



Photograph by Emily Yazzie

# 1. INTRODUCTION

## Purpose

The purpose of the *Community Based Land Plan* is first and satisfies the certification process under the Local Governance Act of 1998, as amended, (LGA) and moves the Coalmine Canyon Chapter (hereafter referred to as the Chapter) closer to self-determination and self-sufficiency. Second, it binds the Chapter and its membership to a plan that guides the community's future growth and stability. It incorporates the traditions and customs of the past and puts into writing the community's vision of the future, mission, guiding principles, goals and objectives (as articulated by the community members) necessary to make this plan a reality.

The *Community Based Land Use Plan* is an official public document approved by the Community Land Use Planning Committee (CLUPC), adopted by the Chapter membership and forwarded to the Resource & Development Committee (RDC) through a CLUPC Resolution and Chapter Resolution CCC-07-0155-16 , respectively (copies of the resolution are inserted at the ending of the document.) It serves as a guide for future land use development and provides a foundation for zoning ordinances. The plan allows the Chapter to evaluate land use development while balancing the needs of cultural traditions and utilization of limited natural resources. The Chapter recognizes that to attract new residents as well as

business and job growth in today's economy; perseverance and a solid land development plan are needed. Equally important to the success of a land use plan is the Chapter membership's commitment and participation. Such a plan is provided here that directly reflects the effort of the Chapter and its members to come together and voice their wants, needs and desires for a better future.



Photo by Christian Gillwood

## Vision

The Blessing Way Ceremony as foundation provides guidance to help community members within the Navajo Nation have a vision of the future. Similarly as the Chapter builds on this tradition, it values the ceremony and further builds a vision that incorporates certain appropriate contemporary western concepts as it moves forward.

Elders and the youth remind community members of the importance of having a vision and that Nahata' or planning helps the community achieve its vision for future generations. Indeed, elders see the results of past planning in the results of today. By setting out a vision now, current and future generations can be active participants to bring that vision into focus while accomplishing the Chapter's mission.

People within the community have endured, and now they have foresight for appropriate planning with a focus on local empowerment and a determination to decentralize government. Applied land use and sovereignty exist only when "owned" by the people within the Chapter and the Navajo Nation. Intermediate and long-range resource management is the key to sustainable communities.

The forward-looking tone of this community's plan demonstrates the Community's willingness to heal, resilience and the traditional holistic worldview of Sa'ah Naghi Bekeh Hozhoon. The Chapter community members intend to rebuild the community and heal psychologically and sociologically.

Today, the people of the Chapter and the Navajo Nation walk into the future with a more assured outlook and a more assertive claim to that future and its potential opportunities.

Thus, the Chapter envisions a community where its people can live and prosper in a safe and self-sustaining environment with a growing, balanced, and diversified economy that prudently utilizes its natural and cultural resources which enhances employment opportunities and provide the quality of life.

## Mission

The Chapter's mission is to provide a local land use guide for community growth and development so that families and business establishments can live in harmony with the natural, cultural and social characteristics of the surroundings within a sustainable economically progressive environment.

## Guiding Principles

The planning principles represent the overall framework for developing, interpreting and implementing the Chapter's *Community Based Land Use Plan*. The following guidelines represent the essence of the planning principles to be used.

- Land use planning and development shall be carried out within applicable common standards for land use development and adherence to all applicable laws, mandates, rules and regulations.
- Land use planning and development processes shall provide opportunities encourage public and community participation.
- Land use planning and development processes shall promote coordination among the various programs and organizations to ensure and maximize regional resources.
- Land use planning and development shall preserve natural treasures and cultural resources.
- Land use planning and development processes shall promote awareness and protection of traditionally sensitive areas and sacred sites.
- Land use planning and development shall promote adequate and safe housing that recognizes uniqueness, special needs, affordability and quality that meet current and future housing needs while also encouraging home ownership.

- Land use planning and development processes shall promote the development and/or expansion of community facilities and service that will meet projected future needs.
- Land use planning and development shall provide a variety of transportation modes for both pedestrian and vehicular traffic while specifically keeping in mind the need for emergency access.
- Land use planning and development for infrastructure shall strive to meet the current and future needs of the community while not impeding the capacity of the community
- Land use planning and development shall promote economic development that will create and sustain jobs which will contribute to the tax base.
- Land use planning and development shall promote tourism and outdoor recreation as a method of sharing local tradition and customs while strengthening the local economic base.
- Land use planning and development will provide opportunity to establish emergency and law enforcement services for a safe community.
- Land use planning and development processes shall address land use disputes first at the level by the Chapter Grazing Official and/ or Chapter Officials before they are presented to the District Grazing Committee or other jurisdiction.
- The central government will adhere to local governance development plan and allocate development funds accordingly.





Photo by Craig Gillwood

## Authority

Under the Local Governance Act of 1998, greater responsibility for land use development is given to local government. As amended in 2001. The law provides the opportunity to develop community based land use plans by chapters who administer their own land. Section 2004, Part B, C, and D & E of the LGA delineate the requirements of a *Community Based Land Use Plan*. The law requires that the public participate in the development, review and approval of the *Community Based Land Use Plan*. Appendices A, B and C provide a detailed description of the plan's development the Community Education and Participation Plan which presents a documented time line for the various public workshops and meetings held by the Community Land Use Planning Committee and the Chapter.

Based on the LGA, the community based land use plan shall project future community land needs shown by location and extent of the area identified for residential, commercial, industrial, and public purposes. The land use land plan shall be based upon the guiding principles and vision as articulated by the community along with information revealed in inventories and assessments of the natural, cultural, human resources and community infrastructure. Finally, with consideration for the land-carrying capacity, such a plan may also include evaluations of open space, thoroughfare and community facilities.



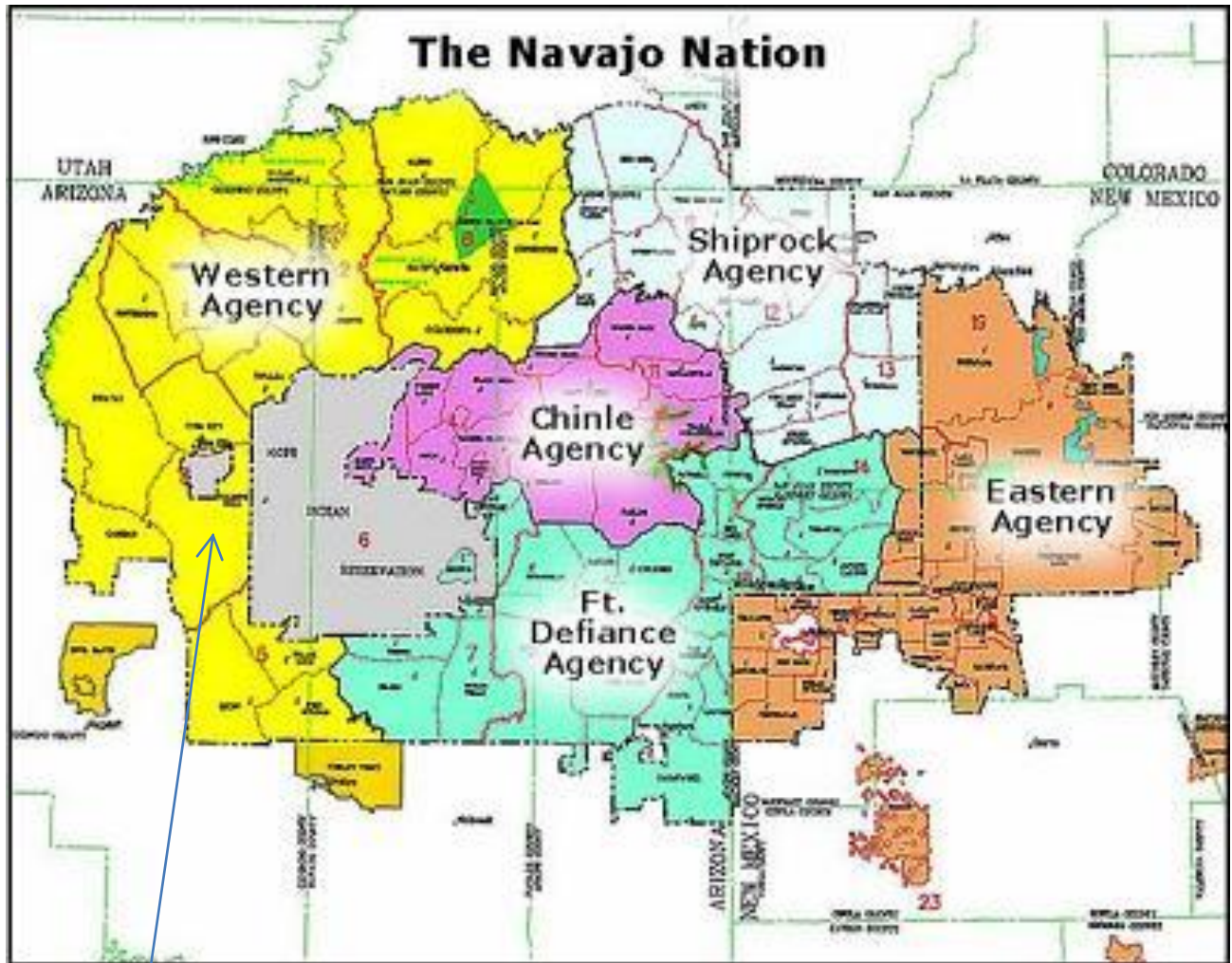
Photo By Christian Gillwood

## 2. COMMUNITY SETTINGS

### LOCATION

The community of Coalmine Canyon is known as Tsé Kô Hásání, the Coalmine Canyon Chapter located in the southwest part of the Navajo Nation approximately 17 miles east of Tuba City along Highway 264 in North Central Arizona (FIGURE 1). It is also in the central eastern portion of Coconino County Arizona. Tolani Lake is to the southeast. Leupp is to the south. Wupatki National Monument is adjacent to the Chapter's southwestern boundary. Cameron is roughly 25 miles to the southwest although no direct transportation routes exist. Bodaway Gap is to the west. The Former Joint Use Area (FJUA), now known as the Hopi Partitioned Land (HPL), is located to the east. The Chapter is also part of the Western Navajo Agency and is bounded by the Bureau of Indian Affairs (BIA) Grazing District 3, Range Unit (Grazing District 3-1).

**FIGURE 1. Chapter Location**



Coalmine Canyon  
Chapter





Photo by Craig Gillwood

## Grazing District

Over the years, the Chapter has used much of its lands for grazing. While sheep and other animals know no boundaries. Certain boundaries have been established throughout the years, particularly with a focus of avoiding overgrazing.

To this end, the Navajo Nation grazing district lines started back in 1936 for grazing livestock on the Navajo Reservation. The Bureau of Land Management (BLM) and the Bureau of Indian Affairs (BIA) conducted soil and range inventories to determine animal unit capacities. Between 1937 and 1938, grazing permits were issued based on sheep units.

In 2016, a total of 2,620 grazing permits (not including Navajo Partitioned Lands) were in place throughout the Navajo Western Agency with a total of 137,142 designated sheep units.

**Table 1– Western Agency Land Management District Grazing, Farms, & Land Base**

<b>Land Management District</b>	<b># of Grazing Permits</b>	<b># of Sheep Units</b>	<b>Current Range Inventory Data Carrying Capacity Adjusted</b>	<b>Grazeable Acres</b>
<b>1</b>	535	26,716	6,502.5	833,625
<b>2</b>	365	17,177	2,658.4	919,603
<b>3</b>	661	40,601	16,857.1	1,426,447
<b>5</b>	353	22,290	7,006.0	616,105
<b>8</b>	706	30,358	1,956.6	1,418,328
<b>Total</b>	2,620	137,142	34,980.6	5,214,108

Data provided by Navajo Nation Western Regional BIA Office, Tuba City, Arizona, August 2016.

As these agencies performed their studies, they also kept track of research areas with that they called grazing district lines that were based on natural topography such as mountain ranges and washes.

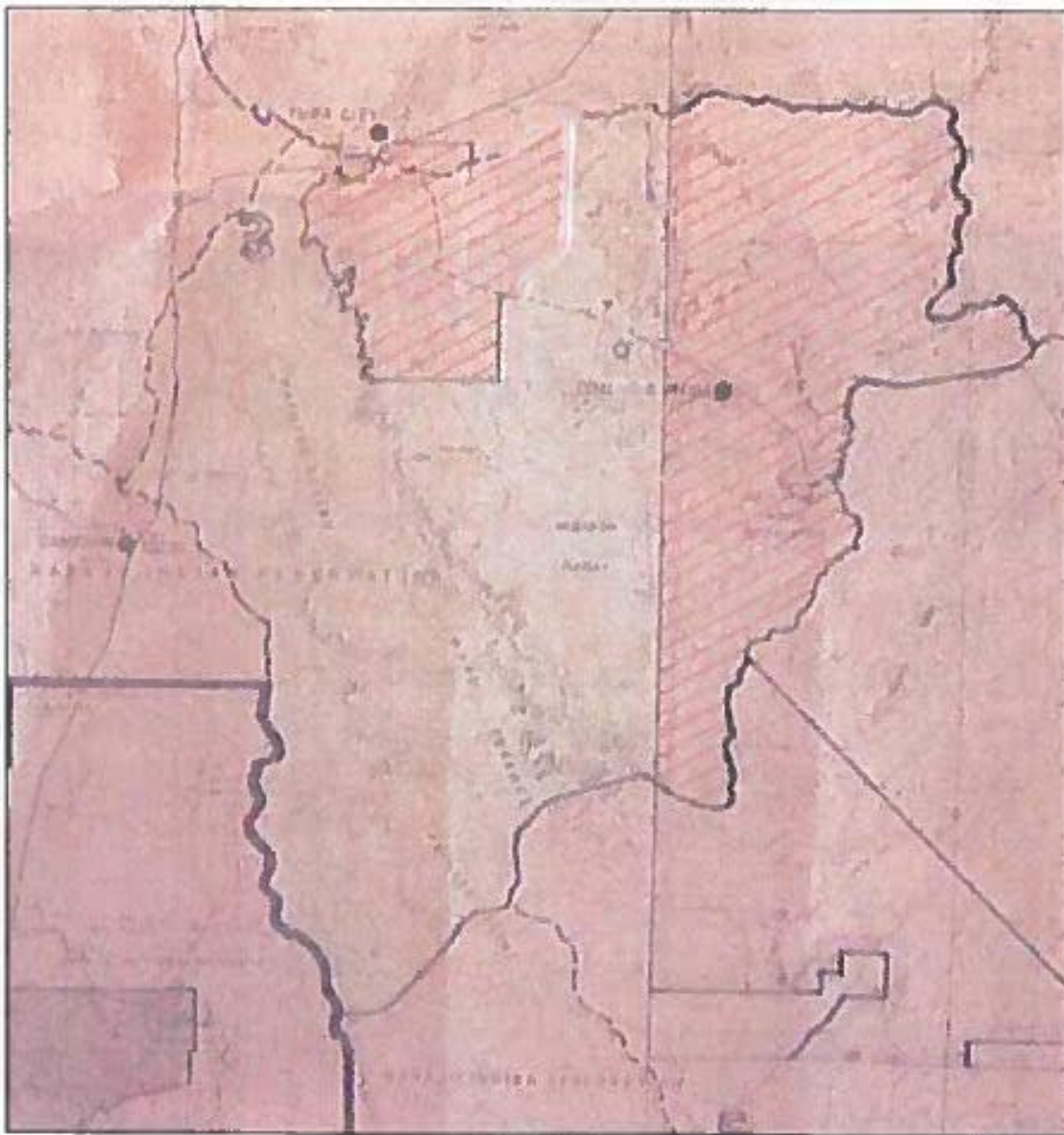
The Chapter is in Grazing District 3-1 which within the Tuba City Western Agency. According to BIA records, there were 165 grazing permittees in Grazing District 3-1 in 1940. Currently, there are 82 permittees within grazing district 3-1.



## Original Land Use Area

The life and tradition of the Coalmine Canyon people are unique among the Navajos. Historically, nomadic people moved around within the area ranging from the top of Coalmine Mesa down Kerley Valley and Gray Mountain. The Bureau of Indian Affairs drew grazing districts to define topography that reflected the cultural traditions of Coalmine Canyon's people and set aside certain areas for the community. The BIA's intention was to facilitate cultural continuity within Coalmine Canyon and keep families together.

**FIGURE 2** illustrated the original Chapter land use area, which also is the Grazing District 3-1



## Present Land Use Area

Over many years, the Hopi Tribe's concerns regarding land status brought the land use into dispute. Through much negotiation, public laws, and ultimately a court decision, a settlement was enacted whereby some 40,000 acres in the northeastern part of the original land use area were set aside for the Hopis to use. The Navajo-Hopi Land Settlement Act of 1974 (PL93-531) more formerly set aside the eastern part of the original Chapter lands, those lying within the 1882 Executive Order Reservation (EOR) area, for the Hopi Tribe. The Bennett Freeze Act of 1966 "lifted" in 2009 by the Obama Administration allowing opportunity to rebuild the Coalmine Canyon community.

## Planning Area

The grazing district lines have had many uses over the years. The natural boundaries are not legally surveyed and are generally based on natural topography such as mountain ranges and washes. Until the Navajo Nation establishes legal chapter boundaries, chapters jurisdiction within the Grazing District 3-1.

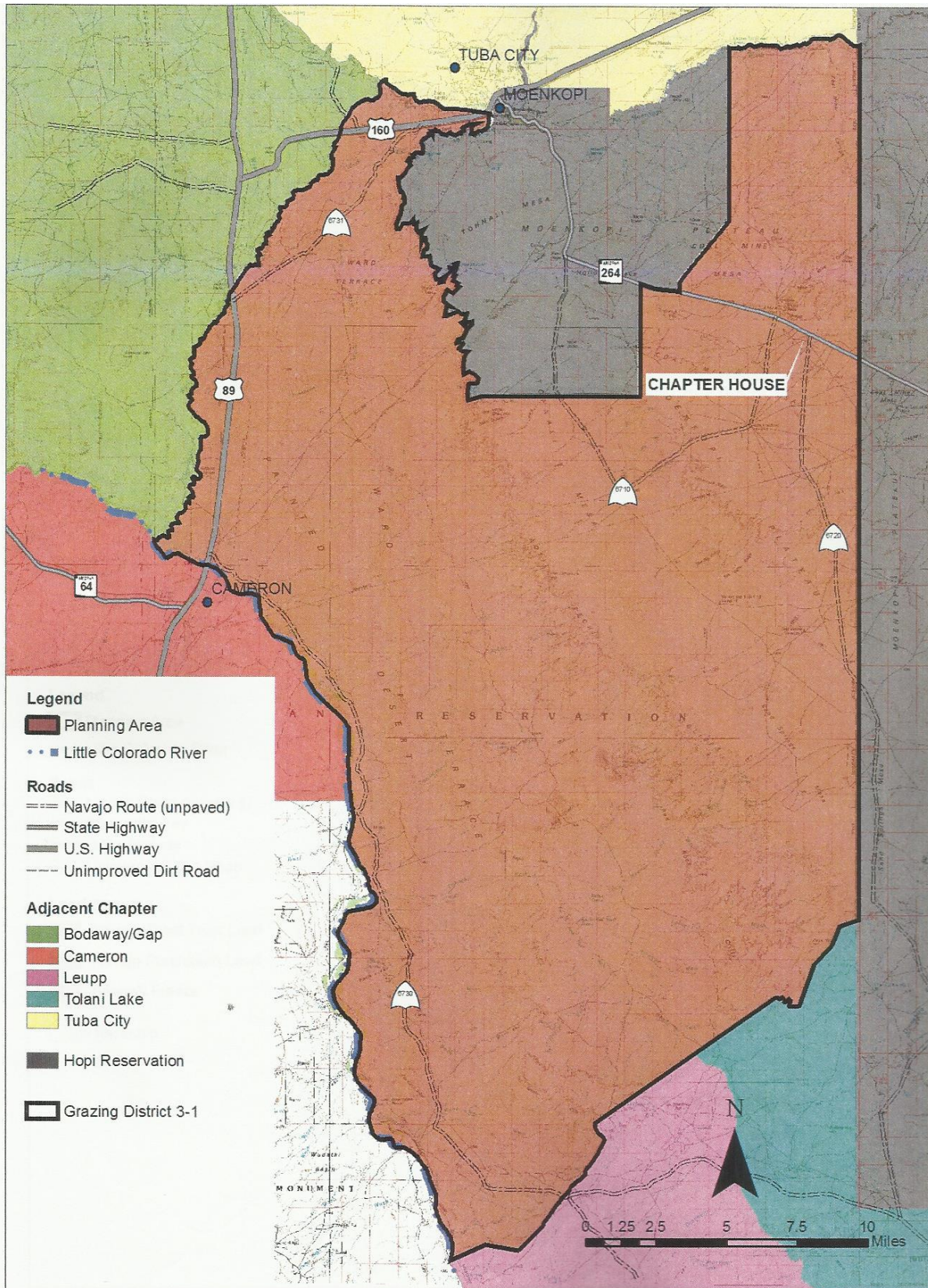
The Chapter Community members identified the planning area based on the grazing district lines established. As referenced above, the BLM established these boundaries while conducting soil and range inventories to determine animal and thereafter referred to them during their research as Grazing District Lines. Though not legally surveyed for the purposes of this document, the Grazing District 3-1 shown in **FIGURE 3** is referred to as the Coalmine Canyon Chapter planning area.

## Land Status

The chapter boundary is determined by land status. The planning area is wholly within the 1934 Reservation. The 1934 Reservation lands is part of the acquisition by the Navajo Nation under the Executive Order of January 8, 1900 and later subject to the Bennett Freeze Act of 1966. The Area is referred to as the Former Bennett Freeze Area lands, in which the Chapter lies, is defined by extending the northern and southern boundaries of the 1882 Executive Order Reservation (EOR) to the western boundary of the Navajo reservation.



**FIGURE 3. Planning Area**







Family of Hosteen Manygoats(Back row with hat & glasses) & Amosa Bighorse Manygoats (Far left)

### 3. BRIEF CHAPTER HISTORY

In 1953, the first chapter house was constructed of cinderblock, located on Coalmine Mesa. Although small, this building accommodated meetings for the local community members until a larger chapter house was built in 1958. During that period, there were no signs of potential land controversy. People were at peace; they had quality livestock that met their lifestyle and subsistence needs. Planning of activities and development during earlier years was a much simpler proposition as there were fewer concerns with government regulations or land use areas.

However, by 1974, certain, land use controversies occurred and the United States Congress passed the *Navajo and Hopi Land Settlement Act of 1974*, Public Law 93-531, as amended. From that time, it was necessary to obtain approvals from the Hopi Tribal due to requirement of this law for all land uses.

Public Law 93-531 had a significant ongoing psychological, sociological and physiological impact on the Navajo people of the Coalmine Canyon region because many Navajo families lived on lands partitioned to the Hopi Tribe within what was considered the Coalmine Mesa Chapter. Due to this legislation, many community members were forcibly evicted thereby had to be relocated to

Coalmine Canyon, New Lands or elsewhere, although a few Navajo people remained in the Hopi Partitioned Land under a residential lease agreement with the Hopi Tribe.

When the community moved the Chapter from Coalmine Mesa to Coalmine Canyon, the Chapter officially changed its name from Coalmine Mesa Chapter to the Coalmine Canyon Chapter per resolution number CMC06-45-98 dated June 7, 1998.

Further, the Bennett Freeze Act of 1966 continued to complicate the land dispute. The 1934 Reservation litigation case, which covers all of the planning area west of the Former Joint Use Area, had prevented development and progress since 1966, with the exception of the short window whereby the construction was authorized from 1992 to 1995.

The Bennett Freeze was vigorously enforced by BIA Hopi Law Enforcement. The law severely restricted and prohibited the completion basic repairs (broken windows and leaky roofs) to Navajo family homes in the areas. The Bennett Freeze caused growing families to live in overcrowded dilapidated housing conditions which increased health and safety problems. The construction restrictions also severely retarded opportunities for economic self-sufficiency for the Chapter.

Since the passage of the Navajo Hopi Land Settlement Act of 1974, the impact of the Bennett Freeze curtailed development on the Chapter's land within the FJUA and the 1934 Reservation, the Chapter has struggled to rebuild its community in and outside the disputed areas.

The Bennett Freeze Act of 1966 was "lifted" by the Obama Administration in 2009 resulting in the community's rebuilding and healing from the impact of both the Bennett Freeze and Relocation. The chapter house has been relocated utilizing funds from ONHIR. where it now holds regular meetings. Indeed, success has been realized to some extent with the construction of a large residential development, the new chapter house, electric lines, and a waterline service to homes near the chapter house.





Photo by Joyceline Wero

While a brief summary of the Chapter's history is chronicled below, **TABLE 2** below details past events and captures a more complete account of the significant historical events that have contributed a making of modern day life of the Coalmine Canyon community.

<b>Table 2. Significant Historical Event 1900-2016</b>	
<b>Time</b>	<b>Event</b>
Early Use	Movement to areas the Long Walk
1930's	<p>Livestock is basis of livelihood</p> <p>1930 conservation program initiated</p> <p>Districting by the federal government as part of land management</p> <p>Dist. 3-1. 637,582 acres (4536,292 after FJUA partition. 60,000 acres more after the 1992 decision)</p> <p>Largest Chapter. Why so large? People moved around all over on seasonal basis.</p> <p>Construction of Ram Pasture in 1937. Horseman directed project.</p> <p>The 1937 grazing allocation.</p>
1940's	<p>WWII: 17 veterans (Out of 109 total)</p> <p>Coalmine community started meetings at the Goldtooth Mission trading post. Mark Begay coordinator. Mtgs about 3 years. Mark Begay didn't want to meet there.</p> <p>Meetings moved to old site. A dug out site. Then decision to build chapter house.</p> <p>Division: Local group (Goldtooth &amp; Nez) v. Mark Begay &amp; Ned A. Hatathi group M. Begay Howell Mesa. Outvoted. Reason at old site: accessibility from directions. Other places: Blue Canyon, Goldtooth Mission. Controversy.</p>

1950's	<p>Mr. Chissie hired a Hopi to block lay work. Oct. Hogan built. First meetings there. Community planning began.</p> <p>Requested for a windmill by rodeo grounds Built. Old home nearby brought for \$71.00.</p> <p>Rodeo grounds est. Rodeo started.</p> <p>Chapter built 1953 at site. Other places: Blue Canyon, Goldtooth Mission.</p> <p>1955: 1 First Officers: Mark Begay, Sagani Bedoni Chissie and Judge Tillman Hadley.</p> <p>Grazing Official: Tom Paddock</p> <p>First council delegate: Dr. Ned A. Hatathli</p> <p>Q-Hut school built circa 1957. First Class</p> <p>1958: Larger replacement Chapter house constructed in 1958 w/tribal funds 2). Ram Pasture breeding program started</p>
1960's	<p>Healy v. Jones. (Reit. 1882 EOR/equal use)</p> <p>Coalmine Mesa Trading Post established</p> <p>The Bennett Freeze Act of 1966.</p> <p>Vietnam War Era: veterans</p>
1970's	<p>1972 court order freezing certain lands in the FJUA</p> <p>The Navajo-Hopi Land Settlement Act of 1974.</p> <p>Population before relocation: 1,850.</p> <p>Effect on Chapter: 1980 census: 852.</p> <p>1990 census: 258.</p> <p>2000 census: 372.</p> <p>Present .</p>

1980's	1980 amendments: Opened up New Lands. Chapter participated in tour & selection process.
	Movement to New Lands beginning in 1987. All relocated but several HPL homes.
1990's	1990 mediation with Hopi Tribe: Chapter facilities moved as condition to further mediation.
	Golf War 1: 11 veterans
	U.S. District Court Judge ordered that the Bennett Freeze lifted in 1992. Ninth Circuit Court of Appeals reversed the Arizona District Court's decision. Planning began.
	Chapter resolved to move to present site in 1995. ONHIR to take lead role in redevelopment. Developed community plan for \$19 Million.
	1997 application to Hopi Tribe. [Process].
	In 1997, a Federal District Court approved an agreement between parties lifting half of the freeze in the Bennett Freeze Area.
	Ground breaking in June 1999. Rain during invocation.
	Chapter house condemned in spring 2000. Chapter moved meetings to concession stand inside the rodeo grounds. Letter to President Begay from H. Williams: "The present official meeting place of Coalmine Canyon Chapter is at the concession stand at the CMC rodeo ground". 06/27/00.
2000	Fall 2000: Energizing ceremony.
	Chapter construction started June 2003. Completed in late February 2004.

	Dedicated March 2004.
	The Future: Opportunity there. "Reversal of the odds."
	Gulf War II 2003: 15 Veterans
	GOAL: Self-sufficient community. People here. Resource management. Community planning vision development, implementation, and funding. Adjustments.
2006	Chapter Land Use Plan approved by chapter membership April 2006.
2007	The Navajo Tribe and Hopi Leaders signed an Intergovernmental Compact which was approved by a federal court in 2007, lifting the Bennett Freeze.
2008	W H Pacific hired to conduct assessments and integrate the most recent Chapter Land Use Plan, existing plans and information gathered from tribal and federal agencies to create a Comprehensive Land Use Plan for chapter and the Former Bennett Freeze Area Recovery Plan
2010	Chapter is placed under Corrective Action Plan due to unfavorable financial audit by the Office of the Auditor General.
2013	New Administration
2016	Update of Chapter Land Use Plan to integrate Conservation, Water Use Plan & EPA Identified Open Uranium mines.



Photo by Craig Gillwood

## 4. NATURAL ENVIRONMENT

### Topography and Slope

The landscape consists of low, broad mesas, high plateaus and wide valleys with gently rolling desert grasslands, sand dunes and hills (H. Sandoval 2002). Elevation within the land varies from a low of 4,700 ft. about mean sea level (amsl) in the Little Colorado River to a high of 6,000 ft. amsl near the Chapter house. Slopes range from 0-77 percent (**FIGURE 4**). The generally flat areas are shown in green while the steepest areas are shown in red. Lechii Cliff, the area around Ward Mesa and the lands in the far northeast portion of the Chapter have some of the steepest slopes. The region between the Little Colorado River and Ward Mesa is flat while the upper areas of the Chapter lands are punctuated by several terraces with steep cliffs.

The chapter is situated in Portions of the following United States Geological Survey (USGS) 7.5' quadrangles: Middle Mesa, Shadow Mountain Well, Moenave SE, Moenkopi, Tuba City SE, Cameron North, Cameron NE, Goldtooth, Appaloosa Ridge, Cameron South, Cameron SE. The Landmark, Gold Spring, Wupatki NE, Badger Spring, Rock Head, Wupatki SE, Standing Rocks and white Water Tank.



**FIGURE 4. Slope Analysis**

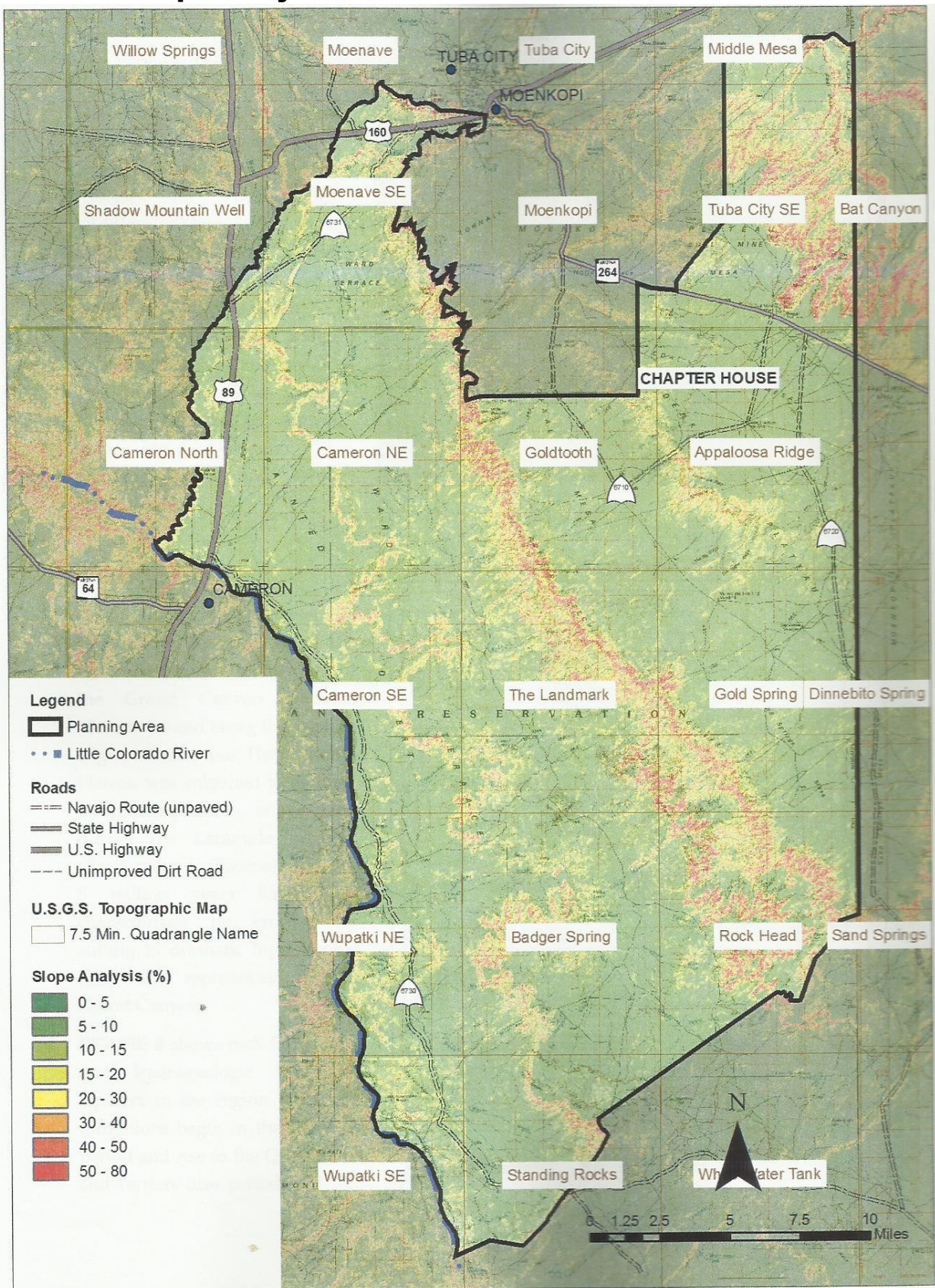






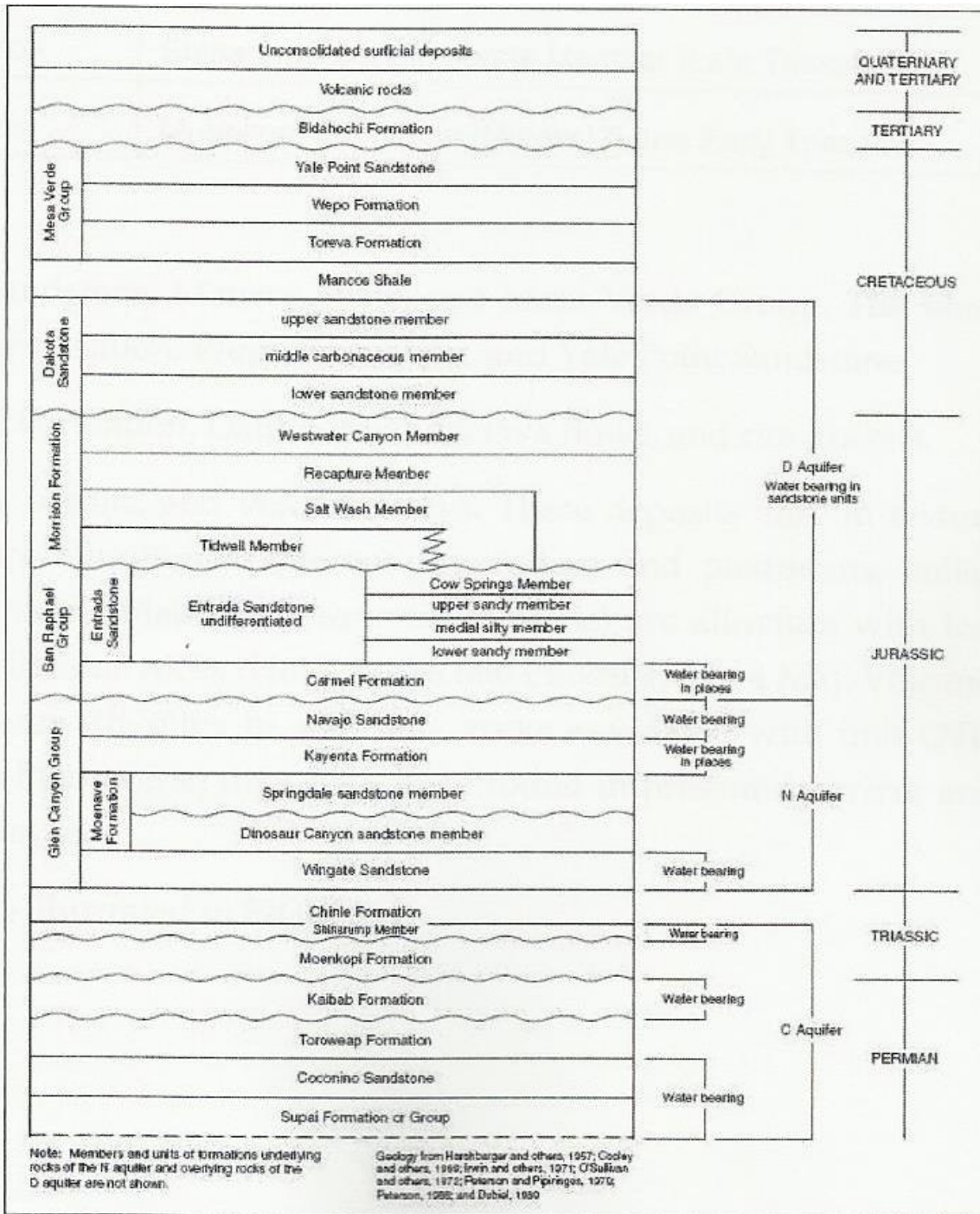
Photo by Craig Gillwood

## Geology

Geologically, the Chapter is situated in the portion of the Colorado Plateau to the east of the Grand Canyon National Monument and along the western edge of Black Mesa. The Colorado Plateau was subjected to regional uplift, compression, and erosion during the Laramide orogeny (Cretaceous to Eocene). The last 5 million years have been characterized by erosion resulting in dramatic Topographic relief best represented by the Grand Canyon.

**FIGURE 5.** Shows rock formations and hydrogeologic units of aquifers in the region. The rock formations begin in the Permian period and rise in the Quaternary and Tertiary time periods.

**FIGURE 5. Regional Rock Formations**







Photograph by Emily Yazzie

The surface geology of the Chapter includes 12 rock formations that range in age from Triassic to Quaternary (**TABLE 3**). The Triassic rocks include the Moenkopi and Chinle formations in addition to the Shinarump Member of the Chinle Formation.

The Jurassic rocks include the Glen Canyon and the San Rafael Groups. The Glen Canyon Group includes the Wingate Sandstone, Moenave Formation, Kayenta Formation, and Navajo Sandstone. The San Rafael Group comprises the Carmel Formation and Entrada Sandstone.

<b>TABLE 3. Geologic Formation</b>	
<b>Map Unit</b>	<b>Geologic Formation</b>
<b>Tsy</b>	Sedimentary rocks (Pliocene to middle Miocene)
<b>Qy</b>	Young alluvium (Holocene to latest Pleistocene)
<b>Q</b>	Surficial deposits (Holocene to middle Pleistocene)
<b>Qtb</b>	Basaltic rocks (Holocene to late Pliocene; 0 to 4 Ma)
<b>Qo</b>	Older surficial deposit (mid-Pleistocene to latest Pliocene)
<b>Ks</b>	Sedimentary rocks (Cretaceous)
<b>Js</b>	San Rafael Group (Late to Middle Jurassic)
<b>Jgc</b>	Glen Canyon Group (Early Jurassic)
<b>Trc</b>	Chinle Formation (Late Triassic)
<b>TrcS</b>	Shinarump Conglomerate Member (Late Triassic)
<b>Trm</b>	Moenkopi Formation (Middle[?]) and Early Triassic



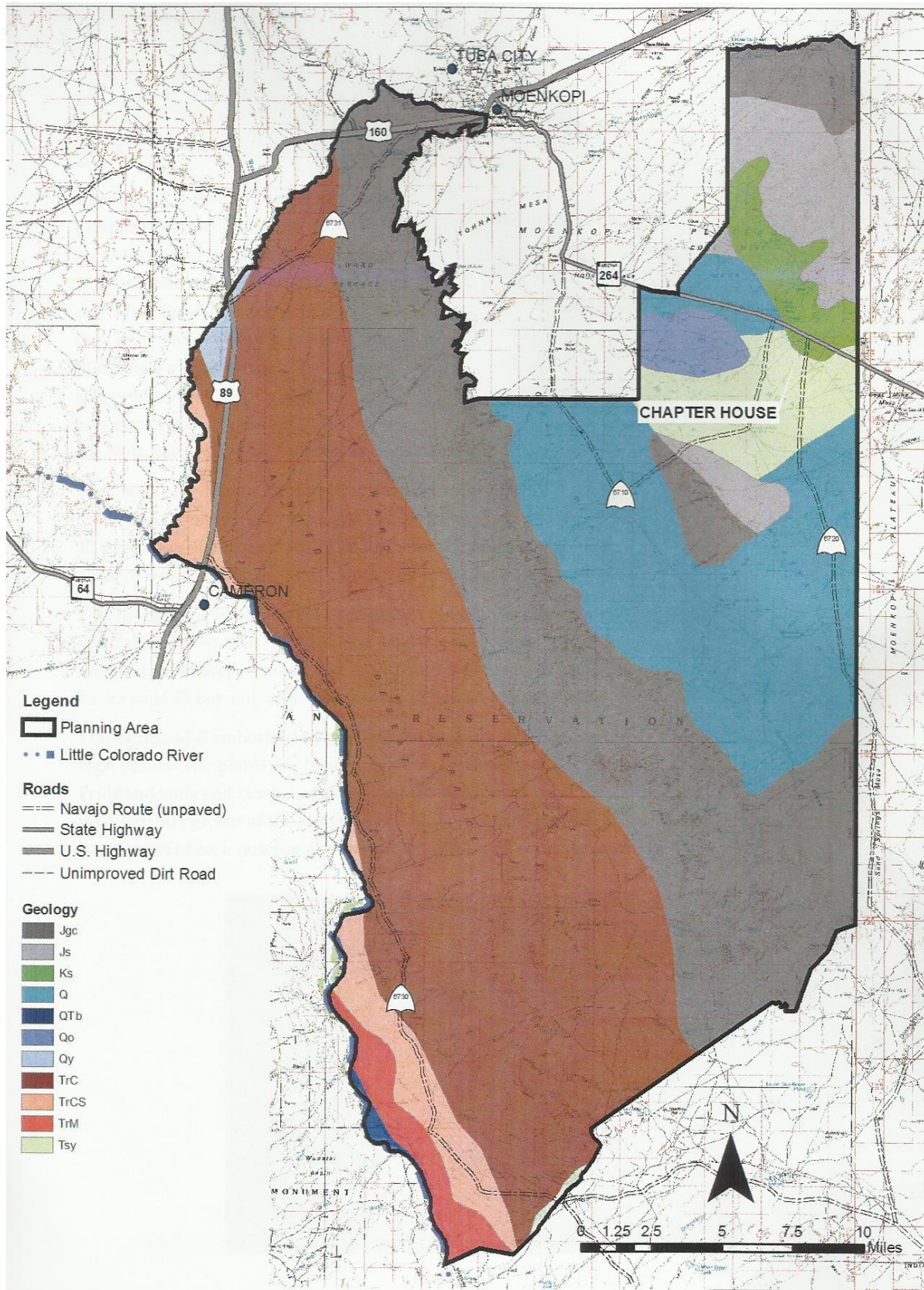
Photograph by Emily Yazzie

Cretaceous rocks include Dakota Sandstone, Mancos Shale, and Mesa Verde Group. The Mesa Verde Group consists of the Toreva Formation, Wepo Formation, and Yale Point Sandstone. Tertiary rocks include the Bidahochi Formation, Datil Formation, lava flows, and rim gravels. Quaternary rocks include alluvium, basalts, and volcanic rocks. These deposits vary in texture and thickness. Surficial deposits are alluvium in present-day alleys and piedmonts, eolian deposits. Older surficial deposits (middle Pleistocene to latest Pliocene) are alluvium with less abundant talus and eolian deposits. Basaltic rocks (Holocene to late Pliocene; 0 to 4 Ma). Volcanic rocks (Quaternary to late Pliocene) are Rhyolitic to andesitic rocks associated with unit QTb. Young alluvium (Holocene to latest Pleistocene) deposits can be found in present-day river and stream channels, flood plains, and playas.

The surface geology of the Chapter is illustrated in **FIGURE 6**.



**FIGURE 6. Surface Geology**





## Soils

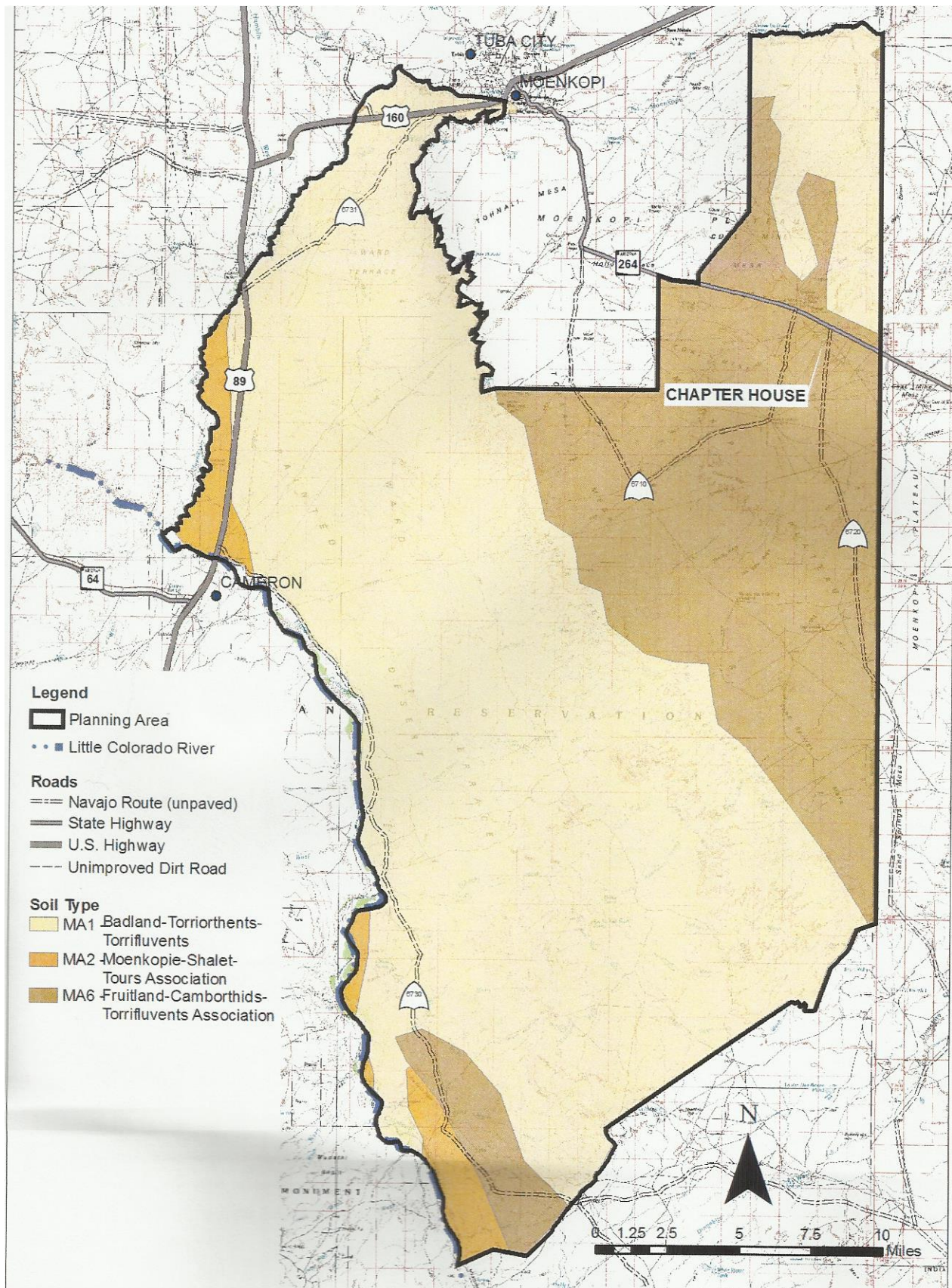
Table 4. Soils	
Map Unit	Soil Name
MA 1	Badland-Torriorhents-Torrifluvents Association
MA2	Moenkopie-Shalet-Tour Association
MA6	Fruitland-Camborthids- Torrifuvents Association

Generally, three primary soil categories occur within the planning area, including soils MA1, MA2, and MA6 (Hendricks1985). **TABLE 4** provides the names corresponding to the map units. The soil units are illustrated in **FIGURE 7**. The primary soil type in the Chapter is MA1, with less occurrence of MA2. Even less of the MA6 soil type is in existence, and that is mostly along the Little Colorado River. The soils in MA1, Badland-Torriorhents-Torrifluvents Association are shallow to deep moderately fine-textured material from eroded from rock formations. Badland makes up about 40 percent of the association, Torriorhents 25 percent and Torrifuvents 25 percent, with minor areas of association soils and rock out crop being 10 percent.

The Moenkopi-Shalet-Tours Association (MA2) consists of well-drained soils on plateaus and floodplains. The soils in MA2 are shallow and deep, moderately coarse to moderately fine-textured. Moenkopi soils make up about 60 percent of the association, Shalet soils 15 percent, Tours soils 15 percent, with minor areas of associated soils being 10 percent.

The Fruitland-Camorthids-Torrifluvents Association (MA6) consists of well-drained soils on the high plains. The plains are broken by occasional steep-sided drainage ways and scattered buttes. Fruitland soils and closely associated unnamed shallow and moderately deep Torriorhents make up about 50 percent of the association, Camborthids 30 percent and Torrifuvents 15 percent, with small areas of rock outcrop and minor included soils being 5 percent.

**FIGURE 7. Soils**





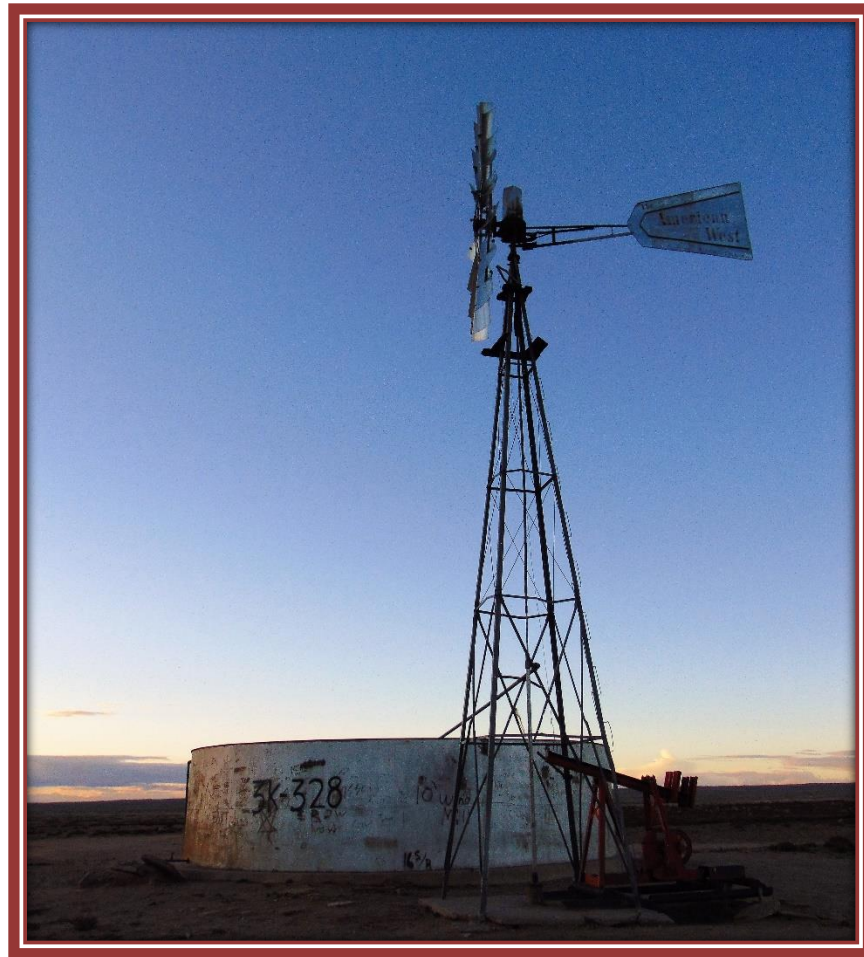


Photo by Craig Gillwood

## Groundwater

The Chapter is located in the Little Colorado River Basin where water-bearing rocks consist primarily of sandstone, limestone and other conglomerates. Several distinct aquifer systems underlie the Little Colorado River Basin. The main water source for the Chapter is the N-aquifer which dominates the higher plateau region at the 6,000 ft. level. The C-aquifer is tapped into down in the valley along Highway 89 near the Little Colorado River. An existing well within the Community tract brings water from the D-aquifer. **FIGURE 8** shows water well locations according to their aquifers.

### **The Coconino Sandstone (C-aquifer system)**

The C-aquifer system yields water of good chemical quality except southwest of Leupp and in the northern part of the Black Mesa basin where excessive amounts of dissolved solids could render it unfit for use. The C-aquifer includes the Coconino Sandstone, the De Chelly Sandstone, the Moenkopi Formation and the Shinarump Member of the Chinle Formation.



The Coconino Sandstone is very fine to medium-grained well sorted quartz grains. The grains are coarse near the southern extend of the unit along the Mogollon Rim and grade into a finer grain size to the north. The De Chelly Sandstone is a thick-bedded fine to medium grained sandstone and hydraulically connected with the Coconino and Shinarump Member of the Chinle Formation. The Chinle Formation and the De Chelly and Coconino Sandstones are primary sources of ground water. The other members of Chinle Formation and the Moenkopi Formations are too fine grained and act as aquicludes. The C-aquifer system thins rapidly to the north and pinches out along the Utah-Arizona border.

### **The Navajo Aquifer (N-aquifer)**

The quality of the water within this system is excellent. The Lukachkai member of the Wingate Sandstone, the Moenave Formation, the Kayenta Formation and the Navajo Sandstone comprise what is referred to as the N-aquifer system. The Lukachkai Member consists of a fine to very fine-grained quartz sandstone that is homogeneous throughout the region. The Moenave Formation consists of two sandstone members that include Dinosaur Canyon and the Springdale Members. These consist of coarse to very fine-grained quartz sandstone with a large percentage of silt and firm calcareous cement.

The Kayenta Formation consists of sandstone facies and a silt facies of which he form is bonded with calcareous cement. The Navajo Sandstone is composed of medium to fine-grained quartz sandstone and is boded with weak calcareous cement. The sandstone contains many lenticular beds of cherty limestone. Because of their homogenous lithologies and loose cementation, the Navajo Sandstone and Lukachukai Member of the Wingate Sandstone are the primary water producing units in the N-aquifer system.

### **The Dakota Aquifer (D-aquifer system)**

The Dakota is a significant aquifer in the region. The system includes the Entrada Sandstone, Summerville Formation, Cow Springs Sandstone, sandstone members of the Morrison Formation and the Dakota Sandstone. The Entrada and Summerville Formation both consist of a sandstone and silty sandstone facies. In both cases, that is also firmly cemented. The Cow Springs Sandstone is well sorted, fine-grained quartz that is also firmly cemented. These deposits are extensive, encompassing the southern half and western portion of the region. The sandstone tongues are quite extensive and interfinger with members of the Morrison Formation.

The Morrison Formation is the uppermost Jurassic unit in the region, and comprised of four members. These are from oldest to youngest: 1) the Salt Wash Member, which consists of fine to coarse-grained lenticular sandstone beds and mudstone; 2) the Recapture member, which consists of friable fine to medium-grained sandstone interstratified with shaly mudstone; 3) the Westward Canyon Member, which consists of fine to coarse-grained sandstone and minor shaly mudstone; 4) the Brushy Basin Member, which consists of shale interbedded with some mudstone and fine to medium-grained sandstone.

The Cretaceous Dakota Formation is comprised of three lithologic types deposited under fluvial, lagoonal and shallow marine conditions. The lower fluvial member consists of well-cemented, medium to fine-grained quartz sandstone with a basal conglomerate in some places. The middle member consists of carbonaceous flat bedded mudstone and siltstones, coal and interbedded sandstone lenses. The upper shallow marine sandstone member differs somewhat in lithology from the lower because it has a greater amount of very fine sand and silt and in several areas forms alternating sandstone ledges and intercalated shaly beds.

The water quality is marginal to unsuitable for drinking due to sulfate and dissolved solids concentrations exceeding U.S. Public Health Service's recommended drinking water limits.

### **Alluvial Aquifers**

Alluvial water quality is poor, and yield to wells is generally small except where significant gravel exists. The concentrations of dissolve solids make the water mainly suitable for livestock only.



**FIGURE 8. Wells and Aquifers**

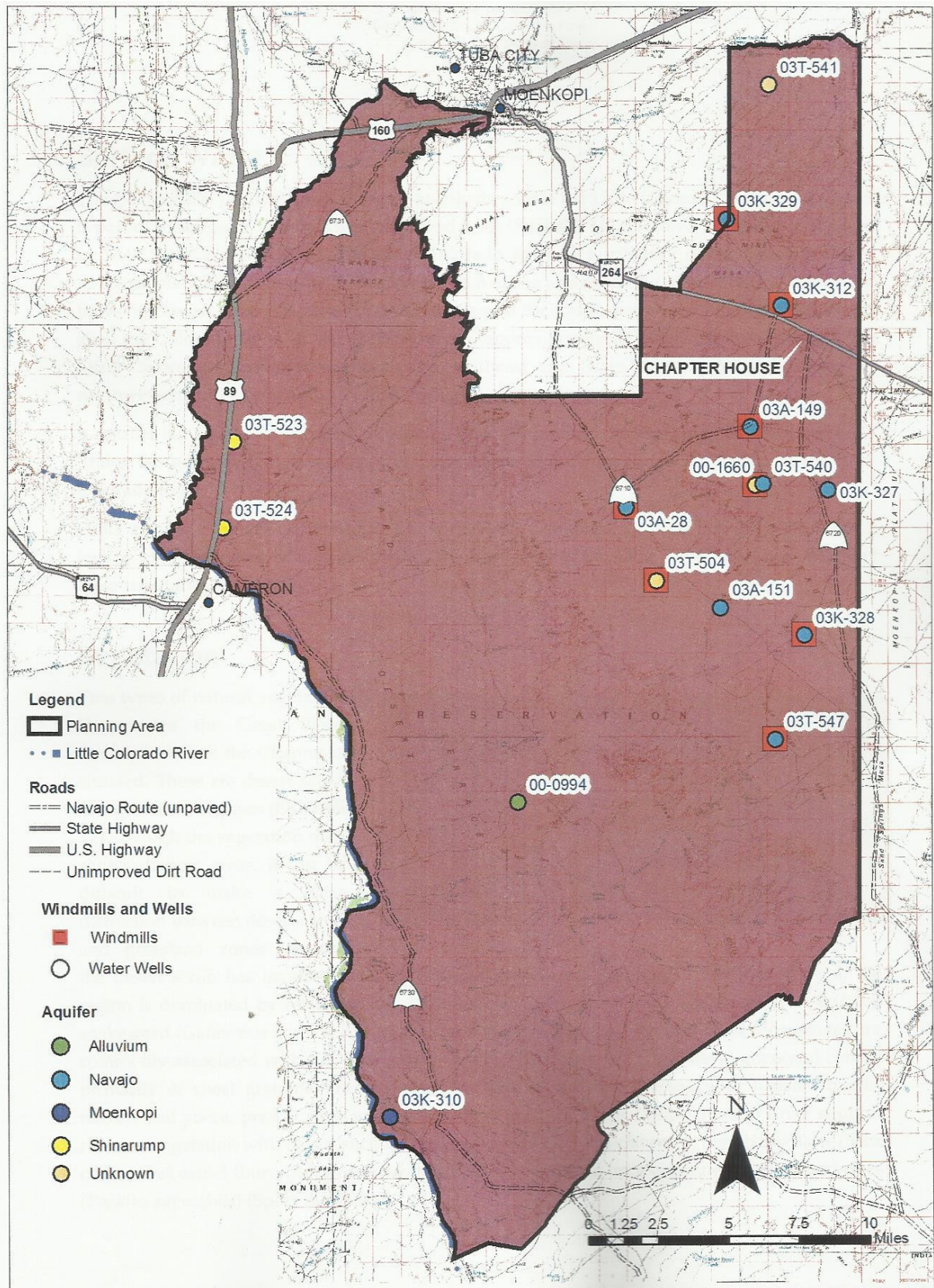






Photo by Joyceline Wero

## Surface Water

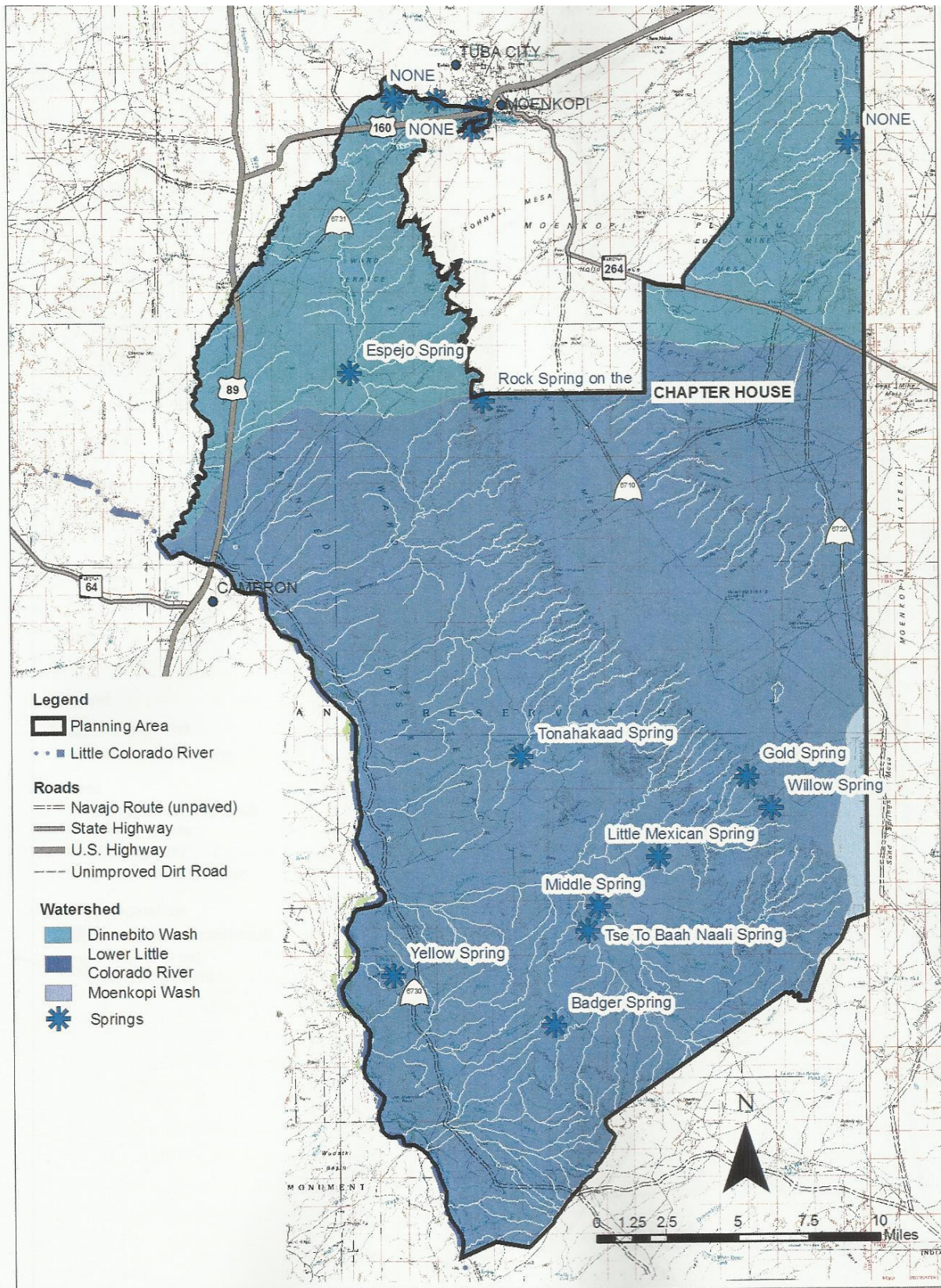
The Chapter lies primarily within two watersheds within the Little Colorado River basin, which is part of the larger Colorado River watershed basis (**FIGURE 9**). The area is drained to the west by the Little Colorado River. The Little Colorado River is a tributary of the Colorado River, approximately 315 miles long. It rises in eastern Arizona and in the southeastern Apache County and flows northwest through a series of deep gorges past the southwestern portion of the Chapter. It joins the Colorado River in the Grand Canyon, approximately 70 miles north of Flagstaff. The Little Colorado River comes in from the Southeast and flow to the northwest, along the southwestern and western edge of the Chapter.

A smaller but significant tributary, Moenkopi Wash, bounds the northern part of the Chapter and drains the northwestern escarpment of Black Mesa. Flow from this wash drains to the Little Colorado River.

Other smaller tributaries of the Little Colorado River also drain the area: however, the water is lost by evaporation or reinfilters before the flow reaches the Little Colorado River. Many of these tributaries are unnamed.



**FIGURE 9. Surface Water**





## Vegetation

Two types of natural vegetation characterize the Great Basin Desert in which the Chapter is situated. These are desert scrub and grassland regimes (**FIGURE 10**). Though the vegetation map shows district areas, it can be difficult to make a clear distinction to make a clear distinction between desert scrub and grassland zones because the desert scrub has invaded the grasslands in many areas (Hendrick 1985)

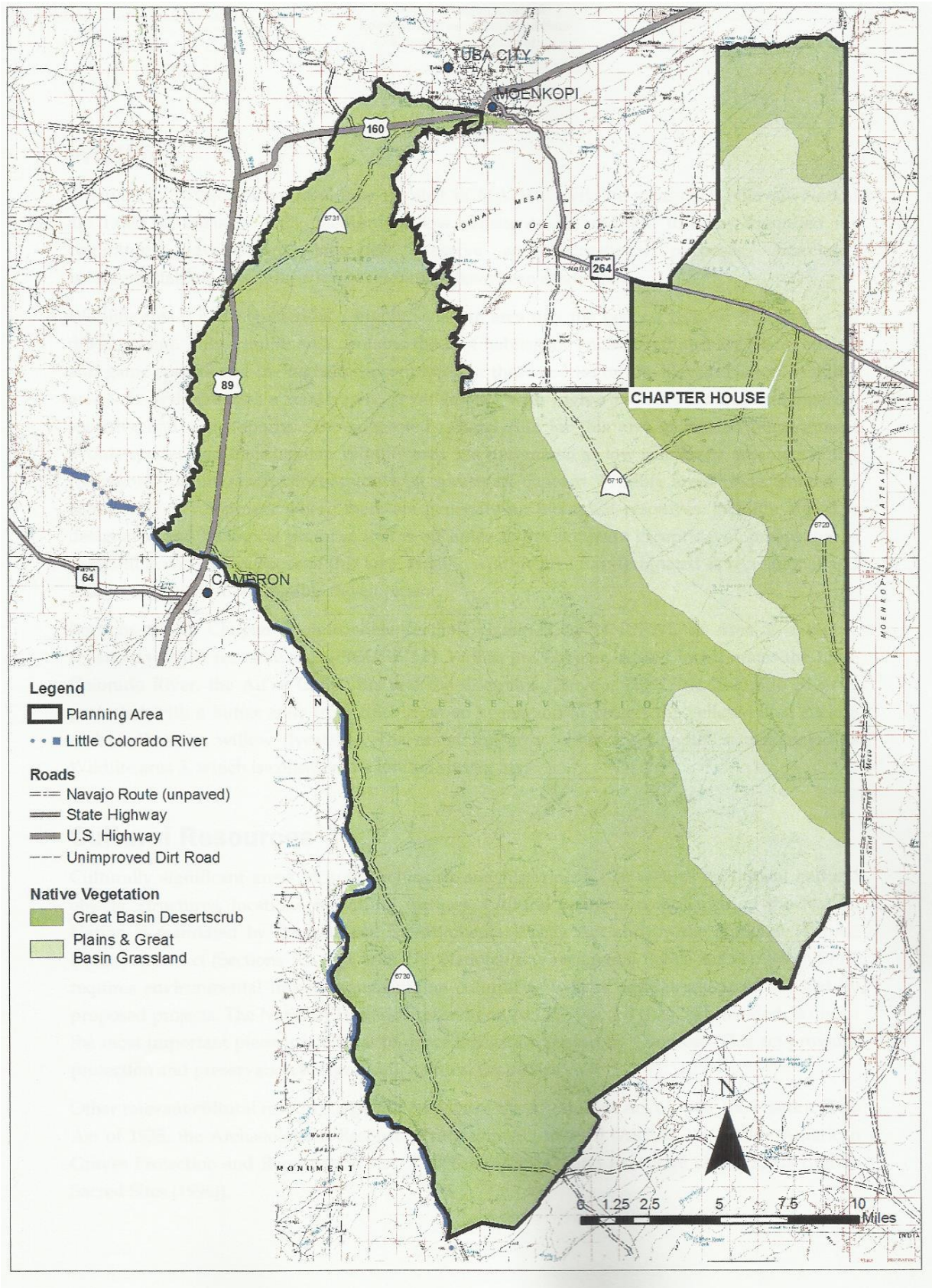


Photograph by Craig Gillwood

In general, the region is dominated by relatively low stature shrubs. Sagebrush, saltbush, (*Atriplex confertifolia*), snakeweed (*Gutierrezia microcephala*), rabbitbrush (*Chrysothamnus nauseosus*), and Mormon tea are commonly associated with the Great Basin Desert. The Plains and Great Basin grassland consist primarily of short gramma grass species. The grasses are interspersed with Russian thistle, narrow-leaf yucca, prickly pear, and cholla. Areas adjacent to the Little Colorado River support riparian vegetation with plants such as Chinese Tamrix (*Tamarix chinensis*), Sandbar willow (*Salix exigue*) and camel thron (*Alhagi camelorum*). This riparian zone once contained cottonwood trees (*Populus angusifolia*) (Spur et. al. 2000).



**FIGURE 10. Vegetation**



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## Wildlife

Pursuant to Navajo Nation resolution number RCMA-34-03 wildlife areas on the Navajo Nation are related as areas of high, medium or low sensitivity, in addition to areas identified for community development, biological preserve and recreational purposes. Associated recommendations and criteria for development have been established.

Wildlife area 1 is designed as a highly sensitive area and the general rule for this area is no development. This wildlife area contains the best habitat for endangered and are plant, animal and game species and the highest concentration of these species on the Navajo Nation. Wildlife area 2 is designed as a moderately sensitive area with a high concentration of endangered, sensitive and game species. The suggested general rule for this area is that all development avoids species and their habitat. Wildlife area 3 is designed as low sensitivity containing fragmented or unknown concentrations of species of concern. Wildlife area 4 is designed as community development where there generally no biological resources. Wildlife area 5 is designed as a biological preserve that is off limits to development that is compatible with the purpose of this area. Finally wildlife area 6 is designed as recreational and should only include compatible development.

Portions of the Chapter contain some sections classified by NNDFWL as Area 1, a highly sensitive wildlife resource area (**FIGURE 11**). Within the Chapter, Area 1 incorporates the Little Colorado River, the A'ee Chii Cliffs and the Coalmine Canyon. The Little Colorado River is protected with a buffer zone from thick riparian vegetation to protect the yellow-billed cuckoo and southwester willow flycatcher. The remaining area within the Chapter is designed as Wildlife area 3, which is considered a low sensitivity area.









Photo by Craig Gillwood

## Cultural Resources

Culturally significant areas include prehistoric and historic sites as well as traditional cultural objects, structures, locations or natural features. Cultural resource compliance on the Navajo Nation is mandated by the National Environmental Policy Act and by the National Historic Preservation Act (Sections 106 and 110). The National Environmental Policy Act of 1969 (NEPA) requires environmental impact statements on cultural as well as natural resources affected by proposed projects. The National Historic Preservation Act of 1966 (NHPA), as amended, is one of the most important pieces of cultural resource legislation passed by Congress. This act provides protection and preservation of significant cultural properties.

Other relevant cultural resources legislation includes the Antiques Act of 1906, the Historic Sites Act of 1935, the Archaeological Resource Protection Act of 1979 (ARPA), the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA), and Executive Order 13007 (Indian Sacred Sites [1996]).

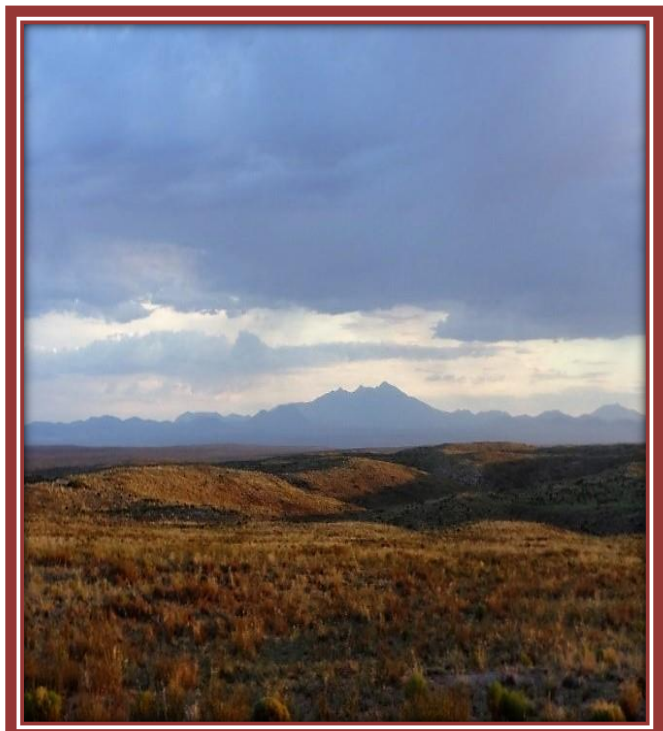


Photo by Christian Gillwood

The community of Coalmine Canyon is rich in archeological sites. This means that there are significant areas with material remains of past Indian or non-Indian life or activities that are of archaeological interest, including without limitation, historic or prehistoric ruins, burial grounds, and inscriptions made by human groups. The sites in the planning area include the presence surface artifacts that appear to indicate a substantial subsurface component. Many studies have been conducted in the area and sites have been recorded with the Navajo Nation Historic Presentation Department; however, it is extremely likely that a great many archaeological and traditional cultural properties and areas of importance have not yet been identified.

Prior to development of any kind, the Navajo Nation Archaeology Department and the Navajo Nation Historic Preservation Office as well as the Chapter Officials and members should be contacted to develop an inventory of currently known cultural resources in the immediate vicinity of each project area. A cultural resources survey of each of the proposed project areas should also be performed before development begins:

Although the cultural histories of each of these locations have many unique characteristics, the overall trajectory of human development remains generally the same from Paleo-Indian through modern times. Extinct cultures of the surrounding landscapes include Paleo-Indian, Archaic, Basketmaker and early Puebloan societies. These prehistoric periods were followed by the protohistoric and historic eras, first when Navajo people and then when Europeans moved to the area.

According to York (1981):

- “The Navajo were in the Upper San Juan Gobernador, and Largo regions of northern New Mexico during the 1500’s, with movement into the Chaco locality in the 1600’s. Vivian’s seven dates for (the site) CM35 on Chacra Mesa establish a Navajo presence in this area by the early 1600’s. In the 1700’s, Navajo expansion to the south is then well documented by Spanish historic accounts.

- Based on a description of Navajo territorial boundaries given by Governor Cuervo 7 Valdez in 1706, the Navajo moved as far south as the Rio San Jose and Rio Puerco (of the west) by that time. This does not necessarily imply settlement of the Coalmine Canyon area during this period, however, it was not until after 1800 when herding became their dominate subsistence mode that the Navajo moved into the lower, drier areas of the San Juan Basin.” Family oral histories indicate movement of back to the Chapter after the Long Walk in 1868.



Photo by Emily Yazzie

## Traditionally Sensitive Resources

Residents of the community of the Chapter live close to the land, herding sheep, farming and gathering ceremonial sacred herbs. Because of this connection to the land, there are areas located throughout the planning area that are important to the people and culturally and traditionally sensitive such as herb gathering sites, squaw dance, offerings and ceremonial areas. It is of widespread opinion that these culturally and traditionally sensitive areas should not be encroached upon. Traditionally sensitive sites are protected under the NHPA, NAAGPRA, and Executive Order 1307.





Photo by Craig Gillwood

## Minerals

**FIGURES 12** shows the location of abandoned mines within the Chapter. Coal is found just north of the Chapter house and a vein of coal that less than ten feet thick is exposed along the rim of Coalmine Canyon in the northern portion of the Chapter. Across Highway 264 is a nonfunctioning coal mine, about a mile north of the Chapter house. This mine operation was abandoned because of an extensive underground fire that smoldered for nearly 10 years, according to local residents. Evidence of the burn is still visible after twenty years of weathering.

From the 1940's through the 1970's, hundreds of exploration uranium mines were opened throughout the Navajo Nation including the western portion of the Chapter. Within the planning area, uranium ore was first discovered in Ward Terrace near Gold Springs in 1950.

Most uranium deposits occur as pore fillings or coatings associated with organic material and are shaped as elongated masses or roll-type bodies. Generally, the deposits are a few feet thick and several hundred to a thousand feet in length and may be stacked parallel to the strike of the host rock. The ore bodies occur as primary deposits or as redistributed ore bodies. This led to construction of open pits along the Little Colorado River.

Uranium was mined from these areas until 1960. Abandoned for years, the pits were reclaimed by 2000.

Sand and gravel also exist within the Chapter. There are at least two gravel borrow pits within the community. One such pit is located just east of the Chapter house, and the other is located along N 6731, 8 miles southwest of Tuba City.

Pumice and clay are other minerals found in the area, and they are located on the western part of the Little Colorado River.



**FIGURE 12. Minerals**

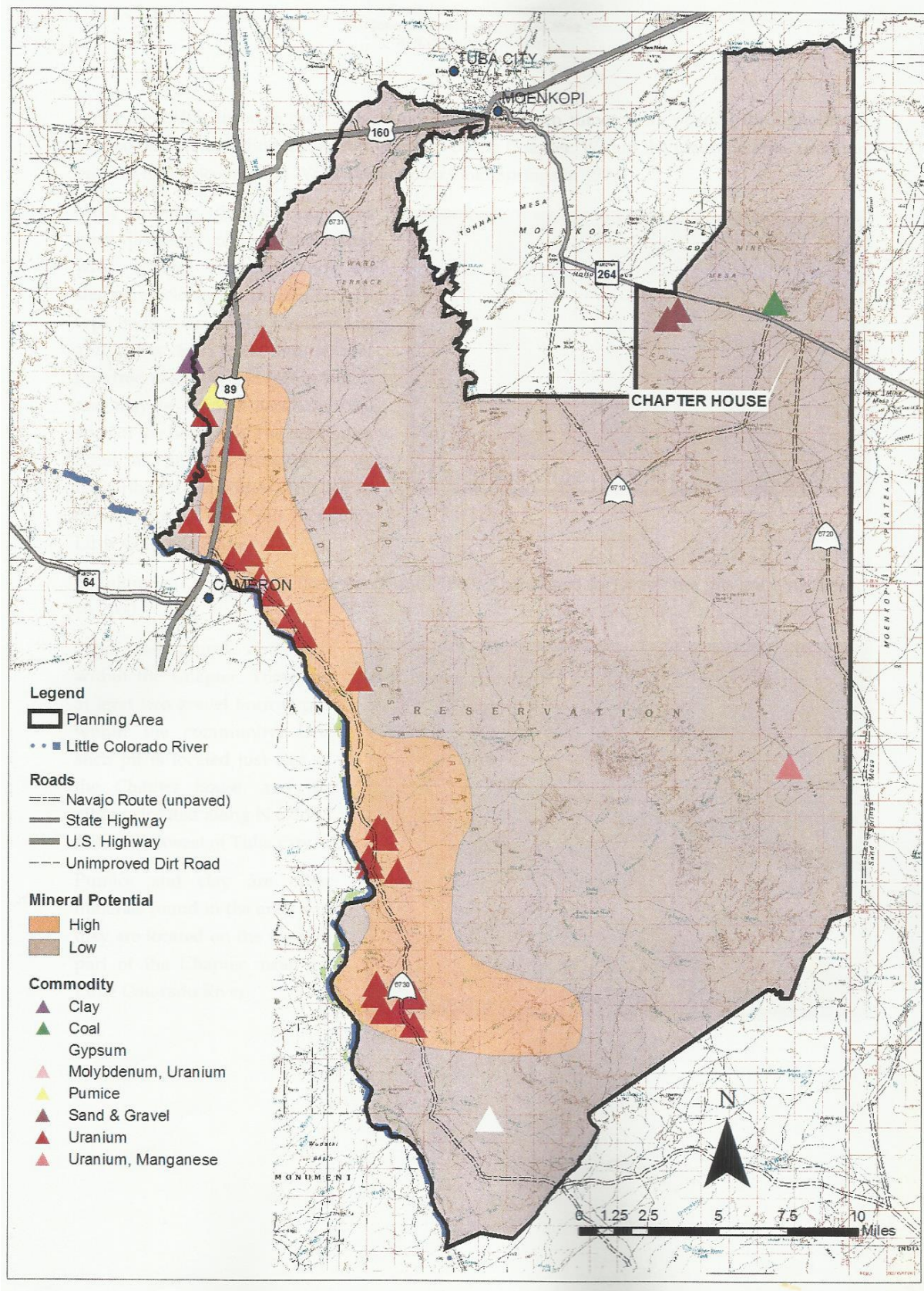






Photo by Cheyenne Bedonie

## 5. DEMOGRAPHICS

### Introduction

Characteristics of the population that could influence prospective development for the Chapter include past population trends and forecasts for the future housing availability and income levels. Below, changes in population are noted for their current and potential future effects on the Chapter's economy. Population growth brings demand for an expanded job base, retail, and services business, residential development and essential community services.

Information for this section comes from a variety of sources. Data from the 2010 U.S. Census provided demographic characteristics for Coconino County, the State of Arizona, the U.S. and the Navajo Nation. The Coalmine Canyon Chapter Summer Youth Program participants along with CLUPC Secretary and Chapter Secretary/Treasurer conducted assessments to update chapter demographics.



## Population Characteristics

### Population Trends and Forecasts

Mainly as a result of the Navajo and Hopi Land Settlement Act of 1974 and the Bennett Freeze Act of 1966, the Chapter's Population decreased from 852 to 365 between 1980 and 2000. This decline is partially due to relocation to other areas where they may have blended in as part of a major growth center and would have been enumerated at different chapters. An annual growth rate of 1.3 percent was used to develop population projections. Regardless, the population has grown substantially to approximately 691 members in 2010.

**Figure 13. Population and Future Projection**

<b>1980</b>	<b>852</b>
<b>1990</b>	<b>388</b>
<b>2000</b>	<b>374</b>
<b>2010</b>	<b>691</b>
<b>2020</b>	<b>825</b>
<b>2030</b>	<b>938</b>
<b>2040</b>	<b>1,068</b>
<b>2050</b>	<b>1,215</b>
<b>2060</b>	<b>1,382</b>
<b>Sources: Population data for 1980-2010 provided by U.S. Census.</b>	

<b>Table 5: Population Trends</b>			
	Population (1990)	Population (2000)	Population (2010)
United States	248,709,873	281,421,906	308,745,537
Arizona	3,665,228	5,130,623	6,392,017
Coconino County	96,591	116,320	134,421
Navajo Nation	128,356	155,214	173,667
Coalmine Canyon Chapter	388	374	691

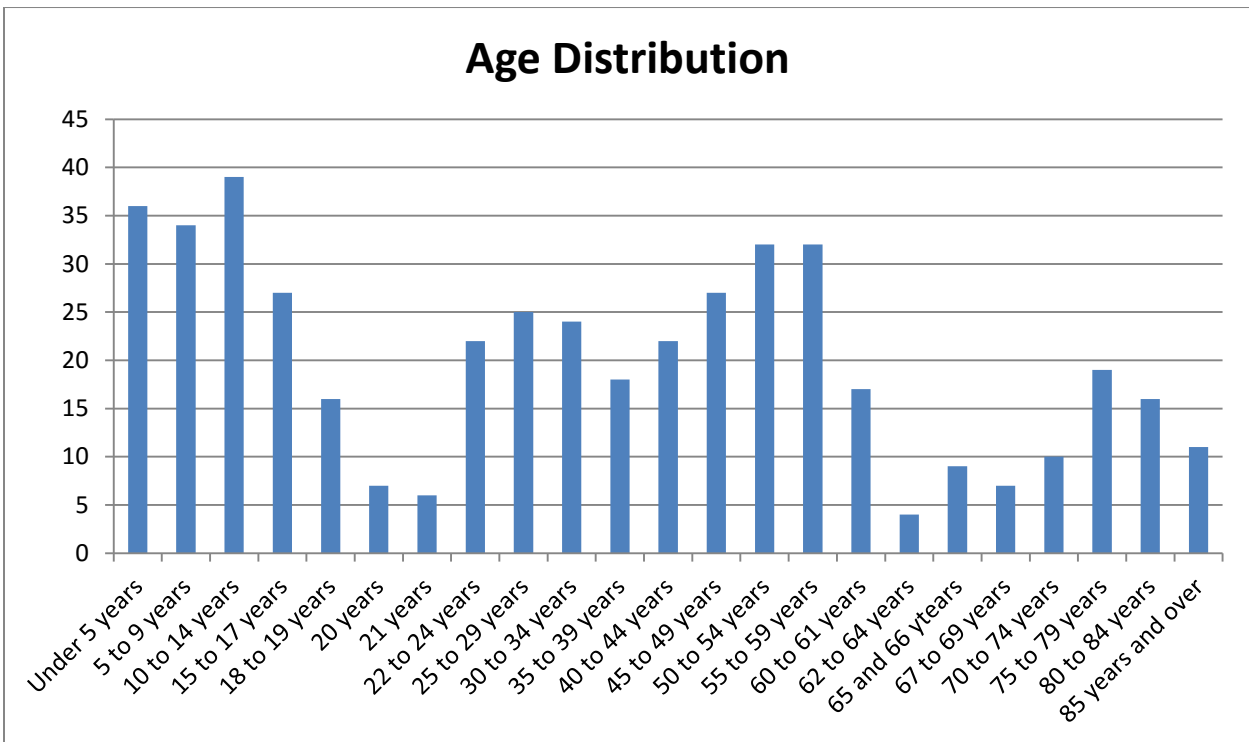
### Age Structure

The Navajo Nation has a higher percentage of residents that are school age is consistently higher when compared to Arizona and Coconino County, and the percent of the population that is 65 years of age and older is typically lower than other jurisdictions (TABLE 6). These two characteristics of the populations result in a comparatively low median age for Navajo when compared to the State of Arizona.

**Table 6. Age Characteristics: 2010**

	Total Population	School Aged 5-18 (%)	Aged 65 or older (%)	Median Age (years)
United States	308,745,537	74.1	13.0	37.2
Arizona	6,392,017	23.8	13.8	35.9
Navajo Nation	173,667	33.0	10.0	28.0
Coalmine Canyon Chapter	691	26.2	15.8	34.1
Coconino County	134,421	23.6	8.9	31.0
Sources: U.S. Census Bureau (2010)				

The Relatively high population of school aged youth within the Chapter according to Chapter Assessment in 2016 shows that economic development even more important (**FIGURE 14**).

**Figure 14. Age Distribution**

Source: Coalmine Canyon Chapter (2016)



## Household Characteristics

### Household Size

The average household size is 3.62, which is slightly lower than the Navajo but higher than the other regions listed in **TABLE 7**.

<b>Table 7. Household Size: 2010</b>					
Households	Coalmine Canyon Chapter	Navajo Nation	Coconino County	Arizona	United States
Total Households		49,946	46,711	2,380,990	300,758,215
Persons per Household	3.62	3.5	2.69	2.63	2.58

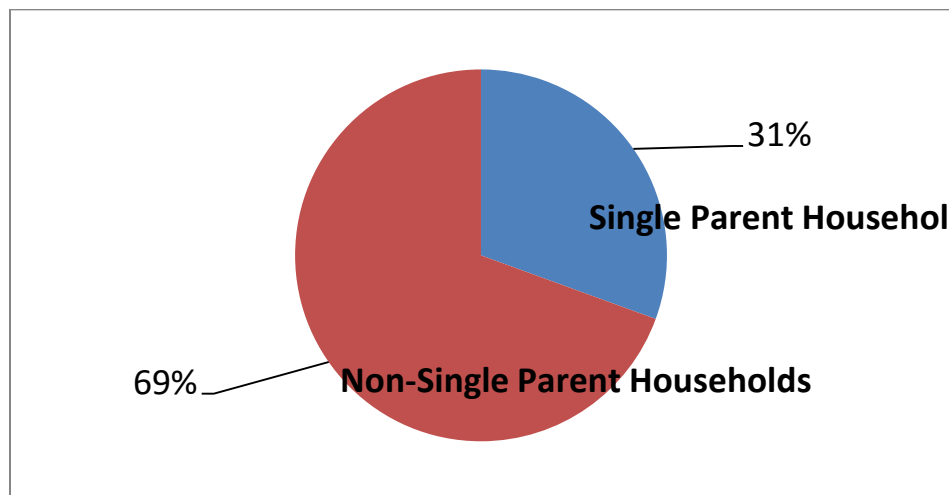
### The Elderly

According to the 2010 Census, 18 percent of the Chapter (65 persons) are over the age 65.

### Single Parent Households

Approximately 28.1 percent of the 121 households in the Chapter are single parent households (**FIGURE 15**). This is compared to 45.5 percent for married couple families and 26.5 non-family households.

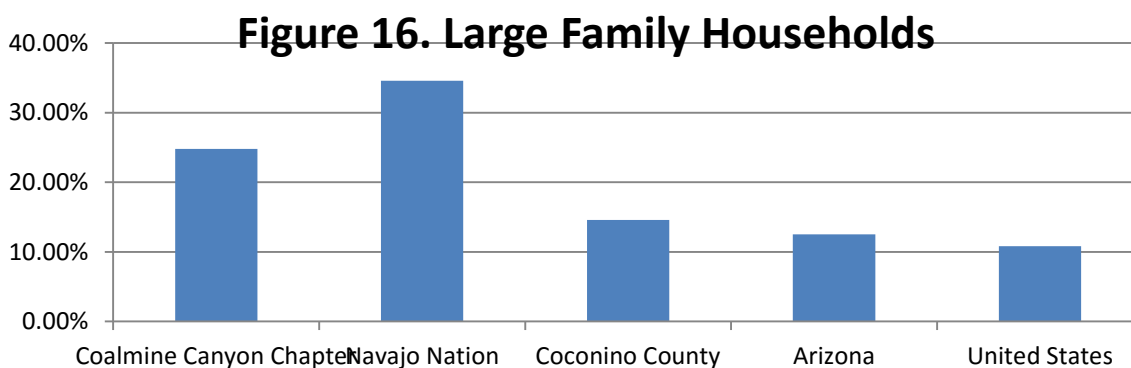
**FIGURE 15. Single Parent Households**



## Households

### Large Families

According U.S. Census in 2000 Large family households are defined as households with five or more persons. A five-person household would typically need a three-bedroom unit while a seven-person household would need a five to six-bedroom unit. Large family households have special housing needs due to the lack of adequately sized and affordable priced homes in the community, which results in overcrowding. (**FIGURE 16**).



### Income

The per capita income and median family income for residents within the Chapter is shown in **TABLE 8**. The median family income for residents within the Chapter is \$18,000, which is lower than the median family income for the Navajo Nation. There is high unemployment rate found in the area.

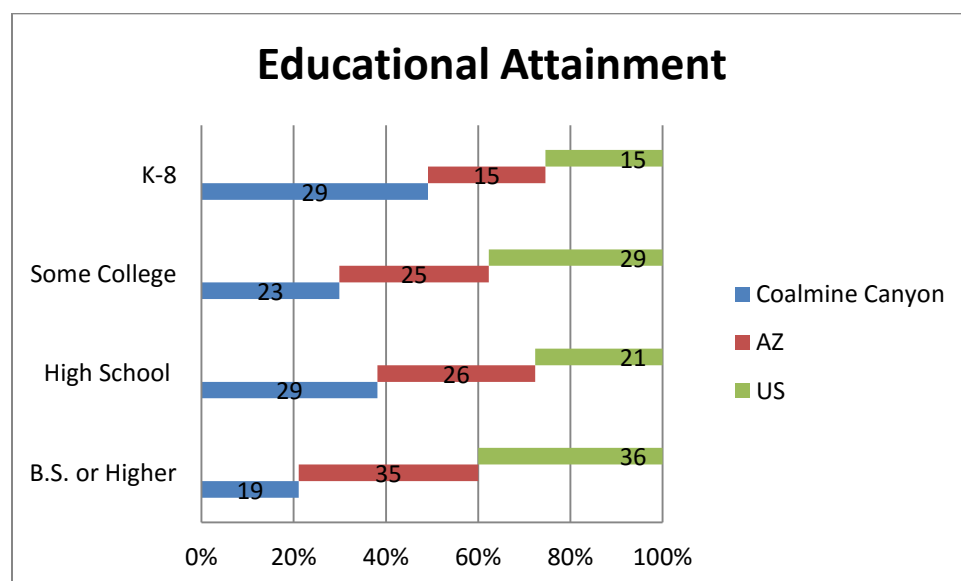
<b>Table 8. Income Characteristics</b>				
	Per Capita Income	Median Family Income	Persons Below Poverty Level	% Below Poverty Level
United States	\$21,587	\$50,046	33,899,812	11.3
Arizona	\$25,537	\$46,789	1,394,249	13
Navajo Nation	\$7,486	\$27,389	65,001	38
Coalmine Canyon Chapter	\$6,075	\$18,000	123	30.5
Coconino County	\$23,459	\$48,540	20,609	21.3
Sources: U.S. Census Bureau (2010) Coalmine Canyon Chapter (2016)				

## Educational Characteristics

### Educational Level

The majority of the Chapter's membership has achieved some level of educational attainment. For example, 29.0 percent of the Chapters population acquired their high school diplomas. Just over 19.0 percent have Bachelor's degrees or higher (**FIGURE 17**)

**FIGURE 17. Educational Attainment**

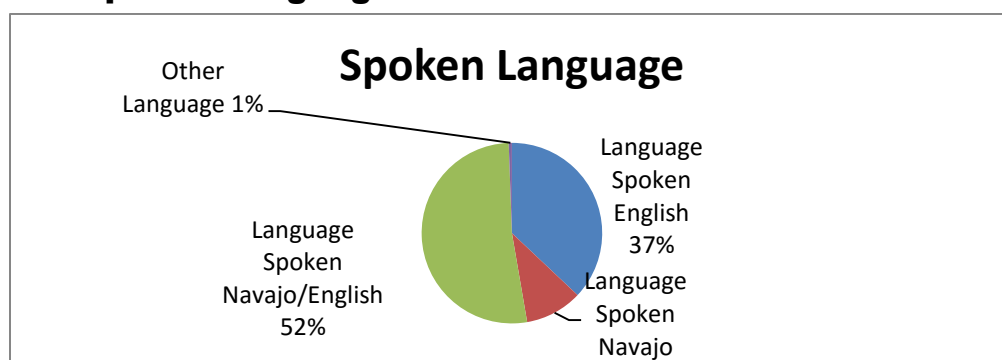


## Spoken Language Characteristics

### Languages Spoken

According to Chapter Assessments in 2016, the majority of the individuals speak both English and Navajo (52 percent) while 37.0 percent only speak English (**FIGURE 18**).

**FIGURE 18. Spoken Language**



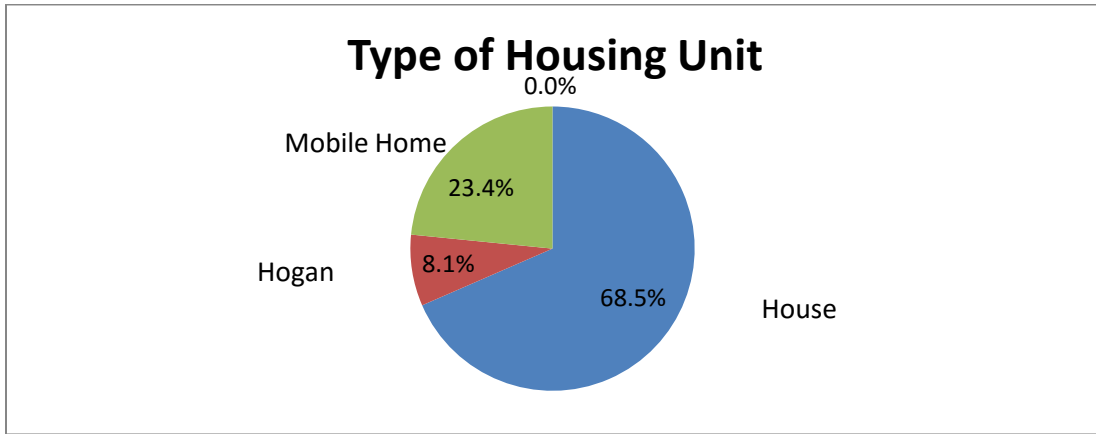


## Housing Characteristics

### Housing Units

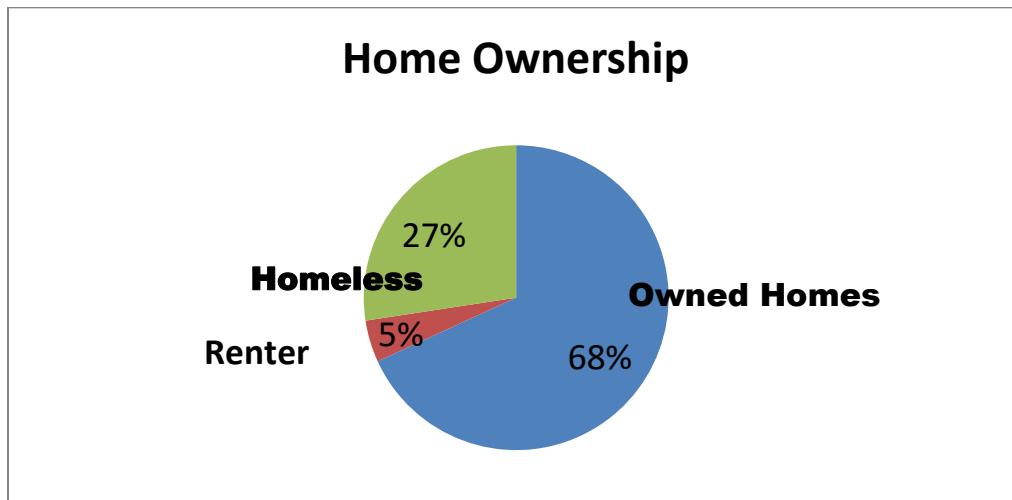
Census 2010 reported 264 housing units in the Chapter. **(FIGURE 19).** Mobile homes accounts for the remaining 23.4 percent.

FIGURE 19. Type of Housing Unit



### Housing Tenure

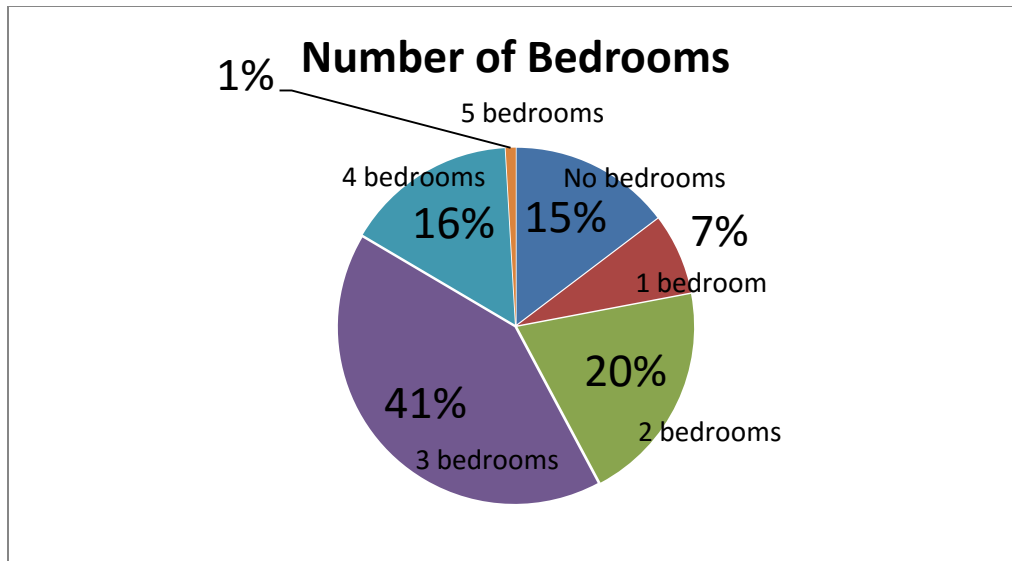
Tenure refers to whether a housing unit is owner or renter occupied. **Figure 20** shows that over three quarters, (68 percent) of all occupied housing units in the Chapter are owner-occupied and 5 percent are renter-occupied. The chapter has indentified 27 % as homeless families. These families were not able to build due to lack of financial resources and the Bennett Freeze.



### **Number of Bedrooms**

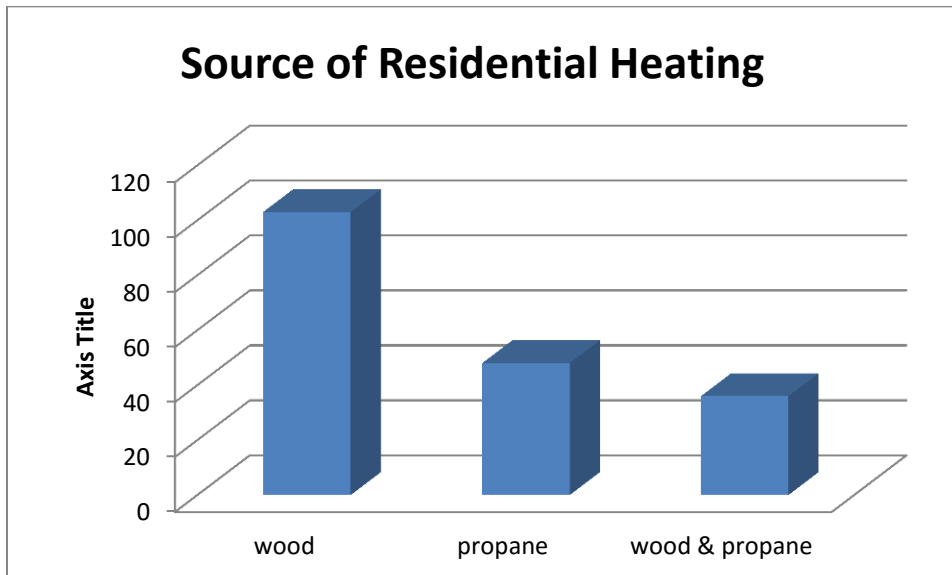
Of the total number of units (including the unoccupied and/or unavailable), 15 percent have no bedrooms. One to three bedroom units range from 7 percent to 41 percent. There are a few housing units with four or more bedrooms (**FIGURE 21**).

**FIGURE 21: Number Of Bedrooms**



### **Source of Residential Heating Fuel**

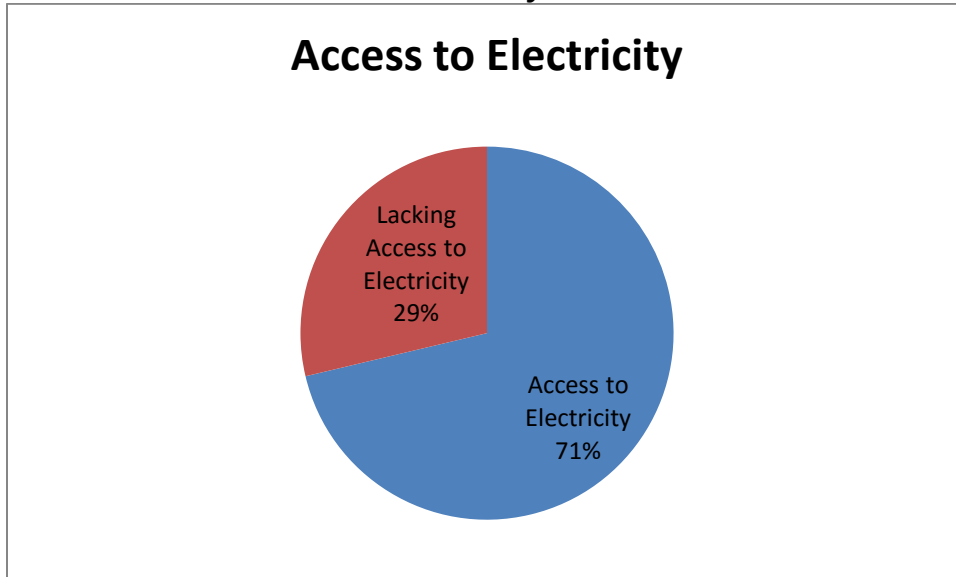
Approximately 90 percent of the Chapter's housing units rely on wood as the primary source (FIGURE 22). The remaining 10 percent use propane.



### **Access of Electricity**

Approximately 71 percent of the Chapter's Housing Units have access to electricity. Homes located south of the chapter house do not have access to electricity. Although some homes have been wired and have solar power.

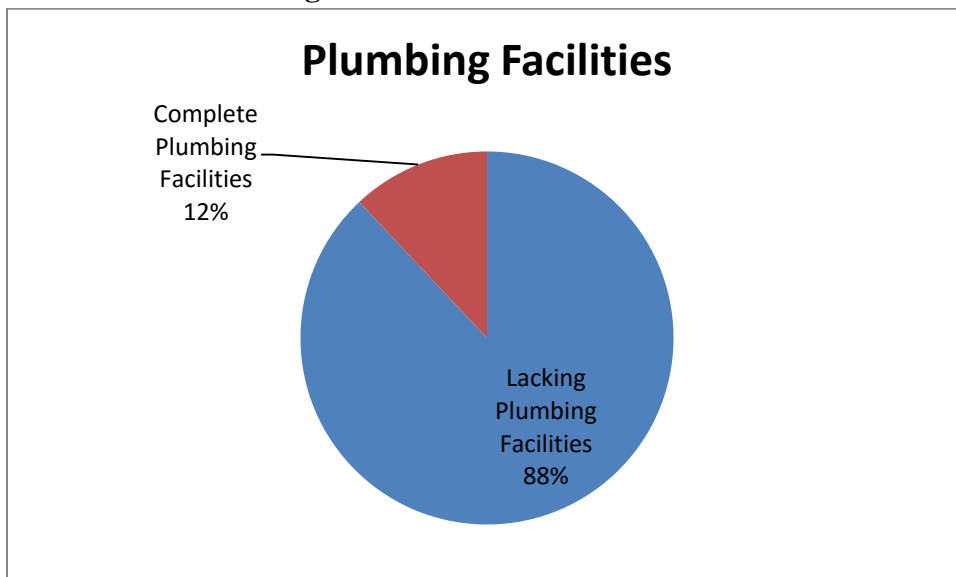
**FIGURE 23. Access to Electricity**



### **Plumbing and Kitchen Facilities**

Nearly 88 percent of the housing units lack complete plumbing facilities (**FIGURE 24**). The majority (87 percent) of Chapter members are also without complete kitchen facilities (**FIGURE 25**).

**FIGURE 24. Plumbing**





**FIGURE 25. Kitchen Facilities**

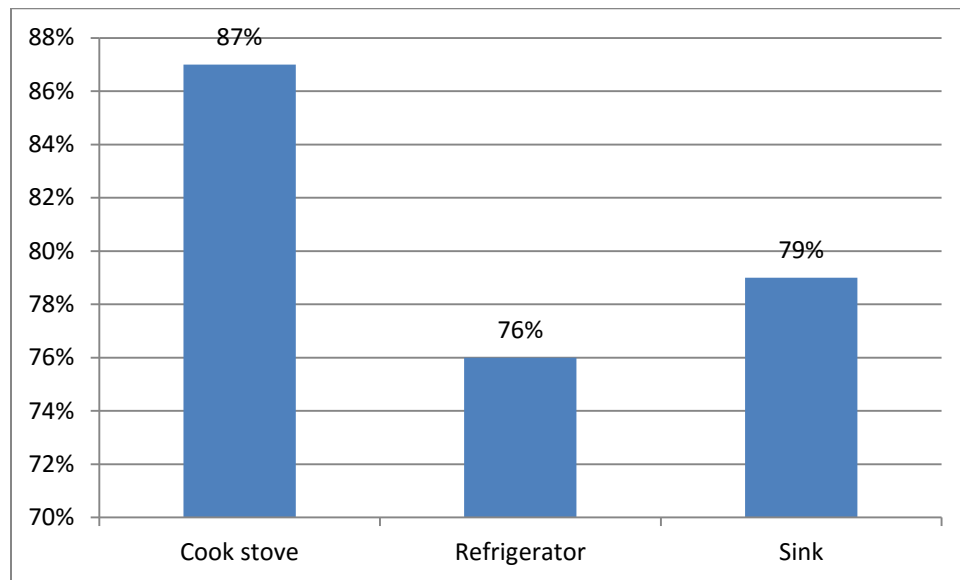




Photo by Christian Gillwood

## 6. LAND USE PLAN

### Introduction

The identification of existing land use patterns and the designation of future land used are important to any community, but especially for the Chapter as it moves toward local governance and self-sufficiency. The community's vision can help it focus on the appropriate mix of land uses. While successfully planning for its future, the community's ability and character can be strengthened. Good planning can lead to stronger economic and community base, an efficient system of roads and utilities, and the protection of natural, cultural, and traditional resources.

The chapter can directly influence the direction of future land development and better manage its growth using this land use plan. The land use plan map designates general location for various land uses while relating each to the other (**FIGURE 26**). The land use plan serves as an important resource for decision-makers involved in development projects: and should be used as a guide whenever land-related issues occur. To achieve appropriate balance among the goals promoted by this land use plan, flexibility in specific decisions is required.

**FIGURE 26. Land Use Plan**





## Land Use Designation

### Residential Housing

Residential land use includes scattered housing and subdivisions. Scattered housing would be those that would generally comprise of one-acre home sites. Within these clusters, homes may or may not be close together. Subdivisions on the other hand, provide a tighter, more organized housing arrangement with more houses per acre. Typically subdivisions on the reservation include housing built by BIA, NHA, ONHIR or other housing entities. Refer to Section 7, the housing element for further discussion.

### Community Facilities

This category designates public land uses, including schools, colleges, libraries, fire stations, police stations, convention centers, museums, governmental offices, utility stations, and hospitals. Community facilities provide a valuable service to the community, offering series to benefit and serve the entire community. Typically, these facilities on the Navajo Nation provide public amenities and include places like the Chapter house. The Chapter house provides a central location for meetings and community gatherings. Other community facilities may include group-housing areas, health services facilities, police stations, and fire departments. In addition, local schools are important community facility that can provide children of the community with a suitable, conveniently located educational facility. Refer to Section 8, the community facilities element for further discussion.

### Commercial

The commercial categories are established to provide areas in which business may conducted, goods sold and distributed, and services rendered. In addition, they are set up to provide for public activities and other activities which support retail and business functions. Such uses may include grocery stores, trading posts, or even areas for local vendors and artists to sell their wares to tourists and others.

This commercial land use is important to the economic development of the chapter as it provides places for businesses to be developed and grow. Businesses can provide jobs and create an economic base, and potential revenue for the Chapter through sales tax or business leases. Local businesses can provide opportunities for local residents to shop locally versus commuting far away to shop; such activities bring money into “locally” owned business that can help spur other growth within the community. Refer to Section 9, the economic development element for further discussion.

### Industrial

Industrial development is another way to enhance economic development. Industrial development typically facilitates businesses connected with the production, manufacture, or construction of a

product or a range of products. Typical industrial development may include mining, manufacturing or warehousing. Industrial development can provide jobs for the community and potentially bring revenue from user fees, sales tax, or other mechanisms. Refer to Section 9, the economic development for further discussion.

## **Recreation**

Recreation facilities provide places for play and relaxation; activities at such facilities can encourage physical fitness among community members. The areas designated for recreation on this plan are intended to be more structural recreation facilities rather than those provided by trails in the open space. Such structural facilities may include both indoor and outdoor structures. Outdoor facilities may include parks, playgrounds, hiking and biking trails, ball fields, rodeo or equestrian facilities, or golf courses. Indoor facilities may include gymnasiums, fitness centers, or a multi-use recreation center. Refer to Section 12, the open space element for further discussion.

## **Open-Space**

Areas designated as open space are those areas that the community has identified as having special significance, and are areas that should be preserved in their natural state without development. The designation as open space does not mean that people cannot use the space for limited grazing, hiking, or other low impact activities, but it does protect the area from mining, building or other forms of development. Grazing in open space areas should not be intensive and should be carefully monitored to ensure that overgrazing does not occur in these areas. The intent of open space is to preserve areas of particular beauty, or natural or cultural significance for future generations to enjoy and respect. Refer to section 12, the open space element for further discussion.

## **Grazing**

As open space areas, grazing lands possess scenic values except when overgrazed. Areas designated for grazing should remain primarily undeveloped to ensure that grazing rights in these areas are protected. The grazing areas will likely be managed by the grazing committee and should be regulated by the grazing management plan. Areas designated for grazing should not limit the use of these areas for other non-development related activities such as recreation or hunting with the understanding that the primary managed land use on this land is grazing. Traditionally, home sites and family clusters of homes are located within a grazing area. This type of home site development is compatible with areas designated for grazing. Refer to section 12, the open space element for further discussion.

## **Farming**

Farming is another important way of life for some community members, though on a smaller scale than grazing. Land that has been designated for farming should be used for raising crops, either for subsistence or for market. Soils and location are prime factors in determining the suitability of the land for farming. Further, availability of adequate water is also a serious consideration and limits

the amount of land capable of being brought into cultivation. Farming land is typically relatively flat with healthy, rich soils, and near a natural or irrigated water source. Refer to section 12, the open space element for further discussion.

### **Traditionally and Culturally Sensitive Sites**

Traditionally and culturally sensitive sites are defined as those areas that have been designated by community members as areas that are either used for ceremonies, or have some cultural significance. These areas may be areas where herbs are gathered, area of archeological importance, or they may be areas that hold other historic or cultural significance for members of the community. These areas should be treated with the greatest of respect and should not be subject to any sort of development (with the exception of building ceremonial structures, etc.) The purpose of designating these areas is to protect them for the use and respect of community members and future generations.

## **Goals and Objectives**

### **Governance**

Goal: Develop the Chapter into self-sufficient local government with strong land development guidelines and land use policies.

#### Objectives:

- Achieve LGA certification by completing and implementing a five management system and a community-based land use plan.
- Develop governance policies, infrastructure, services and framework in collaboration with the tribal central government and the local, county, state and federal agencies.
- Develop and implement policies for business and vendor site leases consistent with local governance and with Navajo Nation Laws.
- Develop land use guidelines that encourage suitable locations for new development and help ensure appropriate access and services are provided.
- Develop a capital improvement plan incorporating the economic development vision.
- Consider incentives and options for attracting businesses.
- Support community input and participation in land development activities.

### **Geographical Boundaries**

Goal: Define the Chapter's geographic boundaries as well as areas for economic development within the chapter.



Objective:

- Define Coalmine Canyon's Chapter geographic boundaries based on original areas identified by soil surveys conducted by the Bureau of Land Management and the Bureau of Indian Affairs for grazing management on the Navajo Nation.
- Focus development in areas economically compatible with service requirements while preserving open space and grazing land.
- Develop and adopt zoning ordinances appropriate for land use areas.



Photo by Craig Gillwood

## 7. HOUSING

### Introduction

The emphasis upon housing is essential for land use planning in any community. While all of the areas where Chapter activities take place are important, because residents' activities begin at their homes every day, it is especially important for housing areas in the Chapter to be functional, safe, and pleasant locations with good access to the lands where other activities take place. The housing element promotes addition of dwelling to ensure housing opportunities meet the desires of the community including quality, safe, affordable and decent housing. Efforts shall continue to be made to provide a mix of housing within subdivisions and scattered housing to allow people of all ages to enjoy living in the community.



Photo by Melanie Nez

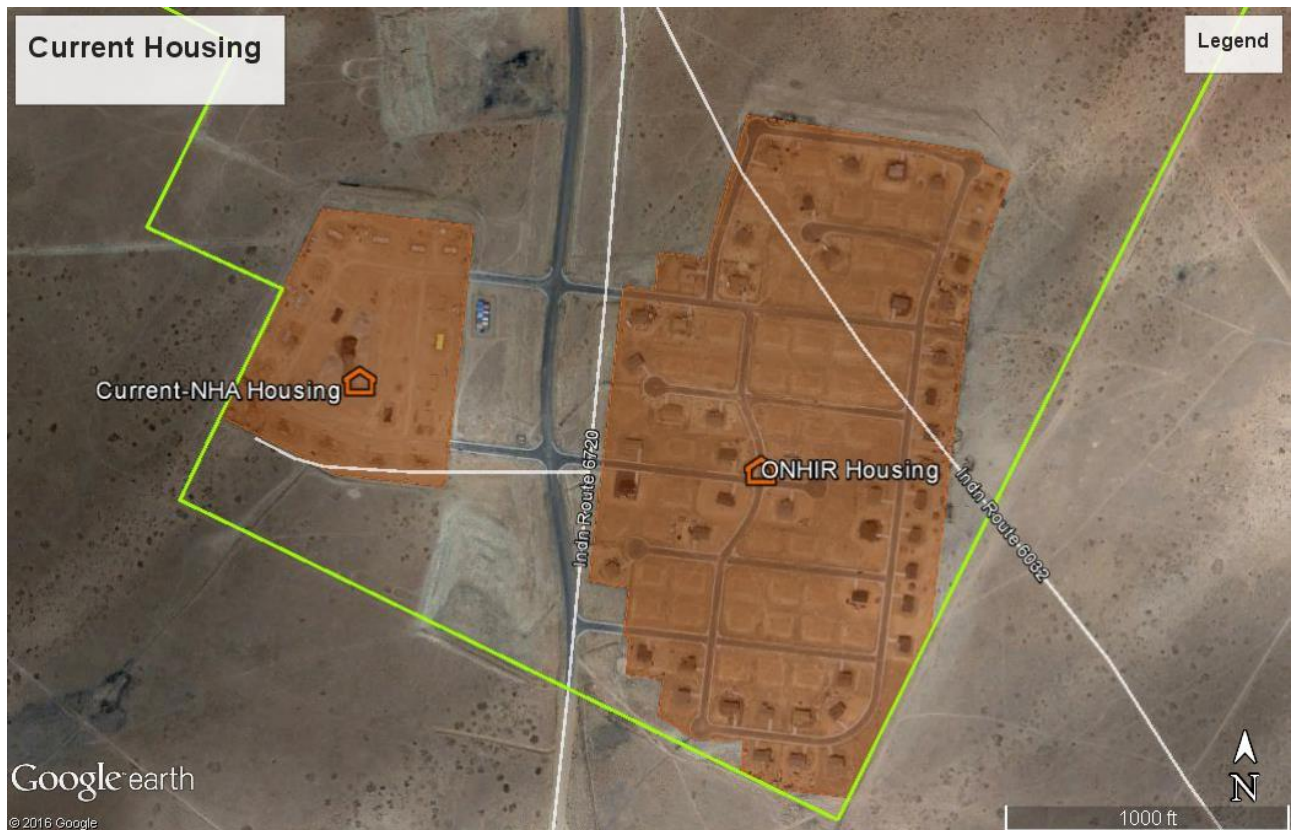
## Current Conditions

Housing in the Chapter includes both scattered housing and subdivisions. Individual residential housing are located both on the high plateau and down in the Painted Desert Valley. Only those scattered residence located near the community tract along either side of Highway 264 and those located north of the Cameron bridge along either side of Highway 89 have access to electricity and/or water. The remaining scattered housing in the Chapter lack utilities and in some cases in need of basic infrastructure.

Two subdivisions, an NHA and the Relocation homes were completed in 2002. The southern and southeastern portion of the community tract is designated as a single residential housing. The NHA and the Office of Navajo Hopi Indian Relocation deemed these units as low to medium density at .45-.50 acre lots. Low density housing was installed to alleviate pressure to existing sewer systems as well as the problems with auto and pedestrian traffic.

Figure 27 shows current subdivisions south of the chapter house.



**Figure 27. Existing Housing**

## Proposed Housing

Additional sites were identified for future housing in the land use plan. The first site is located within the community tract adjacent to the existing housing development. The community members identified this area for additional housing units, preferable, on half acre lots. Accessibility is good and all infrastructure available and low cost development. The site is suitable and is compatible with adjacent land use. The second site is located just north of the relocation subdivision for open lot housing. The third site is located within the Relocation Subdivision. Scattered Home sites are located in outlying areas. An Independent Living Facility is proposed for this location partnership in with Tuba City Regional Health Care Corporation and ONHIR. The idea was encouraging to community members who lack stable living faculties and/or residential care facilities.



Photo by Melanie Nez

## Community Tract

**Figure 28** shows the community tract at 414.15 acres and designates proposed housing areas. The first area is a 13.5-acre site located within the tract along the eastern boundary between the open space strip and the relocation homes. The site is suitable for development and there is sufficient land for approximately 27 NHA lots within a 13.5-acre site,

The proposed housing sites are suggested to be low to medium residential density.

**FIGURE 28. Proposed Housing – Community Tract Location**



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## Ground Water

The existing well within the community tract traps into the N-Aquifer and the D-Aquifer of the Navajo and Dakota sandstone formation. The water in gallons per minute drawn from the well is sufficient to meet the demand capacity of the existing and future growth development. The N-aquifer piezometric surface is approximately 5,800 feet from sea level. The N-aquifer is approximately 700 feet thick at approximately 3,000 to 4,000 feet above sea level. The D-Aquifer is about 400 feet thick and is approximately 4,300 to 5,000 feet above sea level. Water outflow from the N-Aquifer occurs on the surface flow in Moenkopi Wash near Tuba City and at Laguna Creek near Kayenta. Both locations are also recharge areas and both have seen a reduced or no flow of natural springs in the vicinity.

## Surface Water

The area is considered semi-desert with sand dunes developing in most areas and wind erosion is apparent. Precipitation in the region is very low except during late July monsoon season. On a regional geographical level rain from seasonal thunderstorms drain to the southwest and south toward the Appaloosa Ridge and into the Little Colorado River basin,

There is no surface water on the proposed site but there are small amounts of overflow water that drains from the water tanks.

## Soils

Soil in the region is a critical natural resource for agricultural potential to vegetative communities for wildlife. Maintenance of soil stability in the region is important to vegetation and wildlife. Erosion by rain and wind are two critical concerns for management of soils once impacted by road and structural development. This irreversible impact is related to soil's compatibility to regain its structure after it is distributed by human activity.

The south and southwestern portion of the proposed tract has developed a high deposit of sand dunes consisting of sandy loam over predominate reddish brown sandy loam soil. The soil is reddish brown sandy loam clay consisting of Palma-Clovis soils mixed with eolian and alluvial deposits. The permeability and subsoil clay shrinks-swell is moderate. Soil bore testing is recommended prior to actual construction for a stable residential foundation.

## Slope and Topography

The slope on site varies from 4 to 5 percent near the ridge in the northeastern area to the 5,940 feet contour line. The slope continues southeasterly with a 1 to 3 percent grade from 5,940 feet to the 5,920 feet contour lines. Lineal dirt mound and sand formation run west to east at the south portion of the site. The dirt mound acts as a drainage diversion in an easterly direction and away from the adjacent ONHIR residential lots during intensive thundershowers. The excess dirt could be from the ONHIR construction site.



## Vegetation and Wildlife

In higher elevated areas of the site plant species consist of yucca plants and Indian rice grass. They grow in larger clusters and are healthier than the plants in the lower areas. Erosion is not apparent at the moment. The threat of sand dunes moves toward the ridge. Preservation of the remaining plant species with landscaping techniques should be promoted.

Vegetative cover is very low in the southeastern portion of the site. Wind and rain erosion are moderate. The sand dune formation would increase should the site discourage landscaping techniques. A few patches of Indian rice grass (*Orzopsis Hymemoids*) and blue gram (*Bouteloua Gracilis*) remains slow down the erosion process. Low vegetative coverage allows wind and rain erosion to take effect at an excessive rate. Whenever plants try to regenerate it loses the strength of the sand in arid regions.

## Cultural and Traditional Sensitive Areas

A field reconnaissance of the proposed site was conducted and the planner did not see signs of historical structures, contemporary ceremonial land use, or lineal cultural features. Animal traffic patterns were seen but the site did not seem to be utilized on a daily basis for intensive livestock grazing. Livestock grazing is discouraged within the community tract. Cultural inventory studies conducted on the 414-acre community tract revealed non-eligible properties and provided a clearance for the community tract. The proposed residential development of the site would not adversely impact cultural and traditional sensitive areas.

## Accessibility

A conceptual thoroughfare pattern was shown to suggest alternative routes to alleviate traffic N6720 on Figure 29, identified with bold white liens. Two alternative road extensions from the OHNIR tract is suggested should development occur. The Northwest cu-de-sac could become road extension connecting to the existing dirt road at the northwestern area of the proposed tract. The northeast cul-de-sac road extension would run easterly connecting to the same existing eastern dirt road looping the northern boundary of the proposed tract then reconnecting to N6720.

## Environmental Sensitive Areas

The proposed development site will not adversely impact environmental sensitive areas. Future human activities and increase growth development will spur residents to promote recreational activities. This recreational need becomes an environmental issue and concern. The scenic areas do attract residents as well as non-residents. A buffer of 5,000 feet buffer with 1,000-foot increments should be established to enforce environmental policies and regulations to preserve natural scenic areas.

## Ground and Surface Water

Both the N-aquifer and D-aquifer extend to the western portion of the Navajo Nation. In the Coalmine Canyon area the N-aquifer ground water geologic strata flows to Moenkopi wash. Moenkopi wash is considered the nearest water recharge area.

Rain run off is generally east to northeast on site. The Office of Environmental Health and Engineering (OEHE), Tuba City has conducted a water well study for ground water in the 1990's to the east of this area. The area was recommended as the main source of water for the community. It is suggested that the community reconsider drilling another well to accommodate a comprehensive land use plan endeavor.

## Soils

The Natural Resource Conservation Services (NRCS) from Flagstaff, Arizona conducted a soil study in 1990 for approximately 2,439-acres. Soils classification and units are of the Sheppard Nakai complex. Classification denotes the soils as coarse-loamy, mixed, typic Calcclorthids. The Nakai is well drained mix in alluvial on mesa and alluvial fan. The Sheppard series is very deep with surface layer in reddish-yellow fined sand at 17 inches and reddish-yellow loamy fine sand to 60 inches. The soil is considered good construction material for structures. This is not the same for rural septic absorption fields because it is a poor filter.

## Slope and Topography

The on-site terrain has an easterly gentle slope of 3 to 6 percent. Surface run off drains to the east and continues to the north across Highway 264 through a culvert.

The moderate vegetative coverage in decrease rain and wind soil erosion in the area. The elevation contour lines in the area are approximately 5,760 to 5,740 feet in mean sea level.

## Vegetation and Wildlife

Major plant species in the area are yucca, saltbrush, and Indian ricegrass, Vegetative coverage is moderate to poor and there was no indication of high erosion processes on site.

Vegetation is important in that they minimize wind and rain erosion, they are undisturbed as native species they provide food and cover for wildlife, and are rare species.

## Cultural, Traditional, and Environmental Sensitive Areas

A Field reconnaissance indicated development would severely affect significant identification of cultural, traditional and environmental sensitive areas within the conceptual site. A detail site analysis would likely occur during the initial land withdrawal processes when an environmental assessment is conducted. The undisturbed area by human activity and low precipitation does give

the area an advantage in not exposing cultural features should there be features within the proximity.

### Accessibility

The primary arterial road that would connect the site is Highway 264 and is located to the north of the proposed concept site. A dirt road veers southwesterly from Highway 264 and could serve as a major collector road onto Highway 264 from the site.

Roads present a management concern to rural open space areas. Roads impact, change and desecrate the landscape, and threaten plants when heavily used. It can become critically important when rural elderly need attention or responses by emergency services Maintenance of the proposed residential neighborhood. A secondary collector read is suggested onto SR264 at the northeastern portion of the tract to accommodate the intensive development concept.

## **Goal and Objectives**

### **Existing Housing**

Goal: Preserve all existing residential housing units in the Chapter.

Objective:

- Establish local standards, procedures and ordinances to guide the preservation of the existing dwellings.
- Establish programs for maintaining, improving and upgrading existing housing units.
- Continue to work cooperatively with agencies to provide infrastructure to the existing housing units.

### **New Housing**

Goal: Develop and maintain a pattern of residential land uses.

- Provide for a variety and balance of densities and opportunities for a mixture of different dwelling and tenure types.
- Provide adequate sites for the development of a wide range of housing types for all types of households.
- Develop consistent, streamlined regulations and procedures which maintain environmental quality, public health, and safety standards while minimizing the impact on the development of housing.
- Continue to develop the positive aspects of the rural character of the Chapter.





Photo by Christian Gillwood

## 8. COMMUNITY FACILITIES

### Introduction

The section examines the community facilities and services, goals and objectives and proposed future development. It also provides an inventory of the types of community facilities and services (police, fire, hospital, recreation) within the Chapter.

The planning and management of community facilities directly reflects the perception of the quality of life and the character of the community. It can help further other land use plan goals, such as those related to community character, or it can help the community examine present opportunities in existing facilities and support development of facilities where there is the greatest need.

### Current Conditions

The Chapter is in a rebuilding stage, since it lost all its community facilities, including its Chapter house, a pre-school and other public facilities with the passage of the Navajo and Hopi Land Settlement Act of 1974. The land on which the Chapter facilities were located was awarded to the Hopi Tribe. Subject to eviction from the Hopi-partitioned lands, the Chapter began rebuilding an entirely new community outside the 1882 Executive Order Reservation in the early 1990's.

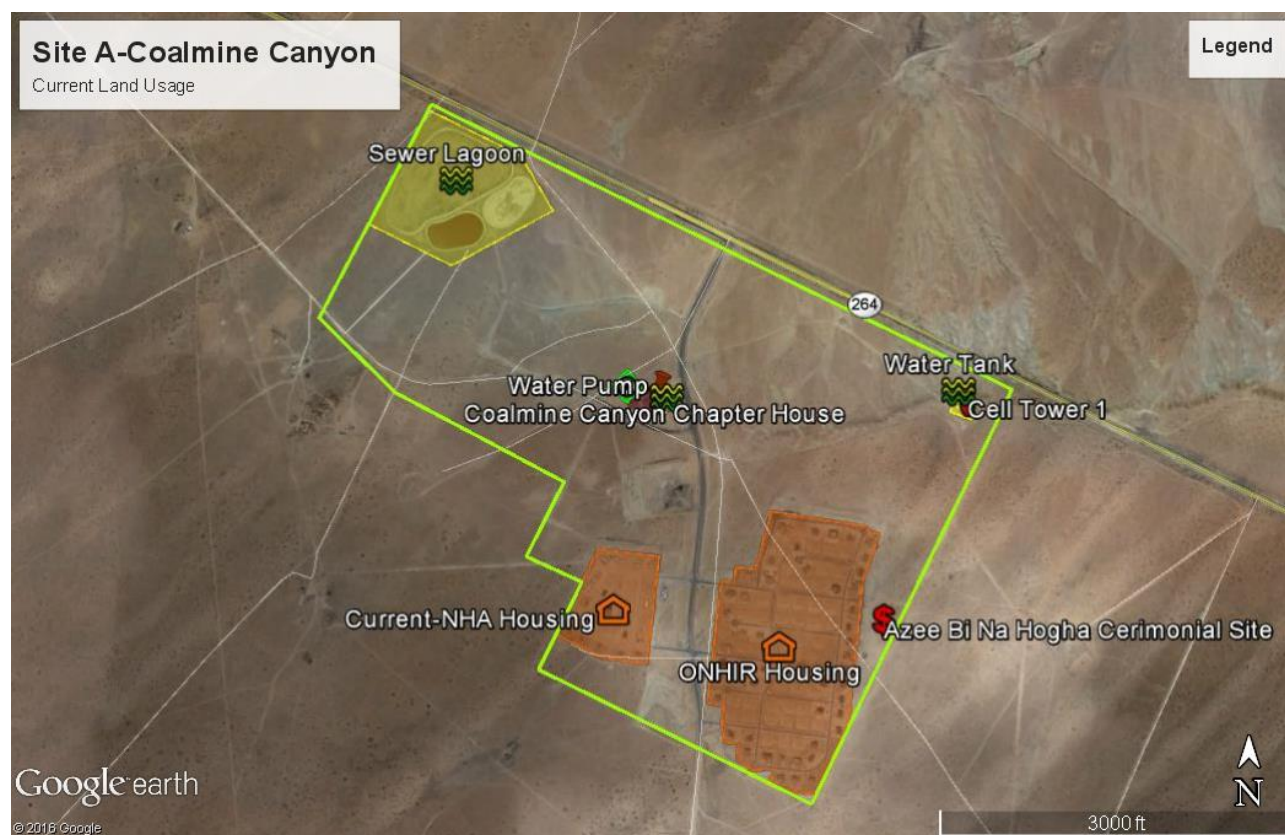
Presently, the Chapter house is the only community facility located within the community tract. The Chapter house, built in 2004, serves as a local governance center for the community and provides the following community services: Public Employment Program (PEP); Summer Youth Program, Scholarships and Housing Discretionary Assistance which includes renovation and Archeological Clearance/Land Survey.

Other community facilities such as public safety, fire protection, and health care are provided Tuba City Regional Health Care Cooperation. A mobile unit is assigned to be at the chapter one day per month providing onsite minimal health care services. On an average, residents must travel more than 18 miles for services.

Within the Chapter, students attend public schools in Tuba City and Leupp or attend BIA schools in Tuba City or elsewhere outside of their home Chapter. The one-way commute to attend school ranges from 20 to over 70 miles, requiring a bus trip of more than two hours, one-way for some students.

No churches are located within the Chapter. Several community members practice the traditional Navajo religion and/ or with the Azai be na hagi. Such members' worship is typically practiced within or near existing developed homesteads. Figure 29 shows map of Site A within 414 acres.

FIGURE 29. Existing Conditions

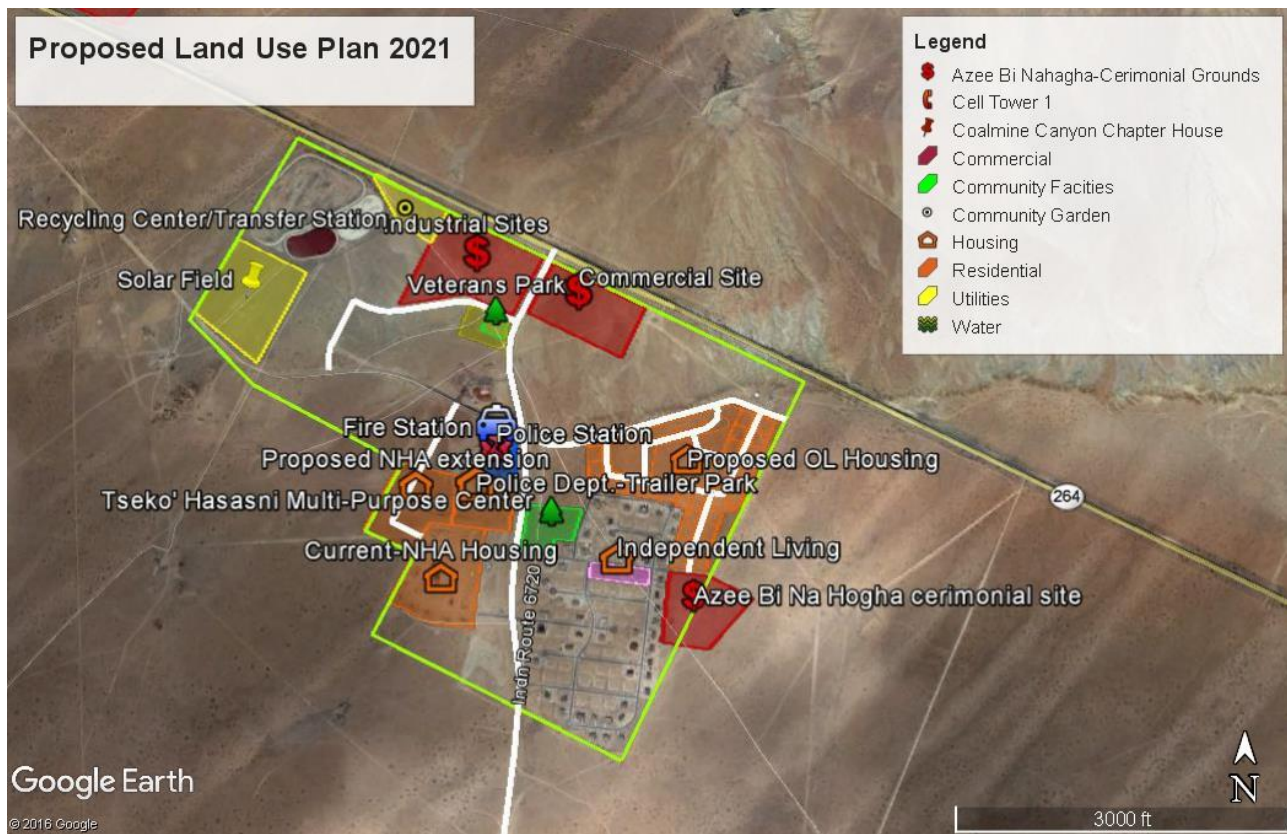


## Proposed Community Facilities

### Community Tract

The Chapter community tract consists of 414 acres of tribally withdrawn land in the northwest corner of the Chapter along Highway 264. The community tract is intended for public facilities and housing. Public facilities may include schools, a senior center, a day care facility and a police substation. Areas for future community facilities are shown on **FIGURE 30**. The central area shows areas for future public facilities. A transfer station site is located to the north which is addressed in the utilities element of this document.

Figure 30. Proposed Community Facilities





## Azai Be Na Hagai

Approximately 10 acres have been identified for the Azai Be Na Hagai and Diné Hatalie Association. This location is located adjacent to the eastern boundary of the community tract. Figure 31 shows area for Ceremonial Site.

FIGURE 31. Ceremonial Site



## Cemetery Tract

Twenty acres has been legally surveyed for the cemetery tract. The tract is located approximately 1,610 feet northwest of the 95.5 milepost monument. The Coalmine Canyon Chapter approved an additional 20 acres of the Land Withdrawal in the total amount of 40 acres to expand the Coalmine Canyon Community Cemetery. Resolution Number: CCC-04-0051-14. The Chapter will be planting some trees and put in the zoning at the cemetery to better organize the plotting situation.

**Figure 32. Cemetery Tract**



## Goals and Objectives

### Community Facilities

Goal: Provide adequate community facilities and services ensuring the well-being of those who live, visit or work within the community.

Objectives:

- Provide a range of community facilities and services to meet existing and anticipated needs of the community.
- Provide community services to ensure each community member a safe, healthful and attractive living environment.
- Continue to work cooperatively with agencies to provide community facilities and services to the Chapter.
- Maintain both facilities and programs to exemplify the quality living standard for the community members.

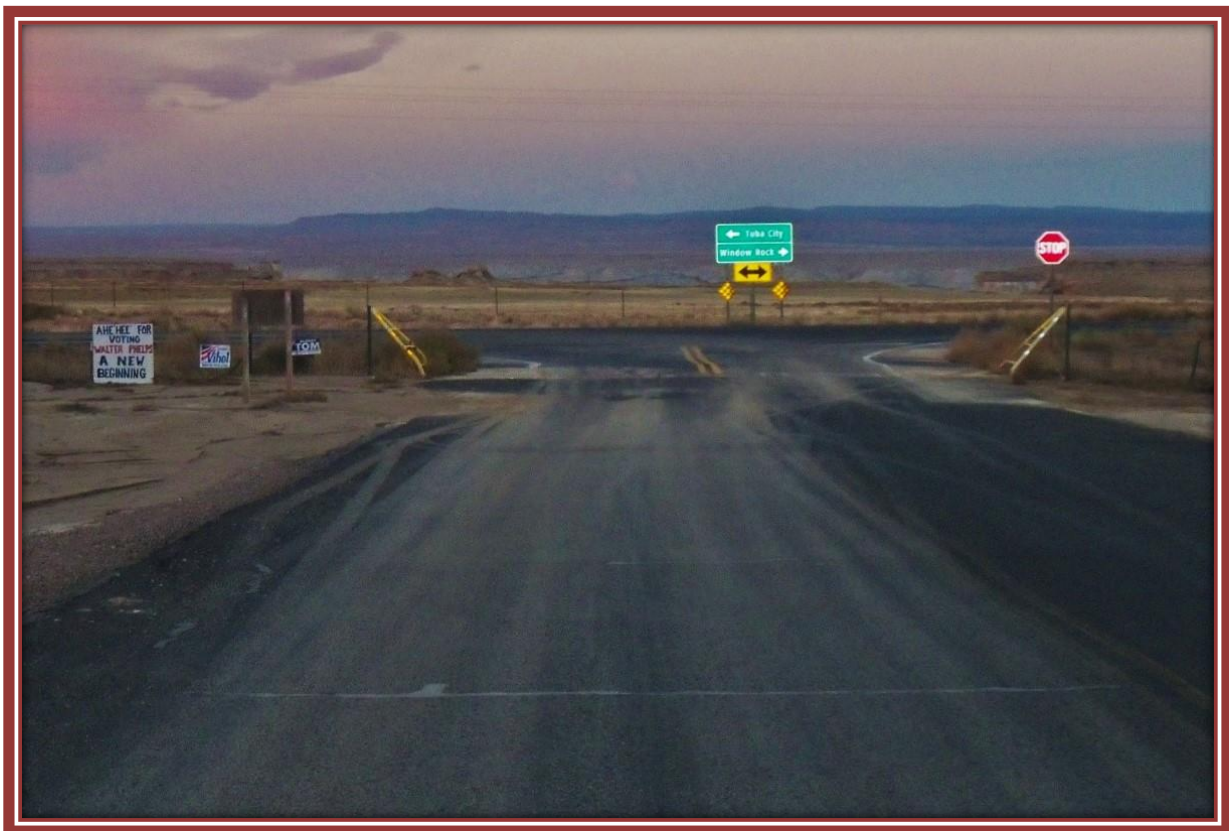


Photo by Christian Gillwood



## 9. TRANSPORTATION

### Introduction

This transportation element provides information about the existing road and proposed road network in relation to the Chapter's current and proposed land use as well as the surrounding area. It has community goals and objectives designed to contribute to the quality of life for residents, provide safe and adequate public access to and within the community, and to the movement of goods and services throughout the region.

To meet the essential needs of the Chapter's current transportation system and keep pace with the demands of tomorrow, State, Federal and tribal routes must be evaluated for the necessary improvements that will successfully support the Chapter's *Community Based Land Use Plan* and future growth.



Photo by Christian Gillwood

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## Current Conditions

### Roads

BIA and State Highways, in addition to Navajo Routes and unimproved dirt roads serve the region. Only the Highways are paved. The Navajo Routes are graveled or dirt roads. **FIGURE 33** shows the existing road network.

U.S. Highway 89 connects Flagstaff and Page, AZ and serves the western portion of the Chapter area. U.S. Highway 160 extends from Highway 264 to Kayenta, and serves Kerley Valley. State Highway 264 runs directly through the northeastern part of the Chapter, alongside the Chapter's community tract, connecting Tuba City, Oraibi and Window Rock.

Navajo Routes N6710, N6720, 6730 and N6731 provide further access into the planning area from the Highways. N6710 loops off of Highway 264 from Moenkopi to the Chapter's community tract. N6720 runs along the eastern side of the planning area and connect Tolani Lake. N6730 extends from Highway 89 to Leupp along the Little Colorado River. N6731 connects Highway 160 in Kerley Valley and extends to Highway 89.

The Navajo Routes are part of the greater Navajo Nation Indian Reservation Roads (IRR) program. Pursuant to 25 CFR Part 170, the IRR Program is part of the Federal Lands Highway Program established to address transportation needs of tribes. The program is jointly administered by the BIA and Federal Highway Administration's Federal Lands Highway Office. It expands transportation activities available to tribes and tribal organizations and provides guidance for planning, designing, construction, and maintaining transportation facilities. The Navajo IRR program is administered by the Navajo Department of Transportation (NDOT).

NDOT classifies roads by their function. Road classification is based on the grouping of roads, streets and highway into integrated systems, each ranked by its relative importance and the function it is intended to serve relative to mobility and land access. The classification also identifies the role each street of highway should play in channeling the flow of traffic in a logical and efficient manner.

The following definitions are from the 2003 Navajo Long-Range Comprehensive Transportation Plan.

- Class 2, Arterial Roads. The Navajo-BIA Class 2 roads are major or minor arterials that provide an integrated network for serving traffic between population centers. They connect state highways and provide travel continuity among Navajo agencies. They collect traffic directly from Class 3 (streets) and Class 4 (local roads) roads onto state highways.

- Class 3, Streets. The Navajo-BIA Class 3 roads include street-type roads which are located within communities serving residential and other urban-type settings. These are streets at Navajo growth centers communities, NHA housing tracts, etc.
- Class 4. The Navajo-BIA Class 4 roads are section line and/or stub-type roads collecting traffic for arterial roads and connecting with the grid of the Navajo IRR roads systems. They may serve areas around Navajo population centers areas, farming areas, schools, tourist attractions or various small business enterprises. This class also includes roads and vehicular trails for administration of forest, grazing areas, mining, recreation, or other utilization purposes. The Navajo-BIA Class 4 encompasses roads not falling in either the Class 2 or 3 classifications.
- Class 5. Pedestrian/ Bikeways. The Navajo-BIA Class 5 encompasses all non-road type paths, trails, walkways, or other designated types of routes for public use by foot traffic, bicycles, horses, or other uses to provide for general access on non-vehicular traffic.

The four Navajo Routes within the Chapter are classified as Navajo-BIA Class 2 roads, which receive traffic from Class 3 and 4 streets and roads. Navajo-BIA class 2 roads and State highways are the Navajo Nation's major and minor arterials providing an integrated network that connect Navajo population centers. Navajo-BIA Class 2 roads also provide travel continuity between Navajo agencies and off-reservation employment centers in nearby border towns. The Navajo-BIA Class 2 roads, therefore, are the key to network efficiency. All of the Navajo-BIA Class 2 roads are unpaved.



Photo by Christian Gillwood



## **Public Transportation**

The Navajo Transit System provides public transportation services (buses) between Window Rock and the Chapter. The CHR, a Navajo Nation program, provides emergency medical transportation upon request. Other tribal and private services provide for non-emergency medical transport. The Navajo Nation Headstart Program Provides bus service to transport pre-school students, and it transports teachers for home-study programs.

## **Air Transportation**

The Tuba City airports located near the intersection of Highway 89 and 160 is one of the primary airports serving Tuba City and surrounding communities. Within the Chapter, an old abandoned airstrip is situated northeast of the Cameron Bridge. The dirt runway no longer exists.







## Proposed Road Improvements

The chapter membership has passed a resolution, CCC-10-0006-16, attached in Exhibit A approving roads for improvement or paving for accessibility of school busses and emergency services. The non-paved roads become impassable during inclement weather.

The main arterial road connecting Coalmine Canyon to Leupp and Tolani Lake is N6720. This road is a school bus route and serves the residents south of the chapter house. This area floods during inclement weather and becomes impassable. N6710 serves families residing west of the chapter house including school children. This road is not a school bus route due to its deleterious condition

The main arterial road paralleling the Little Colorado River is also proposed for paving. This road serves the southwestern portion of the Chapter. They are N6742, N6743, N6747 and N6730.

## Goals and Objectives

### Transportation

Goal: Provide and maintain a transportation system that promotes the orderly and safe transportation of people, goods and service, and at the same time preserve the traditional character of the Chapter.

Objectives:

- Establish a 20 year long-range horizon. Prioritize proposed projects accordingly through chapter resolutions.
- Establish a short range horizon between 5 to 10 years. Prioritize proposed projects according to the needs.
- Evaluate full range of local transportation modes and needs.
- Review existing and proposed transportation system to identify the relationship between transportation and the environment.
- Develop analysis of funding alternatives for plan implementation.



Photo by Craig Gillwood

## 10. UTILITIES

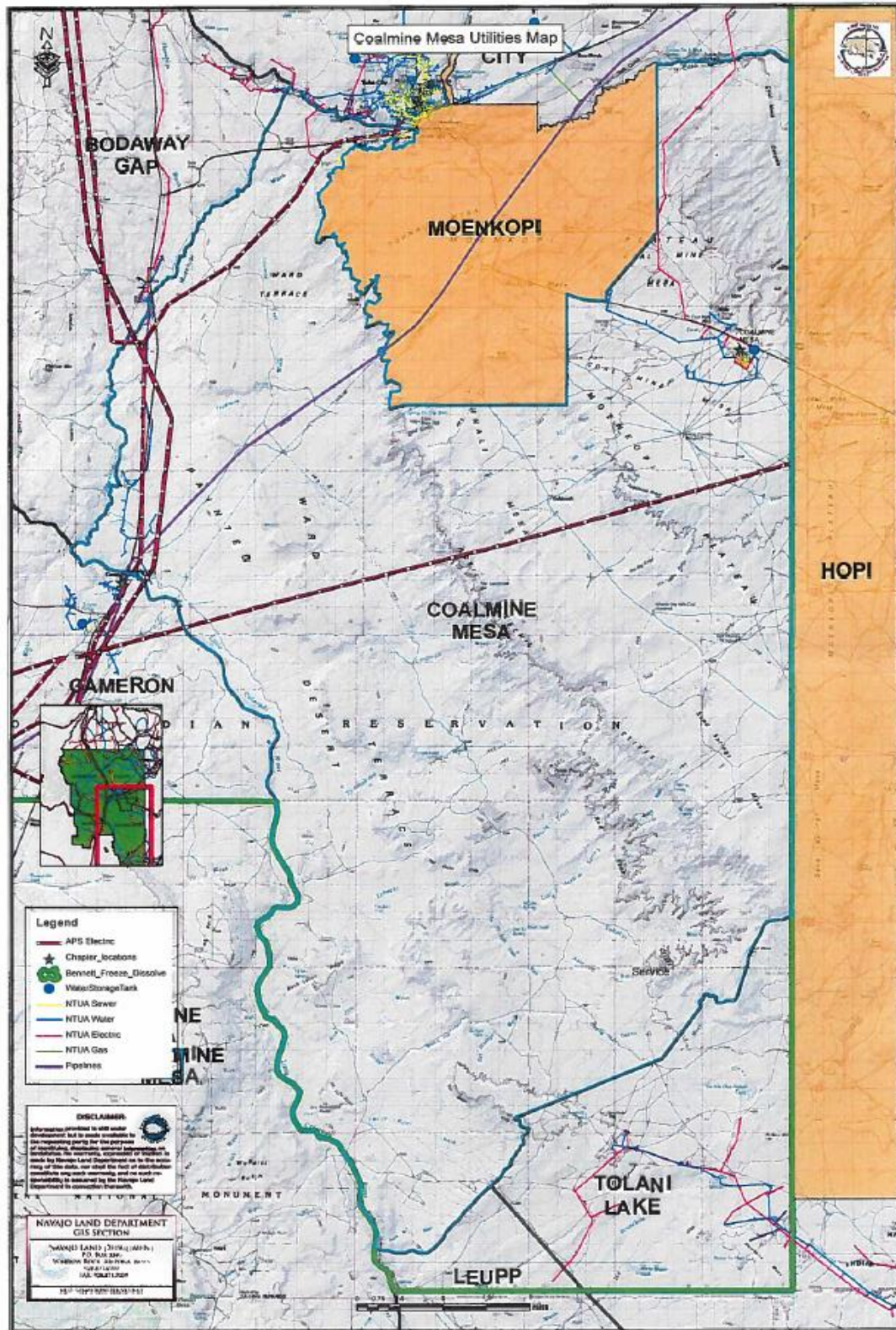
### Introduction

The utility element provides information about the existing proposed utilities in relation to the Chapter's current and proposed land use, and for land in the surrounding area. This element presents the community goals and objectives that are focused on providing safe and adequate utilities and infrastructure within the community.

Some basic needs that the Chapter must address include the availability, reliability and affordability of the community's utilities, defined as electricity, water, sewer and wastewater management, gas, communications and solid waste management needs. In addition, the extent and quality of infrastructure are important determinants for community and economic growth as well.

The Chapter understands the significant need to not only provide utility facilities that are sufficient to support the current community members, but also the Chapter must plan and support adequate utilities and infrastructure for future economic growth and development. **FIGURE 36** shows the existing utilities and roads for the Chapter.

**FIGURE 35. Existing Utilities**





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## Current Conditions

### Electricity

Several major electrical providers, including the Salt River Project (SRP), Arizona Public Service (APS) and the Navajo Tribal Utility Authority (NTUA) own or operate transmission lines within the Chapter's planning area. Only the NTUA provides electricity to the community tract and nearby residents located in the northeast portion of the planning area along Highway 264.

Originating from the Navajo Generating Station located in LeChee, southeast of Page, AZ, two 500-KV transmission lines parallel Highway 89 as they traverse the Chapter's planning area north of Cameron. A consortium of six partners including SRP and APS, operate the generating station and own the power lines but do not provide service to the Chapter. APS also owns two other transmission lines that cross the planning area. These lines include another 500-KV power line that carries electricity from the Four Corners coal-fired Generating Station located in the San Juan Chapter southwest of Farmington, NM, and a three- phase power line that runs along the eastern side of Highway 89, neither of which provide service to the Chapter. Farther north, however, APS provides electricity to the area along Highway 160 in Kerley Valley just below Tuba City, AZ.

As referenced above, all of the Chapter's electricity comes from the NTUA, an enterprise of the Navajo Nation that provides electricity, natural gas, water, wastewater treatment and solar energy to residents and businesses of the Navajo Nation. NTUA has extended a three-phase line to the subdivision and homes along highway 264.

The Chapter currently has plans to develop renewable energy or powerline extension for the remaining families south and west of the chapter house. Clusters of homes shown on Figure 40.

### Domestic Water Systems

Limited areas of the Chapter are served by public water systems. Kerley Valley, the community tract, surrounding residents near the community tract, and residents north of Cameron are the only areas served by public water systems. These water systems are owned and operated by the NTUA.

NTUA has constructed a watering point for domestic water use at the chapter house.

Water hauling is common practice and can be an economic burden for some families, particularly the elderly, as it requires significant time and money.

The residents in the southwest part of the Chapter have been informed by IHS that their well water has unsafe levels of uranium so that it should not be used as drinking water. Possible solutions to provide safe drinking water to the area include (1) a reverse osmosis process to purify the well water; (2) the extension of water lines (the nearest point that water lines now reach families residing along the Lower Colorado River who are not able to access domestic water supply due to uranium contamination); and (3) hauling water on a regular schedule and in large quantities.

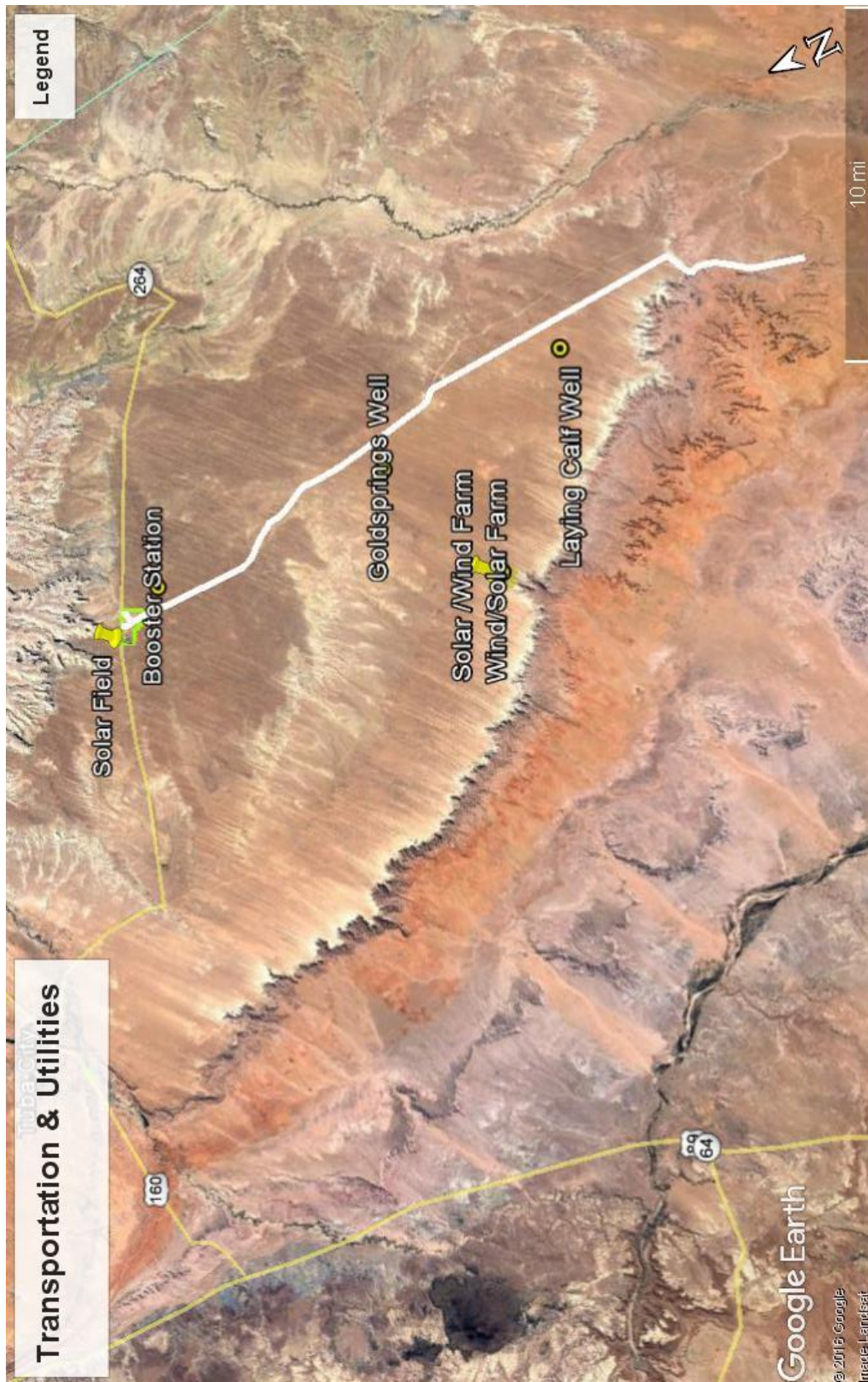
The chapter plans on extending the waterlines to families residing south of the chapter as shown on Figure 36 and Figure 37.

## **Sewer and Wastewater Management**

NTUA operates two sewage treatment lagoons in the planning area. One two-cell lagoon is located in Kerley Valley. The other, also a four-cell lagoon, serves the community subdivision and the Chapter house.

Both sewer lagoons require improvement due to inefficient service. Kerley Valley was reached its capacity and limits additional development in Tuba City area. Coalmine Canyon lagoon requires redesign to operate more efficiently as intended.

**FIGURE 36. Proposed Powerline and Waterline extension Projects**





## Gas

The Questar “Southern Trails” pipeline spans the northwestern portion of the planning area from Moenkopi to Cameron. ARCO constructed the pipeline in 1957 to move crude oil from the Four Corners area to California. In 1977, ARCO reversed the pipeline’s direction and used it to transport oil from Southern California to the north. Questar purchased the pipeline in 2002, converted it to a natural gas pipeline and only activated the portion west of the Colorado River. The pipeline is again flowing in the southwesterly direction, carrying natural gas from San Juan basin in the Four Corners area. Although several companies draw gas from Questar’s pipeline they do not provide service to the Chapter’s planning area. Instead, the community widely relies on local propane distributors. Further, a majority of the residents use wood/coal burning stoves for heating.

## Communications

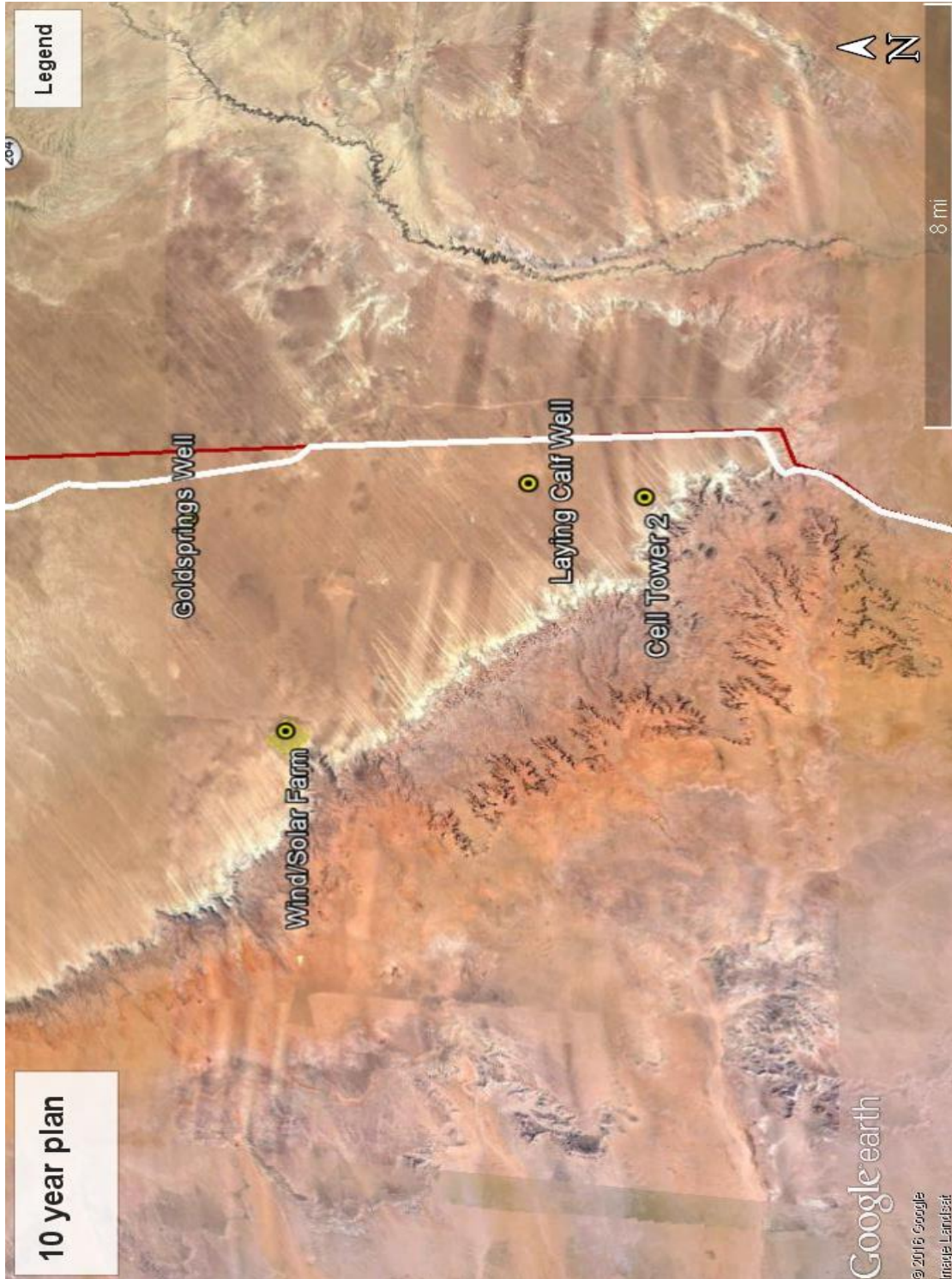
Communications include telephone, radio, television, internet and newspaper. Growing coverage of the Navajo Nation by Cellular One and Choice Wireless Cellular telephone service has begun to replace the need for landline service in some cases, especially for personal communications; however, some businesses may require the stability of land lines. Improvements to the capacity of the landline system are called for in the proposed development areas. Continuing to improve telecommunications can help build stronger businesses links that can help stimulate commercial development opportunities.

Clearly transmitted AM radio stations include and KTNN from Tuba City and Window Rock, respectively. Clear FM radio stations that be readily heard include KGHR from Tuba City and KMGH, KAFF, KVNA and KOLT from Flagstaff, AZ (Rodgers 2004). One television channel is received from KNAZ from Flagstaff, AZ. Some residents access satellite commercial development opportunities.

Newspapers distributors include the Flagstaff Daily Sun on a daily basis. The Navajo Times and the Navajo/Hopi Observer are available on a weekly basis. Internet service is available via modern and satellite connections. There are several different internet services now available in our communities, such as Wild Blue, Choice Wireless and have Broad Band Fiber Optic but costly and the chapter does not have a line. No land lines in our community but several community members do have other services such as Verizon and Contel for disabled individual. The community members has approve a resolution to have Cell One Tower out by the Manygoats residence which is located about 16 miles currently still being implemented. Construction of communication will enhance law enforcement, emergency personnel, and visitors to the region to ensure safety concerns.

**Figure 37 . Proposed location of cell tower south of chapter house and Water Wells.**

Proposed Location of Cell Tower &  
Water Wells for domestic use



## Solid Waste Management

Presently, there are no solid waste disposal sites within the Chapter. An area has been designated for a solid waste transfer station within the community tract. The proposed area is fenced, but lacks the necessary facilities to operate a solid waste transfer station. Figure 38 shows area allocated for development of Transfer Station within the 414 acres referred to as Site A.

Figure 38 . Proposed site for transfer station.





## Goals and Objectives

### Utilities

Goals: Provides adequate utilities to accommodate and stimulate community and economic growth.

Objectives:

- Coordinate the providers of power, gas, water, sewer, telecommunications and solid waste.
- Locate utility facilities to areas currently identified for future planned community and/ or economic development.
- Encourage compatibility between utility facilities and adjacent land uses.
- Ensure adequate energy supplies for future growth.
- Promote reliable and cost-effective service.
- Permit antennas, towers, and new technology for utility service purposes.

### Conservation

Goal: Site new utility facilities to reasonably avoid or mitigate adverse environmental effects.

Objectives:

- Encourage compatibility between utility facilities and the environment.
- Encourage water and energy conservation through land use controls.
- Protect the quality of groundwater used for domestic water supplies.



Photo by Craig Gillwood

# 11. ECONOMIC DEVELOPMENT

## Introduction

This element provides a framework for economic development within the chapter. It sets a direction for future economic growth based on the visions and goals of the community members.

A healthy diversified economy provides many opportunities for jobs, education, and improved health as well as a widely shared and sustainable quality of life and environment, pride in one's own community and hope for the future.

A thriving economy is also important for the chapter because an increase tax based will enhance the community's livability and viability by supporting, maintain, and improving roads, Chapter facilities, and emergency medical services. Job development will provide higher skills, better wages, benefits and opportunities for advancement. Local businesses will feel appreciated by the community and be more likely to stay in town. Further, locally produced goods are more likely to be consumed at the local level and the productivity of the land can be maximized while still preserving the environment.

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## Current Conditions

The construction moratorium has dramatically affected the Chapter's ability to build its local commerce. Commercial business sites within the Chapter's planning area are Van's Trading Post, Barlow's Towing and Nizhoni Health Care which only employs a small number of people. These businesses are located in Kerley Valley along Highway 160.

The "movable vendors" contribute to the local economy. Some vendors are located along Highways 89 and 160. Vendors sell local arts and crafts mostly to people traveling along these major thoroughfares. Temporary agreements with ADOT allow these vendors to conduct such businesses.

Overall, the Navajo economy experiences massive economic leakage to border town and metropolitan communities. Community members are forced to travel long distances to purchase their basic goods, including food, clothing, equipment, and vehicles. Important services such as laundry, auto repair, and banking, for example, are found in outlying communities.

## Economic Development Land Use Categories

The economic development categories fall into the areas of commercial, tourism, grazing, farming, recreational and industrial. Tourism, grazing and recreational can also be found in the open space element of this document.

Commercial areas are established to provide areas where business may be conducted, goods sold and distributed, and services rendered. It further provides for public and other activities which support retail and business functions. This land use category is important to the economic development of the community because it can provide places for businesses that provide jobs. It also can create an economic base and potential revenue for the Chapter through sales tax or business leases. Having local businesses in this area also allows local community members to shop and spend money locally rather than in communities much further away.

Tourism is a conglomerate of many different businesses such as restaurants, gas stations, shops, museums, hotels, trails, and resorts. Each complement the other and are often interdependent on each other for success and survival. Tourism can bring substantial benefits to the community. It is one of the few industries that brings new money into the community; new money means money from outside the community. Tourist spending creates a chain reaction flowing through the local economy.

Grazing lands provide for livestock ranching and sheepherding, in addition to, possessing scenic values. Ranching and sheepherding have been a major occupation and, more importantly, a way of life. Further, ranching and sheepherding are not only commercial venues for Navajo livestock owners; they are also customs that date back many years and are well embedded in the community's cultural heritage. Areas designated for grazing should remain primarily undeveloped to ensure that grazing rights in these areas are protected. The grazing area should be regulated by a



grazing management plan. Areas designated for grazing should not limit use of these areas for non-developed related activities like recreation or hunting.

Farming is another important part of the social, cultural and economic identity of the Chapter that should be maintained. Land designated for farming provides community gardens for growing crops, either for substance or for market.

Recreational areas include natural areas designated for parks and trails. Trails, such as pedestrian walkways and bike paths are established for walking, hiking, biking and horseback riding. Grazing lands can also be considered as part of the recreational areas because they are important to maintaining a high quality of life. These important natural resources are integral components of the Chapter's character and culture. Yet, these scenic areas offer a colorful variety of options for outdoor recreation, tourism, and academic research that can add to the economic viability of the area.

Industrial development typically facilitates businesses connected with the production, manufacturing or construction of a product or a range of products. Typically industrial development may include mining, manufacturing or warehousing. Other industrial land use may be included in the process as there may be needs for providing public utilities, such as water treatment, power lines and other utilities in support of the community. Such focused development fits within the community's needs while also providing jobs for the community and bringing in revenue from user fees, sales tax or other mechanisms.

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## Proposed Economic Development

**Table 9** lists these academic development areas by their development name and development type. These sites were based on the Chapter's Vision and the goals and objectives determined by community members per chapter resolution CCC-02-0035-14..

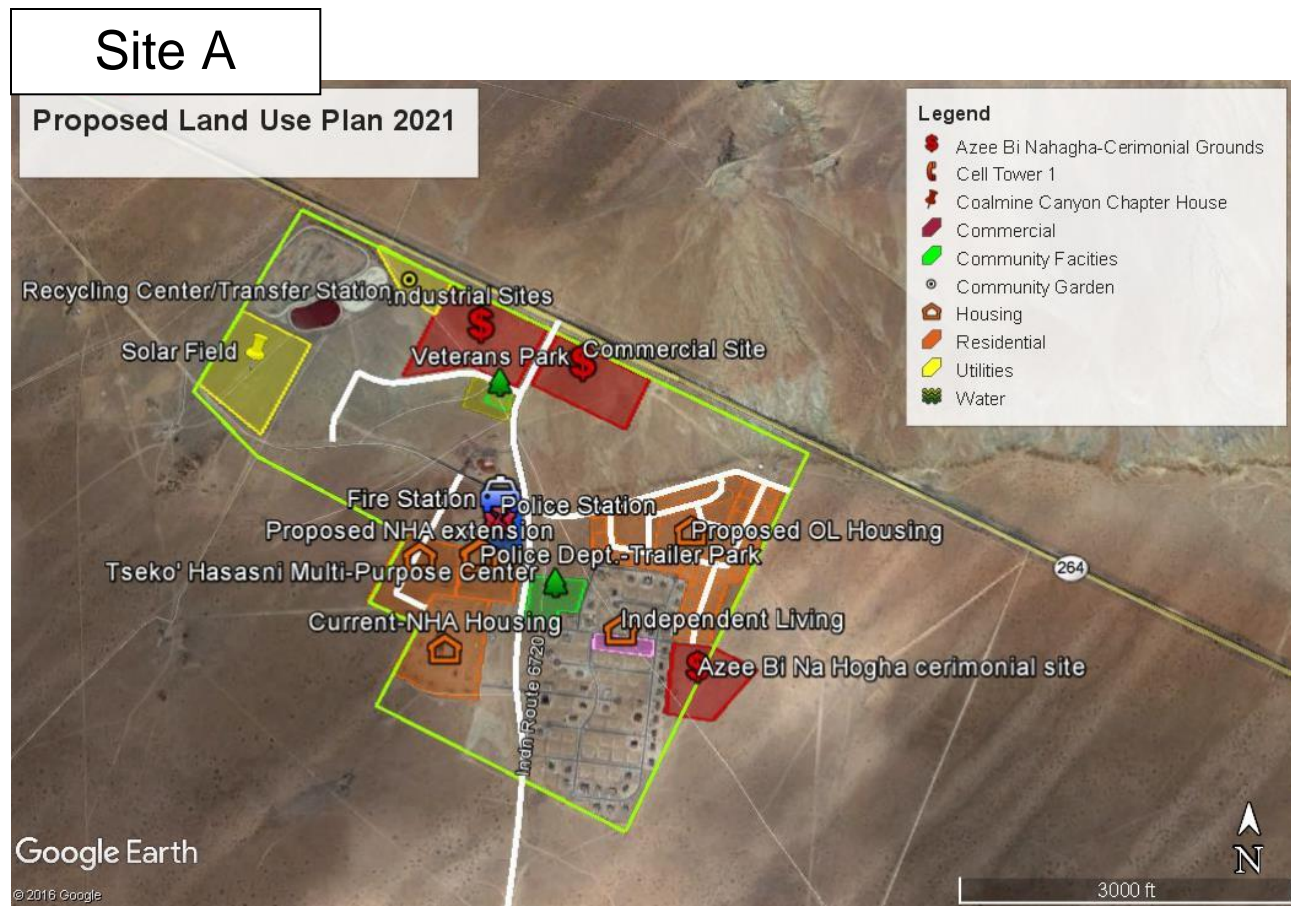
<b>Table 9. Proposed Economic Development Sites</b>	
DEVELOPMENT NAME	DEVELOPMENT TYPE
Commercial Business & Industrial Site A:	Commercial Retail
Kerley Valley (Site B) Commercial & Light Industrial Site	Commercial Retail
Fair Grounds/Rodeo Grounds	Commercial
Ram Pasture	Agriculture / Livestock Production
Rifle Range Park	Commercial

## Commercial & Industrial Business Site

The development of business sites within the community tract will serve much of the newer residential development near the Chapter house as well as people traveling along Highway 264 between Tuba City and Oraibi. **FIGURE 39** shows commercial tracts within Site A.

Location:	Community business site is located by the chapter house complex identified as Site A
Size:	31.93 acres
Land Status:	Withdrawn
Land Use:	Commercial & Light Industry

**FIGURE 39. Commercial & Industrial Business Site**





## Coalmine Canyon Rodeo/Fair Grounds

The Coalmine Canyon Fair Grounds has been in existence since the 1950's. **FIGURE 40**

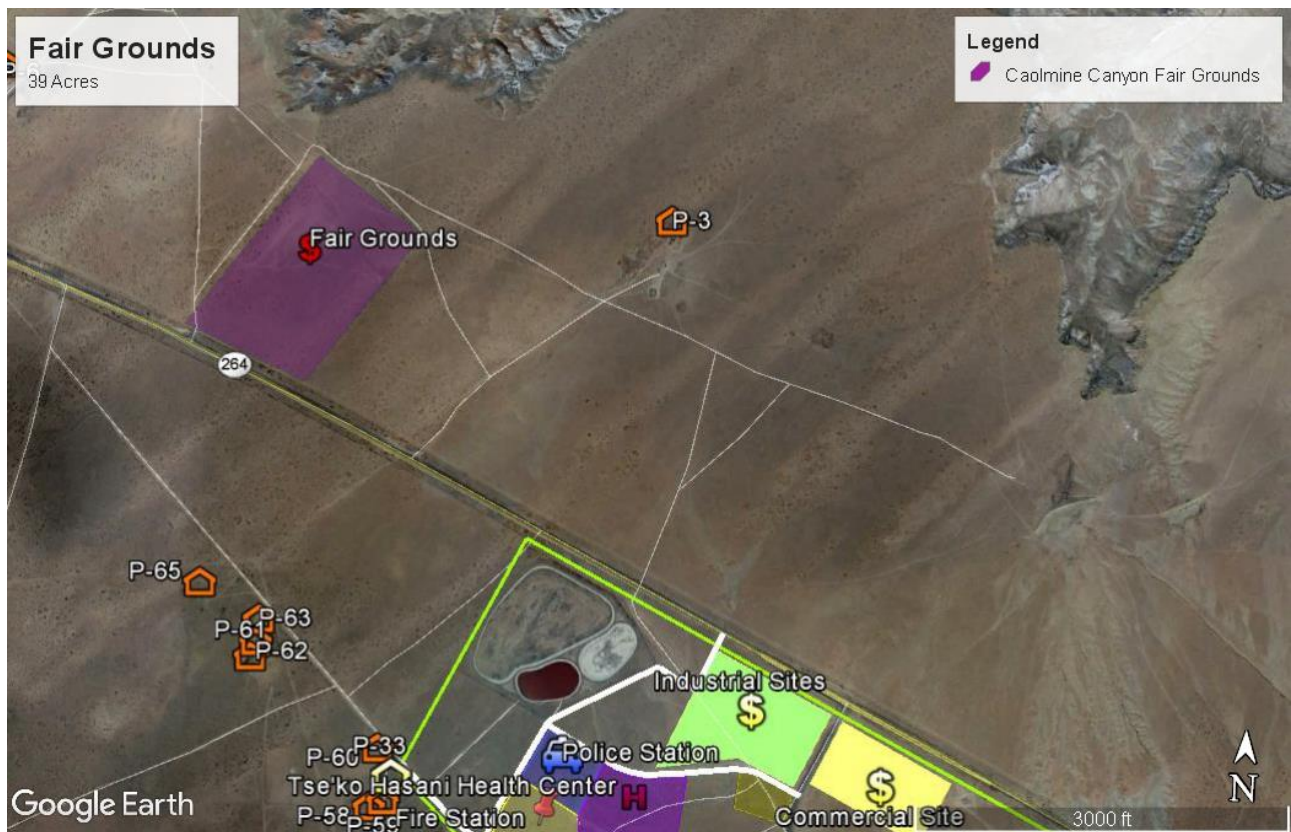
**Location:** North side of Highway 264

**Size:** 39 acres

**Land Status:** Withdrawn

**Land Use:** Commercial

**FIGURE 40. Coalmine Canyon Rodeo/Fair Grounds**



**FIGURE 41. Kerley Vally Commercial & Light Industrial**

### **Kerley Valley Commercial & Light Industrial Site**

Agriculture is an important part of social, cultural and economic identity of the Chapter. As such, we must consider agriculture as legitimate economic development and work to keep these areas viable. **FIGURE 41** shows the area with the following economic development.

#### **Van's Trading Post**

This is an existing business center. The historic trading post provides goods and services to the local community members as well as visitors passing through.

**Location:** The existing businesses site is located adjacent tom the north side of Highway 160.

**Size:** 4.00 acres

**Land Status:** Withdrawn

**Land Use:** Commercial Occupied-in use

The business park is undeveloped and adjacent to Van's Trading Post. Proposed lots will include: grocery store, restaurant(s), laundry-mat, coffee shop, gas station, office space.

Location: The area is located adjacent to Highway 160 west of Van's Trading Post

Size: 23 acres

Land Status: Withdrawn

Land Use: Commercial-Retail & Office

### Kerley Valley Farms

Farms exist within the Kerley Valley and the community members have expressed an interest in keeping these farms and revitalizing those that have not been farmed in recent years.

Location: The area is located adjacent to Highway 160

Size: Not Available

Land Status: Tribal Trust

Land Use: Agriculture-Farming



Photo by Christian Gillwood

### Rifle Range Industrial Park

The proposed industrial site is to be located on the south side of N6731 (FIGURE 42).

Location: The area is located adjacent to N6731

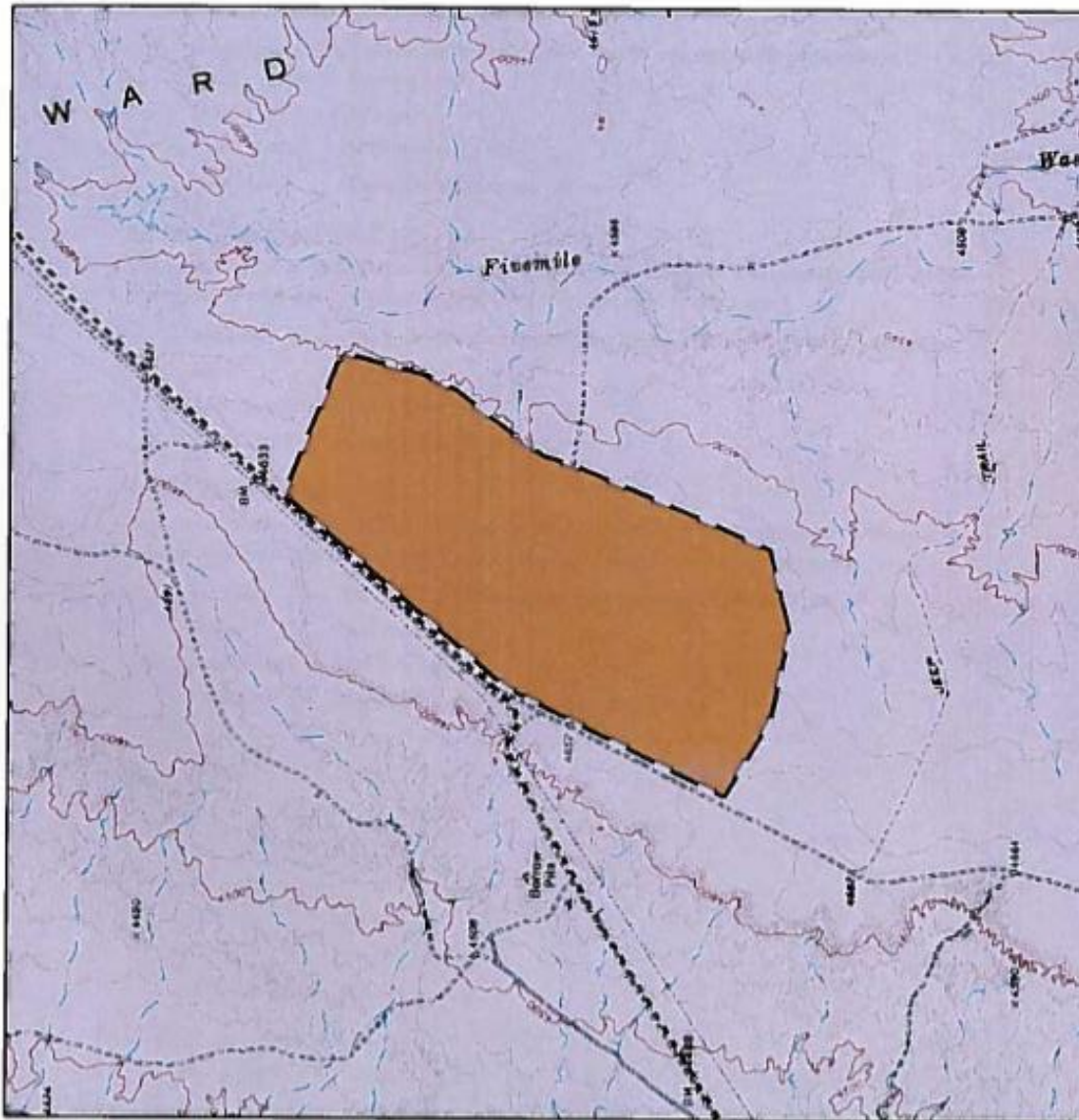
Size: 100 acres

Land Status: Tribal Trust

Land Use: Commercial/Industrial Development



Figure 42: Rifle Range Park



## Goals and Objectives

### Business Development

**Goal:** Encourage economic development that nurtures start-up businesses, business growth and business retention and expansion.

**Objectives:**

- Provide access to resources that will help those who wish to develop and/or grow their businesses.
- Support current businesses activities that are compatible with existing uses in the community and that produce income and/or contribute to the local economy.
- Encourage collaboration among the community, the public and private sectors.
- Explore options to finance development for the designated commercial tract.
- Capitalize on being located adjacent to Tuba City and Highway 89.

### Commercial Development

**Goal:** Encourage economic development that nurtures entrepreneurship, cultural and natural resources, business growth.

**Objectives:**

- Support the development of retail businesses (laundry-mat, grocery store, coffee shop, restaurants, gas stations, etc.)
- Emphasize the development of Kerley Valley Business Park and Regional Business Center along Highway 89.

### Industrial Development

**Goal:** Encourage industrial development that supports sound development of local resources while reducing the impact on the environment.

**Objectives:**

- Analyze the economic, social, and environmental impacts of a transfer station.

### Tourism Development

**Goal:** Create a respectful and balanced approach to tourism development.

**Objectives:**

- Study options to capitalize on tourism opportunities.

- Explore innovated designs of tour packaging such as self-auto tours, scenic trails and historic sites (e.g. Coalmine Canyon and other beautiful areas in community).

## **Workforce Training & Education**

**Goal:** Support a range of educational and training opportunities to enable a properly educated and trained workforce.

**Objective:**

- Build a strong working relationship with current school systems.
- Partner with surrounding communities to enhance educational opportunities.
- Provide areas for educational and training facilities.





Photo by Paighton Goldtooth

## 12. OPEN SPACE

### Introduction

This open space element serves as a guide to balance growth and recreational opportunities with open space preservation. The purpose of preserving land as open space has four primary objectives:

- to conserve key natural resources
- to preserve traditional and cultural resources
- to provide sufficient parks and recreational areas to meet the needs and desires of the community members
- to provide awareness for public health and safety purposes

### Current Conditions

The Chapter is a beautiful community with many areas of natural, traditional and cultural importance. As such, the Chapter recognizes and respects that open space provides many healthful

benefits to the community and that the sustainable management of renewable resources such as grazing lands is a vital part of a self-sustaining economy and way of life.

The Chapter also believes that parks, scenic landscapes and historic sites not only contribute to the Chapter's tourist industry but they lend character to the community and are a source of pride for local residents, which translates to an overall feeling of wellbeing among the people. These components in community life are also a primary factor in attracting and retaining economic investment. The Chapter also views the protection of open space as vital to conserving the overall biological diversity of the plant and animal communities, which provide critical economic goods such as grazing for livestock and wildlife. Additionally, some community members continue to rely on many wild plant and animal species that have important medicinal, nutritional, and traditional values associated with them. Lastly, the land has a strong spiritual value that is integral to traditional Navajo ways.

## Proposed Open Space Areas

The Chapter is fortunate to have a rich physical landscape that not only enhances the quality of life for community members but also provides the livelihood of ranching families. Areas designated as open space are those that the community has identified as having special significance and that should be preserved in their natural state without development.

Based on the Chapter's vision and the goals and objectives determined by the community members, six sites were identified. These areas are listed in **TABLE 10**.

<b>Table 10. Proposed Open Space Areas</b>	
AREA NAME	DEVELOPMENT TYPE
Ram Pasture Ranches	Agriculture-Ranching & Resource Management
Wildlife Habitat Preserves	Preservation
Paleontology Preserve	Open Space
Coalmine Canyon Trails	Recreation
Dinosaur Tracks	Open Space-Recreation
Coalmine Canyon Recreational Park	Recreation

**Figure 43** shows the designated areas for open space. To better highlight the specific areas for open space, individual maps of the specific areas are shown with information specific to that area. Not all sites are at the same stage, thus the level of detail on the corresponding maps may vary.



**FIGURE 43. Open Space**

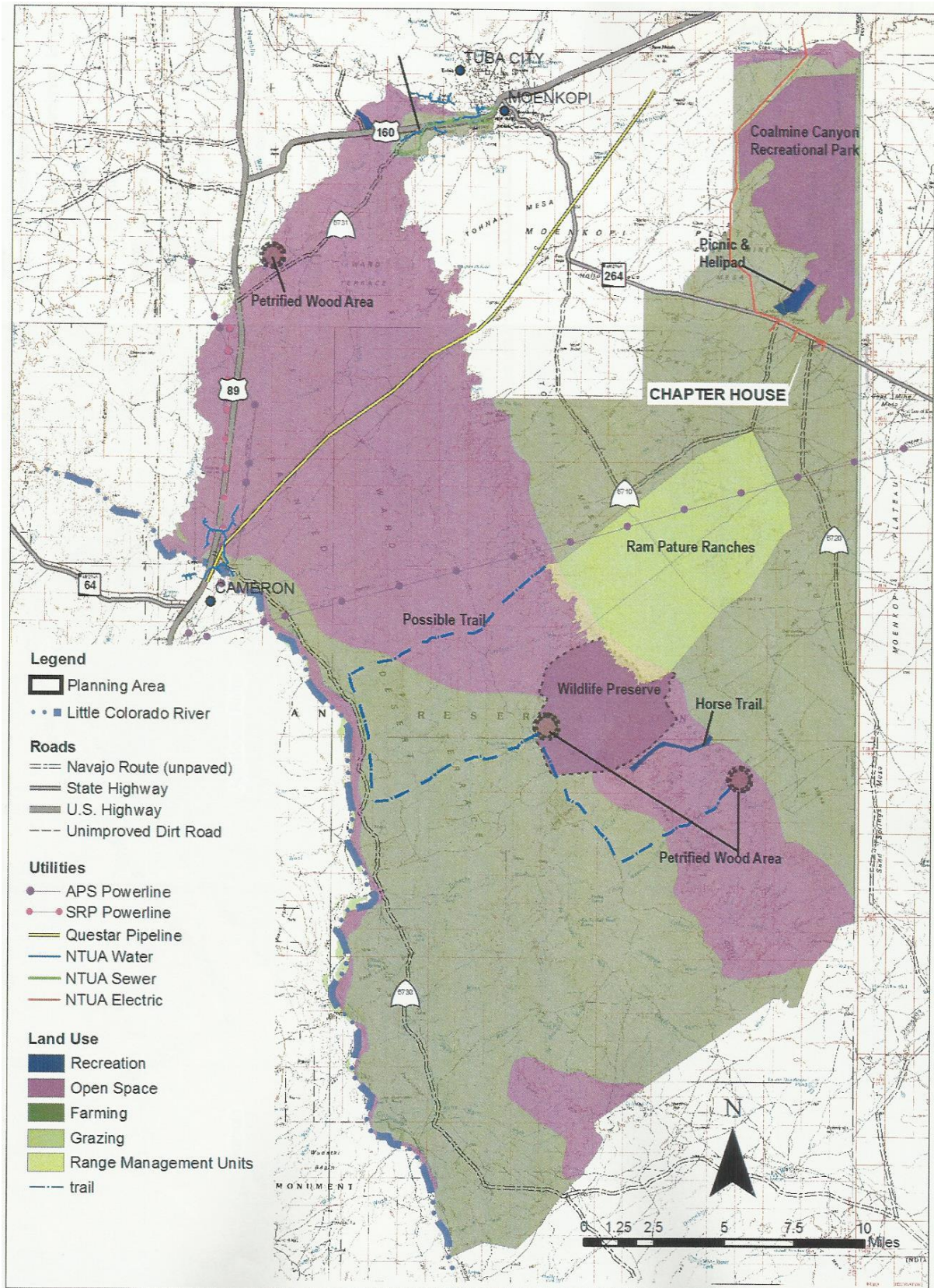






Photo by Craig Gillwood

## Ram Pasture Ranches

Ranching is an important part of the social, cultural and economic identity of the Chapter. Ranching is also a custom that dates back many years and is well embedded in the community's traditional heritage.

**FIGURE 43** shows range management units currently under a grazing management plan. There are four cells or pastures for a total of approximately 2,500 acres. Each pasture is fenced. The regulations associated with range management are maintained by the BIA.

Location:	Ram Pastures Ranches is located on Coalmine Canyon and Tonalea Mesa
Size:	26,626 acres (4 cells/pastures)
Land Status:	Tribal Trust
Land Use:	Open Space-Ranching

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## Wildlife Habitat Preserve

Natural areas and wild lands are important to maintaining a vibrant economy and high quality of life. These important natural resources provide inputs for tourism. They also stand as integral components of the community members for a potential wildlife habitat preserve. **FIGURE 44** shows an area identified by the community members for a potential wildlife habitat preserve.

Location: The proposed site is located on Ward Terrace below the Adeii Cliff in the central part of the Chapter

Size: Not yet determined

Land Status: Tribal Trust

Land Use: Open Space-Wildlife preserve

## Paleontology Preserve

Goldsprings is a widely known paleontological recovery site. It is one of the world's richest sources for prehistoric fauna. The site dates back to the late Triassic and early Jurassic periods. Some researches refer to the Triassic period, which ranges from 248 to 206 million years ago, as one of transition, when global climate change and major circulation of the ocean occurred. It was during and following the Triassic period when it is believed that the largest extinction of life occurred with some 35 percent of all animal families dying out. While some life forms survived and spread to other areas to regenerate, many life forms were captured in time, saving a view of their richness in the prehistoric finds in such places as the Goldsprings area.

While most of the primitive dinosaurs went extinct during this time, the more adaptive dinosaurs evolved during the Jurassic period. The Jurassic period, 206 to 144 million years ago, saw the period when the continents began to drift apart and a time of strong seasonal changes with hot and dry temperatures. During this period, the flowering plants flourished and helped change the face of the Earth. Dinosaurs dominated and bird-line dinosaurs were also flourishing. A major mass extinction occurred with many marine species dying off; some researchers believe that the extinction was triggered by a huge methane deposits from within the earth. These unique treasures are an important part of this chapter and its history.

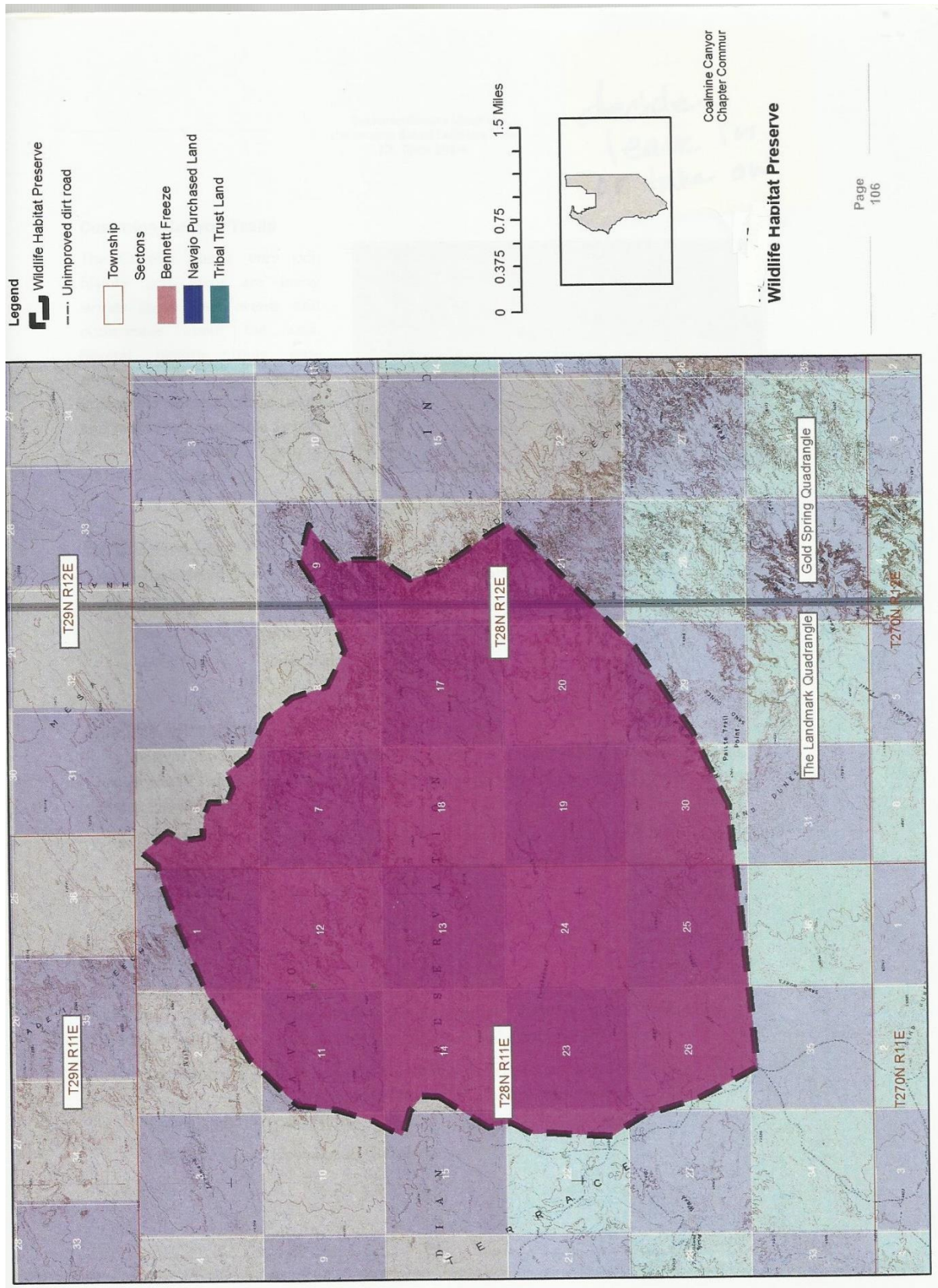
Location: Located in the central western part of the Chapter, near Goldsprings

Size: Not yet determined

Land Status: Tribal Trust

Land Use: Open Space-Preserve

**FIGURE 44. Wildlife Habitat Preserve**





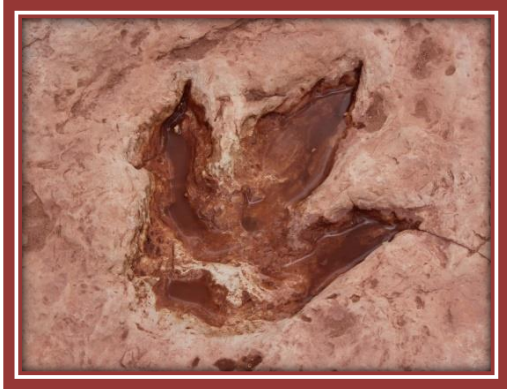


Photo by Christian Gillwood

## Dinosaur Tracks

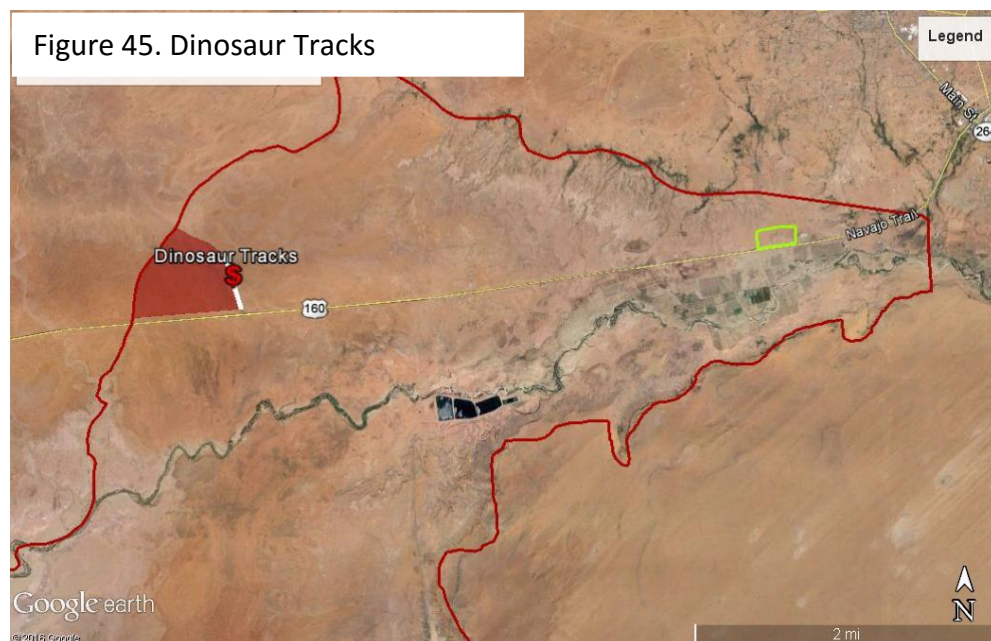
Dinosaur Tracks, perfectly preserved footprints left clearly in the sandstone by a prehistoric creature some 200 million years ago are found along a river bed just west of Tuba City. The dinosaur tracks are from several types of dinosaurs, there are also eggs and fossilized skeletons. The tracks are in the uppermost Moenave formation, near the contact between the Moenave and Kayenta formations.

**Location:** Approximately 5 miles west of Tuba City adjacent to the north side of Highway 160.

**Size:** 83 acres

**Land Status:** Tribal Trust

**Land Use:** Open Space Recreation



## Coalmine Canyon Recreational Park

Natural areas are important to maintain a vibrant economy and high quality of life. These important natural resources provide input for tourism. They also stand as integral components of the community's character and culture. Coalmine Canyon is a beautiful scenic area in the northeastern part of the Chapter **FIGURE 46**.



Photo by Christian Gillwood

### Picnic Area

The picnic area offers a scenic rest stop for eating, walking, relaxing for community residents and for the traveler.

Location:	The area is located at the south western corner of Coalmine Canyon Park
Size:	1.38 acres
Land Status:	Tribal Trust
Land Use:	Open Space-Recreation



Photo by Paighton Goldtooth

### Coalmine Canyon Trails

Coalmine Canyon, north of the Chapter house, is a striking combination of red mudstone, bleached white rock and coal streaks. The play of sunlight off the different colors of rock make for picturesque photography.

Location: The trails will be located within the Coalmine Canyon Park

Size: Not available

Land Status: Tribal Trust

Land Use: Open Space-Recreation



**FIGURE 46. Recreational Area**



## **Goals and Objectives**

### **Community Balance**

Goal: Protect, conserve and enhance the unique natural beauty and irreplaceable natural resources.

Objectives:

- develop a management strategy that is centered on protecting and conserving the areas identified for open space.
- Develop, preserve and enhance areas of scenic interest and determine methods to protect key scenic corridors and routes.
- Support a system of open spaces (parks, trails, etc.) that enrich the lives of community members.

### **Grazing**

Goal: Preserve and enhance traditional livestock activities using effective and appropriate management techniques.

### **Traditional Resources**

Goal: Respect traditionally sensitive areas as an important land use while preserving the integrity of the area.

Objectives:

- Protect and respect ceremonial sites.
- Protect and preserve herb gathering areas.
- Discourage development in and near traditionally sensitive areas.

### **Cultural and Historic Resources**

Goal: Preserve the integrity of historic and culturally significant areas.

Objectives:

- Interpret the significance of sites to add greater interest, preserve area history and educate visitors about the significance of various sites.
- Promote educational programs on cultural and historic areas of interest.



Photo by Christian Gillwood

## 13. DEVELOPMENT AND AMENDMENT PROCESSES

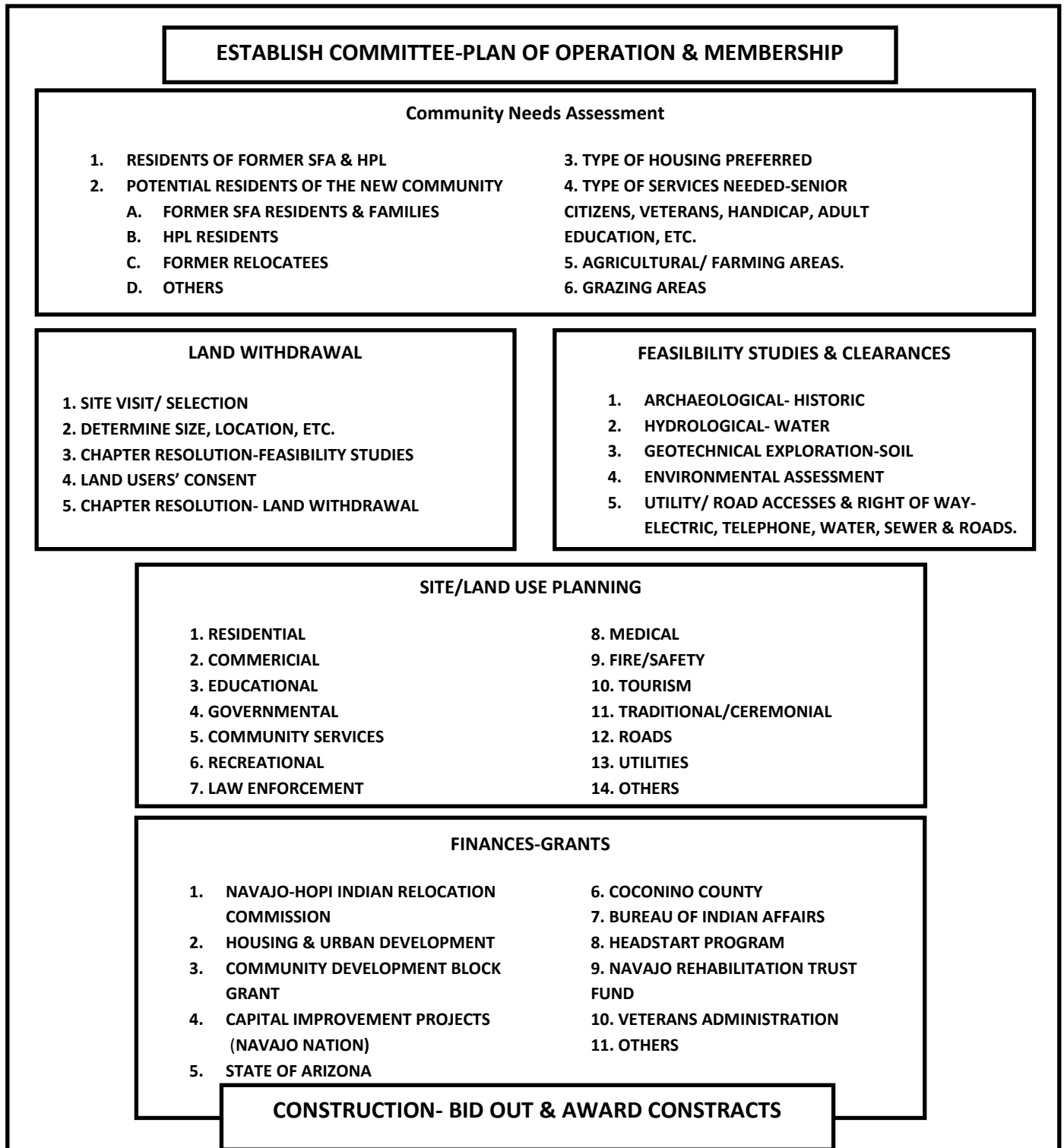
### Land Development Process

Key elements to consider for land development are shown in **FIGURE 47**. At the top of this figure is the establishment of a committee, such as an economic development authority or other entity. Below there are several blocks listing components necessary to the withdrawal or development of land.

This chart should be used in conjunction with the *Community Based Land Use Plan* when land development planning occurs. Master plans or site development plans of designated areas can be generated if they do not already exist. Individual projects, such as businesses, community facilities or other development need to submit their proposals to the CLUPC. The CLUPC will review the proposal and its relationship to the *Community Based Land Use Plan*. The CLUPC will work with the project representatives or sponsor to choose the most beneficial site.



**FIGURE 47. Key Elements to Land Development**



The grazing permittee, or land user, shall be contacted by the project representative or sponsor during the site selection phase. Consent must be obtained from the appropriate land users prior to any planning or development. Once the land user consent is obtained, other planning clearances follow. Such clearances include a chapter resolution, a legal land survey, archaeological and environmental studies. An environmental assessment (EA) and/or environmental impact statement (EIS) may be required for certain projects. The land is then withdrawn via a chapter resolution and subsequent approvals by appropriate agencies such as the Navajo Nation Bureau of Indian Affairs or the State.

After the land is withdrawn, the project may require review and/ or approval by the Division of Community Development (DCD), Resource and Development Committee, Budget & Finance (B&F) and/or the Navajo Nation Council (NNC). Architectural and Engineering services can be obtained from the Design and Engineering Services (DES) or from outside consulting firms. The local land planning authority needs to be involved during this design phase to ensure the new development fits the character of the community as stated in this *Community Based Land Use Plan*.

The following land development process is recommended for land use development in the Chapter.

- Applicant shall contact the Grazing Officials to determine grazing permit holders.
- Applicant shall obtain user consent from grazing permit holders as well as the CLUPC.
- CLUPC Recommendation- The CLUPC will review the site and its compatibility with the *Community Based Land Use Plan*. After land use consents are obtained and other documents are reviewed such as the applicant's land use plan, master plan etc., the CLUPC can make a recommendation for Chapter approval.
- Chapter Approval – the applicant/sponsor is to present its proposal and request for Chapter Resolution at a duly called Chapter Planning Meeting.
- Chapter membership will review and approve/disapprove the chapter resolution for proposed development at a duly called Chapter meeting.
- Site Clearance- The applicant is responsible for all necessary assessments, clearances, studies and surveys, such as but not limited to, archaeological clearances, biological studies, environmental assessments, legal surveys, soil studies, and utilities rights-of-way.

## **Amendment Process**

The amendment process provides an opportunity for community members, groups, organizations, departments, entities, businesses and the general public to propose changes to the *Community Based Land Use Plan*. Proposed amendments may include changes to policies, maps, appendices or other components of the *Community Based Land Use Plan*.

## How to Propose an Amendment

Request for amendments should be in writing to the attention of the designated CLUPC. Appropriate support material, if any, should be included. Contact the designated CLUPC if you have any questions.

### Criteria for Considering an Amendment

The chapter anticipates that the *Community Based Land Use Plan* will function well for some time to come. However, to assure that the plan is meeting the needs of the community, the *Community Based Land Use Plan* will be reviewed and updated every five years pursuant to LGA Section 2004(D).

If at that time or at other appropriate times, an amendment is proposed to the *Community Based Land Use Plan*, specific question will be asked as part of the evaluation process:

- Is the proposed amendment appropriate to the *Community Based Land Use Plan*?

Consider whether changes pertain to *Community Based Land Use Planning*. Some proposed amendments suggest changes to regulations or budgets while others request for specific assistance. These are more appropriately addressed at Chapter planning meetings and Chapter meetings.

- Is the proposal amendment legal?

Consider whether the proposed amendment meets existing relevant laws.

### Approval of an Amendment

The designated CLUPC shall conduct a public hearing for all proposed amendments determined to be appropriate to the *Community Based Land Use Plan*. At the end of the public hearing, the designated CLUPC shall vote to accept or reject the proposed amendment. If the proposed amendment is accepted, the designated CLUPC shall recommend adoption, via a resolution, of the proposed amendment to the Chapter. The Chapter membership shall vote on the resolution at a duly called Chapter meeting. Amendments or modifications shall be approved by the Resource and Development Committee of the Navajo Nation Council, pursuant to 2. N.N.C. Section 425 (C) (2). The approval by the RDC is the formal acknowledgement of the Chapter amending the *Community Based Land Use Plan*.