Chaco Culture National Historical Park Soil Survey Project

Proposal to Map Soils in
Chaco Culture National Historical Park
July, 2001

Submitted to the Office of the Superintendent, Chaco Culture National Historical Park, July 12, 2001

Principal Investigator: Scott Zschetzsche, McKinley County. Soil Survey Project Leader, USDA-NRCS, 1041 Mesa Blvd. Suite C. (505) 285-6963

Abstract

This proposal describes a plan of soils fieldwork in Chaco Culture National Historical Park. The fieldwork part of the project is to begin approximately August 20, 2001 and conclude around November 9th . The plan is to map soils at a scale of 1:12,000. Fieldwork will be conducted by 2 to 4 soil scientists with partial assistance by a range conservationist and other disciplines. All personnel will be under the direction of the Principal Investigator. A quality assurance review will be tentatively held the week of November 5th.

Introduction

The soils of Chaco Culture National Historical Park were surveyed previously during fieldwork for the San Juan East soil survey. This mapping was performed in the period 1963 to 1977, at a map scale of 1:63,360. Some of the outlyers in McKinley County were mapped during fieldwork for the McKinley County soil survey at a map scale of 1:24,000. Due to better knowledge of soil-landscape-climate relationships, changes to Soil Taxonomy, differing levels of field investigation and mapping scale and advancements in inventory methods, techniques and quality control, this soil survey update will provide the Park Service with accurate enough soil information necessary to make sound management decisions.

For additional background information see the attached memorandum of understanding (MOU) and reimbursable agreement between the National Park Service and the National Resource Conservation Service.

Methods

Specifications of the work to be accomplished are attached in the project MOU. The soil survey of Chaco Culture National Historical Park involves two stages: fieldwork and manuscript development. The fieldwork involves several activities dealing with observations and investigations of the landforms and soils of the area. These are listed below in the following order from most common to least common activities:

1) Doing soil observations. These could include observing road and arroyo cuts, utility cuts, and other disturbances. Some limited hand-augering is done with a 2 to 3 inch diameter screw auger. These observations are necessary to ascertain what types of soils exist within specific map units. Great care is taken to assure that no plant damage occurs and concern is given to make sure no artifacts are disturbed. The estimated number of observation holes needed ranges from 200 to 300. This number could be towards the low end of the range if supplemental data from research projects and other data can be obtained.

2) Hand-augering of soils with screw augers or digging small observation holes by hand. The holes we auger are about 3 inches wide. The observation pits are about 12 inches square and range from less than 20 inches to about 60 inches deep. We expect most soils in the Park to average less than 40 inches. These pits give us important morphological information about the soil. Extreme care is taken while digging these pits and the holes are carefully back filled immediately after the observation is completed. These observations are done in the form of straight line, evenly spaced transects to provide a statistical analysis of soil composition. The estimated number of observations holes to satisfy the minimum number required to meet the National Cooperative Soil Survey standards range from 500 to 600.

3) Digging a slightly larger pit to typify the central concept of the representative soil for each map unit. These pits will be hand dug and will be about 2 feet wide by 4 feet long and 60 inches deep or to bedrock. These will also be done with the utmost care. They may be left open for a short time, only with permission, so that a quality assurance team can review them. If they are left open, they will be covered with posts, ramped, or slanted to prevent the entrapment of animals. They will also be carefully back filled after the review process is complete in the last week of November, 2001. These pits form the central concept of the soil series and provide information contained in map unit descriptions, are written out in the taxonomic unit descriptions, and are the basis for the information in the interpretative tables. The estimated number of pits needed to meet the quality assurance standards of the National Cooperative Soil Survey ranges from 18 to 25.

Note: All observations sites will have GPS coordinates (UTM's). Consider the fact that in order to make these observations to map soils to a useful degree, soil survey is relatively unobtrusive, looking at about 1 ten thousandth (1/10,000) of 1 percent of the landscape or approximately 1,200 square feet for mapping 40,000 acres. And again, the number of observation holes needed might be reduced to a degree by the use of prior information gleaned from other projects done in the Park wherein soil descriptions were made as part of the work.

Personnel

Fieldwork will be conducted by a Soil Survey Team consisting of 2 to 4 crew members. The entire team is not yet on board. Personnel currently include:

Full-time,
Scott Zschetzsche-Soil Survey Project Leader
Greg Clark-Soil Scientist

Part-time
Chad Ferguson-Soil Scientist
Gerald Stratton-Soil Scientist

Schedule

We anticipate 50 to 60 field days. Fieldwork is scheduled to begin Monday, August 20th and extend through Friday, November 16th (contingent on weather). Tentatively, November 5th through 9th will be the quality assurance field review. The time period from October 29th to November 2nd will be spent on excavating, preparing, and describing typifying pedons for the progress field review the following week.

Conclusion

The Chaco Culture National Historical Park Soil Survey Project will create an information resource that will enable Park Service employees to make sound resource and visitor management decisions. They will be able to devise management plans to help slow down the unnaturally accelerated severe erosion that occurs over much of the park.

UNITED STATES DEPARTMENT OF AGRICULTURE

NATIONAL COOPERATIVE SOIL SURVEY

MEMORANDUM OF UNDERSTANDING

between

UNITED STATES DEPARTMENT OF AGRICULTURE

NATURAL RESOURCES CONSERVATION SERVICE

and

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

relative to

THE MAKING OF A SOIL SURVEY FOR

CHACO CULTURE NATIONAL HISTORIC PARK,

NEW MEXICO

Authorities

NRCS: Public Law 74-46, 49 Stat. 163 (16 U.S.C. 590 a-f) and Public Law 89-560, 80 Stat. 706 (42 U.S.C. 3271-3274). Public Law 74-46, 49 Stat. 163 authorizes the NRCS to coordinate and direct activities with relation to soil erosion, while Subsection 590a(3) authorizes the agency to enter into agreements with other governmental agencies to conduct surveys and investigations and for the purpose of preventing soil erosion.

NPS: The authority to establish this MOU is 16 U.S.C. 460l-1(g), which authorizes the NPS to obtain from other Federal agencies information, data, reports, advice and assistance that are needed to insure the existence of adequate outdoor recreation resources in the present and future. Additionally, 16 U.S.C. 460l-1(f) authorizes the NPS to sponsor research relating to outdoor recreation and make payments for such purposes without regard to the limitations of 31 U.S.C. 3324(a) and (b) concerning advances of funds.

The Economy Act (31 U.S.C. 1535, as amended) states: "An agency may place orders with any other agency for supplies or services that the Servicing Agency may be in a position or equipped to supply, render, or obtain by contract if it is determined by the head of the Requesting Agency, or designee, that it is in the Government's best interest to do so."

The NPS has determined that it is advantageous and in the best interest of the Government to have the NRCS perform soil survey work related to the Chaco Culture National Historical Park.

Purpose for Doing the Work

The Natural Resources Conservation Service (NRCS) has the Federal leadership and responsibility for the Nation's inventory of soil resources under the National Cooperative Soil Survey (NCSS) Program. This inventory is conducted in cooperation with State and local units of government, universities and state experiment stations, and other Federal land management agencies.

The National Park Service (NPS) needs information concerning the nature and distribution of soils in New Mexico parks, as well as their suitabilities and limitations for different uses and activities. However, many of the parks in New Mexico lack a comprehensive soil survey. Therefore, the purpose of this memorandum of understanding (MOU) is to provide for the completion of detailed soil survey for the Chaco Culture Historic Park. This information is needed to make environmental evaluations and sound resource and visitor management decisions.

Because of the significance of the Park, the following is the Brief History of the Park as taken from the National Park Service home page for the Chaco Culture National Historical Park.

Chaco Culture National Historical Park

A Brief History of Chaco

Chaco Culture National Historical Park is in a long, shallow canyon that is centrally located within the San Juan Basin of northwestern New Mexico. The canyon was carved into the basin by what is now known as the Chaco Wash, a tributary of the San Juan River. The park lies primarily along this wash and its tributaries and includes archaeological sites inside and outside the canyon. These sites represent a prehistoric cultural system, which at one time extended throughout the basin. The San Juan Basin has been occupied for over 10,000 years and has been home to Paleo-Indians, Archaic people, the Anasazi, the Navajo, and people of Hispanic and Anglo descent.

The Anasazi ruins of Chaco are the tangible remains of a culture that flourished in the canyon from A.D. 900 through A.D. 1150. There are 13 major ruins in the canyon, and over 3,500 sites have been recorded within the park boundaries. Out of the 3,500 sites, approximately half are above ground, either as masonry structures or rock art in the cliff faces. The major ruins consist of multi-roomed and multi-storied structures, some of which cover several acres and contain as many as 800 rooms. The most famous of these is Pueblo Bonito. With its finely detailed masonry, elegantly battered walls and overall imposing massiveness, it is difficult to believe that this finely engineered structure was built without the use of power tools, beasts of burden, or the wheel.

Today the ruins look very similar to what they did within a few hundred years of abandonment. None of the structures in the park have been completely reconstructed, although it has been necessary to maintain and stabilize them since excavation. For example, when the great kiva of Casa Rinconada was excavated, it was in very poor condition and a great deal of repair work was done to restore its well-built appearance. Yet, it

still is not a complete structure. The other large sites in the central canyon have also been excavated and extensive maintenance has been done on them. Other sites have been excavated and covered over again. All of the major ruins have had some stabilization above ground, but care has been taken not to alter the appearance of the walls as they were found.

Trade

During its Classic period (1020-1120), Chaco was the center of a far-ranging trade network. Goods were exchanged internally within the Chacoan system and externally with groups as far south as Mexico. Chaco's distinctive Cibola black-on-white pottery may have originated in outlying towns to the south and west. One estimate is that only about 20 percent of the pottery used here was made here.

Turquoise was a precious commodity in the Chacoan world. Great quantities of finished ornaments, offerings, and work-site debris were found throughout Chaco Canyon. Raw turquoise was imported from distant mines and transformed with exquisite craftsmanship into beads, necklaces, and pendants. Large amounts of such jewelry may have been traded to the regional center of Paquimé (Casas Grandes) in northern Mexico. The small frog found in Pueblo Bonito is carved from jet, its eyes and collar inlaid with turquoise.

Other evidence of the trade system found here includes the many seashells (often strung into necklaces), copper bells, and remains of macaws and parrots. The two latter items suggest further contact with Mexico, perhaps with the ancient Toltecs.

The Canyon is Abandoned

The people of Chaco left the canyon around A.D. 1200, and for a few centuries, Chaco remained undisturbed. The Navajo arrived in the area in he 1400's but did not settle in the canyon until the early 1700's. In the middle of the 19th century, several of the park's major ruins were rediscovered and thoroughly described by First Lt. James H. Simpson, who came through the canyon on a military expedition. The first archaeological investigation in Chaco commenced in May 1896 when the Hyde Exploring Expedition started work on Pueblo Bonito. This expedition launched over a century of archaeological excavations and surveys in the canyon and outlying areas and led to the creation of Chaco Canyon National Monument in 1907.

Since 1896, a considerable amount of information has been learned about he ruins of Chaco and the people who built them. We know they designed turquoise jewelry, coiled pots, wove sandals and carved flutes; just as we know the social ramifications of erecting these complex structures included the ability to organize and supervise laborers. Much of the information that is known has been determined through the archaeological record. Yet there is just as much that is not known about these gifted and determined prehistoric masons and their culture. We don't know what their music sounded like or how their food tasted, nor do we know how they recognized the change in seasons or celebrated the birth of a baby. When you visit Chaco, enjoy these mysteries and allow your imagination to recreate what we can no longer see, hear, touch or smell. And, as you walk through these impressive structures of prehistory, be respectful and understand that there will always be questions about the canyon and its people that will remain unanswered.

Chaco Canyon National Monument was created by legislation on March 11, 1907, under the auspices of the 1906 Antiquities Act. In 1980, Public Law 96-550 was passed, which expanded the monument boundaries and changed it to Chaco Culture National Historical Park. The park received international recognition when it was recognized as a World Heritage Cultural Park on December 8, 1987.

Last Updated:Wednesday, 02-Dec-98 14:28:22
http://www.nps.gov/chcu/history.

Previous Publications

The Soil Survey of San Juan County, New Mexico, Eastern Part issued November 1980 covers the main body of lands of the Chaco Culture National Historic Park. These lands were referred to as Chaco Canyon National Monument in the soil survey report. A few small outliers of Park Lands that were not covered in the San Juan report were mapped as part of the McKinley County Area soil survey, which is nearing completion. All areas within McKinley County have been mapped at a scale of 1:24,000. Both soil surveys are somewhat general in nature designed to meet the needs for general land use planning principally for livestock grazing and forest products. The San Juan survey was mapped at a scale of 1:63,360 in and around the park. The area of the Chaco Culture Historic Park consists of dissected sandstone and shale of the San Juan Basin. The principal drainage are the Chaco River, Chaco Wash and the tributaries which feed into them. Although the area was mapped, few detailed soil examinations occurred. Most observations were on aerial photographs. Soil delineations were based principally upon photo interpretation and projection of similar known soil units into the area.

Description of the Work Area

The Chaco Culture National Historical Park lies somewhat in the center of the San Juan Basin in northwestern New Mexico near the southeastern edge of the Colorado Plateau. It occurs in southeastern San Juan County and north central McKinley County. The Park is about 33,974 acres in size and consists of a large main unit and other much smaller discontinuous units. The average annual precipitation is about 8 inches. Average annual temperature is about 53 degrees F. The growing season is about 150 days in length. The vegetation consists of primarily of desert grasses and shrubs.

The geology of the Park consists primarily of freshwater and marine Cretaceous aged sandstone and shale. Rocks exposed in the Park are primarily of the Mesa Verde group consisting of the Point Lookout Sandstone, Menefee Formation, Cliff House Sandstone, and Lewis Shale and Picture Cliffs Sandstone. Differences in hardness and erosivity of the various rock units have resulted in the formation of prominent cliffs, canyons, mesas, and buttes.

The Park lies west of the Continental Divide and drainage trends to the west and northwest being collected by the intermittent Chaco River.

Cooperating Agencies and Responsibilities

The United States Department of Agriculture, Natural Resources Conservation Service and the Department of Interior, National Park Service at Chaco Culture National Historical Park will cooperate in the conduct of this soil survey in accordance with their respective memoranda of understanding or contribution agreements, depending upon annual appropriations. The governing documents which identifies the cooperating agencies and their areas of National responsibility is the Memorandum of Understanding between the

United States Department of the Interior, National Park Service and United States Department of Agriculture, Natural Resources Conservation Service, relative to making and using soil surveys.

THE NPS AGREES TO:

a. Provide archaeological review and clearance of sites for soil disturbance during mapping operations according to Section 106 of the National Historic Preservation Act (NHPA). Park staff will assist NRCS staff if there are questions about proposed testing locations.

b. Provide environmental clearance according to the National Environmental Protection Act (NEPA). This will include the preparation of a categorical exclusion. (Non-destructive data collecting is covered by the Department of the Interior categorical exclusions listed in DM 516, appendix 1, number 6.)

c. Provide research permit application materials, assign a research liaison, and receive and approve the permit for NRCS employees involved in soil survey.

d. Review the draft reports and maps and provide written comments for the final report. Participate in development of informational materials for use of visitors to Chaco Culture National Historical Park.

e. Provide knowledgeable personnel in the area and/or to obtain and provide existing resource inventory materials that would be useful for the survey.

f. Make personnel available for resource sensitivity training, meetings and field reviews pertaining to the survey.

THE NRCS AGREES TO: NRCS-NM is responsible for the following items, except where the NRCS-Major Land Resource Area Soil Survey Office, Region 8 (MLRA Office) is specified.

1. Comply with NPS laws and regulations while conducting the soil survey in Chaco Culture National Historical Park.

   a. Complete application procedures to obtain a park research permit prior to initiating fieldwork. Abide by all conditions of the approved research permit.
   b. Protect by avoidance all known and identified Cultural Resources against destruction, obliteration, removal or damage, in accordance with the requirements of the National Historic Preservation Act of 1966 (36 CFR 800) and in the performance of this field work under this Agreement, to keep all Cultural Resource site location information furnished by the NPS or located during NRCS field activities in the strictest confidence. NRCS also agrees not to publish or otherwise divulge such cultural resource information in whole or in part, in any manner or form, and not to authorize or permit others to do so. Necessary reasonable measures will be taken to

restrict access to such information to those employees needing such information to perform the work provided herein, i.e., on a need-to-know basis. NRCS shall immediately notify the NPS if cultural objects are encountered in soil survey-caused soil disturbance areas or damage occurs to any cultural resource and immediately halt work in the area in which damage has occurred until authorized to proceed.

c. All work and associated activities will be conducted within the policies set forth by NPS regulations (36 CFR), particularly in regard to off-road travel and backcountry use, and by policies set forth by NRCS regulations, guidelines, and standards. The NPS and the NRCS shall observe compliance with all environmental acts. This includes, but is not limited to the Federal Water Pollution Control Act, the Wilderness Act, the National Environmental Policy Act, the National Historic Preservation Act, and the Endangered Species Act.

2. Provide soil scientists and other specialists as necessary to survey and map soils at Chaco Culture National Historical Park.

   a. Staffing plan

Specialists	Responsibility	Staff years
Soil scientist	Field mapping, classification, correlation, database development, manuscript preparation	1.25 SY
Cartographer	Compilation	0.05 SY
Digitizing specialist	Digitizing, map finishing	0.10 SY
NRCS state biologist	Field assistance and authorship	0.01 SY
NRCS state forester	Field assistance and authorship	0.00 SY
NRCS state rangeland specialist	Field assistance and authorship	0.05 SY
NRCS state geologist	Field assistance and authorship	0.01 SY
NRCS public affairs specialist	Information campaign	0.00 SY

   b. The project office will report all progress promptly and keep progress records and maps current.

3. Provide soil survey materials for conducting the soil survey and adhere to particular National Cooperative Soil Survey standards.

   a. Provide base maps for fieldwork and publication, equipment, supplies, transportation, and office space for the survey party.
   b. Provide for classification, correlation, and quality control/assurance necessary to meet the National Cooperative Soil Survey standards as enumerated in the National Soil Survey Handbook and MLRA Office and New Mexico state supplements, as part of the NCSS soil survey update system.
   c. Utilize GPS to identify and record the site locations of representative pedons and transects for each map unit.
   d. Mapping units will be delineated according to NCSS standards.

e. The NRCS will perform the map compilation. The field maps will be compiled onto Mylar transparencies, registered to the digital orthophoto publication base.
f. Provide field reviews for other NRCS and NPS personnel. The purpose of the reviews will be to familiarize park staff on mapping procedures and mapping units. Reviews will be held upon completion of progressive fieldwork.
g. Mapping units will be established with agreement of the NRCS soils team, NRCS range specialists, and the NPS contact person. Primary members of the NRCS team will include: Scott Zschetzsche, Soil Survey Project Leader, Greg Clark, Soil Scientist, Chad Ferguson, Soil Scientist, Gerald Stratton, Soil Scientist, David Trujillo, Rangeland Management Specialist, George Chavez, State Range Specialist, Ken Scheffe, State Soil Scientist, Bill Johnson, MLRA Office Soil Correlator, Phoenix, AZ. Additional soil scientist or other specialist will participate in soil mapping as needed.
h. Laboratory analysis will be conducted as needed to meet needs for proper classification and correlation. Additional laboratory analysis may be conducted, but will not be included as part of the report.

4. Deliver the following products to the National Park Service.

a. Compiled soil survey maps on a stable-base Mylar overlay registered to digital USGS orthophotography quarter quadrangles at a scale of 1:12,000.
b. Provide original rectified aerial photography soil survey field sheets.
c. Prints of digital orthophotography containing soil delineations and map unit symbols, conventional and special symbols.
d. Hard copy of the identification legend, classification legend, mapping unit descriptions, taxonomic unit descriptions, other tables as listed below, and a conventional and special symbols legend.
e. Provide a written interim soil survey report for NPS review. The soil survey report will include:
   1) A background section, which includes a description of the methods used. This section will be developed with review by Park Service personnel in order to create publicity materials for park visitors such as an "Overview of the Soils of Chaco Culture National Historical Park".
   2) Copies of soil survey maps on rectified aerial photography. These maps will be compiled and accompanied by a copy of the identification legend, classification legend, mapping unit descriptions, taxonomic unit descriptions, other draft tables as listed below, and a Conventional and Special Symbols Legend.
   3) A representative pedon for each soil series identified in the survey area.
   4) Mapping unit descriptions in semi-tabular format.
   5) Ecological site (range) designations as are available for sites which typically have grazing lands potential.
   6) Standard soil interpretation tables developed from NASIS as listed below:

      a) Acreage and proportionate extent of the soils
      b) Land capability
      c) Capability classes and subclasses

d) Prime farmland
e) Rangeland productivity and characteristic plant communities
f) Woodland management and productivity
g) Woodland understory vegetation
h) Windbreaks and environmental plantings
i) Recreational development
J) Wildlife habitat
k) Building site development
m) Sanitary facilities
n) Construction materials
o) Water management
p) Engineering index properties
q) Physical properties of the soils
r) Chemical properties of the soils
s) Soil features
t) Water features
u) Classification of the soils

f. Provide interpretations relative to erosion class, surface runoff, and as appropriate, percent bare ground.
g. Provide a final map at the agreed upon scale showing locations of all soil pits.
h. Complete a draft narrative soil survey report for the park. A disk copy of the narrative and tables also will be provided to NPS. The soil survey will be digitized according to SSURGO standards and include required metadata and tabular soil data sets. The digital soil survey will not be copyrighted. The NRCS reserves the right to archive and distribute data generated under the terms of this memorandum of understanding for their use.

Specifications

Map units will be consociations and complexes of phases of soil series. The maximum size of contrasting inclusions in map units will be a function of slope. Steeply sloping areas may contain areas of contrasting inclusions of 5 acres or more. On gently sloping and level areas, contrasting inclusions will typically be of 3 acres or less. Contrasting inclusions of less than 5-acre areas may be shown by use of conventional or special symbols or mapped as point or line segments approved by the MLRA office. The soils in each delineation will be identified by direct field examination. Systematic traverses will be made in map units at an interval close enough to detect 5 acre areas that require significantly different management.

All mapping will be characterized by transecting randomly selected delineations of all map units and by recording other field notes. Three transects are required for each map unit. This is adequate for map units less than 1000 acres. For map units 1,000 to 10,000 acres in extent, an additional transect for every 3,000 acres is recommended. Each transect will have a minimum of seven to10 observations. Thirty observations in the form of transects or

pedon descriptions are required for each map unit. The summarized data from these transects and the field notes will be used to name the soils in each map unit and to statistically define and describe the composition of the map units.

Each map unit in the legend will have a minimum documentation of three complete pedon descriptions for each soil series used in the name. The minimum number of pedon descriptions required for any one series is 10, provided that at least one pedon description comes from each map unit in which that series is used in the name. These descriptions, transect data, and field notes will be used to establish the range in characteristics of the soil series.

Field notes will be taken on soil qualities, soil properties, and soil performance to support soil interpretations such as rangeland, wildlife habitat, riparian area management, rural and community development, recreation, engineering properties, and such groups as hydric soils, sodic soils, saline soils, sodic-saline soils, and other soils requiring special management.

Laboratory analysis will be used to assist in determining the range of important physical and chemical characteristics of selected soils.

Alternate black and white and color infrared field sheets will be prepared from high altitude aerial photography at a scale of 1:12,000 with stereo coverage. The report base will be 1:12,000 orthophotography, quarter quad format.

Other imagery and photography available at NRCS or Chaco Culture National Historical Park will be used as needed to help establish soil boundaries and otherwise supplement the field sheet photo base.

Approximate Time Schedule

A scoping meeting will be held with Park personnel in July to determine local needs and requirements regarding the soil survey data in Chaco National Park. Discussed will be the field methods used in the inventory and the type of information that will be provided. The soil survey will commence about August 20, 2001 with the assignment of project staff, who will begin activities with the collection and review of reference material, the assembly of equipment, and the conduct of preliminary fieldwork. A quality assurance field review will be scheduled on or about the week of November 5, 2001. Additional staff will be assigned as needed to complete various tasks necessary to conduct the soil survey. Field mapping will begin about August 20, 2001 with a completion date of about November 16, 2001 weather dependant.

Soil survey crew members are required to take NPS sponsored training to recognize and avoid cultural resource materials and sites to practice "leave no trace" ideals prior to the beginning of the field mapping
A quality assurance field review will be conducted as can be scheduled with the MLRA Office in Phoenix, AZ.

Manuscript development and map preparation will be performed November through February in 2002. Delivery date of the completed manuscript and digital soil maps will be April 15, 2001. Both digital and hardcopy versions of maps and manuscript will be delivered. Draft maps and descriptions will be made available to Park Service Personnel as soon as they are available.

Publication

The Natural Resources Conservation Service project office is responsible for preparation of the soil survey manuscript. The manuscript will be in a two-part format, and procedures will conform to the specifications outlined in the National Soil Survey Handbook and the included Guide for Authors of Soil Survey Manuscripts. A general soil map may be developed at a scale of 1:250,000 to update the State Soil Geographic (STATSGO) database as appropriate. The manuscript will be stored and revised on computers at the soil survey project office and periodically transmitted to the MLRA office for review. The Natural Resources Conservation Service state biologist, state forester, state rangeland management specialist, and state geologist will guest author the various sections of the manuscript. The preliminary and final interpretation tables will be generated from NASIS database files. The soil survey project leader and staff will review tables and interpretations. Changes will be suggested to the MLRA office as needed. The project data and maps will be stored for use in future update of soil surveys in the area.

Advance Information

Advance information will be provided to NPS staff upon request or in accordance with contributing agreements. All advance information will conform to the specifications itemized in the National Soil Survey Handbook.

Old Mapping

In previous years, Chaco Culture National Historical Park was mapped mostly for conservation planning and other general resource management purposes. This old mapping will be used as appropriate for soil boundaries, soil names, but due to the significant difference in the scale of mapping, mapping unit design considerations, and intended uses for the data, many additional soil lines and boundaries and much smaller delineations will result.

Technical Contacts

For the Natural Resources Conservation Service:

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References

1. Soil Survey of San Juan County, New Mexico, Eastern Part, Issued November 1980, USDA Soil Conservation Service
2. Soil Survey of McKinley County Area, New Mexico, Publication Pending, USDA Natural Resources Conservation Service

Approval

Activities conducted under this Memorandum of Understanding will be in compliance with the nondiscrimination provisions as contained in Titles VI and VII of the Civil Rights Act of 1964, as amended, the Civil Rights Restoration Act of 1987 (Public Law 100-259) and other nondiscrimination statutes, namely Section 504 of the Rehabilitation Act of 1973, Title IX of the Education Amendments of 1972, the Age Discrimination Act of 1975, and in accordance with regulations of the Secretary of Agriculture (7CFR-15, Subparts A and

B) which provide that no person in the United States shall on the grounds of race, color, national origin, age, sex, religion, marital status, or handicap be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving federal financial assistance from the Department of Agriculture or any agency thereof.

IN WITNESS HEREOF, the parties hereto have signed their names and executed this Memorandum of Understanding.

_____ _____

Rosendo Treviño III — Date
New Mexico State Conservationist
Natural Resources Conservation Service

_____ _____

Butch Wilson — Date
Superintendent
Chaco Culture National Historical Park
National Park Service

United States Department of the Interior
NATIONAL PARK SERVICE
Chaco Culture National Historical Park
Post Office Box 220
Nageezi, New Mexico 87037-0220

IN REPLY REFER TO:
(CHCU)
N2219

MEMORANDUM

DATE: April 18, 2002

TO: Soils Researchers Interested in Chaco Canyon

FROM: Acting Superintendent, Chaco Culture National Historic Park

SUBJECT: Soil Research Coordination

In recent months Chaco Culture National Historic Park has received five proposals to conduct research on park soils. It is the policy of the National Park Service to encourage and support research consistent with the mission and goals of the National Park System. There are many questions concerning the prehistory of Chaco which valid soils research may help answer.

In order to maximize the use of soil sampling techniques, while minimizing the amount of time needed for environmental and NHPA compliance, we feel it would be valuable to hold a meeting of persons interested in conducting soils research at Chaco Culture NHP. The overriding goal of the meeting would be to discuss possible methods of standardizing sampling techniques and analyses to ensure consistency and meaningful comparison between studies. It would also give our personnel an opportunity to discuss park research needs and potential restrictions, as well as cooperative opportunities for research with the Navajo Nation.

We are planning to host a 1 day scoping meeting in Grants, NM to discuss these issues. If you are interesting in attending this meeting, please complete the attached form and return it to the park no later than May 10.

If you have any questions, please contact Dabney Ford, Chief of Cultural Resources (ph. 505-786-7014 ext. 242) or Jim Ramakka, Chief of Natural Resources (ph. 505-786-7014 ext. 223).

Stephanie Dubois
Acting Superintendent

CHACO CULTURE NATIONAL HISTORIC PARK

SOILS RESEARCH SCOPING MEETING

Yes, I am interested in attending.

Name:_____

Address:_____

_____

_____

Phone: _____

e-mail: _____

Please circle dates you would be available for a meeting:

June 4 5 6 11 12

Please e-mail your response by May 10 to james_ramakka@nps.gov or mail this form to:

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