

US EPA ARCHIVE DOCUMENT

**IN THE
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

IN THE MATTER OF:

Safe Drinking Water Determination; Underground
Injection Control Program, Determination of Indian
Country Status for Purposes of Underground Injection
Control Program Permitting

ON REMAND FROM:

UNITED STATES COURT OF APPEALS FOR THE TENTH CIRCUIT COURT

Case Nos: 97-9556, 97-9557

HRI, Inc.

Petitioner

v.

United States Environmental Protection Agency

Respondent

**APPENDIX OF EXHIBITS TO WRITTEN COMMENTS OF HRI, INC. IN
SUPPORT OF THE POSITION THAT THE SECTION 8 LAND IN QUESTION IS
NOT INDIAN COUNTRY AS DEFINED IN 18 U.S.C. § 1151(B) AND *STATE OF
ALASKA v. NATIVE VILLAGE OF VENETIE TRIBAL GOVERNMENT*, 522 U.S.
520 (1998)**

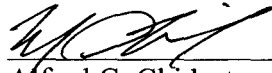
HRI, Inc., by and through its counsel of record, hereby submit the following exhibits in support of the position that the Section 8 land in question is not Indian country as defined in 18 U.S.C. § 151(b) and *State of Alaska v. Native Village of Venetie Tribal Government*, 522 U.S. 520 (1998):

APPENDICES I, II and III

Appendix Tab	Description
I	REGULATORY FRAMEWORK
II	REGULATED IN SITU URANIUM RECOVERY ASSURES NO ADVERSE IMPACT ON ADJACENT AQUIFER USES OR SURROUNDING USDWS AT SECTION 8
III	McKINLEY COUNTY COMPREHENSIVE PLAN PHASE 2 AUGUST 22, 2005 DRAFT WHITE PAPER REGARDING SOCIOECONOMICS AND GROWTH ANALYSIS, CONDITIONS, ISSUES AND POLICY DIRECTIONS
IV	UNITED STATES PATENT DATED MAY 5, 1970.
V	JUNE 21, 1989 LETTER FROM EPA TO NMED GRANTING THE SECTION 8 AQUIFER EXEMPTION.
VI	JUDGE RICH ELEVENTH JUDICIAL DISTRICT, STATE OF NEW MEXICO DECISION DATED JUNE 23, 1995 IN CASE NO. CV-92-72 THAT THE N.M. STATE ENGINEER HAS JURISDICTION OVER WATER RIGHTS.
VII	OCTOBER 22, 1999 N.M. STATE ENGINEER'S FINDINGS AND ORDER RE WATER RIGHTS IN MATTER G-11-A
VIII	NATURAL WATER QUALITY DATA AT U.S. ISL URANIUM RECOVERY OPERATIONS
IX	LBP-99-30 DATED AUGUST 20, 1999 IN ASLBP NO. 95-706-01-ML
X	U.S. NUCLEAR REGULATORY COMMISSION MATERIALS LICENSE SUA-1508 AMENDMENT NO. 1
XI	AFFIDAVIT OF CRAIG BARTELS

DATED: This 30th day of January, 2006.

Respectfully submitted,



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APPENDIX I

APPENDIX I

REGULATORY FRAMEWORK

1.0 Nuclear Regulatory Commission (NRC)

1.1 General

The Nuclear Regulatory Commission (“NRC”) is the primary regulatory authority over source material uranium recovery operations, including in situ leach (ISL) operations. In 1954, Congress, through the Atomic Energy Act of 1954 (AEA), empowered the Atomic Energy Commission (AEC), now NRC, to regulate AEA materials (i.e., source, byproduct, and special nuclear materials). Under its AEA authority, the AEC/NRC promulgated 10 C.F.R. Part 40 and, later, Appendix A to Part 40 to implement a regulatory program for uranium recovery operations. At the time of Appendix A’s issuance, conventional mining techniques (underground and open pit) were assumed to be the primary source of uranium production in the United States, and Appendix A was written to reflect that assumption. As ISL techniques have become the prevalent form of uranium recovery in the United States, NRC has applied relevant portions of Appendix A to ISL licensing. ISL uranium recovery licensees also are required to comply with relevant 10 C.F.R. Part 20 radiation protection standards. NRC also has issued guidance in the form of NUREG-1569 entitled *Standard Review Plan for In Situ Leach Uranium Extraction License Applications* (June 2003) to assist licensees in complying with relevant NRC licensing requirements including groundwater protection criteria.

Prior to commencing active ISL uranium recovery operations at a given site, NRC requires that prospective licensees submit an application that describes all aspects of the proposed ISL uranium recovery operation. This license application requires detailed analyses of issues such as: (1) groundwater protection and restoration, (2) financial assurance, (3) historic and cultural resource preservation, (4) financial and technical qualifications, and (5) public and occupational radiation protection. NRC Staff reviews license applications for proposed ISL uranium recovery projects and often solicits additional information from the prospective licensee through official requests for additional information (RAIs). After NRC Staff completes its review of the license application, a preliminary finding is issued approving the application, approving it with conditions, or rejecting it.

During this review process, NRC also permits potentially affected members of the public, organizations or governmental entities to request an administrative hearing to challenge the viability of the license application. An administrative hearing, if granted, is conducted before a panel of NRC administrative law judges and technical experts who evaluate all arguments regarding the license application and determine whether NRC Staff’s licensing decisions should be sustained in whole or in part or rejected.

Although the Administrative Law Judges have changed several times, throughout the course of the HRI proceeding, the following technical experts have been on the hearing panel:

- (1) Judge Richard F. Cole: B.S.C.E., Drexel University (1959)
M.S.S.E., Massachusetts Institute of Technology (1961)
Ph.D., University of North Carolina (1968)

Dr. Cole has been a full-time member of the Panel since 1973. In addition to publishing numerous articles on water, wastewater treatment, and international training of environmental engineering, Dr. Cole has held teaching, administrative, and engineering positions in the United States and Guatemala with the University of North Carolina, Pennsylvania State University, and the state of Pennsylvania. He has held several leadership positions and committee assignments with numerous professional associations and is a diplomat of the American Academy of Environmental Engineers.

- (2) Judge Robin Brett: B.S., University of Adelaide (1956)
M.A., Harvard University (1960)
Ph.D, Harvard University (1963)

Dr. Brett has been a part-time member of the Panel since 1998. During his professional career, Dr. Brett has served as a geologist for the U.S. Office of Geological Survey, director of the Earth Science Division of the National Science Foundation, and as chief of the Geochemistry Branch of the Johnson Space Center, where he was awarded the Exceptional Scientific Achievement Medal in 1973. In addition to holding several leadership positions on various scientific committees and panels, Dr. Brett has also published over 130 scientific papers and abstracts on geology, geochemistry, mineralogy, and petrology.

Any aggrieved party can appeal a decision issued by the hearing panel to the full five-member Commission, whether it be the licensee, NRC Staff, any challengers, or combination thereof.

1.2 Licensing Process for the Crownpoint Project

On April 25, 1988, HRI applied for an NRC source material license to operate an ISL uranium recovery project called the Crownpoint Project, which consists of the Church Rock Section 8 site, as well as three additional sites (Church Rock Section 17, Unit One and Crownpoint). On November 14, 1994, NRC Staff prepared a draft environmental impact statement and published a notice in the Federal Register detailing its availability. *See* 59 Fed. Reg. 56,557 (November 14, 1994). This Federal Register notice provided potentially affected parties with an opportunity to request a hearing in

accordance with 10 C.F.R. § 2.1205.¹ Several parties filed hearing requests with NRC and a panel of administrative law judges, and NRC's Atomic Safety and Licensing Board appointed technical experts on December 21, 1994. *See* 59 Fed. Reg. 66,979 (January 8, 1995). The administrative panel held in abeyance all aspects of the proceeding, including final determinations of the threshold issue of the requestors' standing for an NRC administrative hearing, until NRC Staff completed its review of HRI's license application and issued its final environmental impact statement (FEIS). On February 29, 1997, NRC Staff issued its FEIS and, on January 5, 1998, NRC Staff approved HRI's license application and granted HRI License No. SUA-1508.

On May 13, 1998, the administrative panel granted standing to several parties, including the Eastern Navajo Dine Against Uranium Mining (ENDAUM), the Southwest Research Information Center (SRIC), and Grace and Marilyn Sam (hereinafter the "Intervenors"), to challenge HRI's license under NRC's 10 C.F.R. Part 2, Subpart L provisions for "informal hearings." *See In the Matter of Hydro Resources, Inc.* (Crownpoint Uranium Project), LBP-98-9, 47 NRC 261 (May 13, 1998). Additionally, in September 1997, NRC Staff requested leave to participate as a party in the hearing process in accordance with 10 C.F.R. §§ 2.1213 & 2.1237.

During the hearing process, the administrative panel bifurcated the hearing so that each uranium recovery site would be litigated separately. Section 8 was addressed first, and the administrative panel requested written presentations from all parties regarding Intervenors' contentions to determine whether HRI's license should be approved as issued, approved with conditions or revoked. With respect to Section 8, issues litigated during the hearing process were: (1) groundwater production/restoration, and financial assurance, (2) historic and cultural resource preservation, (3) radiological air emissions, (4) environmental impact statement adequacy, (5) financial and technical qualifications, (6) environmental justice, (7) surface water protection and liquid waste disposal. After considering all written presentations on these issues, the administrative panel issued a series of decisions addressing each contention, and determined that HRI's license, with minor revisions, was protective of public health and safety, and should be approved. The full Commission also reviewed these decisions on appeal and sustained the administrative panel's decisions. As a result, HRI has an adjudicated NRC license to conduct uranium recovery operations at Section 8.

2.0 EPA Safe Drinking Water Act (SDWA) Regulations

To assure safe and effective underground injection throughout the United States, Congress, in 1974, enacted the SDWA, which, in part, authorizes establishment of the Underground Injection Control (UIC) program. The UIC program is designed to ensure that injection wells will not endanger underground sources of drinking water (USDWs). Underground injection is defined in 40 C.F.R. § 146.3 as "the subsurface emplacement of fluids through a bored, drilled or driven well...." Thus, all ISL uranium recovery injection well activities require these relevant authorizations.

¹ NRC's administrative hearing regulations have been amended since the issuance of the 1994 Federal Register notice. Thus, the reference to 10 C.F.R. § 2.1205 has been changed to 10 C.F.R. § 2.1200 et seq.

The SDWA granted EPA primary jurisdiction to regulate underground injection to protect current and future USDWs. UIC regulations establish specific performance criteria for each class of well (ISL uranium mining wells are EPA Class III wells) to assure that drinking water sources, actual and potential, are not damaged by underground injection during commercial mineral recovery operations. EPA also was authorized to provide States with the opportunity to assume primacy over UIC programs in accordance with final regulations promulgated by EPA in 1980, setting minimum standards for State programs to be delegated primacy.²

Between 1981 and 1996, EPA granted primacy to 34 States for all classes of injection wells (except those on Tribal lands). EPA implements the UIC program directly in 10 States and shares responsibility in six (6) other States. The State of New Mexico has primacy for the UIC program, but EPA directly implements UIC programs for all Indian lands.

Before their NRC-licensed ISL uranium recovery operations can commence at any site, HRI must have obtained an aquifer exemption for the aquifer or portion of the aquifer wherein ISL mining operations will occur, and an UIC permit to assure that the operations will be confined to the exempted area within a prescribed area of review (AOR).

2.1 Aquifer Exemptions

A USDW is defined as an aquifer, or portion thereof, which serves as a source of drinking water for human consumption, or contains a sufficient quantity of water to supply a public water system, and contains fewer than 10,000 mg/liter of total dissolved solids (TDS). See Section 1421(d)(2)³ of the SDWA.

Within this regulatory framework, however, some aquifers or portions of aquifers, which can meet the broad regulatory definition of a USDW, may not reasonably be expected to serve as a current or future source of drinking water. As a result, the UIC program regulations allow EPA to *exempt* portions of an aquifer from delineation as a USDW and allow for injection into such aquifers or portions thereof. EPA regulations at 40 C.F.R. § 146.4 specifically state:

“An aquifer or a portion thereof which meets the criteria for an “underground source of drinking water” in § 146.3 may be determined under 40 C.F.R. 144.8 to be an “exempted aquifer” if it meets the following criteria:

- (a) It does not currently serve as a source of drinking water;
- and
- (b) It cannot now and will not in the future serve as a source of drinking water because:
 - (1) It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a

² See 42 U.S.C. § 300h(1) (2005).

³ See 42 U.S.C. § 300h(b)(1) (2005).

Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible;

(2) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;

(3) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or

(4) It is located over a Class III well mining area subject to subsidence or catastrophic collapse; or

(c) The total dissolved solids content of the ground water are more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.”⁴

Aquifers meeting these criteria generally are associated with *in situ* mineral recovery or enhanced oil recovery. If an operator, licensee or permittee wishes to inject into a USDW for the purpose of recovering minerals (e.g., uranium), a demonstration must be made that the proposed aquifer meets at least one of the exemption criteria.

On June 21, 1989, EPA approved an aquifer exemption for Section 8⁵, determining that the exempt portion of the Westwater Canyon Member of the Jurassic Morrison formation (a) is not currently used as a drinking water supply and (b) cannot be used as a drinking water source in the future because it can be shown by a permit application to contain minerals that are expected to be commercially producible. In other words at Section 8, the uranium orebody shares the same Westwater Canyon Formation with adjacent USDWs, yet the portion of the aquifer that HRI plans to mine meets the criteria of 40 C.F.R. 146.4.

EPA’s grant of an aquifer exemption for the Section 8 site is consistent with such grants at other ISL operations across the U.S. where adjacent non-exempt aquifers have not been adversely affected. The UIC program described herein, as it applies to the Section 8 site, allows ISL mineral development in *portions* of geologic strata, which are exempt aquifers. The table below lists EPA-approved exempted aquifers at commercial ISL uranium recovery operations in the states of Texas, Wyoming, and Nebraska:

Company	Mine Name	Regional USDW
Caithness Mining	McBride	Oakville
Conoco	Trevino	Oakville
Everest Minerals	Hobson	Jackson
Everest Minerals	Las Palmas	Oakville
Everest Minerals	Mt Lucas	Goliad
Everest Minerals	Tex-1	Jackson
Intercontinental Energy	Pawnee	Oakville

⁴ See 40 C.F.R. § 146.4 (2005) (emphasis added).

⁵ Only the southeast quarter of Section 8, Township 16N, Range 16W, covering approximately 160 acres, is at issue here, and is already licensed for *In situ* uranium recovery by the Nuclear Regulatory Commission (NRC). For convenience, “Section 8” as used throughout this document refers just to the southeast quarter of Section 8.

Intercontinental Energy	Zamzow	Oakville
Mobil/Cogema	Holiday	Catahoula
Mobil/Cogema	El Mesquite	Catahoula
Mobil/Cogema	O'Hern	Catahoula
Tenneco/Cogema	West Cole	Catahoula
URI	Alta Mesa	Goliad
URI	Benavides	Catahoula
URI	Kingsville Dome	Goliad
URI	Longoria	Catahoula
URI	Rosita	Goliad
URI	Vasquez	Oakville
U.S.Steel	Boots	Oakville
U.S.Steel	Burns	Oakville
U.S.Steel	Clay West	Oakville
U.S.Steel	Mosier	Oakville
U.S.Steel	Pawlik	Oakville
Chevron	Palangana	Goliad
Westinghouse	Bruni	Catahoula
Westinghouse	Lamprecht	Oakville
Cogema	Irigary	Wasatch
Cogema	Christensen Ranch	Wasatch
Power Resources	Smith Ranch	Fort Union
Power Resources	Highland Ranch	Fort Union
Power Resources	Crow Butte	Chadron

All of the ISL mining operations shown in the table above have been developed in aquifers that are a USDW *regionally*, but which qualify for an aquifer exemption *locally* because they met the criteria of 40 C.F.R. 146.4. HRI is not aware of any significant adverse impacts to a USDW or the regional aquifer in any of these examples.

2.2 The Area of Review (AOR)

A buffer zone surrounding the exempted permit area is called the Area of Review (AOR). The AOR encompasses a circumscribing area, the radius of which is either 1/4 of a mile from the area permit boundary or a radius calculated according to set criteria based on the pressures in the injection zone (40 C.F.R. 146.6). During the UIC permit process, the applicant must assure that there are no potential adverse water quality impacts to USDWs within the AOR.

The ISL uranium industry has historically used a 1/4 mile radius for the AOR because the alternative set-criteria model results in a negative number and hence a negative area of review. Although hypothetically permissible, that is not a practical AOR, so the industry defaults to the 1/4 mile fixed radius. At Section 8, the AOR used is 1/4 mile, and there are no water users (i.e. water wells) within the Section 8 AOR. Moreover, the analysis of potential impacts within the AOR has shown that there will be no impacts on USDWs.

2.3 The UIC Permit

UIC permits issued pursuant to the SDWA and UIC regulations provide EPA with a mechanism for the administrative supervision of required regulatory criteria and standards to control the construction, operation, monitoring, reporting and closure of Class III injection wells. The EPA has delegated New Mexico primary regulatory authority to administer this permit process for lands within the State's jurisdiction, because the State has demonstrated the technical ability to implement UIC programs that meet EPA requirements promulgated under Section 1422 or 1425 of the SDWA. A New Mexico UIC Permit has been issued for Section 8, in addition to the EPA aquifer exemption approved in 1989 as described above.

The UIC permit assures site-specific compliance with the regulations. In the case of Section 8, the UIC "Area" Permit Application contained construction and testing criteria for the Class III injection wells. These criteria assure confinement of injected fluids to the authorized exempted injection zone and prevent migration of these fluids into the AOR and USDWs. Some specific items addressed include: (1) that Class III injection wells drilled into the mineralized rock formations are completed with casing of proper specifications, and cemented in place to prevent fluid migration into USDWs; (2) that mechanical integrity tests be required prior to initial operation of the Class III injection wells to show that there are no leaks in the casing or packer, and there is no fluid movement into USDWs; (3) that the Class III injection wells in the exempted area be surrounded by monitor wells within the AOR to detect horizontal migration of the mining solutions, and that overlying and, if required, underlying aquifers, also have monitor wells, all of which must be monitored to detect any vertical migration of fluids.

At the end of the in situ leaching operations, the New Mexico UIC regulations require restoration of the aquifer to its original quality. EPA UIC regulations do not require groundwater restoration of exempted aquifers, presumably because such exempted aquifers will never be used as USDWs. However, as described in 40 C.F.R. § 146.7, EPA does require corrective action/remediation for any contamination of adjacent, non-exempt aquifers in accordance with the purpose of the SDWA and the UIC program to protect USDWs. Finally, after restoration the UIC Permit requires plugging of wells to assure that there is no post restoration interformational transfer of groundwater from the exempted interval to overlying USDWs.

The UIC regulatory track record for the uranium ISL industry is well established. HRI is not aware of any adverse impacts to USDWs in adjacent aquifers within the relevant AORs.

2.4 Section 8 UIC Permitting Actions

On April 13, 1988, HRI submitted a plan to the New Mexico Environmental Department (NMED) that, when approved, would permit underground injection for ISL uranium recovery operations on Section 8. Later in 1988, NMED applied to the EPA for an aquifer exemption for the underlying aquifer on grounds discussed above. On June

21, 1989, EPA approved NMED's request for an aquifer exemption for Section 8, also as discussed above. On November 2, 1989, NMED granted approval for a UIC permit for Section 8. In April of 1992, HRI requested that NMED extend the UIC permit or "discharge plan" as it is called in the New Mexico Water Quality Control Commission Regulations to include Church Rock Section 17, and NMED applied for an aquifer exemption for that property. EPA declined to issue the aquifer exemption for Section 17 claiming that it was Indian country. Following a hearing, NMED issued a ruling that it had jurisdiction to regulate Section 17, because it was not Indian country.

In 1995, NMED once again requested that EPA extend the Section 8 aquifer exemption to include the Section 17 property. EPA rejected this request and directed that HRI must obtain a federal UIC permit prior to obtaining the requested aquifer exemption and that both HRI and NMED submit a request to EPA Region 9 for an aquifer exemption. NMED then entered into negotiation to consider joint permitting of the Section 17 property with the Navajo Nation, EPA Region 9 and NMED. The discussions prompted a July 14, 1997 letter from EPA in which the Agency determined that Section 17 was Indian country, but nevertheless treated its status as "in dispute." This determination also included a conclusion that Section 8's status as Indian country was "in dispute." This resulted in an appeal to the United States Court of Appeals for the Tenth Circuit which remanded the issue to EPA Region 9 to determine if Section 8 is a dependent Indian community.

APPENDIX II

APPENDIX II

REGULATED IN SITU URANIUM RECOVERY ASSURES NO ADVERSE IMPACT ON ADJACENT AQUIFER USES OR SURROUNDING USDWS AT SECTION 8

1.0 Summary.

Water from the portion of an aquifer containing uranium ore is not potable and can be exempted as an underground source of drinking water (USDW). The presence of uranium, and its decay products of radium and radon, cause that portion of the aquifer in which the uranium exists to exceed the *maximum contaminant levels* (“MCLs”) for such radionuclides allowable in public drinking water supplies as set forth in the United States Environmental Protection Agency’s (EPAs) National Primary Drinking Water Regulations (“NPDWR”) for public water systems.

Conventional underground mining of any mineral (e.g., coal, gravel, gold, uranium) from deposits within an aquifer requires that the aquifer in and around the mine be de-watered. In a drinking water aquifer, this can affect water availability, and often water quality, for some distance. Men, machines and explosives are used to excavate the mineral and surrounding rock, causing miners to face many hazards, from cave-ins to breathing contaminated air. In the same way that oxygen and oxidation causes the elevation of certain constituents in the ISL process, oxidation in conventional mining of the previously buried rock by the air that is circulated through the mine workings to provide miners with fresh air will add new contaminants to water; yet, restoration of the aquifer, in and around conventional mines, to baseline conditions is seldom required. Additionally, large tailings impoundments are required to hold waste, contaminated rock, and water at the mill that is used to process the ore.

The modern method of uranium recovery in the U.S. leaves the original rock in-place (*in situ*), so does *not* require the aquifer to be de-watered and does *not* place men underground. This technology has various names, such as solution mining, *in situ* leach, *in situ* mining and *in situ* recovery. For ease of reference, this type of mining is hereinafter referred to as ISL. Instead of manually excavating the rock from underground as in conventional mining and placing it in large piles on the surface, water wells are used, very much like those for a home. Oxygen is added to the native ground water from the orebody, and that water is continuously recirculated until most of the uranium is recovered. The technology used to take the uranium out of the water is the same as that used in home water softeners. Uranium ISL is not new, and has been safely used for more than thirty years, with operations in Nebraska, Texas and Wyoming. Waste from ISL uranium recovery is only a tiny fraction of that from a conventional mine, so tailings piles are not needed at the site, and the required surface area for ISL facilities is far smaller than that for a conventional mining operation. ISL uranium recovery is highly regulated, and monitor wells surrounding the mine site are required, ensuring protection of the surrounding aquifer. Additionally, restoration of the affected portion of the aquifer consistent with baseline conditions or federal or state concentration limits is required.

Approximately 30 commercial ISL operations, and numerous pilot projects, have been licensed and operated in the United States since the early 1970's, six of which have been conducted by the parent of HRI. In all of these, some portion of the aquifer outside the mine zone is available as a USDW. In all of these cases, engineered wellfield patterns, balanced wellfield operations and monitor wells surrounding the mine area have ensured that water quality outside the mine zone is not impacted.

Once the uranium has been recovered, the affected ground water used in ISL is treated, and the quality is restored consistent with pre-mining baseline conditions, or quality of use, as appropriate. HRI's restoration goals for New Mexico have been evaluated in the United States Nuclear Regulatory Commission's (NRC's) final environmental impact statement (FEIS) and have been adjudicated in the Commission's hearing process¹ both of which found that the water quality outside the mine zone will be protected during mining and after restoration is completed.

2.0 Aquifer at Section 8² is not Potable

As determined by NRC³ and EPA in 1989⁴, the aquifer at the Section 8 site cannot now nor in the future provide potable drinking water for the area because it is highly mineralized. As with water at all other commercial uranium ISL ore bodies, water quality at the Section 8 site is mineralized with naturally-occurring uranium, and uranium decay products ("progeny") including radium-226 (²²⁶Ra) and radon-222 (²²²Rn), exceeding U.S. EPA drinking water MCLs. Water quality in the aquifer within the Area of Review (AOR) of the Section 8 land in question will not be affected by the UIC operations because regulations require that injected solutions be limited to the mineralized area. Further, the mineralized interval must be monitored to verify that solutions are contained within it. Moreover, no water wells used for consumption are located on Section 8 or within the ¼ mile AOR, so no well could be individually impacted or could serve as a conduit for transfer of fluids into overlying or underlying USDWs. Monitoring is required in the mineralized sand and in overlying and, if required, underlying sands, containing USDWs until the groundwater restoration process has been completed to the satisfaction of regulatory agencies.⁵ As a result, no present or future user of water outside the exempted area within and beyond the AOR will be impacted by the HRI project.⁶

¹ LBP-99-30 at 46

² HRI is the owner of approximately 160 acres located in the Southeast portion of Section 8, Township 16N, Range 16W, McKinley County, State of New Mexico. Unless otherwise noted, reference to "Section 8" herein refers to that property.

³ LBP-99-30 at 39, 42

⁴ June 21, 1989 EPA letter to NMED granting an Aquifer Exemption for the Section 8 site.

⁵ LBP 99-30 at 28

⁶ Water *quantity* impacts associated with consumptive use are not subject to regulation under the SDWA but are subject to jurisdiction by the New Mexico State Engineer.

As shown in the table below, HRI has collected pre-mining water quality information from baseline wells at Section 8, which confirms the water exceeds EPA NPDWR MCLs in the uranium ore zones.

<u>Parameter</u>	<u>Average</u>	<u>Low</u>	<u>High</u>	<u>EPA MCL</u>
Uranium (ppb)	1,800	10	10,900	30
²²⁶ Ra (pCi/l)	10.225	1.1	26.0	5.0

This information demonstrates that the water in the Section 8 ore zone is not now and will not in the future be a USDW because of naturally occurring concentrations of uranium and uranium progeny.

3.0 ISL Technology

The ISL uranium recovery process planned at Section 8 involves pumping a natural ground water solution containing non-toxic chemicals (e.g. oxygen and carbon dioxide) down injection wells. ISL leaves the underground orebody (and aquifer) in place and continuously re-circulates native groundwater, fortified with oxygen, through the orebody. ISL mining was first tried on an experimental basis in the 1960s in Wyoming and Texas, with the first commercial mine operations in both states starting in the 1970s.

Uranium deposits amenable to ISL recovery typically occur in permeable sandstone that are confined above and below by impermeable strata. At Section 8, the uranium ore was redistributed, meaning that oxidizing groundwater percolated through the original uranium deposit solubilizing and moving the uranium until rock was encountered that caused the water to lose its oxygen (become “reduced”). The broad regional nature of uranium roll-front deposition is ongoing today. ISL works the same way as nature: by circulating oxygenated groundwater across the narrow redox interface between injection and extraction wells, the uranium again is made soluble and can be pumped to the surface and recovered.

During operations, less water is injected than is extracted, creating a “bleed” and resulting in a pressure “cone of depression” within and beyond the exempt portion of the aquifer. This assures a net inflow of water into the mine area protecting the surrounding water in the AOR, which is usually of higher quality, from degradation. While the bleed provides the dynamic to assure confinement of leach solution to the exempt area, it results in a minor *quantity* impact to outside relevant aquifer users due to consumptive use of water, which is under the jurisdiction of the State of New Mexico⁷ and is regulated by the New Mexico State Engineer. A permit to appropriate the necessary quantity of water to mine and restore Section 8 has been approved by the New Mexico State Engineer.⁸

⁷ United Nuclear Corporation v. Eluid L. Martinez, New Mexico State Engineer and The Navajo Nation. See **Appendix VI**.

⁸ Findings and Order, G-11-A. See **Appendix VII**.

Operating as a unit of EPA Class III wells in a UIC *area* permit, injection wells are paired with multiple extraction wells located within and around the uranium orebody, much like the well patterns in an oil or gas wellfield. Pumping water (extraction) out of the aquifer causes the injected waters to move toward the extraction wells, passing through the uranium orebody in the process. When the oxygen-fortified water contacts the uranium in the host sandstone, the uranium is oxidized and is made soluble. The water, now rich with mobilized uranium, is drawn to the extraction wells, pumped to the surface, and through the surface ion exchange (IX) facility, where the uranium is removed in a process very similar to that of a conventional home water softener. After uranium removal, oxygen and possibly bicarbonate is added, and the water is re-injected. The water from the orebody, already naturally contaminated with uranium and its progeny, is continuously refortified with oxygen and re-circulated through the sandstone. Injection is inextricably linked to extraction, i.e., without extracting at least as much water as is injected, the surface plant will run dry and re-circulation will stop. Injection cannot proceed without an equal or greater amount of extraction; so over-injection across the area cannot take place.

4.0 History of ISL operations in the U.S.

Uranium deposits that are amenable to the ISL recovery process are common in New Mexico, Nebraska, Texas and Wyoming. ISL recovery operations from many of these deposits have a history of 30 years or more, during which water quality information has been gathered. The collected data provides definitive evidence that the water in and around uranium ore is not potable prior to commencement of any mining activities. Specifically, **Appendix VIII** contains a table showing natural concentrations of uranium and uranium progeny measured at 124 ISL mine units prior to mining. Values shown are for uranium and ^{226}Ra , and where available, information on ^{222}Rn , gross alpha (α) radiation, and gross beta (β) radiation are also presented. Either the uranium or ^{226}Ra (and usually both) concentrations always exceed the EPA MCL standard, often by 10 times or even 100 times. In all instances where ^{222}Rn and gross α radiation are measured, concentrations exceed EPA MCLs or proposed MCLs by a significant margin.

All of the examples referenced in this section are ISL operations in redistributed ore in regional aquifers with mineralization similar to that of the Section 8 site. It is contact with a zone of chemical reduction that causes the regional precipitation of the once-soluble uranium and the cumulative concentration into a commercial-grade orebody. Where uranium ore is saturated by groundwater, the mineralization leaves a distinct radiochemical footprint in rock that extends itself into the water.

5.0 EPA National Primary Drinking Water Regulations.

Water used for ISL is not suitable for drinking and will be restored to constituent levels that are consistent with baseline or class of use. It has been demonstrated that uranium and uranium-related elements such as ^{226}Ra and ^{222}Rn (uranium's natural decay products) are found in water in uranium deposits in New Mexico, Nebraska, Texas, and Wyoming. When the mineralization is sufficiently concentrated, uranium and its progeny

cause the natural groundwater in the ore zone to exceed federal and state drinking water limits for uranium and/or gross α , ^{222}Rn , and ^{226}Ra . As shown by EPA MCLs below the water would not qualify for a public water supply system.

Current NPDWR MCLs for uranium and uranium progeny are:

Contaminant	MCL †	Potential Health Effects from Ingestion of Water	Sources of Contaminant
^{226}Ra and ^{228}Ra	5 pCi/L	Increased risk of cancer	Erosion of natural deposits
Uranium	30 $\mu\text{g/L}$ as of 12/08/03	Increased risk of cancer, kidney toxicity	Erosion of natural deposits

EPA has proposed a ^{222}Rn MCL at 300 pCi/L. [Federal Register: November 2, 1999 (Volume 64, Number 211)]. The potential health hazards associated with ^{222}Rn are described at length therein. Given the widely accepted potential hazards of ^{222}Rn exposure described by EPA, it is reasonable to consider the 300 pCi/l ^{222}Rn MCL along with uranium and radium MCLs as criteria to screen groundwater for suitability as a source of drinking water.

EPA radionuclide MCLs are legally enforceable drinking standards that *public water systems* must satisfy. As shown, in the Section 8 exempted area, uranium and its decay products are ubiquitous in the water in contact with naturally occurring uranium ore. Sites, such as Section 8, that are permitted for Class III UIC activity and exempted under the provisions of the SDWA are not USDWs and will not serve as future sources of drinking water for a *public water supply system*. When considering the relevant aquifer uses at Section 8, the only reasonable use of the water in the exempted area is commercial uranium recovery.

6.0 ISL uranium recovery is performed only in the mineralized zone of the aquifer which is local not regional so the aquifer is not affected regionally.

As stated, when considering the relevant aquifer uses at Section 8, the only reasonable use of the water in the exempted area is commercial uranium recovery. The UIC regulations require that ISL operations be designed to produce only from the mineralized sands in the exempted area. Wellfield patterns are engineered, wellfield operations are balanced, a *negative production bleed* is maintained and the ore zone is surrounded by horizontal and vertical monitor wells. Moreover, production economics of ISL operations and UIC environmental criteria complement one another because both require that only the ore zone is leached, and the leach solution is constrained to the exempted area. The result is water quality is not impacted in USDWs beyond the exempted area into the ¼ mile AOR for the Section 8 project. In other words, there is no impact to the regional aquifer that would affect other relevant aquifer uses.

The type of monitoring approved for Section 8 has already proved successful at the other ISL operations, demonstrating that leach solution is contained within the ore zone. Before monitoring ceases, restoration must be completed, so contamination is not possible.

Even if one were to assume that monitoring is not a sufficient safeguard, it would be hard to affect water outside of the exempted area because of the planned ISL project at Section 8. As shown in the FEIS⁹, the natural ground water movement at Section 8 is about 8.7 feet per year. This rate is exceedingly slow. In the unlikely event that an excursion occurred during operations, corrective action would be applied before contamination of the adjacent aquifer could take place. Placed in proper context, the Section 8 mine life, including restoration, is estimated to be 5.5 years. So even if there was no bleed, no wellfield balancing, nor excursion controls at Section 8, and assuming an excursion occurred at the start of mining, the water would migrate approximately 48 feet down gradient over the mine life. At this distance, water would not leave the Section 8 exempted area before restoration is complete. In other words, adverse impact to the aquifer outside of the mine area over the projected mine life can not happen.

Even if it were possible for affected groundwater to migrate from the Section 8 area permit boundary, attenuation and dispersion would mitigate the impact to obscurity¹⁰. Existing radiological contamination of the groundwater in the orebody from uranium, radium and radon make the water undrinkable using EPA standards. The orebody can be millions of years old with billions of gallons of groundwater having moved through the area, but water analysis shows that the contamination is still confined to the area of the orebody itself. The area affected by mineral recovery is extremely small compared to the size of the regional aquifer. It is logical that the regional reducing capacity of the aquifer will prevail over any small pockets of residual oxidation that may persist. The uranium at Section 8 is contained in the Westwater Canyon aquifer in northwest New Mexico, which is larger than 19,000 square miles, or 12+ million acres. By comparison, the Section 8 wellfield patterns, when fully developed, will encompass approximately 30 acres. These wellfields will be completed in a small fraction of the regional Westwater aquifer, and will be restored so that uranium and other radionuclides are consistent with pre-mining values to eliminate the potential for post mining migration to adjacent USDWs.¹¹

Even if there were no restoration, the Westwater Canyon aquifer has shown the regional capacity to reduce and precipitate uranium ore over a frontal length extending 60 or so miles, west to east, an area that is orders of magnitude larger than the planned Section 8 site. The broad regional nature of uranium roll front deposition is ongoing today. Regional roll fronts require broad areas of up gradient meteoric oxidation to keep

⁹ *Final Environmental Impact Statement to Construct and Operate the Crownpoint Uranium Solution Mining Project, Crownpoint, New Mexico*. NUREG-1508. Washington, D.C. February 1997. p 3-35.

¹⁰ *Final Environmental Impact Statement to Construct and Operate the Crownpoint Uranium Solution Mining Project, Crownpoint, New Mexico*. NUREG-1508. Washington, D.C. February 1997. p 4-39, 4-57 LBP-99-30 at 10 [**Appendix IX**], Also see Deutsch, W.J., et al. 1983. *Aquifer Restoration at In-Situ Leach Uranium Mines: Evidence for Natural Restoration Processes*. NUREG/CR-3136.

¹¹ LBP-99-30 at 39 at **Appendix IX**.

uranium mobile until that oxidized water moves downgrade far enough to encounter a zone of abundant reductant. It is at this regional redox interface where the oxygenated water is reduced and uranium is deposited. This process is not merely historic, it is active today. It is unreasonable to conclude that the Westwater Canyon Formation maintains the capacity to absorb meteoric oxygen from expanses of slow moving ground water on a grand scale, yet this same redox interface would be unable to absorb a far smaller amount of manually injected oxygen from equally slow moving post-restoration groundwater from an ISL operation.

7.0 Restoration returns water to previous use quality after mining is completed but before monitoring ceases.

Once the economic recovery limit of a mine area is reached, lixiviant injection is stopped, and the affected ground water is treated (restored) to return the water quality to levels consistent with pre-mining baseline conditions, or quality of use, as appropriate. The restoration of ground water at Section 8 will have the benefit of a previously engineered array of injection, and production wells that were initially installed in a configuration to maximize sweep efficiency throughout the uranium orebody, and maximize uranium recovery. The same engineering principals hold for maximum sweep efficiency and solution containment during the restoration phase. In other words, ground water restoration is performed uniformly throughout the mine zone, and verified statistically at individual sampling points.

The restoration goals have been evaluated in the Crownpoint FEIS¹² where the finding was that water quality outside the mine zone would be adequately protected during mining and after restoration is complete. The restoration criteria will be established on a parameter-by-parameter basis, with the primary goal of restoration to return all parameters to levels consistent with average pre-mining baseline conditions. To the extent that water quality parameters cannot be returned to the identical average pre-mining baseline levels, the secondary goal will be to return water quality to the maximum concentration limits as specified in EPA secondary, and primary drinking water regulations (40 C.F.R. part 141 and § 143.3). If a groundwater parameter cannot be restored to its secondary goal, HRI must make a demonstration to the NRC that leaving the parameter at the higher concentration will not threaten public health and safety, and that, on a parameter-by-parameter basis, water use will not be significantly degraded. As such, there is no potential impact to the aquifer outside of the mine area after restoration is complete.

Surety (bonding) for ground water restoration of the Section 8 wellfields is required by NRC. Based on experience with other ISL operations and test results from laboratory restoration on core samples, NRC approved a nine (9) pore-volume estimate

¹² *Final Environmental Impact Statement to Construct and Operate the Crownpoint Uranium Solution Mining Project, Crownpoint, New Mexico.* NUREG-1508. Washington, D.C. February 1997. p 4-27.

for bonding¹³. The NRC approved initial surety with contingency for groundwater restoration is \$8,201,585.

8.0 Conclusion

In over three decades of operations, HRI is not aware of any adverse impact to USDWs from ISL uranium recovery operations in the United States.¹⁴ As required by UIC regulations the construction, operating, monitoring and reporting at ISL sites has been highly successful in assuring that leach solution are confined to the ore (exempted) zone. Before monitoring ceases, restoration must be conducted so the risk of excursions is eliminated and contamination from the exempted mining zone aquifer to adjacent, non-exempt aquifers is not possible. This regulatory approach has been successful because there has never been a report of contamination of aquifers outside of the exempted interval and into the AOR because of Class III UIC activity.

¹³ See In the Matter of Hydro Resources, Inc. (Crownpoint Uranium Project), CLI-008, 51 NRC 227, 244 (2000)

¹⁴ LBP-99-30 at 47

APPENDIX III

**McKinley County Comprehensive Plan Phase 2
August 22, 2005 White Paper
Regarding
Socioeconomics and Growth Analysis,
Conditions, Issues and Policy Directions**



Introduction

The McKinley County Board of County Commissioners adopted the McKinley County Comprehensive Plan in April 2003. The plan consists of a vision with broad goals and objectives for a wide range of subjects relating to the physical development of the county. The 2003 plan established a general framework for long-range planning in the county, and identified most of the important issues that the county faces. In 2004, after reviewing the Comprehensive Plan, the current Board of County Commissioners and County Manager felt that the plan needed to be revised and fleshed out to provide action and implementation steps that could be delegated to County staff. The county contracted with Northwest New Mexico Council of Governments to prepare a phase 2 of the comprehensive plan.

Northwest New Mexico Council of Governments hired Architectural Research Consultants, Incorporated (ARC) to partner with them in preparing the phase 2 plan. The phase 2 plan is scheduled to be completed by November 2005.

The goals of the phase 2 effort are to develop policy directions that are more specific, with action steps that can be implemented, to continue public involvement both directly related to the plan and integrating other topical public involvement processes where appropriate, and to develop an approach to county land use planning, ordinances and administration.

This white paper is an intermediary product in the preparation of the comprehensive plan, resulting from the following activities in the phase 2 planning process:

- Meetings with the county manager and management staff
- Meetings with local administrators and experts on the focal topics of the Phase 2 plan: **Transportation, Land Use, Economic Development, Water and Navajo Nation Intergovernmental Relations**
- Research of existing plans and studies

McKinley County Comprehensive Plan Phase 2

- Matrix summary of ten Navajo chapter plans
- Demographic and socioeconomic profile
- Presentation of socioeconomics, conditions, issues and options for policy directions (in Powerpoint)
- Meeting of the Comprehensive Plan Committee on June 20, 2005
- Incorporation of the Plan Committee's recommendations into the White Paper

Topics of Phase 1 Plan

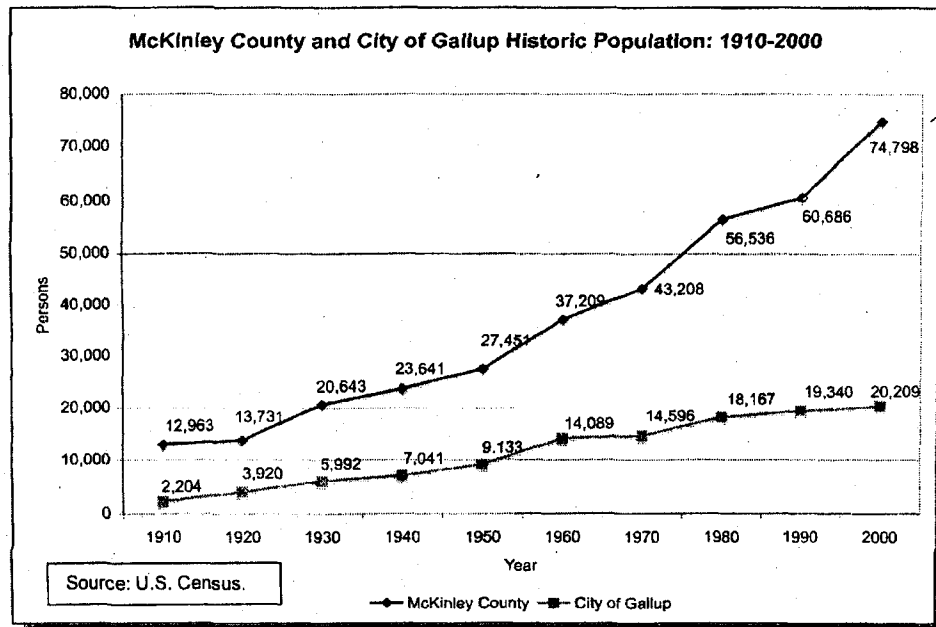
Components of the Phase 1 Plan adopted April 8, 2003 include:

- Vision, Goals & Objectives
- Elements
 - o Land Use
 - o Transportation
 - o Water
 - o Intergovernmental Relations
 - o Health
 - o Housing Education
 - o Tourism
 - o Economic Development
 - o Fiscal Impact
 - o Infrastructure
 - o Implementation Program

Socioeconomics Profile

Population

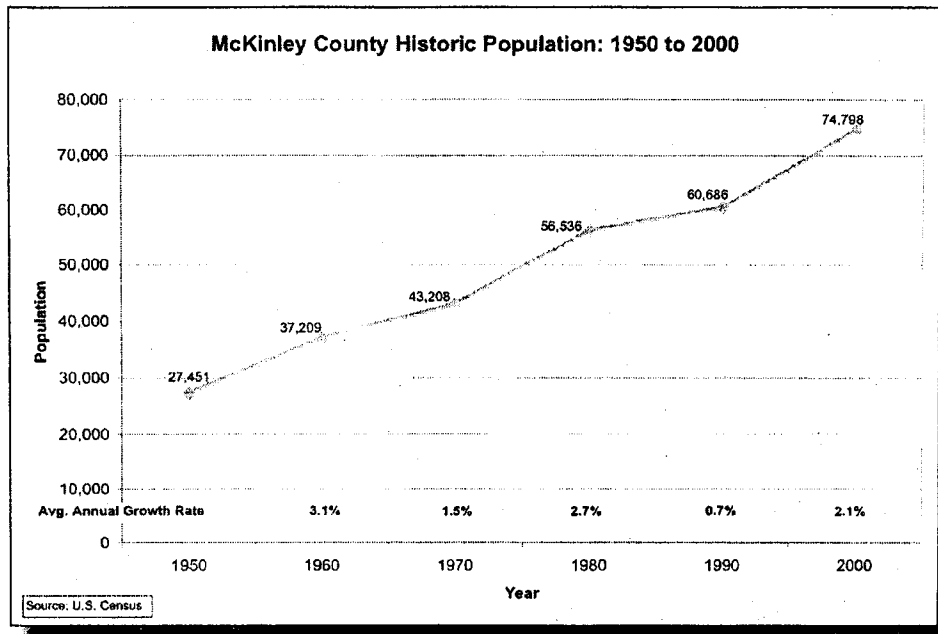
McKinley County has experienced long-range moderate growth. Population grew every decade in both the city of Gallup and McKinley County between 1910 and 2000, as shown in the following figure. The unincorporated area of McKinley County has grown faster than Gallup every decade since 1960. Gallup's share of the total county population peaked in 1960 with 38% and declined to 27% by 2000. The unincorporated population nearly doubled from 23,120 persons in 1960 to 54,589 persons in 2000.



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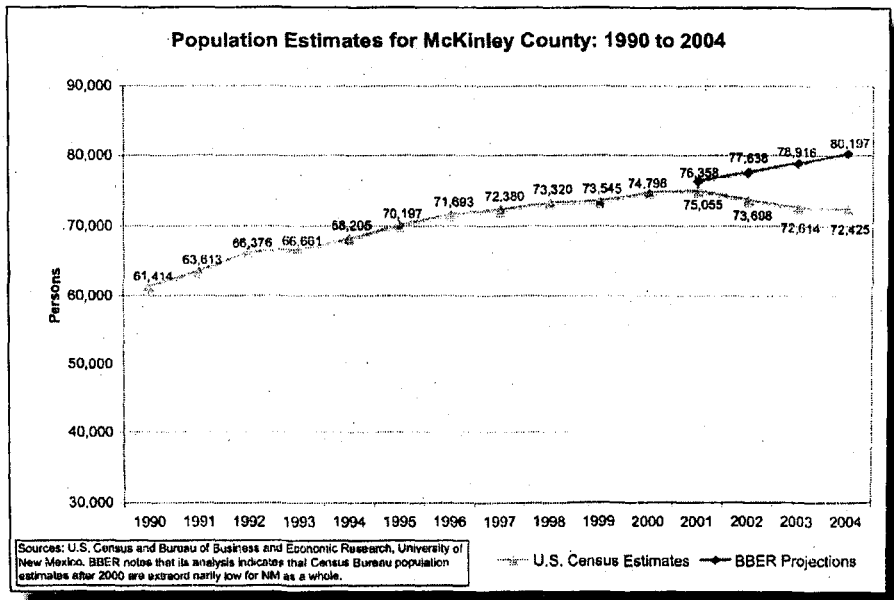
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Between 1950-2000, the average annual rate of growth in both McKinley County and the State of New Mexico was 2.0%. During the last 30 years, McKinley County grew faster than the state in the 1970's and 1990's and slower in the 1980's.



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The U.S. Census Bureau showed a small decline in population estimated between 2000-2004, while the University of New Mexico Bureau of Business and Economic Research (BBER) projected a small increase in population during the same period. During the period of 1990-2000, the U.S. Census Bureau underestimated county growth. BBER notes that its analysis indicates that Census Bureau population estimates after 2000 are extraordinarily low for New Mexico as a whole. As indicated later in this paper, birth rates have been stable or increasing and the economy appears to have been relatively stable, which should keep net migration similar to the past ten years. The BBER projections appear more likely than the Census Bureau estimates.



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Population by Subareas

As shown on the following map, the county was divided into eight subareas.

All subareas of McKinley County grew in the 1990's. The greatest growth occurred in the greater Gallup area, labeled "Gallup, Outside Metro Area," gaining over 6,500 persons between 1990 and 2000. This subarea was further divided into "Gallup North" with 10,039 persons and "Gallup South" with 8,940 persons in 2000. Both of these smaller areas grew by around 3,200 persons between 1990 and 2000. The "Gallup Metro" area immediately surrounding Gallup added 2,169 persons, while the Thoreau subarea added 2,177 persons during the decade..

Subarea	1990	2000	1990-2000	
			Change	Average Annual Growth
Gallup Metro	21,241	23,410	2,169	1.0%
Gallup, Outside Metro Area	12,465	18,979	6,514	4.3%
Navajo	3,066	3,720	654	2.0%
Tohatchi	4,807	5,394	587	1.2%
Crownpoint	5,847	7,438	1,591	2.4%
Thoreau	5,394	7,571	2,177	3.4%
Ramah	484	537	53	1.0%
Zuni	7,382	7,749	367	0.5%
McKinley County	60,686	74,798	14,112	2.1%
New Mexico	1,515,069	1,819,046	303,977	1.8%

Source: U.S. Census 1990 and 2000. Subarea aggregation of block groups into subareas, ARC, Inc.

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Insert 11X17 map of subareas

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Most Native American communities in McKinley County grew between 1990 and 2000. In general, growth was dispersed in the various rural communities. Of 29 Navajo chapters mainly in the county, only 9 lost population. Chapters that grew the most were: Church Rock, Red Rock and Mexican Springs. In total, there was an increase of nearly 6,000 residents in the various Indian communities. It should be noted that the U.S. Census Bureau, working with the Navajo Nation, focused on improving the accuracy of the count of Native Americans in the 2000 Census. Even with a greater effort, most observers acknowledge that problems persisted. Migration has been a particularly difficult variable.

Native American Population in Communities of McKinley County: 1980-2000							
	Persons			Change		Average Annual Change	
	1980	1990	2000	1980-90	1990-00	1980-90	1990-00
Gallup and Surroundings Subarea							
Church Rock Chapter	1,833	1,684	2,737	51	1,053	0.3%	5.0%
Iyanbito Chapter	852	969	1,029	117	60	1.3%	0.6%
Pinedale Chapter	931	608	1,110	-323	502	-4.2%	6.2%
Rock Springs Chapter	1,416	1,295	986	-121	-309	-0.9%	-2.7%
Tsayatoh Chapter	1,172	1,288	731	116	-557	0.9%	-5.5%
Red Rock Chapter	1,573	1,022	1,974	-551	952	-4.2%	6.8%
Bread Springs Chapter	1,005	1,147	990	142	-157	1.3%	-1.5%
Manuelito Chapter	394	623	350	229	-273	4.7%	-5.6%
Chichiltah Chapter	1,371	1,442	1,667	71	225	0.5%	1.5%
<i>Subtotal</i>	<i>10,347</i>	<i>10,078</i>	<i>11,574</i>	<i>-269</i>	<i>1,496</i>	<i>-0.3%</i>	<i>1.4%</i>
Zuni Reservation-Ramah Subarea							
Ramah Navajo Indian Reservation (partly in Cibola County)	1,163	1,114	1,598	-49	484	-0.4%	3.7%
Zuni Indian Reservation	6,343	7,412	7,758	1,069	346	1.6%	0.5%
<i>Subtotal</i>	<i>7,506</i>	<i>8,526</i>	<i>9,356</i>	<i>NA</i>	<i>830</i>		<i>0.9%</i>
Thoreau Subarea							
Thoreau Chapter	1,341	1,336	1,363	-5	27	0.0%	0.2%
Mariano Lake Chapter	718	720	865	2	145	0.0%	1.9%
Smith Lake Chapter	579	504	1,044	-75	540	-1.4%	7.6%
Baca/Prewett Chapter	1,452	666	879	-786	213	-7.5%	2.8%
Casamero Lake Chapter	407	555	547	148	-8	3.2%	-0.1%
<i>Subtotal</i>	<i>4,497</i>	<i>3,781</i>	<i>4,698</i>	<i>-716</i>	<i>917</i>	<i>-1.7%</i>	<i>2.2%</i>
Crownpoint/Eastern Agency Subarea							
Crownpoint Chapter	1,295	2,468	2,642	1,173	174	6.7%	0.7%
Little Water Chapter	582	636	567	54	-69	0.9%	-1.1%
White Horse Lake Chapter	429	603	542	174	-61	3.5%	-1.1%
Pueblo Pintado Chapter	580	447	436	-133	-11	-2.6%	-0.2%
Torreón/Star Lake Chapter (partially in Sandoval County)	1,157	1,326	1,777	169	451	1.4%	3.0%
Ojo Encino Chapter (partially in Sandoval County)	148	577	699	429	122	14.6%	1.9%
Beceñi Chapter	246	193	498	-53	305	-2.4%	9.9%
Standing Rock Chapter	504	243	678	-261	435	-7.0%	10.8%
Nahodisgish Chapter	272	313	404	41	91	1.4%	2.6%
<i>Subtotal</i>	<i>5,213</i>	<i>6,806</i>	<i>8,243</i>	<i>1,593</i>	<i>1,437</i>	<i>2.7%</i>	<i>1.9%</i>
Tohatchi/Twin Lakes Reservation Subarea							
Twin Lakes Chapter	1,692	1,952	2,240	260	288	1.4%	1.4%
Coyote Canyon Chapter	835	1,226	941	391	-285	3.9%	-2.6%
Tohatchi Chapter	1,572	1,460	1,988	-112	528	-0.7%	3.1%
Mexican Springs Chapter	942	710	1,312	-232	602	-2.8%	6.3%
Red Lake Chapter (both Navajo, NM and Red Lake, AZ)	2,315	2,203	2,344	-112	141	-0.5%	0.6%
<i>Subtotal</i>	<i>7,356</i>	<i>7,551</i>	<i>8,825</i>	<i>195</i>	<i>1,274</i>	<i>0.3%</i>	<i>1.6%</i>
Total Population (All Subareas)	34,919	36,742	42,596	803	5,954	0.5%	1.5%

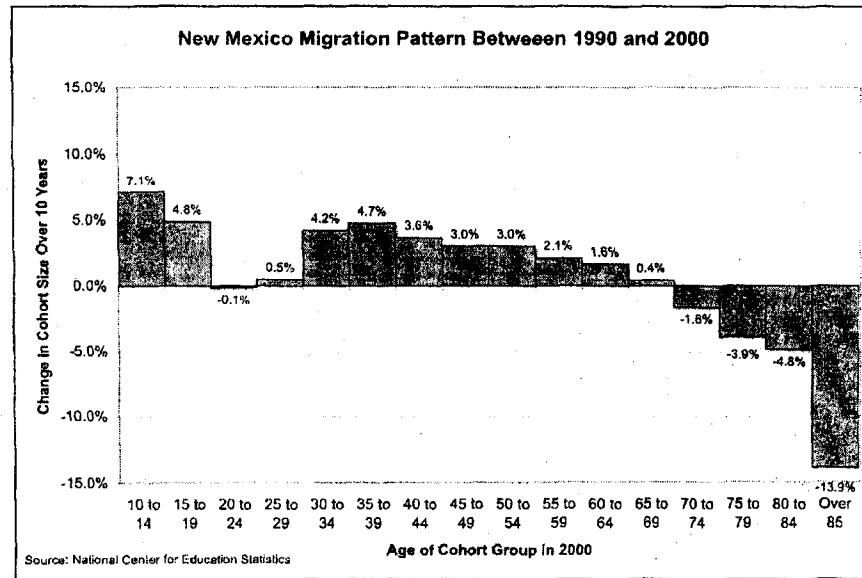
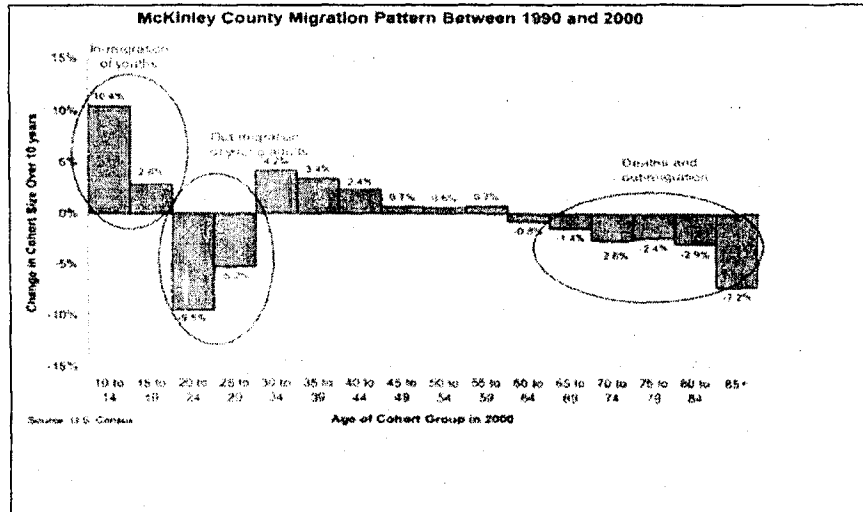
Notes: The Rincon Marquez Community is counted in Torreón/Star Lake and White Horse Lake Chapters. Fort Defiance Chapter and Crystal Chapter extend into New Mexico, although most residents live in Arizona. Naschitti Chapter extends into McKinley County, although most residents live in San Juan County.

Sources: U.S. Census 2000, Navajo Nation Community Division of Community Development, Chapter Images 2004 for 1980 and 1990 numbers, based on U.S. Census counts.

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Indicators of Migration

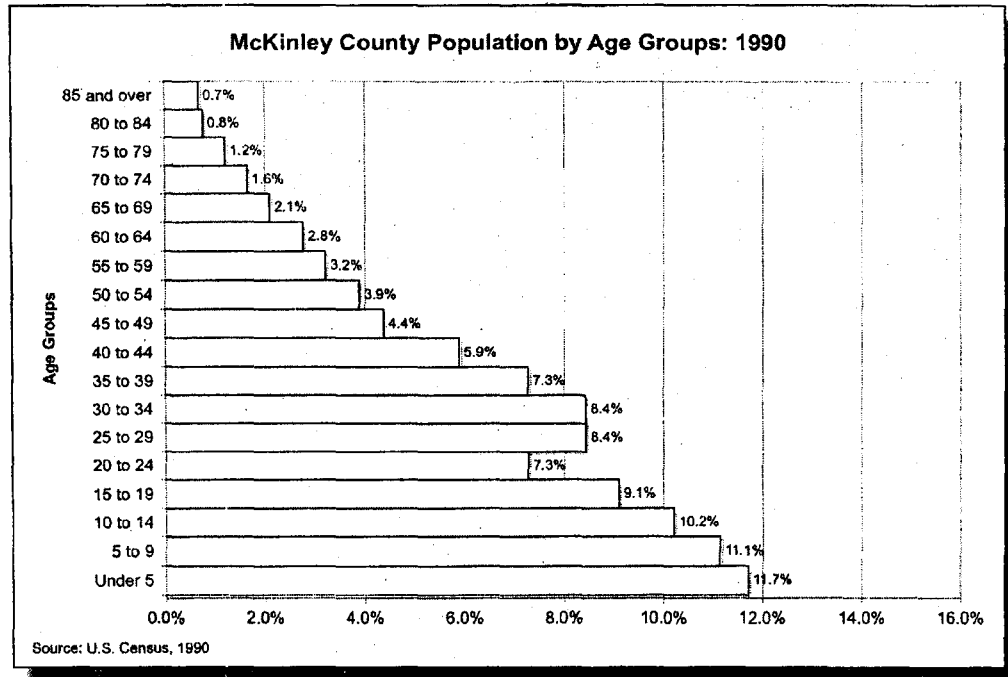
Most of the growth that occurred in McKinley County between 1990 and 2000 was due to natural increase. Between 1990 and 2000, the population of McKinley County increased by 13,384 persons. Eighty five percent (85%) of this growth (or 11,409 persons) was due to natural increase (births minus deaths), while 15% (or 1,975 persons) was due to in-migration. In comparison to the state as a whole, McKinley County experienced a higher portion of in-migration of youths and more out-migration of young adults.



Age Characteristics

McKinley County has a comparatively young population. The median average age in 2000 was 26.9 years, compared to 34.6 years in the state and 35.3 years in the U.S.

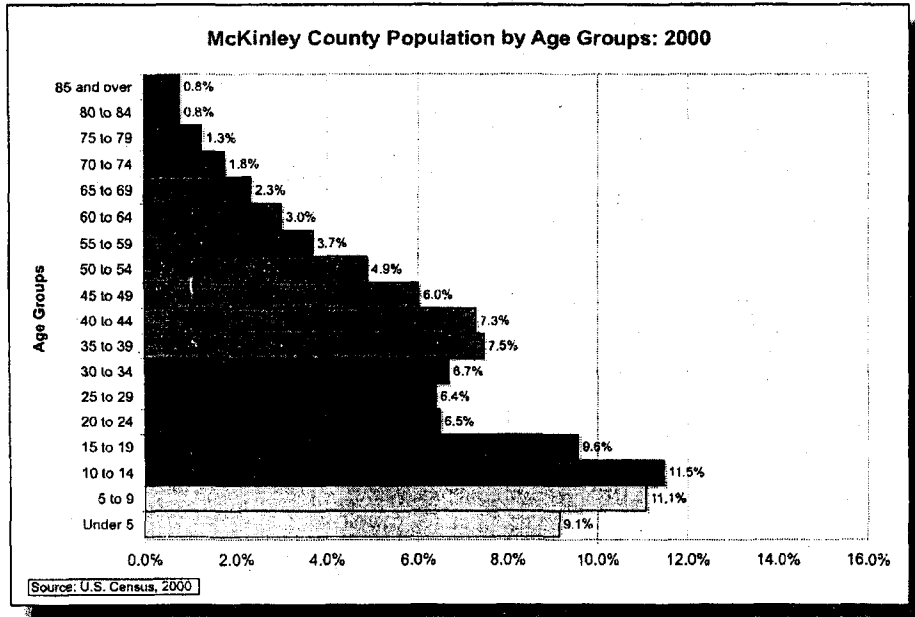
Population aged in McKinley County between 1990 and 2000, as can be seen by comparing the 1990 and 2000 half-pyramid charts below.



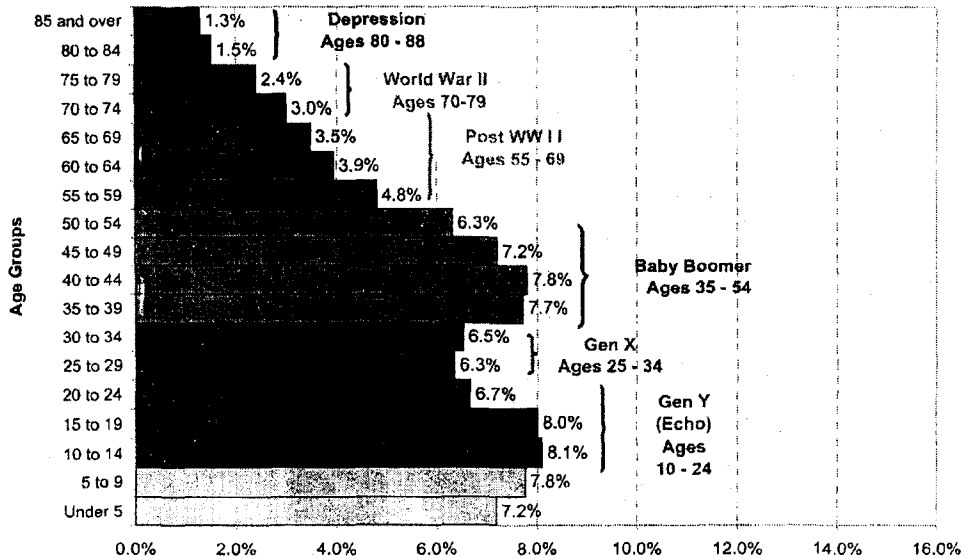
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Focusing on the 2000 age composition in comparison to the State of New Mexico "half-pyramid" charts below, it is notable that the county had a smaller "Baby Boomer" generation and a larger Generation Y (Echo).



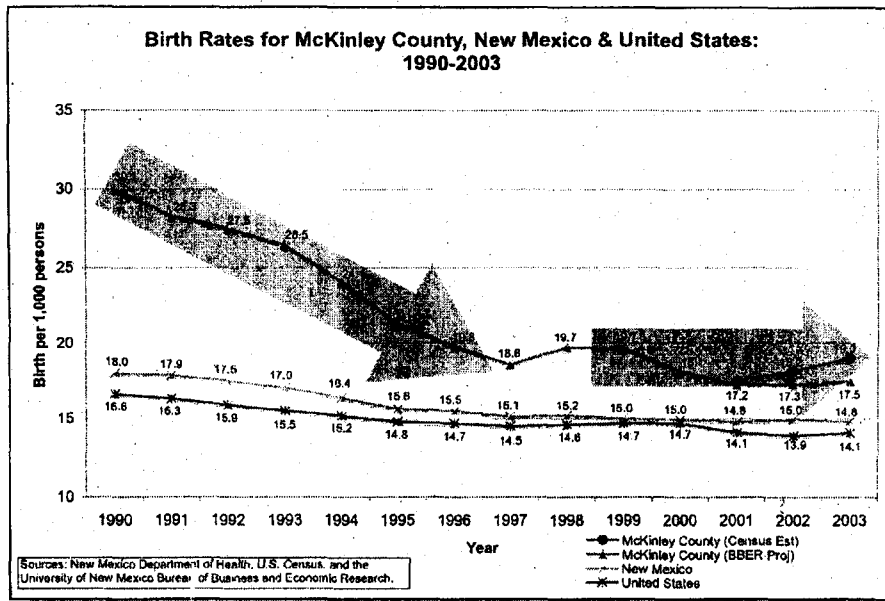
State of New Mexico Age Cohorts 2000 and "Generations"



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Birth Rates

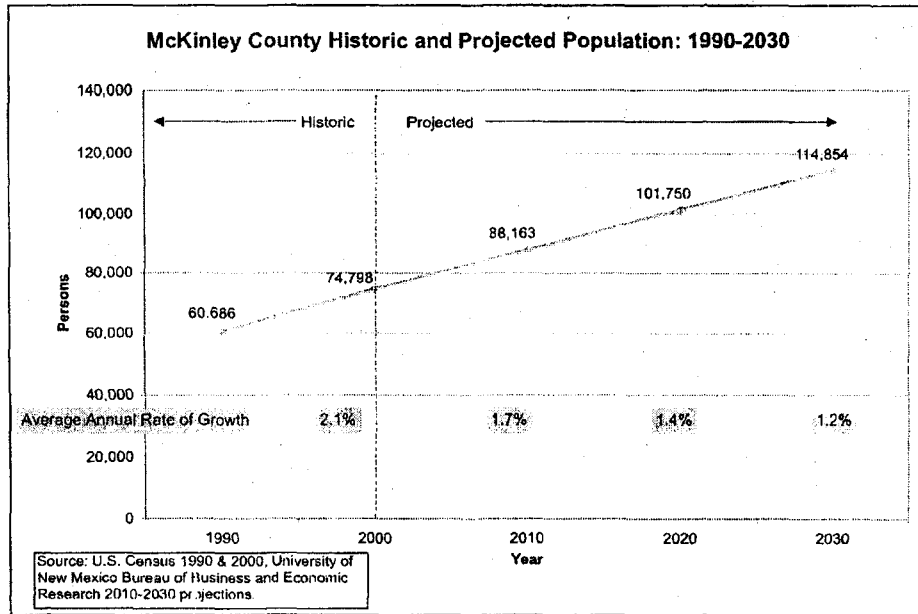
Birth rates were declining in McKinley County from 1990-1997, as well as in the state and U.S. The McKinley County birth rate went down at a much faster rate from 1990-1997, however, it remained significantly above the state and U.S. rates. Since 2000, the birth rates appear to be leveling out or increasing somewhat.



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Population Projections

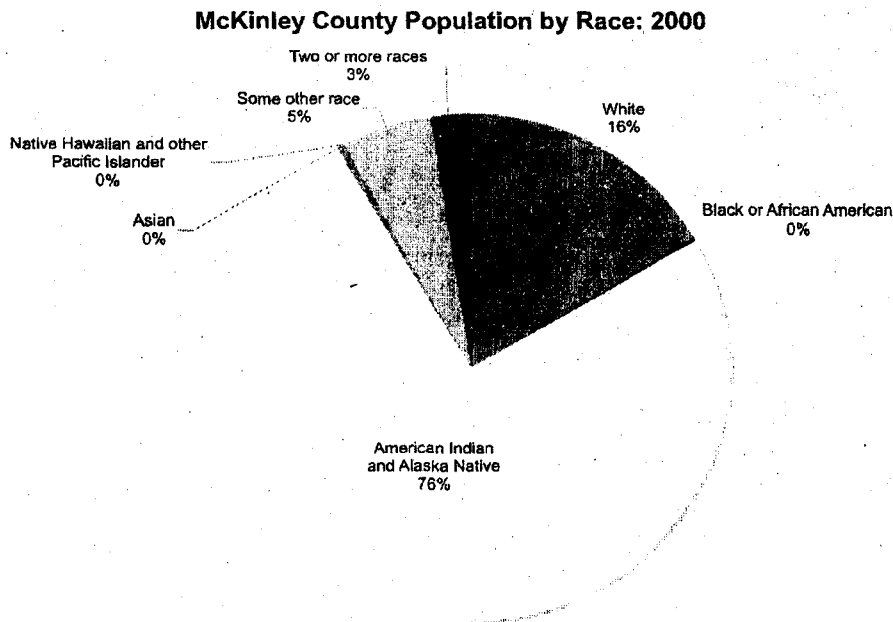
McKinley County is projected to add 40,000 residents from 2000-2030. In comparison, the county grew by around 31,000 persons from 1970-2000. The rate of growth is projected to decline each decade.



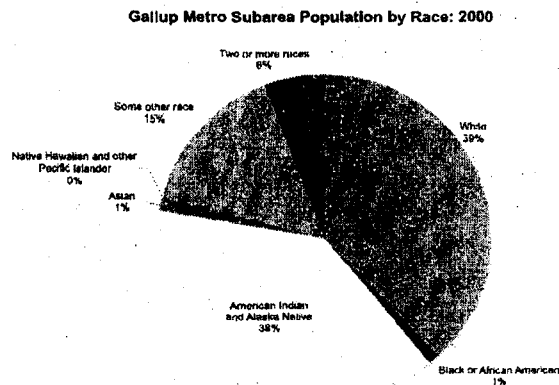
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Racial Composition of the Population

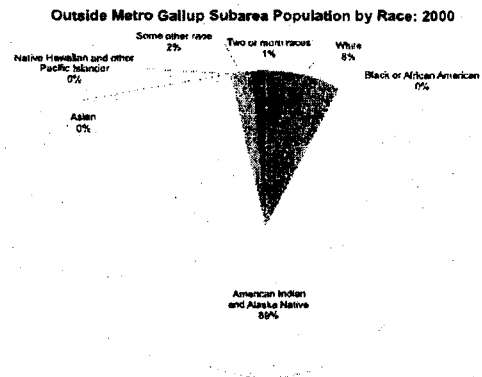
McKinley County's population is 76% American Indian, 12.4% Hispanic (can be any race), and 12.9% other. The following pie charts show the population of McKinley County and for each subarea by race in 2000.



Source: U.S. Census, 2000

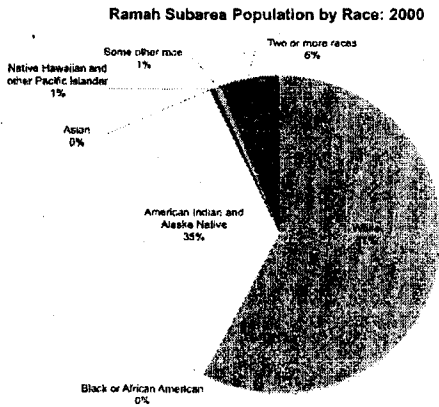


Source: U.S. Census, 2000



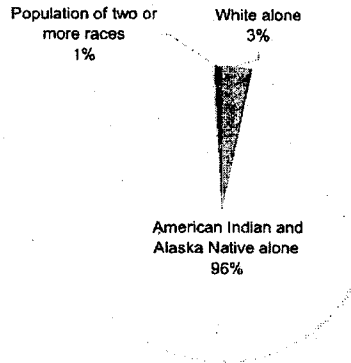
Source: U.S. Census, 2000

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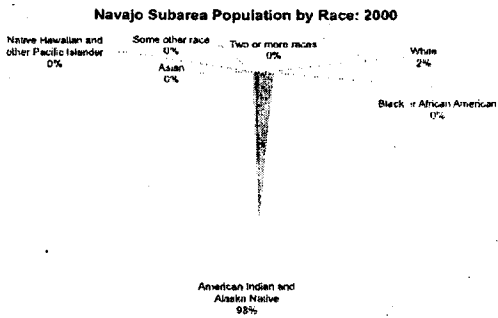


Source: U.S. Census, 2000

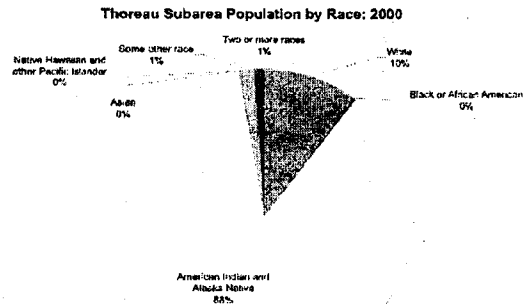
Zuni Reservation Subarea Population by Race: 2000



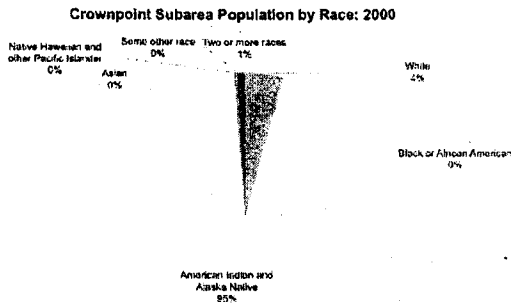
Source: U.S. Census 2000.



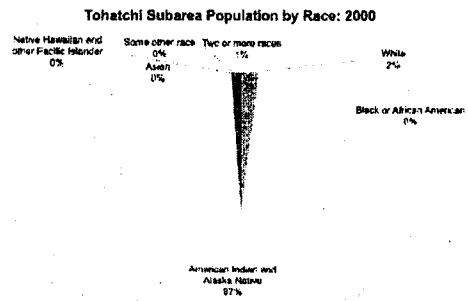
Source: U.S. Census, 2000



Source: U.S. Census, 2000



Source: U.S. Census, 2000



Source: U.S. Census, 2000

Housing Characteristics

McKinley County had a total of 26,718 housing units in 2000, of which 21,476 were occupied households and 5,242 were considered vacant/not permanently occupied. The portion of vacant units in the City of Gallup was the lowest, at 7.3%, still fairly high. The Zuni Reservation had a vacancy rate of 11.2%. The Ramah subarea had a vacancy rate of 31.0% - perhaps reflecting a high portion of mountain seasonal residences. The other subareas, which are primarily Navajo, had vacancy rates of over 24%, characteristic of the Navajo Nation where many housing units are used seasonally or occasionally, or are abandoned.

McKinley County Housing Units, Households and Vacant Units by Subareas: 2000

Subarea	Housing Units	Households	Vacant Units	Portion of Vacant Units
<i>City of Gallup</i>	7,349	6,810	539	7.3%
Gallup Metro	8,436	7,726	710	8.4%
Gallup N	3,489	2,655	834	23.9%
Gallup S	3,523	2,536	987	28.0%
<i>Gallup N & S (Combined)</i>	7,012	5,191	1,821	26.0%
Navajo	1,257	905	352	28.0%
Tohatchi	2,063	1,470	593	28.7%
Crownpoint	2,876	2,072	804	28.0%
Thoreau	2,747	2,095	652	23.7%
Ramah	245	169	76	31.0%
Zuni	2,082	1,848	234	11.2%
Total	26,718	21,476	5,242	19.6%

Source: U.S. Census 2000, SF1.

Household size varied from a high of 4.16 persons per household in Zuni to a low of 3.18 persons per household in the Ramah subarea. The county has a larger average household size than the state, and all areas had larger household average sizes than the state average.

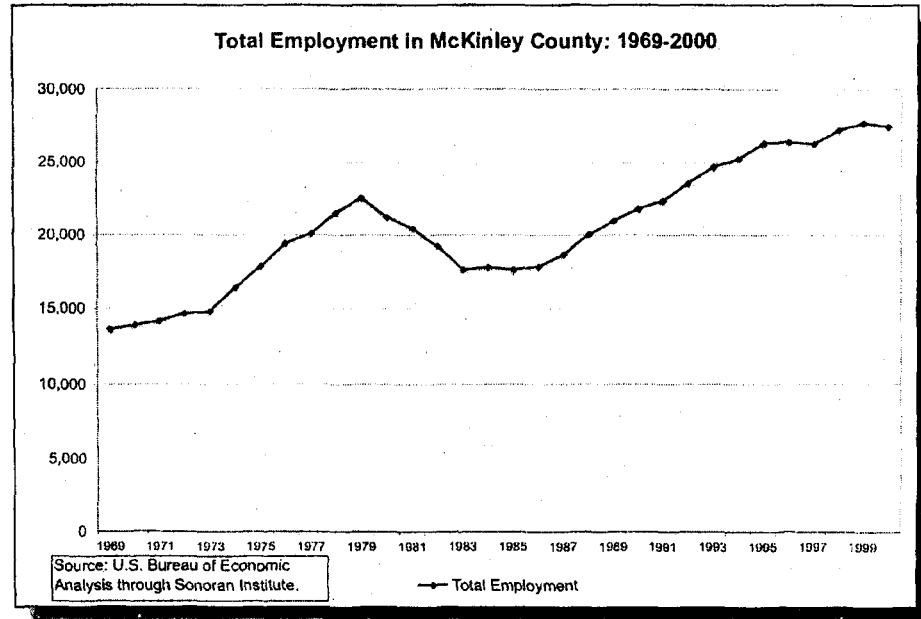
Average Household Size by Subarea: 2000

Gallup	3.22
Navajo	4.11
Tohatchi	3.67
Crownpoint	3.59
Thoreau	3.61
Ramah	3.18
Zuni	4.16
McKinley County	3.44
New Mexico	2.63

Source: U.S. Census, 2000, SF 1.

Growth Analysis: Local Economy

McKinley County's employment has grown from 13,913 jobs in 1970 to 27,532 jobs in 2000 (U.S. Bureau of Economic Analysis). Over the 30-year period, the county gained an average of 2.4% jobs per year. From 1986-2000, employment growth average 3.1% per year.



From 2000 to 2004 another 2,260 jobs were added (New Mexico Department of Labor).

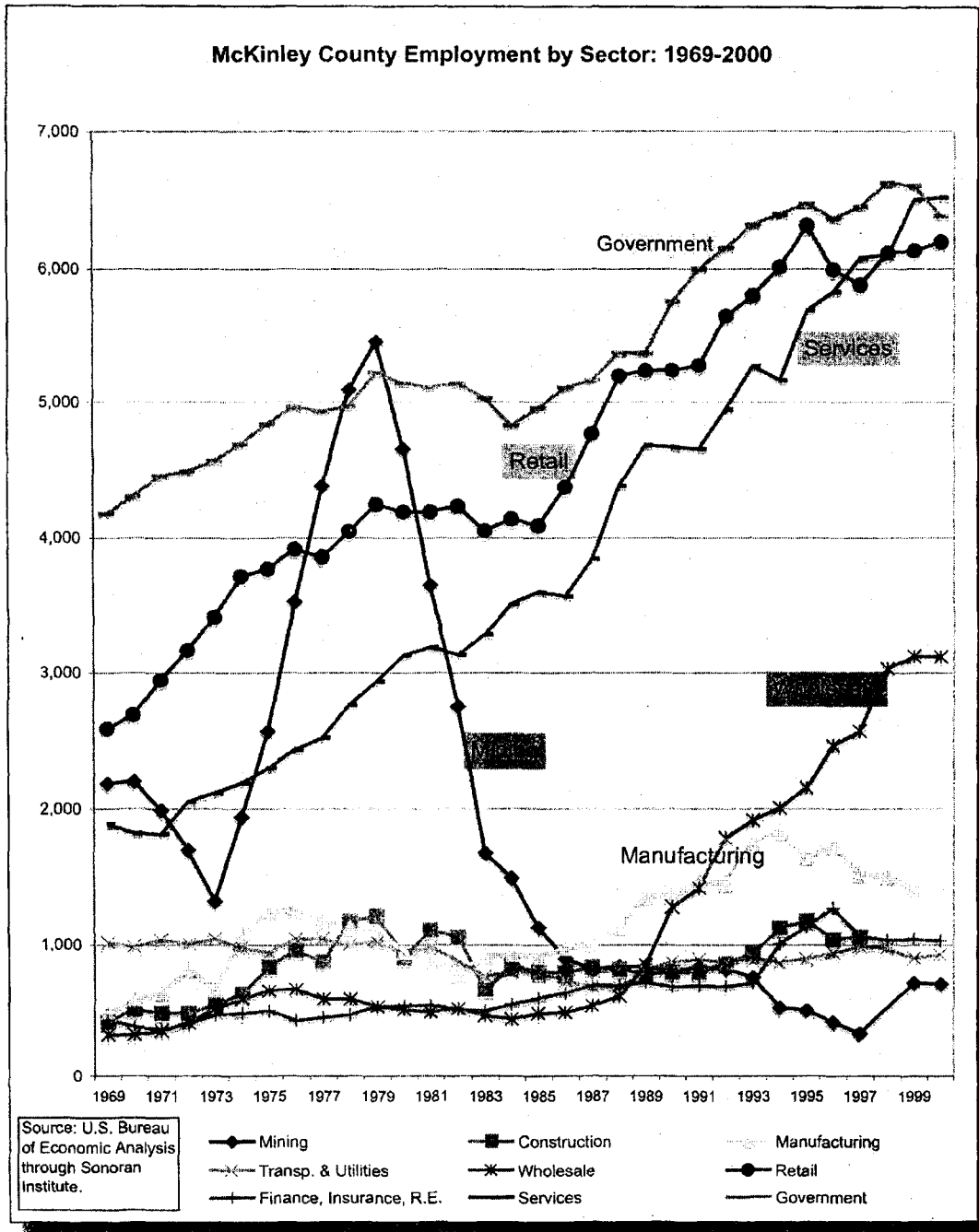
Average earnings per job in real terms (adjusted for inflation to 2000 dollars) fell from \$30,703 in 1970 to \$24,378 in 2000. In 2000 average county earnings were lower than NM average of \$28,283 and the U.S. average of \$36,316. In 1973-1984 county earnings were higher than U.S. average. This time period corresponds to the spike in mining employment.

Employment by Sector

Retail and service jobs have grown the most of any of the employment sectors. Combined, these sectors are dominant. Retail sales and services in Gallup meet the needs of approximately 120,000 people over a

15,000 square mile territory in Northwestern New Mexico and Northeastern Arizona (source: Gallup/McKinley County Chamber of Commerce). McKinley County and Apache County, AZ had a combined population of 120,000.

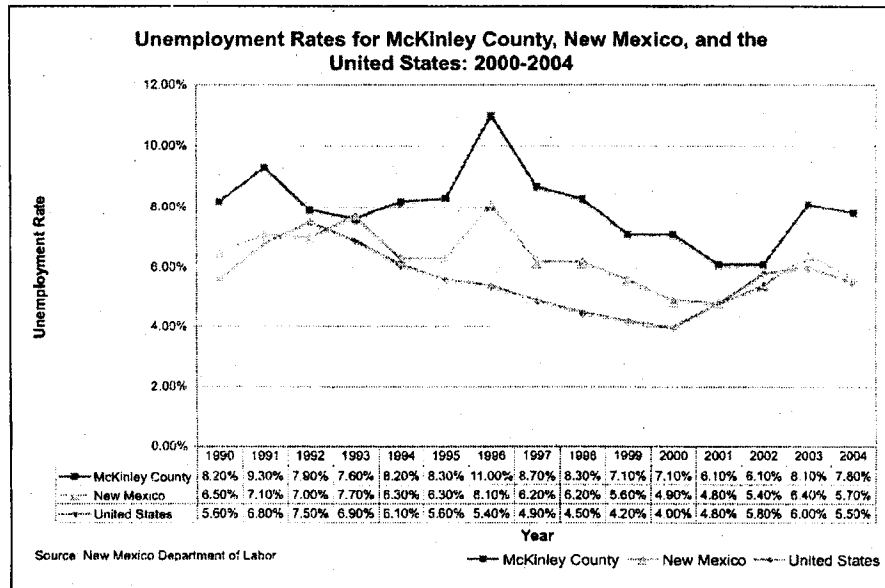
Government is a very strong employment sector in the county's economy, providing nearly 6,400 jobs by year 2000. The mining sector has diminished. Wholesale trade has grown substantially since 1988. Growth in manufacturing was significant in the 1980's and early 1990's, but has the sector has gradually declined since 1994.



McKinley County had the lowest per capita income in New Mexico in 1999.

Lowest Per Capita Income in New Mexico in 1999		
McKinley County	\$	9,872
Luna County	\$	11,218
Guadalupe County	\$	11,241
Source: U.S. Census		
Highest Per Capita Income in New Mexico in 1999		
Bernalillo County	\$	20,790
Santa Fe County	\$	23,594
Los Alamos County	\$	34,646
Source: U.S. Census		

The county has had high unemployment rates compared to New Mexico and the U.S. In 2004, McKinley County had 7.8% unemployment compared to 5.7% for NM and 5.5% for U.S. Participation rate in work force in county is low. New Mexico Department of Labor or the U.S. Bureau of Economic Analysis does not count "Non-participants". On the Navajo Reservation, unemployment is estimated to be in the range of 50-70%.



Major Employers in McKinley County

Most of the major employers in the county are located in Gallup, but not all.

- Gallup McKinley County Schools (2,000 employees)
- SUPS Gallup Indian Medical Center (1,000 employees*)
- Rehoboth McKinley Christian Hospital (649 employees)
- City of Gallup (601 employees, full- and part-time*)
- Wal-Mart (637 employees)
- Zuni Public Schools (417 employees)
- Giant Refinery and Truck Stop (389 employees)
- Pittsburgh and Midway Coal Company (380 employees)
- University of New Mexico- Gallup (242 employees, full and part-time)
- California Supermarkets (240 employees)
- Bureau of Indian Affairs (210 employees)
- McKinley County (200 employees*)
- Plains Escalante Generating Station - Prewitt (120 employees*)

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Employment Change

The following tables show expected job losses, expected job growth, and economic development prospects that have been pursued in recent years.

Job Growth and Loss In Gallup and McKinley County		
Job Loss	Number of Jobs	Additional Information
Pittsburg & Midway coal mine closing	380	Projected to close by 2008. Loss of 800 jobs from peak. Option of early retirement to eligible employees.
Giant Refinery - possibly		Reportedly either Gallup or Bloomfield will be closed in 5 years
Railroad engineers moved to Winslow or Belen	Not Known	
Navajo Nation Tribe possible lay-offs	500	Budget shortfall could lead to lay-offs - not all in Window Rock or affecting McKinley County
TPL, operators of the Ft. Wingate Demilitarization Facility	27	Furlough at conclusion of its current contract
Navajo Forest Products Industries		Closed down in 1994
Job Gain	Number of Jobs	Additional Information
Indian Health Service - New Hospital	600-1,000	Site selection and project submittals in process. Top location priorities are east of town near High School (1st), Rehoboth Red Mesa (2nd) and Gallup Golf Course (3rd). 45 or 60 acres required. Expect 12-13 years from opening the doors under best case. Many of the new employees would be expected to relocate from outside Gallup
New Mexico Cancer Treatment Center	Not Known	16,000 square foot facility under construction north of NM 602 near UNM-Gallup
Hotel & Conference Center near Indian Hills	Not Known	
Lee Ranch El Segundo Coal Mine	150	Expected to come on line in 2007
Uranium Mine north of Church Rock Village	50-75	
Retail sales growth - recent big box and franchise development: Super Wal-Mart, Home Depot, Applebee's, and Carl's Jr.	Not Known	Population in the expansive Gallup Trade Area historically has increased, leading to additional retail employment

US EPA ARCHIVE DOCUMENT

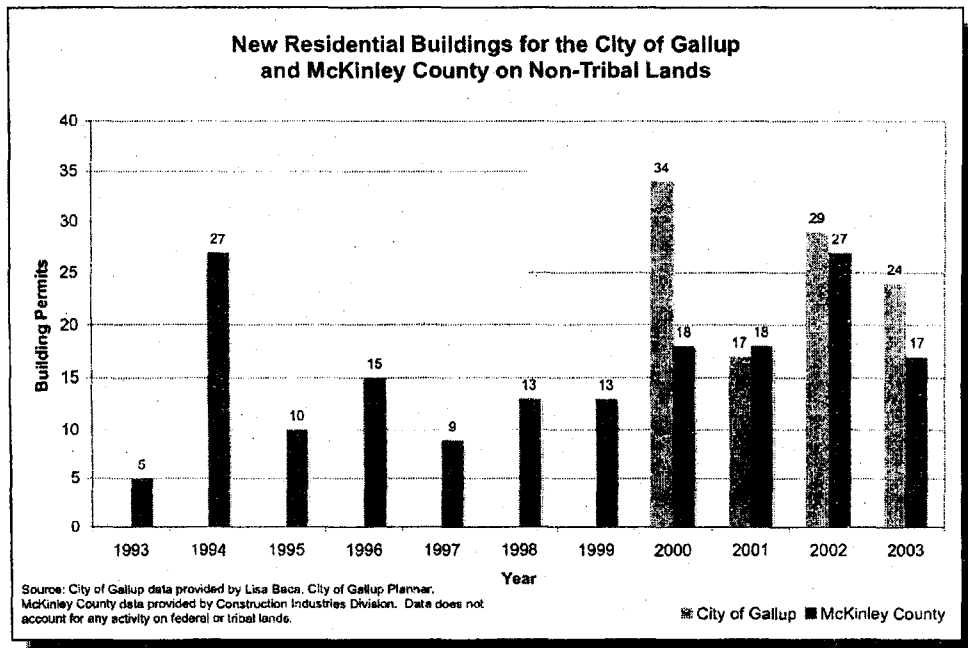
McKinley County Comprehensive Plan Phase 2

Economic Development Prospects in Gallup and McKinley County	
Economic Development Prospects	Additional Information
Fort Wingate Army Depot industrial development	Ft. Wingate Army Depot effectively locked up in management disputes and need for additional clean-up. Development is not considered likely to develop soon.
Casino in Manuelito Chapter near Spencer Valley, Church Rock Chapter or Iyanbito Chapter	Navajo Nation approval required. Competing sites have been suggested. Concept of travel center, restaurants, hotels, entertainment, venue with 500 seating
Additional coal resources in northeast part of the county	
Uranium resources on Navajo Nation	Navajo Nation adopted a policy in opposition to permitting any uranium mining on Reservation
Church Rock Industrial Park	Indian Market Center and Culinary Arts Center on 20 acres of land planned. Significant land available, promoted for large employers and not moving quickly.
Manufacturing niche/target industrial sectors: medicines, medical equipment, manufacturing involving hazardous materials	
Navajo Nation Economic Development Department is conducting a Crownpoint market feasibility study	
Navajo Nation Economic Development Department is conducting market feasibility study that covers six communities (Pueblo Pintado/Torreón area)	
Navajo Chapter Economic Development	Economic development on Navajo Reservation one of goals of Local Governance Act. Early to say how much economic activity may occur.
Expansion in Gallup retail sector	Downtown Plaza Development encompasses some new shopping
Tourism development	
Adventure Gallup	
Regional storage/distribution hub development	
Home-based businesses in Navajo Nation	

Residential Growth in Gallup and McKinley County

Building permits issued for new houses has varied by year in both the unincorporated county (non-Tribal lands) and in the City of Gallup. Overall, the number of building permits has not been high for a growing county as large as McKinley County – however, these records do not include growth on Tribal Trust and Allotment lands. Records of new homes on Tribal lands are not available. Additional building activity on the Indian Reservations has been occurring both through Navajo Housing Authority and other housing providers’ projects and individuals building homes or moving in manufactured housing.

McKinley County permits have generally been higher in the past four years, 2000-2003, compared to the earlier period of 1993-1999. City permits have varied by year since 2000 to a greater extent.



McKinley County Comprehensive Plan Phase 2

The following table provide information on major residential developments and identified development areas in the City of Gallup and unincorporated McKinley County. Maps showing these projects in

Major Residential Developments and Development Areas in Gallup and McKinley County					
Subdivisions	Location	Available Units/Lots	Zoning/Density	Comments	ES Attendance Area
City of Gallup					
Mentmore	West end of Gallup			Steady, gradual build-out	Turpen
Sky West Subdivision	North of High School	600	Small lot		Stagecoach
Rico Menapace				Potential for significant development activity	Stagecoach
Stagecoach	Southeast of High School			Gradual build-out activity	Stagecoach
Coyote Canyon	Canyon Drive on east side				Rocky View
Extension of Nizhoni/Mendoza	South of Airport			Potential for significant development activity. Some of land belongs to Gamarco, part of 27,000 acres owned around Gallup	Red Rock
Catalpa Hills	South of NM 602 Loop	Not Known	Large Lot		Red Rock
Rehoboth Red Mesa	East of Hogback	Conceptual plan calls for up to 400 units.		800 acres to be rezoned and master planned for mixed use development(residential, retail, entertainment, employment and office) leaving much of property as open space. Conceptually will use 1/3 -1/2 of the site for mixed density residential uses. Approval process, utilities extension and project organization and funding needed prior to development.	Indian Hills
South Fork MHP	South end of Patton Drive	200	MHP small lot	Mobile home park, significant low and moderate income. Not growing fast at this time	Jefferson
Mossman				Gradual build-out. High end development	Jefferson
McKinley County					
Diné Estates	China Springs Loop, Red Rock Chapter area	100-140	5+ acre lots		Chee Dodge
Spencer Valley	Spencer Valley/Manuelito Chapter area		Not known		Stagecoach
Whispering Cedars	Jamestown	Not known	1+ acre lots	Gradual build-out	Indian Hills
Timberlake Subdivision	Ramah Area	Not known	Large lot mountain homes		Ramah
Bluewater Lake	South of Thoreau	Not known	Not known		Thoreau
Navajo Township CDC Subdivisions	Navajo, NM	32 units subdivision; 25 units in phase 1 of mxed use project	Varies	CDC is a non-tribal 501(C)(3) corp. developing a homeownership subdivision consisting of 3 & 4 bedroom units. Infrastructure built. Expect to begin home building in 2005. 1st phase of 35-acre tract mixed-use project planned to begin soon. CDC would like to rebuild 1960's NHA housing stock	Navajo
Crownpoint Planned Community	East of Crownpoint			NHA conceptual plan on private and tribal lands	Crownpoint

Sources: Lisa Baca, City of Gallup; Doug Decker, McKinley County; David Nez, NHA - Tohatchi; Janet Hubbard, Navajo Township CDC; and Rhonda Berg, Rehoboth Red Mesa Foundation.

Gallup and McKinley County are on the following page.



Conditions, Issues and Policy Direction Options

Topics addressed are: transportation, land use, economic development, and intergovernmental relations

Transportation Conditions and Issues

Interstate 40, US 491 and state highways form the backbone of the road network serving McKinley County. The roads listed below and shown on the map on the following page are maintained by the New Mexico Department of Transportation.

Interstates, U.S. and State Highways in McKinley County

- I-40 (Wilmington, NC to Barstow, CA—*doesn't quite tell the story*)
- US 491 (Gallup to Shiprock and Cortez)
- NM 602 (Gallup to Zuni)
- NM 566 (Churchrock to Nahadishgish/d Chapter)
- NM 400 (to Fort Wingate and McGaffey)
- NM 118 (old Route 66 from Manuelito to State line)
- NM 53 (Zuni to Grants)
- NM 612 (Thoreau to Bluewater Lake)
- NM 412 (Prewitt to Bluewater Lake)
- NM 371 (Thoreau to Crownpoint and Farmington)
- NM 605 (Milan to San Mateo)
- NM 509 (San Mateo to Whitehorse Lake and Pueblo Pintado)
- NM 57 (Whitehorse to Chaco Canyon and Blanco)
- NM 197 (Crownpoint to Cuba)

The US 491 improvements plan consists of fourteen phases, including: building a total of six new bridges, refurbishing already standing bridges, and expanding the two-lane highway to four lanes (Source: NMDOT).

GRIP Road Projects in Northwest New Mexico

	Target Start Date	Target End Date
I-40 - Laguna Pueblo to Mesita	Jun-05	Jun-08
I-40 - Thoreau East	Mar-06	Dec-07
I-40 - West of Gallup	Aug-05	Feb-07
US 491 - Shiprock to Colorado State Line	Oct-05	Apr-09
US 491 - Tohatchi to Shiprock	Jan-05	Dec-05

Source: New Mexico Department of Transportation website, 2005.

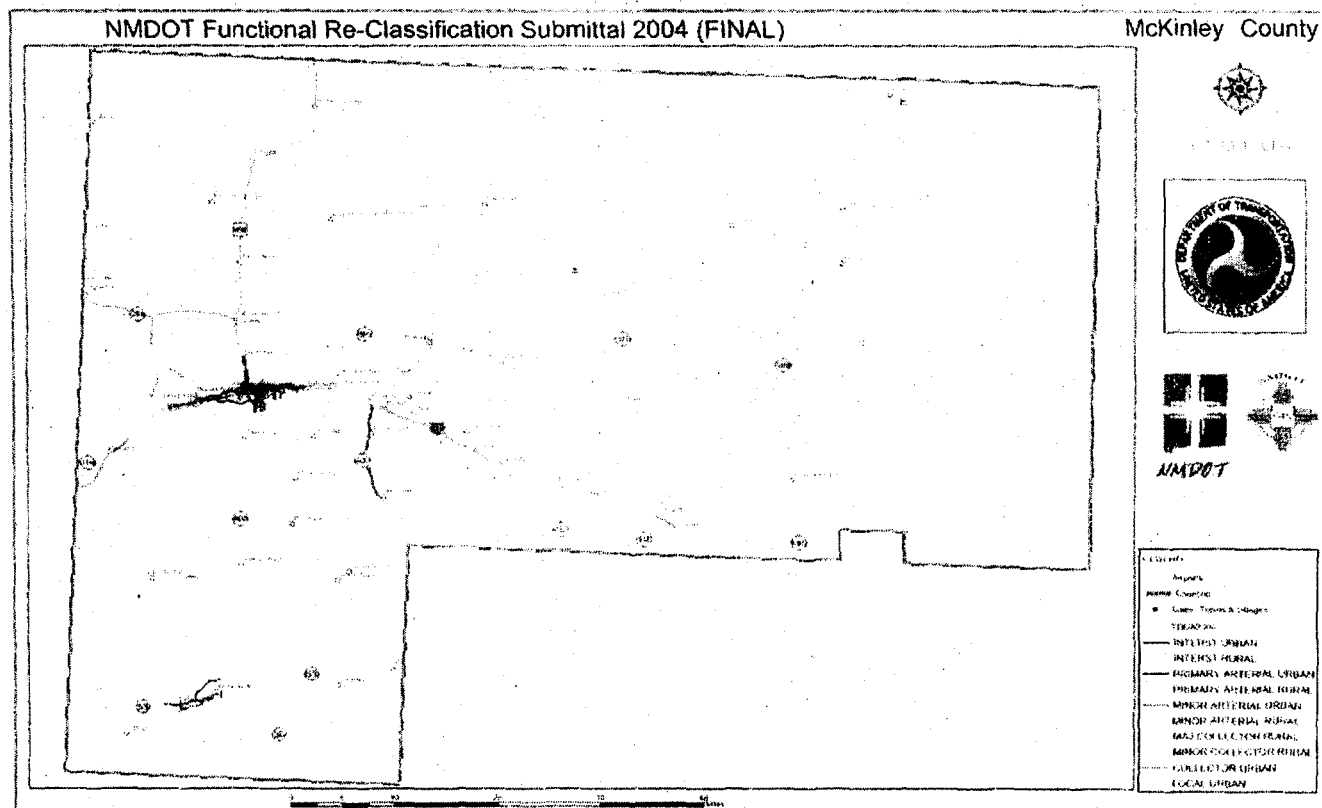
McKinley County provides an extremely important service to county residents and others by maintaining an extensive network of county roads. The county maintained 586 miles of roads in fiscal year 2004-05. A large portion of county roads serves Navajo trust and allotment land, particularly in the Checkerboard Area of the county. According to the 2003 Navajo Nation Long Range Transportation Plan, 528 miles of county roads were located on the Navajo Reservation. The county system was reduced from a peak of 800 miles in past years. Most of the county roads are dirt roads with little or no base and drainage.

In addition to the dedicated county roads, there are many roads in the county that are private roads. Most of these roads and drainage structures do not meet standards and are susceptible to being flooded out, severe erosion, and poor driving surfaces.

McKinley County requires by its policy the dedication of right-of-way in order to improve roads. Road building has slowed down because of difficulty in receiving right-of-way and compliance with archaeology requirements.



McKinley County Comprehensive Plan Phase 2



In addition to federal and state highways and county roads, the Bureau of Indian Affairs and Navajo Nation maintain BIA roads; and the Zuni Pueblo maintains roads on the Zuni Reservation.

Given that there are multiple providers of roads and road maintenance, inter-agency cooperation is needed on an on-going basis and to address specific issues as they arise.

State of New Mexico, McKinley County, BIA, Navajo Nation and recently chapter maintenance yards are dispersed to be closer to road maintenance projects. Independent agency and community-based decisions may not lead to a well-organized system-wide distribution of road maintenance resources. McKinley County regularly works with the City of Gallup on road projects that are of mutual interest.

McKinley County Comprehensive Plan Phase 2

- McKinley County and the Navajo Nation have joint powers agreements that assign maintenance responsibilities of some BIA roads to the county.

Following are other transportation issues for the county:

- *Safety*

- o Driving while intoxicated (DWI) and driving under the influence (DUI) contribute to accidents.
- o Pedestrian accidents continue to need to be addressed.
- o On the extensive county road system, many of the unpaved roads are not safe if drivers exceed the speed limits.

Littering along roadsides is an issue of unsanitary conditions and marring the beauty of the county.

- o Some fear that improving existing roads and opening new roads will result in more illegal dumping of trash, so it may not be worth it.

- *Trains and Buses*

- o Amtrak train service serves Gallup on its Southwest Chief route from Los Angeles to Chicago. Congress has thus far resisted the Administration's efforts to drastically cut federal funding for Amtrak, which reportedly might eliminate the Southwest Chief.
- o Navajo Transit operates in parts of county.
- o School buses operate all over the county.

- *Road Connectivity and Access*

- o In this large county, there are roads that extend to existing users then stop. Some roads may logically be extended to make connections and improve accessibility.
 - For example, consideration has been given to a by-pass from Camerco to Church Rock.
- o On the other hand, for fiscal reasons, the county should restrain growth in the miles of county roads; and road improvements and extensions that serve a very few individuals are not warranted.
- o There are some substandard accesses for significant populations that should be improved.
 - For example, a shallow underpass underneath Highway 66 accesses White Cliffs subdivision.

Planning and Programming

- o The county prioritizes road improvements through a working group headed by the County Road Supervisor and priority meetings of the Board of County Commissioners.
- o The Navajo Nation DOT assigns "priority roads" for the BIA to execute maintenance tasks. Criteria include routes for elderly, school buses, pre-school students, high traffic volume, and safety/accident rates.
- o Transportation planning of the State Department of Transportation (NMDOT) is organized by NMDOT and the District Engineer into the "Regional Planning Organization" Long Range Plan (with NWNMCOG), State Transportation Improvement Program (STIP), and Governor Richardson's Improvement Program (GRIP). The county needs to participate in these planning processes to assure that its needs are met.
- o Road improvements and extensions are also accomplished through project-specific legislative appropriations.
- o The 2005 New Mexico Legislature passed a bill that authorized and sets up a "Tribal Infrastructure Fund (TIF)" to assist tribes with major infrastructure projects and might be able to assist on the planning and design phases as well.

Transportation Policy Direction Options

Responsibilities for Roads

- o Feasibility of McKinley County taking responsibility for maintaining BIA roads should be considered.
 - Fund sharing and coordination of manpower may make it possible to improve efficiencies and get more accomplished.
- o Feasibility of transferring road ownership and maintenance responsibilities between McKinley County and the BIA to have greater connectivity by responsible parties in the road networks, and make more efficient.
- o The county and region need a regional maintenance plan, addressing: who maintains which roads, where

are the maintenance yards, and number of personnel.

- o Continuing communication between McKinley County and the Navajo Nation DOT is needed regarding the planning and programming for road projects.
- o The county should coordinate with the Zuni Pueblo to identify if there are needs for partnering as a contractor to build or maintain roads on the Zuni Reservation

- *Right-of-Way (ROW) Acquisition*

- o The County should hire a staff person for a period of 3 to 4 years to specifically work on ROW acquisition and gathering consent documents for road projects. This staff person would work with local Chapter officials and coordinators, BIA Realty Office, Navajo Nation, and allottees.
- o McKinley County should take the lead in organizing a "one-stop ROW shop." This shop would regionalize the ROW and easement process into a one-stop office of government entities with jurisdiction, where individuals could go to find information, work through, and made headway of ROW issues.

- *Programming*

- o The McKinley County road projects prioritization process should be revamped to increase public participation, consider all projects in a comprehensive grouping, and integrate into the ICIP process

- *Long Range Planning*

- o The county should prepare a road network plan to identify where there are needs for network improvements.
- o Some new connections of roads, which now dead-end, are needed to enhance the network.

- *Alternative Transportation*

- o The county should cooperate with the City of Gallup on planning bicycle routes, trails and lanes that enter unincorporated areas.
- o The county should support retention of Amtrak service.

McKinley County Comprehensive Plan Phase 2

- o The county should work with Navajo Transit, TNM&O, Gallup-McKinley County Schools and other current and potential bus service providers to support enhancing bus transit service in the county. The county role is primarily to coordinate county road improvements and maintenance for bus routes.
 - Recent fuel price increases signal the need to develop alternatives to reliance on private vehicles for virtually all trips.

Economic Development Conditions and Issues

As discussed in some detail in the socio-economics portion of this paper, there are many opportunities as well as serious problems regarding economic growth in McKinley County. The poverty and unemployment are particularly serious concerns. Some concerns, such as the system and management of tribal trust and allotment land tenure, are structural and beyond the responsibility and ability of the county to address.

The Comprehensive Economic Development Strategy (CEDS), developed and adopted by the Northwest New Mexico Council of Governments, provides an overall plan for economic development for McKinley County as well as the other counties in the region. The vision of the CEDS is for cooperative innovation and strategic support for economic vitality, which breakdown into eight (8) main strategies:

- Creating a diversified and creative regional economy
- Facilitating regional forums for innovation
- Inspiring inter-community dialogue & cooperation
- Collaborating on regional cooperation in tourism
- Developing an innovative housing industry
- Producing strategic infrastructure for development
- Creating progressive land use for user-friendly communities
- Working towards vibrant and prosperous downtowns.

Following are key economic development issues identified in the county comprehensive plan process:

- *Limited Job Opportunities*
 - o Job growth not keeping pace with population growth, low wages, high unemployment.

McKinley County Comprehensive Plan Phase 2

- o Youths leave the community due to lack of job opportunities. Many high school graduates leave the area for the military, Albuquerque, and Phoenix.
- o Rural areas in McKinley County outside Gallup appear to be "dying" because employment opportunities are not increasing and may be decreasing.

Housing Shortage in Gallup

- o Business development is stifled from the lack of housing available for new entrepreneurs and employees.
- o Housing is an economic activity that could generate more wealth in the community, and is a relatively small sector considering the housing demand.
- o Housing is believed to be expensive because demand is greater than supply.

Business Climate

- o Prevalent negative attitudes towards change and growth in the community, including the business community and general public.
- o Leakage of local sales to Albuquerque, 135 miles from Gallup and to Phoenix, 285 miles from Gallup.

Land Requirements

- o Land available for industrial development has constraints. The Airport Industrial Park has some problems that stifle its development. Other areas lack infrastructure.

Tax Base

- o The county tax base should be expanded. More economic development in the off-reservation unincorporated county area would be helpful.

Navajo Nation Economic Development

- o Since Navajo communities are a major part of McKinley County, there is a desire to assist in their economic development where the county has the opportunity to do so. For example, county roads are a major factor supporting economic development in rural areas. The Navajo tribe and individual chapters have primary responsibilities for developing economic development strategies.
 - Crownpoint is a primary growth center or economic development according to Navajo

Nation plans. Secondary growth centers in McKinley County are Tohatchi and Navajo. Church Rock is not designated as a primary or secondary growth center. Interest in sub-agency district community centers (see *Intergovernmental Issues*.)

Economic Development Policy Direction Options

- *NWNMCOG Comprehensive Economic Development Strategy (CEDS) should be the main economic development plan for McKinley County, as periodically updated.*
- *Promote Favored Business Sectors (from the CEDS and contributors to the comprehensive plan)*
 - o Expansion in Gallup retail sector
 - o Tourism development
 - o Industrial park development
 - o Regional storage/distribution hub development
 - o Home-based businesses in Navajo Nation
 - o Adventure Gallup
 - o Navajo/Gallup Water Supply Project is critical to sustain communities and growth (See Water Discussion)
 - o Manufacturing niche/target industrial sectors: medicines, medical equipment, manufacturing involving hazardous materials for which large unpopulated land area is required for safety (history of Ft. Wingate Army Depot production in the community)
 - Manufacturing activities with low water demands are most appropriate in Gallup and McKinley County.
 - o Cottage industries and arts and crafts cooperatives
 - o Encourage more of New Mexico economic development to be located outside the Rio Grande Corridor (e.g., away from Albuquerque, Santa Fe and Las Cruces)



McKinley County Comprehensive Plan Phase 2



Program Needs

- o The region needs a central tourism station that offers tourists one-stop shopping for hotels, tours, etc. The central station would book reservations and ensure that they are available when tourists arrived. Tourism should be packaged and made easy for tourists to gain an authentic cultural experience.
- o Promote Navajo and Zuni tourism.
- o Promote "step-on" guide service for Navajo and Zuni tourism is a possible niche for the area.
- o Incentives are needed for developers to build housing; they perceive greater risk than exists.
- o There is a perception that zoning code provisions are impediments to creating new subdivision lots. Further analysis is needed to identify any such impediments.

Land Use Conditions and Issues

Nearly 80% of the land in McKinley County is owned by the federal government, state or in trust status. Reportedly the City of Gallup (source: www.city-data.com/city/Gallup-New-Mexico.html) is 13.4 square miles, leaving 1,159 square miles of private unincorporated land subject to county jurisdiction.

McKinley County Land Status					
	Total Acres	Federal	State	Trust Land	Private
Square Miles	5,463	779	264	3,248	1,172
Acres	3,496,084	498,393	168,887	2,078,572	750,232
Portion of Total	100.0%	14.3%	4.8%	59.5%	21.5%

Source: Gallup-McKinley County Community FactBook 2003, citing New Mexico Water Resources Institute, NMSU, 1996.

Issues and conditions of the county related to land use include the following:

- *Small Communities and Exurban Development*
 - o Some development requires county services in excess of tax revenues or fees generated.
 - Some unincorporated communities on the outskirts of Gallup are believed to generate low tax revenues compared to the services needed. While higher levels of services are desired, the county is in a difficult position to be fiscally able to provide those services.
 - Rural residential growth outside cities and suburbs, called "exurban" development, is typically not efficient for road, utility or school bus services, and may create demands for county services in excess of revenues.
 - o Some residential development has no potable water supply.
 - o Eleven unincorporated communities are formed around water and sanitation districts or mutual domestic water systems.
 - o Substandard development: Dilapidated structures/blight in portions of unincorporated county.
- *Land Requirements for Housing and Non-Residential Uses*
 - o Housing is a major issue relating to both land use and economic development.
 - o Availability of land area and vacant lots served by infrastructure to meet projected demands for housing (by varying housing types and cost ranges) and for economic development.
- *Working with the City of Gallup and guiding land use in the Gallup Metro Area*
 - o State law enables extraterritorial planning, subdivision regulations (platting) and zoning for areas around municipalities. The planning and platting authority for the City of Gallup is three miles. The City of Gallup has offered to participate in extra-territorial zoning on several accounts. The county does not have available staff at this time to administer extraterritorial planning, platting and zoning; and

McKinley County Comprehensive Plan Phase 2

staffing arrangements with the city have not been formally considered or agreed upon.

- City of Gallup annexation plan includes areas on the east side (in proximity of Rio Puerco) and west side (in proximity of Nizhoni Blvd./Mendoza)
- The Rehoboth Red Mesa Foundation is developing a master plan for an 800 acres mixed-use, multi-income on the east side of Gallup. The Rehoboth-Red Mesa Foundation master plan aims at developing dense housing centers to allow for conservation of open space, reduction of rural sprawl, and a reduction of impact on water. The housing and residential development would only amount to 80-100 acres of the total 800 acre-parcel that the Foundation controls.

Environment and Resources

- Sensitive lands (such as fragile lands, threatened and endangered species, culturally significant, or notably scenic vistas) should be protected in the county.
- Resource lands (such as coal, oil & gas, sand & gravel) should be reserved in the county for which resource development would potentially conflict with residential uses nearby.

Jurisdiction

- McKinley County has jurisdiction over private land in unincorporated land outside Checkerboard Area and private land in unincorporated land in Navajo. Chapter boundaries inside Checkerboard Area.
- Indian Trust and Allotment Lands are not subject to county jurisdiction.
- USFS, BLM and State lands are arguably not county jurisdiction, although the county may influence the public land managers.

Existing Regulations of Land Use and Related Subjects

- McKinley County exercises the following regulations related to land use:
 - Subdivision Regulations
 - Litter and weed control ordinance (includes junk cars)
 - Business license ordinance
 - Pawn broker ordinance (shops keep records of goods)

McKinley County Comprehensive Plan Phase 2

- o The New Mexico Construction Industries Division (office in Grants) issues building permits in the county.
- o The New Mexico Environment Department manages septic/waste water permits.
- o The New Mexico Office of the State Engineer manages water.

Zoning and Subdivision Regulations

- o The county subdivision regulations appear to mainly follow the “template” set in the New Mexico Subdivision Act, with limited county standards and little extra provisions added that may address the desires and needs of special communities or subareas.
 - Exemptions from the NM Subdivision Act include the creation of lots greater than 140 acres, realignment of lot boundaries and family transfers. These exemptions can be abused and create impacts.
 - McKinley County requires those creating lot divisions exempt from the subdivision regulations based on the NM Subdivision Act to come in and claim their exemption.
- o There is no county zoning, leaving the possibility of incompatible uses and low standards of development occurring in the unincorporated private lands of the county. However, zoning requires planning staff to administer a zoning ordinance, including permitting processes, and zoning code enforcement in order to be successful.

Land Use Policy Direction Options

- *In general, urban development should be encouraged to be located inside the city of Gallup, where full urban services are available and greater efficiencies of mixed land uses (i.e., live, work, shopping, recreation and entertainment) can be more easily achieved.*
- **Intergovernmental Planning and Land Use Regulations**
 - o Work with City of Gallup on an annexation plan
 - o Work with City of Gallup on Extraterritorial Planning and Zoning
 - Promote development north of Gallup

McKinley County Comprehensive Plan Phase 2

- *Encourage municipal incorporation of the larger stand-alone communities.*
 - o Ramah, Thoreau and Gamerco may be eligible
- *Promote desired land uses and land use patterns*
 - o Promote energy resource development - such as Lee Ranch coal mine - also wind and solar
 - o Promote housing as appropriate
 - o The phase 1 of the Comprehensive Plan promotes "smart growth." What the county considers smart growth needs to be defined, then promoted.
- *Evaluate the county subdivision regulations for consistency with the comprehensive plan, and consider any revisions as needed.*
 - o Discourage exemptions from subdivision standards, such as waiving road standards or proof of water requirements.
 - o In recognition of the inadequate volume of groundwater in McKinley County, the county should have a stricter proof of water in its consideration of approving new subdivisions.
- *Assure that all entities comply with subdivision regulations.*
 - o Administration of county subdivision regulations mainly requires developing procedures for submittal and review of proposed plats, and having staff conduct those reviews with either elected officials or a planning and zoning commission. The county should be capable of enforcing its regulations if illegal subdivisions are occurring.
 - o Make sure that the Navajo Housing Authority complies with county subdivision regulations when development is proposed on private lands. Navajo Housing Authority should be invited to be part of the planning process.
- *Address housing needs in the county*
 - o Participate with the city of Gallup to reinvigorate and expand a housing roundtable discussion, including consideration of a more pro-active role in developing county subdivisions; or alternately, create a community forum on housing, possibly through the New Mexico Town Hall process. Among issues to be addressed are:

McKinley County Comprehensive Plan Phase 2

- Assessment districts for financing infrastructure improvements – either do not use them, or find ways to ensure their success,
- Strategy to improve the capacity for individuals to obtain financing for homeownership, determination of the income levels of housing needed in Gallup and areas of the county,
- Public support and zoning regulations for a multi-level housing, innovative housing, sustainable housing, pre-fabricated housing developments, and cluster development
- Maybe through a pilot or model project, programs for training workforce in construction.
- Utilize the potential Gallup Incubator to link the demand side for housing to production (i.e., on-site or manufactured/module housing) and workforce development.

- Collaborate with Navajo Housing Authority (NHA) and Navajo Housing Partnership (NPH). NHA is currently developing a survey to showcase demand needs.
- Consider forming a "regional land use authority" to address land use issues in McKinley County including unincorporated private, fee-simple land subject to county jurisdiction, Indian Reservations, and city of Gallup.
- Consider zoning in the extraterritorial area and perhaps in several of the unincorporated community areas.
- Covenants have been inconsistently applied by different homeowner associations. In a few cases, they have been successful. In the absence of zoning, a **property maintenance ordinance** should be considered for adoption by the county.
- Consider agricultural uses of the land and promote best practices to reduce erosion and retain sustainable methods regarding grazing, irrigation, Ramah's irrigation methods, and dry land farming.
 - o Bring the County Extension Agent's office and Farm Services Agency of USDA to the table on these issues
- Develop a staffing plan to accomplish a county planning program.

Water Conditions and Issues

The Region 6 Water Plan addresses county water issues and its recommendations should be incorporated into the comprehensive plan.

Following are conditions and issues identified in the comprehensive plan process.

- *Natural Conditions*
 - o Aridity of the area results in low precipitation and high evaporation.
 - o Virtually all domestic water throughout the county is groundwater. Groundwater is a non-renewable water supply. Pumping has caused declining groundwater levels. All the wells in McKinley County tap the San Andrés/Glorietta aquifer. This aquifer is not able to recharge quickly at all.
 - o Restoration of watersheds should lead to an added ability to recapture surface water.
- *State Jurisdiction*
 - o All groundwater basins in the county are “declared basins,” subject to permits from the Office of the State Engineer.
 - o Issuance of domestic water permits is perfunctory, even though they accumulatively affect the groundwater level available to other permittees.

Surface and Groundwater Basins in McKinley County
Surface Water Basins in McKinley County
<i>Little Colorado Basin</i>
· Rio Puerco · Rio San Jose · Zuni River
<i>San Juan Basin</i>
· Chaco River
Administrative Groundwater Basins in McKinley County
<i>Little Colorado River Basin</i>
· Gallup · Gallup Extension (in Zuni area)
<i>Rio Grande Basin</i>
· Bluewater (mainly in Cibola County) · Rio Grande

McKinley County Comprehensive Plan Phase 2

- *Water Demand*
 - o The projected water demand for the City of Gallup would result in a water shortage as early as 2010
- *Diversion and Distribution Projects*
 - o Jurisdictional and legal constraints require cooperation among many parties to develop well fields or major diversion projects
 - The City of Gallup general policy is to not extend water lines outside city limits
 - City water serves an unincorporated area near Boardman Street/NM 584
 - o Navajo-Gallup Water Supply Project would divert water from the San Juan River for delivery and use in Gallup and surrounding communities within the Little Colorado River Basin
 - The eastern pipeline of the Navajo-Gallup Supply Project will service the Navajo Checkerboard Area and the Jicarilla Apache Reservation. However, it is perceived to be more vulnerable than the U.S. 491 line since it serves a smaller population.
 - o Since the Navajo-Gallup Water Supply Project will likely be built in phases, San Juan River water probably will not arrive to Gallup for 20-25 years.
 - o Gallup Regional Water System is a proposed water distribution system designed to create local water management flexibility by wheeling groundwater through Gallup to neighboring Navajo Chapters
 - o Infrastructure costs tend to escalate over time
- *Rural Navajo and Non-Navajo Communities*
 - o All are tapping into the same aquifer
 - o Growth in Navajo communities and in unincorporated communities on private lands
 - o Water districts in the county are tittering on the brink of bankruptcy
 - o The county desires that water and sanitation districts do not become "stepchildren" of the county, requiring costs and on-going responsibilities
 - o The dispersal of communities throughout McKinley County makes for poor economies of scale to build extending infrastructure, such as water lines.

- o The Navajo Nation is a major purveyor of water in the county serving Navajo communities. Many residents do not have running water. NTUA, I.H.S. and other agencies are pursuing the objective of expanding domestic water.
- Gallup Regional Water Project is able to move forward more quickly than the Gallup-Navajo Pipeline to address some of the problems in Gallup and the vicinity

Purveyors of Water and Sanitary Sewer Surfaces in Off-Reservation Unincorporated Areas of McKinley County
Water and Sanitation Districts in McKinley County

- Bluewater Water and Sanitation District
- Gamarco Water and Sanitation District
- Thoreau Water and Sanitation District
- Yah-ta-hey Water and Sanitation District

Mutual Domestic Water User Associations

- Bluewater Acres
- Bluewater Lake
- Coal Basin
- San Mateo
- Whispering Cedar
- White Cliffs

Water Policy Direction Options

County Role in Water Planning

- o The County Water Board should be directed to develop a 40-year water plan. The plan would encompass all of the water districts in the county, identifying needs and infrastructure improvements. It would present rationale for protection of water rights to help the individual systems
- o The County Water Board should be directed to develop a strategy for water conservation and re-use
 - For example, education programs, conservation kits, and plumbing retrofits

McKinley County Comprehensive Plan Phase 2

- The county should consider requiring a stricter proof of adequate water and water conservation measures in its subdivision requirements
 - For example, Santa Fe County requires proof of water for more than 40 years, water harvesting, and water rights for major subdivisions
- Feasibility of regionalizing of the water districts of the county by McKinley County should be considered. The county would designate a single authority for the districts. Shared revenues may allow for better capital programming.

County and Navajo Nation Intergovernmental Relations Conditions and Issues

- *Navajo Chapter Planning*
 - In accordance with the Local Governance Act, most Navajo chapters in McKinley County have prepared chapter land use plans.
 - Some are in progress, not all are adopted.
 - There are no "certified" chapters in the county.
 - Chapter boundaries now are planning boundaries, and may be re-aligned. They should be formalized/legalized.
- *Housing Shortage*
 - Reportedly, the Navajo Nation believes that the housing stock on the reservation is short 30,000-35,000 homes.
- *County Services*
 - Road building and maintenance are important county functions. Right-of-way approvals through allotments, need sign-off from 75% of owners. Large extended families are difficult to assemble to make decisions like that.
- *Revenues and Economic Development*
 - Chapters need revenues if they are to provide services and build facilities. Chapters need to work with the county on sharing financial resources
 - Economic development on the Navajo Reservation possibilities include: tourism, extraction, off-shore storage of secured data, eCommerce

McKinley County Comprehensive Plan Phase 2

- The Navajo Nation has started an Infrastructure Capital Improvements Programming (ICIP) process similar to the State of New Mexico's, encouraging chapters to prepare ICIPs

- *Sub-Agency Districts*

- Navajo Nation chapters are grouped into 23 districts. The districts are organized within the 5 agencies. Districts may be most appropriate for conducting coordinative planning and capital improvements programming.
- Grazing permits are based on districts
- District 14 of the Navajo Nation consists of 5 chapters: Coyote Canyon, Mexican Springs, Naschiti, Tohatchi, and Twin Lakes Chapters.
- Districts 15 (10 chapters) and District 16 (15 chapters) in the Eastern Agency have so many chapters that they might be too large for purposes of coordinative planning.
- Districts meet once per quarter. Participants include chapter officials, school board, land board. They are policy makers

- *Economic development should be regional in order to share revenues. A non-profit organization can be set up to serve a larger area than a chapter.*

- Excellent example: Tohatchi Area of Opportunity & Services (TAOS).

**Navajo Chapters By Sub-Agency Districts -
Chapters Totally or Partially Within McKinley
County**

District 14 of the Fort Defiance Agency

Coyote Canyon
Mexican Springs
Naschitti
Tohatchi
Twin Lakes

District 15 of Eastern Navajo Agency

Becenti
Crownpoint
Nahodisgish
Lake Valley
Littlewater
Standing Rock
Torreon/Star Lake
Pueblo Pintado
White Horse Lake
White Rock

District 16 of Eastern Navajo Agency

Baca/Prewitt
Bread Springs
Casamero Lake
Chichitah
Church Rock
Iyanbito
Manuelito
Mariano Lake
Pinde Dale
Red Rock
Rock Springs
Smith Lake
Thoreau
Teyatoh

District 19 of Eastern Navajo Agency

Counselor
Herfano
Nageezi
Ojo Encino

Yellow highlight identifies chapters in the county.

o

The Navajo Nation may prioritize where growth should be encouraged by developing criteria for selecting regional centers and district centers

o Alternately, it may be most fair to distribute to different chapters in a district such facilities as education centers, health clinics, and NHA sub-offices.

Trash, Illegal Dumping and Disposal Station

o The Navajo Nation had no landfills. There is a major to develop a landfill and transfer stations closer to

McKinley County Comprehensive Plan Phase 2

population centers. Currently, residents of the Navajo Nation would have to travel 200 miles to dispose of trash. This leads to illegal dumping.

- The closure of P&M mine provides an opportunity for a portion of that land to be utilized as a landfill.
- This should be considered as part of the Re-Use Plan for the P&M mine.



McKinley County Comprehensive Plan Phase 2

Comparison of Selected Chapter Land Use Plans for Navajo Chapters in McKinley County

	Baca/Prewitt Chapter	Becahiti Chapter	Churchrock Chapter	Crownpoint Chapter
General Physical Characteristics				
Settlement pattern, history & prominent environmental features	The southern Navajo sacred mountain, Taoodzi (Mount Taylor), looms in the east. Haystack Mountain and other formations make up a dramatic panorama a and foreground to Taoodzi when viewed from the Chapter House.	The chapter land area covers 302.7 square miles. Part of the Checkerboard Area includes Indian allotments, tribal trust, fee simple, private, public domain and BLM lands. The land can be described as rolling hills, sandstone mesas, and sandy washes. Chaco Wash drains to the north into the San Juan River.	Churchrock is located east and southeast of Gallup. The Chapter is divided into southern and northern portions by the Rio Puerco Valley, old Route 66, the Burlington Santa Fe Railroad, and I-40. Churchrock is named for the prominent rock formation that was originally called "Navajo Church." Another rock formation and local landmark nearby is named Pyramid Rock because of its shape.	Crownpoint was originally founded as a site for an agency and school for Navajo children. Crownpoint's location was selected by S. T. Stacher, Superintendent of all Navajo living outside the reservation as it was then established. Mr. Stacher named the site "Crownpoint," because it was surrounded on three sides by mesas with rock crowns and points.
Demographics				
Population				
1990	731	245	1,780	2,658
2000	899	498	2,802	
Projected 2020	1,389	436	5,213	3,918
Housing Units				
2000	286		1020	
Projected Needs	No projections were provided; however there were 16 families waiting for homes in a housing subdivision.	No housing numbers were projected	No projected needs were determined in the land use plan; however, there were several NHA projects in the planning stages at that time. In addition to home ownership units, they were looking at placing rental units in the Chapter.	Two housing sites were chosen in the land use plan. Together they yield 600 gross acres of land, much of which is appropriate for residential development. Even at an average gross density of three houses per acre (including infrastructure development), the two sites could accommodate 1,800 new houses, which should be adequate for the next 20 years.
Characterization of Housing Sites/Settlement Pattern for future housing	The Chapter area includes the communities of Prewitt, Haystack, South Chavez, and Bluewater. There are no NHA housing subdivisions in the Chapter. All housing is scattered site housing.	A 1997 estimate by NN Community Development Dept. lists 85 occupied housing units in the Chapter. Of the total, 85 were constructed by NHA and NHS. NHA completed 10 additional mutual help (homeownership) houses in 2001. NHA was planning to build 15 scattered homes in 2002.	There are five NHA subdivisions in the Chapter along with numerous scattered houses. The newest subdivision, developed by the Fort Defiance Housing Corporation, was built after completion of the plan.	In 2001, there were approximately 1,217 housing units in the Chapter. Housing built by NHA, IHS, BIA, public schools, and in mobile home parks totaled 784 units. The remaining units were scattered housing.
Facilities Chapter Facilities Needs				
Chapter Facilities Needs	The Chapter has a relatively new Chapter House built in 2000.	Chapter House built in 1960 and remodeled in 1989. The Chapter opened a new multi-purpose building in 2001 with a ar. ctr. And preschool	The Chapter needs more office space and would like an attached library with it. Presently, the Chapter House also serves as the senior center; residents would like a separately housed facility.	The chapter needs a new community cemetery, new post office, elderly group home, adult day care facility, nursing home, Chapter House renovation, and a juvenile justice center.
County-provided facilities and services				
County-provided facilities and services	The McKinley County Sheriff's department provides police services under an agreement with NN. Service is also provided by the Navajo Nation Police in Crownpoint	No county facilities are noted in the Chapter Land Use Plan (CLUP).	None were noted in the land use plan	No county facilities are located in the Chapter
Fire stations, senior centers				
Fire stations, senior centers	Fire protection is provided by volunteer fire departments in Bluewater, Prewitt, and Thorsau. Emergency services are provided by Thorsau Ambulance Service and Bluewater Fire Department.	No police or fire substations exist in the Chapter. Services are provided out of Crownpoint and response time can be up to 2 hours	There are three Navajo Nation police officers working out of a substation located in the Chapter. Fire protection is provided by the City of Gallup Fire Department.	New community facilities are needed for children, youth, and the elderly. Have a NN police station and judicial building; a community volunteer fire dept., and a BIA fire dept., and ambulance service provided by NN Emergency Medical Services.
Roads				
Roads	McKinley County Road 19, CR23, and CR41 (may be incomplete list)	No County roads listed (may be incomplete list)	CR30, CR43, CR77, Topaka Yalalar Road, Santa Fe Trail Road, White Cliff Access Road to Red Rock State Park	There are no County roads located within the Chapter

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McKinley County Comprehensive Plan Phase 2

Comparison of Selected Chapter Land Use Plans for Navajo Chapters in McKinley County

	Iyambito Chapter	Ojo Encino Chapter	Pueblo Pintado Chapter	Smith Lake
General Physical Characteristics				
Settlement pattern, history & prominent environmental features	Iyambito was settled by Navajo families from different parts of the reservation to work at the Fort Wingate Army Depot during World Wars I & II. Some returned to their former homes, but others chose to remain in Iyambito. The dominant regional features of the general area are the Zuni Uplift to the south, Nutria Monocline to the west, Wingate Cliffs to the north and the Continental Divide to the east.	There is an abundance of translations and stories about the name of the community. In Spanish, "Ojo Encino" translates as "Oak Springs." The Navajo Name for the community, Tee'ich'ih' bi'ho, translates as "water within rough rock," most likely a reference to the same springs.	The Navajo name for Pueblo Pintado is Nahodeseahgitch Ch'in'ini, which means (water) flowing from canyon. The Chapter is named in English for the ruins of a Chacoan Great House, located approximately one and one-half miles north of the Pueblo Pintado Boarding School. This 181-room pueblo was constructed just after A.D. 1080.	Smith Lake was originally settled by people returning from captivity at Bosque Redondo. Around 1909 the Chapter was divided into 180 allotments by the federal government. These allotments were awarded to local residents.
Demographics				
Population				
1990	969	577	447	504
2000	1,029	709	464	1,067
Projected 2020	1,223 persons by 2010. No 2020 projections were made.	970	610	1,217
Housing Units				
2000		232	204	374
Projected Needs	An estimated 71 new housing units were recommended by 2010	While there is no waiting list at the present time for housing, an additional 36 houses will be needed over the next ten years to meet the needs of increased population in the Chapter.	Projections shows an average demand for 23 new housing units per decade	Approximately 30 new housing units will be needed in the next 20 years.
Characterization of Housing Sites/Settlement Pattern for future housing	The ARC estimate in 2001 for the number of housing units within the entire Chapter boundary was 477. A new NHA subdivision built since then has added another _____ homes in 2005. Additional sites for scattered housing and a trailer/RV park were proposed along Old Route 66. Housing sites have been proposed on BIA land south of I-40 as well.	The first Navajo settlers in the areas were families returning from imprisonment at Ft. Sumner. Ojo Encino has a major NHA subdivision near the Chapter House that was built in three phases. Others live in scattered housing throughout the Chapter.	Anticipated growth in the Chapter is based on the assumption that some former residents will return to the Chapter and that there will be new employment in the Chapter. Employment growth will be due to two new facilities in the Chapter: a newly completed high school and a planned health care clinic. There are no NHA housing subdivisions in Pueblo Pintado. Presently all homes are on scattered sites.	There is an NHA subdivision located in the Chapter along with numerous scattered housing units. In addition to wanting more NHA housing, the Chapter would also like to see an area set aside as a mobile home park.
Facilities Chapter Facilities Needs	Mechanical and electrical wiring upgrades for the Chapter House. A community center has been proposed.	Community members have expressed concern that the Chapter is outgrowing the present Chapter House.	Chapter House: needs include a new computer room, better heating and cooling systems, kitchen renovation, a larger conference room, and a new roof	The Chapter would like a health clinic
County-provided facilities and services	Police, fire, & emergency services are provided out of Gallup. (City or County?)	There are no county facilities in the Chapter	no County facilities are located in the Chapter.	None were noted
Fire stations, senior centers	Chapter Hse. Provides meals and acts as senior center	There are no fire protection facilities at Ojo Encino. A fire station is being planned in construction of the new BIA elementary school for the Chapter. Use of this facility and equipment may be limited in use within the Chapter. A new, modular senior center opened in 2004 in the Chapter.	There is a fire station at the BIA school. The Chapter has a senior center that is need of replacement.	Police protection is provided by the Navajo Nation Police in Crownpoint, the McKinley County Sheriff's Department in Thoreau, and the New Mexico State Police, Gallup District. Fire protection is provided by the Thoreau Volunteer Fire Department and occasionally by the Pinedale Volunteer Fire Department.
Roads	Dakota Loop, Red Sage, Sweetwater Road, and CR27 are County maintained roads	There are no county-maintained roads	There are no county roads in the Chapter	NN60 may be county maintained

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McKinley County Comprehensive Plan Phase 2

Comparison of Selected Chapter Land Use Plans for Navajo Chapters in McKinley County

	Twin Lakes Chapter	Chichiltah Chapter
General Physical Characteristics		
Settlement pattern, history & prominent environmental features	"Twin Lakes." The community is better known as Bahastlah in Navajo. Around 1930, the community of Twin Lakes started to form with construction of a government day school.	Chichiltah Chapter is the furthest south contiguous chapter within the Eastern Agency, located in rolling pinon and juniper forest at 7,000-7,200 feet elevation. The BIA built the original Jones Ranch School in 1934. Cousins Trading Post is about 100 years old. Bean fields were cleared by white farmers. Local Navajo workers were employed.
Demographics		
Population		
1990	1,952	1,442
2000	2,240	1,692
Projected 2020	2,837	2,190
Housing Units		
2000		691
Projected Needs	No housing projections were made.	The medium range projection shows an average demand for 129 new housing units per decade through 2030.
Characterization of Housing Sites/Settlement Pattern for future housing	In 2000, there were 177 persons who needed new low income or replacement housing according to the Chapter. Another 104 persons needed housing renovations. At that time, NHA was only planning on three scattered site houses in the Chapter.	There is one NHA Subdivision with 25 housing units. Most of the scattered housing clusters is located in proximity to the major roads - Jones Ranch, Cousins and Two Wells Roads. Non-Navajo housing, churches, religious camps and trading posts are located within the chapter area.
Facilities		
Chapter Facilities Needs	New Chapter House and Administrative Offices are needed.	Chapter has comparatively low portion of residents served by domestic water. Chapter wants water lines & electricity extended, sewer/septic for more scattered housing, many chapter complex improvements, inc. paving, activities
County-provided facilities and services	A McKinley Co. fire station is located in Yatahey.	Volunteer Jones Ranch fire department, fire engine at BIA School.
Fire stations, senior centers	Police service is provided out of Crownpoint. A NN police officer was living in the Chapter and patrolling the area in 2000. A senior center was under construction in 2000 and is presumed to be open.	Police service is provided out of Crownpoint; response time is often 2 hours.
Roads		
	There may be County roads in the Chapter, but they weren't listed.	Majority of roads in chapter are maintained by McKinley County, most of which are graded dirt roads subject to becoming mud when rain & snow.