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A CULTURAL RESOURCES-ENVIRONMENTAL ASSESSMENT AND
MANAGEMENT PLAN FOR THE PROPOSED HYDRO RESOURCES, INC.,
UNIT NO. 1 LEASE IN THE CROWNPOINT AREA OF THE EASTERN
NAVAJO DISTRICT, NEW MEXICO



A REPORT PREPARED BY CIBOLA RESEARCH CONSULTANTS
FOR HRI, INC., A SUBSIDIARY OF
URANIUM RESOURCES, INC.

BY MICHAEL P. MARSHALL
DIRECTOR OF ARCHAEOLOGICAL PROJECTS
CIBOLA RESEARCH CONSULTANTS

DECEMBER 15, 1991

CIBOLA RESEARCH CULTURAL RESOURCE
REPORT NO. 52

Submitted to Mark Pelizza
Environmental Planner, Hydro Resources, Inc.

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ABSTRACT

A cultural resource evaluation and management plan is presented in this report for the proposed Hydro Resources, Inc. (HRI), Unit No. 1 mining lease on Navajo allotment lands in the Crownpoint Chapter of the Eastern Navajo Agency, McKinley County, New Mexico. The lease consists of an approximately 1307-acre tract located west of Crownpoint in parts of Sections 14, 15, 21, 22, 23, and 24 of T17N, R13W. The proposed project concerns the development of an in situ solution uranium mine, which involves the construction of a series of injection-extraction wells and a pipeline gathering system. The cultural resources-environmental assessment presented in this report includes an evaluation of the cultural resources known to exist in the lease area and outlines a management plan designed to prevent adverse impact to the cultural resources during the project development.

INTRODUCTION

This report provides a cultural resources-environmental assessment for the proposed HRI Unit No. 1 lease area near Crownpoint, New Mexico. The objective of this report is to evaluate the nature of the archaeological, historical, and traditional cultural properties within the proposed lease area and to develop a preliminary management plan that ensures resource preservation. The proposed HRI Unit No. 1 lease area is a 1307-acre tract located near Crownpoint, New Mexico (Figures 1 and 2). The proposed in situ solution uranium mine would involve the development of injection-extraction wells, access roads, a pipeline gathering system, and a processing facility. The location of this facility within the lease is very flexible and can be planned in such a manner to avoid adverse impact, both direct and indirect, to the cultural resources of the area. A preliminary cultural resource management plan for the proposed lease area is presented in this report. Specific management plans that define precise site boundaries and avoidance procedures will be developed following a Class III cultural resources survey. This survey will be completed after the lease acquisition and will be part of the environmental clearance document to be submitted to the Navajo Nation and the Bureau of Indian Affairs prior to the project development.

The information presented in this report includes a description of the known cultural resources in the proposed lease area, details of a cultural resource management plan, and information regarding culture history and potential research considerations for the area. A management plan describing the proposed HRI mining project in terms of potential impact on the cultural resources is also presented. This section of the report includes discussion of the proposed Class III cultural resource inventory, information on the archaeological and traditional site protection plan, and considerations of indirect impact. A discussion of the Muddy Water Chaco Protection Site and State Register district, located adjacent to the lease, is also included. In addition, statements are made regarding the proposed treatment of sacred and other traditional sites and human burials and graves.

Information regarding the cultural resources of the proposed lease area and the surrounding district are also presented in this report. This discussion includes a records search and a summary definition of all previously documented sites in the proposed lease area. It also includes discussions of the Chacoan Muddy Water community, the Navajo occupation of the area, and information regarding known traditional and sacred sites near Crownpoint.

This report also includes additional information on Chacoan Anasazi and Navajo culture history and considers research topics that might be addressed as a result of the proposed cultural resource investigations. Other information presented in this report includes a copy of National Park Service information regarding the Muddy Water Protection Site and a copy of Public Law 96-550, Title V, known as the Chaco Culture Archeological Protection Act.

It is the purpose of this report to serve as a preliminary planning document for cultural resource management in the proposed HRI Unit No. 1 lease area. It is probable that the proposed mine would be developed at intervals over a period of years. Following the completion of a Class III inventory, specific management plans for each development phase would be formulated.

This topographic map shows the HRI Lease Area, which is outlined in a thick black line. The area is situated in the northern part of the map, near the town of Crownpoint. The map includes contour lines, a grid system, and various geographical features. A north arrow is located in the upper right corner. The map is titled "Figure No. 1. Location of the Proposed HRI Unit No. 1 Lease Area." and includes a scale of 100,000.

~~Base Map Gallup, NM, 100,000 Scale~~

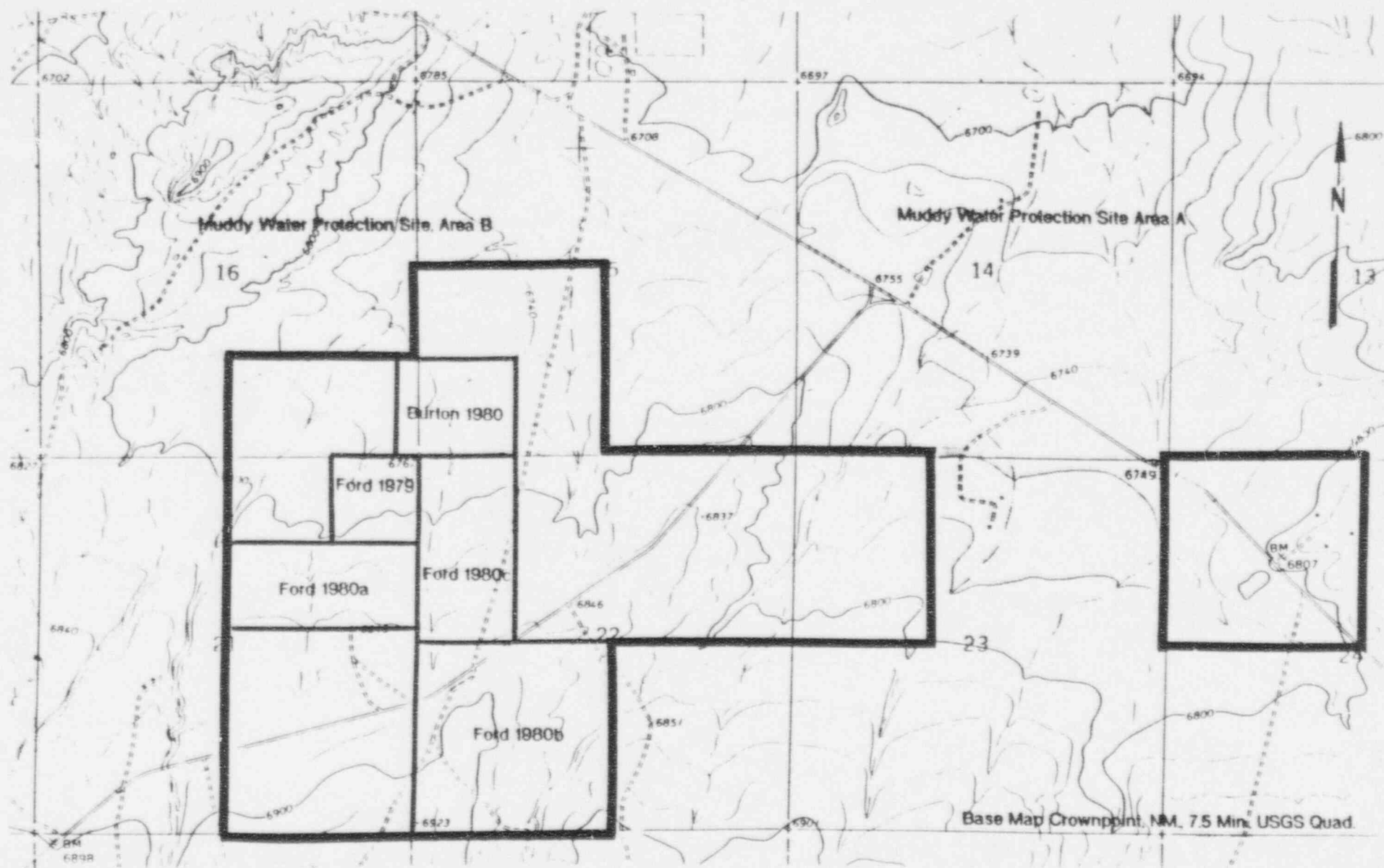


Figure No. 2. Location of the Proposed HRI Unit No. 1 Lease, The Chacoan Muddy Water Protection Site and Areas of Previous Archeological Survey.

THE CULTURAL RESOURCE MANAGEMENT PLAN

Introduction

A cultural resource management plan for the proposed HRI Unit No. 1 lease is outlined in the following text. This outline describes the procedures that will be taken to ensure the preservation of the important cultural antiquities, historical properties, and sacred-traditional sites within the lease area. A policy of total avoidance of all significant cultural manifestations is to be followed during the project development. It is the objective of the HRI cultural resource management plan to complete the development of the well field, access network, and gathering-processing system without adverse impact to the cultural resources. This objective is possible given the locational flexibility of the proposed mining development.

All cultural resources encountered in a Class III archaeological and sacred-traditional site inventory will be recognized as protection areas. The boundaries of each resource area will be recognized as exclusion zones from the mining development. All well pads, access roads, pipelines and other construction facilities will be developed outside the exclusion areas. Any subsurface disturbance will be preceded by archaeological testing, and an archaeological monitor will be present during construction and reclamation activities.

Only the procedural outlines for the cultural resource management plan are defined in this assessment. Specific management plans will be developed following the Class III inventory, and these plans will be submitted for review to the Bureau of Indian Affairs and the Navajo Nation Historic Preservation Department. These plans will identify all cultural resources in the lease area, designate protection areas, and outline the specific avoidance procedures.

Information regarding the cultural resource management plan presented in this assessment includes a description of the mining project in terms of its potential impact on the cultural resources, an outline of the site protection plan, considerations of indirect impact, the relationship of the project to the adjacent Muddy Water Chaco Protection Site, and statements regarding the treatment of sacred sites, traditional cultural properties, and human burials and gravesites.

Description of the Proposed HRI In Situ Mining Project

The purpose of this assessment is to outline the procedures for cultural resource management and preservation within the proposed Hydro Resources Incorporated Unit No. 1 lease area near Crownpoint, New Mexico. A cultural resource management plan that is carefully coordinated with the project development is proposed in order to prevent adverse impact. The principal objective of the management plan is to avoid all cultural resources. Given the nature of the project and its locational flexibility, this objective is feasible.

In situ mining involves the removal of uranium oxide in solution and is accomplished by the construction of a series of injection-extraction and monitoring wells. This type of mining involves the development of wells and a pipeline gathering system which has a limited impact to the land surface. The types of subsurface disturbance that are related to the project include well pad drilling activities and the excavation of well mud pits (located at about 30 to 50 m intervals), road access development, and the construction of a pipeline gathering system and a 5-acre processing facility. The placement of all these facilities is very flexible, and each can be located in a manner that avoids all known cultural resources.

Access to the well pad sites in the open environment of the Unit No. 1 lease area can in many instances be made without substantial subsurface road construction. All access roads will be

located in order to avoid the cultural resources. All areas along access roads that require road work resulting in subsurface disturbance, such as arroyo crossings, will receive archaeological testing and monitoring before and during construction. The leveling of well pads (approximately 30 by 30 m) and the excavation of well mud pits (5 by 10 m) will also involve archaeological monitoring and testing to ensure that there is no adverse impact to buried cultural resources.

The flexibility of the location of the pipeline gathering system means that all known cultural resources can be avoided. Most of the pipeline gathering system will probably be built above-ground, and subsurface lines will appear in only limited areas, such as road crossings. Since buried cultural resources may occur in the area, any subsurface lines will be archaeologically tested prior to development and monitored during construction.

The pipeline gathering system will lead to a processing facility that will cover approximately 5 acres. The placement of this facility is also flexible and can be located to avoid impact to the cultural resources. The facility will include three 1-acre holding ponds and a 2-acre plant and processing facility. The entire 5 acres for this plant will be systematically tested for subsurface cultural antiquities prior to development. If concealed cultural resources are found, they will be subject to mitigative action.

The boundaries and location of all well pads, access roads, and pipelines are to be inspected by the archaeological monitor prior to development and are to be flagged during development and use. All construction and use activity will be confined within flagged boundaries. All access roads are to be flagged. White flagging will be used to promote nighttime visibility. No construction personnel will be allowed on site until they have received a briefing regarding the archaeological protection procedures.

The Class III Cultural Resource Inventory

A systematic Class III archaeological survey and study of sacred-traditional cultural properties in the proposed HRI Unit No. 1 lease area will be completed prior to any use or development. A comprehensive cultural resources report, which describes the cultural properties present in the study area and which includes specific recommendations for the management and preservation of the resources, will be submitted to the Navajo Nation Historic Preservation Department, and other agencies as required, for evaluation and comment prior to the development phase.

Archaeological survey and report preparations will follow the standards outlined in the "Interim Fieldwork and Report Standards and Guidelines of the Navajo Nation Historic Preservation Department" (August 1, 1991). The entire Unit No. 1 lease area will be surveyed, including the various tracts that have been the subject of previous documentation (Burton 1980; Charles 1975; Ford 1980a, 1980b, 1980c). A Class III survey of the previously studied tracts is required to determine the precise site boundaries and current status of the documented sites. A re-evaluation of each previously documented site will also be made, and any additional information obtained will be appended to the site records.

Descriptions of the cultural resources will follow the format detailed in the Navajo Nation site survey and management form for sites and isolated occurrences. This description will include detailed information on site locations, boundaries, land status, and a complete description with maps and photographs. Each site will also be evaluated with respect to its significance in terms of National Register (36 CFR 60.4), the Archaeological Resources Protection Act (43 CFR 7.3), and the American Indian Religious Freedom Act (AIRFA). All sites will be recorded in the computerized data base of the New Mexico State Archeological Records Center and will receive "LA" site numbers. Survey methods will entail a pedestrian search of the study area with transects spaced 10 to 15 m apart. All site dimensions will be measured in metric with tape or

survey instruments. No artifact collections will be made. All artifact samples will be documented in the field.

All cultural manifestations within the lease area are to be documented systematically. These manifestations include all historical and modern sites with the exception of locations presently occupied. All sites currently in use will be briefly described but will not be photographed, mapped, or recorded out of respect for the privacy of the occupants. An attempt will be made to obtain information about historical sites in the area through interview with the local residents. These on-site interviews will also be made in order to evaluate register eligibility and significance under AIRFA.

All cultural properties encountered in the lease area will be specifically evaluated with respect to their integrity and qualification for nomination to the National Register (36 CFR 60.4) and with respect to the Archaeological Resources Protection Act (43 CFR 7.3). In addition, the cultural properties will be evaluated with respect to the Navajo Nation's Cultural Resource Protection Act (CMY-19-88). This evaluation will include both the Anasazi and Navajo sites and any sacred or traditional cultural properties.

Aerial photographic imagery will be used in the HRI Unit No. 1 cultural resources survey to evaluate various types of cultural features, such as Anasazi roads and Navajo cornfields, and will be used as a photographic base map for the location of all sites. A complete set of aerial photographs for the Crownpoint area, including the proposed Unit No. 1 lease area, have been collected (Flight DAS, June 20, 1979, at a scale of 1 inch to 600 feet) and will be used in the survey. Each cultural feature will be plotted on the aerial photographs, and these photos will be placed on file at the State Archeological Records center after the project is completed.

Examination of the Soil Conservation Service 1930s aerial imagery will also be made in an effort to define features that have been reduced or obscured over the past 50 years. The use of SCS imagery has proven to be especially useful with respect to the study of Chacoan roads and to the definition of historical Navajo field areas.

An attempt will also be made during the cultural resources study to obtain oblique, low-sun-angle aerial photographs of the Muddy Water complex, including the great house and road structures. Low-sun-angle photography has proven to be of considerable use in the recognition of very subtle roads and earthworks, which are often invisible in conventional vertical photography.

Archaeological and Traditional Site Protection Plan

A cultural resource management plan for archaeological and traditional sites will be developed following the Class III inventory of the lease area. All cultural resources identified in the lease area will be recognized as "protection zones" that will be avoided during the HRI project development. All drilling activities and movement of heavy equipment into the lease area will avoid these protection zones.

The precise boundaries of all cultural properties within the lease area will be defined during the archaeological survey and the traditional site inquiry. These boundaries will be marked in the field with iron fence posts, where appropriate. This system of site boundary definition, developed by Dan Hurley during the extensive drilling exploration of the area by Mobil Oil Corporation during the period from 1973 to 1980, has proven to be very effective. Many of these markers still remain in place today and there is little evidence of subsequent disturbance. There may, however, be certain sensitive archaeological sites or traditional-sacred sites that should not be permanently marked. These sites will be identified as "special or sensitive protection areas" near which no development activity is allowed.

The location and boundary definition of sites as cultural resource protection areas will result in the protection of most cultural resources in the lease area. Since buried or concealed cultural resources probably exist in the proposed lease area, especially in areas of alluvial deposition, it is important that any project activity resulting in subsurface disturbance be preceded by archaeological testing. In most instances, protection can be accomplished by the presence of an archaeological monitor on the construction site or by the placement of backhoe test trenches in the area of proposed disturbance. Areas of subsurface disturbance in the project area will be limited whenever possible. Activities in which subsurface disturbance is anticipated include the construction of well pads and mud pits and the development of occasional areas along access roads. Any subsurface disturbance caused by the development of the pipeline gathering system will also require archaeological testing and monitoring. It is also recognized that any cultural resources encountered during construction will require mitigative actions, under consultation with the Navajo Nation Historic Preservation Department, before construction can continue.

Considerations of Indirect Impact

The HRI cultural management plan is designed to maximize avoidance of all cultural resources and sacred-traditional properties within the lease area. Avoidance will be accomplished by a systematic Class III cultural resource inventory and by the demarcation of all site boundaries as protection areas. Archaeological testing of all areas of proposed subsurface disturbance and a monitoring program during the project development will also prevent any adverse impact to the cultural resources.

Since the lease is located within the Chacoan Muddy Water community and is adjacent to the Muddy Water Protection Site, consideration of potential indirect impact to the cultural resources is also incorporated in the HRI management plan. In order to avoid possible indirect impact to the cultural resources, a series of actions are planned.

All transportation corridors within the lease area will be located in conjunction with the project archaeologist. Any transportation activities adjacent to the lease, in the Muddy Water protection zone, will be confined to established roads. The boundaries of the entire lease area will be determined by cadastral survey. The location of those boundaries that join with the Muddy Water Protection Site will be specially marked, if existing fence lines are not present. Given these precautions, the proposed HRI development should have no adverse indirect impact on the cultural resources adjacent to the lease.

Looting of cultural antiquities in the Crownpoint area is very limited and seems to be confined to limited disturbance near the ruin of Kin Ya'a. The infrequency of looting in the Crownpoint area is clearly due to the protection afforded by Navajo residents of the area. The Navajo do not intentionally disturb archaeological sites, and their allotment ownership of the lease area has prevented looting by pothunters. There is no evidence to suggest that the intensive drilling activity conducted by Mobil Oil Corporation in 1973-1980 resulted in looting by construction workers. There is also no evidence to indicate that sites marked with fence posts (during the 1973 to 1980 drilling period) have since attracted the attention of looters. All evidence of looting observed during the proposed Class III survey of the lease area will be noted, and any special problems will be identified in the HRI cultural resource management plan.

The Muddy Water Complex: Chacoan Protection Site and State Register Nomination

The Muddy Water Chacoan Protection Site and State Register archaeological district is located in the direct proximity to the proposed HRI Unit No. 1 lease (Figure 2). The proposed lease

development will have no impact on the archaeological protection site. The HRI cultural resource assessment, however, recognizes the sensitive nature of the protection area and has addressed various considerations of indirect impact.

The Chacoan Muddy Water community, which consisted of a 5600-acre tract, was proposed as a National Register District in 1979. This proposed district was rejected in 1981 by the Director of the Registry, Joy L. Bush, because the existing site documentation failed to substantiate the boundaries. A revised version of the district, which included a total of 1090 areas in two areas, was then defined in areas of documented high site density. This revised boundary was based on archaeological inventory surveys by Charles (1975), Davis (1976) and Marshall et al. (1979). This revised district was listed on the New Mexico State Register of Cultural Properties as Nomination 675 in 1979, but the nomination was never re-submitted to the National Register.

In December of 1980, the Muddy Water Community was included as part of the Chacoan Archaeological Protection Site System and was listed as one of 33 protection sites under Title V of Public Law 96-550 (Appendix A). The preliminary definition of the Muddy Water Protection District contained a 1210-acre tract (Figure 2 and Appendix B). The protection site therefore originally included 120 acres more than the State Register nomination; however, a subsequent recommendation by the Chaco Culture Interagency Management Group to delete these 120 acres (Figure 3, NPS Denver Office, May 1982, Map No. 310/80043, Chaco Culture Archaeological Protection Sites, Site Status Segment II) resulted in a boundary identical to that on the State Register.

Even though the boundaries defined by the State Historic Preservation Office and the Interagency Management Group (IMG) are identical and consist of a 1090-acre tract, Title V of P.L. 96-550, Section 501, states that "Additions to or deletions from such lists shall be made only by an Act of Congress." An amendment to the Chaco Protection Act that outlines various additions and deletions, including the changes in the Muddy Water boundaries, has been submitted to Congress. The bill has passed the floor of Senate, but no action has been taken as yet in the House. Since the recommendations made by the IMG are pending, the original 1210 acres are legally recognized.

Consultation with New Mexico State Historic Preservation Office regarding the Muddy Water State Registry Nomination, and its status with respect to the proposed HRI lease, was made on December 3, 1991. The Historic Preservation Officer, Mr. Tom Merlan, stated that specific determination of policies regarding the area should be made by the Bureau of Indian Affairs and the Navajo Tribe, since the lands under consideration are Navajo allotments. He did state, however, that as part of the Interagency Management Group the State of New Mexico's policy regarding Chaco Protection sites is to restrict all types of surface mineral development.

Public Law 96-550 called for the development of a Joint Management Plan (JMP) to be developed by those agencies that have jurisdiction over or interest in lands containing the protection sites. In response to that mandate, the Chaco Culture Interagency Management Group (IMG) was established in January of 1981. The agencies that comprise the IMG are the Navajo Tribe, the New Mexico Historic Preservation Division, the Bureau of Land Management, the National Park Service, and the Forest Service. A description of the Joint Management Plan published in December of 1982 states that "...a site management plan will be prepared for each of the designated protection sites, based on the concepts of the Joint Management Plan and the information contained in the reconnaissance study. The site management plan will indicate site-specific proposals for administration, resource management (protection, stabilization, research, research, energy development), visitor use and interpretation. These plans will be reviewed by the IMG before the proposals are implemented."

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EXISTING 2007-2008 SITE BOUNDARY
PROPOSED SITE BOUNDARY

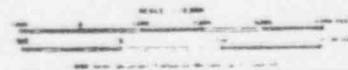
SITE STATUS SEGMENT II

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SYNCHRONIZATION CHANGE.
DATE. MAY 1983
MAILED BY MESSAGE SERVICE CENTER
NATIONAL PARK SERVICE

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WORTHINGTON, J. C. 1993. *Principles of Wetland*



DR. ST.	CR. ST.
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SHEET 12 OF 18	

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
BUREAU OF LAND MANAGEMENT
OFFICE OF LAND ACQUISITION

A reconnaissance survey of the Muddy Water community was completed by the National Park Service (Robert Powers 1981, Appendix B). A specific management plan for the protection site district does not, however, appear to have been completed (Erick Van Hartesveldt, Navajo Historic Preservation Division; Lynne Sebastian, New Mexico Historic Preservation Division; and Robert Powers, National Park Service, personal communication, December 1991). Funds have been recently appropriated by Congress, under a request by the National Park Service, to assist in the planning effort for the Navajo Tribe Chacoan protection sites (Robert Powers, personal communication, December 1991). This program is in the early stage of development, and no action on the Muddy Water Management Plan has been taken to date.

Statement Regarding the Treatment of Sacred Sites and Other Traditional Cultural Properties

Considerable attention will be given in the HRI cultural resource preservation project to the recognition and protection of Native American sacred sites and traditional cultural properties that might exist within the proposed Unit No. 1 lease area. Traditional or sacred sites have not been recognized in previous studies of the lease area, but these earlier investigations did not address this issue directly, and there is a potential for these sites within the area.

All legislative mandates and Navajo Tribal policies regarding the protection and preservation of sacred sites and other traditional cultural properties will be explicitly followed throughout the proposed HRI development project. This action is in accord with the American Indian Religious Freedom Act of 1978 (Public Law 95-341) and will follow procedural directives described in the "Navajo Nation Policy to Protect Traditional Cultural Properties" (1990) and National Register Bulletin 38 (1990) entitled "Guidelines for Evaluating and Documenting Traditional Cultural Properties."

All of the sacred and traditional cultural sites that might be documented in the lease area are of probable Navajo affinity. Pueblo Anasazi sacred sites may once have existed in the area, but it is very unlikely that any of these sites are maintained by a living community. In the unlikely event that such places are still maintained by Pueblo populations, it is probable that Navajo residents of the area will have knowledge of this use. Emphasis in the investigation of sacred and traditional sites will, therefore, be directed toward the Navajo people of the Crownpoint area. This investigation will involve the procedures for interview described in the Navajo Nation policy and completion of Navajo Nation HPD Sacred and Traditional Places Documentation Forms.

Preliminary review of existing literature regarding Navajo sacred places does not reveal any outstanding, tribally recognized locations within the lease area. The two most important sacred sites commonly known in the Crownpoint area are *Ak'iilnastiani* (The Mountain That Sits on Top of Another Mountain) and the ruin and nearby shrine of Kin Ya'a, known as the home of the *Kii ya anii* clan and associated with the Blessingway (*hozhooji*). These locations, however, are well outside the proposed HRI lease area. (See the discussion of traditional sites in the section on Background Research.)

Various local or regionally recognized sacred and traditional sites may exist in the lease area: for example, traditional gathering areas, sites associated with life-cycle rituals, prayer offering places, and structures associated with ceremonies, such as hogans and sweatlodges. It is also recognized that many sacred and traditional sites are elements of the natural landscape, such as trees, springs, rocks, and mountains, etc., for which there is no structural evidence.

The HRI cultural resources management project will involve a comprehensive consultation effort with local residents and other persons who have knowledge of sacred and traditional sites. Interviews with local residents on and adjacent to the lease will be conducted by ethnohistorian

Michael Marshall with the assistance of translator and HRI employee Billy Johnson (who is also a member of the Crownpoint community). Any sacred or traditional cultural properties encountered in the lease area will be carefully researched, and recommendations regarding the sites, with regard to the HRI project, will be elicited from the various Navajo contacts. All of this information will be incorporated into the Cultural Resource Management Plan to be compiled by HRI for Navajo Nation Historic Preservation Division evaluation. All sacred and traditional sites encountered in the lease area will be avoided during the project development.

Statement Regarding Treatment of Human Burials, Graves, and Gravesites

Special attention will be given in the proposed HRI Unit No. 1 project to the recognition and protection of human graves and cemeteries, especially those of Navajo affinity. No gravesites have been previously recognized in the study area, but these sites are possibly present. Anasazi grave sites usually appear in midden areas adjacent to habitation sites and are normally protected as part of the archaeological site avoidance procedure. Navajo graves, on the other hand, are often isolated and may lack any obvious marker or structure.

All legislative mandates regarding the protection of graves and gravesites will be explicitly followed throughout the proposed HRI development project. This protection includes procedures described in the Native American Graves Protection and Repatriation Act (Public Law 101-601 [H.R. 5237], 1990); the Navajo Nation Policies and Procedures Concerning the Protection of Cemeteries, Gravesites and Human Remains (ACMA-39-86); and relevant gravesite protection as described in the American Indian Religious Freedom Act of 1978 (P.L. 95-341).

It is the intent of the proposed HRI development project to avoid any disturbance to human gravesites in the proposed Unit No. 1 lease area, whatever the circumstances. Any grave identified in the study area will be recognized as a protective site and will be avoided. Any burial inadvertently discovered during the development project will be re-interred following consultation with and recommendations of the Navajo Nation Historic Preservation Department.

The locations of grave sites will be determined through archaeological survey and according to interview procedures outlined by the Tribal Council Advisory Committee in Resolution ACMA-39-86. Efforts to locate gravesites in the lease area will involve discrete consultation with local residents and with members of the Crownpoint Chapter House. Efforts will also be made to contact former residents of the area. Investigation of gravesite locations within the study area will be conducted in conjunction with the "Traditional Cultural Properties" study. All gravesites identified in the study area will be subject to cultural resource documentation, and a Navajo Nation grave identification form will be completed for each location of Navajo affinity.

THE CULTURAL RESOURCES

Introduction

An overview of the cultural resources known to exist in the proposed HRI Unit No. 1 lease area and the context of these cultural manifestations in the Crownpoint, New Mexico, area are presented in the following discussion. The cultural landscape of the proposed Unit No. 1 lease is a complex pattern of prehistoric Chacoan Anasazi and historical to modern Navajo occupation and land use. Seven previous cultural resource studies have been conducted in the lease area, and numerous others have surveyed lands adjacent to the lease. Approximately half of the lease area has been subject to intensive archaeological survey, which has resulted in the identification of 37 archaeological sites (Figure 4). It is estimated that approximately 40 to 50 additional sites are present in the proposed lease area. Important sacred and traditional sites are known in the Crownpoint area, but none have been previously documented in the lease area. Previous work in the lease area has not addressed this issue, however, and it is possible that traditional cultural properties are present.

The proposed HRI lease area is located within the Chacoan Muddy Water community and adjacent to the Muddy Water Chacoan Protection Site (Figures 2 and 3). This ancestral Chacoan community was occupied for approximately 650 years, from about AD 500 to 1150. A total of 33 Anasazi components associated with the community have been documented in the lease area. The lease area is located directly south of the center or nuclear area of the community. The community's public-ceremonial buildings, including three great house pueblos and one great kiva, have been located about one-half mile north of the lease (Marshall et al. 1979). Most of the Anasazi sites found in the lease area appear to be habitation and special-function sites that are part of the central community halo. The Muddy Water-Lobo Plateau Chacoan road crosses the lease area, and another possible road linking Muddy Water to Kin Ya'a is also present.

The Navajo people have occupied the Lobo Plateau region since at least AD 1700, and continued research will probably result in the discovery of still older occupations. Navajo occupation in the immediate lease area and on the grassland plains of the basin floor appears to be largely from the post-Bosque Redondo Reservation period, ca. 1868 to the present. A total of 14 Navajo sites have been described in the lease area, and it is estimated that an additional 20 to 30 sites will be found. The records search indicates that the earliest occupations in the lease predate the coming of railroad in 1881 and consist of occasional "big block" hogans with few or no Euroamerican artifacts. The Navajo occupation of the lease area clearly intensified with the establishment of the Pueblo Bonito Eastern Navajo Agency and the Ohlin Trading Post at Crownpoint in 1910. Since that time the lease area has been rather intensively used by Navajo residents for grazing and agricultural purposes, and the remnants of numerous hogan and house settlements, corrals, sweatlodges, ramadas, ovens, and other features are present.

Records Search

All previous documents concerning the cultural resources of the proposed HRI Unit No. 1 lease area are summarized in this report. A total of 37 archaeological and historical sites have been previously documented within the lease area (Table 1). Most of the existing records are the result of cultural resource clearance activities conducted during the 1973 to 1980 uranium exploration work performed by Mobil Oil Corporation. The lease area comprises slightly more than two square miles, and nearly half of this area has been the subject of comprehensive archaeological survey. Most of the cultural resources known in the area were documented in clearance surveys conducted by the Navajo Nation Cultural Resource Management Program (Charles 1975), the Cultural Resource Management Program of the New Mexico State University-San Juan Campus

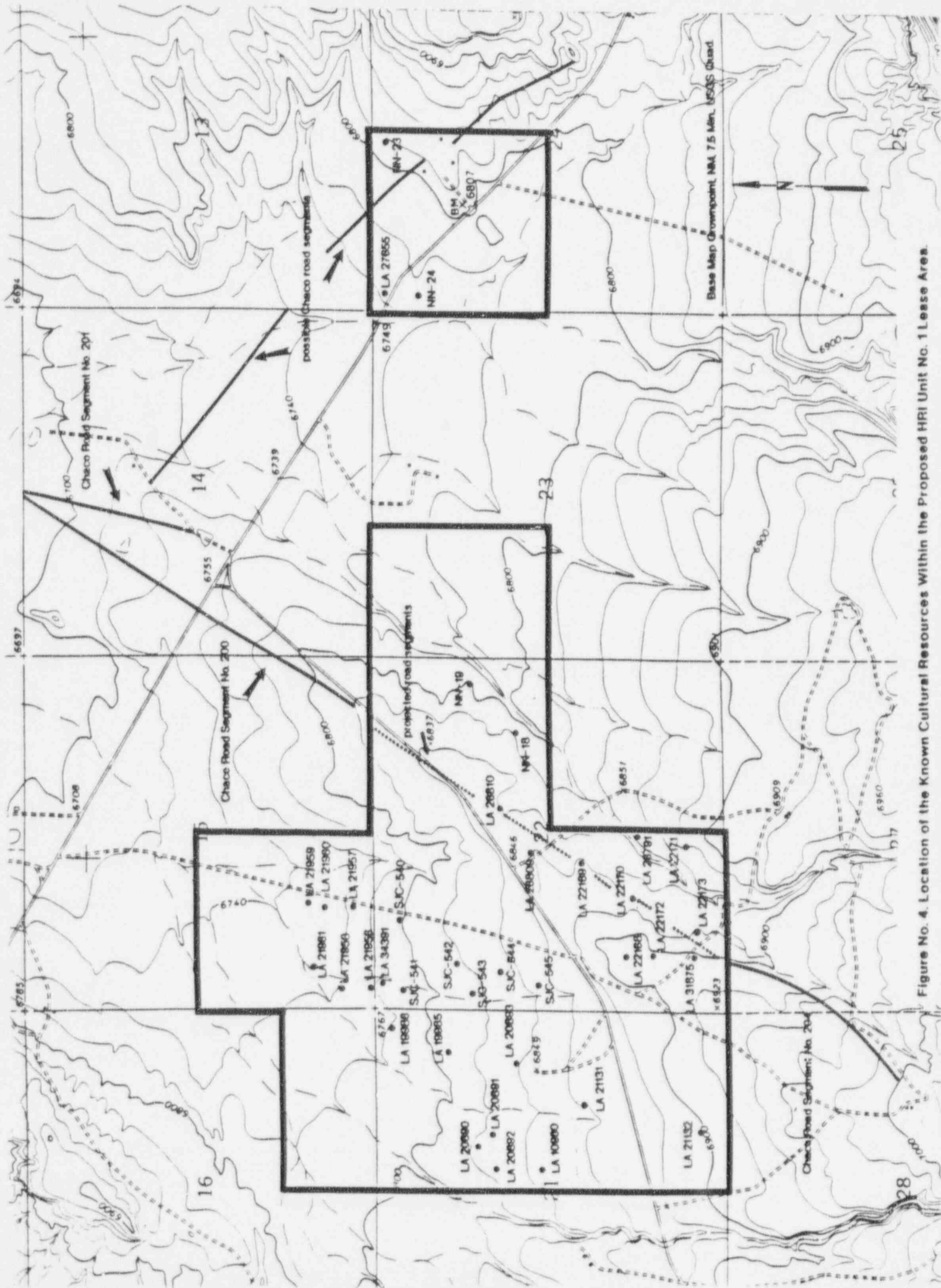


Figure No. 4. Location of the Known Cultural Resources Within the Proposed HRI Unit No. 1 Lease Area.

Table 1. List of Previously Documented Sites within the Proposed HRI Unit No. 1 Lease Area

Section 15, southwest 1/4

LA 21956	Burton 1980 (survey of 50 acres)
LA 21957	Burton 1980
LA 21958	Burton 1980
LA 21959	Burton 1980
LA 21960	Burton 1980
LA 21961	Burton 1980

Section 16, south half of the southeast 1/4

No sites recorded in this area

Section 21, east half

LA 10960	Wells (Laboratory of Anthropology) 1972
LA 19985	Ford 1979
LA 19986	Ford 1979
LA 20890	Ford 1980a
LA 20891	Ford 1980a
LA 20892	Ford 1980a
LA 20893	Ford 1980a
LA 21131	Ford 1979
LA 21132	Ford 1979

Section 22, north half and southwest 1/4

LA 22168	Ford 1980b (160-acre tract, or SW 1/4)
LA 22169	Ford 1980b
LA 22170	Ford 1980b
LA 22171	Ford 1980b
LA 22172	Ford 1980b
LA 22173	Ford 1980b
LA 26791	Henderson 1980
LA 26809	Whitten 1980
LA 26810	Whitten 1980 (same as Charles 1975, NN# 17)
LA 31875	Hewett 1981 (DCA site form)
LA 34391	Whitten 1982
SJC-540	Ford 1980c
SJC-541	Ford 1980c
SJC-542	Ford 1980c
SJC-543	Ford 1980c
SJC-544	Ford 1980c
SJC-545	Ford 1980c
NN # 18	Ford 1980c
NN # 19	Ford 1980c

Projected Southwest Muddy Water Chacoan Road

Table 1 (continued)

Section 23, western two-thirds of the northwest 1/4

No recorded sites

Section 24, northwest 1/4

LA 27655	Clifton 1979
NN # 23	Charles 1975
NN # 24	Charles 1975

Possible Chaco Road Segments (Muddy Water to Kin Ya'a road)

(Burton 1980; Ford 1979, 1980a, 1980b, 1980c; Henderson 1980), and by the San Juan County Museum's Division of Conservation Archaeology (Clifton 1979, Whitten 1980, 1982).

A study of the central core of the Chacoan Anasazi Muddy Water complex, located directly adjacent to the lease area, resulted in the documentation of 50 Anasazi sites (Marshall et al. 1979:207-225). This study is a significant source of information for the proposed Unit No. 1 cultural resource assessment because the Anasazi sites in the proposed lease area are affiliated with the Muddy Water community. Preliminary studies of the Chacoan roads, two of which are reported in the lease area, have been completed by Marshall et al. (1979), Obenauf (1980), and Nials et al. (1987). Documentation regarding the Muddy Water community complex is also presented in the nomination to the New Mexico Register of Cultural Properties. This nomination reiterates the information found in *Anasazi Communities of the San Juan Basin* (Marshall et al. 1979) and includes a brief summary of the Section 16 survey (Davis 1976) and the survey of the Muddy Water complex (Charles 1975).

All existing site records for the HRI Unit No. 1 lease area will be re-evaluated during the cultural resource survey. The cultural-temporal affinity and summary description of known sites in the study area are listed in Table 2. Most of the cultural resources previously documented in the Unit No. 1 lease area have been entered into the ARMS (New Mexico State Archeological Records Management System) file and have been located on the Crownpoint quadrangle topographic base map and can be retrieved from the computerized data base. Two major surveys completed in and adjacent to the lease area have not been entered into the ARMS data base, however: the survey of 80 acres in the western half of the northwest quarter of Section 22 (Ford 1980c), which resulted in the identification of six sites (SJC-540 to SJC-545); and a survey of 24 sites (NN-1 through NN-24) by Charles (1975). Following re-evaluation during the HRI cultural resource survey, these sites will be assigned "LA" numbers and coded into the ARMS data base.

The Muddy Water Complex: An Ancestral Chacoan Anasazi Community

The numerous archaeological surveys conducted in the Crownpoint West district and in the proposed HRI Unit No. 1 lease area have revealed a very extensive complex of Chacoan Anasazi sites. This impressive constellation of Anasazi sites is composed of components of the Chacoan

Table 2. Cultural-Temporal Stratification of Previously Documented Cultural Resources within the Proposed HRI Crownpoint Unit 1 Lease Area

Site No.	Section	Period	Description
Navajo Sites			
LA 21957(LC)	15	Unknown	Hearth
LA 20892(LC)	21	WWII-Pres.	Corral, wood chips, trash
LA 20893(LC)	21	Unknown	Historical trash
LA 21131	21	WWII-Pres.	Corral, historical trash
LA 21132	21	WWII-Pres.	Ranch complex, historical trash
LA 22168(LC)	22	WWII-Pres.	Corral, wood chips, trash
LA 22170(LC)	22	Unknown	Historical trash, fillet sherd
LA 22171	22	WWI-WWII	Hogan, house foundation, sweatlodge
LA 22172	22	WWII-Pres.	Corral, wood chips, trash
LA 22173	22	Unknown	Hogan
LA 26810	22	Unknown	Hogan
LA 31875(LC)	22	Unknown	Historical road
SJC-545	22	WWII-Pres.	Corrals, brush shelter, trash
Historical Pueblo (probable Pueblo ceramics on Navajo sites)			
LA 22169(LC)	22	Historical	Ceramic scatter, Zuni or Acoma polychrome
Chacoan Anasazi: BMIII-PI Components (AD 500-700)			
LA 19986(EC)	21	BMIII-PI	Bin, artifact scatter, five pithouses
LA 20893(EC)	21	BMII-III	Hearth and lithic scatter
LA 22169(EC)	22	BMIII-PI	Stone slab circles, jacal rooms, ceramic scatter
LA 22170(EC)	22	BMIII-PI	8-12 jacal rooms, two masonry rooms, artifact scatter
LA 26809	22	BMIII	Ceramic-lithic scatter
SJC-541(EC)	22	BMIII-PI	Sandstone slab concentration, hearths, and artifact scatter
SJC-542	22	BMIII	Hearths and artifact scatter
SJC-544	22	BMIII	Sandstone slabs, hearths or slab structures and artifact scatter
NN #23	24	BMIII ?	Upright slabs--two pithouses
Chacoan Anasazi: Pueblo I-II Components (AD 700-1100)			
LA 21958	15	PI-II	Possible masonry structure, midden, scatter
LA 21959	15	PI-II	Possible masonry structure, midden, kiva
LA 19985	21	PI-II	Masonry roomblock, depression, scatter
LA 19986 (LC)	21	PI-II	Ceramic scatter
LA 22168 (EC)	22	PI-II	Ceramic scatter
LA 34391	22	PI-II	Hearth (tested)
SJC-540	22	PI-II	Roomblock, depression, slab feature, jacal structure and artifact scatter

Table 2 (continued)

Site No.	Section	Period	Description
Chacoan Anasazi: Pueblo II Components (AD 900-1100)			
LA 21957(EC)	15	PII	Mound, artifact scatter
LA 21961	15	PII	Possible masonry structure, artifact scatter
LA 20890	21	PII	Two depressions, a masonry roomblock and artifact scatter
LA 20891	21	PII	Masonry roomblock, scatter
LA 20892 (EC)	21	PII	Artifact scatter
LA 26791	22	PII	Isolated masonry room, artifact scatter
SJC-541(LC)	22	PII	Artifact scatter
Chacoan Anasazi: Pueblo II-III Components (AD 900-1300)*			
LA 21956	15	PII-III	Artifact scatter
LA 21960	15	PII-III	Possible masonry structure, midden, scatter
LA 10960	21	PII-III	Two-room fieldhouse, ceramic scatter
LA 22169 (MC)	22	PII-III	Artifact scatter
LA 27665	24	PII-III	Artifact scatter
Anasazi Unknown (Probable PII; no ceramic data)			
NN #18	22	Anasazi	Mound, 1-2 rooms
NN #19	22	Anasazi	Artifact scatter
NN #24	24	Anasazi	Mound, 3-4 rooms
Unknown			
LA 31875 (EC)	22	Unknown	Ground stone, burned sandstone slabs
SJC-543	22	Unknown	Hearth

EC = Early Component

MC = Middle Component

LC = Late Component

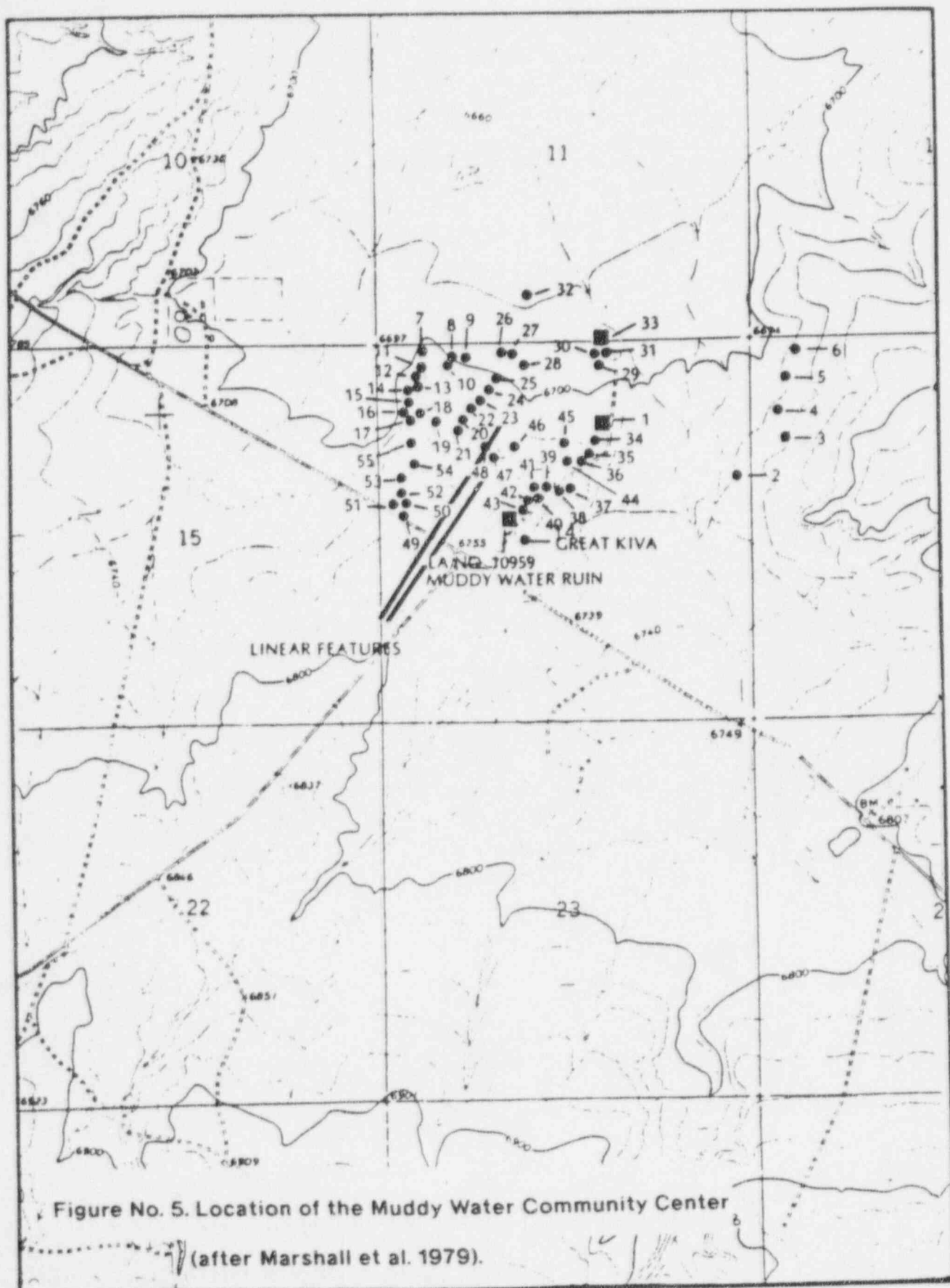
NN = Navajo Nation Field Number

SJC = San Juan College Field Number

* These sites are probably PII and late PII, since the area was abandoned ca. AD 1150-1175

Muddy Water community. The Muddy Water complex is a Chacoan community of the "Ancestral Type" (defined by Marshall et al. 1982:1231) that probably originated in the Early Developmental Era, ca. AD 400 to 500, and evolved into a major "Chacoan Outlier" in the Pueblo II Period, ca. AD 1000-1125.

The center or nucleus of the Muddy Water complex, which contains examples of great house and great kiva architecture, is located within the northwest quarter of Section 14 adjacent to the proposed lease area (Figure 5, after Marshall et al. 1979). This area is known to the local Navajo



DOCUMENTED SITES OF THE MUDDY WATER NUCLEAR COMMUNITY AREA

people as *Hashtl'ish biyi kits'ii* or "Ruin in the Mud" (Fransted 1979:28). This central complex includes three great house buildings, one great kiva, a Chacoan road and earthwork platform, and approximately 50 masonry unit-house pueblos (Marshall et al. 1979:207-225). Archaeological surveys completed near this community center indicate a very extensive halo of habitation and special-function sites extending about two to three miles around the nuclear area. Anasazi site densities within this area range from 20 to 45 sites per square mile (Marshall 1989:8), and it is estimated that approximately 750 sites comprise the community complex. A total of 33 Anasazi components have been recorded in the proposed HRI Unit No. 1 lease area, and it is likely that an additional 40 components are present.

The location of the proposed HRI Unit No. 1 lease within the area of the Chacoan Muddy Water community means that considerable effort must be devoted to management and protection of the cultural resources during project development. This management effort must recognize the structure and components of the Muddy Water site complex. It must include evaluations of known and potential roadways and it must recognize that a great deal of the complex is buried in alluviated areas and hence concealed. The boundaries of all cultural resources within the area, as determined from Class III survey, will be defined regardless of previous documentation. Aerial photographic imagery will be examined for evidence of prehistoric roads, and road corridor surveys will be completed. Any subsurface disturbance in the area will be preceded by archaeological testing and accompanied by monitoring. Previous management efforts associated with extensive drilling by Mobil Oil Corporation (overseen by Dan Hurley in 1979-1980) were very successful, and if the management plan proposed in this assessment is followed, adverse impact to the cultural resources of the area will be negligible.

Chacoan Roads

Two prehistoric Anasazi roads have previously been reported in the area of the Muddy Water Chacoan community. Both of these roads have segments that extend into the proposed Unit No. 1 lease area. One of the roads, which enters the Muddy Water complex from the north, has a branch road that runs southwest across the lease area. The location of this road has been verified by archaeological survey (Marshall et al. 1979; Nials et al. 1987). The other road, identified on the basis of alignments visible on aerial photographs, extends between the Muddy Water and Kin Ya'a communities. Survey investigations of one segment near Kin Ya'a (Hogan et al. 1981) and a pipeline cross section across another near Muddy Water (John Roney, Bureau of Land Management, personal communication) indicate that the feature is probably historical and do not support the presence of a Chacoan road in this area. Further study of both the Muddy Water road and the possible Muddy Water-Kin Ya'a road are required. The proposed HRI Unit No. 1 cultural resources study will include a detailed examination of these roads. This research will entail detailed stereoscopic examination of all available aerial photography and a systematic road corridor survey of all alignments within and adjacent to the lease area.

The Muddy Water Road

A prehistoric Chacoan road enters the center of the Muddy Water community complex from the north (Marshall et al. 1979:208; Nials et al. 1987:137-139). A section of this road crosses the proposed HRI Unit No. 1 lease area in the northeast and southwest quarters of Section 22 (Figure 4). Survey of the Muddy Water road has documented road segments in the immediate area of the community, but the extent and destination of the road are not presently known. The road appears to enter the complex from the north, where it divides into two avenues. The east branch (Segment No. 201) extends south to the main Muddy Water great house pueblo (LA 10959) where it ends. The west branch (Segment Nos. 200 and 204) angles to the southwest, passing a large Chacoan earthwork, and continues southwest, across the proposed lease area, to the slopes

of Lobo Mesa (Figure 6). A possible parallel road identified by Marshall et al. (1979; Figure 5) was subsequently recognized as a historical feature during the Bureau of Land Management study (Nials et al. 1987).

The northern destination of the Muddy Water road is presently unknown. The road enters an alluvial bottomland, 700 m north of the Muddy Water great house, where it is obliterated. Aerial reconnaissance of the Muddy Water area conducted by Sofaer and Roney in 1989 revealed a possible continuation of the road about one mile to the north (John Roney, personal communication 1991). The studies suggest that the Muddy Water road is either a short distance directional avenue similar to other Anasazi north road corridors (Marshall 1991a) or that it is a possible trans-basin corridor leading toward Kin Bineola.

The southwest branch of the Muddy Water road resembles a similar branch road at nearby Kin Ya'a. Both branches begin in the central area of the community, adjacent to large earthwork mounds, and both lead southwest toward the top of Lobo Mesa. The Kin Ya'a branch is a southwestern extension of the Chaco South Road, which links the great pueblos of Chaco Canyon and Kin Ya'a Pueblo to the summit of Hosta Butte. The destination of the southwest Muddy Water branch road is unknown, but it is possible that after it ascends the mesa it turns southeast and links Muddy Water to Hosta Butte. Investigation of the southwest Muddy Water branch road during the BLM Phase II road project included survey of a segment of the road to the base of the mesa, 2 km southwest of the HRI lease area (Nials et al. 1987:140). A sherd scatter was found extending up the mesa slope. A brief inspection of the mesa top failed to locate a continuation of the road, but this area requires further investigation.

The section of the southwest Muddy Water branch road that extends across the proposed HRI Unit No. 1 lease area requires survey definition. The road (Segment No. 200) is well defined in the aerial imagery as it enters the southeast corner of Section 15, but it is not visible in the aerial imagery as it extends across Section 22 toward Segment No. 204. In order to determine the precise location and nature of the road, a corridor study utilizing transect survey and photointerpretative methods, devised by the BLM Roads Phase I project (Kincaid 1983), will be completed.

The Possible Muddy Water-Kin Ya'a Road

A possible Chacoan road, linking the great houses of the Muddy Water community and the Kin Ya'a community, was recognized in an inspection of aerial photographs (Obenauf 1980:116). A projected section of this possible road crosses the proposed Unit No. 1 lease area in the northwest quarter of Section 24 (Figure 4). This road was reportedly verified by Michael Bartlett (no report known) of the Navajo National Cultural Resources Management Program (Hogan et al. 1981:14), although subsequent work on selected segments near Kin Ya'a and Muddy Water have failed to support Chacoan affinity and suggest instead that the imaged alignments are segments of various historical roads.

A survey of the east end of the projected road near Kin Ya'a Pueblo identified as Segment No. 11 (Nials et al. 1987:34-35) suggests historical affinity, as does inspection of the 1930s SCS aerial imagery. Study of alignments west of this segment were not, however, completed during the BLM investigation.

A segment of an alignment was also investigated in the area of Muddy Water. This study involved the inspection of a water line trench cut across the alignment. Examination of the profile section suggested that it too was a historical road segment (John Roney, personal communication 1991).

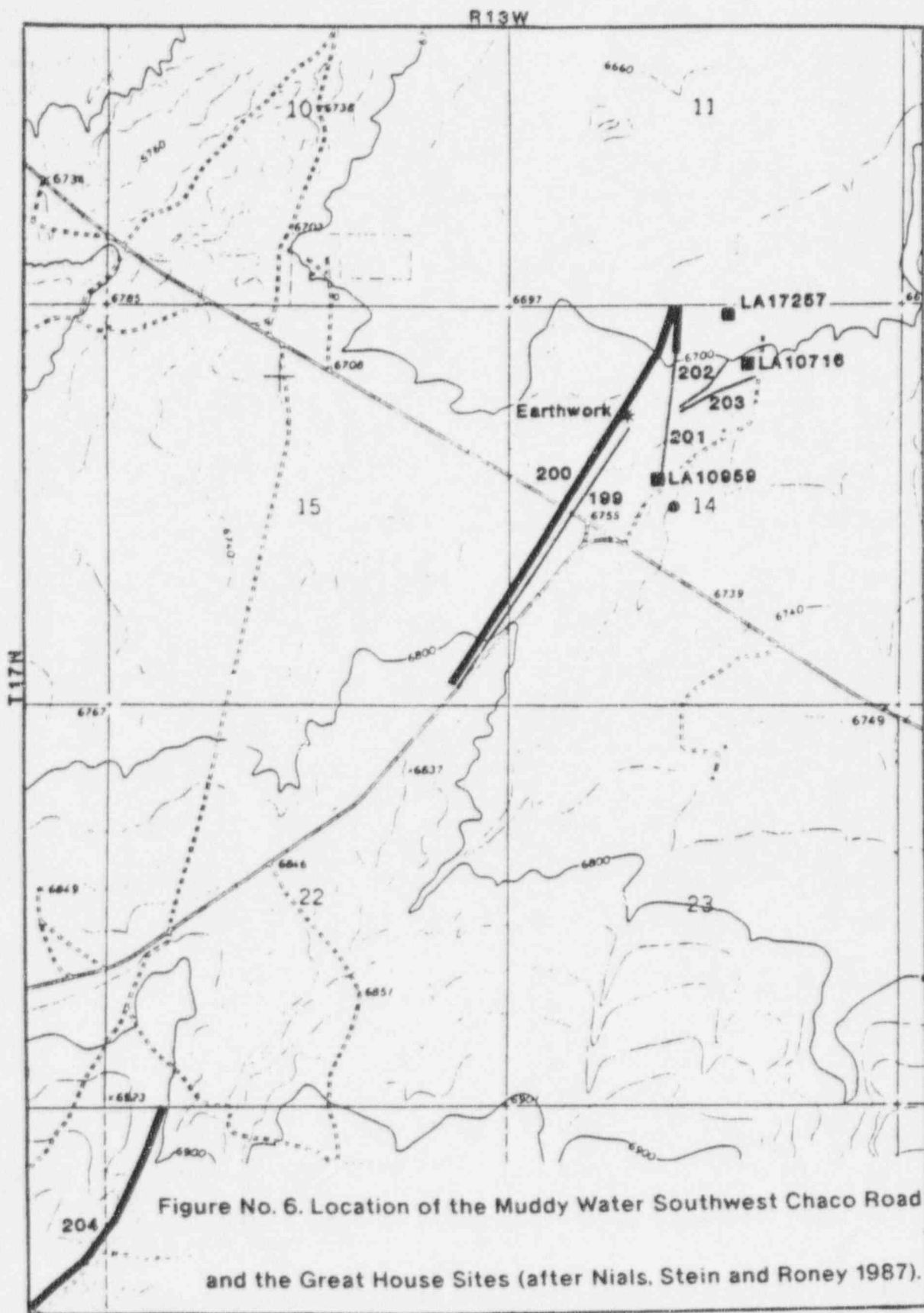


Figure No. 6. Location of the Muddy Water Southwest Chaco Road
and the Great House Sites (after Nials, Stein and Roney 1987).

Field investigations conducted at two locations indicate that the alignments identified by Obenauf (1980) are in fact historical features and hence are not a Chacoan road. A detailed investigation of the Muddy Water-Kin Ya'a alignments will, however, be conducted during the HRI investigations. This will involve inspection of SCS 1930s imagery and on-the-ground survey of all alignment segments identified inside and outside the proposed lease area.

Navajo Occupation of the Crownpoint Region

The earliest evidence of Navajo occupation in the Crownpoint district appears in the canyons and forested mesa tops of the adjacent Lobo Plateau. Little is known about the early Navajo occupation of the region, but there is evidence of early eighteenth century settlement throughout the plateau, and seventeenth century occupations may also exist. The earliest known Navajo camps in the area consist of forked-stick hogans and occasional masonry rooms. Ceramic materials include Dinétah Plain and intrusive Acoma and Zuni pottery of Ako and Ashiwi Polychrome. Early Navajo forked-stick hogans have been found in the northern canyons of Lobo Mesa, and coursed masonry rooms, masonry-based hogans, and early cribbed-log hogans have been found in the Churchrock area (Marshall 1991b). Fortified pueblito and hogan sites are also documented at Toyee Rock (LA 51135; Marshall and Sofaer 1988:227-237), and one is known on an isolated mesa point near Crownpoint. This undocumented site is located in the southwest quarter of Section 8, approximately one mile south of the proposed HRI Unit No. 1 lease.

The early Navajo occupation of the Crownpoint region was primarily a woodland adaptation. Few Navajo sites of this early occupation have been found in the grassland plains of the Chaco region, and none have been found in the HRI Unit No. 1 lease area. Nevertheless, early Navajo sites probably do occur in the adjacent canyons and mesas directly south of the study area. The earliest occupations of the grassland plains from Crownpoint north along the Chaco drainage system probably came during the early nineteenth century after the shift toward herding as the dominant subsistence mode (Hester 1962:84).

The majority of the Navajo sites known in the Crownpoint area, and most of 14 components previously documented in the Unit No. 1 lease area (Table 2), are of recent twentieth century affinity. There are, however, a few sites in the area that probably represent late nineteenth century occupation. These sites consist of "big block" hogans with little or no associated artifact material. Large masonry blocks form the base for a cribbed log upper wall and roof. Two sites of this type are presently documented in the lease area (LA 22173, LA 26810), and others have been found in adjacent surveys.

The earliest historical record of Navajos in the Crownpoint area is in late 1860s when three Navajo chiefs and their associated bands were said to be residing at a place called "Slender Cottonwood Gap" (*tiistsooz nieeshgizh*), which was later called Crownpoint (York 1981:22). Navajos were also said to be living near Hosta Butte in the 1870s. Hastinn titsoi'tsosi (Mr. Slim Yellowman), also known as Señor Mariano, moved his band west of Hosta Butte and dammed a sink now known as Mariano Lake (Van Valkenburgh 1974:93).

Traditional and Sacred Sites in the Crownpoint Area: Hosta Butte and Kin Ya'a

No sacred sites or other traditional cultural properties are presently known within the proposed HRI Unit No. 1 lease area. Previous cultural resource investigations in the area, however, have not adequately addressed this issue, and there is a potential that traditional cultural properties exist in the area. In order to determine if sacred or traditional sites are present in the lease area,

the HRI cultural resources project will involve a comprehensive consultation effort with local residents and other knowledgeable Navajo people.

A review of the existing literature regarding Native American sacred sites reveals the presence of two important locations in the Crownpoint area, near but outside of the proposed HRI lease. These are the sacred mountain peak of Hosta Butte and the ruin and nearby shrine of Kin Ya'a, which are discussed in the following notes.

Hosta Butte

Hosta Butte, located 6 mi south of the proposed Unit No. 1 lease area, is the most prominent and elevated landform in the Lobo Plateau. This butte, which rises to an elevation of 8600 ft, is one of the most conspicuous features on the southern horizon of the Chacoan Province. There is considerable evidence to indicate that Hosta Butte was a very important shrine during the Chacoan Anasazi occupation of the region. Indeed, the pinnacle is the destination of the Chaco South Road, which extends 34 mi to link the great pueblos of Chaco Canyon with Kin Ya'a and Hosta Butte. Reference to Hosta Butte has not been found in the ethnographic literature of contemporary Puebloan mythology, and like other sacred Anasazi sites, its significance may have been lost over the passing of the centuries.

Hosta Butte is, however, a very important sacred site to the Navajo people, and it is often visited as an offering place. The Navajo people refer to Hosta Butte as *Ak'i dah nast'ani* (The Mountain That Sits on Top of Another Mountain). This name is an apt description for the towering truncated pinnacle, which extends 700 ft above the forested summit of the Lobo Plateau. The name Hosta Butte dates back to 1877 when it was given to the mountain by W. J. Jackson in honor of a Jemez Indian who guided Col. John Washington's expedition in 1849 (Marshall and Sofaer 1988).

Hosta Butte is one of the seven principal sacred mountains in the Navajo origin myth and was recognized as one of the southern markers for the area traditionally occupied by the Navajo and called the Tinetxa or the "Old Navajo Country." It is also mentioned in various versions of the Blessingway (Wyman 1970:561, 575) and Nightway (Van Valkenburgh 1941:75) ceremonies. It is said to have been created by First Man and First Woman and the supernaturals Black Body and Blue Body when they decided to decorate this world (Matthews 1897:79).

And finally they fastened Ak'i dah nast'ani to the firmament with a sacred mirage stone (quartz crystal). It they decorated with many plants, and with the black clouds that bring male rain. On its summit they placed Nahachagii, the Grasshopper, whose descendants are abundant to this day. And there they also placed Tse hadahoniye'ashkii the Mirage Stone Boy and Yoo'lichi'i at'eed the Carnelian Girl to dwell there forever as gods (Zolbrod 1984:89).

Numerous shrine sites are located on the summit of Hosta Butte, and many contain offerings of modern materials (Marshall and Sofaer 1988). It is clear that Hosta Butte is an important sacred site and offering area, especially to the Navajo people. It is unknown, however, if the butte is visited by Pueblo people.

Kin Ya'a and the Kii ya anii Shrine

The Chacoan ruin of Kin Ya'a (Tall House; Marshall et al. 1979:201-206) and a nearby shrine are important Navajo sacred places. "The mythology of the Blessingway connects the Navajo place name for Kin Ya'a ruin (Kii Yaa'a) with one of the four original clans" (Fransted 1979:40-

41; Wyman 1970:331-458). According to the Franciscan Fathers (1910:356, 424), "the Kii yaanii and three other clans were created from parts of Changing Woman's body and are said to have been the first earth people" (York 1981:21-22). Kin Ya'a is also given as the home of Rainboy's parents in the origin legend of the Hail Way (Reichard 1944:153), and it appears in the legend of the Excess Way (Kluckhohn 1967:159).

RESEARCH CONSIDERATIONS

Introduction

The proposed HRI Unit No. 1 cultural resources study promises to provide a major contribution to the data base regarding archaeological, historical, and traditional sites in the Crownpoint District. Previous archaeological investigations within the Unit No. 1 lease and in adjacent areas have revealed an extensive Navajo occupation of late nineteenth and twentieth century affinity and a major ancestral Chacoan Anasazi community known as the Muddy Water complex. Most of the previous research been conducted in the Crownpoint area was completed during the period from 1973 to 1980 and was limited to archaeological clearance activities. No previous attempt (other than Marshall et al. 1979) has been made to provide an overview of the Anasazi occupation. Historical, archival, and oral history studies are likewise limited to the work of Hogan et al. (1981). The seven major cultural resource studies within the proposed HRI Unit No. 1 lease have documented 37 archaeological-historical sites. None of these studies, however, employed the use of historical or oral history research, nor did they evaluate the presence of sacred or traditional sites.

The proposed HRI Unit No. 1 cultural resources study will address many of the issues that were neglected in the previous work. The HRI research will concentrate on a definition of Chacoan community structure as it is reflected in the Muddy Water complex and on recent Navajo history in the Crownpoint area. This study will involve a comprehensive definition of cultural resources in the study area, a review of historical documents regarding the Crownpoint Navajo, and an oral history study designed to outline Navajo secular and sacred land use in the area.

A brief discussion concerning Anasazi and Navajo research considerations to be addressed by the HRI project is provided in the following text.

Muddy Water Community Structure

The proposed HRI Unit No. 1 lease area is located within the Chacoan Anasazi community known to the local Navajo people as *Hashł ish biyi kits' iil* (Ruin in the Mud) or Muddy Water. The name refers to extensive bottomlands in the area, which are often inundated by runoff from Lobo Mesa. It is this seasonal flooding of the valley floor and its consequent agricultural potential that supported the prehistoric community.

The investigation of cultural resources in the proposed HRI Unit No. 1 lease area promises to yield considerable information on the nature of Anasazi culture and the evolutionary development of Chacoan community structure. The Muddy Water complex is an example of an "ancestral community" in that it was established in the early Formative period of Chacoan Anasazi development about AD 500 and was occupied for an incredible period of 650 years until its abandonment about AD 1150. Ancestral communities have considerable time depth and thus exhibit a series of evolutionary developments from the Formative Basketmaker II-III period into the occupation of the Classic Bonito/Pueblo II era (Marshall et al. 1982:1231). Ancestral communities, like Muddy Water, are located in areas with favorable agricultural conditions. Ancestral communities appear to have developed from the late Archaic period substratum as small constellations of habitation sites scattered about a single kiva or great enclosure. These communities eventually developed into rather large constellations of habitation sites grouped around Bonito-style great houses and great kivas. Other public works, such as ceremonial roadways, earthworks and irrigation facilities, were also built during the late Pueblo I and Pueblo II periods.

A preliminary study of the Muddy Water complex (Marshall et al. 1979:207-225) has defined the core of the Classic period community in the northwest quarter of Section 14, directly adjacent to and north of the proposed HRI lease. This community center contains three multistoried buildings of Bonito-style great house construction, one great kiva, 50 masonry unit pueblos, and a Chacoan road and earthwork (Figure 5). The concentration of masonry buildings many with associated kivas, is phenomenal, and during its occupation the village must have resembled a great stone apartment complex separated by irregular streets.

Archaeological surveys conducted in the proposed HRI Unit No. 1 lease area adjacent to this community center have revealed a considerable number of unit-pueblo habitation sites and special-function areas, indicating that a rather extensive halo or constellation of sites appears around the community core. Indeed, archaeological survey of about one-half of the lease area, which extends from one to two miles out from the community core, has revealed a total of 33 Anasazi components. This partial inventory indicates the possible presence of 60 to 75 components in the lease area. There are also areas within the lease that are crossed by Chacoan roads and areas that appear to have been major agricultural fields.

One of the major objectives of the proposed HRI research is the study of Chacoan community structure and its evolutionary development as it is represented in the Muddy Water complex. This analysis will involve a detailed examination of the cultural resources within the study area and include research concerned with known cultural properties adjacent to the lease. The location of the lease in a two square mile area extending across the southern core of the community will provide a cross-sectional view of the community and the central halo. The study area also provides examples of three major drainages and agricultural areas and four upland habitation zones. The stratification of site types according to seven major ceramic-temporal horizons will allow us to view the development of community structure over a period of 650 years.

A study of Anasazi agricultural land use in the Muddy Water community is also an important research topic. Information concerning Anasazi agriculture in the area may be obtained by environmental study, by the identification of irrigation or water diversion works, and by the study of field-related sites (ovens, artifact scatters, fieldhouses). Information regarding the trade network and regional interaction of the Muddy Water community residents will be obtained by the analysis of intrusive-indigenous ceramic wares and by a study of lithic material types.

Another important research problem involves the function and destination of the Chacoan roads in the Muddy Water community. Information obtained from the HRI study may contribute data significant to interpretation of Chacoan roads and their probable integrative and cosmological function.

Navajo Studies: Recent History of the Crownpoint Navajo

All of the historical sites documented in the HRI Unit No. 1 study area are Navajo cultural properties of late nineteenth and twentieth century affinity (Table 2). All of these properties date to the period after the Navajo incarceration at Bosque Redondo in 1863-1868. Earlier Navajo occupations of the Lobo Plateau region, during the eighteenth and early nineteenth centuries, are also known, but none have been found in the lowlands of the study area. Navajo occupation of the proposed HRI Unit No. 1 lease and the immediate Crownpoint area was rather sparse during the late nineteenth century, but the area became a center of Navajo occupation after the establishment of the Eastern Navajo Pueblo Bonito Agency and Ohlin Trading Post at Crownpoint in 1910 and the Crownpoint Indian School in 1912 (York 1981:26-27).

An attempt to reconstruct the recent history of the Navajo people in the Crownpoint area, as specifically seen from the HRI Unit No. 1 lease area, will be made in the cultural resource

project. All historical sites encountered in the lease area will be systematically documented following the "Guidelines for the Treatment of Historic, Modern, and Contemporary Abandoned Sites" outlined by the Navajo Nation Historic Preservation Department. This process will include archaeological survey documentation, historical archival research, and interviews with local residents. This documentation will undoubtedly yield considerable information on recent Navajo history in the Crownpoint area.

A chronological sequence for the Navajo cultural properties found in the lease area will be developed using a combination of archaeological artifact data, historical records, and oral histories. The development of this sequence will assist in the demographic analysis of Navajo occupation in the region. The "big block" hogan sites that have been documented in the lease area probably date to the period after Bosque Redondo but before the railroad, ca. 1868-1881. Later sites occupied after the railroad and during the early Pueblo Bonito Agency and trading post days should exhibit considerable numbers of Euroamerican artifacts.

The demographic analysis of Navajo occupation of the lease area should reveal a rather dramatic population increase following the establishment of the Pueblo Bonito Agency and the Crownpoint trading posts. A report in 1911 from the Pueblo Bonito (Crownpoint) Agency, however, indicates that the Navajo in the area had been forced to move to Mariano Lake and the Chaco Wash to get water for their stock (Stacher 1940). This problem was rectified by the development of a series of wells in the area after 1915.

The nature and development of Navajo agricultural land use in the study area is a research topic of considerable interest. Navajo agriculture in the area, like that of the earlier Anasazi, was quite extensive (rather than intensive). About 1915, a well and various reservoirs were built at the Agency Farm in Section 10, near the present rodeo grounds, just north of the proposed Unit No. 1 lease area. There was no doubt considerable agricultural use of the "Muddy Water drainage system" in the Unit No. 1 lease area during the period from 1915 to 1940. Agricultural use of the area appears to have significantly declined after 1960. An evaluation of the extent and location of farm sites in the lease area will be made using SCS 1930s aerial photographs and through interviews with elder residents.

Research regarding the recent and contemporary Navajo occupation of the lease area will also be a part of the proposed cultural resources study. This activity will include the location and description of all settlements and use areas within the lease and the collection of information regarding land use and recent history as related by the residents interviewed. This research will also be instrumental in the definition of sacred and traditional sites in the area.

CONCLUSION

The cultural resources-environmental assessment conducted for the proposed HRI Unit No. 1 lease area indicates that it is located within a cultural district of considerable significance. Indeed, the proposed lease is within the Chacoan Muddy Water community complex and is placed in direct proximity to the Muddy Water Chacoan Protection Site and State Cultural Properties Register District. The lease area is also the location of a rather extensive historical period Navajo occupation, and it has the potential to contain properties of sacred or traditional value. Numerous cultural properties that qualify for nomination to the National Register are clearly present in the lease area. Other sites that qualify for preservation under the American Indian Religious Freedom Act and the Navajo Nation Policy to Protect Traditional Cultural Properties are also likely to be present.

Any plans for mining activity within the lease area must be extremely sensitive to the cultural properties within the area. A management plan for the proposed lease area can, however, effect total avoidance of the cultural resources. This avoidance plan is possible given the flexible nature of the proposed in situ mining project. Following a systematic Class III cultural inventory and traditional site inquiry, all significant cultural properties within the lease area would be recognized as protection zones and the boundaries marked. A specific cultural resource management plan would then be developed and submitted to the Bureau of Indian Affairs and Navajo Nation Historic Preservation Department for approval. The limited subsurface disturbance in the area would be preceded by archaeological test excavations in case buried or concealed cultural remains are present, and all construction projects would be archaeologically monitored.

Mobil Oil conducted previous systematic drilling in and adjacent to the lease area, and the cultural resource avoidance project conducted by Dan Hurley from 1973 to 1980 was extremely successful. Given the implementation of the culture resource management plan outlined in this report, adverse impact to the cultural resources of the lease area would be negligible. Furthermore, the proposed study of cultural resources in the lease area would significantly contribute to our knowledge of the Chacoan community structure and recent Navajo history.

BIBLIOGRAPHY

Burton, Jeff

- 1980 An Archaeological Clearance Survey of Fifty Acres near Crownpoint, New Mexico conducted for Mobil Oil Corporation. Cultural Resource Management Program, San Juan Campus, New Mexico State University, Report No. 80-SJC-085. Farmington.

Chaco Culture Interagency Management Group

- 1982 Joint Management Plan, Chaco Archeological Protection Site System, New Mexico/Arizona/Colorado. National Park Service.

Charles, James N.

- 1975 Interim Report. "Memorandum Dated 13, August 1975." Notes on Archeological Clearance Survey for Mobil Oil Company in undetermined areas of Sections 14, 15, 22, 23, and 24 of T17N, R13W. (No formal report, and sites have not received LA numbers; site descriptions are brief and lack site maps)

Clifton, Don

- 1979 An Archaeological Survey of a Proposed 15 Miles of 115 kV Transmission Line and the Proposed Crownpoint Substation. Conducted for the Public Service Company of New Mexico. Contributions to Anthropology No. 280. Division of Conservation Archaeology, San Juan County Archaeological Research Center, Bloomfield.

Davis, Caroline

- 1976 Interim Notes, Including a Brief Overview Concerning an Archaeological Survey of Section 16, T17N, R13W, near Crownpoint, New Mexico. On file, Navajo Tribal Museum, Window Rock, and Archeological Records Center, Santa Fe. (Notes include brief descriptions of sites; no site forms or maps are present)

Ford, Dabny

- 1979 An Archaeological Clearance Survey of the Tom Yazzie Homesite, Drill Hole #36, and Two Forty Acre Tracts. Conducted for Mobil Oil Corporation. Cultural Resource Management Program, San Juan Campus, New Mexico State University, Report No. 79-SJC-170. Farmington.
- 1980a An Archaeological Clearance Survey of an Eighty Acre Tract of Land Near Crownpoint, New Mexico Conducted for Mobil Oil Corporation. Cultural Resource Management Program, San Juan Campus, New Mexico State University, Report No. 79-SJC-293. Farmington. (South 1/2 of the NE 1/4 of Section 21)
- 1980b An Archaeological Clearance Survey of a 160 Acre Tract of Land in Section 22 (SW 1/4) near Crownpoint, New Mexico. Conducted for Mobil Oil Corporation. Cultural Resource Management Program, San Juan Campus, New Mexico State University, Report No. 80-SJC-040. Farmington.
- 1980c An Archaeological Clearance Survey of an Eighty Acre Tract of Land in Section 22 (West 1/2 of the NW 1/4) near Crownpoint, New Mexico. Conducted for Mobil Oil Corporation. Cultural Resource Management Program, San Juan Campus, New Mexico State University, Report No. 80-SJC-040A. Farmington.

Franciscan Fathers

- 1910 *An Ethnologic Dictionary of the Navaho Language* (reprinted in 1968). St. Michaels Press, St. Michaels, Arizona.

Fransted, Dennis

- 1979 An Introduction to the Navajo Oral History of Anasazi Sites in the San Juan Basin Area. Navajo Aging Services, Fort Defiance, Arizona.

- Henderson, Ruth Wiens
 1980 Archaeological Site SJC-654 (LA 26791), McKinley County, New Mexico. Cultural Resource Management Program, San Juan Campus, New Mexico State University, Report No. 80-SJC-372. Farmington.
- Hester, James J.
 1962 *Early Navajo Migrations and Acculturation in the Southwest*. Museum of New Mexico Papers in Anthropology No. 6. Museum of New Mexico, Santa Fe.
- Hewett, Nancy S.
 1981 An Archaeological Survey of 108 Uranium Test Core Drill Holes and Associated Access Roads within Eleven Exclusion Areas in Sections 22 and 27, T17N, R13W, near Crownpoint, New Mexico. Contributions to Anthropology No. 346. Division of Conservation Archaeology, San Juan County Archaeological Research Center, Bloomfield.
- Hogan, Patrick, Fred York, and Joseph C. Winter
 1981 A Survey of Cultural Resources in Eight Sections Surrounding Crownpoint, New Mexico. Report prepared for Sverdrup and Parcel and Associates, Inc. Office of Contract Archeology, University of New Mexico, Albuquerque.
- Kincaid, Chris, ed.
 1983 Chaco Roads Project, Phase I: A Reappraisal of Prehistoric Roads in the San Juan Basin. Bureau of Land Management, Albuquerque.
- Kluckhohn, Clyde
 1967 *Navajo Witchcraft*. Beacon Press, Boston.
- Marshall, Michael P.
 1989 The URI Crownpoint Cultural Resources Survey, A Class III Inventory. A Report Prepared by Cibola Research Consultants under contract with Uranium Resources Incorporated. Cibola Report No. 38. (Survey of SW 1/4 of Section 24, T17N, R13W).
 1991a The Chacoan Roads -- A Cosmological interpretation. Paper presented at the Mesa Verde Symposium on Anasazi Architecture and American Design, May 18, 1991. To be published by the Maxwell Museum of Anthropology, University of New Mexico.
 1991b Archaeological Investigations on URI-BLM Lease Lands near Crownpoint and Churchrock, New Mexico. Cibola Report, in preparation.
- Marshall, Michael P., and Anna Sofaer
 1988 Solstice Project Archaeological Investigations in the Chacoan Province, New Mexico. (manuscript)
- Marshall, Michael P., David Doyel, and Cory Breternitz
 1982 A Regional Perspective on the Late Bonito Phase. In *Bis sa'ani: A Late Bonito Phase Community on Escavada Wash, Northwest New Mexico*, edited by Cory Breternitz, David Doyel, and Michael P. Marshall, pp. 1227-1240. Navajo Nation Papers in Anthropology No. 14. Window Rock, Arizona.
- Marshall, Michael, John R. Stein, Richard W. Loose, and Judith E. Novotny
 1979 *Anasazi Communities of the San Juan Basin*. Public Service Company of New Mexico, Albuquerque, and New Mexico Historic Preservation Division, Santa Fe.

Marshall, Michael P., John R. Stein, and Robert Powers

- 1979 New Mexico State Register of Cultural Properties No. 675. The Muddy Water Chacoan Community and Crownpoint Archaeological District. On file, Historic Preservation Division, Santa Fe.

Matthews, Washington

- 1897 *Navajo Legends*. Memoirs of the American Folklore Society, Vol. 5.

National Park Service

- n.d. A Description of the Muddy Water Protection Site. In Chaco Culture Archeological Protection Sites: Site Reconnaissance Studies of the Interagency Planning Group, pp. 147-158. (Based on a reconnaissance survey by Robert Powers, 1981)

Nials, Fred, John Stein, and John Roney

- 1987 *Chacoan Roads in the Southern Periphery: Results of Phase II of the BLM Chaco Roads Project*. Cultural Resources Series No. 1. Bureau of Land Management, Albuquerque.

O'benauf, Margaret Senter

- 1980 The Chacoan Roadway System. Unpublished M.A. Thesis, Department of Anthropology, University of New Mexico, Albuquerque.

Reichard, Gladys A.

- 1944 *The Story of the Navaho Hail Chant*. Columbia University Press, New York.

Stacher, Samuel F.

- 1940 Crownpoint and Eastern Navajo. In *Crownpoint News*. Crownpoint School, New Mexico.

Van Valkenburgh, Richard F.

- 1941 *Dine Bikeyah*. U.S. Department of Interior, Office of Indian Affairs, Navajo Service. Window Rock, Arizona.

- 1974 Navajo Sacred Places. In *Navajo Indians*, Vol. III. Garland Publishing, New York.

Wells, Larry

- 1972 Museum of New Mexico Site Form LA 10960. (No map; no report known. Survey conducted for Mobil Oil Corporation)

Whitten, Penelope

- 1980 An Archaeological Survey of Five Drill Holes and Associated Access Roads Located in McKinley County, New Mexico. Conducted for Mobil Oil Corporation. Contributions to Anthropology No. 319. Division of Conservation Archaeology, San Juan County Archaeological Research Center, Bloomfield.

- 1982 An Evaluation of Cultural Material Found in Mud Pits at Newfuels Corp. Uranium Drill Hole 22U146, Located near Crownpoint, New Mexico. Conducted for Mobil Oil Corporation. Contributions to Anthropology No. 449. Division of Conservation Archaeology, San Juan County Archaeological Research Center, Bloomfield.

Wyman, Leland C.

- 1970 *Blessingway*. University of Arizona Press, Tucson.

York, Fred

- 1981 The Navajo Occupation of Crownpoint and Its Development as an Administrative Center for the Eastern Navajo Agency. In A Survey of Cultural Resources in Eight Sections Surrounding Crownpoint, New Mexico, by Patrick Hogan, Fred York, and Joseph C. Winter, Chapter IV. Office of Contract Archeology, University of New Mexico, Albuquerque.

Zolbrod, Paul G.

- 1984 *Dine Bahane, The Navajo Creation Story*. University of New Mexico Press, Albuquerque.

APPENDIX A

PUBLIC LAW 96-550, TITLE V

CHACO CULTURE NATIONAL HISTORIC PARK AND THE
CHACO CULTURE ARCHEOLOGICAL PROTECTION SITES

THE 96TH CONGRESS OF THE UNITED STATES
DECEMBER 19, 1980

A: LEGISLATION

PUBLIC LAW 96-550—DEC. 19, 1980

94 STAT. 3221

Public Law 96-550
96th Congress

An Act

To designate certain National Forest System lands in the State of New Mexico for inclusion in the National Wilderness Preservation System, and for other purposes.

Dec. 19, 1980
[H. R. 8253]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

National Forest
System lands,
New Mex.
Designation.

TITLE V—CHACO CULTURE NATIONAL HISTORICAL PARK

SEC. 501. (a) The Congress finds that—

16 USC 410ii

(1) archeological research in the San Juan Basin conducted over the past several years has greatly increased public knowledge of the scope of the prehistoric culture referred to as Chacoan Anasazi;

(2) the discoveries and the increased general interest in the Chaco phenomenon have come at a time when the San Juan Basin is experiencing extensive exploration and development for a wide variety of energy-related resources, including coal, uranium, oil, and natural gas;

(3) development of the San Juan Basin's important natural resources and the valid existing rights of private property owners will not be adversely affected by the preservation of the archeological integrity of the area; and

(4) in light of the national significance of the Chacoan sites and the urgent need to protect them, continued cooperation between Federal agencies and private corporations is necessary to provide for development in the San Juan Basin in a manner compatible with preservation and archeological research.

(b) It is the purpose of this title to recognize the unique archeological resources associated with the prehistoric Chacoan culture in the San Juan Basin; to provide for the preservation and interpretation of these resources; and to facilitate research activities associated with these resources.

SEC. 502. (a) There is hereby established in the State of New Mexico, the Chaco Culture National Historical Park comprising approximately thirty three thousand nine hundred and eighty nine acres as generally depicted on the map entitled "Chaco Culture National Historical Park", numbered 310/80,032-A and dated August 1979. The Chaco Canyon National Monument is hereby abolished, as such, and any funds available for the purpose of the monument shall be

Establishment.
16 USC 410ii-1.

Abolishment.
16 USC 431 note.

available for the purpose of the Chaco Culture National Historical Park.

(b) Thirty three outlying sites generally depicted on a map entitled "Chaco Culture Archeological Protection Sites", numbered 310/80,033-A and dated August 1980, are hereby designated as "Chaco Culture Archeological Protection Sites". The thirty three archeological protection sites totaling approximately eight thousand seven hundred and seventy one acres are identified as follows:

Name:	Acres
Allentown	42
Andrews Ranch	640
Bee Burrow	40
Bisa'ani	131
Casa del Rio	40
Coolidge	15
Dalton Pass	10
Great Bend	19
Greenlee Ruin	60
Grey Hill Spring	23
Halfway House	40
Haystack	115
Hogback	371
Indian Creek	100
Jacques	40
Kin Nizhoni	726
Lake Valley	30
Las Ventanas	31
Morris 41	85
Muddy Water	1,210
Newcomb	44
Peach Springs	985
Pierre's Site	440
Raton Well	23
San Mateo	14
Sanostee	1,565
Section 8	40
Skull Springs/Crumbed House	568
Standing Rock	321
Twin Angels	40
Toh-la-kai	10
Upper Kin Nizhoni	60
Squaw Springs	870

List additions or
deletions,
submittal to
Congress
16 USC 410ii-2.
Supra

Lands, waters,
and interests,
acquisition
16 USC 410ii-3.

SEC. 503. The Secretary of the Interior shall continue to search for additional evidences of Chacoan sites and submit to Congress within two years of date of enactment of this Act and thereafter as needed, his recommendations for additions to, or deletions from, the list of archeological protection sites in section 502(b) of this title. Additions to or deletions from such list shall be made only by an Act of Congress.

SEC. 504. (a) The Secretary is authorized to acquire lands, waters, and interests therein within the boundaries of the Chaco Culture National Historical Park (hereinafter referred to as the "park") and the archeological protection sites as identified in section 502 of this title by donation, purchase with donated or appropriated funds, or exchange. Property owned by the State of New Mexico or any political subdivision thereof, may be acquired by exchange or donation only. Property held in trust for the benefit of any Indian tribe or for the benefit of any individual member thereof may be acquired only with the consent of such owner or beneficial owner as the case may be.

(b) The respective tribal authorities are authorized to convey by exchange, purchase, on donation the beneficial interest in any lands designated by section 502 of this Act and held in trust by the United States for the respective tribes, to the Secretary, subject to such terms

and conditions as the tribal authority deems necessary and which the Secretary deems are consistent with the purposes of this title.

(c)(1) The Secretary shall attempt to acquire private lands or interests therein by exchange prior to acquiring lands by any other method authorized pursuant to section 504 of this Act.

Private lands or
interests,
acquisition.

(2) The Secretary shall attempt to enter into cooperative agreements pursuant to section 505 of this Act with owners of private property for those archeological protection sites described in section 502(b) of this Act. The Secretary shall acquire fee title to any such private property only if it is necessary to prevent direct and material damage to, or destruction of, Chaco cultural resources and no cooperative agreement with the owner of the private property interest can be effected.

Private property
owners,
cooperative
agreements.

(d)(1) For purposes of completing an exchange pursuant to subsections (a) and (b), the Secretary shall designate a pool of at least three times the private acreage described in subsections (a) and (b), comprised of Federal property interests of a similar resource character to property to be exchanged. Federal property shall, whenever possible, be designated in blocks of at least one section in size, but in no event shall the blocks designated be less than one-quarter of a section in size.

Pool, acreage
designation.

(2) The Secretary may include within the pool any Federal property under his jurisdiction except units of the National Park System, National Forest System, or the National Wildlife Refuge System that are nominated by the owner of the private property to be exchanged. Exchanges shall be on the basis of equal value, and either party to the exchange may pay or accept cash in order to equalize the value of the property exchange, except that if the parties agree to an exchange and the Secretary determines it is in the public interest, such exchange may be made for other than equal values.

(e) All Federal lands, waters, and interests therein excluded from the boundaries of Chaco Canyon National Monument by this title may be exchanged for non-Federal property to be acquired pursuant to this title. Any lands so excluded shall be managed by the Secretary under the provisions of the Federal Land Policy and Management Act of 1976. Transfer of administration of such lands to the Bureau of Land Management shall not be considered a withdrawal as that term is defined in section 103(j) of the Federal Land Policy and Management Act of 1976.

Federal lands
exchanged for
non-Federal
property.

43 USC 1701
note.

43 USC 1702.
16 USC 410ii-4

SEC. 505. The Secretary shall seek to enter into cooperative agreements with the owners, including the beneficial owners, of the properties located in whole or in part within the park or the archeological protection sites. The purposes of such agreements shall be to protect, preserve, maintain, and administer the archeological resources and associated site regardless of whether title to the property or site is vested in the United States. Any such agreement shall contain provisions to assure that (1) the Secretary, or his representative, shall have a right of access at all reasonable times to appropriate portions of the property for the purpose of cultural resource protection and conducting research, and (2) no changes or alterations shall be permitted with respect to the cultural resources without the written consent of the Secretary. Nothing in this title shall be deemed to prevent the continuation of traditional Native American religious uses of properties which are the subject of cooperative agreements.

SEC. 506. (a) The Secretary shall administer the park in accordance with the provisions of this title and the provisions of law generally applicable to the administration of units of the National Park

Administration.
16 USC 410ii-5.

System, including the Act of August 25, 1916 (39 Stat. 535; 16 U.S.C. 1, 2-4), and the Act of August 21, 1935 (49 Stat. 666; 16 U.S.C. 461-7).

43 USC 1702.

(b) The Secretary shall protect, preserve, maintain, and administer the Chaco Culture Archeological Protection Sites, in a manner that will preserve the Chaco cultural resource and provide for its interpretation and research. Such sites shall be managed by the Secretary in accordance with the provisions of this title and the provisions of law generally applicable to public lands as defined in section 103(e) of the Federal Land Policy and Management Act of 1976: *Provided, however*, That lands held in trust by the Secretary for an Indian tribe or any individual member thereof, or held in restricted fee status shall continue to be so managed or held by the Secretary.

(c) No activities shall be permitted upon the upper surface of the archeological protection sites which shall endanger their cultural values. For the purposes of this title, upper surface shall be considered to extend to a depth of twenty meters below ground level. Nothing in this title shall be deemed to prevent exploration and development of subsurface oil and gas, mineral, and coal resources from without the sites which does not infringe upon the upper surface of the sites.

(d) Nothing in this title shall be deemed to prevent the continuation of livestock grazing on properties which are the subject of cooperative agreements.

General
management
plan, transmittal
to congressional
committees

16 USC 1a-7.

(e) Within three complete fiscal years from the date of enactment, the Secretary shall transmit to the Committee on Interior and Insular Affairs of the United States House of Representatives and the Committee on Energy and Natural Resources of the United States Senate, a general management plan for the identification, research, and protection of the park, pursuant to the provisions of subsection (12xb) of the Act of August 18, 1970, to be developed by the Director, National Park Service, in consultation with the Directors, Bureau of Land Management and Bureau of Indian Affairs and the Governor, State of New Mexico, and a joint management plan for the identification, research, and protection of the archeological protection sites, to be developed by the Director, National Park Service, in consultation and concurrence with the Directors, Bureau of Land Management and Bureau of Indian Affairs, and the Governor, State of New Mexico.

16 USC 410ii-6.

Plan, submittal
to congressional
committees

SEC. 507. (a) Consistent with and in furtherance of the purposes of the Division of Cultural Research 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. The Secretary shall submit in writing within six months of the effective date of this section, to the Committee on Interior and Insular Affairs of the United States House of Representatives and the Committee on Energy and Natural Resources of the United States Senate, a plan for the continued operational program of the Division. The Secretary is authorized and encouraged to establish a committee composed of professional archeologists and others with related professional expertise including the designee of the Governor of the State of New Mexico to advise the Secretary in matters related to the surveying, excavation, curation, interpretation, protection, and management of the cultural resources of the historical park and archeological protection sites.

Computer-
generated data
base,
development

(b) The Secretary shall, through the Division of Cultural Research of the Southwest Cultural Resources Center of the National Park Service, 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.

(c) The head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking with respect to the lands and waters in the archeological protection sites, and the head of any Federal agency having authority to license or permit any undertaking with respect to such lands and waters, shall prior to the approval of the expenditure of any Federal funds on such undertaking, or prior to the issuance of any license or permit, as the case may be, afford the Secretary a reasonable opportunity to comment in writing with regard to such undertaking and its effect upon such sites, and shall give due consideration to any comments made by the Secretary and to the effect of such undertaking on the purposes for which such sites are established.

SEC. 538. Effective October 1, 1981, there are authorized to be appropriated such sums as may be necessary to carry out the provisions of this title but not to exceed \$11,000,000 for acquisition and \$500,000 for development.

Appropriation
authorization.
16 USC 410ii-7.

APPENDIX B

THE CHACO CULTURE ARCHAEOLOGICAL PROTECTION ACT MUDDY WATER PROTECTION SITE ARCHEOLOGICAL RECONNAISSANCE

An Unpublished Record Compiled by the National Park Service
for the Chaco Interagency Planning Group

by Robert Powers (1981)

DESCRIPTION AND ANALYSIS

Muddy Water is a 1200-acre archeological protection site on the northern margin of Lobo Mesa 3 mi northwest of Crownpoint and about 25 mi southwest of Chaco Culture National Historical Park. The site contains two separate parcels: one along a ridge west of the Crownpoint-Coyote Canyon Highway, the other a mile east of the first on the north and south sides of the highway. The archeological protection area includes approximately 125 Chacoan sites located in two separate concentrations. Ranging in date from Basketmaker III to early Pueblo III (AD 500-1175), the majority of sites are small houses (habitation sites), with a smaller number of field-houses and other special-use sites. The most prominent buildings within the area are three Chacoan structures; the largest is Hurley Ruin, which is two stories high with an estimated 25 rooms and two kivas. A great kiva is located southwest of Hurley Ruin. A prehistoric road links Muddy Water with Kin Ya'a and the Southwest Road system. Muddy Water has been nominated to the National Register of Historic Places.

The site lies in a rapidly developing area (just west of Crownpoint) that has traditionally been used for agricultural purposes but is currently undergoing municipal growth and intensive mineral development. There are scattered ranch buildings and homesites in the vicinity, and the site is crisscrossed with roads and telephone lines. A uranium leaching test program was recently completed on the property, and full uranium development is now proposed.

The natural setting of the Muddy Water site is a northeast/southwest-trending ridge that originates at the base of Lobo Mesa. The drainages flanking this ridge form the headwaters of an unnamed tributary of Indian Creek. The ruins in the western parcel are concentrated along a distinct ridge formation, with scattered features in the valley bottom. Ruins in the eastern parcel are distributed across a low rolling ridge formation and along a dry wash. Vegetation consists of grassland interspersed with snakeweed, saltbush, and greasewood. Scattered stands of pinyon/juniper occur to the southwest at the base of Lobo Mesa.

There is no visitor use at Muddy Water at present, and the site's interpretive value is considered low. Although the ruins are important for research purposes, most of them are reduced (collapsed) and provide few distinctive features and minimal aesthetic interest for the general public.

The entire protection site (see Muddy Water map 1) is Indian allotment land, with the title held in trust by the United States for individual allottees. There are 12 separate allottees with lands in the area (see Muddy Water map 2 for allottee numbers and locations of parcels). The site also contains four range units that are part of Navajo tribal ranches. Thirteen permits have been issued for these four range units (see Muddy Water map 3).

Mineral rights are owned by the individual allottees except for sections 14 and 16 where the United States has retained the coal rights (see Muddy Water map 4). Mobil Oil Corporation currently has all 1,210 acres under lease for uranium mining. To date, Mobil has done an exemplary job of working closely with the BIA and NPS to protect the known cultural resources within the protection site. Muddy Water lies within the Crownpoint KRCRA (Known Recoverable Coal Resource Area) and federal coal leasing is possible in the near future. Some coal mining has historically taken place in the area.

Most of the Muddy Water site will be affected by the development of uranium reserves. Mobil's successful test program for the in situ leaching of the ore has encouraged the company to proceed with full development of its leases. Current market problems may temporarily slow development, but eventually the entire area will likely be developed.

ALTERNATIVES AND IMPACTS

Alternative I -- Deauthorization

Under this alternative the interagency management team would recommend to Congress that Muddy Water be removed from archeological protection status under section 502(b) of PL 96-550. The entire site would then remain in private ownership.

The management team does not recommend deauthorization for the site because of its scientific value, in particular the concentration of Chacoan ruins with distinctive kivas, masonry, middens, and associated features.

Alternative II -- Preservation and Research

Under this alternative Muddy Water would be maintained as an archeological protection site, and its resources would be preserved and studied. As the result of recent boundary reconnaissance, the team recommends that two acres within the Muddy Water protection site be deleted from protection site status. These include the NW 1/4 of the SW 1/2 of Section 16 and the E 1/2 of the NE 1/4 of Section 23. No archeological sites are present in these acres. Access for managers and researchers would continue to be along existing access roads, pending determination of ownership and implementation of a cooperative agreement, but no attempt would be made to improve the roads, and the site would not be open for any type of public use or interpretation.

No stabilization is presently required.

Because Mobil Oil was granted permits before enactment of PL 96-550, current management and protection of Muddy Water falls under an agreement implemented specifically for that site. This agreement would be maintained under alternative II, but would not necessarily be considered precedent-setting for future mineral proposals at this or other archeological protection sites. All future requests and plans for active development of mineral leases and mining claims would be required to comply with the approved interim guidelines of the interagency management team. Following approval of the joint management plan called for in the enabling law, all activities would have to be consistent with the management objectives and guidelines in that plan.

About 26 separate cooperative agreements would be required to ensure adequate protection and management of the cultural resources at the site. Agreements would first be established between the interagency management team and the 12 allottees (through the BIA), then between the interagency management team and the 13 permittees for the four range units. The agreement with Mobil Oil would also be finalized to cover future operations. Given the history of Mobil's cooperative efforts in protecting cultural resources, this agreement would undoubtedly serve only

to document their past procedures, allowing them to proceed with scheduled mineral development.

LAND OWNERSHIP

Available Information

Entire site is allotment land, with title held in trust by the U.S. government for individual allottees; 12 allottees are involved (see map 2).

Mineral rights also held in trust for the individual allottees, except for portions of sections 14 and 16 where coal rights have been reserved by the U.S. (see map 4).

Three residential leases have been issued for 1-acre parcels in sections 14 (Betty Craig), 16 (Francis Nez), and 23 (Christine Perry).

Twelve separate mining leases have been issued by the BIA to Mobil Oil Corporation as follows:

- SE 1/4 section 11 -- mining lease 4494, 160 acres
- NW 1/4 section 13 -- mining lease 4947, 160 acres
- NE 1/4 section 14 -- mining lease 4950, 160 acres
- NW 1/4 section 14 -- mining lease 4949, 160 acres
- SW 1/4 section 14 -- mining and surface leases 7457 and 7457A, 160 acres
- NW 1/4 section 15 -- mining lease 8364, 160 acres
- NE 1/4 section 16 -- mining lease 8362, 160 acres
- NW 1/4 section 16 -- mining lease 8367, 160 acres
- SE 1/4 section 16 -- mining and surface leases 7452 and 7452A, 160 acres
- SW 1/4 section 16 -- mining lease 8366, 160 acres
- NE 1/4 section 23 -- mining lease 7458, 160 acres
- NW 1/4 section 23 -- mining lease 7482, 160 acres

Highway right-of-way (BIA highway N9) affects portions of the SW 1/4 of section 14.

Powerline right-of-way held by Continental Divide Electric Cooperative affects portions of the same SW 1/4 of section 14.

Four separate range units belonging to Navajo tribal ranches overlie the protection site (see map 3).

Additional Needs

Names of grazing permittees for range unit 50 (Navajo tribe).

Individual copies of mining leases (if different); this could affect future cooperative agreements.

RESEARCH

History and Available Information

Most of the ruins recorded fairly recently (as a result of energy development proposals), some by several archeologists; most comprehensive reports: Marshall et al. (1979) and Davis (1971,

1976); no major excavations known; salvage of small sites along BIA highway N9 before its construction; surface artifact collections (by Davis) curated at Navajo Tribal Museum, Window Rock, Arizona; surrounding area traditionally used by the Navajo for farming (Fransted 1979).

Aerial photos (1:3000) available for portions of site.

Additional Needs

Aerial photos for remainder of site.

MUDDY WATER

Location: T 17 N, R 13 W, Sec. 16, NE 1/4; SE 1/4 of NW 1/4; N 1/2 of S 1/2
Sec. 15, W 1/2 of NW 1/4
Sec. 14, N 1/2; SW 1/4
Sec. 23, E 1/2 of E 1/2 of NW 1/4; NE 1/4
Sec. 13, W 1/2 of NW 1/4
Sec. 11, S 1/2 of S 1/2 of SW 1/4 of SE 1/4

Total acreage: 1210 acres

Topo quad: Crownpoint

For further information contact: BIA

National Register Status: Nomination pending

Known archeological sites: 120+

SUMMARY OF IMPACTS

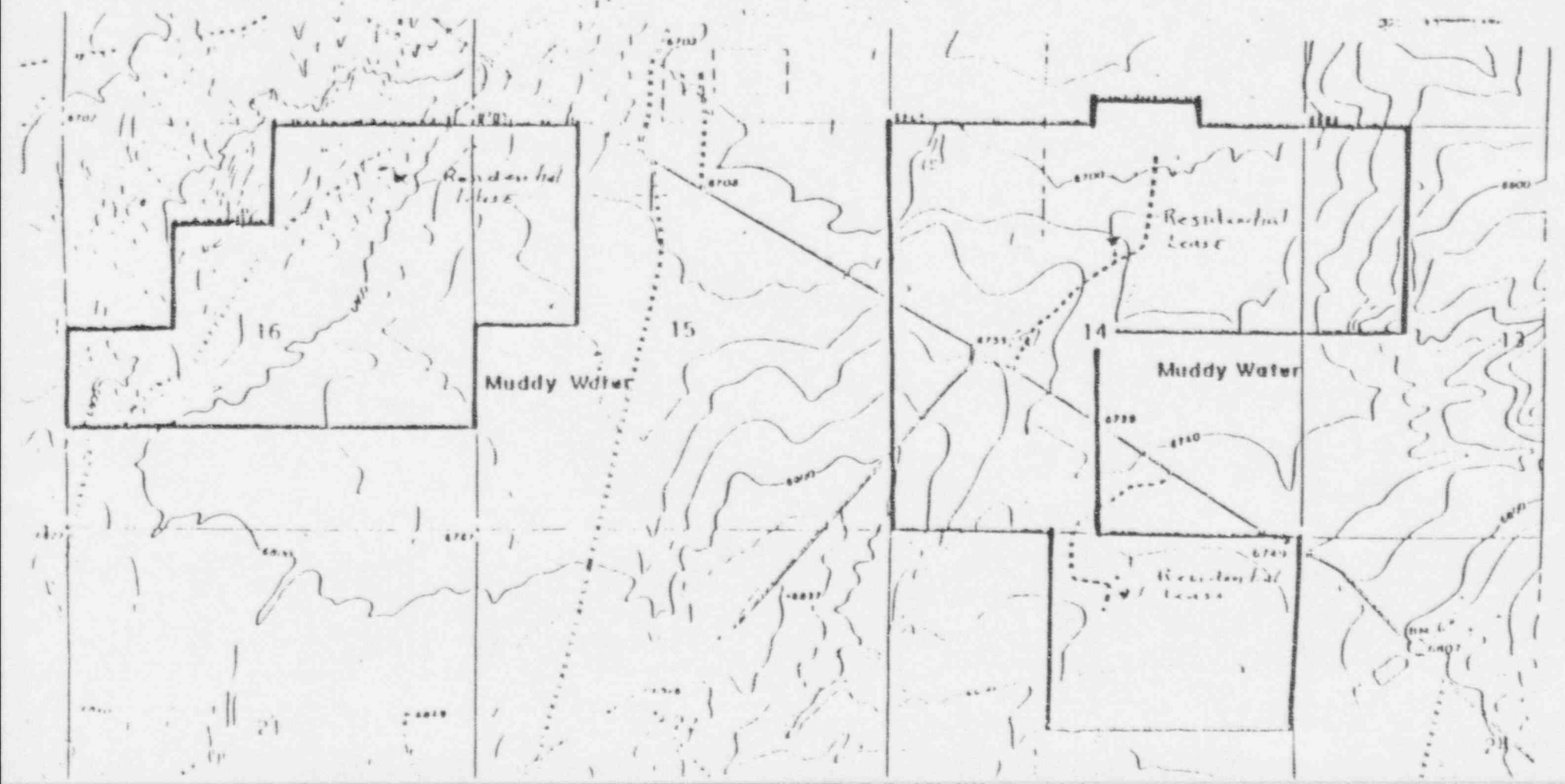
	Cultural Resources	Natural Resources	Land Use and Management
Alternative I - Deauthorization	Protection and management of archaeological resources under procedures established by the BIA, but continued potential for disturbance or destruction because of erosion and reduction in archaeological research and related preservation efforts, possible loss of valuable scientific data concerning our cultural heritage, potential for disturbance because of mineral development	Some degradation of natural environment because of surrounding land use, potential for additional disturbance because of mineral development	Elimination of protection status and federal funding authorization, probable continuation of existing ownership and management, continuing shift in land use from agriculture (grazing) to mineral development
Alternative II - Preservation and Research	Increased protection of site resources because of legal stipulations, research and stabilization efforts, and cooperative agreements, increased knowledge and data concerning our cultural heritage, reduction or elimination of potential for resource disturbance associated with mineral development	Some degradation of natural environment because of surrounding land use, reduction or elimination of potential for disturbance associated with mineral development	Maintenance of protection status and federal funding authorization, management and regulation of land use according to legal stipulations and cooperative agreements, encroachment of private property and mineral rights, potential for economic loss or additional costs associated with mineral development



O. QUAD: Crownpoint

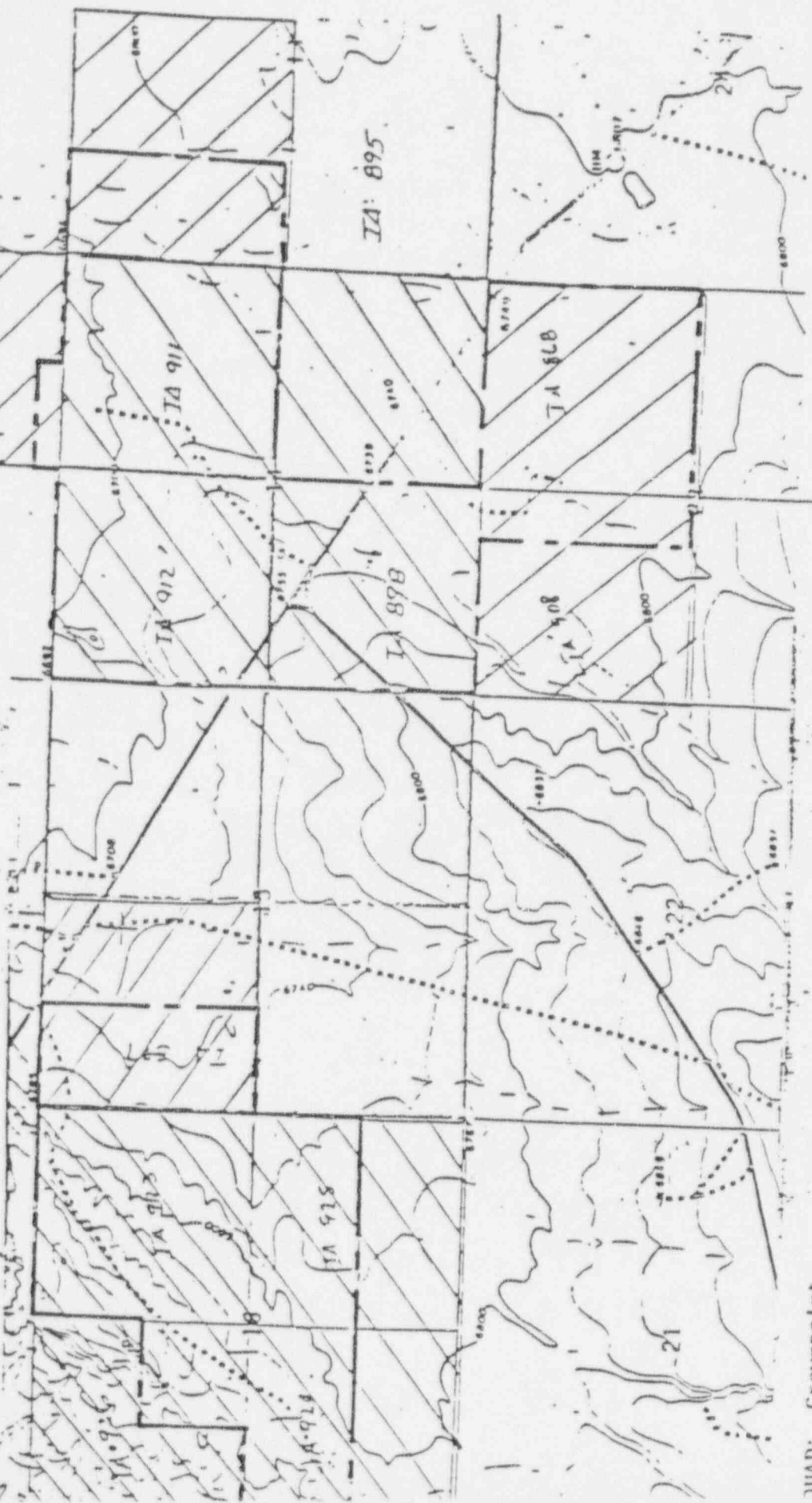
Muddy Water map 1

ATION: T.17N., R.13W., Sec. 16, NE $\frac{1}{4}$; SE $\frac{1}{4}$; NW $\frac{1}{4}$; N $\frac{1}{2}$ S $\frac{1}{2}$; Sec. 15, W $\frac{1}{2}$ NW $\frac{1}{4}$
 Sec. 14, N $\frac{1}{2}$; SW $\frac{1}{4}$; Sec. 23, E $\frac{1}{2}$ E $\frac{1}{2}$ NW $\frac{1}{4}$; NE $\frac{1}{4}$; Sec. 13, W $\frac{1}{2}$ NW $\frac{1}{4}$; Sec. 11, S $\frac{1}{2}$ S $\frac{1}{2}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$



PRIVATE (ALLOTTEE')

U.S. COAL ONLY - ALL OTHER MINERALS, ALLOTTEE'



QUAD: Crownpoint

01: T. 17N., R. 13W., Sec. 16, NE1/4, SE1/4, NW1/4, SW1/4; Sec. 15, NW1/4

Sec. 14, NW1/4, SW1/4; Sec. 23, E1/4NW1/4, NE1/4; Sec. 11, SW1/4SW1/4SE1/4

SHEDDY WATER - Map 0-4

- Unit #43 permittee's
Atty Craig
Leonard Wood

- Range Unit #50 permittee's

Mae Nez

? Nez

?

- Range Unit #52 permittee's

Harry B. Arviso

Art Arviso

Wilson Arviso

Tommy Arviso

Leonard Arviso

Mr. Mrs. Edward Teosie

RANGE UNIT #50

RANGE UNIT #43

RANGE UNIT #63

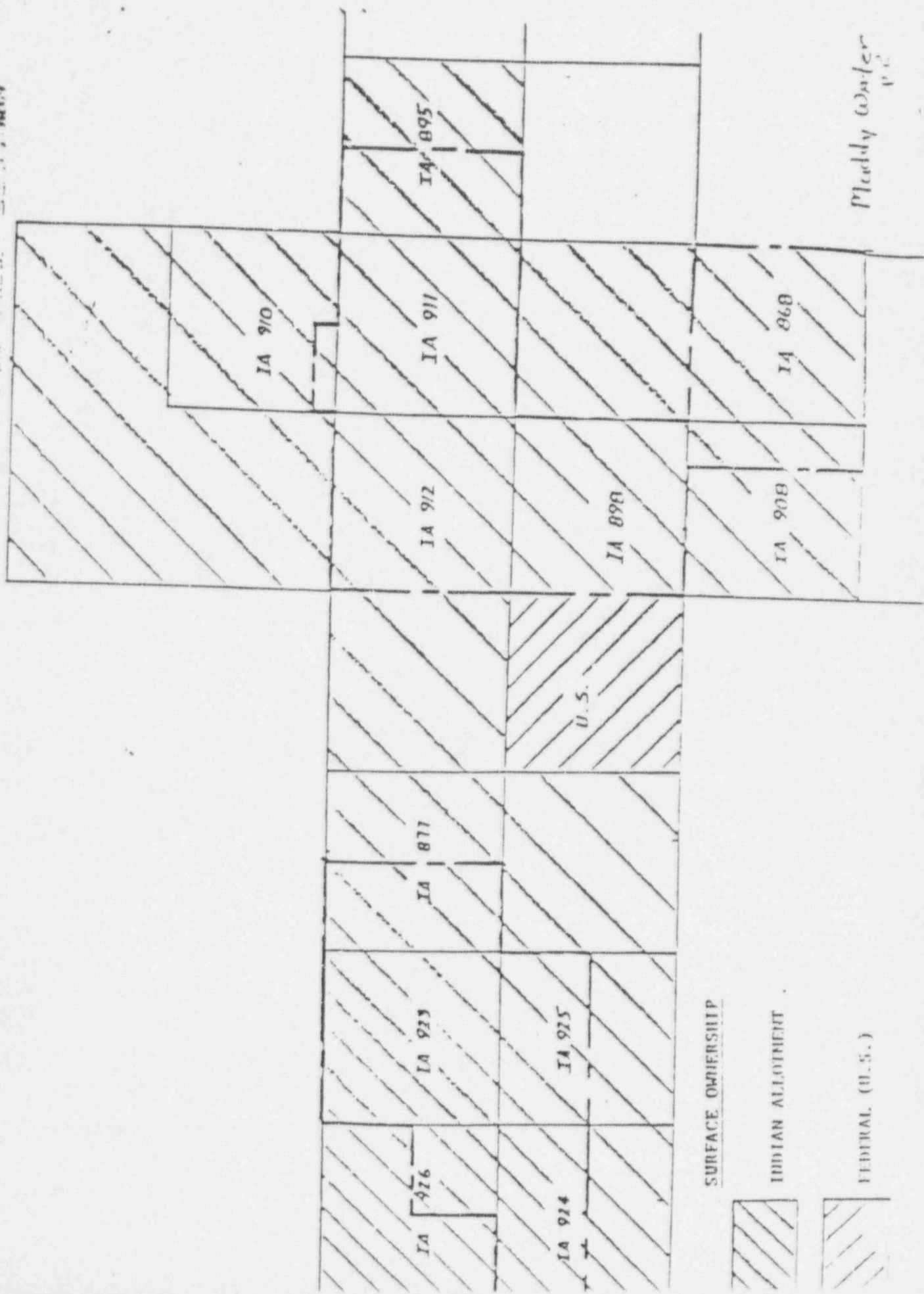
RANGE UNIT #52

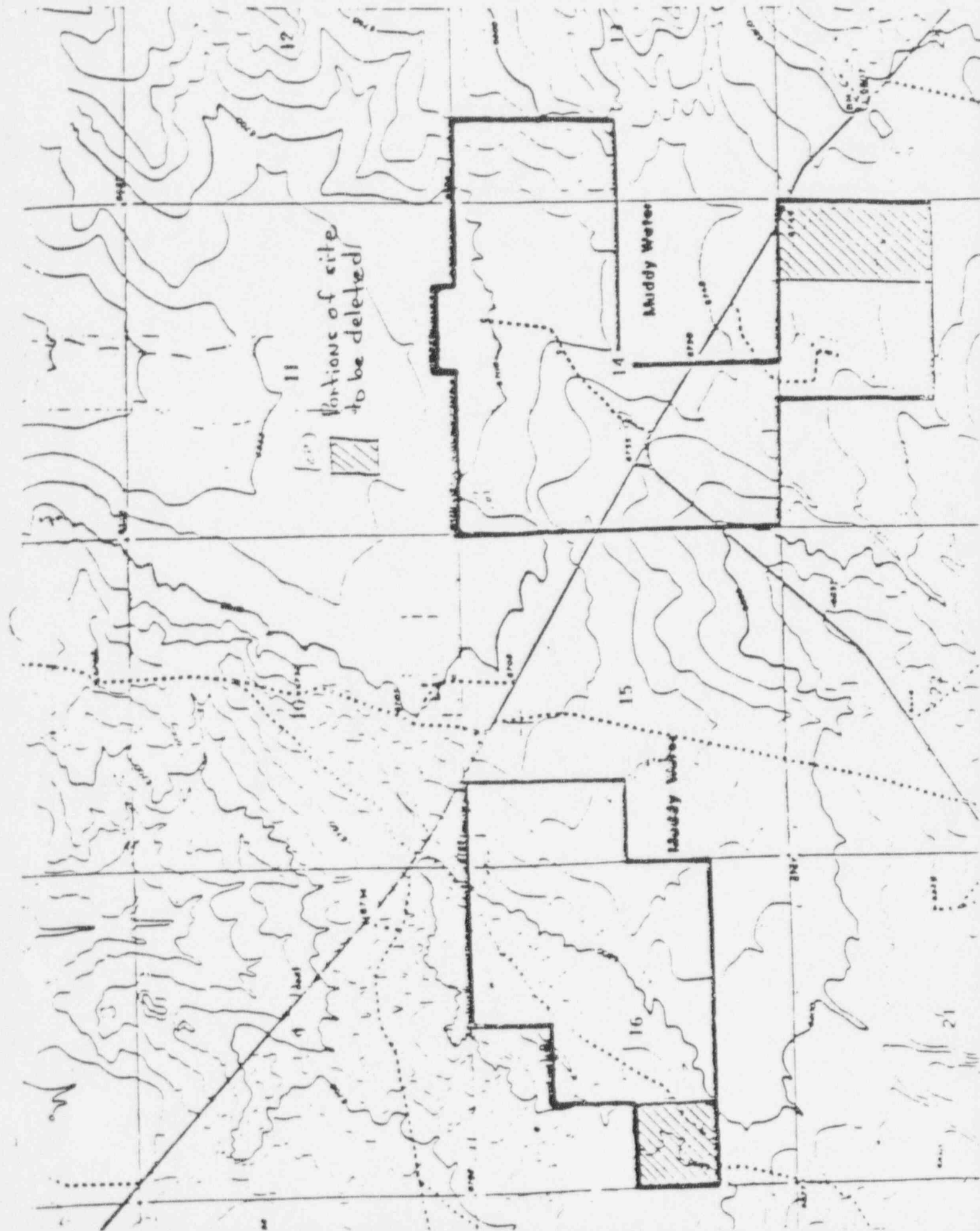
- Range Unit #63 permittee's

Joe Hescal

Fannie Wilson

Muddy Water
map 3





APPENDIX C

PROCEDURAL SEQUENCE FOR THE HYDRO RESOURCES, INC.

CROWNPOINT UNIT NO. 1 CULTURAL RESOURCE MANAGEMENT PLAN

- I. Complete a cultural resources environmental assessment and proposed culture resource management plan (this document).
- II. Submit assessment and cultural resource management plan to the Bureau of Indian Affairs and Navajo Nation Historic Preservation Department.
- III. Respond to comments by BIA and Navajo Nation Historic Preservation Department and revise Management Plan, if required.
- IV. Request permit to conduct cultural resources inventory and sacred-traditional site inquiry.
- V. Complete Class III cultural resources inventory and sacred-traditional site inquiry for the Unit No. 1 lease area. Document all cultural resources in the area and establish specific resource boundaries.
- VI. Prepare a cultural resources survey report following "Interim Fieldwork and Report Standards and Guidelines" of the Navajo Nation Historic Preservation Department.

Evaluate all cultural resources with respect to National Register Significance (36 CFR 60.4), the Archaeological Resources Protection Act (43 CFR 7.3), and the American Indian Religious Freedom Act (P.L. 95-341). Also follow Navajo Nation Policy for the Protection of Traditional Cultural Properties (1990) and the National Register Bulletin No. 38 (1990) entitled "Guidelines for Evaluating and Documenting Traditional Cultural Properties."

Develop specific treatment for the management-avoidance plan.
- VII. Submit cultural resources report and management recommendations to the BIA-Navajo Nation for review and request permit for project clearance-approval to begin construction. Respond to comments or requests for revision.
- VIII. Following Navajo Nation and Bureau of Indian Affairs approval, survey boundaries of lease, well pads, access roads, and pipelines and verify via archaeological survey that these areas are outside all protection zones. Complete archaeological testing in all areas of proposed subsurface disturbance to determine if buried or concealed cultural resources are present. If buried resources are found, avoid or develop mitigation plan, under consultation with the Navajo Nation Historic Preservation Department.
- IX. Brief all construction personnel and workers in the HRI lease area regarding the cultural resource protection plan and avoidance areas. Monitor, at intervals, all construction and development within the lease area. Compile a report on the monitoring program after the major development phase and submit to Navajo Nation Historic Preservation Department.
- X. Develop cultural resource management plans for continued maintenance and occasional development and submit to Navajo Nation Historic Preservation Division for clearance. Monitor, at intervals, all reclamation activities.

