United States Department of Agriculture
Natural Resources Conservation Service

USDA NRCS

Nebraska

… The Good Life

A little about me…

National Soil Survey Center Soil Survey Laboratory

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Line of Staff
National Leader for Soil Research and Laboratory – Larry West
National Soil Survey Center Director – Jon Hempel
Soil Survey Division Director – Mike Golden
Deputy Chief for Soil Survey and Resource Assessment – Doug Lawrence

Background of the Soil Survey Laboratory

- Established in Lincoln, Nebraska, by consolidation over time with NRCS laboratories in Maryland, Oklahoma, North Dakota, and California.
- Provides leadership in soil analysis to support the NCSS.
- Cooperates with Universities and State and Federal agencies on research projects, source of soil analysis methods, and participant in interlaboratory quality comparisons.
- Cooperates with international agencies and research institutions to expand availability of soil resource data and enhance understanding of soil behavior.

Mission

- To support the NCSS with laboratory data on the properties of soils.
- To develop, implement, and publish standard soil analysis methods.
- To train soil scientists in soil analysis and use of laboratory data.
- To support NRCS MLRA Soil Survey Office Laboratory operations, including use of custom field kits for soil analysis.
- To store soil property data and make it readily available for use by Federal and State agencies, universities, and the public.

Full Service Laboratory

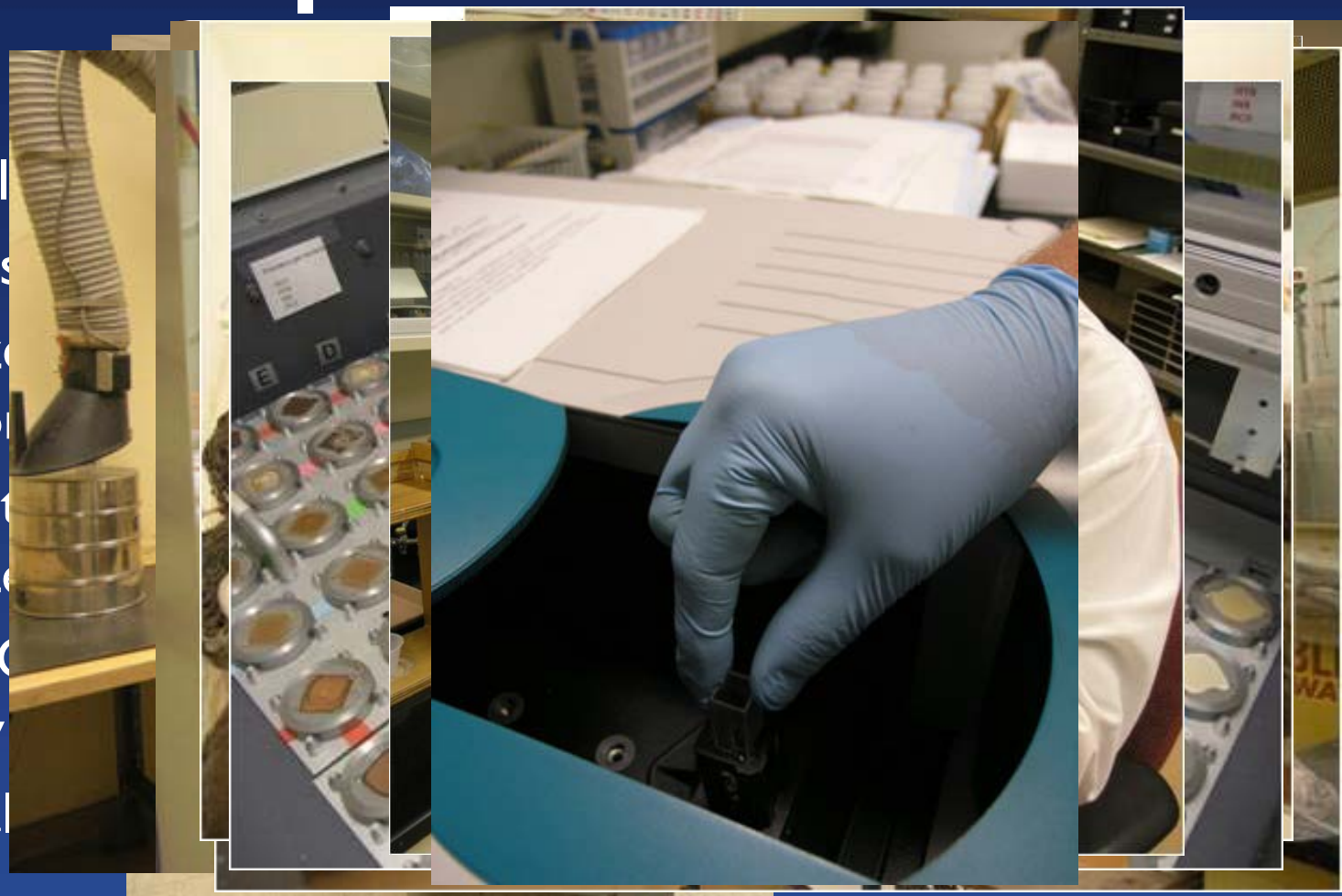
- Clients receive as much service as possible!
  - Soils are processed and analyzed.
  - Data are thoroughly evaluated for accuracy.
  - Verified data are organized into reports.
  - Current turn around time on full characterization projects: 6 - 8 months
    - Shorter turn around times for less involved or higher priority projects

Analytical Overview

- Highly trained analysts annually perform 200,000 + chemical, physical, mineralogical, and biological analyses on 6,000+ soil samples from across the U.S. (and other countries). A few common analyses :
  - Cation-exchange capacity
  - Particle-size distribution
  - Water retention
  - Bulk density
  - Phosphorus
  - Total carbon and nitrogen
  - Calcium carbonate equivalent
  - Water soluble salts
  - Extractable acidity
  - X-ray mineralogy
  - Optical mineralogy
  - Active carbon
  - Particulate organic matter
  - Gypsum
  - pH
  - Aggregate stability
  - Trace metals
  - Major metals

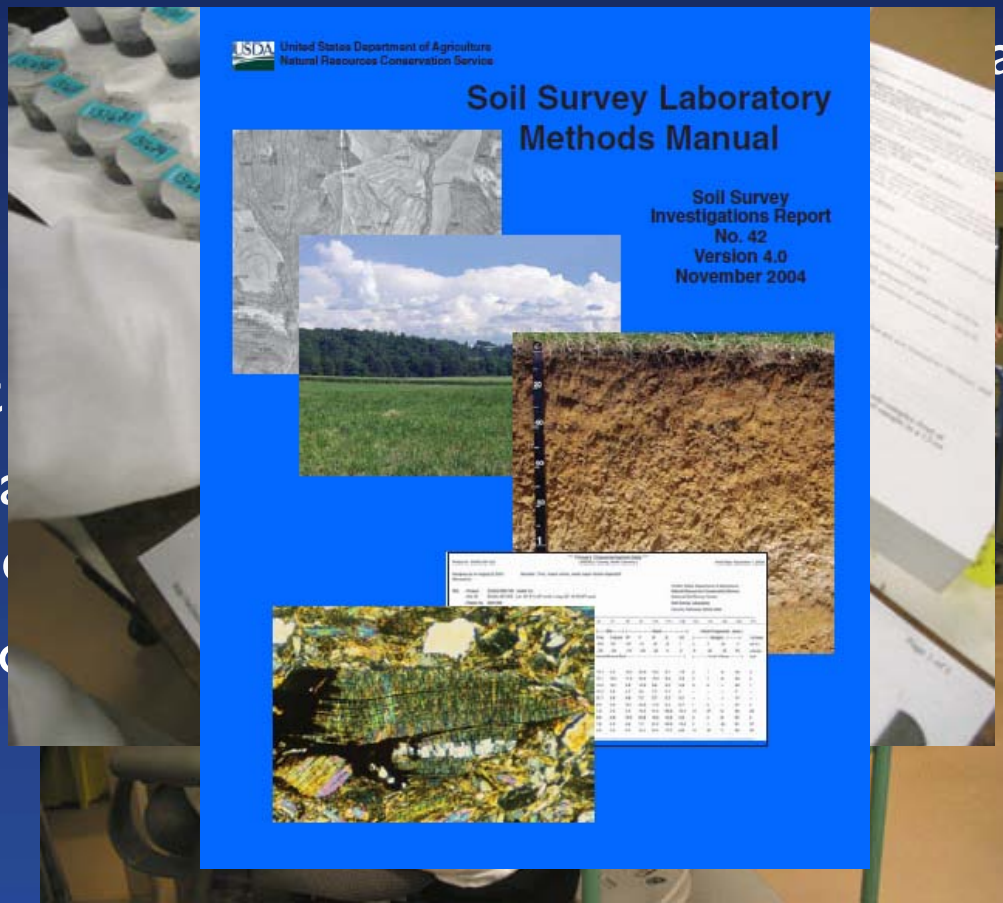
One Laboratory, Multiple Sections

- Processing
- Chemical Anal
- Physical Analys
  - Particle Siz Distributio
  - Bulk Densit Water Rete
  - X-ray and C Mineralogy
- Biological Anal



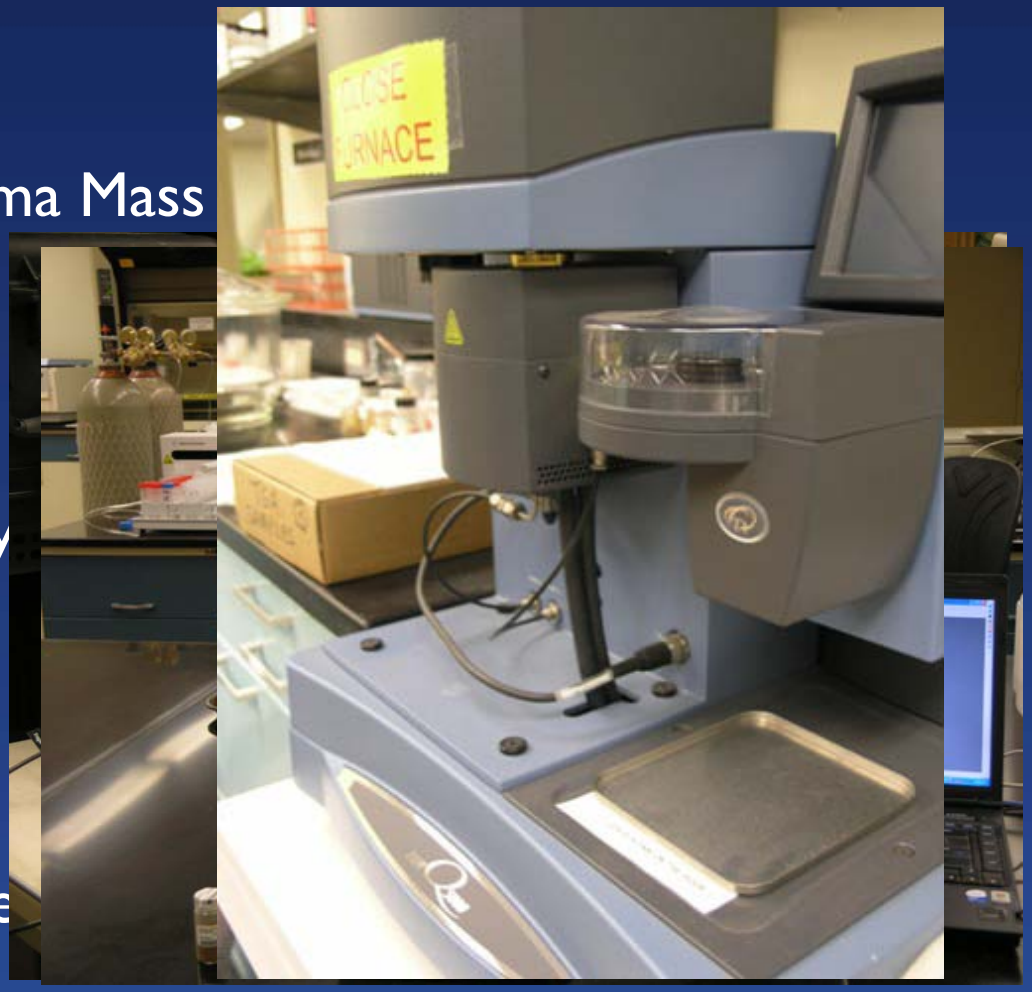
Quality Assurance

- Rigorous adherence to established, vetted methods.
- The batch analyst verifies at fall within established limits.
- The Section Lead Analyst
- The Project Coordinator re consistent and congruent
- A final review is given by a mple origin, before data are rel
- Interlaboratory comparis ge.



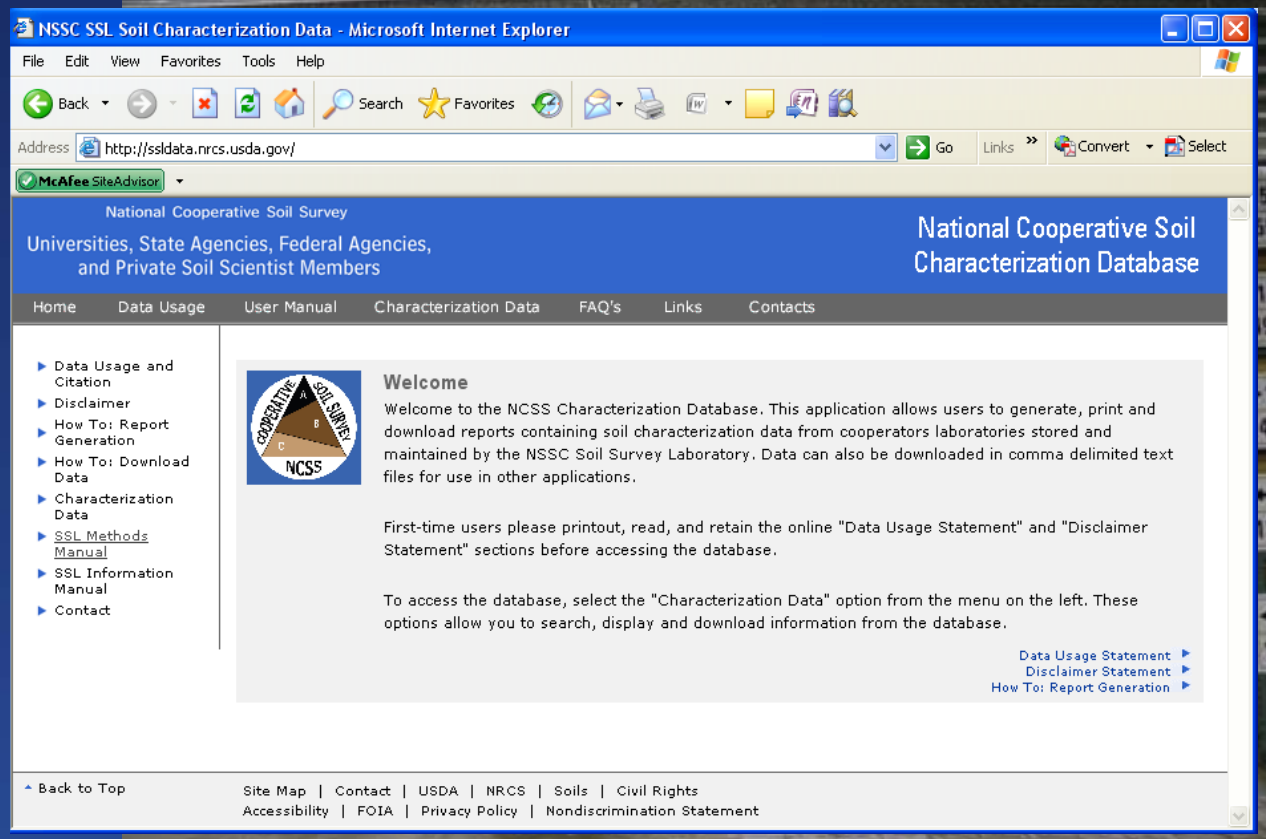
Cutting Edge Facility

- State of the Art Equipment
  Recent additions:
  - Inductively Coupled Plasma Mass Spectrometer
  - Visible Near Infrared Spectrometers
  - Thermogravimetric Analy
- Method Development
  - Improve data quality
  - Increase efficiency
  - Respond to emerging nee client requests



Invaluable Resources

- The NCSS database
- Soil archive
- The people



Standard Setting Facility

- Field sampling assistance
- Field office laboratories
  - Field Laboratory Manua
  - Safety manuals
    - Laboratory set-up
    - Chemical disposal
    - Material Safety Data Sheets
  - Quality assurance
- Field kits
- Technical support

Standard Setting Facility

- Recent method development activities
  - Active carbon
  - β glucosidase
  - Hyper POM
  - Particle size analysis for soils with gypsum
  - Trace metals
  - Boron

We're Here to Help

- Data needs
- Special analysis requests
- Reports
- Interpretations
- Field assistance
- Field Office Laboratory assistance
- Special projects

"Thanks for Listening!"