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# Planning The "New" Soil Survey Building on Technology



# Planning The “New” Soil Survey – Building on Technology

- Soil Survey of the Future

- Predict and display spatial distribution of components within polygons on the landscape.

- Benchmark Landscape Catena’s

- Utilize what we have learned the last 100+ years by improving the spatial and tabular data to digitally join lines and fill in data gaps and voids in soil database.

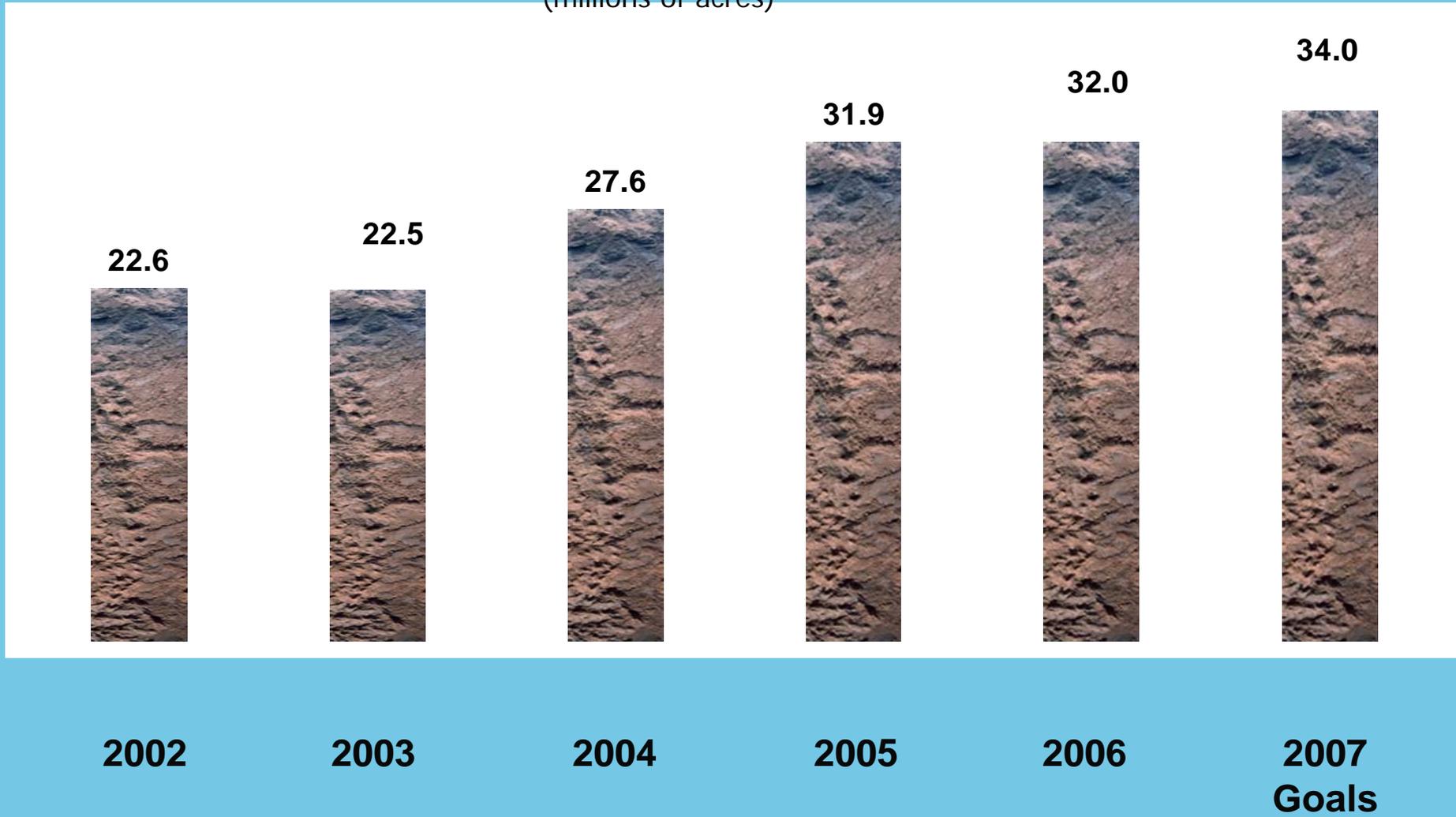


# Planning The “New” Soil Survey – Building on Technology

- Stability Goals
  - A More Balanced Soil Survey Program where Soil Maps, Soil Data, and Soil Interpretations will be Maintained and Enhanced while Expanding Technical Soil Services.
  - Accelerate funding (\$35 M) to Complete the Initial Soil Survey on Non-Federal and Native American and Tribal Lands within 5 Years.
  - Paperless Soil Survey Program.

# Total Soil Survey Acres Mapped

(millions of acres)



# Soil Survey Status

Land Owner	Total Acres	Acres Mapped	Acres Remaining to Map	Acres in FY 05	% Left	Yrs Left
BLM	260,630,902	223,008,902	37,622,000	832,313	14%	45
USFS	192,730,805	134,713,302	58,017,503	575,328	30%	101
NPS	73,366,967	64,593,281	8,773,686	123,296	12%	71
Other Federal	118,310,239	108,108,597	10,201,642	325,512	9%	31
Native American	93,522,644	77,250,361	16,272,283	1,166,579	17%	14
Non-Federal	1,535,373,931	1,489,663,384	45,710,547	3,241,686	3%	14
Totals	2,273,935,488	2,097,337,827	176,597,661	6,264,714	8%	28



# Planning The “New” Soil Survey – Building on Technology

- Stability
  - MLRA Soil Survey Restructure
    - Based on MLRA Geographic Areas
  - 144 Permanent Soil Survey Offices
    - From 255 Offices (175 Offices had 1-2 SS)
  - Geographic Structure for “Update” of Spatial and Tabular Soil Data

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# Planning The "New" Soil Survey – Building on Technology

## Stability

144 MLRA Project Offices  
(Today 97 Offices in Place)



- By end of FY07 + 8 More = 73%
- FY08 + 14 More = 83%
- FY09 + 14 More = 92%
- FY10 & Beyond + 11 More = 100%

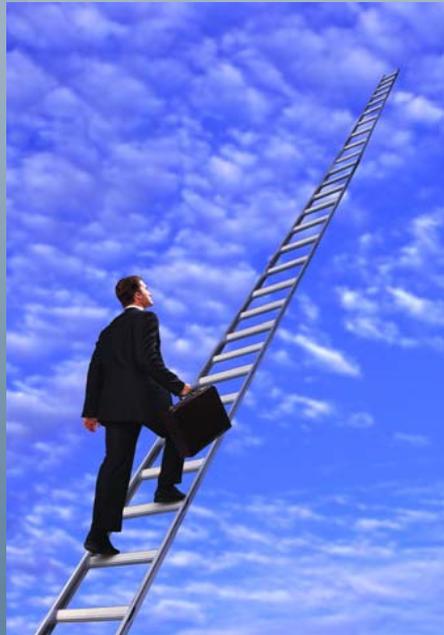
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# Planning The "New" Soil Survey – Building on Technology

## Stability

146 MLRA Soil Survey Leaders GS-12  
(Today 77 MLRA Leaders in Place)



- By End of FY07 + 25 More = 70%
- FY08 + 13 More = 79%
- FY09 + 11 More = 86%
- FY10 & Beyond + 20 More = 100%

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# Planning The "New" Soil Survey – Building on Technology

## Stability

18 MLRA Senior Regional SS GS-13  
(Today 5 Regional Positions in Place)

- By End of FY07 + 7 More = 66%
- FY08 & 09 +2 More = 78%
- FY10 & Beyond + 20 More = 100%



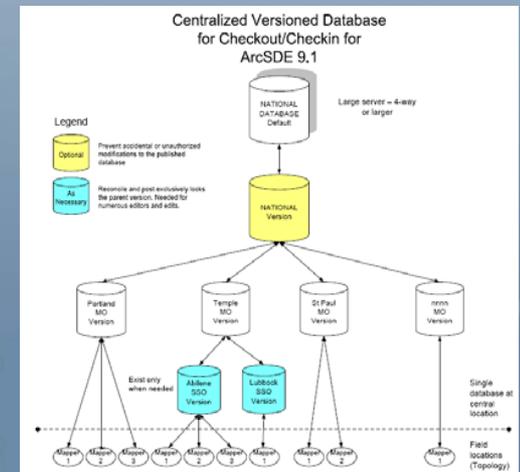
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# Planning The “New” Soil Survey – Building on Technology

## Efficiency

- Emphasis on ***Enhancing*** existing Soil Data
  - Provide High End Geospatial Workstations
  - Provide Viewable Field Tablets
- Develop One “National Geospatial Database”

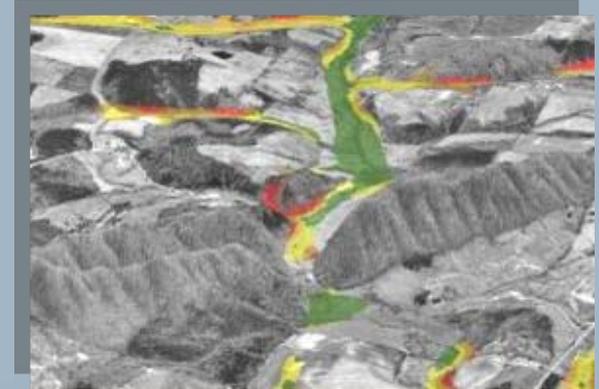




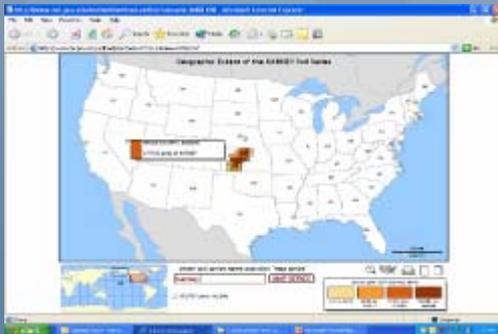
# Planning The "New" Soil Survey – Building on Technology

## Efficiency

- Utilize New Technologies
  - Complete the Initial
  - Accelerate the Update



- Deploy "Soil Resource Inventory Tool Box"
  - PEDON PC
  - Soil Landscape Predictive Models
  - Pre-Mapping Tools
  - Series Extent Tool
  - Landscape Analysis Tools

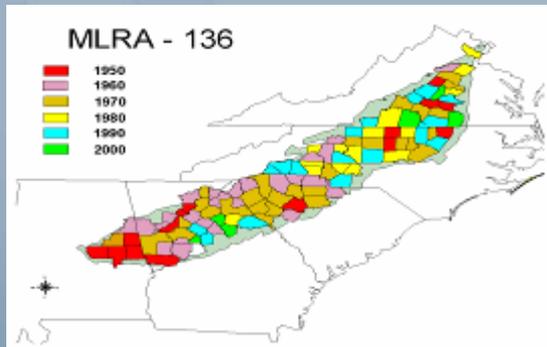




# Planning The “New” Soil Survey – Building on Technology

## Efficiency

- Develop Work Plans
- Long Term Plan
  - Covers Whole Geographic Area
  - Identify Multiple Project areas
  - Prioritize Projects
- Project Plan
  - Covers 1-5 years of work
  - Include Special Studies & Sampling
- Annual Business Plan
  - Covers what will be done each year and by who





# Planning The “New” Soil Survey – Building on Technology

## Opportunities



- Mapping Details
  - 38 Volunteered (27 selected)
- Hiring of New Soil Scientists
- NCSS Partners
  - Develop Research Projects



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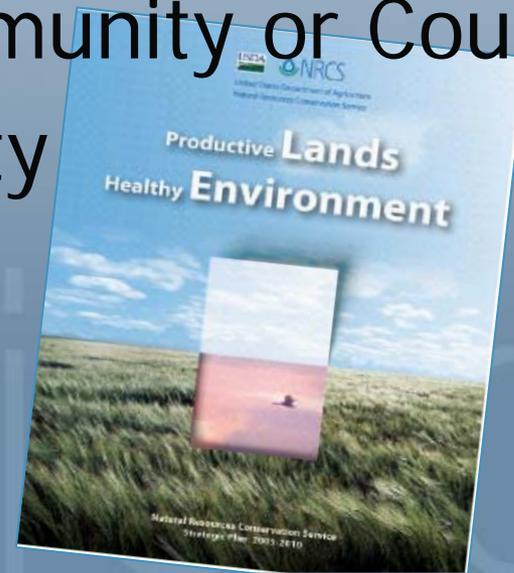


# Planning The “New” Soil Survey – Building on Technology

Where will New Employees Come From?

Why would they work for the Government?

- 47%-Helping people to make a difference
- 26%-Having good Pay and Benefits
- 15%-Serving your Community or Country
- 11%-Having Job Security
- 1%-Not Sure



# RETIREMENT PROJECTIONS BY MISSION CRITICAL SERIES

SERIES	DESCRIPTION	TOTAL	2005	2006	2007	2008	2009	2010
0401	Gen. Biol Sci	599	-43	-38	-44	-63	-56	-62
0454	Rangeland Mgt	92	-1	-8	-8	-6	-11	-7
0457	Soil Conservation	2096	-134	-148	-160	-157	-178	-185
0458	Soil Con Tech	613	-35	-45	-51	-52	-46	-59
0470	Soil Science (field)	526	-42 (8)	-42 (10)	-49	-47	-36	-36
0471	Agronomy	80	-7	-4	-9	-9	-2	-2
0802	Civil Eng Tech	276	-22	-22	-29	-15	-23	-26
0810	Civil Engineering	289	-16	-15	-14	-23	-25	-23
0890	Ag Engineering	71	-4	-9	-4	-5	-5	-4
1102	Contracting	52	-4	-5	-4	-3	-6	-6

\* Represents actual retirements by year, not cumulative

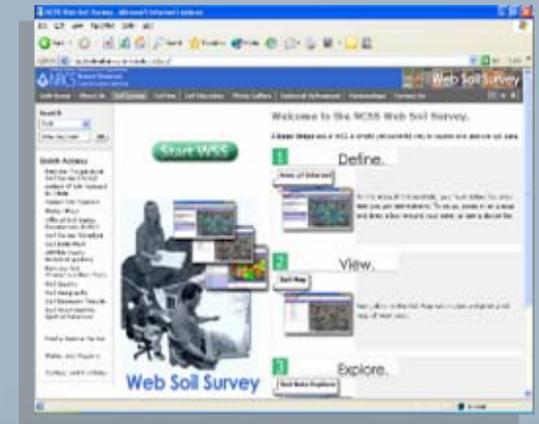
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# Planning The “New” Soil Survey – Building on Technology

## Efficiency

- Accessibility On-Line
  - “Web Soil Survey”
    - 2800 Spatial
    - 3000 Tabular
    - 660 Manuscripts
    - Generated Interpretations



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# Web Soil Survey Usage

## Efficiency

### ■ Visits

- Over 1.5 million total since 8/05
- Over 100,000 visits per month
- Up to 5,000 visits per day

### ■ Hits

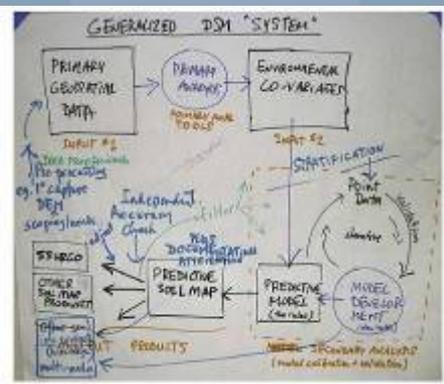
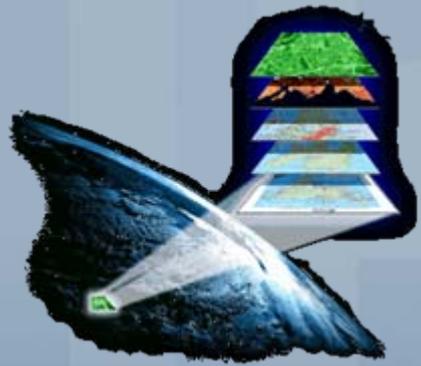
- Over 310 million hits since 8/05
- 30 million hits per month



# Planning The "New" Soil Survey – Building on Technology

## Looking to the Future

- Soil Business Area Analysis Group
- Federal Lands Advisory Group
- NCSS Advisory Group
- State Conservationist Advisory Group
- Soil Interpretation Advisory Group
- NCSS and SSSA S-5 Digital Soil Mapping Committees

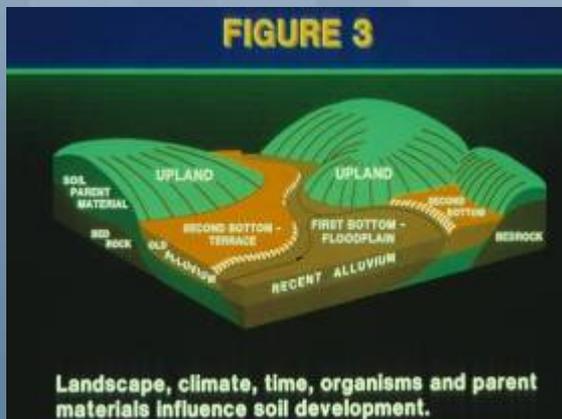




# Planning The "New" Soil Survey – Building on Technology

## Benchmark Landscape Catena's

- Dynamic Soil Properties
- Subaqueous soils
- Investigation Plans  
(Study and Research)



# Planning The "New" Soil Survey – Building on Technology

## Dynamic Soil Properties

- Provide information on how soils change
  - Productivity
  - Sustainability
  - Environmental impacts



Dynamic soil properties change on the human time scale.



# Planning The “New” Soil Survey – Building on Technology

## WILL

- Use Web Soil Survey to Deliver our Information to Customers
- Use New Technologies to enhance our Efficiencies & Knowledge of Landscapes
- Provide Stability by Establishing Permanent Soil Survey Offices
- These will Prepare us for the:  
***“New Frontiers in Soil Survey”***

A sunset over a desert landscape. The sun is low on the horizon, casting a warm orange and red glow across the sky. The sky is filled with scattered clouds, some of which are illuminated by the setting sun. In the foreground, the silhouettes of saguaro cacti and other desert vegetation are visible against the bright sky. The overall scene is peaceful and evocative of a desert sunset.

*Thank You!*



Thank You!



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# Federal Lands Advisory Group

## Identified Priorities

- **FS, BLM, NPS, DOD, & BIA Lands**
  - Soil Mapping
  - Data Base Population
  - Correlation to Standards
  - Digitizing to Standards
  
- **Develop Joint Plan for Completing areas**
  - Leverage Funding/Resources



# NCSS Conferences

## 2005 NCSS National Conference

- Corpus Christi, Texas

## 2006 NCSS Regional Conferences

- New Jersey, Utah, North Dakota, and Oklahoma
- Recommendations
  - Utilize Open File Reports
  - New Standing Committee  
“NCSS Interpretations Committee”



# NCSS Conferences

## Standing Committees

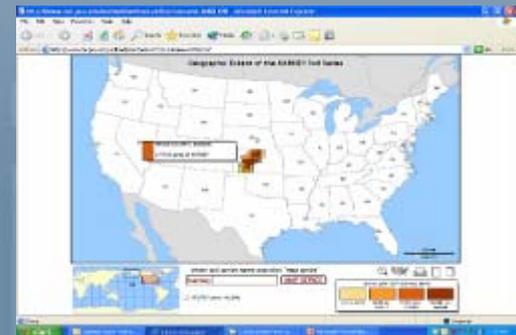
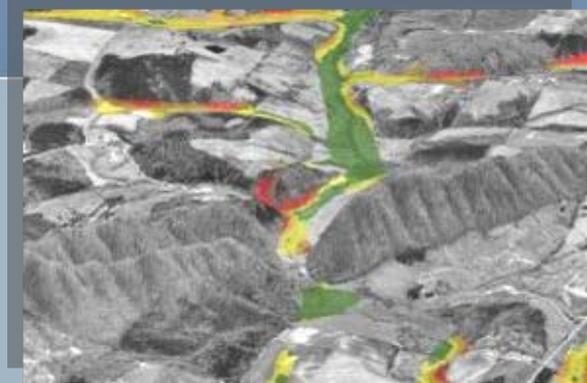
- Standards/Soil Taxonomy
  - National Soil Handbook enhancements
- New Technology
  - Partnership in development & testing
- Research Needs and Priorities
  - NCSS Soil Pedon Database

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# The "New" Soil Survey

## Efficiency

- Utilize New Technologies
  - Complete the Initial
  - Accelerate the Update
- Soil Resource Inventory
  - "Tool Box"
    - PEDON PC (Data Collection)
    - Soil Landscape Predictive Models
    - Pre-Mapping Tools
    - Landscape Analysis Tools





# Planning The “New” Soil Survey – Building on Technology

- NASIS 5.4 June 2007
- NASIS 6.0 Spring 2008



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# Planning The “New” Soil Survey – Building on Technology

## Sampling Guide for Dynamic Soil Properties

draft

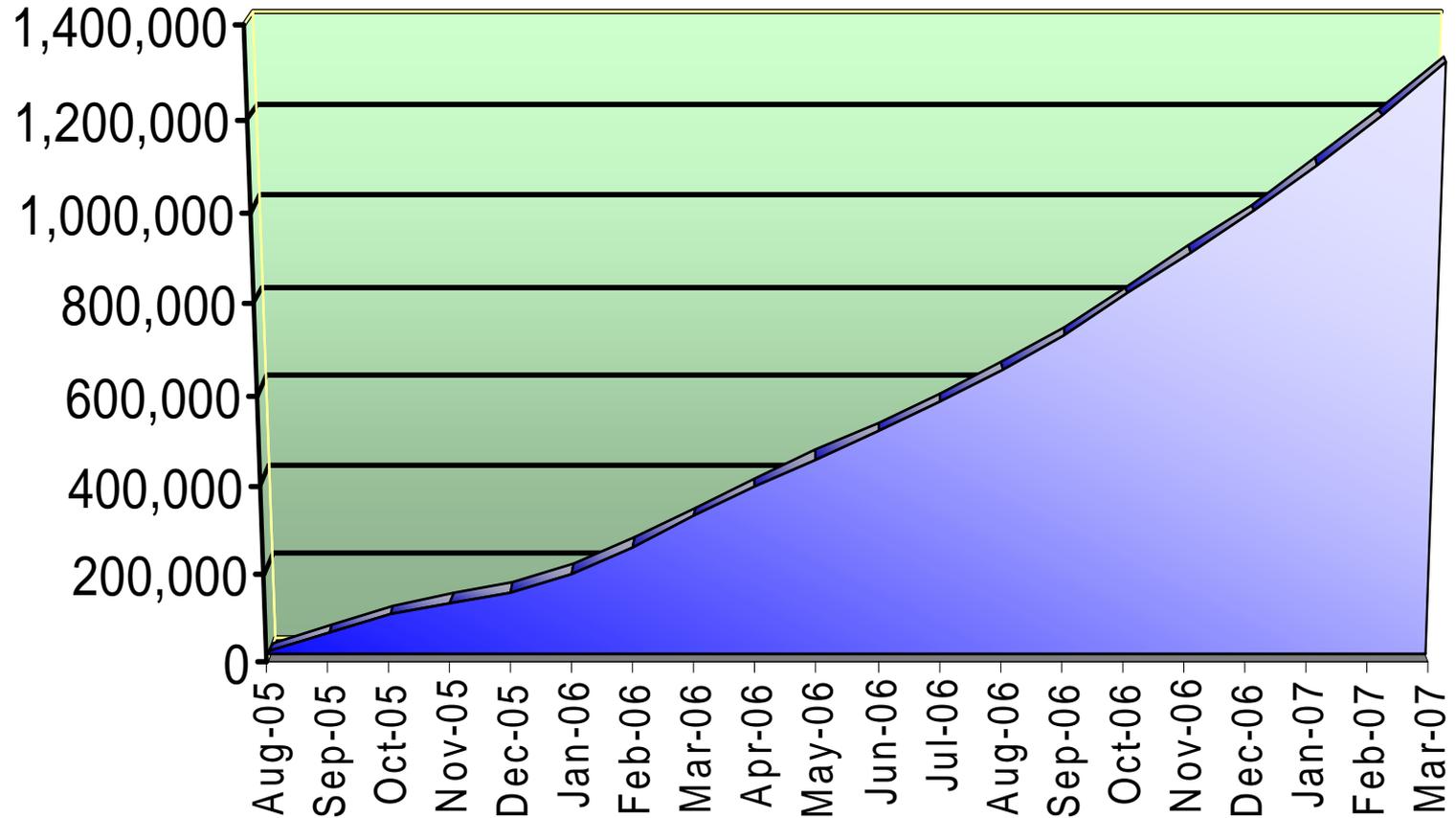


- Soil change
- Sampling design
- Statistics for quality assurance
- Sample methods (soil and vegetation)
- Data analysis

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# Web Soil Survey Usage

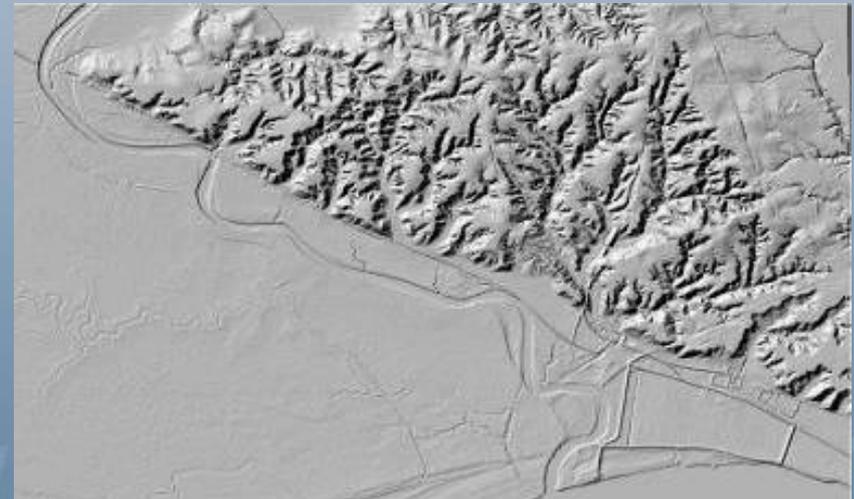
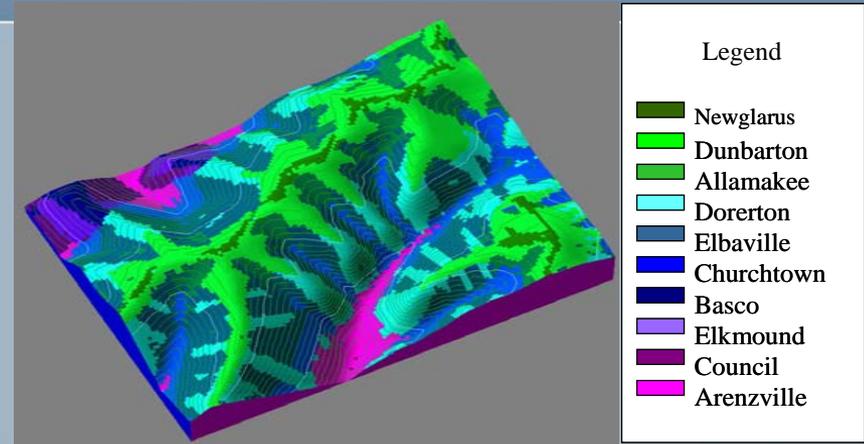
## Cumulative Visits





# Planning The "New" Soil Survey – Building on Technology

- Soil Resource Inventory Toolbox
  - **Field Data Collection**
- Mobile Data Collection and Revision
  - **National Geospatial Database**
- Soil Landscape Predictive Models
  - **SoLIM, PURC, RASP, TEUI**
- Elevation Data
  - **10M, LIDAR, IFSAR**



# The "New" Soil Survey

## "Web Soil Survey"

- 2,800 Spatial Layers
- 3,000 Tabular Layers
- 660 Manuscripts
- Generated Soil Interpretations

