

NUMBER: WCC-093

TITLE: Western Region Soil Survey and Inventory

DURATION: October 1, 1999 - September 30, 2002

DESCRIPTION AND JUSTIFICATION:

The National Cooperative Soil Survey (NCSS) is a federal and state partnership charged with the survey and inventory of soil resources in the United States and its territories. All surveys conducted under NCSS must adhere to strict standards of quality and scope. Federal cooperators include personnel from the USDA Natural Resources Conservation Service, USDA Forest Service, USDI Bureau of Land Management, National Biological Research, National Park Service, and the US military services. State cooperators include soil scientists primarily from Agricultural Experiment Stations involved in soil survey and pedological research (soil genesis, classification, morphology, interpretation, and mineralogy), but may include state agencies involved in natural resource management. Soil scientists from the private sector have increased their participation in NCSS activities as well.

Historically, Experiment Station cooperators have been involved in almost all aspects of soil survey. Currently, Experiment Stations are subject to static or reduced funding, increasing demands for research productivity, and obtaining external grant funds, while still committed to providing quality soil survey, interpretations, and research assistance to the NCSS. At the same time, federal agencies involved in NCSS are subject to limited funds, organizational restructuring, and a changing clientele demanding new surveys and expanded data interpretation oriented toward ecosystem management and environmental quality.

The Western Coordinating Committee-93 and its predecessor, WRCC-30, have provided opportunity for western Experiment Station cooperators to meet with leaders of the NCSS in the western region and coordinate regional activities consistent with the goals of NCSS. Because of changing demands on all NCSS cooperators, WCC-93 continues to be essential for providing opportunity for Experiment Station personnel to be actively involved in planning of NCSS activities and coordination of research to support NCSS programs.

Soils and ecosystems in the western region are distinct from other regions, encompassing high altitude and high latitude, volcanic, arid/semiarid, and cold soils and ecosystems. Development of successful survey, inventory, and management strategies requires research conducted specifically in ecosystems unique to this region. Many of these ecosystems occur on lands managed by cooperators in NCSS, primarily the Forest Service, Bureau of Land Management, National Park Service, and the military services. These cooperators have become increasingly active in their participation in the NCSS, especially the NPs and military. In many cases, the needs for soil survey information on these lands is quite different from the needs of resource conservation districts whose primary focus is on agricultural production systems. Coordination of research consistent with NCSS goals must be expanded to include the full range of cooperators.

Coordination of research activities via WCC-93 is essential for Experiment Station cooperators to fulfill their commitments to NCSS in the west. Because each western state Experiment Station has so few personnel actively involved in soil survey, and the distances between personnel are so great, it is critical that this committee be renewed to provide continued opportunities for regional coordination of activities related to soil survey.

OBJECTIVES:

The revised objectives of a Western Regional Coordinating Committee on Soil Survey include:

1. To develop more effective mechanisms for direct input from the Experiment Stations into the National Cooperative Soil Survey (NCSS).
2. To coordinate pedologic research activities in soils and ecosystems of the western region (including properties and processes of volcanic soils; influence of soil and weathered rock on water quality and supply; the role of soils in understanding the history, function, and degradation of arid, semiarid, and high elevation and high latitude ecosystems; and the use of soil survey information for land management), with emphasis on activities that benefit NCSS goals of soil survey and ecosystem management.
3. To identify and directly involve all NCSS cooperators in western regional research related to soil survey and ecosystem management, especially NCSS cooperators from USDA Forest Service USDI Bureau of Land Management, National Park Service, the military services, state agencies, and the private sector.
4. To continue representation of Experiment Station pedologists in the National Cooperative Soil Survey at regional and national work planning conferences.

EXPECTED OUTCOMES:

Research programs that facilitate the survey, inventory, and management of soils and ecosystems unique to the western region will be coordinated. Research on critical ecosystems and specific geographic areas will be identified and prioritized.

Involvement in NCSS via participation in regional and national soil survey work planning conferences will continue. Cooperators from federal and state agencies and the private sector will be identified for potential research collaboration.

Comparison of NCSS goals and cooperator resources in the western region will lead to more efficient use of NCSS personnel in soil survey, inventory, management, and research activities.

EDUCATIONAL PLAN:

Participation of WCC-93 members at regional and national work planning conferences in strategic committees and in technology transfer will result in education of NCSS cooperators.

Strategies and joint research will be published in regional newsletters (e.g., Pedon News, published by the Bureau of Land Management) and other publication outlets.

PARTICIPANTS:

			<u>Teaching</u>	<u>Research</u>	<u>Extension</u>
J.L. Boettinger	Utah State University	Pedology, soil mineralogy	75%	25%	
R.C. Graham	Univ. of Calif., Riverside	Soil mineralogy, pedology	80%	20%	
D.M. Hendricks	Univ. of Arizona	Mineral micromorph., genesis	70%	30%	
E.F. Kelly	Colorado State Univ.	Pedology	60%	40%	
P.A. McDaniel	Univ. of Idaho	Pedology	65%	35%	
H.C. Monger	New Mexico State Univ.	Pedology	60%	40%	
G.A. Nielsen	Montana State Univ.	Pedology, ecosys. manag.	80%	20%	
C.L. Ping	Univ. of Alaska, Fairbanks	Soil genesis and classif.	65%	20%	15%
R.J. Southard	Univ. of California, Davis	Pedology, mineralogy	75%	25%	

OPERATIONAL STRUCTURE:

The secretary of the committee is selected by the participants at the biennial regional NCSS meeting. After serving a two-year term as secretary, the secretary moves into the committee chair position. Committee members rotate through the chair and secretary, insuring full regional representation. Regional representatives to national NCSS committees (e.g., Soil Survey Standards Committee, National Soil Survey Laboratory Committee) are selected by committee participants at annual or biannual meetings as necessary. The chair is responsible for organizing and presiding over each meeting. The secretary records minutes of the meetings, updates information on all participants, and collects reports from individual participants for inclusion with the minutes and evaluation report to the Western Association of Agricultural Experiment Station Directors.

Meetings are held in even years in conjunction with the regional soil survey conference. During odd years, the WCC-93 meeting is held in conjunction with the Western Society of Soil Science.

SIGNATURES:

Administrative Advisor

Date

Chair, Western Director's Association

Date

ATTACHMENTS:

ACCOMPLISHMENTS:

Objective 1: To develop more effective mechanisms for direct input from the Experiment Stations into the National Cooperative Soil Survey (NCSS).

Experiment Stations Cooperators met with leaders in the National Cooperative Soil Survey (NRCS) on local (state) and regional levels. The Cooperators from each state first met with local personnel from the NRCS, BLM, Forest Service, and Park Service, among others, at the local soil survey planning meetings. Issues that arose during local meetings were then brought to the regional cooperative soil survey conference in 1998 in Albuquerque. The Experiment Station Cooperators participated in discussions and resolutions of these issues as members and as chairs of working committees. These working committees identified and developed strategic planning initiatives crucial to the success of NCSS. The committees at the 1998 regional work planning conference were 1) Research needs; 2) Update of MLRAs and land resource units and ecological units for ecosystem characterization and conservation planning; 3) Soil taxonomy; 4) Soil quality information products; and 5) Technology applications to enhance soil survey. A Experiment Station Cooperator reported on soil survey research conducted at universities in the West at the National Cooperative Soil Survey Conference in Baton Rouge and was on the steering committee for the next national meeting to be held in St. Louis in 1999.

Objective 2: To coordinate pedologic research activities in soil and ecosystems of the western region (including properties and processes of volcanic soils); influence of soil and weathered rock on water quality and supply; the role of soils in understanding the history, function, and degradation of arid, semiarid, and high elevation ecosystems; and the use of soil survey information for land management, with emphasis on activities that benefit NCSS goals of soil survey and ecosystem management.

Experiment Stations Cooperators involved in soil survey are conducting pedologic research on soils and ecosystems in all of the western states, Hawaii, and Mexico. Global Change research is being conducted in the High Plains of Colorado, Chihuahuan Desert, and the Palouse area. This research is primarily concerned with (1) the timing and magnitude of natural erosion events based on Quaternary paleosols, and (2) the dynamics between warm-season grasses (C4 plants) and other plants (C3 plants), both of which can be tracked by their isotopic signatures contained in soil organic matter and pedogenic carbonates.

Relationships between soils, geomorphology, and ecology, or Ecopedologic research, is being carried out on the Colorado Plateau, Mojave Desert, California chaparral, western High Plains, and Chihuahuan Desert of southern New Mexico and west Texas. One of the goals of this research is to help understand complex natural systems by quantifying interactions between geologic and biologic processes. In addition to scientific journal articles, this research contributes to the development of management tools. Such tools may, for example, identify geomorphic areas that are most and least ecologically fragile. As a result, land managers can know which areas must be managed with great care and which areas can withstand greater land use. This research also attempts to identify geomorphic settings where natural components of ecosystems might be stimulated for remediation. It is becoming apparent that, in many cases, managing natural ecosystem in accordance to ecological and geomorphological boundaries is more suitable than managing according to agronomic practices, involving techniques such as spraying, plowing in straight rows, and irrigating.

Several pedologists with the Western Agricultural Experiment Stations are conducting Mineralogy research. For example, zeolites are being studied for their use in animal wastes and slow-release fertilizers. Bedrock weathering is being studied as it pertains to roadcut stability, its involvement in supplying deep water storage,

and its transport of viruses through macropore fractures . Biogenic calcite in desert soils is being studied for its role in carbon sequestration. In addition, volcanic ash weathering and saponite formation is being studied.

Soil-Atmospheric research is being conducted that deals with the transport of respiratory particles as well as the eolian transport of pesticides adsorbed onto soil particles. Soil-Hydrologic research is an active area of study and is being conducted to understand perched water tables, nitrate movement in Oxisols, saline irrigated-induced wetlands, and geomorphic-aquifer relationships in the Basin and Range.

Objective 3: To identify and directly involve less traditional NCSS cooperators in western regional research related to soil survey and ecosystem management, specifically NCSS cooperators from the USDA Forest Service and USDI Bureau of Land Management.

Experiment Station Cooperators conducted several joint projects with the Forest Service and USDI Bureau of Land Management. Of particular prominence were research projects designed to understand the relationships between soils and vegetation changes, soils and endangered species, and soils and dust sources.

Objective 4: To continue representation of Experiment Station pedologists in the National Cooperative Soil Survey at regional and national work planning conferences.

Members of WCC-093 are voting members of the Western Soil Survey NCSS Conference. These representatives set the direction of the soil survey and soil-survey-based land use planning in the region. The WCC-093 meeting in 1997 was held at Oregon State University, Corvallis (during the Western Soil Science Society Meeting). In 1999, a meeting and field trip are planned in conjunction with the Western Soil Science Society Meeting in San Francisco.

PRINCIPAL INVESTIGATOR CONTRIBUTION TO WCC:

Please see attached original of each participant's form.

