/19/2008

Map symbol	Map unit name	Rating
134	Okoboji silty clay loam, depressional, 0 to 1 percent slopes	86
138B	Lerdal clay loam, 2 to 6 percent slopes	80
219	Rolfe silt loam, depressional, 0 to 1 percent slopes	84
238B	Kilkenny loam, 2 to 6 percent slopes	79
238C2	Kilkenny clay loam, 6 to 12 percent slopes, eroded	74
238D2	Kilkenny clay loam, 12 to 18 percent slopes, eroded	62
238E	Kilkenny clay loam, 18 to 25 percent slopes	32
256	Mazaska clay loam, 0 to 2 percent slopes	81
323	Shields silty clay loam, 0 to 2 percent slopes	81
523	Houghton muck, depressional, 0 to 1 percent slopes	74


Untitled - ArcMap - ArcInfo
File Edit View Insert Selection Tools Window Help
1:10,897
Rice , MN131
Utility Tools
Editor
Task: Create New Feature
Target:
Topology:
Layers
Crop Productivity Index
{WA, >, null = 0}
<= 32
> 32 AND <= 62
> 62 AND <= 74
> 74 AND <= 86
> 86 AND <= 99
Not rated or not available
soilmu_a_mn131_Clip
Sections - Rice
Civil Townships - Rice
Soils -Rice
Display
Source
Selection
Map Book
ArcToolbox
_mytools
3D Analyst Tools
Analysis Tools
Extract
Clip
Select
Split
Table Select
Overlay
Proximity
Statistics
Cartography Tools
CommonSoilLines_92
Conversion Tools
Coverage Tools
Data Management Tools
Geocoding Tools
Geostatistical Analyst Tools
Linear Referencing Tools
Favorites
Index
Search
Results
3
2
1
10
11
Erin
12
15
14
13
Drawing
Arial
10
465297.711 4921356.405 Meters

Soil Data Viewer - ArcMap

File View Help

Attribute Folders

- Corrosion of Concrete
- Corrosion of Steel
- Dwellings With Basements
- Dwellings Without Basements
- Lawns, Landscaping, and Golf Fairways
- Local Roads and Streets
- Shallow Excavations
- Small Commercial Buildings
- Construction Materials
- Disaster Recovery Planning
- Land Classifications
- Land Management
- Military Operations
- Recreational Development
- Sanitary Facilities
- Soil Chemical Properties
- Soil Erosion Factors
- Soil Physical Properties
- Soil Qualities and Features
- Vegetative Productivity
- Waste Management
- Water Features
  - Depth to Water Table
  - Flooding Frequency Class
  - Ponding Frequency Class
- Water Management

Basic Mode / Advanced Mode

Attribute/Folder Description | Rating Options | Report Options

Basic Options

Result Column Name: Dep2WatTbl

Advanced Options

Aggregation Method

Dominant Component

Method Description

Component Percent Cutoff

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule

Lower
Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero

Yes
No

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Month Range

Beginning Month: January

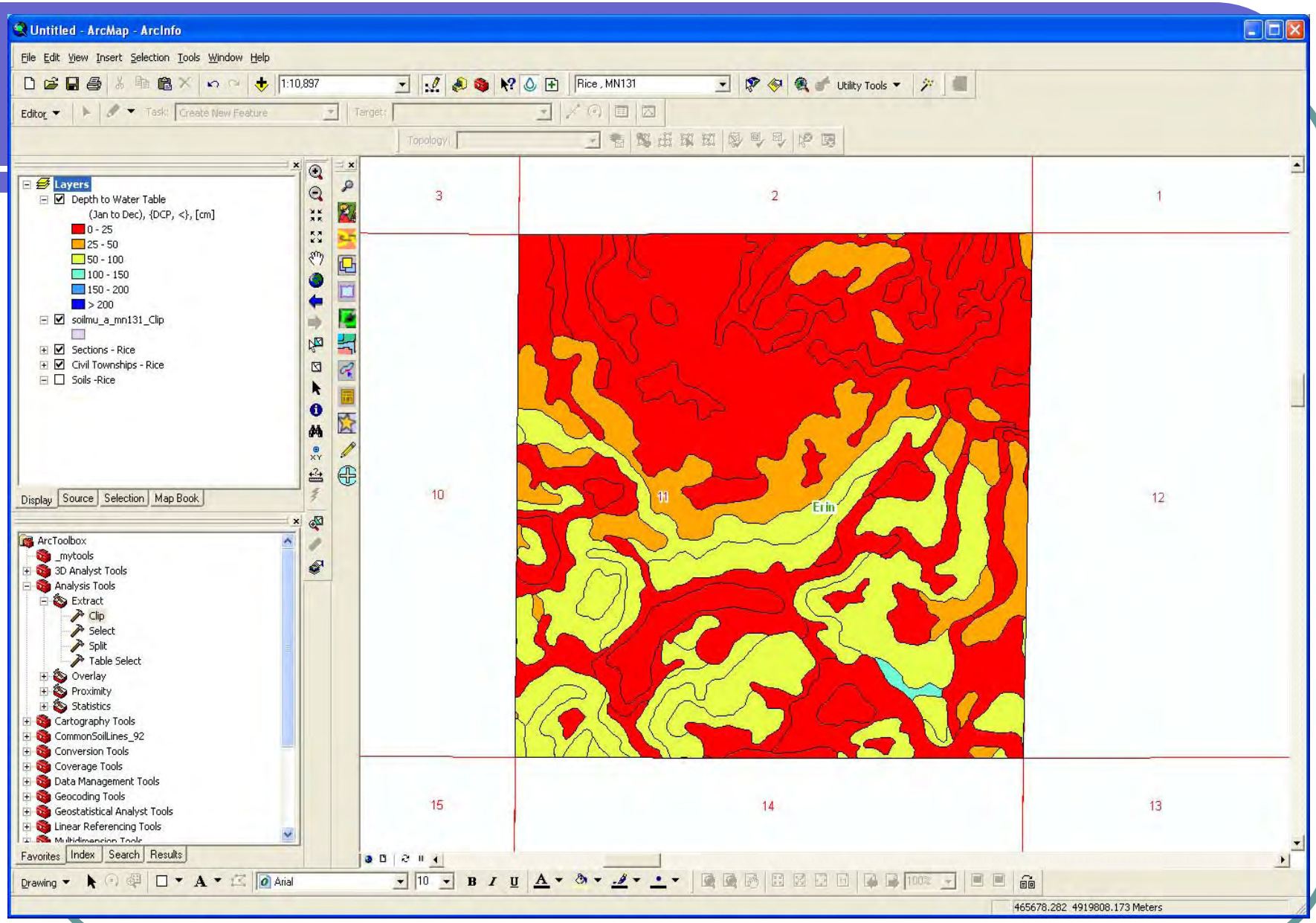
Ending Month: December

Aggregation Report | Map Unit Desc. Report | Map | Synchronize | Clear Themes

Synchronization Status: All map units in sync.

Map Layer: C:\temp_other\soilmu_a_mn131_Clip.shp | soilmu_a_mn131_Clip

Database: C:\FOTG\soildb_MN_2003_mn131.mdb


Untitled - ArcMap - ArcInfo
File Edit View Insert Selection Tools Window Help
1:10,897
Rice , MN131
Utility Tools
Editor
Task: Create New Feature
Target:
Topology:
Layers
Depth to Water Table
(Jan to Dec), {DCP, <}, [cm]
0 - 25
25 - 50
50 - 100
100 - 150
150 - 200
> 200
soilmu_a_mn131_Clip
Sections - Rice
Civil Townships - Rice
Soils -Rice
Display
Source
Selection
Map Book
ArcToolbox
_mytools
3D Analyst Tools
Analysis Tools
Extract
Clip
Select
Split
Table Select
Overlay
Proximity
Statistics
Cartography Tools
CommonSoilLines_92
Conversion Tools
Coverage Tools
Data Management Tools
Geocoding Tools
Geostatistical Analyst Tools
Linear Referencing Tools
Favorites
Index
Search
Results
3
2
1
10
11
Erin
12
15
14
13
Drawing
Arial
10
465678.282 4919808.173 Meters

SDV –Spatial limitations

- Thematic Layer is temporary, need to export to make permanent.
- Acres not included in report
- Some SDV automated Symbology is arbitrary (example CPI), but can be modified as needed in ArcMap

Web Soil Survey - Home - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

Address http://websoilsurvey.nrcs.usda.gov/app/ Go Links McAfee SiteAdvisor

USDA United States Department of Agriculture
Natural Resources Conservation Service

Web Soil Survey

Home | About Soils | Help | Contact Us

You are here: Web Soil Survey Home

Search

Enter Keywords Go

All NRCS Sites

Browse by Subject

- Soils Home
- National Cooperative Soil Survey (NCSS)
- Archived Soil Surveys
- Status Maps
- Official Soil Series Descriptions (OSD)
- Soil Series Extent Mapping Tool
- Soil Data Mart

The simple yet powerful way to access and use soil data.

START WSS

Welcome to Web Soil Survey (WSS)

Web Soil Survey (WSS) provides soil data and information produced by the National Cooperative Soil Survey. It is operated by the USDA Natural Resources Conservation Service (NRCS) and provides access to the largest natural resource information system in the world. NRCS has soil maps and data available online for more than 95 percent of the nation's counties and anticipates having 100 percent in the near future. The site is updated and maintained online as the single authoritative source of soil survey information.

Three Basic Steps

I Want To...

- Start Web Soil Survey (WSS)
- Know the requirements for running Web Soil Survey
- Know whether Web Soil Survey works in my web browser
- Know the Web Soil Survey hours of operation
- Find what areas of the U.S. have soil data

Announcements/Events

- Web Soil Survey 2.1 has been released! View description of new

Trusted sites

Web Soil Survey - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

USDA United States Department of Agriculture
Natural Resources Conservation Service

Web Soil Survey

Contact Us | Download Soils Data | Archived Soil Surveys | Glossary | Preferences | Logout | Help

Area of Interest (AOI)

View Soil Information By Us

Intro to Soils | Suitabili Limitation

Search

Soil Reports

- AOI Inventory
- Building Site Development
- Construction Materials
- Land Classifications
- Land Management
- Recreational Development
- Sanitary Facilities
- Soil Chemical Properties
- Soil Erosion
- Soil Physical Properties
- Soil Qualities and Features
- Vegetative Productivity
- Waste Management
- Water Features
- Water Management
- Wildlife Management

Using the NCSS Web Soil Survey

Three Basic Steps make WSS a simple yet powerful way to access and use soil data.

1 Define.

Use the **Area of Interest** tab to define your area of interest. You can navigate to an area by zooming in on a map or by selecting from a Quick Navigation choice list. After you find the area, define it as the Area of Interest (AOI) by drawing a rectangle or a polygon around it using a map tool. You must complete this step before you can go on to the next two steps.

2 View/Explore.

Click the **Soil Map** tab to view or print a map of the soils in your area and view a description of the soils, or click the **Soil Data Explorer** tab to access soil data for your area and determine the suitability of the soils for a particular use. The items you want saved in a report can be added to your shopping cart.

3 Check Out.

Use the **Shopping Cart** tab to get your custom report immediately or download it later.

View some helpful Tips & Shortcuts.

You can access context-sensitive online help throughout the application

Scale

FOIA | Accessibility | Quality | USA.gov | White House

Done | Trusted sites

Web Soil Survey - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Natural Resources Conservation Service — Web Soil Survey

Contact Us | Download Soils Data | Archived Soil Surveys | Glossary | Preferences | Logout | Help

Area of Interest (AOI) | Soil Map | Soil Data Explorer | Shopping Cart (Free)

Search

Quick Navigation

Navigate By...

- Address
- State and County
- Soil Survey Area
- Latitude and Longitude
- PLSS (Section, Township, Range)

View

State: Minnesota

Principal Meridian: Fifth Principal

View Meridian Map

Section: 11

Township: 111 — North / South

Range: 22 — East / West

Show PLSS Section and

Area of Interest Interactive Map

Legend

View Extent: Contiguous U.S. Scale (not to scale)

http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm?TARGET_APP=Web_Soil_Survey_application_x4rucj55e3jsfmjuntj2ln55 — Trusted sites

Web Soil Survey - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Natural Resources Conservation Service

Web Soil Survey

Contact Us | Download Soils Data | Archived Soil Surveys | Glossary | Preferences | Logout | Help

Area of Interest (AOI) | Soil Map | Soil Data Explorer | Shopping Cart (Free)

Search

Area of Interest Properties

Clear AOI

AOI Information

Name

Map Unit Symbols
- Use Soil Survey Area Map Unit Symbols
- Use National Map Unit Symbols

Area (acres) 1,010.9

Soil Data Available from Web Soil Survey

Rice County, Minnesota (MN131)

Soil Maps Version 1, Sep 27, 2004

Soil Data Version 4, Aug 19, 2008

Clear AOI

Quick Navigation

Navigate By...

Address

State and County

Legend

Area of Interest Interactive Map

View Extent Contiguous U.S.

Scale (not to scale)

Done

Trusted sites

Web Soil Survey - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

USDA United States Department of Agriculture
Natural Resources Conservation Service

Web Soil Survey

Contact Us | Download Soils Data | Archived Soil Surveys | Glossary | Preferences | Logout | Help

Web Soil Survey Home Page

Area of Interest (AOI) | Soil Map | Soil Data Explorer | Shopping Cart (Free)

Printable Version | Add to Shopping Cart

Search

Map Unit Legend

Rice County, Minnesota (MN131)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
134	Okoboji silty clay loam, depressional, 0 to 1 percent slopes	115.1	11.4%
138B	Lerdal clay loam, 2 to 6 percent slopes	162.6	16.1%
219	Rolfe silt loam, depressional, 0 to 1 percent slopes	32.2	3.2%
238B	Kilkenny loam, 2 to 6 percent slopes	10.1	1.0%
238C2	Kilkenny clay loam, 6 to 12 percent slopes, eroded	171.6	17.0%
238D2	Kilkenny clay loam, 12 to 18 percent slopes, eroded	81.2	8.0%

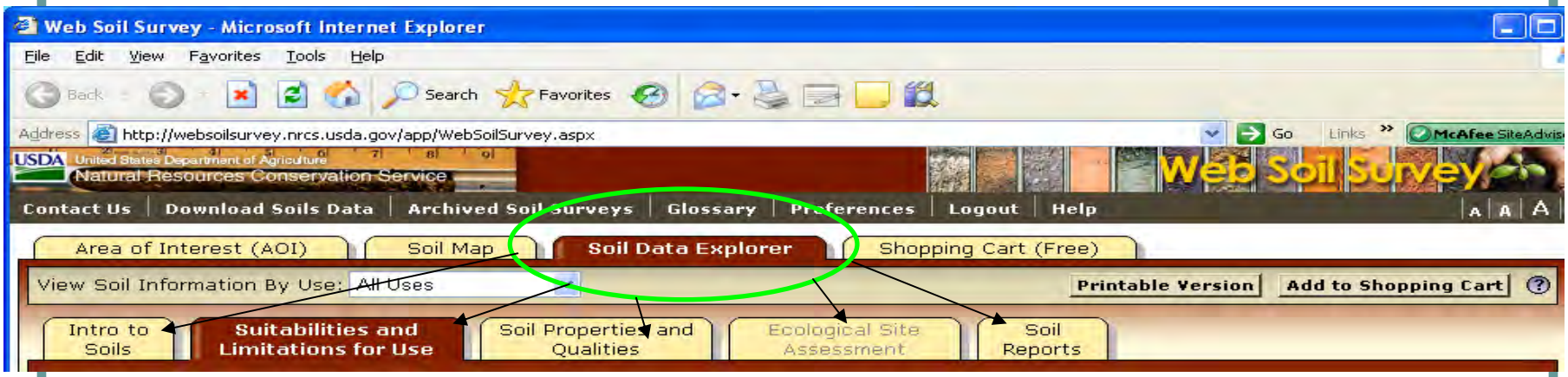
Legend

Soil Map

Scale (not to scale)

http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm?TARGET_APP=Web_Soil_Survey_application_x4rucj55e3jsfmjuntj2ln55

Trusted sites



Soil Data Explorer has all the Reports from SDV broken down in multiple tabs and an “Intro to Soils” tab

Intro to Soils
Suitabilities and Limitations for Use
Soil Properties Qualities
Search
Suitabilities and Limitations Ratings
Open All
Close All
Building Site Development
Construction Materials
Disaster Recovery Planning
Land Classifications
Land Management
Military Operations
Recreational Development
Sanitary Facilities
Vegetative Productivity
Waste Management
Water Management

Intro to Soils
Suitabilities and Limitations for Use
Soil Properties and Qualities
Search
Properties and Qualities Ratings
Open All
Close All
Soil Chemical Properties
Soil Erosion Factors
Soil Physical Properties
Soil Qualities and Features
Legend

Search
Soil Reports
Open All
Close All
AOI Inventory
Building Site Development
Construction Materials
Land Classifications
Land Management
Recreational Development
Sanitary Facilities
Soil Chemical Properties
Soil Erosion
Soil Physical Properties
Soil Qualities and Features
Vegetative Productivity
Waste Management
Water Features
Water Management
Wildlife Management
Legend
Soil Map

Web Soil Survey - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

USDA United States Department of Agriculture
Natural Resources Conservation Service

Web Soil Survey

Contact Us | Download Soils Data | Archived Soil Surveys | Glossary | Preferences | Logout | Help

Area of Interest (AOI) | Soil Map | Soil Data Explorer | Shopping Cart (Free)

View Soil Information By Use: All Uses

Printable Version | Add to Shopping Cart

Intro to Soils | Suitabilities and Limitations for Use | Soil Properties and Qualities | Ecological Site Assessment | Soil Reports

Search

Suitabilities and Limitations Ratings

Open All | Close All

- Building Site Development
- Construction Materials
- Disaster Recovery Planning
- Land Classifications
- Land Management
- Military Operations
- Recreational Development
- Sanitary Facilities
- Vegetative Productivity
  - Crop Productivity Index
    - View Description | View Rating

View Options

Map ☑
Table ☑
Description of Rating ☑
Rating Options ☐ Detailed Description

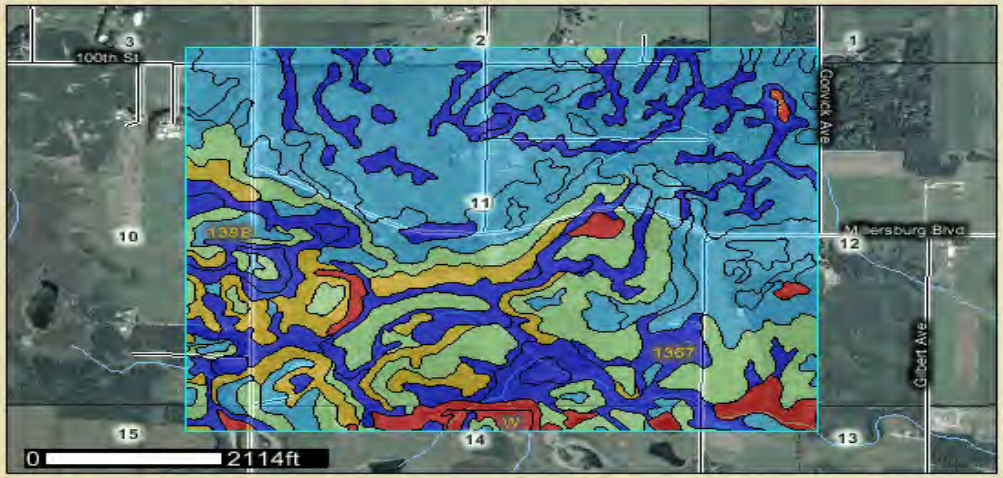
Advanced Options

View Description | View Rating

Legend

Map — Crop Productivity Index

Scale (not to scale)



Tables — Crop Productivity Index — Summary By Map Unit

Summary by Map Unit — Rice County, Minnesota

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
134	Okoboji silty clay loam, depressional, 0 to 1 percent slopes	86	115.1	11.4%
138B	Lerdal clay loam, 2 to 6	80	162.6	16.1%

Done | Trusted sites

Web Soil Survey

Web Soil Survey - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Contact Us | Download Soils Data | Archived Soil Surveys | Glossary | Preferences | Logout | Help

Download Soils Data for your AOI

Select Data to Download

Tabular Data ☑

Template Database ☑

Select Template Database

	State	Microsoft Access Version	Template Database Version	Template Database Name
○	IA	Access 2002	31_3	soildb_IA_2002
○	MI	Access 2002	32	soildb_MI_2002
◉	MN	Access 2002	33.3	soildb_MN_2003
○	MT	Access 2002	32.2	soildb_MT_2002
○	MT	Access 2000	32.2	soildb_MT_2000
○	MT	Access 97	32.2	soildb_MT_97
○	NE	Access 2002	33	soildb_NE_2002
○	NJ	Access 2002	32	soildb_NJ_2002

Spatial Data ☑

Select Spatial Coordinate System

UTM Zone 15, Northern Hemisphere (NAD 83)

Delivery Options

Your Web Soil Survey download request will be placed in the order queue and processed in turn. These requests are processed every day between 6:00 AM CST and 11:00 PM CST.

You will receive an email message notifying you when your Web Soil Survey download request is complete. This message will include a link from which you can download your soil data.

Email Address

Cancel | Download

Done | Trusted sites

Websites that provide soil information

http://www.soils.usda.gov/survey/geography/ssurgo/

http://soildataviewer.nrcs.usda.gov/

http://soildatamart.nrcs.usda.gov/

http://websoilsurvey.nrcs.usda.gov/app/

http://www.mn.nrcs.usda.gov/

http://www.nrcs.usda.gov/technical/efotg/

http://soils.usda.gov/use/hydric/

http://soils.usda.gov/survey/printed_surveys