

# Soil Survey Interpretations And NASIS 6.0

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# NASIS 6 screen

**NASIS Client Version Number 6.0.0**

NASIS Reports Explorer Editor Help

**Local Database**

Run queries against the national database to select more data. [Accept] [Cancel] [Clear Local Database]

Project	Technical Soil Service	Legend	Mapunit	Data Mapunit	Site	Pedon	Transect	Site Association	Distribution Metadata
Local									
Local			Saneli silty clay	consociation	provisional	1zb7		MLRA08_Office	8-7 Marfa, Texas
Local			Allamore-Lozier association, hilly	association	additional	1zb8		MLRA08_Office	8-7 Marfa, Texas
Local			Reakor-Mimbres association, nearly level	association	provisional	1zb9		MLRA08_Office	8-7 Marfa, Texas
Local			Reakor loam, 0 to 1 percent slopes	consociation	provisional	1zbb		MLRA08_Office	8-7 Marfa, Texas
Local			Reakor loam, 1 to 3 percent slopes	consociation	provisional	1zbc		MLRA08_Office	8-7 Marfa, Texas
Local			Bluepoint gravelly association, rolling	consociation	provisional	1zbd		MLRA08_Office	8-7 Marfa, Texas
Local			Anthony and Glendale soils	undifferen...	provisional	1zbf		MLRA08_Office	8-7 Marfa, Texas
Local			Volco association, hilly	association	provisional	1zbg		MLRA08_Office	8-7 Marfa, Texas
Local			Gullied land	undifferen...	additional	1zbh		MLRA08_Office	8-7 Marfa, Texas
Local			Rock outcrop-Brewster association, steep	association	provisional	1zbj		MLRA08_Office	8-7 Marfa, Texas
Local			Hoban loam, 0 to 1 percent slopes	consociation	provisional	1zbk		MLRA08_Office	8-7 Marfa, Texas
Local			Hoban loam, 1 to 3 percent slopes	consociation	provisional	1zbl		MLRA08_Office	8-7 Marfa, Texas
Local			Dev very gravelly loam, 1 to 3 percent slopes	consociation	additional	1zbn		MLRA08_Office	8-7 Marfa, Texas
Local			Agustin association, undulating	association	provisional	1zbn		MLRA08_Office	8-7 Marfa, Texas
Local			Agustin gravelly loam, 0 to 1 percent slopes	consociation	provisional	1zbp		MLRA08_Office	8-7 Marfa, Texas
Local			Igneous rockland	undifferen...	additional	1zbq		MLRA08_Office	8-7 Marfa, Texas
Local			Glendale loam	consociation	provisional	1zbr		MLRA08_Office	8-7 Marfa, Texas
Local			Sharvana-Wickett association, nearly level	association	provisional	1zbs		MLRA08_Office	8-7 Marfa, Texas

Record 386 of 5837

Status Messages

Preparing to run report "CHECK: COMPONENT - Albedo Dry RV EXPORT" on the local database...  
Report was successfully generated!  
Opening output file - C:\Documents and Settings\All Users\Application Data\USDA\NRC\NITS\Nasis6.x\temp\CHECK COMPONENT - Albedo Dry RV EXPORT.txt

Status Messages Local Conflicts Upload Conflicts Validation Results

Ready Online

Start Interps List.doc - Micros... Microsoft PowerPoint - [I... Inbox - Microsoft Outlook NASIS Client Version ... 9:01 AM

# NASIS 6.0 March 2010

- Major changes – NASIS, Staging Server, SDW
- UNIX to .Net
- Informix to SQL Server
- Client-Server application
- added 3 new Objects: Mapunit, Project, Technical Soil Services
- added a “national map unit symbol”

# Soil Interpretations are Functional in NASIS 6.0

## A few obstacles to overcome

- Rounding of the fuzzy number that determines the rules classes went from 13 digit to 2 digit we had to edit the rules classes.
- Some subrule class names were truncated from a max of 64 to 32 characters were renamed
- Updated some the properties due to a change in the query language and changes in tables
- Reports that output interps results required rewrites to make them function again

# What didn't change

- The Process for adding local interpretations to Web Soil Survey, Soil Data Mart, and Soil Data Viewer did not change
- The procedures for certifying and posting data to the Soil Data Warehouse for SSURGO data and Manuscripts did not change

# Soil Interpretations and where we are at

- Local Interps we export for SSURGO
- New local interpretations developed in MO9
- Geospatial application of Soil Interpretive Reasons and Indexes
- TXPED interpretations from Pedon Data
- Aggregating Traditional Interpretations to a broader Rural Residential interpretation
- Incorporating Relative Natural Resource, Climate and other relative spatial data layers into the interpretive process.

# Legend and Stats for Exported Texas Soil Interpretations

■ National Interps	9
■ National Interps developed in MO16/MO9 and elevated to national status	26
■ Standard Interps	40
■ Standard Interps developed in MO9 and elevated to standard status	7
■ Local National Park Service Interps	5
■ Local New MO9/TX interps <2 years old	21
■ Local MO9/TX interps >2 years old	45
Total exported in Texas	153

# Exported Interps List File

[Interps List.doc](#)

# Air Quality PM10 (TX)

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

McAfee SiteAdvisor

Open All Close All

- Building Site Development
- Construction Materials
- Disaster Recovery Planning
- Land Classifications
- Land Management**
- Air Quality PM10 (TX)**
- Air Quality PM2\_5 (TX)
- Construction Limitations for Haul Roads and Log Landings
- Conventional Tillage (TX)
- Erosion Hazard (Off-Road, Off-Trail)
- Erosion Hazard (Road, Trail)
- Fencing, Post Depth Less Than 24 inches (TX)
- Fencing, Post Depth Less Than 36 inches (TX)
- Filter Strips (TX)
- Harvest Equipment Operability
- Mechanical Site Preparation (Deep)
- Mechanical Site Preparation (Surface)
- Mulch Tillage (TX)
- No-Till (TX)
- No-Till, Drained (TX)
- Phosphorus Index
- Potential for Damage by Fire
- Potential for Seedling Mortality
- Ranch Access Roads (TX)
- Rangeland Chaining (TX)
- Rangeland Discing (TX)
- Rangeland Dozing or Grubbing (TX)
- Rangeland Planting by Mechanical Seeding (TX)
- Rangeland Prescribed Burning (TX)
- Rangeland Roller Chopping (TX)
- Rangeland Root Plowing (TX)

View Description View Rating

View Options

Advanced Options

View Description View Rating

Tables — Air Quality PM10 (TX) — Summary By Map Unit

Summary by Map Unit — Mason County, Texas

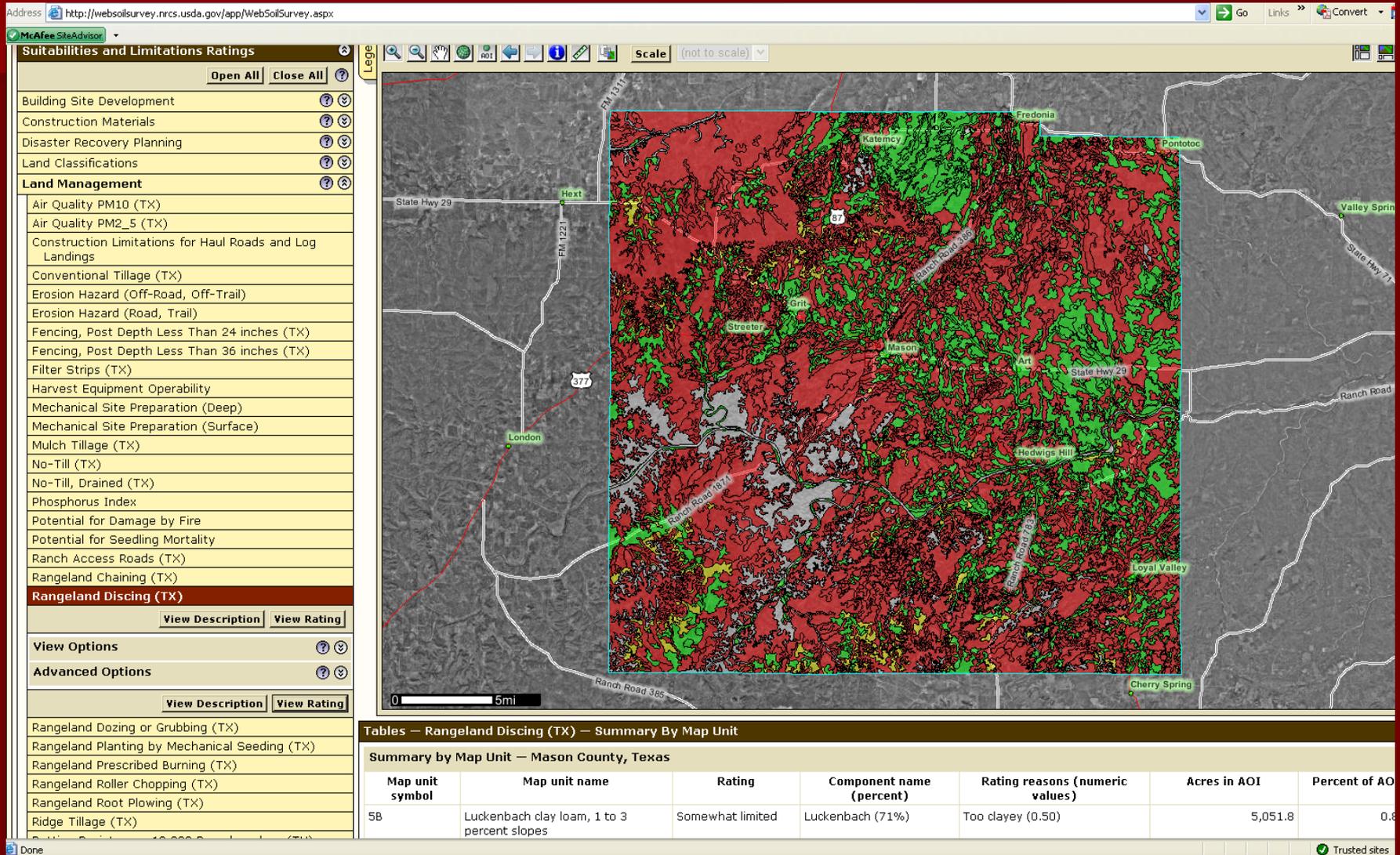
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
5B	Luckenbach clay loam, 1 to 3 percent slopes	Moderate PM10	Luckenbach (71%)	Potential source PM 10 (0.33)	5,051.8	0.8%

Done

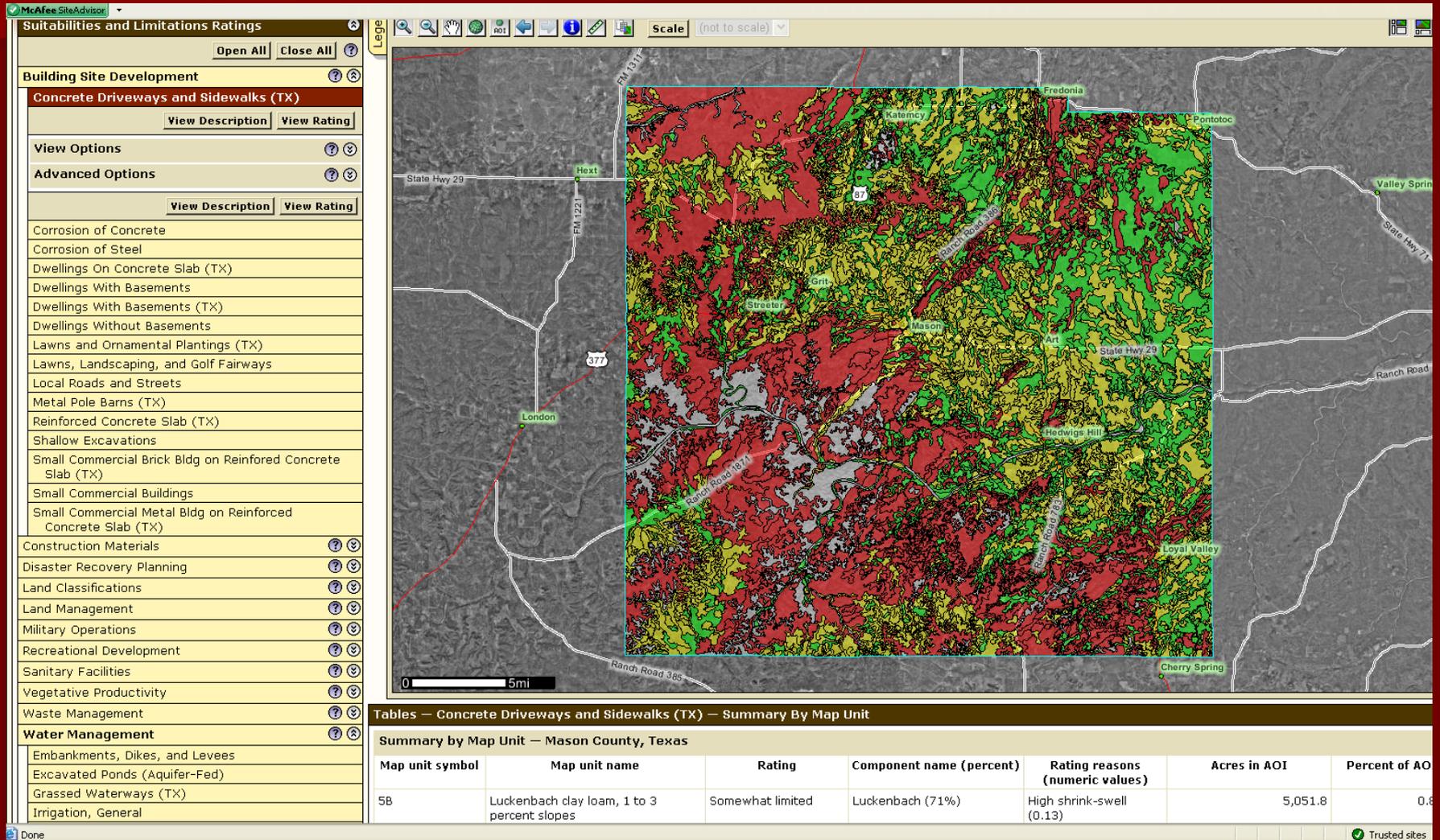
Trusted sites

<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

# Rangeland Discing (TX)



# Concrete Driveways and Sidewalks (TX)





# Surface Drains (TX)

McAfee SiteAdvisor

**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 ? ?**

- Embankments, Dikes, and Levees
- Excavated Ponds (Aquifer-Fed)
- Grassed Waterways (TX)
- Irrigation, General
- Irrigation, Micro (Above Ground)
- Irrigation, Micro (Subsurface Drip)
- Irrigation, Sprinkler (Close Spaced Drops)
- Irrigation, Sprinkler (General)
- Irrigation, Surface (Graded)
- Irrigation, Surface (Level)
- Pond Reservoir Areas
- Subsurface Drains (TX)
- Surface Drains (TX)**

View Description View Rating

**View Options** ? ?

- Map
- Table 
  - Component Breakdown and Rating Reasons
  - Numeric Values
- Description of Rating
- Rating Options

**Map — Surface Drains (TX)**

**Tables — Surface Drains (TX) — Summary By Map Unit**

Summary by Map Unit — Mason County, Texas

Map unit	Map unit name	Rating	Component name	Rating reasons (numeric values)	Acres in AOI	Percent of AOI

Done Trusted sites

# Septic Tank Subsurface Drip Irrigation (TX)

McAfee SiteAdvisor

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

- Daily Cover for Landfill
- Sanitary Landfill (Area)
- Sanitary Landfill (Trench)
- Septic System; Disinfection, Surface Application (TX)
- Septic Tank Absorption Field (TX)
- Septic Tank Absorption Fields
- Septic Tank, Gravity Disposal (TX)
- Septic Tank, Leaching Chamber (TX)
- Septic Tank, Subsurface Drip Irrigation (TX)**

View Description | View Rating

View Options

- Map
- Table 
  - Component Breakdown and Rating Reasons
  - Numeric Values
- Description of Rating
- Rating Options 
  - Detailed Description

Advanced Options

View Description | View Rating

Map — Septic Tank, Subsurface Drip Irrigation (TX)

Legend

Scale (not to scale)

Tables — Septic Tank, Subsurface Drip Irrigation (TX) — Summary By Map Unit

Done Trusted sites

# TXPED

## Implementation and Development of Web Tools to Perform Geospatial Analysis of Soil Laboratory and Pedon Data Interpretations for Pedons

The screenshot shows the 'Pedon MapUnit Correlation Tool' web application running in Microsoft Internet Explorer. The browser address bar shows the URL: <http://www.soilsurvey.org/Pedon/correlation/main.asp>. The page title is 'The Cooperative Soil Survey'. The user is logged in as 'Name: Jon Wiedenfeld' with a 'Log Out' and 'Edit Profile & Password' option. The date and time are 'Date: 7/12/2010 11:57:02 AM'.

The application has a navigation menu with tabs: HOME, WORK LOAD, CORRELATION (selected), CLASSIFICATION, INTERPRETATIONS, REPORTS, UTILITIES, and LAB TOOLS.

The main content area is divided into three sections:

- 1. Select a Category**
  - Correlated Name
  - Sampled Name
  - County
  - Map Unit Symbol
  - Map Unit Name
- 2. Selection Criteria**
  - Amegon
  - Ander (selected)
  - Aransas
  - Ariel
  - Arispo
- 3. Select a property**
  - Interpretation: Septic Tank Absorption Field (Details Remove)
  - Interpretation: Catastrophic Mortality Large (Details Remove)
  - Buttons: Add Property, Retrieve Data, Map Pedons, Close Map

Below the selection area, there is a link to the results: [http://www.soilsurveydemo.org/pedon/correlation/main.asp?load=main2\\_ajax.asp%3Fpedons%3DAnder%7CCorrelated%7CSITES](http://www.soilsurveydemo.org/pedon/correlation/main.asp?load=main2_ajax.asp%3Fpedons%3DAnder%7CCorrelated%7CSITES). There are buttons for 'Create report' and 'Add to Favorite Queries'.

The 'Certification Color Codes: (About)' section shows a color-coded legend for levels 1 through 5.

The main data table is as follows:

Number	Lab # User Site ID	Mapunit	County	Series	Correlated	Certification	Correlation Identifier	Texture (Mineral Surface Layer Average) <a href="#">Kritiana</a>
1	07N0392 07TX175002	128B	Goliad	Ander	Ander	Level 3	P2	0 0 Sandy Loam n

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# TXPED Interpretations Output

Dr. Bryan Mayhan, University of Missouri

Pedon MapUnit Correlation Tool - Microsoft Internet Explorer

Address: [http://www.soilsurveydemo.org/pedon/correlation/main.asp?load-main2\\_ajax.asp?3Pedons%3DAnders%7C%26p1%3DInterpretation%7C145%7C%7C%26p2%3DInterpretation%7C79%7C%7C%26pcount%3D2](http://www.soilsurveydemo.org/pedon/correlation/main.asp?load-main2_ajax.asp?3Pedons%3DAnders%7C%26p1%3DInterpretation%7C145%7C%7C%26p2%3DInterpretation%7C79%7C%7C%26pcount%3D2)

The Cooperative Soil Survey

Name: Jon Wriedenfeld  
Log Out Edit Profile & Password  
Exire: 7/12/2010 2:05:07 PM

Number	Lab # User Site ID	Mapunit	County	Series	Correlated	Certification	Correlation Identifier	Interpretation (Catastrophic Mortality_Large_Animal_Disposal_Pit)	Interpretation (Septic Tank Absorption Field (TX))
1	07N0392 07TX175002	128B	Goliad	Ander	Ander	Level 3	P2	cec_05_15_180CM: 0.00 (default) Flooding_gt_rare: 0.00 Depth_water_table_180: 0.00 (default) Ponding_gt_none: 0.00 Depth_to_Contact_200cm: 0.00 (default) Clay_27_45_30_200cm: 1.00 Sand_grt_70_30_200cm: 0.00 OM_grt_15_30_200cm: 0.00 Fragr_grt_75pct_25_to_50pct: 0.00 Ksat_120_to_150cm_max: 0.00 Slopesto12: 0.00 pH_It_3_5_Too_Acid: <b>Insufficient Data</b> Depthtopan_grt_180: 0.00 Surface_Rocks: 0.00 <b>Response: Insufficient Data</b>	Slope_gt_30_pct: 0.00 Ponding_gt_none: 0.00 Flooding_gt_rare: 0.00 Excessive_gravel_TXDEQ: 0.00 Depth_to_pan_45_to_160: 0.00 Depth_water_table_45_to_160: 0.00 (default) TXDEQ_Textural_Class_IV_45_160: 1.00 Depth_to_bedrock_45_to_160: 0.00 <b>Response: Limiting (1.00)</b>
2	P07TX1752004 MLRA83-ANDER-P07TX1752004	128B	Goliad	Ander	Ander	Level 3	P2	cec_05_15_180CM: 0.00 (default) Flooding_gt_rare: 0.00 Depth_water_table_180: 0.00 (default) Ponding_gt_none: 0.00 Depth_to_Contact_200cm: 0.00 (default) Clay_27_45_30_200cm: 0.98 Sand_grt_70_30_200cm: 0.00 OM_grt_15_30_200cm: 0.00 Fragr_grt_75pct_25_to_50pct: 0.00 Ksat_120_to_150cm_max: 0.00 Slopesto12: 0.00 pH_It_3_5_Too_Acid: <b>Insufficient Data</b> Depthtopan_grt_180: 0.00 Surface_Rocks: 0.00 <b>Response: Insufficient Data</b>	Slope_gt_30_pct: 0.00 Ponding_gt_none: 0.00 Flooding_gt_rare: 0.00 Excessive_gravel_TXDEQ: 0.00 Depth_to_pan_45_to_160: 0.00 Depth_water_table_45_to_160: 0.00 (default) TXDEQ_Textural_Class_IV_45_160: 1.00 Depth_to_bedrock_45_to_160: 0.00 <b>Response: Limiting (1.00)</b>
3	P07TX1753012 MLRA83-ANDER-P07TX1753012	128B	Goliad	Ander	Ander	Level 3	P2	cec_05_15_180CM: 0.00 (default) Flooding_gt_rare: 0.00 Depth_water_table_180: 0.00 (default) Ponding_gt_none: 0.00 Depth_to_Contact_200cm: 0.00 (default) Clay_27_45_30_200cm: 0.94 Sand_grt_70_30_200cm: 0.00 OM_grt_15_30_200cm: 0.00 Fragr_grt_75pct_25_to_50pct: 0.00 Ksat_120_to_150cm_max: 0.00 Slopesto12: 0.00 pH_It_3_5_Too_Acid: <b>Insufficient Data</b> Depthtopan_grt_180: 0.00 Surface_Rocks: 0.00 <b>Response: Insufficient Data</b>	Slope_gt_30_pct: 0.00 Ponding_gt_none: 0.00 Flooding_gt_rare: 0.00 Excessive_gravel_TXDEQ: 0.00 Depth_to_pan_45_to_160: 0.00 Depth_water_table_45_to_160: 0.00 (default) TXDEQ_Textural_Class_IV_45_160: 0.00 Depth_to_bedrock_45_to_160: 0.00 <b>Response: Not limiting (0.00)</b>

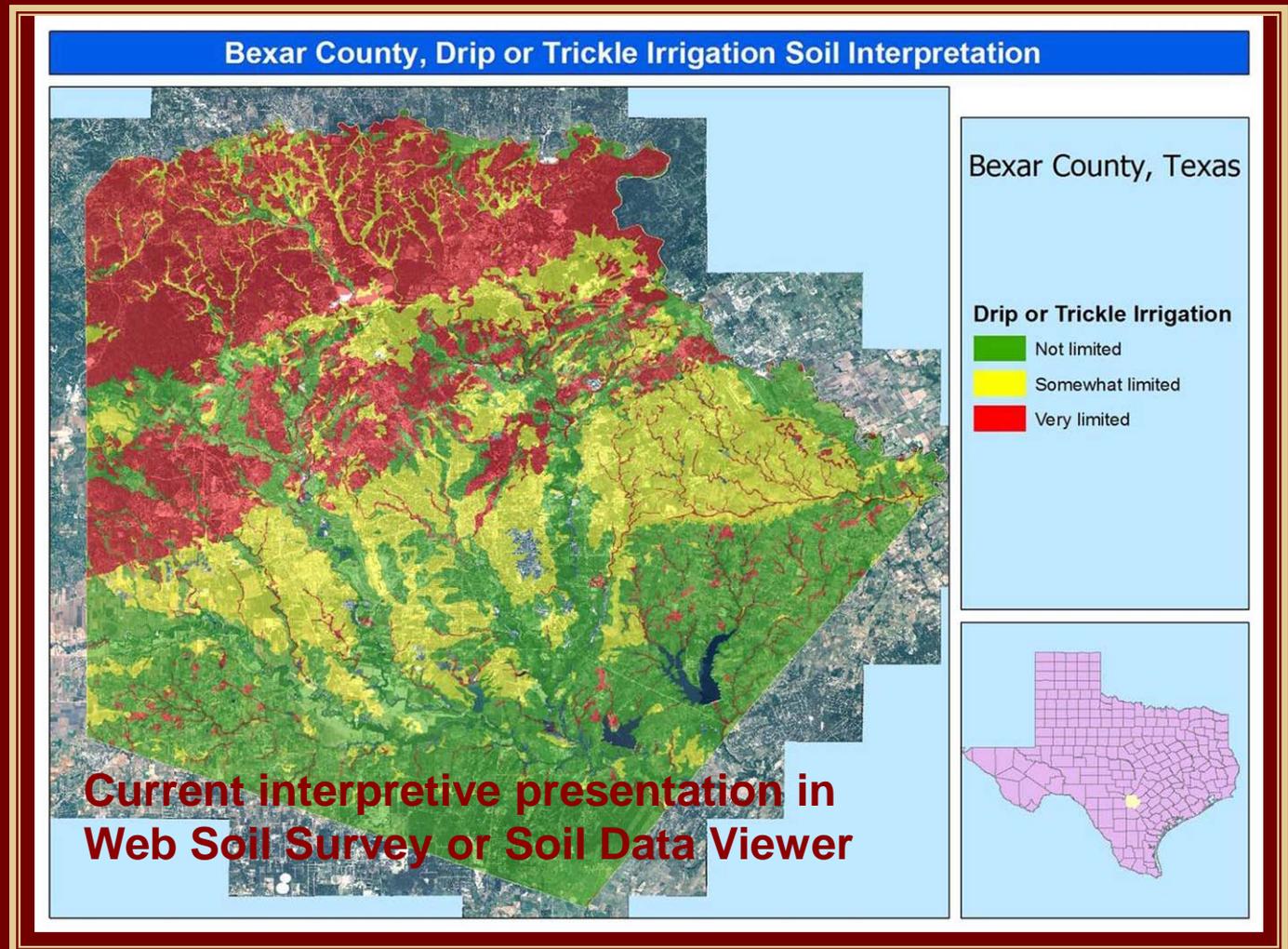
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# Geospatial Application of Soil Interpretive Reasons and Indexes

- Soil interpretations in Web Soil Survey and Soil Data Viewer are currently displayed as Very limited, Somewhat limited, or Not limited.
- However, the reasons for the limitations are not visible on thematic maps and are only found in the tabular report. They cannot be displayed geographically without manual manipulation of the SDV rules file.
- Within the interpretive data contained in the SSURGO database there is a wealth of soil interpretive data that is currently not accessible either through Web Soil Survey or Soil Data Viewer. These data include:
  1. The interpretive reason.
  2. The degree to which the interpretation is somewhat limited.
  3. The degree to which the interpretive reason is limiting.

# Geospatial Application of Soil Interpretive Reasons and Indexes -- Continued

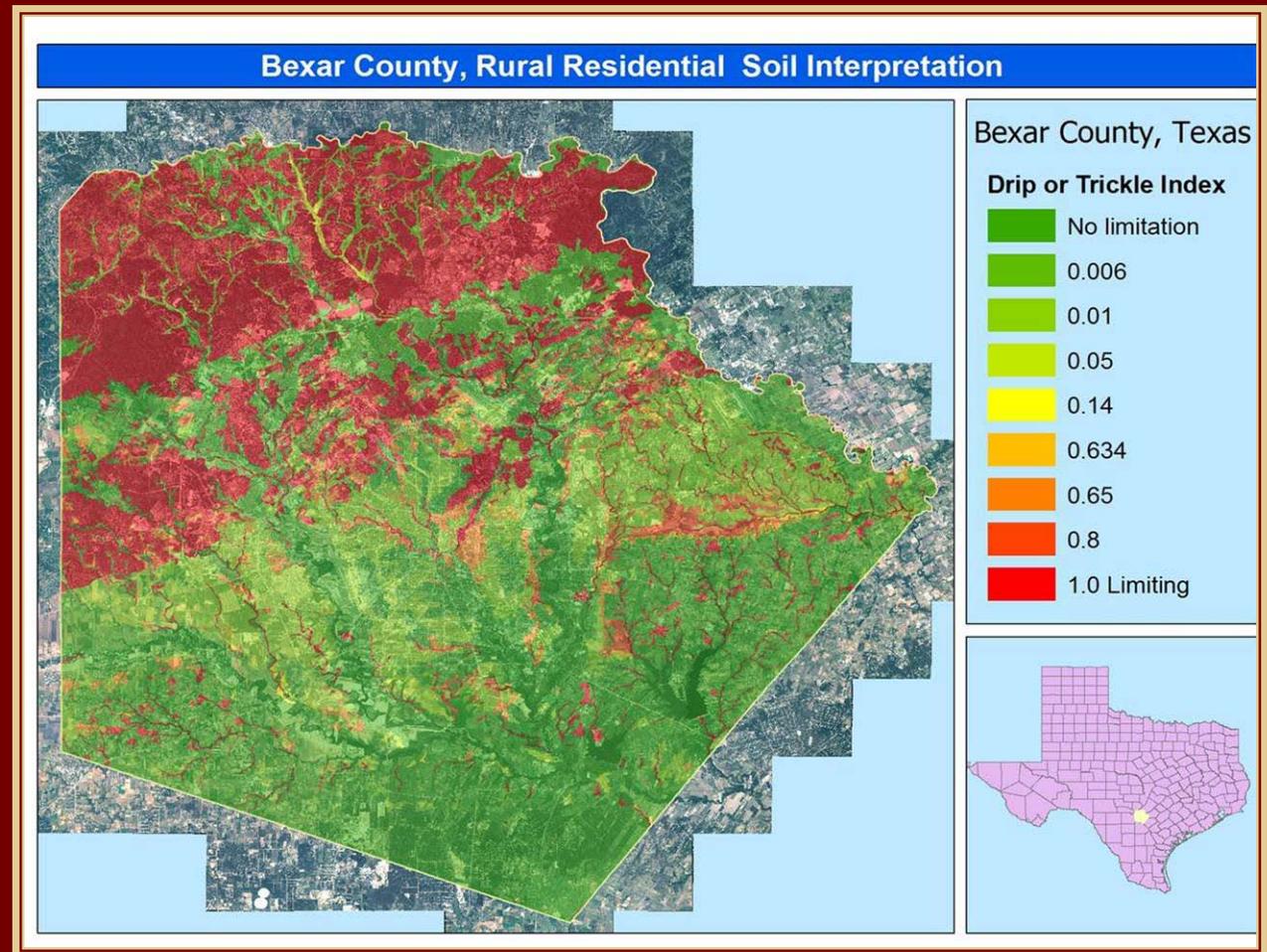
Using the local Texas interpretation for Irrigation, Micro (Above Ground) for Bexar County as an example, the concept of utilizing interpretive reasons and degree of limitations are illustrated.



# Geospatial Application of Soil Interpretive Reasons and Indexes -- Continued

Texas – local interpretation for Irrigation, Micro (Above Ground), Index View.

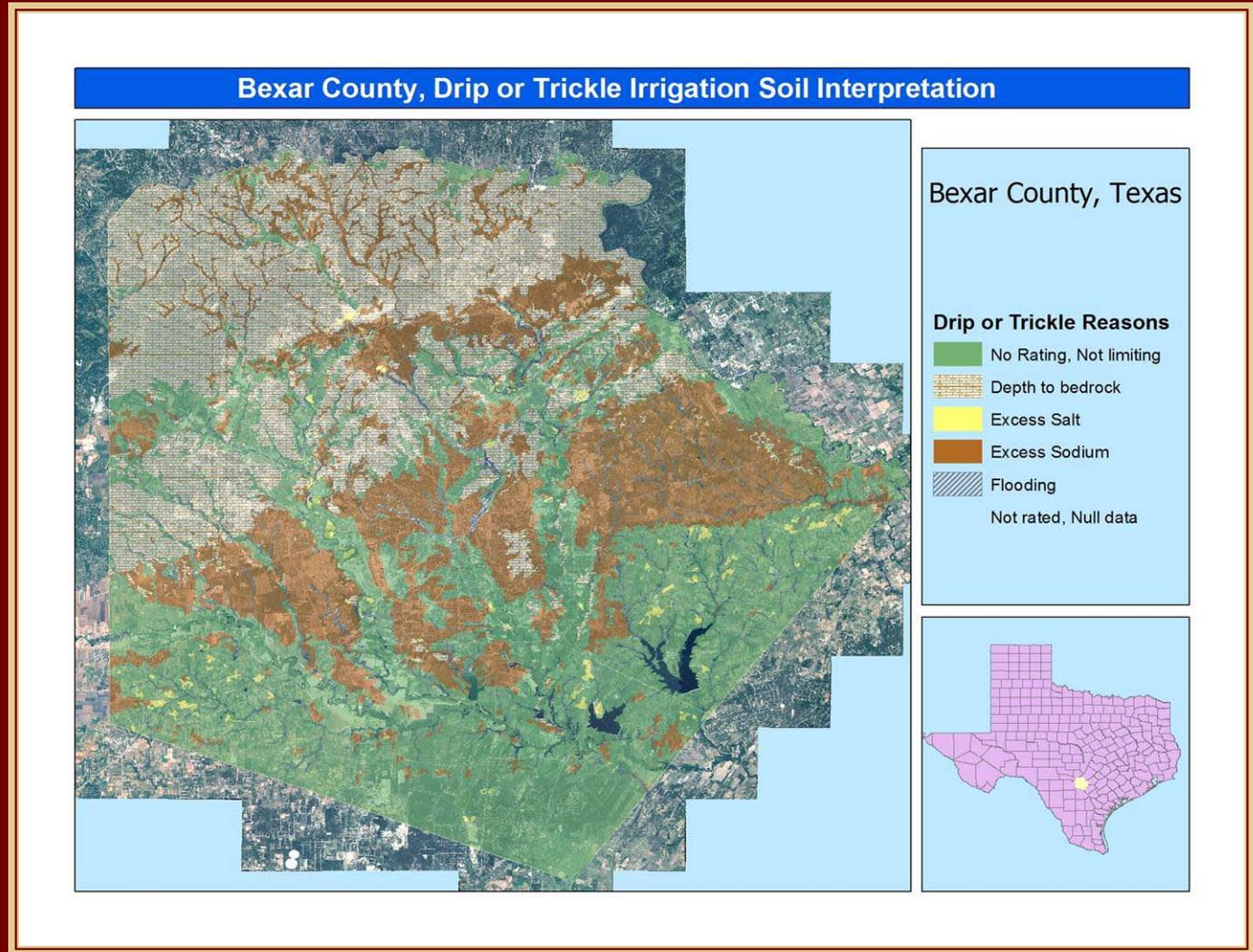
Shows the interpretive result as a continuum of the degree of limitation between the numbers of 0 and 1.0.



# Geospatial Application of Soil Interpretive Reasons and Indexes -- Continued

Texas – local interpretation for Irrigation, Micro (Above Ground), Reasons View.

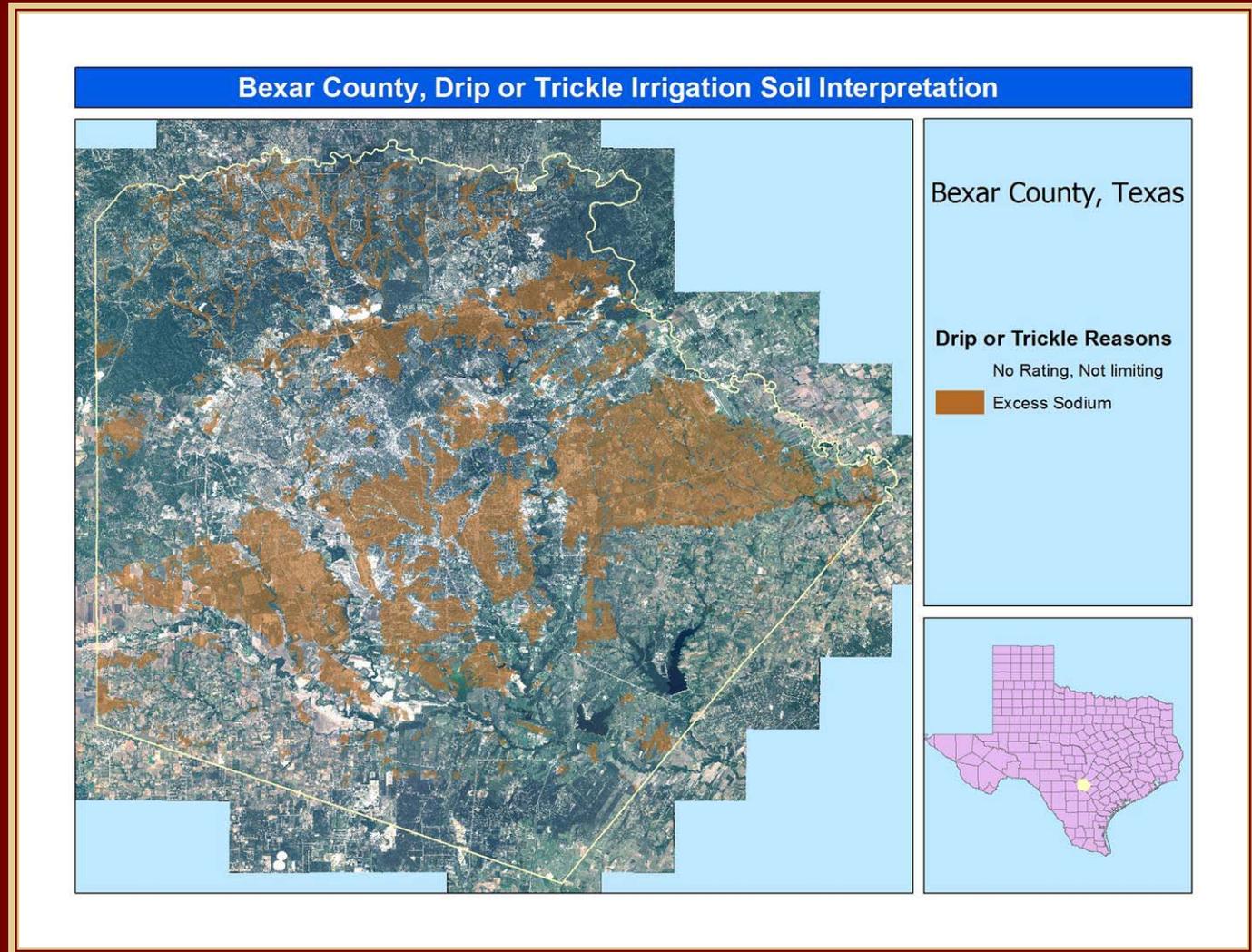
Shows the interpretive reasons from which the base interpretation receives its rating and provides the user with additional information.



# Geospatial Application of Soil Interpretive Reasons and Indexes -- Continued

Texas – local interpretation for Irrigation, Micro (Above Ground) , Reasons Excess Sodium View.

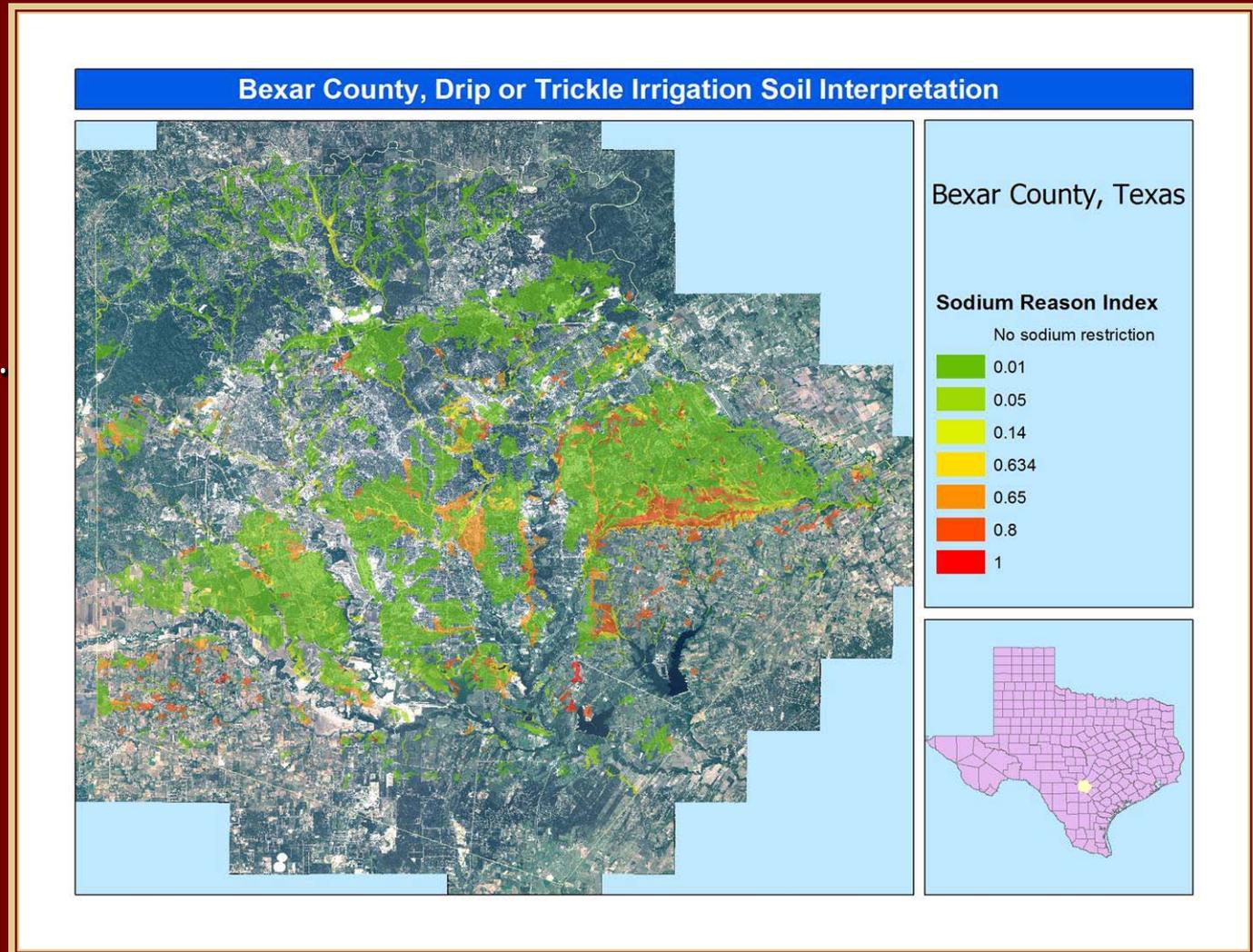
Shows the spatial extent of the interpretive reason Excess Sodium but does not show the degree or magnitude that sodium is limiting.



# Geospatial Application of Soil Interpretive Reasons and Indexes -- Continued

Texas – local interpretation for Irrigation, Micro (Above Ground), Reasons Excess Sodium Index View.

Shows the spatial extent of the interpretive reason Excess Sodium and also illustrates the degree or magnitude that sodium is a limiting factor.



# Aggregating Traditional Interpretations to a Broader Interpretation

- Aggregating traditional interpretation into a new broader interpretation is possible because of the numeric nature of the SSURGO interpretive indexes.
- In the case of the broader Rural Residential interpretation, four interpretive indexes are added together to derive the final interpretive ratings for sighting a Rural Residence. These are:
  1. Dwelling without Basements
  2. Septic Tank Absorption Fields
  3. Local Streets and Roads
  4. Lawns and Landscaping

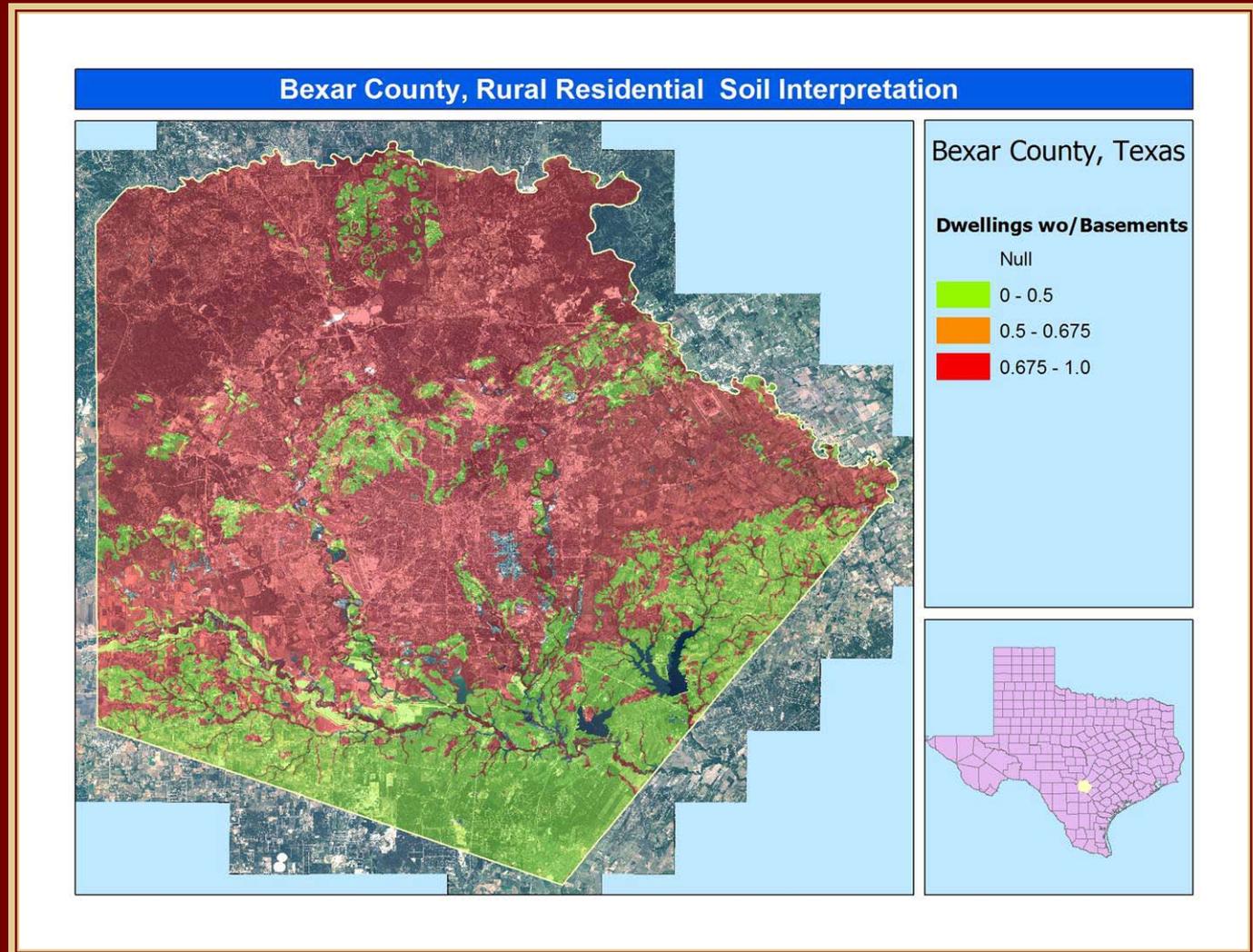
## Aggregating Traditional Interpretations to a Broader Interpretation -- Continued

- In the following example, the degrees of limitation or interpretive indexes from each of the subordinate interpretation were added together to form the Rural Residential interpretation.
- However, any combination of weighting or other appropriate mathematical operation that aggregates the subordinate interpretive index ratings into a final index can be used to derive values for a broader interpretation.

# Aggregating Traditional Interpretations to Site a Rural Residential – Dwellings Without Basements

National interpretation for Dwellings without Basements, Index View.

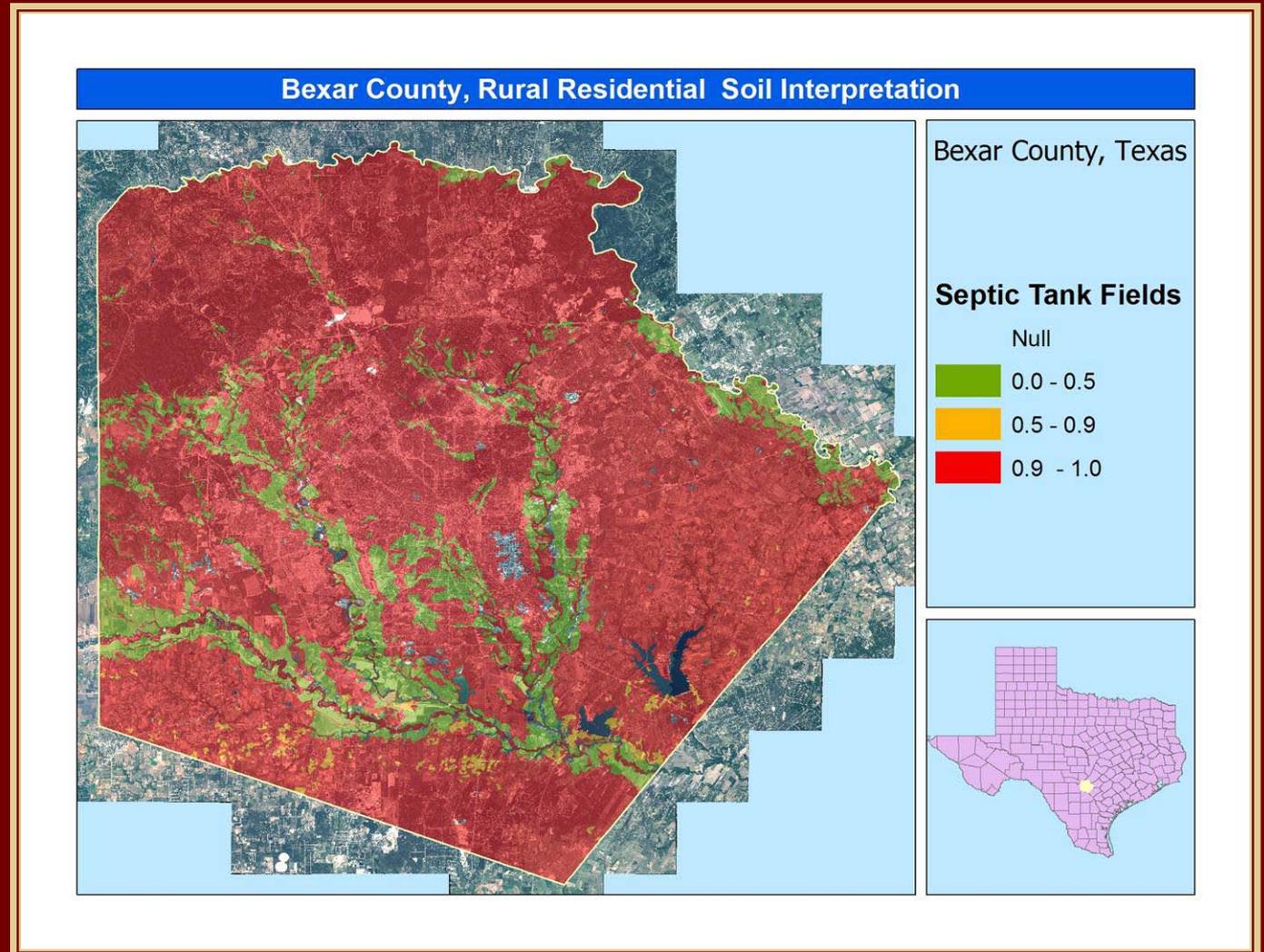
Shows the interpretive result as a continuum of the degree of limitation between the numbers of 0 and 1.0.



# Aggregating Traditional Interpretations to Site a Rural Residential – Septic Tank Absorption Fields

National interpretation for Septic Tank Absorption Fields, Index View.

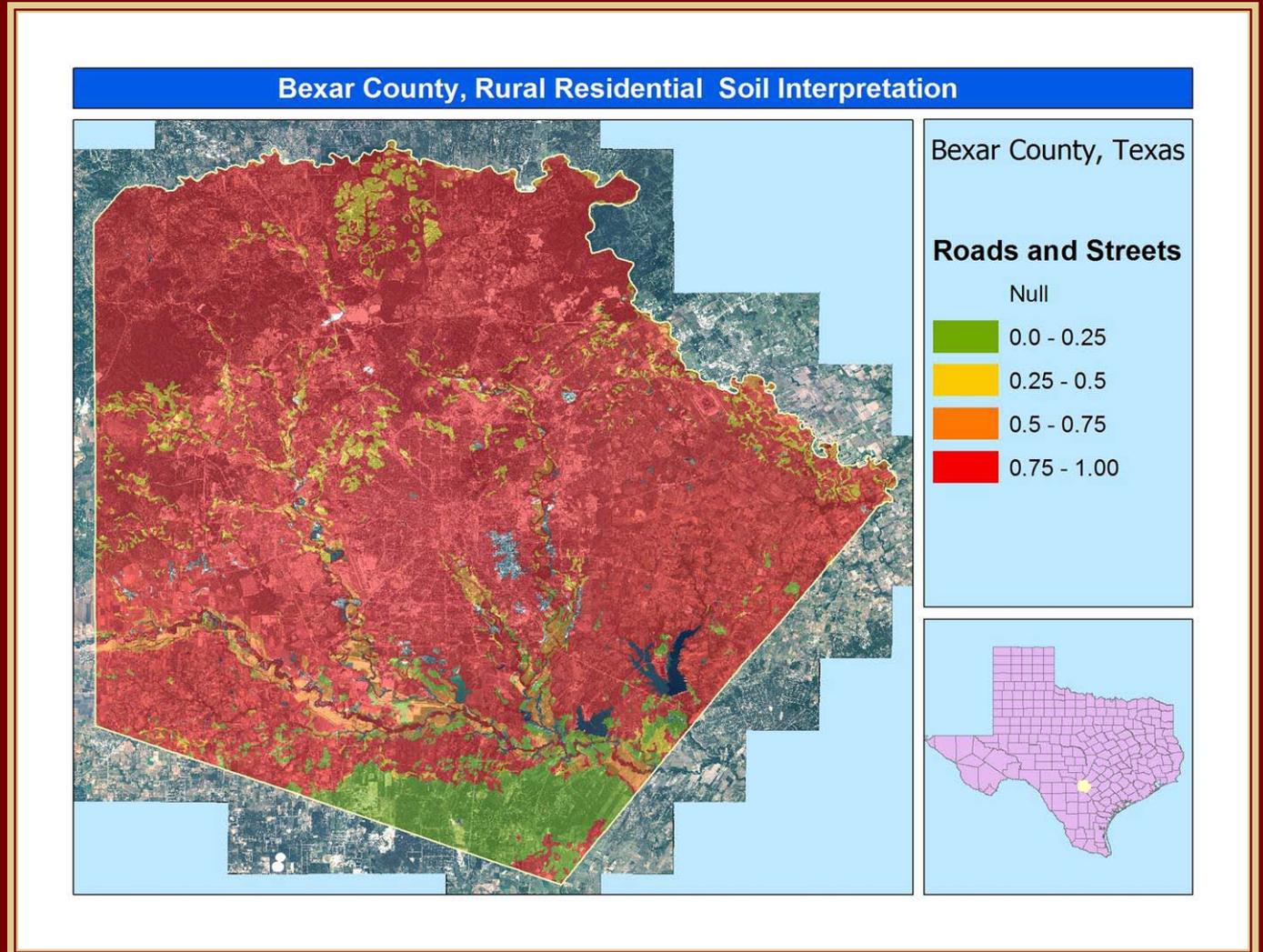
Shows the interpretive result as a continuum of the degree of limitation between the numbers of 0 and 1.0.



# Aggregating Traditional Interpretations to Site a Rural Residential – Local Roads and Streets

National interpretation for Local Roads and Streets, Index View.

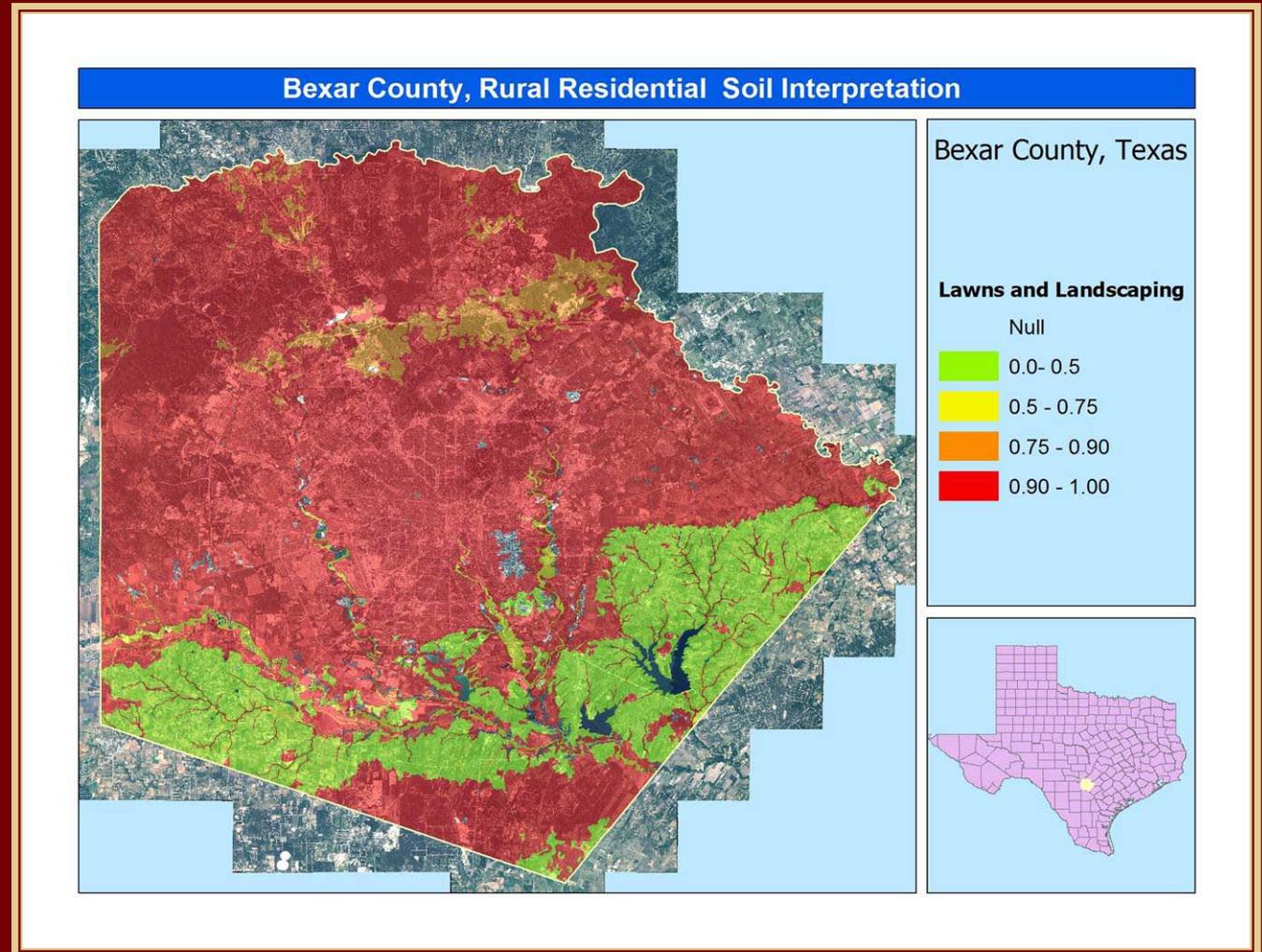
Shows the interpretive result as a continuum of the degree of limitation between the numbers of 0 and 1.0.



# Aggregating Traditional Interpretations to Site a Rural Residential – Lawns and Landscaping

National interpretation for Lawns and Landscaping, Index View.

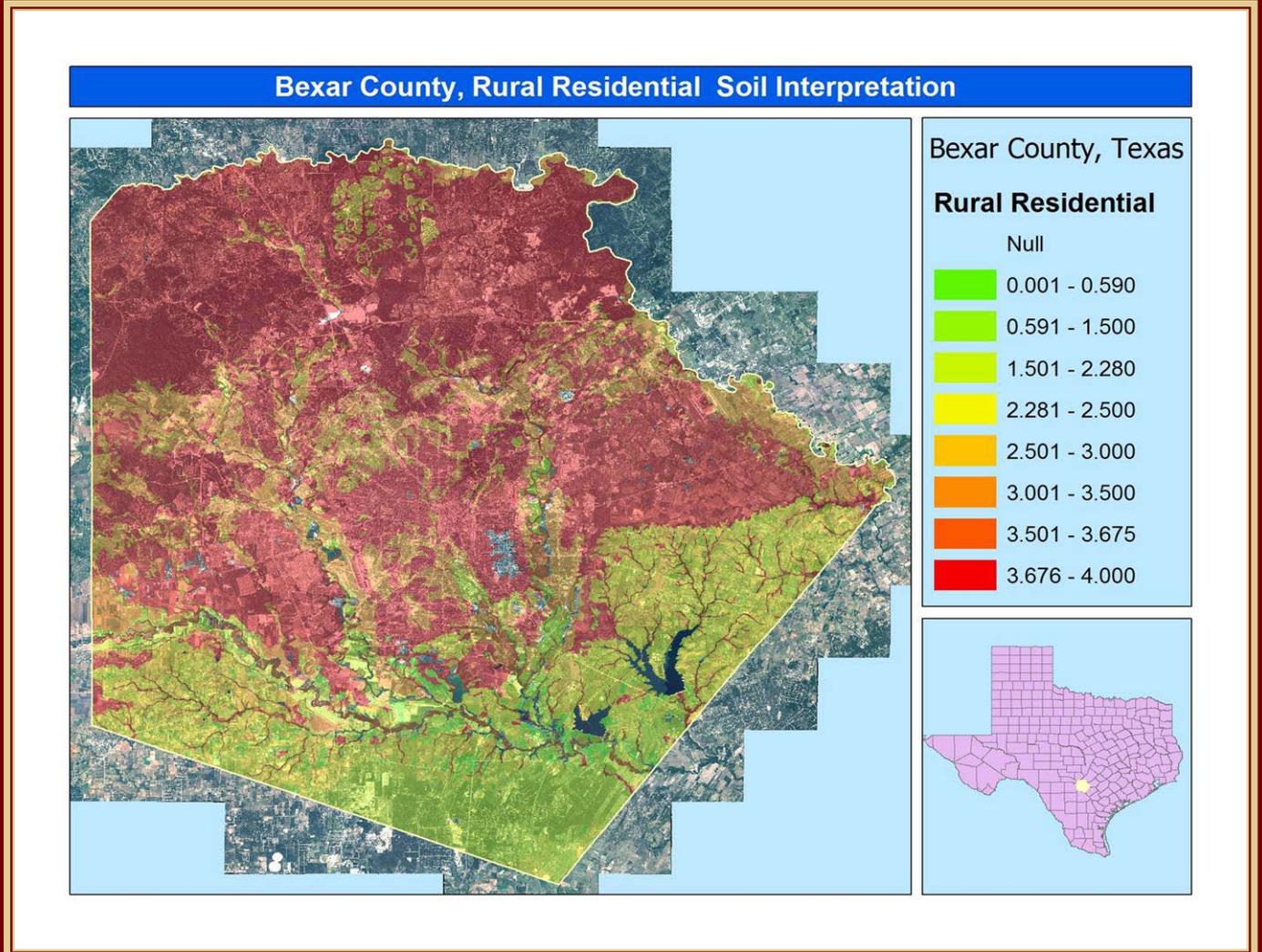
Shows the interpretive result as a continuum of the degree of limitation between the numbers of 0 and 1.0.



## Rural Residential Aggregating – Additive Result

Rural Residential interpretation where the four subordinate interpretive indexes are added together to derive the final interpretive ratings for sighting a Rural Residence.

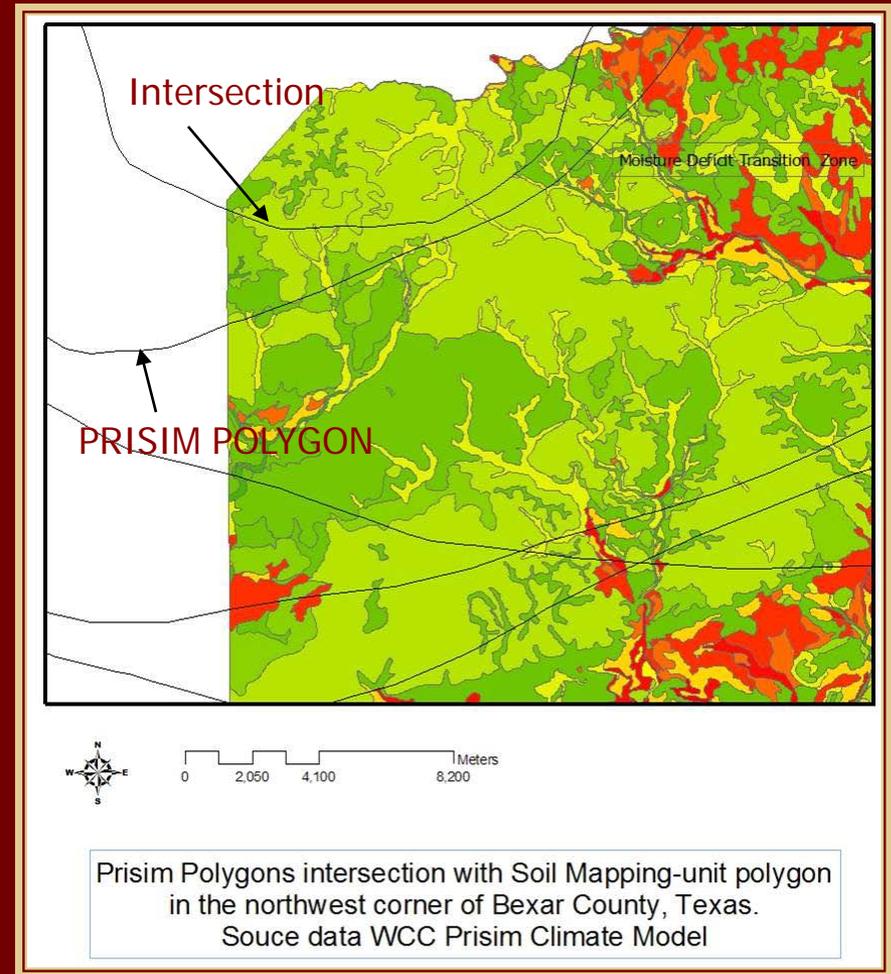
The higher the index the greater the aggregate limitations.



# Incorporating Relative Natural Resource, Climate and other relative spatial data layers into the interpretive process.

- Adding external data and spatial layer to the interpretive process presents a unique set of concerns and issues that will need to be resolved.
- The one concern or constrain is the intersection of layer polygons with soil mapping-unit polygons. When this happens the soil mapping-unit polygons is split into 2 or more polygons that contain the soil attributes (including interpretations) and the attributes of the other data layer being applied for interpretive purposes.

# Incorporating Relative Natural Resource, Climate and other relative spatial data layers into the interpretive process. – Continued



Example, if climate data from the PRISIM model is layered over Bexar county SSURGO data there is a strong possibility for a mapping-unit to occur within or across PRISIM derived Mean Annual Precipitation or Mean Annual Air Temperature polygons. This intersect spits the soil mapping-unit into polygons containing the same soil data but different climatic data. An interpretation using both soil and climate attributes can be made but the interpretive result will create multiple interpretive ratings for the split soil mapping-unit. The issue of multiple interpretive ratings for a soil mapping-unit is one that will require some analysis to resolve.

# Soil Survey Interpretations And NASIS 6.0 and what we can do

# Where do we go from here?

## Greg Scott

