An Administrative History of the Chaco Project

Mary Maruca

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by

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Introduction

Carved at the base of a rock in Chaco Canyon is the following inscription: "Jean I cannot get no feed I cannot wait for you." These lines serve as a reminder that the rugged, sometimes harsh terrain of Chaco has known human occupation. Scattered across the landscape are the remains of solitary dwellings as well as more intricately complex centers of social activity. This evidence of the past permits archeologists and others to gather data which answer some of the question marks in the historical and prehistorical record. The identity of Jean is only one of these questions (and a minor one at that) which puzzles archeologists and others who work in Chaco Canyon. Where the ancient inhabitants originated, where they eventually scattered, how their outlying settlements tied into Chaco Canyon -- each of these is a challenging issue confronting National Park Service archeologists. These are also issues which indirectly affect management of the cultural remains. Answers to some of these questions will assist management in establishing preservation priorities in Chaco Canyon.

The extensive investigations into Chaco prehistory are due, in great part, to the determination of one man. In 1969, Dr. John M. Corbett, Chief Archeologist of the National Park Service, laid the groundwork for the comprehensive, fifteen-year research project at Chaco Canyon National Monument, which later became Chaco Culture National Historical Park. The decision to sponsor such a program represented a particularly important landmark in Dr. Corbett's career. It signified the fulfillment of a dream motivating him since he first

worked at Chaco as a university student. Dr. Corbett had long been sensitive to the untapped archeological data scattered throughout the canyon. His training in archeology alerted him to the information potentially available through systematic and comprehensive surveys, carefully selected excavations, and subsequent artifact analysis, which he felt would significantly broaden scholarly insights into the prehistoric Southwest. Corbett's vision, plus the dedication and support of those working with him, made possible a unique project which ultimately exceeded his initial expections. In the long run, it helped to pave the way for the establishment of Chaco Culture National Historical Park; it increased our understanding of the Southwest prehistoric and historic past; it resulted in the application of remote sensing technology to NPS Southwestern archeology; and it encouraged the development of new resources assessment and management concepts.

To know the resources of a park thoroughly, to preserve them, to manage them wisely, and to provide the visiting public the opportunity to enjoy them -- these are the primary goals of a park superintendent and his staff. But over the years, the scope of their work has been complicated by the pressures of urban and industrial development. Faced with the uncertain impact of this development on the park system, park managers have begun to rely increasingly on the research of specialists to provide the highly technical data needed to make well-informed decisions regarding the management of their parks. In the past, the work of archeologists, ethnohistorians, historians and others tended not to be incorporated into the decision-making process with the immediacy that is common today. In fact, archeologists recognized the cultural value of Chaco Canyon long before it came under the land managing protection of the National Park Service. The current studies at Chaco Culture National Historical Park represent a major National Park Service

attempt at research-supported management decision-making. By the scheduled conclusion of the Chaco project, this effort will have produced numerous published documents on the complexities of Native American occupation from the Archaic through Navajo periods. These documents will synthesize approximately ten years of intensive park-related research and will serve as a foundation for future park management decisions at Chaco. Major accomplishments of the program include the development of a computerized data base for retention and recall of research and management information, expanded knowledge of Chacoan archeology, a greater understanding of Southwest prehistory, and recognition of the interdependence of research and management in the decision-making process.

The following pages recount the milestones which determined the managerial direction of the Chaco Canyon research project. They examine the early years of the project, the individuals who shaped the project, and the problems which later emerged as the program grew and changed. This document also reviews the program's achievements and potential contributions to future park cultural resource management. On occasion, in the telling of this story, it may be necessary to explore events of a non-administrative nature, to report on the chronological sequencing of archeological excavations, as well as on field conditions. This information should help to clarify the tightly knit relationship between park and project management staff. Finally, it is hoped that this account will help park and regional managers, cultural and natural resources professionals, and planners to gain insights into problems, solutions, successes, and failures of long-term, systematic, mission oriented research.

Methodology

The report which follows was researched while the writer was detailed at the Chaco Center on the University of New Mexico campus. Research materials

available in the library at the center, as well as back copies of memoranda helped piece together the events leading up to and away from the establishment of the center. Additional information was obtained through interviews and telephone conversations with personalities responsible for the inception and growth of the Chaco Project. Unable to personally interview Dr. Robert Lister and Alden Hayes, the writer mailed them questionnaires to which they kindly and fully responded. Washington Office (WASO) records as well as the personal and written recollections of WASO staff have helped to fill out the picture. The oral portion of the data collection tended to flesh out the "bare-bones" concepts and statistics gleaned from memoranda and other archival materials. Those interviewed were asked questions regarding administrative problems, people, and and events pertaining to Chaco research. George Hartzog and Thomas Matthews were approached but their schedules precluded their availability for questioning.

Many thanks are due James Judge, Chief of the Chaco Center; and the archeologists, and support staff of the Chaco Center who read the draft of this report with painstaking care and made carefully thought out suggestions. Thanks are also due Dr. Ernest Allen Connally for his comments and the use of his research materials, Edwin C. Bearss and Dr. Lawrence Van Horn for their suggestions and support, and Douglas L. Caldwell and Douglas H. Scovill for providing the time and opportunity to complete this project.

Chaco Canyon, The Physical Setting

Chaco Culture National Historical Park is at the center of the semi-arid San Juan Basin, in northwestern New Mexico. It is an area of predominantly dry arroyos, dramatic fluctuations in temperature, seasonal dust storms, and sparse vegetation. On a clear day, visibility is high, and may extend as far as seventy miles from the Park. But during a dust storm, even the most immediate

visibility becomes impossible.

Conditions, particularly the occasional heavy rain storms in conjunction with scanty vegetation, leave the park vulnerable to severe erosion problems. Scattered pinyon and juniper trees comprise the primary woody growth. Low-lying shrubs like greasewood and saltbush are in abundance. Forbes and grasses are also present. Data gathered to date suggest that conditions during the Anasazi occupation were not much different from those today.

Chaco Canyon, The Sites

The most remarkable asset of Chaco Canyon National Historical Park is not the natural setting it protects, though indeed this is spectacular, but the storehouse of archeological sites which illuminate some of the complexities of canyon life. There are over 2,200 known archeological sites throughout the park.[1] These range from complex, multi-storied "apartment" ruins with associated areas for social and religious practices to outlier sites located sometimes at great distances from the more heavily populated areas of the canyon. Preserved by the dry Southwestern climate and the lack of disturbance compared to other sites in densely populated areas, many significant above-ground structures have survived into the present. From such information-gathering techniques as archeomagnetic dating, pollen analysis and floatation analysis, dendrochronology, and aerial and satellite photography, all of which assist in furthering the excavation process, archeologists have uncovered significant data regarding the cultural processes of the Anasazi. Environmental/climatic reconstructions of the period suggest that forestation was not substantially greater than at present. From this, the project staff deduced that most of the trees used in building construction must have been transported in over the extensive Anasazi

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1. Alden C. Hayes, David M. Brugge, W. James Judge, Archeological Surveys of Chaco Canyon (Washington, D.C.: National Park Service, 1981), p. 20.

road network. The low productivity of the canyon also suggests the probability of transporting in food from other areas.

Chaco Canyon, Early Occupation

These signposts of activity date back to the early occupation of the canyon by the Paleo Indians and Archaic peoples (9000 B.C.), followed by the Anasazi, commencing approximately A.D. 1 and terminating as a cultural unit about A.D. 1300. For the next few hundred years, the land essentially went unoccupied. Except for an occasional intruder, the vacant pueblos remained unvisited, and gradual weathering accomplished their decay. Then slowly, in the 1700's, the Navajo began their occupation of the region. During a series of wars between the Spanish and Navajo and the peaceful era which followed, these latter-day residents of Chaco received mention in the papers documenting land grants and skirmishes.[2]

Chaco Canyon, Early Exploration

The first penetrations of the Chaco area by nationalities other than Native Americans were frequently warlike. Taunted by the seminomadic Navajo, the Spanish frequently attempted missions of destruction on land claimed by these Native Americans. References to Navajo occupation of the land around Chaco is also made in land grants issued to Ignacio Chavez and Joaquin Maestra in 1768. Both men were cautioned not to infringe on the prior rights of the Navajo. But sporadic warfare kept the two groups at odds. Reports of officials such as Lt. Vicente Lopez and Jose Vizcarra in fact describe activities in and around Chaco Canyon at such sites as what are probably now Pueblo Pintado and Penasco Blanco.[3] There are also scattered reports of Mexican involvement in the Chaco region, but the most detailed report came during the early days of American involvement in the canyon.

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2. David M. Brugge, A History of the Chaco Navajos (Washington, D.C.: National Park Service, 1980), p. 11.

3. Robert H. Lister and Florence C. Lister, Chaco Canyon Archeology and Archeologists (Albuquerque: University of New Mexico Press, 1981), pp. 3-6.

Lt. J. H. Simpson, an officer under Colonel Washington with the Corps of Topographical Engineers, U. S. Army, happened on Chaco in 1849 while on the trail of some misdemeaning Navajo. Excited by his discovery, he set to work, diagramming, describing, and measuring his "find," until seven major ruins and several minor ones had been documented.[4]

From the time that Simpson first reported on the splendors of Chaco down to the present exploration of the canyon, the record of Chaco investigations has become long and involved. After Simpson's report reached the more heavily populated east coast cities, more Americans slowly became aware of the existence of this rare and beautiful area. Chaco Canyon became an important stopover for southwestern explorers. The Geological and Geographical Survey of the Territories was scheduled to explore the area. Numerous cavalry and infantry patrols visited the ruins at Pueblo Pintado and Pueblo Bonito. William H. Jackson, a photographer and artist attached to the Geological and Geographical Survey (under the direction of F.V. Hayden) was one of the many who succumbed to Chaco "fever." Jackson was the first to make mention of Pueblo Alto and to record details of its appearance. He also discovered the stairway behind Chetro Ketl, which now carries his name -- the Jackson Stairs.[5]

The arrival of these adventurers and explorers intensified during the influx of cattlemen and traders to the Southwest. And following them, the Southwest was further opened by scientists, both amateur and professional, who refined their knowledge of Native American prehistory through their research at Chaco. These early explorers initiated investigations to which the present study of Chaco owes its debt. They recorded the earliest known conditions of the ruins and made it possible for those who followed to compare previous observations of the canyon

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4. Ibid, p. 6.

   Lloyd M. Pierson, "A History of Chaco Canyon National Monument" (unpublished, 1956), p. 19.

5. Ibid, p. 21.

with those of their own time period. During the early 1890's, anthropologists began their long-term involvement with the canyon. Taking into account the state of the art at that time, it is amazing how prolifically their shovels and trowels unearthed significant clues to the lifeways of the Anasazi.

Such noted scholars as Dr. Edgar L. Hewett, director of the School of American Research in Santa Fe, and Neil M. Judd, an explorer backed by support of the National Geographic Society, observed marks on the land which they attributed to either primitive roads or drainage canals.[6] Time and more highly refined scientific equipment, especially the use of remote sensing technology, have revealed patterns on the ground which, after ground checking and excavation, have proven to be both canals and roads, each distinguished by slightly different characteristics.[7]

One of the primary personalities in the early archeological exploration of the canyon was Richard Wetherill. Wetherill's first history making investigation in Chaco came in 1895. He was intrigued by the Anasazi ruins, having spent years excavating at Mesa Verde and Grant Gulch, and this life long interest in archeology was further nourished by his discoveries at Chaco. Wetherill communicated his interest to Talbot and Frederick Hyde, approachable financiers who had inherited a small fortune from their grandfather's Babbit Soap Company in New York. They caught the excitement of the expedition, and agreed to finance Wetherill's 1896 trip. Hyde money underwrote the enterprise, which, under the direction of Professor F. W. Putnam of the American Museum of Natural History and Harvard University, was based at Chaco for the next four years. George H. Pepper, a former student of Putnam's, supervised the field work and Wetherill functioned as

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6. Ibid, p. 22-23.

Dr. Thomas Lyons as interviewed by Mary Maruca, April 1980.

7. Dr. Thomas Lyons as interviewed by Mary Maruca, April 1980.

the foreman in charge of a crew of Navajo laborers. Pepper evidently assumed responsibility for cataloging artifacts and maintaining detailed records of the excavations while Wetherill kept the camp routine and the excavation work proceding smoothly.[8] During the next four seasons, approximately 198 rooms and kivas were explored, studied, and backfilled.[9]

Wetherill's attachment to the canyon prompted him to make it his home as well as his business address. To support his work in the ruins, he raised livestock at Chaco and operated a trading post. Though the store and stock pens have been torn down, traces of the stock area (the corral to the southwest of Pueblo Bonito) remain on the canyon floor.

Perhaps one of the early great boons to Chaco field study was the joint institutions of the School for American Research (SAR) and the University of New Mexico (UNM). The SAR/UNM joint field schools operated during 1920-21 and again from 1929-1937. Ordinarily students attending the University of New Mexico would not have been involved in the School of American Research, because that institution was essentially a research facility. But Dr. Edgar Hewett held joint positions, one as the director for the School of American Research and the other as the department chairman for the anthropology department of UNM. Under his influence, UNM students received one credit for work contributed to SAR. Then from 1935 to 1937 both institutions were involved in separate digs. The School of American Research withdrew from the program after 1937, and the University of New Mexico continued alone through 1942 when World War II forced it to close down temporarily.[10]

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8. Lister and Lister, Chaco Canyon Archaeology and Archaeologists, pp. 22-24.

9. Pierson, "A History of Chaco Canyon National Monument," pp. 25.

10. Lister and Lister, Chaco Canyon Archaeology and Archaeologists, p. 45.

Note from Alden Hayes to Mary Maruca, November 1981.

The UNM field school trained some of this century's outstanding contributors to archeology. Among them was the late John M. Corbett, whose early attachment to the canyon later prompted him to work toward an intensified Chaco research effort under the Park Service aegis.[11] Also students at the field school were Robert C. Lister, the future director of the program sponsored by Dr. Corbett, and Alden Hayes, future field supervisor for the same program. Back in 1936, Corbett was a student from Princeton, attending the UNM field school. Hayes and Lister both attended the University of New Mexico and, "as 'camp boys' drove the supply and mail truck to Gallup and walloped pots and pans in the mess hall, cut pinewood, and stoked the kitchen range for their tuition."[12] At the time these men were first exploring Chaco, the fullest extent of their involvement with the canyon was still years away. During their field school days, all they really knew was that Chaco still posed questions to which they had no answers, and that they were intrigued by what they did not know.

The Chaco Project — Origins and Early Influence

Several of Dr. Corbett's friends and collegues have speculated on why he instituted the Chaco project.[13] Their reasons vary, perhaps depending on how well each of them knew him. Dr. Ernest Allen Connally, Chief of the Office of Archaeology and Historic Preservation and Corbett's immediate supervisor, emphasized Corbett's recognition of Chaco's still untapped archeological richness. He also stressed Corbett's affection for the Southwest, which he saw clearly reflected in the trip he took to the Southwest with Corbett as guide.[14] Dr. Wilfred

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11. Pierson, "A History of Chaco Canyon National Monument," p. 25.

12. Note from Alden Hayes to Mary Maruca, November 1981.

13. Dr. Corbett retired in 1972. He died in 1975.

14. Dr. Ernest Connally as interviewed by Mary Maruca, February 1982.

Logan fondly recalled John Corbett's romanticism, and how, during some of their walks through Chaco, he slowly pronounced the names of the ruins -- Kin Bineola, Kin Ya'a, Tzin Kletzin -- "savoring the sound of each."[15] The lonely, isolated spaces of the canyon seemed to hold a special sway over Corbett's thoughts. Perhaps because his student days had been filled with speculations on "why" and "what" Chaco meant, he remained strongly interested throughout his life in the potential archeological breakthroughs that might arise from a thorough investigation of Chaco Canyon. In Logan's words:

> As a product of one of the last generation of generalists in anthropology, John never forgot that he was dealing with things human. He was vibrantly aware that these things came from people who lived, ate, starved, became angry, fought each other, loved, married, produced children, died, and were grieved for. He was every bit as interested in the interpretation of sites to the public as he was in research. He had great sensitivity to such things and could kindle one's imagination through his own feelings. He was a restless mind, constantly examining, probing, and interpreting cultural phenomena in human -- very personally human -- terms.[16]

In 1966, following the conclusion of the joint National Park Service/National Geographic Society Wetherill Mesa Project at Mesa Verde National Park, Corbett began to push for research commitments at Chaco Canyon. Project plans remained a low priority, however, though Lister, then with the University of Colorado, and Corbett, then NPS chief of archeology in Washington, informally discussed the research possibilities many times. Finally in 1968, the two men made a trip to the canyon. Their expedition closely followed on the heels of a discussion between Corbett and Connally to "do something big for Chaco."[17] Both men were interested in the unparalleled archeological significance of the area, and Connally, in addition, hoped to raise the level of NPS archeological

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15. Letter from Dr. Wilfred Logan to Mary Maruca, May 22, 1980.

16. Ibid.

17. Letter from Alden Hayes to Mary Maruca, July 27, 1980.

    Dr. Ernest Connally as interviewed by Mary Maruca, February 1982.

study "to an undisputed place on the cutting edge of scientific inquiry. It seemed to me that this was the only proper role for NPS, which had stewardship of such important resources and which was supported by the authority and wealth of the U.S. Government. If the USA could not support archeological investigation carried out by the most sophisticated means, then who could?"[18] Connally took Corbett's proposal to NPS Director George B. Hartzog, who was "always agreeable to worthwhile outreach projects involving other institutions through cooperative agreements." [19]

Hartzog proved to be strongly committed to establishing cooperative agreements between the National Park Service and university archeology departments.[20] Cooperative agreements between the National Park Service and several universities, such as the University of Arizona and the University of Pennsylvania, were already in existence. Therefore, the process for establishing bonds between the Federal Government and private institutions was already in place when Connally and Corbett began to push for the establishment of a research project at Chaco and to work out the managerial complexities. This last entailed, among other problems, selecting a university open to the idea, coordinating the approval and establishing the responsibilites of all parties involved, and determining the best organizational structure for such a program.

Corbett felt that the University of New Mexico was the only feasible institution to work through. This determination was based on the existence of a previous agreement entitling the University of New Mexico to do research on Chaco lands. (This agreement dated from 1949 when the NPS accepted an offer originating with Hewett in which UNM lands in the monument were traded to the NPS for perpetual rights to conduct research in the canyon.)[21] Connally recognized the legal

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18. Note from Dr. Ernest Connally to Mary Maruca, February, 1982.

19. Ibid.

20. Dr. Thomas Lyons as interviewed by Mary Maruca, April, 1980.

21. Robert H. Lister and Florence C. Lister, Chaco Canyon Archaeology and Archaeologists (Albuquerque: University of New Mexico Press, 1981), p. 112.

necessity of working with the University of New Mexico. Once this decision was made, cooperative agreements with the University of Arizona, the University of Colorado at Mesa Verde and the University of Pennsylvania were used as models for the agreement signed jointly by NPS and UMN. The various levels on which the two organizations interacted were determined in successive meetings. Because of the low visibility of these proceedings, little information leaked to the press until most of the negotiations were complete.[22] When the press did receive notification in the late summer of 1969, park and regional level administrators were unprepared to accept the project, not having been informed by Corbett of all transactions. Frank Kowski, Southwest Regional Director, and Richard Hardin, the superintendent for what was then called Chaco Canyon National Monument, understandably seemed to feel overlooked. Though, along with the others, they recognized that the program was necessary, Kowski and Hardin felt that the negotiating process might have been streamlined, had they been consulted. Corbett's failure to handle program planning through line management channels disturbed them.[23] Kowski felt the NPS/UMN agreement gave the University too much authority. He carried his complaints to Hartzog, who passed the responsibility for making reparations down the line to Corbett.[24]

The sensitive nature of the issue was best expressed by Charles B. Voll, then an archeologist with the Navajo Lands Group in the National Park Service. In a memorandum to Robert Lister dated August 24, 1971, Voll expressed some of the reasons for frustration at the regional and local administrative levels:

> The way in which the agreement was negotiated and the way in which the area, group and region were by-passed and ignored is

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22. Letter from Dr. Robert Lister to Mary Maruca, June 1980.

23. Ibid.

Dr. Ernest Connally as interviewed by Mary Maruca, February, 1982.

24. Letter from Dr. Robert Lister to Mary Maruca, June 1980.

> at the bottom of much of your troubles and will continue to effect [sic] your relations with the area, group and region. This "anti-" feeling has been tempered with time, with the selection of Lister and Hayes to head NMAC [New Mexico Archeological Center] with some important research results, and with some talking. But it is going to take some more talking, communication and coordination to bury feelings of mistrust. Probably the one thing that has kept the Center from blowing up is the recognition on the part of anyone who has ever had anything to do with Chaco Canyon that research is needed and will bear major results.[25]

Essentially, according to Voll's analysis, the parties involved recognized the potential benefits from such a program. But the way in which Corbett executed his plans led to several months of hard feelings between the project staff and the park and region. Events did work themselves out, however. Kowski's appeal to Hartzog resulted in the renegotiation of the contract between the University of New Mexico and the National Park Service.[26]

UNM/NPS Memorandum of Agreement

The process of renegotiating the UNM/NPS contract was documented in an attachment made by Voll to his August 24 memorandum to Lister. Entitled "A Management Viewpoint on the History of a Memorandum of Agreement Between National Park Service and University of New Mexico," this outline verifies that "representatives from the University of New Mexico, Institute of American Research, New Mexico State Museum and Washington, Southwest Region and Field National Park Service representatives [first] met in Santa Fe to discuss ground rules"[27] for developing an agreement between the University of New Mexico and the National Park Service, for mutually beneficial research. The premise implied from the beginning, according to Voll, was that an NPS research center with close academic ties to the university would

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25. Memorandum from Charles Voll to Dr. Robert Lister, August 24, 1971.

26. Memorandum from Zorro Bradley to John Cook, September 30, 1970.

27. Memorandum from Charles Voll to Dr. Robert Lister, August 24, 1971.

be developed to "assist management in doing a better job."[28] All left the meeting with the understanding they would convene again before any action took place.[29]

Approximately nine months later, on May 31, 1969, Warren R. Oates from the University of New Mexico visited Chaco Canyon. He informed Superintendent Hardin that the University had begun to review a draft agreement, and that Dr. Thomas Lyons had agreed to direct the joint NPS/UNM project until a permanent director could be selected.[30] Superintendent Hardin discussed this information with Navajo Lands General Superintendent John Cook and Regional Director Frank Kowski. Beyond the fact that Corbett had failed to consult him, Hardin was concerned for the integrity of the park and the potentially negative impact that longterm exploration might have on the delicate landscape.[31] He felt that field crews would not restrict their use of trucks as transportation vehicles, and that this overuse of heavy equipment would severely alter the ground cover. Faced with Hardin's worried response to the UNM/NPS agreement, Regional Director Kowski contacted Corbett; he informed him of regional office objections to the creation of the Chaco project, then requested copies of the NPS draft agreement with the University. He also requested Corbett's promise to keep the Regional Office informed of further developments related to the research project.[32]

According to Voll, regional and local management received no follow-up request for their recommendations regarding the memorandum of agreement. Field personnel felt they had been overlooked. Perhaps, indeed, Corbett assumed there

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28. Memorandum from Charles Voll to Dr. Robert Lister, August 24, 1971.

29. Ibid.

30. Ibid.

31. Walter Herriman as interviewed by Mary Maruca, April 1980.

32. Memorandum from Charles Voll to Dr. Robert Lister, August 24, 1971.

was no need to consult them further. Connally, along with other collegues, suggested that Corbett enjoyed working on his own, and that he personally involved himself in too many activities to fulfill all commitments.[33] Whether he was or was not interested in regional commentary, he did stir up a storm of controversy. Superintendent Hardin spoke out in his June 13 memorandum to the Regional Director. Feeling angry and betrayed over Corbett's failure to keep them informed, regional personnel scheduled a meeting for September 23 to "resolve the problems compounded by the agreement and the unethical bypassing of management in all deliberations leading to its execution."[34] The recommendations from the regional and local levels were:

1. That the National Park Service and University of New Mexico amend the 1969 Agreement to include pertinent points from the 1949 Agreement [to be discussed later], and that the 1949 Agreement be cancelled;

2. That the amendment include changes recommended in the Regional Director's memorandum of February 3, 1970 [which primarily requested changes in the Chaco Prospectus, to be discussed at length];

3. That the 1969 Agreement also be amended to assure the establishment of an Advisory Board, that research reports be available to all, and that the National Park Service keep certain artifacts and specimens obtained within the boundaries of Chaco Canyon National Monument for research and interpretation;

4. That the 1969 Agreement be amended to give the National Park Service and the University greater protection from a unilateral one year withdrawal (Article 3) prior to the first 15 year limit.[35]

Following receipt of the September 23 recommendations, Zorro Bradley, then Assistant Chief Archeologist, WASO, sent a memorandum to John Cook, General Superintendent of Navajo Lands. Bradley's communication, dated September 30, 1970,

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33. Dr. Ernest Connally as interviewed by Mary Maruca, February 1982.

34. Memorandum from Charles Voll to Dr. Robert Lister, August 24, 1971.

35. Ibid.

relayed the current status of the UNM-NPS Chaco Agreement.[36] Three changes had been made in the agreement as a result of the recommendations of Kowski, Cook, and Hardin. They were:

1. Article I, Section (c) -- changed from the original to read "...with the exception of certain specimens as may be called for by the Service.";

2. Article II, Section (d), paragraph 5 -- last portion of sentence reading "with the University retaining any such physical improvements after termination of this agreement" had been dropped;

3. Article III, Section (a) -- the following sentence was added: "Since the Center is to be organized on a joint Service and University basis and will call upon the Service's resources at Chaco Canyon National Monument, and since this will require the cooperative efforts of Service management, the Director of the Center will receive approval and coordinate administratively with the monument Superintendent."[37]

Bradley's memorandum closed with a personal note, "Corbett read the Chaco Management appraisal report...and didn't even blink an eye at the recommendation for change in the agreement."[38]

In 1978, the memorandum of agreement establishing the Chaco project was renewed, with the next review of the document scheduled for November 1, 1983. This conforms to the 1978 decision requiring the agreement to be reviewed every five years.

Loose Ends -- The 1949 Agreement

Only one complication remained unresolved from this period -- the 1949 agreement with the University of New Mexico, which the NPS regional managers suggested should be reconsidered and possibly discarded. In a letter dated December 12, 1973, to John Perovich, Vice President for Business and Finance

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36. Memorandum from Zorro Bradley to John Cook, September 30, 1970.

37. Ibid.

38. Ibid.

for the University of New Mexico, Robert Lister graphically outlined some of the difficulties pertaining to renegotiating this agreement:

> I have been here with the UNM-NPS Chaco Canyon program for almost three years now and have been serving as a sort of middle man between the University and the Park Service in trying to bring about certain changes in the 1949 Memorandum of Agreement between the two organizations, but we still have not concluded the matter. I had thought it would be a simple task but it is turning out to be almost like negotiating a peace in Viet Nam.[39]

Part of the complexity of the 1949 Agreement and the reason that it is still unresolved is evidenced by Article III of the document. The right to perpetually conduct research at Chaco Canyon was guaranteed to the University. The phrasing allowed the University greater power for independent investigation than NPS administrators involved in planning the Chaco project thought advisable. It also negated any possibility for a joint cooperative agreement between the University and the Park Service. The 1949 agreement stated under Article III(d):

> That the university may invite other reputable research institutions and personnel to participate in its research or, with the permission of the Secretary, to undertake separate research; and that the Secretary may authorize research by other institutions, upon the lands described in the accompanying deed, with the permission of the University. In the event that University research is interrupted for ten consecutive years, the latter permission is unnecessary.[40]

The fact was that ten years had indeed elapsed since the University had last conducted research at Chaco Canyon, but that other parts of the contract negated this stipulation. Despite the University's non-involvement over a period of years, Article I of the 1949 agreement gave to UNM "perpetual preferential right" to conduct research. This was an obvious contradiction

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39. Letter from Dr. Robert Lister to John Perovich, December 12, 1973.

40. Memorandum of Agreement between the National Park Service and the University of New Mexico, 1949.

of Article III, "In the event that University research is interrupted for ten consecutive years, the latter permission is unnecessary...,"[41] and so the NPS representatives hoped to reword the agreement so that "preferential right" would be used in place of "perpetual preferential right."

Robert Lister, by then director of the Chaco project, wisely called for the recommendations of Voll and Hardin before finalizing suggestions for altering the agreement. In this way, he avoided the complications which accompanied the formation of the Chaco project.

The regents of UNM approved a revised version of the 1949 agreement in September 1972. This was forwarded to the Secretary of the Interior for his signature. The document was misplaced and did not resurface until months later at the U.S. Department of Interior in Washington. It was signed and forwarded to Santa Fe, where it again dropped out of sight.[42]

The Search for a Project Director

After the establishing agreement for the UNM-NPS Chaco project (not the 1949 agreement) was signed (August 13, 1969) and revised according to field comments (September 1971), Corbett's plan was set in motion. The first step for the New Mexico Archeological Center (as the Chaco project was called) was the appointment of a project director to organize the research design and itemize the needs of the program. Though Corbett never pointedly said he wanted to direct the Chaco project, those who knew him also knew the thought lay at the back of his mind. Nevertheless, when National Park Service Director Hartzog approved the Chaco project, he decided not to approve Corbett as the project director.[43] Corbett had lost Hartzog's confidence when he could not explain the descrepancy between his operating budget and the funds he had available to draw on. A

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41. Ibid.

42. Letter from Dr. Robert Lister to John Perovich, December 12, 1973.

43. Letter from Alden Hayes to Mary Maruca, July 27, 1980.

Dr. Ernest Connally as interviewed by Mary Maruca, February, 1982.

misunderstanding involving another Federal agency in the Western Region resulted in a loss of funds that Corbett had never pinpointed in his budget, which he had applied toward park projects. When this money source vanished, he was unable to afford the same level of archeological work. Corbett's inability to explain the situation cost him the support of Director Hartzog. Though Connally attempted to effect a peace between the two men and though he lobbied for Corbett's transfer to the Southwest as project director of the new research program, Hartzog would hear none of it.[44]

In the light of Hartzog's decision, it became necessary to determine just what kind of applicant could best fill the position at the archeological center. First, the person assuming the leadership function had to be acceptable both to the Park Service and to the university. Without a solid working relationship with both, the cooperative nature of the Memorandum of Agreement would have been threatened. Second, the director of the program had to be well-respected in university circles in order to maintain close ties with members of the academic community.[45]

Originally, Dr. Wilfred Logan was a contender. But during his initial travels to New Mexico, he received a cool reception from UNM.[46] In part, this was the result of his work experience. Logan had substantial academic training in southwestern archeology, but at the time the Park Service was searching for a project director, he was more deeply involved in eastern archeology.[47] The coolness with which the University received him seemed to indicate

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44. Dr. Ernest Connally as interviewed by Mary Maruca, February 1982.

45. Dr. James Judge as interviewed by Mary Maruca, June 1980.

    Dr. Thomas Lyons as interviewed by Mary Maruca, June 1980.

46. Letter from Dr. Wilfred Logan to Mary Maruca, June 1980.

47. Ibid.

    Dr. Ernest Connally as interviewed by Mary Maruca, February 1982.

its unwillingness to see him appointed. Because it was feared that Logan's appointment would jeopardize the strength of the research agreement between the two parties, he was dropped early on from among the contenders for the position.

While the search for a program director proceeded through channels, no one wanted the project to lie fallow, so Corbett decided to appoint someone to "mind the store."[48] He contacted the University of New Mexico, and was referred to Dr. Thomas Lyons.

A long-time geologist with a newly acquired Ph.D. in anthropology, Lyons had just accepted a position with the Technology Application Center on the University of New Mexico campus where he worked with remote sensing techniques. Though seeking a teaching position, Lyons was intrigued by the conversation he had with Corbett. He agreed to assist Corbett in the details of setting up the Chaco program. Corbett, who shared Lyons' interest in the potential contributions of remote sensing to archeology, himself had contracted for remote sensing overflights of Jamestown; the resulting photos had impressed him so much that he was already considering remote sensing technology as a potential archeological research tool. He told Lyons he planned to use remote sensing technology to assist in the analysis of the Chaco sites. Since the interests of both men coincided, Corbett appointed Lyons acting director for the Chaco project. This appointment became official on September 20, 1969.[49]

One of Lyons' first actions as interim director was to contract with Dr. James Judge, an assistant professor of anthropology at UNM and founder of the UNM Office of Contract Archeology. Judge became the principal investigator for a sample archeological survey of the study area. The result was a team of archeologists,

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48. Dr. Thomas Lyons as interviewed by Mary Maruca, April 1980.

Dr. Ernest Connally as interviewed by Mary Maruca, April 1980.

49. Personnel papers for Dr. Thomas Lyons.

headed by graduate student Dennis Stanford, who surveyed a sample of a 36-square-mile area of the canyon, recording information about hundreds of sites. This survey, which began in 1971, marked the beginning of the actual research work at Chaco Canyon.[50]

Efforts to select a permanent program director proceeded slowly. In fact, a final choice was not made nor the personnel papers completed until April 1971. The man who finally satisfied the major requirements of the office and who was acceptable to both the National Park Service and the University of New Mexico was Dr. Robert Lister, Professor of Anthropology at the University of Colorado. As early as 1969 and several years before the selection was finalized, Corbett and Connally had approached Lister to determine his interest in directing the Chaco project. According to Connally, both he and Corbett felt Lister was tailor-made for the job. Lister's credentials exemplfied the direction Connally hoped all Park Service professionals would pursue. He held a Ph.D. from Harvard University during a time when Connally had Hartzog's support in his efforts to increase the number of Ph.D.'s in the National Park Service.[51]

Lister's experience demonstrated his extensive research capabilities, credibility with his profession, and proven administrative ability. His background also made it easy for him to move comfortably between academic and administrative responsibilities. He was a well-respected Southwestern archeologist, with high standing in the academic community. His Ph.D. from Harvard made him familiar to Ph.D.'s from other schools. Yet, he also had a wide variety of park and adminstrative experience. After completing

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50. Dr. Thomas Lyons as interviewed by Mary Maruca, April, 1980.

Alden Hayes, David Brugge, James Judge, Archeological Surveys of Chaco Canyon, New Mexico (Washington, D.C.: National Park Service, 1981), p. 13.

51. Dr. Ernest Connally as interviewed by Mary Maruca, February, 1982.

his academic education, he worked as a seasonal ranger at Bandelier, Casa Grande, and Chaco. Later, he ran field schools for the University of Colorado in Dinosaur National Monument and Mesa Verde National Park, Colorado.[52] Lister's background in Southwestern archeology, plus his standing with the university, made his qualifications uncontestable.

Building the Program

After Lister assumed responsibility for the direction of the Chaco project, he started to assemble his staff, beginning with Alden Hayes. Hayes had been an NPS employee with the Southwest Archeological Center since 1967. Lister requested his transfer to the New Mexico Archeological Center where he assumed the responsibilities of supervisory archeologist. Like Lister and Corbett, Alden Hayes had attended the University of New Mexico as an undergraduate. He had acquired a fine reputation as a Southwestern archeologist. He had supervised significant excavations at Mesa Verde and Gran Quivira.[53]

Hayes was in charge of all matters related to field research. As supervisory archeologist, he assigned archeologists to specific excavations, then assisted them with the analysis, synthesis and reporting of the excavations as necessary. He also collated the data for the survey, using laboratory assistants to help with pottery identification. Hayes described his responsibilities as:

> on-site supervisor of survey and excavation with 12 to 20 archeological assistants and laborers, co-ordinator for facilities for other researchers, liaison with park staff. Usual practice was for me to come in to Albuquerque on Friday afternoons with the plunder of the week, arriving

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52. Letter from Dr. Robert Lister to Mary Maruca, June 1980.

Dr. Thomas Lyons as interviewed by Mary Maruca, April 1980.

53. Letter from Alden Hayes to Mary Maruca, July 27, 1980.

> in time to unload, pick up needed supplies, confer with Lister and others. And Lister made a trip to Chaco once every week or two, usually spending the night and allowing enough time to visit all digs, see the superintendent, etc. [54]

In all dealings with the park staff and visitors, consideration for their needs simply became a part of the daily courtesies. Hayes commented:

> Our policy, one that we laid out to all personnel, was based on the premise that our work was principally for the benefit of Chaco Canyon National Monument and the monument's goal was to serve the people who came to see it. We did what we could to help out. Provided training programs in archeology for seasonal park staff, helped with the existing museum collections and exibits. When excavation started, we set up scheduled tours of the digs for visitors and made brief talks. Our people sometimes helped out with campfire talks... [55]

A great deal of informal Chaco Project/park cooperation came in the form of on-site talks for visitors:

> The whole project was justified by the need to properly interpret the park to the visitors. As an immediate contribution to the interpretive program we accommodated tour groups at the digs to explain the work in progress. This required the archeologist in charge of each excavation to spend a few minutes a day with them. But I don't think it hurts the work to have to say out loud from time to time what you think you're doing. Also by an unobtrusive signal, the archeologist could let the seasonal ranger bringing in the group know if he was too involved at the moment to spend time with them. [56]

Hayes was always accessible to the staff archeologists. The general opinion of the office staff was positive regarding the leadership of the program. Each felt treated like the best in their field. Each felt important to the future of the project and the direction of the research. Even the administrative staff toured Chaco because Lister felt it was important for them to become familiar with the physical surroundings of the canyon,[57] and to see first hand

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54. Letter from Alden Hayes to Mary Maruca, July 27, 1980.

55. Ibid.

56. Ibid.

57. Catherine Ross as told to Mary Maruca, April 1980.

the work undertaken by the archeological staff.

During this period, Lyons continued to work with the project, no longer as acting director, but rather as project supervisor for all remote sensing research. Lister and Hayes both conceived of Lyons' program as a support service for the activities of the archeologists.[58] Lyons, on the other hand, perceived Chaco to be a kind of proving ground for more wide-scale activities.[59] To this end, he experimented with a range of aerial and terrestial photogrammetic techniques, to determine which ones most effectively produced results beneficial to the archeological investigations.

According to Lyons, the application of remote sensing as an archeological tool was initially suspect among the archeologists. Lyons personally demonstrated the capabilities of remote sensing technology before Hayes accepted its validity. First he showed Hayes aerial imagery confirming the presence of an ancient road network in the canyon; then he accompanied Hayes to the sites with photographic imagery in hand in order to verify that the traces on the ground matched the marks on the photograph. Hayes accepted Lyons' supposition only after they had thoroughly examined the sites. Such physical verification of interpretations from photographic imagery remains crucial to standard remote sensing procedure. What is picked up on the imagery is not considered valid until it is confirmed by "ground truthing," the verification of information through on-site examination.[60]

Despite difficulties with hiring, housing, budget, etc., support for the program ran high. Hayes described the frequently annoying but nevertheless challenging circumstances under which the program first operated:

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58. Dr. Thomas Lyons as interviewed by Mary Maruca, April 1980.

    Letter from Alden Hayes to Mary Maruca, July 27, 1980.

59. Dr. Thomas Lyons as interviewed by Mary Maruca, April 1980.

60. Ibid.

> Before the new lab quarters were constructed, we were shuffled from one broom closet to another for a year. Conditions on the campus were aggravating and frustrating. To spread a map on the desk, you had to first put the typewriter on the floor. To find a book, you had to rummage through a carton. But we all were deeply interested in Chaco, if not in love with the damn place, and were anticipating with pleasure the chance to learn something we didn't know.[61]

At one time, while the staff waited for completion of their offices in what would be called the New Mexico Archeological Center, the project was headquartered in the Mechanical Engineering Department's metal shop.[62]

The Chaco Prospectus

The document which established the working relationship of the Chaco project with the park was the Chaco Prospectus, written in 1969 while the project was still in its developmental stages. Originally titled "The Chaco Research Prospectus," the document was retitled "The Chaco Prospectus" on Hartzog's recommendation. New covers were put on the report and the word "research" eliminated in the text.[63] The document reflects the efforts of Dr. Wilfred Logan and Zorro Bradley. Both men spent approximately five days in New Mexico. They toured the Chaco area, discussing park problems with the superintendent and staff. Then they held talks with university officials in order to complete their research. Finally, they sat down to write the prospectus as a scope of work for the Chaco project. Within a 24-hour period, the main body of the text was completed. Logan wrote most of the text; Zorro Bradley calculated the time frame of the program and where within that time frame certain staff members would be needed and certain research jobs completed.[64]

Following completion of the document, Bradley returned to Washington.

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61. Letter from Alden Hayes to Mary Maruca, July 27, 1980.

62. Ibid.

63. Note from Dr. Robert Lister to Mary Maruca, November 1981.

64. Dr. Wilfred Logan in a telephone conversation with Mary Maruca, May 1980.

The prospectus was approved by Corbett, Kowski, and Connally, with few changes in the original text. Individuals such as Lyons, Voll, and Jack Campbell, then anthropology department chairman at UNM, reviewed the prospectus before its approval, and acted as consultants while final changes to the document were being framed.

In 1969, at the start of the project, planners expected an increase in park use, and began to determine how best to accommodate the additional visitation. To cope with this expected increase, they advocated taking on additional staff at the park level as well as opening up new areas for interpretation.[65] In the prospectus, Logan pointed out the importance of the Chaco project to the park. He emphasized how useful their research would be during a period of park expansion, and how, indeed, it might answer questions about the canyon that would be useful for interpretative programs. He wrote, "To insure the high quality experience the visitor should receive in this area, an investigative effort of major scope is necessary if the management and interpretive problems of the area are to be solved."[66] The phase, "an investigative effort of major scope," describes the way he viewed the program. The Chaco project was planned as a concentrated, long-term research effort to be used in the service of management and interpretive needs. It was intended to answer questions dealing with zoning, erosion, interpretation, wildlife, and floral cover within the park.[67] And some, indeed, the program dealt with; others it did not. The prospectus basically provided the boundaries within which the program was designed to operate. The investigative scope of the project was: 1) to clarify events occurring during Chaco prehistory, 2) to suggest reasons why they happened, 3) to supplement existing park "exhibits-in-place" with

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65. Dr. Wilfred Logan in a telephone conversation with Mary Maruca, May 1980.

66. Wilfred Logan and Zorro Bradley, "Prospectus: Chaco Canyon Studies," (Washington, D.C.: September, 1969), p. 2.

67. Ibid.

representative samples of pre-Bonito Phase structures, and 4) to supply the museum with more extensive and representative collections from each time period.

The prospectus listed five methods for accomplishing these goals: 1) encourage scientific explorations on a broad basis to support and strengthen Service interpretive and management programs; 2) cooperate with other Federal, state, and local agencies to develop regional programs in ecological, historical, and anthropological resource conservation, and recreation; 3) undertake intensive investigations (by survey, excavation, remote sensing photography, etc.) to determine new methods, techniques, and products for use in prehistoric and historic ruins stabilization, and for preservation of objects; 4) seek out meaningful and effective educational techniques for application to regional and Servicewide information and interpretive programs, through behavioral science studies, and audiovisual and communication disciplines; and 5) remain abreast of current knowledge, scientific attitudes, and approaches through close Service contact and association with academic environments.[68]

Two broad research categories were also suggested by the prospectus. These comprised: 1) investigations into the process of cultural development, and 2) analysis of human and environmental relationships during historic times in the canyon. These categories were further dissected as the details of the research design were worked out. Issues were more specifically defined, and questions developed which would direct the archeologists toward research of rainfall, vegetation, mineral resources, contacts with other cultural groups, and cultural reorganizations over time, as these elements had an impact on Anasazi and Navajo lifestyles.[69]

Zorro Bradley's analysis of staffing needs included: in a full-time, permanent position -- a director, administrative assistant, archivist,

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68. Ibid, p. 4.

69. Ibid, p. 9.

statistical editor, illustrator, meteorologist, palynologist, vertebrate zoologist, soil scientist, ethnologist, secretary, archeologist (2), clerk-stenographer (2), museum technician (2), and custodial help (2); in a temporary capacity -- an ethnologist, zoologist, botanist, soil scientist, meteorologist, anthropologist, ecologist, architect-engineer, cartographer, librarian, archeologist (3), and laboratory technician (2). Nevertheless, the actual operating configuration of the staff was significantly smaller than Bradley had anticipated, this reduction being necessary to cope with financial realities. Bradley did conceive of the Chaco project as a 10-year, fully staffed research effort. According to his time phasing charts, he projected the analysis of historic sites would be completed within the first three years of the project, the completion of the resource inventory within the next eight years, and archival development over the full term of the program. Time allotments were also made for ethnographic research, the excavation of Una Vida, and the development of a publications program.[70]

In reality, and rather unexpectedly, the deadlines of the Chaco project changed. This made Bradley's staffing and time phasing proposals useful primarily as a guide to the initial thinking behind the project. Lister's annual report for 1973 called attention to already existing problems in maintaining the pace laid out by the prospectus, "Adjustments have had to be made in the proposed program due primarily to inability to fund the project at the level stipulated by the Prospectus, but in general we are on schedule in respect to programmed accomplishments."[71] Then, in his January 17, 1974 report, Lister clarified the necessary changes:

> Both the regional and Washington offices have been informed that the Chaco Center cannot carry out its research program as it is set forth and scheduled in the Prospectus, Chaco Studies, due to insufficient funding, size of staff, and

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70. Ibid., appendix.

71. Annual Report, Calendar Year 1972, New Mexico Archeological Center, Dr. Robert Lister to Director, National Park Service, January 4, 1973.

> lack of adequate housing and laboratory facilities at Chaco Canyon. Specifically, we will not be able to begin the excavation of a major ruin in Fiscal Year 1975 as it is called for in the Prospectus. We will continue small excavations and limited environmental studies, all of which will result in significant contributions to our knowledge of Chaco Canyon, until funding, staff, and facilities are sufficient to mount a major operation.[72]

More changes followed at the end of the year. The December 16, 1974 report summarized the status of then-current project planning:

> Field work during the next several seasons will continue to be focused upon the smaller villages and the cultural developments that existed in Chaco prior to the climax period (Pueblo III). When, in the future, we undertake the excavation of a large Pueblo III Chaco community, it will be done at Pueblo Alto rather than at Una Vida as had been stated in our Prospectus. This change has been made, and approved at the Monument, Regional and WASO levels, because Pueblo Alto promises to be a much more significant site from both research and interpretive points of view.[73]

It should be noted that all levels of NPS management were consulted as a part of the decisionmaking process.

In a memorandum dated November 2, 1973, addressed to the Assistant Director for Park Historic Preservation, Alden Hayes wrote for Lister, explaining the early problems which hampered the field work:

> It is clearly apparent that in funding, staffing, and field facilities during fiscal years 1971-74 we have operated far below the levels proposed in the Prospectus. Nevertheless, we have managed to conduct studies in all of the projects listed in the Prospectus, although in some cases not in as much detail as we have desired. Obviously, with the small staff we have assembled we cannot accomplish all the required; therefore, we have turned to contracts with appropriate departments of the University of New Mexico and to cooperative arrangements with other federal agencies.
>
> Also, as an economy measure we have carefully reviewed the Prospectus and have combined some projects and numerous staff positions where such streamlining would not significantly lower our standards of research. However, we cannot continue to make such concessions, for any further

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72. Annual Report, Calender Year 1973, Chaco Center, Dr. Robert Lister to Director, National Park Service, January 17, 1974.

73. Annual Report, Calender Year 1974, Chaco Center, Dr. Robert Lister to Chief Historian, National Park Service, December 16, 1974.

> reductions will be detrimental to our studies. In fact, unless we receive additional staffing and funding in the near future we will start falling behind our stated goals.[74]

Hayes also explained that "because of insufficient staff, anticipated lack of funding, and lack of satisfactory field facilities," the excavation of a major site had been postponed until FY 1977.[75] Attached to the memorandum was a chart designed "to capsulate the history and future of the Chaco Center."[76] The chart contrasted, by way of funding, staffing, and actual projects accomplished, the requirements of the prospectus versus the real demands of the project. For example, in FY 1971, the Chaco program commenced the historic and analytical archival portion of the program. The staff consisted of a director, archeologist, clerk-typists, and UNM custodial assistance. By the end of the year, total projects and staff had cost the Center $23,000. The prospectus had proposed $92,902 as a reasonable operating budget for the first year of the program. It had also listed the staffing needs as: director, administrative assistant, secretary, clerk-stenographers, anthropologist, and custodian. In FY 1972, the prospectus earmarked $382,785 as operating funds, as opposed to the $140,900 the Center actually had available. The Center was also two employees short of the number listed in the prospectus, though the prospectus suggested hiring other additional technical staff as funds permitted. The list included a zoologist, botanist, and soil scientist. The appendix includes a copy of these charts along with the remainder of the prospectus. The charts provide a useful gauge to what the program set out to do and what it actually accomplished during FY 1971 to 1974.[77]

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74. Alden Hayes for Dr. Robert Lister to Assistant Director, Park Historic Preservation, November 2, 1973.

75. Ibid.

76. Ibid.

77. Ibid.

Space

The cooperative agreement between the University of New Mexico and the National Park Service gave UNM responsibility for supplying the Chaco project with temporary housing while a permanent work space was being constructed. The prospectus outlined the space demands:

> It is recommended that at the University of New Mexico a facility be constructed with the realization that following the first phase of the project this structure could be enlarged to accommodate expanded project objectives and staff. As the project develops, large scale archeological excavations will ensue, necessitating increased laboratory, storage, and office space. Initially, much of the space needs could be integrated into existing Department of Anthropology/Maxwell Museum facilities.[78]

During the first year, while their new offices were being readied, the staff worked as consistently as possible under frequently crowded conditions. A visit in 1974 by then-retired John Corbett found the staff settling into their new quarters and the work progressing with a fair amount of smoothness. Corbett described their work space:

> The Center consists of two floors. Upstairs are the offices for the Chief and his staff including a room or two set aside for students carrying out related studies. The offices are adequate, commodious, but not luxurious. In addition to the Chief's office, Dr. Thomas Lyons has special space for his remote sensing and photogrammetric equipment. His equipment is diverse, complicated, but highly suited to the job in hand. Included upstairs is a library -- some unpurchased, some donated, and hopefully other items (including new ones) to be added. A good working library is essential to any research center.
>
> Downstairs is stored various archeological items acquired during various projects conducted -- or being conducted -- by the Center. These collections, like the library, are a vital part of the Center.[79]

After a reasonably agreeable work space had been constructed, problems arose which necessitated changes in the physical layout of the work area. In 1976,

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78. Logan and Bradley, "Prospectus: Chaco Canyon Studies," p. 30.

79. Letter from Dr. John Corbett to Joseph Rumburg, Jr., August 10, 1974.

the Regional Office gave approval for the establishment of a separate Division of Remote Sensing. Lyons became Chief of this division. The creation of a new division, requiring additional personnel, also meant the additional requirement of more space. To accommodate this change in program direction, the University provided, at no cost to the National Park Service, 12 additional rooms within walking distance of the Chaco Center. This left unoccupied space for the Chaco Center to expand into. The project gained space for a photo laboratory and darkroom as well as additional work space for study and storage.

In 1978, Government Services Administration (GSA) attempted to consolidate Federal offices in space rented by the Federal Government. There was inquiry into why the Chaco Center was located on the UNM campus rather than in offices in downtown Albuquerque. As Lister's successor, James Judge explained the importance of maintaining a research center in proximity to a university. He wrote a memorandum to the Chief, Division of Contracts and Property Management in answer to the GSA inquiry. His points were: 1) the memorandum of agreement between the National Park Service and the University of New Mexico required a minimum of one year's notice before a move by the NPS to a new location; 2) the nature of ongoing research required the continuance of cooperative programs between the NPS and other research facilities on campus, as well as close interaction with the faculty and student body; 3) the Center depended heavily on a close working relationship with the Department of Anthropology, whose students had been encouraged to use the Center's archeological collections for their own research; 4) the Center depended on the Maxwell Museum for additional storage space for artifact collections under study, and for access to the museum's collections, for comparative and research purposes; 5) the Center uses space specifically constructed to meet its research needs, i.e. darkroom, laboratory, archival and library space, each of these being too expensive to reconstruct somewhere else at this time; and 6) with the project spanning so many years, a move

would interrupt the productivity of the Center.[80]

Despite the occasional headaches associated with justifying work space, the Center never had the space problems the field archeologists had at Chaco Canyon. Originally, the prospectus recommended three types of housing at Chaco Canyon to accommodate the archeologists and the summer seasonals:

> It is recommended that facilities be developed at Chaco Canyon to support the field administrative, laboratory, and housing needs of the Center staff. These facilities will be fully integrated with the Chaco Canyon developed area plan, 1) permanent: mainly for the administrative, long-range archeological laboratory, and housing needs of the staff. These facilities will be integrated into the developed area plan for the monument. Use of standard floor-plan houses and seasonal apartments would have lasting value to the eventual development of Chaco. 2) mobile: to support the short-range projects. 3) temporary: tent living and facilities for temporary crews, particularly those working some distance from the headquarters.[81]

The prospectus proposed that the park have 4 trailers available to the researchers by FY 1972. In reality, only 2 trailers were on the site. Plans for FY 1973 allowed for the completion of a water and treatment system. Instead, the trailers represented the sole facility. Plans for FY 1974 predicted the completion of the dormitory and laboratory facility, but researchers that season had only 4 trailers available to them. In reality, Dr. Lister did not expect to see a dormitory and laboratory facility at Chaco until FY 1977, but as adequate funding remained a persistently unmet need, even FY 1977 became an unreasonable target date. Though attempts to obtain permanent housing for the seasonals came under frequent discussion, no action was taken, and the plan was scrapped in 1979.[82] It is expected that the trailers will remain at the park because they were financed out of the park budget.[83]

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80. Memorandum from Dr. James Judge to Chief, Division of Contracts and Property Management, April 18, 1978.

81. Logan and Bradley, "Prospectus: Chaco Canyon Studies," pp. 31-33.

82. Walter Herriman in an interview with Mary Maruca, April 1980.

83. Ibid.

Staffing The Project

Initially, all Chaco project assignments that could not be handled by the permanent staff were processed through the Office of Contract Archeology (OCA) on the UNM campus. This was a last resort after exploring all alternatives then available through NPS and the Civil Service. The original rationale for this action was the need to complete major projects under the constrictions of a deadline and in the face of hiring freezes. In the early days, OCA contracted for a service, such as artifact analysis, then had only to turn in a final report on the completed project.[84] The National Park Service handled all other administrative functions. This arrangement suited the needs of the Center and solved some of its personnel hiring problems.

The first contract awarded to OCA by the Chaco project made several temporary seasonal appointments available. These were filled by carefully selected student archeologists, many of whom have in fact stayed with the project, assuming sole responsibility for various phases of the research. Eventually, however, the NPS contracting office in Santa Fe decided that an individual research program like Chaco could not contract for a service to be performed under its own supervision. Once this decision was made, the Center could no longer contract through OCA.[85]

Hiring for the Chaco Center was handled in several rather complicated ways, in addition to OCA contracts. The need for other types of hiring practices became clear as the program matured and field activities expanded. Larger crews were needed to keep up with the rapidly expanding workload.

Perhaps the greatest weakness of Federal hiring procedures was that employees essential to the work of the program could not always be hired on a full-time permanent basis. Being as many faceted as it was, the Chaco project

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84. Dr. James Judge, as interviewed by Mary Maruca, April 1980.

85. Ibid.

required a certain amount of continuity of work force to carry out its research goals. That the field crew would change from season to season meant that notes and knowledge related to specific areas of research had to be reconstituted with each new change in staff.[86]

Hiring procedures changed under this and other kinds of research pressures, among them, a change in program leadership. As Lister's work expanded into increasingly administrative areas, the direction of the Center was assumed by James Judge, then Supervisory Archeologist for the project following Hayes' retirement. Judge had been responsible for the first Chaco site survey which launched the project. As early as 1974, when Hayes was planning to retire, it was agreed that Judge would spend a field season with him, then take over his position as supervisory archeologist the following year.[87] Gradually as Lister's workload required him to spend more and more time away from the Center, Judge took over Lister's administrative duties also. A schedule was worked out whereby Lister visited the Center once a week. Eventually his involvement in the project ceased with the growth of other duties. Judge became Chief of the Chaco Project. Lister retired in 1978.

Recognizing the impact on the program of the personnel problems Lister had struggled with, Judge determined that changing hiring practices was a pressing priority. He decided to seek more permanent status for those staff archeologists hired under temporary appointments. Judge believed that high quality research required the stable, continuous effort of the same personnel on any one specific project for the time needed to complete the project, and not in the spurts of

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86. James Judge as interviewed by Mary Maruca, April 1980.

87. Letter from Alden Hayes to Mary Maruca, July 27, 1980.

James Judge as interviewed by Mary Maruca, April 1980.

activity occasioned by a constant turnover of employees.[88] What followed was many excruciating months of work with personnel offices in Albuquerque, Santa Fe, Dallas, and Washington, D.C.

Judge requested "term appointing authority" for the maximum period of time permitted under Civil Service Commission (now Office of Personnel Management) regulations, that maximum being four years. Following a series of complicated personnel actions, the authority to make 4-year term appointments was granted to Judge in 1978. The appointments were to end in 1981. These guaranteed positions stabilized the employee picture for the project, and assured consistency and continuity of effort on specific research projects for at least four years. Unlike the old format where field seasonals could change annually, the same archeologists now returned to the field in successive seasons. Each archeologist was assigned responsibility for analysis of some artifact type or feature (i.e. arrowheads, metates, skeletal material), and each was responsible for writing a report on that particular type or site.[89]

Staffing Differences for the Remote Sensing Division

Though working in conjunction with the Chaco Center, the Remote Sensing Division used a totally different approach to its staffing problems. As Chief of the Division, Lyons hired his employees under a separate appointing authority. His hiring was done under what is called "excepted authority." The Remote Sensing Division was not project oriented in the same sense that the Chaco Center was. Having worked on many different projects around the United States, the Remote Sensing Division found it inappropriate to hire on term authority, which implies that people work only during the term of a project. Lyons hired graduate students on a one-year appointments,

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88. James Judge as interviewed by Mary Maruca, April 1980.

89. Ibid.

with the option to extend their employment one more year when they were working toward a degree. The only prerequisite was that they be enrolled at some university, and that their project work contribute to their degree.[90] In most cases, the students' interest in remote sensing, in conjunction with the training they received in the field, assisted them in the development of research topics for their theses.

Though hiring graduate students was a positive experience for those working toward a degree related to remote sensing, it was a practice which did not always advance the work of the division.[91] The program trained them in many facets of the work, beginning with intensive reading material, and advancing to each student's formulation of a project interesting to him or her. The structure of the program required student projects that could be completed within two years. But no matter how good the student or how significant his or her contriibution to the program, the Remote Sensing Division could not keep any of its student employees beyond the 2-year matriculation period.[92] This meant that the hours expended in training had to be repeated every two years with a new group of students. The division could not even retain those student employees who showed exceptional promise in the discipline. These students usually went on to assume highly responsible positions outside the Park Service, leaving the Service unable to take full advantage of the time and money spent on these employees during the training process.

Supervisory Problems

Because of the staffing woes burdening the Chaco project, the size of the staff changed in accordance with the budget and the workload. During the summer seasons, staffing needs generally peaked. Initially, the program hired Navajo laborers to assist the archeologists with the excavations. The understanding at

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90. Dr. Thomas Lyons as interviewed by Mary Maruca, April 1980.

91. Dwight Drager as interviewed by Mary Maruca, April 1980.

92. Ibid.

this time was that these workmen would work on the dig and that Hayes and his staff would take all notes, analyze the excavated material, and write up the report during the following winter. But the reality of the situation was that too many laborers were usually assigned to too few archeologists. The laborers worked so quickly, uncovering materials to be logged and analyzed, that the archeologists could not keep up with the paperwork. Although the supervision of laborers by archeologists is standard archeological practice, the proportion of laborers to archeologists became as great as 4 to 1. The need simply to supervise and direct the outpouring of effort by the laborers, as well as the recording of field notes and the location of finds within the excavated areas became overwhelming for the archeologists. The archeologists eventually were unable to keep up with the pressure of daily field notes, record keeping, and supervisory duties.[93] Eventually under the direction of Judge, the ratio of workmen to archeologists changed. Judge reduced the number assigned to each archeologist, thereby reducing the extensive amount of material the archeologists had to keep track of on a daily basis.

Name Changes

Throughout this period, the Chaco project went through a series of changes in its search for an identity. It was initially named the Chaco Canyon Archeological Center, but the name was changed to New Mexico Archeological Center (NMAC) on August 10, 1971, to avoid confusion with what was then Chaco Canyon National Monument.[94] During this time, the NMAC had a strong interest in the activities of the Arizona Archeological Center (AAC), now the Western Archeological and Conservation Center (WACC) of the National Park Service. At stake was whether to separate the Ruins Stabilization Unit from the AAC. All of this activity took place during Richard Nixon's first term of office. Nixon wanted create standard Federal regions so that all Federal agencies would share the same geopolitical boundaries from

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93. James Judge, as interviewed by Mary Maruca, April 1980.

94. Departmental Annual Report, May 12, 1972, Lister to Dept. of Anthropology Chairman, UNM.

which to direct their field activities. In attempting to comply with Nixon's directions, the Park Service removed Arizona from the Southwest Region and added Texas, Louisiana, and Arkansas. With Arizona a part of the Western Region, the services of its archeological center were technically unavailable to the parks in the Southwest. As the Regional Directors were reluctant to provide services across regional boundaries, expanded responsibilities were proposed for the new Southwest Region. The Arizona Archeological Center had a memorandum of agreement with the University of Arizona for faunal studies and ruins stabilization, among other activities. However, there was some talk of expanding the responsibilities of the Chaco project to include consultation, ruins stabilization, survey, and salvage archeology at the Southwest parks. Selection of the name, New Mexico Archeological Center, was thought to be a foot in the door. The Chief of the Arizona Archeological Center initially interpreted this action as empire building by the Southwest Region and contrary to the NPS commitment to the University of Arizona.[95]

After a series of intense negotiations, Robert Utley, Director, Office of Archeology and Historic Preservation, took the position that the NMAC should not "extend its functions to include activities other than archeological research in Chaco Canyon."[96] Utley's argument, in a memorandum dated June 19, 1972 to Frank Kowski, Director, Southwest Region, reads:

> Unlike the other archeological centers, which were set up to handle a variety of responsibilities, NMAC was established under the terms of a Memorandum of Agreement which specifically limits its program to Chaco Canyon...Any thoughts the University may have for increasing the NMAC staff to handle other activities or for broadening its scope beyond Chaco Canyon should be discouraged.[97]

A joint memorandum from Lister (NMAC) and Douglas Scovill (AAC) also went out, this time to the directors of the Southwest and Western Regions.

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95. Note from Alden Hayes to Mary Maruca, September, 1981.

    Douglas Scovill, as interviewed by Mary Maruca, April, 1982.

96. Memorandum from Robert Utley to Director, Southwest Region, June 19, 1972.

97. Ibid.

This memorandum predated Utley's by several months. It reads:

> The New Mexico Archeological Center, as currently staffed, has only the capacity to handle its responsibilities for the Chaco Canyon Archeological Project plus, to a limited extent, participating in a consulting capacity in the in-house archeological programs of the Southwest Region. The Arizona Archeological Center, though understaffed, is at this time carrying the main burden of archeological program operations and continuity for both regions. The Arizona Center cannot continue to effectively handle the current workloads unless it obtains additional staffing; nor can the New Mexico Center offer any relief unless it gets additional staffing.[98]

The following separation of responsibilities for each center was suggested:

> that the AAC function as the primary repository for Service collections from the Southwest Culture Area;
>
> that the AAC continue to operate the Ruins Stabilization Unit;
>
> that the AAC continue to operate and serve as the primary center of archeologically derived avian, mamalian, and reptilian remains;
>
> that the NMAC continue to operate the Chaco Canyon Archeological Project as its primary mission; and
>
> that the NMAC continue to operate and expand a Servicewide remote sensing program for archeological and environmental studies.[99]

These last two functions did continue under the jurisdiction of the NMAC, which, on July 18, 1973, was renamed the Chaco Center, underlining its research responsibilities to Chaco Canyon.[100] A final change of title was later precipitated by dramatic growth in the remote sensing program. In 1976, Dr. Lister moved to separate the functions of the remote sensing program and the Chaco Canyon research work. His memorandum to the Regional Director, Southwest Region, dated October 14, 1976, explained his rationale for this decision:

> The Remote Sensing Project of the Chaco Center has expanded greatly beyond its originally conceived contribution to research and planning programs and to several field areas in the Southwest Region, and there are increasing requests from throughout the Service for various types of assistance that can be provided by remote sensing...In view of this increase in remote sensing activities, and anticipating additional responsibilities in the future, we have

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98. Memorandum from Robert Lister and Douglas Scovill to Directors, Southwest and Western Regions, March 27, 1972.

99. Ibid.

100. Annual Report, Calendar Year 1973, Chaco Center, Robert Lister to Director, National Park Service, January 17, 1974.

> separated remote sensing into an independent organizational unit within the Chaco Center.[101]

Recognition of this event came from the Regional Director in a memorandum to Southwest Region superintendents, dated December 28, 1976:

> Effective November 21, 1976, the Chaco Center and the Division of Cultural Resources were combined into a new organizational unit... Dr. Lister has been designated to head the new unit... The Center does not represent a separate and new entity in terms of working relationships with the field. It does provide for better coordination and interrelation of professional activities involving preservation and research studies...[102]

In accordance with the organizational chart accompanying the announcement, the name, Chaco Center, no longer referred simply to the research program at the canyon. Rather, that part of the program became known as the Division of Cultural Research. The Chief of that Division was James Judge, now Lister's successor. The remote sensing program was retitled Division of Remote Sensing, and remained under Lyons' direction.[103]

Funding Problems of the Remote Sensing Division

Though a separate entity in its own right, the Division of Remote Sensing still lacked the definite budgetary base available to the Division of Chaco Research. From the very beginning, the expenses of Chaco research had been figured into the operations budget as a base funded item. Though the level of funding failed to match program needs, the fact that the program had base funding made its future a secure one.[104] Excavation plans could fall behind schedule,

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101. Memorandum from Robert Lister to Regional Director, Southwest Region, October 14, 1976.

102. Memorandum from Regional Director, Southwest Region to Southwest Region Superintendents, December 28, 1976.

103. Annual report, Calendar Year 1977, Division of Chaco Research, Robert Lister to Acting Chief, Southwest Cultural Resources Center, March 13, 1978.

104. James Judge, as interviewed by Mary Maruca, April 1980.

but major research would not stop altogether.

The Division of Remote Sensing was not so protected. Only the salaries of Dr. Lyons and a support staff of one professional came out of the Southwestern Region budget as a base funded item. Primarily, funding to conduct research came to the Division on a project-by-project basis, i.e., through end-of-year funds, through the Anthropology Division, WASO, project support funds, through some contract work, through cooperative activities with other agencies, and through grants from groups like the National Geographic Society and U.S. Geological Survey. The Division continues to operate without the type of base funding provided for the Division of Cultural Research.[105]

Conservation Archeology

The thought processes which lead to the concept of conservation archeology -- and its associated tools such as remote sensing devices -- in the service of management started coming together as early as 1970 with the passage of the National Environmental Policy Act. The Act required all Federal agencies to assess the effect of their actions on the environment and to prepare environmental impact statements if a major change to the environment was anticipated. Managers began to recognize the importance of thoroughly knowing the resources (archeological and historical as well as natural) before determining the nature of the impact. The notion of excavation archeology as a potential threat to archeological resources was a new idea as far as the National Park Service was concerned. Managers like Douglas Scovill, Calvin Cummings, and Dr. Keith Anderson were among the leaders in the Federal Government concerned with this issue. In conjunction with the few universities that contracted with the Federal Government, they searched for a consistent approach to this issue. Papers were presented at conferences but few of these papers were published, being early musings on

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105. Dwight Drager, as interviewed by Mary Maruca, April 1980.

conservation archeology. The terms "archeological resources" and "cultural resources" were used interchangeably by the Federal archeologists until, in 1972, a paper by William Lipe on conservation archeology was presented as a Society for American Archaeology (SAA) symposium paper. Concurrently, the academic community, which had only on a few occasions been involved with Federal archeologists, was also beginning to see excavation archeology as a discipline with a built-in termination date, and conservation archeology as the answer to the dilemma.

Then in the Spring 1974 issue of The Kiva, William Lipe's SAA symposium paper saw publication under the title "A Conservation Model for American Archaeology." He observed:

> Archaeological research on any particular segment of the past is based on a non-renewable resource, and one that is being very rapidly eroded. If archaeological field work is to continue very much into the future, we must slow down the attrition of the resource base and must see that from now on it is expended very frugally.[106]

Lipe attempted to alert the academic archeological community to the hazard that excavation represented. He pointed out that it destroyed the historic and prehistoric record, and eradicated information that future archeologists with more sophisticated techniques might glean from land surface and subsurface exploration. He wrote:

> I submit that we not only need discussion of how to do salvage archaeology, but discussion of how not to do it as well. If our field is to last more than a few more decades, we need to shift to a resource conservation model as primary, and to treat salvage, especially of the emergency kind, as a last resort to be undertaken only after all other avenues of protecting the resource have failed. Obviously, we must excavate enough to pursue the problems raised by the discipline, and to keep the field intellectually healthy. But a focus on resource conservation leads us to a position of responsibility for the whole resource base. We must actively begin to take steps to insure that this resource base lasts as long as possible. Only if we

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106. William D. Lipe, "A Conservation Model for American Archaeology," The Kiva 39 (Spring, 1974), p. 213.

> are successful in slowing down the rate of site loss can the field of archaeology continue to evolve over many generations and thereby realize its potential contributions to science, the humanities, and to society.[107]

Toward accomplishing these goals, Lipe proposed "direct conservation measures, such as public education, involvement of archaeologists in land use planning, and establishment of archaeological preserves."[108] About salvage archeology, he directed:

> Emergency salvage archaeology should be carried out only as a last resort, and should combine a strong problem orientation with additional work designed to preserve a representative sample of the data to be lost when the site or sites are destroyed.[109]

Significance of Conservation Archeology for the Chaco Project

Comments such as these were particularly attractive to Lyons. In fact, they merged easily with attitudes he had propounded since the establishment of the Chaco project. With Corbett's approval, Lyons experimented with aerial photography at Chaco. His remote sensing exploration helped to confirm the existence of an Anasazi road network, suspected by earlier archeologists but never recognized as an actual system of interconnecting roadways. The use of remote sensing technology, plus the introduction of a computerized data base for easy data retrieval (in conjunction with the research of the Chaco Center) reinforced the NPS ethic of conservation archeology.

Problems and Accomplishments

The Chaco project is particularly rich in accomplishments, each worth noting, considering the importance of the project to NPS management history. Of primary importance to the endurance of the project seems to be the level of scholarship

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107. Lipe, "A Conservation Model for American Archaeology," p. 214.

108. Ibid, p. 215-219.

109. Ibid, p. 213.

and commitment evidenced by those who directed the program. The capabilities of men like Lister, Hayes, and Judge had a telling effect on the direction of the research and the commitment to accurate scholarship, demonstrated by the archeologists under them. Lister, an extremely capable administrator, possessed the gift for generating funding for projects and inspiring confidence in academic circles. Hayes, well respected for his abundant knowledge of Southwestern archeology as well as his ability to supervise and train young archeologists, gave Lister the field support necessary for Lister to redirect his energies toward his increasingly administrative responsibilities. Finally, Judge worked what was considered a minor miracle for the program when he wrested from OPM the right to hire archeologists on term appointments.[110] His managerial abilities plus his work as an archeologist had an important impact on the work of the Chaco Center. In a fortuitous convergence of events, Judge and Scovill came together, both of them staunch archeological conservationists, to support nondestructive archeology in the Park Service. Judge's philosophy, plus the decision to dig Pueblo Alto rather than Una Vida, as well as limited funding for excavation led to a significant policy change in favor of the application of conservation oriented archeological research techniques.

Second, the program had enough flexibility to engender additional research directions, as exhibited by the remote sensing program and the introduction of computer support. Third, the diligent efforts of the archeologists resulted in the accumulation of a tremendous amount of information which will be useful to Chaco Culture National Historical Park at the end of the project. Cooperation with various departments of the University of New Mexico have resulted in the greater availability of archival resources to the project. In addition, the project worked with the Archaeological Society of New Mexico which conducted

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110. Marcia Truell, archeologist with the Chaco Center, as interviewed by Mary Maruca, April 1980.

Tom Windes, supervisory archeologist with the Chaco Center, as interviewed by Mary Maruca, April 1980.

the rock art survey at Chaco, with Dr. O. Werner who performed ethnographic studies on the Navajo, and with David Brugge of the Southwest Regional Office whose work also has resulted in several important ethnographic studies of the Chaco Navajo. Along with these contributions, the project has also developed a computerized data base management system which will enable the park manager to retrieve information pertaining to archeological sites within the park.

Perhaps chief among the contributions of the project was the enactment of legislation by Congress on December 19, 1980. Public Law 96-550 recognizes the research in the San Juan Basin and the significance of the Chaco phenomenon. As stated, this law is intended to encourage and facilitate research activities. Section 507(a) of P.L. 96-550 states that "Consistent with and in furtherance of the purposes of the Division of Cultural Reseasrch of the Southwest Cultural Resources Center, operated by the National Park Service, the Secretary shall continue such research and data gathering activities as may be appropriate to further the purposes of this title and knowledge of the Chaco culture." Section 507(b) requires the Secretary to "be responsible for the development of a computer-generated data base of the San Juan Basin, and make such information available to Federal and private groups when to do so will assist such groups in the preservation, management, and development of the resources of the basin." This is to be handled through the Division of Cultural Research of the Southwest Cultural Resources Center.

These Congressional mandates resulted from the research done by the Southwest Cultural Resources Center. Early on, Judge recognized the fragility of Chaco resources in the face of energy development in the San Juan Basin. He called this to the attention of the Director through the Regional Director. Such foresight started the process which gave legislative recognition and protection to the Chaco resources.[111]

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111. Memorandum from Associate Regional Director, Planning and Cultural Resources, SWR, to Associate Director, Cultural Resources Management, WASO, August 27, 1982.

Several significant problems have also affected the direction of the program. Its scope and objectives changed drastically from its inception. The choice of Pueblo Alto illustrates this. Originally, the aim was to dig up ruins in chronological sequence for archeological research and visitor interpretation. Una Vida appeared to meet both of these criteria. By 1974 and 1975, neither money, time, nor sufficient staff permitted the actual digging of such a major ruin, so the decision was made to rely on sampling excavation rather than total excavation. This change in methodology also altered the way the Chaco project developed. Although sampling did not provide the same volume of information that excavation did, it did provide sufficient data to make inferences about any site. When it appeared that Pueblo Alto could answer more questions than Una Vida on some of the transportation mysteries of the canyon, the substitution was made. This change in excavation strategy also coincided with the increased emphasis on conservation of archeological resources.

The publication of site reports and additional documents relating to the excavations has also been a continual problem. In the past, archeologists were burdened with new projects before they could write up the results of their previous years' work. According to Dr. Judge, the project supervisor should not assign other duties to the archeologist until he/she writes up the results of the previous assignment. Therefore, time has been alloted during which the staff archeologists write up their research reports. They are each expected to complete specific manuscripts within a clearly specified time.

Processing manuscripts through the design and publiction phase can be as time consuming or more time consuming than the already lengthy process of writing them. In a memorandum from Jack Pound, Operations Evaluation, to Lister (December 1974), comment is made on the importance of publishing to the program:

> Now, the writing is every bit as important to the field work. There have been archeological projects undertaken by the NPS before, including Wetherill Mesa where we have done the dig,

made the notes, analyzed the data, and ten years hence have not seen published. Projects such as these, left undocumented, made the entire Service, not just archeologists, look like a bunch of rank amateurs digging up the world in wild abandon. Chaco Center absolutely must follow through to a professional conclusion.

A final problem faced by the Center was its difficulties with hiring a permanent staff. With no promotion potential or job security the archeologists found themselves concerned with personnel problems as well as the usual difficulties associated with their work. But once Judge managed to place them on Park Service four-year term appointments, the program benefited from the continuity of effort they brought to the research.

Completion of the Project

As of March 18, 1980, the following list represented the goals of the Center in regard to closing down operations and tying up final research details:

1) Complete, in a format ready for typesetting, eight major research volumes to be published in the NPS Archeological Series -- a total of approximately 6,130 typewritten manuscript pages;

2) Complete, in a camera-ready format, 11 major reports to be published in the series "Reports of the Chaco Center" -- approximately 2,750 manuscript pages;

3) Catalog, access, and pemanently curate approximately 430,000 artifacts and specimens collected by the Chaco Project;

4) Provide assistance to management as needed to insure protection of the Chacoan outlier system; and

5) Prepare a management report for Chaco Canyon National Park to include: a) identification of problems in need of management attention and recommendations of solutions; b) presentation of guidelines for long-range cultural resource management; c) development of computerized cultural resource base inventories; d) production of detailed resource base maps; e) identification of potential cultural and natural resource interaction problems, and f) proposed resource monitoring/reassessment schedules.[112]

Work to be Done

Since 1972, project crews have completed a phenonmenal amount of work.

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112. Memorandum from Associate Regional Director, Planning and Cultural Resources to Regional Director, Southwest Region, March 18, 1980.

To cite a few figures, there have been a total of 2,528 archeological sites surveyed, 27 sites excavated or tested (representing a total of 10,632 man-days in the field), and approximately 427 110 artifacts recovered. Of the artifacts recovered, approximately 107,023 have been initially analyzed, with the recorded information stored in computer banks. Approximately 5 percent of the artifact photography and 613 maps, profiles, and illustrations have also been completed. [113]

But in spite of the tremendous activity level of the project, an equally tremendous amount of work remains to be completed. Nevertheless, a strong stand was taken by Wayne Cone, Associate Regional Director, Planning and Cultural Resources, in a memorandum dated March 18, 1980 to Lorraine Mintzmeyer, Regional Director, Southwest Region. In effect, it reinforces Jack Pound 's observations in his earlier memorandum. Attachment A of Cone 's memo reads in part:

> It is extremely important to the reputation of the National Park Service to avoid pitfalls encountered by other projects in the past (for example, the Wetherill Mesa Project at Mesa Verde) where the project is disbanded after the fieldwork and initial analysis is complete and people are transferred, leaving half-finished manuscripts, uncatalogued artifacts, and no one to direct the publication of the research results or to insure that benefits to management are realized. [114]

A completion schedule has been worked out to insure that all major research details are wrapped up as the project concludes. If all goes as planned, staff levels in FY-82 will be reduced by 10. An archeologist-editor and artifact cataloguer will be added, bringing staffing levels down to 9. This level will be maintained through FY-83, and in FY-84 reduced to 6, if the archeologist-editor, cataloguer, and clerk-typist have completed their work. [115]

The memorandum attachment concludes with a word of warning, "If the proposed

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113. Ibid.

114. Ibid.

115. Ibid.

schedule cannot be met at all, the resultant product will be professionally inferior and ultimately unacceptable. Further, the reputation of the National Park Service for the conservation and management of its own (and the Nation's) valuable resources will be irrevocably damaged."[116]

Perhaps, more than anything else, the Chaco Project has proven to be a tremendous learning experience for the National Park Service. It has demonstrated just how useful park-related research can be to the manager of a cultural resources park. In Attachment B of the same memo, a pilot project to be handled by the Division of Cultural Research is proposed by Judge. It is observed that:

> Although management policies exist for historic preservation in National Park areas, they are predominantly oriented toward the stabilization, restoration or reconstruction of resources and deal most frequently with historic structures. Policies which do relate to archeological resource management are frequently not specific...In view of the diminishing qualities of cultural resources in the U.S. in general, the role of the National Park Service in the management of such resources becomes crucial. The Park manager is entrusted with awesome responsibility of the "perpetual" conservation of cultural resources, and yet is given virtually no information as to how to effect this responsibility properly and efficiently.[117]

To remedy this, Judge has proposed that the Division of Cultural Research undertake park-specific studies, the end result of which would be a long-range cultural resources management plan for each park area studied. Requests for various archeological studies would not be generated by the program. Rather, they would be identified by the park manager who would see in the program the opportunity to better understand and care for the cultural resources under his or her jurisdiction.

A Cultural Resources Management Plan for Chaco Canyon is already in the production stage. As a document, this plan will identify and evaluate known

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116. Ibid.

117. Ibid.

cultural resources along with cultural resources needs of the park; identify and set priorities for research and planning in history, archeology, anthropology, and architecture; and propose interim or final management direction for action by the park. At minimum, the plan sets these goals:

1) provide (brief) professional syntheses of cultural resources, periods of occupation, and ethnic and ethnohistoric groups native to the study area;

2) assess the historic and prehistoric resources of the study area in the context of relevant time periods, the surrounding region, etc;

3) evaluate the level of existing knowledge of cultural resources against current professional standards;

4) identify deficiencies in the inventory, study, evaluation, treatment, and interpretation of cultural resources, and provide specific recommendations to correct them;

5) identify known and potential human and natural impacts on cultural resources and deficiencies in information on these impacts;

6) provide a standard U.S. Geological Survey map of appropriate scale or equivalent showing areas inventoried for cultural resources and all such resources known to exist;

7) list cultural resources potentially eligible for the Register of Historic Places in the study area, including documentation of those sites/properties considered but found not eligible in accordance with this guideline;

8) provide recommendations and required data for the List of Classified Structures; and

9) include a bibliography (annotated) of other primary and secondary sources bearing on the identification, management and interpretation of cultural resources in the study area.[118]

Conclusion

The existence of the Chaco Project is something of an anomaly in the National Park Service, partly because of funding. Nevertheless, it does serve as a model for what should well be done at all sites of such importance, size, and complexity. The high level of professionalism among the project staff has established

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118. Preliminary Cultural REsources Management Plan, May 12, 1980.

a standard against which future research projects may be judged. The staff's dedication and discipline in regard to the discovery of data is an accomplishment which also will not be lost on future research projects. In addition, the project has established an economically feasible approach to the comprehensive collection of data -- and carried it out. Finally, it has increased our level of understanding as well as appreciation for the Chaco culture. For those who have worked on the project, the intimacy of long acquaintance with the canyon has only increased their attachment. As one archeologist expressed it:

> For those of us who have spent a lot of time in Chaco, we're worried about it. There are many, many things out there that are very vulnerable.[119]

The data collected by the Chaco Project will give future managers of Chaco's cultural resources a better idea of what exists within park boundaries and how it ties in with the surrounding area, as well as more precise thoughts on how to protect it.

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119. Marcia Truell, as interviewed by Mary Maruca, April 1980.

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Walter Harriman, Superintendent, Chaco Culture National Historical Park
Alden C. Hayes, former Supervisory Archeologist, Division of Chaco Research
James Judge, Chief, Division of Chaco Research
Robert H. Lister, former Chief, Division of Chaco Research
Thomas Lyons, former Chief, Division of Remote Sensing
Peter McKenna, former archeologist, Division of Chaco Research
Robert Powers, former archeologist, Division of Chaco Research
Catherine Ross, librarian, Division of Chaco Research
John Schoenburg, former archeologist, Division of Chaco Research
Douglas H. Scovill, Chief Anthropologist, National Park Service
Marcia Truell, former archeologist, Division of Chaco Research
Thomas Windes, Supervisory Archeologist, Division of Chaco Research

APPENDIX

MEMORANDUM OF AGREEMENT

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

REGENTS OF
THE UNIVERSITY OF NEW MEXICO

MEMORANDUM OF AGREEMENT

WHEREAS, this Memorandum of Agreement supercedes and cancels the Memorandum of Agreement entered into by the University of New Mexico and National Park Service dated August 13, 1969; and

WHEREAS, the Acts of August 21, 1935 (49Stat. 666, U.S.C. ss461-467), and June 8, 1906 (34Stat. 225. 16 U.S.C. ss431-433), declares that it is a national policy to make necessary investigations and researches in the United States relating to particular sites, buildings, or objects to obtain true and accurate historical and archeological facts and information concerning the same and, for the purpose of effectuating this policy, authorized the Secretary of the Interior, through the National Park Service (hereinafter referred to as the Service) to cooperate with and to seek and accept the assistance of any Federal, State, or municipal department or agency or any educational or scientific institution and authorizes archeological examinations and investigations on Federally owned lands under the administration of the Service; and

WHEREAS, the Service has certain facilities available for archeological and other research at the Chaco Canyon National Monument and has foreseeable need for extensive research within and in the vicinity of Chaco Canyon National Monument and its segmented parts; and

WHEREAS, Regents of the University of New Mexico (hereinafter known as the University), through capabilities and resources in Anthropology, Biology, Computer Systems, Geography, Geology and in other disciplinary areas have qualified personnel to conduct such extensive investigations as may be desirable and necessary within and in the vicinity of Chaco Canyon National Monument and its segmented parts; and

WHEREAS, it appears advantageous to the United States to enter into an agreement with the University in order to facilitate the desirable research in a joint and cooperative endeavor through the establishment of a Research Center (hereinafter referred to as the Center) by the Service and the University.

NOW, THEREFORE, in consideration of mutual covenants hereinafter set forth and pursuant to the authority contained in the said Act of Congress, the parties hereto agree as follows:

ARTICLE I. The University agrees to

(a) Supply the Center the necessary personnel (professional, sub-professional and laborers) to conduct field studies and other relevant research projects as may be jointly determined by the University and the Service.

(b) Assist the Center in providing reports, suitable for publication, of such investigations as promptly as possible within the dictates of sound scholarship and the provisions of such contracts as may be entered into between the University and the Service for specific investigations.

(c) Display, or make available at the University for use of future researchers and the public, specimens obtained from within the boundaries of the management areas of the Chaco Canyon National Monument with the exception of certain specimens as may be called for by the Service.

(d) Furnish the Center, at no cost to the Service, the full access and use of certain facilities such as laboratories, libraries, museum collections and other scientific collections and related records as mutually agreed.

(e) Make available on a temporary basis to the Center scientific collections, and related records, which are on loan to the University from other agencies, institutions, or individuals.

(f) Provide services for the care, maintenance, and operation of research facilities on campus.

(g) Depending upon the availability of funds, and within existing regulations, administer or provide the following and such other activities as may be agreed upon:

1) An exhange of personnel between the University and the Center.

2) Research projects relating to the Chaco Canyon National Monument areas and adjacent regions.

3) Studies leading to educational programs for interpretive purposes.

4) Research facilities at the domicile (s) of the Center as required by developing activities.

5) Other activities such as will further the cooperative research objectives of the University, the Service, and the Center.

(h) Enter into further cooperative agreements with the Service as necessary and desirable for the furtherance of the interdisciplinary objectives of the Center.

(i) Offer University status to Center personnel with academic and other qualifications acceptable to the University, and subject to availability of funds and applicable laws and regulations.

ARTICLE II. The Service agrees to:

(a) Supply the Center the necessary personnel (professional, sub-professional and laborers) to conduct field studies and other relevant research projects as may be jointly determined by the University and the Service.

(b) Furnish the Center the full access and use of the proposed facilities and resources of the Chaco Canyon National Monument, including the ruins, proposed laboratory, library, office space,

the collections of archeological, historical and natural science specimens and related records.

(c) Make available to the University on a temporary basis scientific collections, and related records, which are on loan to the Service from other agencies, institutions, and individuals.

(d) Depending upon the availability of funds, and within existing laws and regulations, conduct or provide the following and such other activities as may be mutually agreed upon:

1) An exchange of personnel between the Service and the Center:

2) Graduate research projects relating to the Chaco Canyon region:

3) Studies leading to educational programs for interpretive purposes:

4) Other activities such as will further the cooperative research objectives of the Center, the University, and the Service:

5) Make plans and present to the Congress a program to expand the present field research facilities in Chaco Canyon National Monument.

(e) Enter into further cooperative agreements with the University as necessary and desirable for the furtherance of the interdisciplinary objectives of the Center.

(f) Offer Federal status to University personnel as collaborators, consultants, temporary or permanent employees, or in other status, subject to availability of funds, applicability of laws and regulations,

and employment ceilings.

(g) Provide services for care, maintenance and operation of research facilities in Chaco Canyon National Monument.

ARTICLE III. It is further mutually agreed between the parties, subject to the availability of funds:

(a) In the studies and investigations carried on under this agreement the University is not to be precisely restricted to Service areas, since the purpose of the Center is to add to the general fund of scientific knowledge of the Southwest.

(b) The Center is to conduct interdisciplinary projects, providing laboratories and other facilities for both resident and visiting scholars.

Since the Center is to be organized on a joint Service and University basis and will call upon the Service's resources at Chaco Canyon National Monument, and since this will require the cooperative efforts of Service management, the Director of the Center will receive approval and coordinate administratively with the monument Superintendent.

(c) To aid in attracting the highest caliber of scholastic expertise to collaborate in the objectives of the Center, fellowship stipeds, grants, salary stipends, etc., will be advertised nationally and internationally.

(d) The Service and the University are to be the principal parties to this formal agreement but such organizations as the Museum

of New Mexico and the School of American Research will be invited to cooperate with and enter into agreements with the Center for specific research or other purposes.

(e) The Director of the Center will be appointed by mutual agreement.

(f) The Director is to be a fully qualified and accredited scholar and shall be offered a joint appointment on the faculty of the Anthropology Department while occupying said position.

(g) The Director, in cooperation with chairmen of the participating departments, will select his permanent professional staff.

(h) Since the Center is to be organized on an interdisciplinary basis and will call upon the scholastic resources of several academic departments of the University, and since this will require the cooperative efforts of a significant segment of the University, the Director of the Center will coordinate administratively with the University Vice President in Charge of Research.

(i) This agreement will remain in force for a period of fifteen (15) years from the date it is approved except that either party may withdraw from the agreement after giving one year's notice to the other.

(j) In connection with the performance of work under this agreement; the University agrees as follows:

1) The University will not descriminate against any employee or applicant for employment because of race, religion, color, sex or national origin. The University will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, color, sex or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The University agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this Nondiscrimination clause.

2) The University will, in all solicitations or advertisements for employees placed by or on behalf of the University, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, or national origin.

3) The University will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency Contracting Officer, advising the said labor union or workers' representative of the University's commit-

ments under this Nondiscrimination clause, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

4) The University will comply with all provisions of Executive Order No. 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

5) The University will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts, by the contracting agency and Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

6) In the event of the University's noncompliance with the Nondiscrimination clause of this agreement or with any of the said rules, regulations, or orders, this agreement may be cancelled, terminated, or suspended and the University may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies involved as provided in the Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

7) The University will include the provisions of paragraphs (a) through (f) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The University will take action with respect to any subcontract or purchase order as the contracting agency may direct as means of enforcing such provisions, including sanctions for noncompliance: PROVIDED, HOWEVER, that in the event the University becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the University may request the United States to enter into such litigation to protect the interests of the United States.

(k) No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this agreement, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

IN WITNESS WHEREOF, the parties hereto have hereunto subscribed their names and affexed their seals this

thirtieth day of September ~~October~~, 19.71

THE UNITED STATES OF AMERICA

By Ernest Allen Carmack

REGENTS OF

THE UNIVERSITY OF NEW MEXICO

By Yusef Hardy

CHACO PROJECT CHARTS

As Outlined in "Prospectus, Chaco Canyon Studies."

10-29-73

Fiscal Year	Projects Proposed	Funding	Staff Proposed	Amount	Chaco Facilities Proposed	Projects Undertaken	Funding	Staff	Amount	Chaco Facilities
71	(Chaco Center Established April, 1971)									
	Historical & Analytical	$5,000	Director Adm.Asst. Secre. Clk-steno Anthropologist Custodial -2 (7 MY)			Historical & Analytical Archives & Comp. Colls.	c. 10,000	Director Archeologist Clk-typ. Custodial UNM (3 MY)	c. 13,000	
	Total Projects & Staff $92,902			87,902		Total Projects & Staff c. $23,000				
72	Historical & Analytical	$5,000	Director Adm.Asst. Secre. Clk-steno Anthro. Custodial-2 Archeol.-2 Zoologist 1/2 Botanist 1/2 Soil Sci. 1/2 Meteor. 1/2 Ecologist Archit-Engr. Cartographer Archivist Statistician 1/2 Librarian Lab.Techn. (17.5 MY)		4 trailers	Historical & Analytical		Director Archeol-2 Clk-typ Custodial UNM Adm.Asst. WAE Mus. Techn .9 (5.9 MY) Archeol.* Biologist* *Contract w/UNM or coop. other Fed. Agencies		2 trailers
	Descriptive (Resource Inventory)	100,000				Descriptive (Resource Inventory) (UNM survey)				
	Archives & Comp. Colls.	60,000				Archives & Comp. Colls.	39,000		87,042	
						Adm. Office	14,858			
	Total Projects & Staff $382,785			217,785		Total Projects & Staff $140,900				

As Outlined in "Prospectus, Chaco Canyon Studies."

Fiscal Year	Projects Proposed	Funding	Staff Proposed	Amount	Chaco Facilities Proposed	Projects Undertaken	Funding	Staff	Amount	Chaco Facilities
FY'73	Descriptive (Resource Inventory)	100,000	Same as FY '72 (17.5 MY)		Water & Treatment System	Descriptive (Resource Inventory) (Hayes survey - Archaic site)		Director Archeol- Clk-typ Custodia UNM Adm.Asst		4 trailers
	Archives & Comp. Colls.	60,000		228,674	4 Trailers Plan Dorm. Lab.	Archives & Comp. Colls. Process	43,000	WAE Mus. Techn 1.8 (7.8 MY)	19,048	
						Adm. Office	16,952			
						Other funding: EROS - 20,000 - Remote Sensing Part RHL salary from WASO - 9,500 Research project	29,500	Ecologist* Biologist* Geog.* Geologist* *Contract w/UNM or coop. other Fed. Agencies		
	Total Projects & Staff $388,674					Total Projects & Staff $208,500 (NPS - $188,500)				

As Outlined in "Prospectus, Chaco Canyon Studies."

Fiscal Year	Projects Proposed	Funding	Staff Proposed	Amount	Chaco Facilities Proposed	Projects Undertaken	Funding	Staff	Amount	Chaco Facilities
Y '74	Descriptive (Resource Inventory)	100,000	Same as FY '72 (17.5 MY)		Dormitory Lab.	Descriptive (Resource Inventory (BM excav., Archaic sites, survey)		Director Archeol-3 Clk-typ Custodial UNM Adm.Asst. WAE Mus. Techn. & Archeol. Aids3.6 (9.6 MY)		4 trailers
	Archives & Comp. Colls.	60,000		240,107		Archives & Comp. Colls. Process				
						Ethnography & Ethnohistory	21,050			
						Adm. Office	19,402		147,048	
						Other funding: *EROS - 20,000 - Remote Sensing *Part RHL salary from WASO - 7,000 Research project NGS - 12,000 *Anticipated, but not received 10-30-73	39,000	Ethnologist 1/2 - NALA Ecologist* Biologist* Geog.* Geologist* *Contract w/UNM or coop. other Fed. Agencies		
	Total Projects & Staff $400,107					Total Projects & Staff $226,500 (NPS - $194,500)				

As Outlined In "Prospectus, Chaco Canyon Studies."

Fiscal Year	Projects Proposed	Funding	Staff Proposed	Amount	Chaco Facilities Proposed
FY '75	Descriptive (Resource Inventory)	100,000	Director		Dormitory Lab.
	Archives & Comp. Colls.	60,000	Adm.Asst.		
	Excavation of Una Vida	250,000	Secre.		
	Man & Environment	50,000	Clk-steno-2		
			Anthro		
			Custodial-2		
			Archeol-3		
			Zool-1/2		
			Botanist1/2		
			Soil Sci1/2		
			Meteor -1/2		
			Ecologist		
			Archit-Engr.		
			Cartog.		
			Archivist		
			Statistician 1/2		
			Librarian		
			Lab.Techn-3		
			Mus.Techn-2		
			Editor		
			Illustrator		
			Palynologist		
			(26.5 MY)	352,752	
	Total Projects & Staff $812,752				

Projects to be Undertaken	Funding Required	Staff Required	Amount	Chaco Facilities
Descriptive (Resource Inventory) 30,000		Director		4 or 5 trailers
Exc.Devel.Pueblo, survey) 10,000		Archeol-4 (1new-18,900)		
Archives & Comp. Colls. Process		Clk-typ		
Ethnography & Ethnohistory 5,000		Mus.Techn. (new 7,000)		
Man & Environment 15,000		Custodial UNM		
Publications 10,000		Adm.Asst.		
	70,000	WAE Mus. Techn. & Archeol.		
Adm. Office	20,000	Aids 3.6		
		Ecologist (new 18,900)		
Other funding: EROS - 20,000			191,848	
Remote sensing	20,000	(12.6 MY)		
		Biologist*		
		Geog.*		
		Geologist*		
		*Contract w/UNM or coop. other Fed. Agencies		
Total required for Projects & Staff $301,848 (NPS - $281,848)				

As Outlined in "Prospectus, Chaco Canyon Studies."

Fiscal Year	Projects Proposed	Funding	Staff Proposed	Amount	Chaco Facilities Proposed	Projects to be Undertaken	Funding Required	Staff Required	Amount	Chaco Facilities
FY '76	Descriptive (Resource Inventory)	100,000	Same as FY '75 plus Ethnologist (27.5 MY)	369,379	Dormitory Lab.	Descriptive (Resource Inventory) 40,000 (Exc.Devel.Pueblo, survey)		Same as FY '75 (12.6 MY) + 5%	201,442	4 or 5 trailers Plan Dorm. Lab.
	Archives & Comp. Colls.	60,000				Archives & Comp.Colls. Process 5,000		Biologist*		
	Excavation of Una Vida	250,000				Ethnography & Ethnohistory 2,000		Geog.*		
	Man & Environment	50,000				Man & Environment 15,000		Geologist*		
	Process	25,000				Publications 15,000		*Contract w/UNM or coop. other Fed. Agencies		
	Publications	60,000					77,000			
						Adm. Office	22,000			
						Other funding: EROS - 20,000 Remote sensing	20,000			
	Total Projects & Staff $914,379					Total required for Projects & Staff $320,442 (NPS - $300,442)				

As Outlined in "Prospectus, Chaco Canyon Studies."

Fiscal Year	Projects Proposed	Funding	Staff Proposed	Amount	Chaco Facilities Proposed	Projects to be Undertaken	Funding Required	Staff Required	Amount	Chaco Facilities
FY '77	Descriptive (Resource Inventory)	100,000	Same as FY '76 (27.5 MY)	369,379	Dormitory Lab.	Descriptive (Resource Inventory)	10,000	Director Archeol-5 (1 new 15,000)		Dormitory Lab.
	Archives & Comp. Colls.	60,000				Archives & Comp. Colls. Process	10,000	Clk-typ-2 (1 new 7,500)		
	Excavation of Una Vida	250,000				Ethnography & Ethno-history	2,000	Mus.Tech-2 (1 new 8,000)		
	Man & Environment	50,000				Man & Environment	15,000	Custodial UNM		
	Process	25,000				Publications	20,000	WAE Mus. Techn. (2.3 new) 16,000 & Archeol. Aids 6 Ecologist Editor(new) 15,000 Illustrator (new) 12,000 (19 MY)	283,500	
	Ethnography & Ethno-history	25,000				Major excavation	125,000			
	Publications	60,000				Adm. Office	25,000			
						Other funding: EROS - 20,000 Remote sensing	20,000	Biologist* Geog.* Geologist* *Contract w/UNM or coop. other Fed. Agencies		
	Total Projects & Staff $939,379					Total required for Projects & Staff $510,500 (NPS - $490,500)				

As Outlined in "Prospectus, Chaco Canyon Studies."

Fiscal Year	Projects Proposed	Funding	Staff Proposed	Amount	Chaco Facilities Proposed	Projects to be Undertaken	Funding Required	Staff Required	Amount	Chaco Facilities
'78	Descriptive (Resource Inventory)	100,000	Same as FY '76 (27.5 MY)	369,379	Dormitory Lab.	Descriptive (Resource Inventory)	10,000	Same as FY '77	283,500	Dormitory Lab.
	Archives & Comp. Colls.	60,000				Archives & Comp Colls. Process	10,000			
	Excavation of Una Vida	250,000				Ethnography & Ethno-history	2,000			
	Man & Environment	50,000				Man & Environment	15,000			
	Process	25,000				Publications	20,000			
	Ethnography & Ethno-history	25,000				Major excavation	125,000			
	Publications	60,000				Adm. Office	25,000			
						Other funding:				
						EROS - 20,000				
						Remote sensing	20,000			
	Total Projects & Staff $939,379					Total required for Projects & Staff $510,500 (NPS - $490,500)				
FY '79	Same as FY '78		Same as FY '78		Dormitory Lab.	Same as FY '78		Same as FY '78		Dormitory Lab.
	Total Projects & Staff $939,379					Total required for Projects & Staff $510,500 (NPS - $490,500)				
FY '80	Phase down to analysis and report preparation or one more season of excavation of major site.									

CHACO PROSPECTUS

PROSPECTUS:

CHACO CANYON STUDIES

I concur:

Chief Archeologist

Approved:

Director, Southwest Region

Approved:

Chief, Office of Archeology and
Historic Preservation

CONTENTS

Page

INTRODUCTION.....1

MULTIDISCIPLINARY INVESTIGATIONS ON CHACO CANYON IN RELATION TO SERVICE NEEDS.....2

STUDIES NEEDED IN THE CHACO DRAINAGE.....5

Culture Process.....5

Analytic Historic Investigations.....8

Ethnographical and Ethnohistorical Projects.....16

Studies Relating to Man and Environment in Chaco Canyon.....19

Natural History Studies.....21

Preservation of Structures.....23

Archives and Comparative Collections.....24

Publications.....25

STAFFING AND FACILITIES FOR AN ARCHEOLOGICAL CENTER.....26

PRIORITIES, COSTS, AND TIME PHASING OF WORK....at end of report

INTRODUCTION

The purpose of Chaco Canyon National Monument is ~~to~~ preserve outstanding prehistoric remains of Basketmaker and Pueblo Indian ruins dating primarily from A.D. 700-1200, and to provide for the fullest degree of public educational and inspirational benefit from these remains as is consistent with their preservation.

Chaco Canyon contains a great number and a great variety of prehistoric remains including some of the largest and most imposing ruins in the United States. From these remains, which cover a period of approximately ten centuries, it has been possible to trace the growth and development of the Anasazi or Pueblo Culture from its simple primitive beginnings to its complex and highly urbanized peak development. As a result, the area offers excellent opportunities for not only preserving outstanding relics of the past, but also for studying and interpreting one of our country's most spectacular and interesting prehistoric cultures.

Because of its spectacular and nationally significant resources, Chaco Canyon is one of the outstanding archeological areas in the National Park System. In addition, the area is located in a section of the country which is rapidly becoming important as a recreational vacation land. With improved accessibility, Chaco Canyon can be expected to receive substantial increases in visitor use. To insure

the high quality experience the visitor should receive at this area an investigative effort of major scope is necessary if the management and interpretive problems of the area are to be solved. The Chaco Canyon Archeological Center a cooperative venture between the National Park Service and the University of New Mexico has been proposed as a means of offering solutions to these problems.

MULTIDISCIPLINARY RESEARCH ON CHACO CANYON IN RELATION TO SERVICE NEEDS

Concentrated, long-term inquiries on Chaco Canyon must serve National Park Service management and interpretive needs. The program will provide authoritative up-to-date, sophisticated scientific information on the history of man and his environment in the Chaco drainage. Such information, derived through a multidisciplinary approach, will provide answers to such immediate management problems as (1) floral cover to be encouraged in the area (2) water and erosion-control within the national monument; (3) encouragement of wildlife species; (4) zoning for visitor use. It will provide authoritative information for use in planning and executing imaginative interpretive and other informational programs for visitor comsumption. Such programs, detailing in an interesting way the broad forces that shaped the course of man's history in the Chaco Canyon, should bring to the modern visitor increased appreciation of the fragile nature of his natural habitat; increased appreciation of the impact

human cultural events may have upon the habitat; and, in turn, how an adverse effect upon the natural environment may react upon human cultural development.

The foregoing are the immediate Service needs at Chaco Canyon National Monument. They form the principal justification for long-term Service involvement in surveys and studies at this area. There are, however, broader, but from National Park Service management standpoint, secondary benefits to be derived from such a program. For example, while climatic and soil histories and data on floral and faunal successions in the area may be of value to area management and interpretive programs, such material can have application far beyond the boundaries of Chaco Canyon National Monument. The information derived from these investigations may be applied at other Service-administered areas. It may also be applied to modern Navajo and Anglo land management programs over the entire region involved. These studies may be expected to develop information on which predictions of future trends may be based. Such predictions, if based on painstakingly assembled data, can offer an authoritative basis for planning future land use.

As the major prehistoric Indian cultural developments of the Chaco are those of town-dwellers depending on agriculture as a major food source, there is an opportunity to study the history of a trend toward urban growth in response to agriculture. From such studies we

may derive information applicable to modern urban problems--that is, we may obtain insights into the problems of man living in closely associated social groups, the interplay and balance of social forces in such groups, the mechanism of cohesion and cooperation, the mechanisms of disorganization and community breakdown.

In order to accomplish the goals outlined above, the National Park Service must fulfill several objectives:

1. Encourage scientific explorations on a broad basis in order to support and strengthen Service interpretive and management programs.

2. Cooperate with other Federal, State, and local agencies to develop, on a regional basis, programs in ecological, historical, and anthropological resource conservation and recreation, and other appropriate disciplines.

3. Intensive investigations must be undertaken to determine new methods, techniques, and products for use in prehistoric and historic ruins stabilization and for preservation of objects.

4. Seek out meaningful and effective educational techniques for application to Area and Servicewide information and interpretive programs through studies in the behavioral sciences, audiovisual and communication disciplines.

4. Crucial to all park management programs is the need to stay abreast of current knowledge, and scientific attitudes and approaches. Such can best be accomplished through close Service contact and association with academic environments.

STUDIES NEEDED IN THE CHACO DRAINAGE

To fulfill the general goals outlined in the foregoing sections, the National Park Service has entered into an agreement with the University of New Mexico for multidisciplinary activities to be performed in the Chaco area on a continuing basis. The program to be carried out, on a cooperative basis, is presented in the sections which follow, and can be broken down into two major groupings: (1) those which contribute to knowledge of the culture process (anthropological studies); and (2) those which contribute to a knowledge of the environment. It is obvious that to fully comprehend man in relation to his environment in this area, analytic studies, presenting the interplay of these two factors, must also be prepared, drawing on the results of both social and natural science studies.

Culture Process

Objective: The unique potential of Chaco Canyon as a laboratory for testing propositions of a cross-cultural relevance makes it an

exceptional area for investigating questions of cultural processes of change and stability. Studies stemming from such questions should contribute to the recognition of generalizations about the nature of culture without regard to time or space.

List of Projects:

1. The Development of Agriculture, Its Impact on a Cultural System

Chaco Canyon, with its great potential for detail concerning its cultural sequences, can serve as an important area for studying the impact on the total cultural system of the development of agriculture. Three questions relating to this impact might be asked of this sequence as well as to other relevant cross sequences:

a. the sequence of resultant changes in the cultural system, including demographic organization, religion, and the arts.

b. the developing relationship between this cultural system and others apart from it.

c. the impact of this introduction and its resultant changes on the ecosystem.

2. Town Life

Chaco Canyon developed a pattern of town life which appears to have bordered on urbanization. This pattern has developed elsewhere

in the world during the historic past and present, and has been the subject of many studies. What interferences can be made in regards to town life in Chaco Canyon from these previous studies and from what is known about Chaco Canyon prehistory? To what extent were population pressures, religion, water-control systems, etc., important in influencing this development and leading to the downfall of Chaco Canyon culture?

3. Cultural Water-Control Systems in a Marginal Environment

Recent investigations have suggested that Chaco Canyon had a well-developed and complex water-control system. Many other such systems have been described both archeologically and ethnographically from throughout the world. The significant cross-cultural study which might be stimulated by further investigation of the Chaco system in relation to the development of other such systems would hinge on the question: what was the development of and dynamic interplay between population size, complexity of the water-control system, and the nature of political authority.

4. The Cause of Differential Rates of Change in Cultural Systems

Chaco Canyon culture developed quite rapidly. What are the causes and mechanisms that allowed Chaco Canyon to move ahead so rapidly, and how is this case related to other situations of differential culture change?

5. Implications of Interaction Between Continuous Distinctive Cultural Systems

Present evidence indicates there were three distinct cultural systems exploiting the Chaco Canyon environment. What are the implications of the presence of several community types toward an understanding of the pace of cultural change in Chaco Canyon?

6. Cultural and Ecological Implications of Population Growth

Chaco Canyon, between A.D. 800-900, was characterized by population growth. In this and similar situations, what impact did the population expansion have on the interrelated parts of the cultural and ecological systems?

Analytic Historic Investigations

Objective: To provide a framework within which to examine the problems of human and environmental relationships in the Chaco Canyon through time.

Approach: One of the basic problems to be resolved by explorations Chaco Canyon is the refinement and elaboration of the sequence and chronology of cultures in the Chaco. It is nonetheless necessary to proceed from the known, and generally accepted cultural sequence, as follows:

1. Preceramic
2. Anasazi

3. Refugee

4. Navajo

5. Recent Historic (European)

Methodology: A series of questions or problems will be proposed, the answers or solutions to which are to be sought through intensive investigations of sites and environments relating to each of the above culture periods. Data for consideration of these problems will be derived from descriptive studies, considered elsewhere in this program, or from specific investigations herein proposed.

In general, these problems fall into two major categories: Man-Land Relationships, and Inter-Human Relationships.

Man-Land Relationships:

Within this category it is proposed that investigations be concentrated upon the cultural adaptation as it affects or is affected by the natural environment. Particular attention should be directed, in descriptive studies relation to each stage in the culture sequence, to questions of the following character:

1. What mineral resources were available (during each of the culture periods) to man in the Chaco; which of these were utilized or exploited by him, and in what manner?

2. What floral and faunal resources were present, and how were these utilized?

3. What were the hydrological resources; how were they utilized; how did they determine or direct the course of culture development?

4. In what way did climatological factors such as insolation, seasonal precipitation variation, air-current prevalence and direction, etc., affect the cultural adaptation?

5. How did the character and distribution of arable soils affect settlement pattern in the Chaco, and the character of the cultural adaptation in each period?

6. What portions or sectors of the natural environment were utilized by man in each period in the Chaco, and how do these appear to reflect his view of the natural world?

7. How has utilization or exploitation of the natural environment affected the character of that enviroment at each time period with regard to resource availability, landscape, patterns of predation, etc.

8. How did resources, or the lack of them, affect the character of the cultural adaptation?

Inter-Human Relationships: Man's Relationship to Man

Within this category, consideration is given to contacts and movements within and between peoples living within and outside the Chaco area. The

following questions are proposed for consideration during investigations of each culture period:

1. What external cultural contacts may be discerned as influencing cultural evolution in the Chaco?

2. What demographic movements within the Chaco, into the Chaco, and out of the Chaco can be discerned in the record of cultural evolution?

3. What insights into the development of, and changes in, social organization can be ascertained from archeological data which have implications for past or contemporary social problems?

Projects and Recommendations

The problems of each cultural period are not the same. Their resolution demands specific approaches. Such approaches for each period are given below.

1. Preceramic

Scant attention has been given to this period in the past, and present evidence is limited. A survey specifically oriented toward recovery of preceramic information is mandatory. The establishment of typology and criteria for cultural subdivisions, if any, is necessary. This survey should include all physiographic situations. It is suggested that the survey be extended beyond the canyon

environment, especially to the east in the Chacra Mesa area. Resulting typological studies would enable relating these materials to other areas.

2. Anasazi

The Anasazi embraces all archeological manifestations from Basketmaker III through Pueblo IV. Whereas literature on the pre-ceramic is virtually nil, the extensive literature on the Anasazi period demands a critical examination in order to discern the gaps in knowledge in Chaco archeology. This aim can be accomplished by the compilation of an annotated bibliography. Such a compilation should be standardized and computerized.

A comprehensive survey of the Chaco area is necessary to supplement present site information, and should be a high-priority project. This survey cannot be limited to the national monument boundary but must extend in all directions beyond the canyon environment.

It is proposed that an excavation design be established. Some projects for such a program are submitted below and should serve as a guideline only. Present limited archeological knowledge and new information gained through surveys will undoubtedly suggest other projects and modify those proposed here.

a. Determination and collection of mineral resources.

b. Soil survey of the canyon and environs. An example of the applicability of this information is the relating of soil distribution and settlement pattern.

c. Ethnobotanical and ethnozoological inventories for background information on subsistence. In view of limited study material, particular attention should be given to collection of this material in future excavations.

d. A more thorough survey of water-control systems. This survey information could be utilized for determining relationships of these systems with canyon communities and for recommending test excavations in selected systems. Systems with possible high potential of recovery of information would include Kin Bineola, Pueblo Pintado, and Penasco Blanco.

e. One of the assumptions we make is that the microclimatological relations of given Anasazi cultures, as well as how each utilized portions of the habitat and how each affected the landscape, will be the subject of study by ecologists. However, of immediate interest is the development of agriculture, and studies pertaining to this subject should be implemented.

f. External cultural contacts revealed by trade objects, architectural styles, art motifs, physical types,

cultigens, and ceremonial items and concepts indicate the extent of inter-cultural relationships. This involves Anasazi, Mogollon-Western Pueblo, Hohokam, and Mexican relationships. Perhaps of particular interest would be studies to discern the introduction of Athabaskan traits in late Pueblo IV times.

In view of the culture contact situation present in Chaco, it is suggested that the ceramic sequence established for the Chaco be re-evaluated in detail to determine internal and external influences on ceramics. The same could be said for architectural styles. It is proposed that studies of prehistoric engineering and architectural planning be implemented.

g. Population studies for each stage within the Anasazi period should be carried out as data are available. As much of this information will be based on survey data, it should be re-emphasized that the site survey program must be detailed and thorough.

Such demographic information must be the basis on which we can define movements within the Chaco (such as the shift of Basketmaker sites from the southern environs of the Chaco to the canyon proper), into the Chaco (such as the early Basketmaker intrusion into the canyon and the later McElmo penetration), and out of the Chaco (such as

the Mesa Verde Black-on-white pottery peoples' movement from the canyon east to the Chacra Mesa). It is recognized that abandonment is a special problem within itself.

Questions of process, motivation, and destination are unanswered and may have their origin in social and political problems. We can only suggest that we be sensitive to these problems as the research project unfolds.

3. Refugee

a. It is suggested that no specific survey be directed toward archeological sites of the Refugee period but that sites located in the ongoing survey be added to the existing records.

b. There is specific need for thorough and intensive investigation of archival materials relating to the period of Spanish-Navajo-Pueblo contacts.

c. It is suggested that some excavation be undertaken in selected sites in order to obtain better documentation of Navajo culture, particularly in the areas of architecture and ceramics.

4. Navajo

a. For purposes of establishing Navajo history in the area, it is recommended that a survey be conducted of all Navajo remains from approximately 1800 to the present.

b. It is further recommended that data derived from the survey be supplemented by additional archival search and by ethnological studies conducted among Navajo still resident in the locality.

5. Recent Historic (European)

a. An intensive search for documentary and photographic records of this period should be implemented.

b. It is also recommended that an immediate program for the recording of oral history be undertaken to take advantage of the information possessed by people still living.

c. Historic sites in the Chaco which are encountered during course of the ongoing survey should be placed on record and considered for excavation.

Ethnological and Ethnohistorical Projects

Objectives: We see three broad objectives for this project:

1. Historical study of the ethnological peoples most closely related to the prehistoric Chaco Canyon cultures and the Mesa Verde materials in the canyon.

2. Ethnographic studies designed to assist the archeologist in the reconstruction of social organization and other non-observable aspects of the prehistoric societies of Chaco Canyon.

3. Ethnohistorical studies of the use of Chaco Canyon by the Navajo.

Specific projects designed to help achieve the objectives of this project are:

1. Ethnographic Survey. Work with older and recent ethnographies of both the Western and Eastern Pueblos in an attempt to identify the functions of times of material culture and the social context of use and manufacture of such items. A survey of this kind might also help identify styles of rooms, kivas, etc., associated with various types of social units. These data should be most useful as a background in helping the archeologist interpret his material.

2. Cultural Historical Study. Migration legends of the various Puebloan peoples should be surveyed as a basis for archeological testing as an aid in understanding the historical place of Chaco Canyon in the development of modern Pueblo groups. Specifically, data from Acoma and Laguna and the Hopi should be checked with regard to the late Upper Chaco occupation as well as that of the Chuska Valley. Both published and unpublished material of such workders as Dittert, Ruppé, and Ellis should be most useful in this study.

3. We urge the hiring of Pueblo Indian consultants drawn from various Pueblos to examine material items and sites and provide suggestions of meanings, interpretations, and so on. This should be done on a regular basis, perhaps once a month.

4. Ethnology of Pottery Making. An ethnographic study of pottery making with emphasis upon the correlation of styles and micro-styles with social units of various types and sizes should be undertaken. Such a project should be carried out in both a bilateral Eastern Pueblo society as well as among one of the relatively unilateral groups. Since ceramic studies are not taboo among the Eastern Pueblos, such a project would be feasible. The data from such work would be invaluable to the archeologist attempting to use the distribution of styles of pottery in prehistoric sites as an aid in the drawing of inferences about social organization.

5. Ethnohistorical Study of the Navajo. An ethnohistorical study of the Navajo use of Chaco Canyon with an emphasis on ecological analyses should be undertaken. This would determine if the Navajo groups made similar or different use of the canyon compared to the prehistoric pueblos even though the Chaco Canyon environment has changed somewhat. This would provide

valuable and important comparative data for the larger ecological project in the canyon.

Studies Relating to Man and Environment in Chaco Canyon

Major Objectives:

1. Determination of present and past environments for the purpose of relating these data to historic and prehistoric human occupations of the Chaco region with ecological emphasis on influence of man on his environment and problems of the changed environment on man.

    a. Climatological-meteorological assessments, including precipitation, temperature, wind studies, etc.

    b. Soil analyses, including chemical, deposition studies, etc.

    c. Establishment of geologic base map.

    d. Floristic and faunistic surveys, including inventories of species, relative abundances, distributions, etc.

2. Development of an integrated program of working relationships among the several disciplines praticipating.

    a. Standardization of base maps and aerial photos, including, for example, quarter-section grids.

b. Standardization of data collecting, including types of data collected, techniques of collection, reporting techniques, etc. Recording forms, for instance, should be equally adaptable to data processing. Further, it should be agreed as to what kinds of non-archeological data are to be recovered from archeological sites, and it should be made certain that such data will be collected in accordance with standardized, agreed upon procedures.

Examples of priority projects:

1. Excavation of a trench from canyon wall to arroyo for the purpose of textural and mineral analysis of the soil; pollen analysis of the strata, examination of buried soil profiles; and correlation of above with archeological sites.

2. Meteorological and soil studies of micro-habitats from selected sites in the canyon: temperature regimes; atmospheric moisture stress; solar radiation and re-radiation; soil moisture regimes; and soil chemistry. The above to be done for both the outside environment and within reconstruction dwellings. The above studies to be converted to man's caloric requirement.

3. Experimental plot studies to test capability of various environments for food production. Simulate primitive agricultural conditions and known crop plants as well as the transplanting of native plants to various sites. Determine the season of

productivity and total caloric yield as affected by soil moisture, soil chemistry, and atmospheric stress.

4. Reconstruction of preceramic ecosystems. Determination of vegetation in preceramic times. Using biological materials from archeological sites, locate an ecological equivalent present-day natural system. In the equivalent system, study plant and animal populations to determine the carrying capacity for human populations from the aspect of both caloric and nutritional value.

5. Environmental chamber testing of hypothesis of environmental stress. By use of laboratory-controlled chambers, human subjects can be measured for physiological response to environmental conditions determined on the site.

Natural History Studies

Chaco Canyon National Monument presents an opportunity for the study of historic as well as prehistoric natural history. The monument was fenced from 1936 (Sargent Portion) to 1947, with all livestock grazing eliminated. The area is not large enough to be completely free of outside influences. Such factors as reduction of predatory animals by neighboring ranchers and heavy runoff from upstream watersheds modify the population of flora and fauna. Nevertheless, a representative population of native Southwestern flora and fauna exists, including the endangered Golden Eagle.

A great deal of soil and moisture control work has already taken place. Some of this work has been quite effective and some has been unsuccessful. Effective methods of soil stabilization and erosion control should be established. High concentrations of alkali salts and the tendency of the soil to "pipe" or dissolve creates construction and soil management problems.

1. A complete biotic survey is needed to determine the existing and optimum floral and faunal levels and their relationships at Chaco Canyon National Monument.

2. The soils of the monument should be analyzed and their relationships to the biotic community established.

3. Methods of correcting existing soil deficiencies should be established.

4. Cooperation should be established and maintained between the Archeological Center and the Soil Conservation Service to provide methods for soil and moisture conservation in the watershed.

5. Climatic, rainfall, and temperature conditions should be analyzed for their effect on the biotic community and their effect on the erosion of soil and on silt deposition. Cyclic degradation and aggradation of the valley floor should be studied.

Preservation of Structures

Objective: Provide for the efficient and effective preservation of the diverse aboriginal structures of Chaco Canyon.

Chaco Canyon provides one of the largest and most diverse collections of aboriginal architecture in the country. The preservation and maintenance of these structures is a continuing responsibility of the National Park Service. New methods, techniques, equipment and materials from the fields of engineering and architecture are being developed which may or may not apply to the preservation and maintenance of Chaco Canyon and similar structures throughout the country and the world. Research and investigations, including the testing of new methods, techniques, equipment and materials, will add to the discovery of efficient, economic and effective ways to preserve and maintain the Chaco Canyon ruins and can be carried out in cooperation with National Park Service ruins stabilization personnel.

Projects and Recommendations

1. Develop, test, and apply equipment for the grouting of masonry walls and foundation such as pressure grout and sub-soil grout machines.

2. Develop, test, and apply new mortar materials such as mortar additives, expoxy adhesives, and fiberglass.

3. Investigate and test ways to stop or arrest the use of capillary water in and through walls.

Archives and Comparative Collections

Objectives:

1. Establish a central repository for the cataloging, maintenance, and preservation of the basic research data (literature, manuscripts, documents, photographs, maps, artifacts, etc.).

2. To collect, catalog and make available to the researcher these data.

3. Formulate standardized record keeping systems through automatic data processing and/or other suitable means.

In order to accomplish these data collating objectives, the following projects will have to be undertaken.

Projects:

1. Search for, collect, and/or copy all existing research notes and manuscript material.

2. Locate, inventory, and photograph existing artifact collections wherever they exist.

3. Establish multidiscipline library containing material pertinent to the research area. Include microfilm where feasible.

4. Establish a still and motion picture library and investigate the possibility of documentary film records of research projects.

5. Develop annotated bibliographies, including non-anthropological materials.

6. Develop standardized system of recording research data suitable for Automatic Data Processing and cataloging and filing systems.

7. Investigate ADP programs.

Publications

Objective:

Early preparation, publication, and dissemination of research results to the professional community and to the National Park Service interpretive and Resource Management programs.

Projects:

1. Establish suitable professional editorial and layout/design staff to ensure expeditious publication of research results.

2. As rapidly as possible, prepare publishable manuscripts on unreported park work for the benefit of future researchers.

3. Acquire a waiver from the Joint Committee on Printing and Binding so that presses other than GPO can be used as outlets to supplement the Archeological Research Series.

4. Establish a program of publication in various professional

journals for articles and papers that would not qualify as monographs.

5. Establish lines of communication and liaison with the National Park Service interpretive organizations to assure constant feed-back of research data.

6. Establish a numerical series for all published data.

STAFFING AND FACILITIES FOR AN ARCHEOLOGICAL CENTER

The potential value of extensive relationships between universities and scientific laboratories of the Federal Government has been highlighted by the report, "Education and the Federal Laboratories," recently issued by the Federal Council for Science and Technology.

This report was prepared by the Committee on Federal Laboratories of the FCST, under the chairmanship of Allen V. Astin, former director of the National Bureau of Standards.

The report makes recommendations for extending collaborative relationships between Government laboratories and universities, including stronger incentives and greater flexibility on the part of Federal laboratories in making their staffs and facilities available for teaching and research by faculty and students.

One of the important objectives set forth in the report of the Committee on Federal Laboratories is to involve academic scientists from

universities in their programs, and make special scientific studies. This is one of the objectives in establishing the Chaco Canyon Archeological Center.

The normal pattern for this program will be three-month summer appointments, for two or more successive summers. The active participation by faculty members in study programs at the Chaco Center will present the NPS researcher with an exceptionally practical method of becoming familiar with new approaches, techniques, and opportunities in his own disciplinary field. In turn, knowledge gained in the Federal laboratory frequently provides the inspiration for new programs by the faculty scientist when he returns to his university.

Benefits of Program

1. Open opportunities for graduate and postgraduate studies.

2. Helps produce the environment desired by working scientists by helping each to develop his interest through interchange of personnel.

3. Increases effectiveness of the education of scientists.

4. Increases the rate of transfer of knowledge from explorations to education and vice versa.

5. Encourages initiation and completion of reconnaisance problems in new areas which would not ordinarily be easily entered within a traditional organization.

Staffing:

Personnel for University of New Mexico-National Park Service Chaco Canyon Archeological Center.

Objective:

To adequately staff the archeological center with professional and supportive staff sufficient to carry out the major objectives.

Recommendations:

It is recommended that some of the personnel be full-time National Park Service employees, others be joint appointments with the University of New Mexico, and some temporary employees from university students (principally graduates) who could be appointed as collaborators.

Projects:

Listing of personnel below to perform the various research projects.

Full-time

Administrative

*Chief

Administrative Assistant

Secretary

Clerk-Stenographer

Professional

Archeologist (Site Survey)

Archivist

Statistician

*Vertebrate Zoologist

*Palynologist

*Soil Scientist (hydrology, physical)

*Meteorologist

*Ethnologist

*Archeologist, Field

Archeologist, Lab

*Suggested possible joint appointments

Support Personnel

Editor

Clerk-Stenographer

Illustrator

Museum Technicians (2)

Custodial (2)

Temporary Help for the following

Archeologist	graduate	6 man months per year
Librarian	clerk-steno	6 man-months
Vertebrate Zoologist	2 graduate R.A.	3 mos. full, 9 mos. 1/2 ea.
Palynologist	2 graduate R.A.	3 mos. full, 9 mos. 1/2 ea.
Soil Scientist	technician	6 man-months
Meteorologist	technician	6 man-months
Ethnologist	1 graduate R.A.	3 mos. full, 9 mos. 1/2 ea.
Archeologist, Field	laborers	2 1/2 man years per year
Archeologist, Lab	2 graduate R.A. laborers	3 mos. full, 9 mos. 1/2 ea. 1 1/2 man years per year
Illustrator	draftsman	6 months per year

Facilities:

Recommendations: (University of New Mexico)

It is recommended that at the University of New Mexico a facility be constructed with the realization that following the first phase of the project this structure could be enlarged to accommodate expanded project objectives and staff. As the project develops, large scale archeological excavations will ensue, necessitating increased laboratory, storage, and office space. Initially, much of the space needs could be integrated into existing Department of Anthropology/Maxwell Museum facilities.

First Phase Needs

Offices

Director	Clerk-Steno
Administrative Assistant	Illustrator
Secretary and Clerk-Steno	5 Specialists offices
Archeologist (2)	5 study rooms and visitor's offices
Archivist	Dark Room
Statistician	Storage--archeology
Archeological Laboratory	Storage--archives
Editor	Parking area

Recommendations: (Chaco Canyon)

It is recommended that facilities be developed at Chaco Canyon to support the field administrative, laboratory, and housing needs of the Center staff. These facilities will be fully integrated with the Chaco Canyon developed area plan, prepared by professional Park Service planners. Three types of facilities are:

1. Permanent: mainly for the administrative, long-range archeological laboratory and housing needs of the staff. These facilities will be integrated into the developed area plan for the monument. Use of standard floor-plan houses and seasonal apartments would have lasting value to the eventual development of Chaco.

2. Mobile: to support the short-range projects.

3. Temporary: tent living and facilities for temporary crews, particularly those working at some distance from the headquarters.

Permanent Facilities (Exact character of facilities to be determined by Park planners and integrated into the Park developed area plan.)

Offices - 5

Secretary

Archeologists (2)

Visiting specialist

Visiting specialist

Living Quarters for personnel with families - 4

Visiting specialist

Survey archeologist

Testing archeologist

Maintenance man/Custodial

Dorm space with kitchen and messhall

Bed space perhaps divided into two sections for males and females, to sleep perhaps ten

Messhall may double as seminar room and lounge.

Individual sleeping rooms, 2 R.R. 8 x 10

Mobile facilities:

Three to four medium-sized trailers to be rotated among visiting workers as needed.

Tent Camps:

Living tents and mess outfits available for extra investigative crews.

STAFFING REQUIREMENTS

Permanent Positions	Historical Analytical	Descriptive	Archives	Una Vida	Man & Environment	Process	Ethnology	Publication	Suggested Grade Level	Amount $
Director									14/15	21,589
Admin Asst									11 12	13,389
Secretary									6 7	7,639
Clerk Steno									5 6	6882
Custodial - 2									3	9834
Archivist									12	13,389
Statistician									9	9320
Museum Techs - 2									9	18640
Editor									13	15812
Illustrator									9	9320
Clerk - Steno									5	6176
WAE Positions										
Archeologist									12	13,389
Archeologist (Lab)									9	9320
Archeologist									11	11 233
Ethnologist									11 12	13,389
Zoologist									12	13,389
Botanist									12	13389
Soil Scientist									12	13 389
Meteorologist									12	13 389
Palynologist									11	11 233
Lab Technicians - 2									9	18,640
Anthropologist									13	15,812
Ecologist									13	15,812
Architect - Engineer									13	15,812
Cartographer									11	11,233
Librarian									9	9,322
Project Duration	3 Years	3 Years	Duration	3 Years	6 Years	5 Years	4 Years	Duration		
How Accomplished	Contract	Contract	Staff	Contract	Contract	Contract	Contract	Staff		

Project Priority	Major Objective	10 Year Program (2 Year Increments) 1971	73	75	77	79	1980	At Chaco: Personnel	Facility	Funding	Other	On Campus: Personnel	Facility	Funding	Other
1	Historical & Analytical								Existing Lab*	$5000/yr	Contract	1-Director 1-Adm Asst 1-Secretary 1-Clerk-Steno 1-Custodial	Office Space ↓ 400 sq ft	$60,000	1 Vehicle
2	Descriptive (Resource Inventory)							1/2 Time 1-Archeologist 1-Archeologist(L) 1-Zoologist 1-Soil Scientist 1-Meteorologist 1-Botanist 1-Custodial	Seasonal Housing Trailers or S'l'd Apts	$100,000 yr	Contract or → 4 Vehicles	1/2 Time if form UNM	Existing		
3	Archives & Comparative Collections		FULL TERM OF PROGRAM									1-Archivist 1-Statistician 1-(T)Librarian 2-Mus Tech's	Library, Office Space ↓ 1500 sq ft	$60,000	

* Add Electrical Outlets, Water to Existing Storeroom

Project Priority	Major Objective	10 Year Program (2 Year Increments) 1971 73 75 77 79 1980	At Chaco: Personnel	At Chaco: Facility	At Chaco: Funding	At Chaco: Other	On Campus: Personnel	On Campus: Facility	On Campus: Funding	On Campus: Other
4	Excavation of Una Vida		3-Archeologists 2-Lab Tech's 1-Palynologist	Field Lab** Trailers or S't'd Apt's	$250,000/yr	2 Vehicles				
5	Man & Environment		½ Time 1-Palynologist 1-Ecologist		$50,000/yr Contract		½ Time 1-Palynologist 1-Ecologist			
6	Process				$25,000/yr Contract					
7	Ethnography & Ethnohistory		½ Time 1-Ethnologist		$25,000/yr	1 Vehicle		½ Time 1-Ethnologist	Office & Storage 800 sq ft	
8	Publications						1-Editor 1-Illustrator 1-Clerk-Steno	500 sq. ft	$60,000	

**Major Addition to Existing Storeroom-Lab-4-5,000 sq ft

SYNOPTIC HISTORY

SYNOPTIC HISTORY OF THE CHACO CENTER

1971

Chaco Center established by Memorandum of Agreement between the Department of the Interior and University of New Mexico. National Park Service funded the program and recognized the Center as a research installation. Temporary facilities provided by UNM on campus. Field work: archeological sampling survey, biological studies. Reports: in-house; archeology, 1; published, remote sensing, 1. Permanent staff, 2.

1972

Field work: initiated comprehensive archeological survey of Chaco Canyon and vicinity, excavated Archaic site, continued biological studies, began geological studies and remote sensing experiments, checked prehistoric road system at Pueblo Alto. Laboratory processing and analysis. Report preparation. Reports: in-house, archeology, 1; ecology, 3; published, remote sensing, 2. Permanent staff, 4.

1973

Occupied permanent facility constructed by University of New Mexico. Field work: continued archeological survey, biological studies, geological investigations, and remote sensing program (prehistoric road system), started Navajo ethnohistoric studies, excavated second Archaic site, three Basketmaker III settlements, one Pueblo I ruin, one Pueblo II unit, tests in Shabikeshchee Village (Basketmaker III) to obtain materials for dating, initiated clearing of Basketmaker III to Pueblo III sequence of sites in Marcia's Rincon. Laboratory processing and analysis. Report preparation. Reports: in-house, archeology, 3; ethnology, 1. Permanent staff, 6.

1974

Field work: completed archeological survey of Monument, continued biological, geological, Navajo, and remote sensing studies, excavated two Pueblo I villages, one Pueblo I - Pueblo II unit, and continued digging in Marcia's Rincon, tested prehistoric road features at Pueblo Alto and Penasco Blanco, water control system at Chetro Ketl, fire boxes at Pueblo Bonito, and 19 "stone circles". Began ruins mapping project using remote sensing and photogrammetry. Laboratory processing and analysis. Report preparation. Reports: in-house, ecology, 1; archeoastronomy, 1; remote sensing (roads), 2; published, geology, 1. Permanent staff, 7.

1975

Field work: continued biological, geological, and remote sensing investigations, excavated a third Archaic site, two Pueblo I villages, a Pueblo III shrine, a Pueblo II site associated with the road network, an 18th century Navajo community, and continued the program in Marcia's Rincon. Completed ruins mapping project. Laboratory processing and analysis. Report preparation. Reports: in-house, archeology 3; ecology, 2; published, archeology, 2; remote sensing, 3. Permanent staff, 7.

1976

Field work: continued biological, geological, and remote sensing research, survey of Chaco outlier sites, excavated last units in Marcia's Rincon community, initiated large scale testing and excavation program at Pueblo Alto (Pueblo III). Laboratory processing and analysis. Report preparation. Reports: in-house, archeology, 19; geology, 3; archeoastronomy, 1; water control systems, 1; ethnology, 1; remote sensing, 1; physical anthropology, 1; published, archeology, 1; remote sensing, 8; ethnology, 5. Permanent staff, 8.

1977

Reorganization of National Park Service cultural resources program in Southwest Region. Field work: limited biological, geological, and remote sensing projects, continued major excavation at Pueblo Alto. Accelerated laboratory processing and analysis. Report preparation. Reports: in-house, archeology, 17; remote sensing, 6; geology, 1; ecology, 2; ethnology, 1; published, remote sensing, 3; archeology, 2; Permanent staff, Division of Chaco Research, 6; Division of Remote Sensing, 2.

1978

Field work: excavation program at Pueblo Alto. Laboratory processing and analysis. Report preparation.

1979

Field checks. Analysis of materials, and data and report preparation.

1980 - 1982

Complete analysis of materials and data, and all reports. Winding down of Chaco Project.