Quay County
40-Year Water Plan Update

Quay County, New Mexico

October 2015

Funding for this plan was provided by the New Mexico Finance Authority with oversight by the New Mexico Environment Department.

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Quay County 40-Year Water Plan Update

Prepared for:

Quay County, New Mexico

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Executive Summary

Quay County contracted with HDR Engineering, Inc. (HDR) in mid-2014 to prepare a 2015 update of the Quay County 40-Year Water Plan to reflect the current water supply situation, establish projections of future water demands, and assess needs for development of additional supplies. The update is focused on municipal water use and the future water needs of Tucumcari, Logan, San Jon, and House. Several water supply alternatives are described that could be developed to meet water needs during the planning period.

Water demand projections are based on U.S. Census Bureau data, observed historical population growth rates, and discussions with local leaders, as well as data available from the Bureau of Business and Economic Research (BBER). Multiplication of projected populations by recent per capita use rates for each municipality results in the water demand projections adopted for use in this plan and summarized in Table ES-1.

Table ES-1.
Water Demand Projections for Quay County (acft/yr)

Entity	2020	2030	2040	2050	2060
Tucumcari	1,489	1,621	1,765	1,924	2,098
Logan	472	620	813	1,067	1,400
San Jon	50	54	58	63	68
House	12	12	12	12	12
County Unincorporated	98	101	104	107	111
County Total	***2,122***	***2,408***	***2,753***	***3,173***	***3,688***

Although there are significant surface water resources nearby, none of the incorporated municipalities currently rely on surface water as a source of supply. Conchas Reservoir is dedicated to agricultural uses and Ute Reservoir, with the exception of very limited use for golf course irrigation, remains untapped for municipal supply. The four incorporated communities in Quay County maintain water supply wells drawing from the following aquifers:

- City of Tucumcari – Entrada Sandstone and alluvial aquifers.
- Village of Logan – Santa Rosa Sandstone and alluvial aquifers.
- Village of House – High Plains Aquifer System (Ogallala Formation).
- Village of San Jon – Supplied entirely by groundwater delivered by pipeline from the Village of Logan. San Jon wells (which are no longer in use) are completed in an alluvial aquifer and the Chinle Formation.

Available groundwater supplies based on permitted active well capacities provided by each municipality are summarized in Table ES-2.

Table ES-2.
Available Municipal Groundwater Supply (acft/yr)

Entity	Supply
Tucumcari	3,797
Logan	1,008
San Jon	161
House	250

Comparison of available groundwater supplies and projected demands results in the estimates of water surplus or shortage presented in Table ES-3. Demands for Logan include demands for San Jon; however, only the supplies available to Logan are included as a supply due to water quality issues with San Jon groundwater supplies. Projected shortages are indicative of needs for additional water supply during the planning period.

Table ES-3.
Municipal Water Surplus/(Shortage) Projections

Entity	2020	2030	2040	2050	2060
Tucumcari	2,308	2,176	2,032	1,873	1,699
Logan/San Jon	485	334	136	(122)	(460)
House	238	238	238	238	238

As indicated in Table ES-3, Logan (including service to San Jon) is the only incorporated area within Quay County projected to need additional water supplies during the planning period. Although its needs are not apparent in Table ES-3 until about 2045, Logan may need additional supply sources or facilities to meet peak day needs well in advance of that time.

Several potential strategies are identified to meet the projected water supply needs of Logan. These strategies include conservation, reuse, and/or utilizing surface water from Ute Reservoir. In addition to these strategies, the plan also describes a potential pipeline connecting the Tucumcari and Logan water systems, thereby creating a regional water system and allowing these two communities to share available water supplies and serve intervening development.

1 Introduction

1.1 Background Information

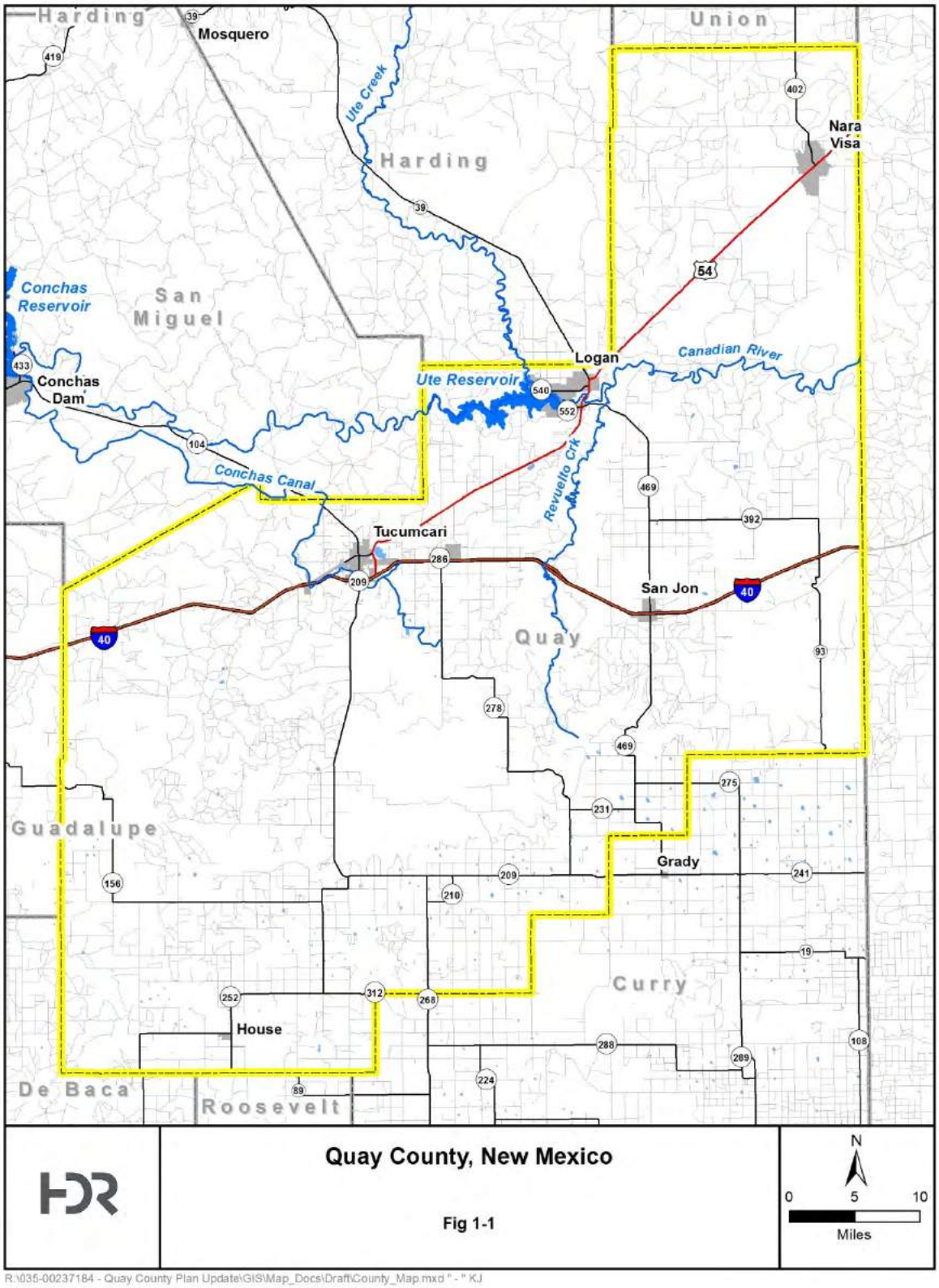
The State of New Mexico strives to preserve and protect its water supplies for the good of public welfare. The State recognizes the need for all entities to plan for the reasonable development and use of water resources. In accordance with these objectives, the State encourages the preparation and periodic update of regional 40-year water plans addressing projected demands and existing supplies to ascertain needs for development of new water supply facilities and equitably manage water rights subject to commerce limitations.

Quay County is located in East Central New Mexico between Union and Curry Counties, just west of the Texas border (Figure 1-1). The County covers a 2,883 square mile area. Elevations range from near 3,700 feet-msl in the eastern portion of the County to over 5,100 feet on the caprock. Quay County lies almost entirely within the Canadian River Basin, although a portion of the southwestern part of the County lies within the Pecos River Basin. The County includes four incorporated areas: Tucumcari, Logan, San Jon, and House. Nara Visa, in far northeastern Quay County, is unincorporated. The total County population in 2010 was 9,041. Historically, tourism and agriculture have been the bases of the County economy. Significant livestock grazing and agriculture take place throughout the County and water use in the region is primarily for irrigated agriculture.

Quay County and the local governments of Tucumcari, Logan, San Jon, and House have joined together to form the Tucumcari Quay County Regional Water Authority (TQCRWA) to address water planning in Quay County. Pursuant to the requirements of Section 72-1-9 of the New Mexico Statutes Annotated and adhering to the State Engineer's policy, the Ute Reservoir Regional Water Board developed a 40-year water plan (Plan) for Quay County in 2005 and updated it in 2011.[1]

Quay County contracted with HDR Engineering, Inc. (HDR) in mid-2014 to prepare a 2015 update of the Quay County 40-Year Water Plan to reflect the current state of water resources and develop new projections of future water demands and supplies. The update is focused on existing municipal water supplies and the future water needs of Tucumcari, Logan, San Jon, and House.

[1] Daniel B. Stephens & Assoc., Inc. and Phelps Engineering Services, Inc., "Quay County 40 Year Water Plan," Ute Reservoir Regional Water Board, June 2011.


Harding
Mosquero
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Ute Creek
Harding
Nara Visa
Conchas Reservoir
San Miguel
Logan
Canadian River
Ute Reservoir
Conchas Dam
Conchas Canal
Revuelto Crk
Tucumcari
San Jon
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Quay County, New Mexico
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1.2 Organization of the Plan Update

The 2015 update of the Quay County 40-yr Water Plan is organized into five sections as follows:

1) Introduction – Provides a brief summary of County information and the organization of the Plan.

2) Planning Area Description – Provides a more detailed description of the County including groundwater and surface water resources as well as other factors important to water planning.

3) Population and Water Demand Projections – Details projected population and water demands through 2060 for each of the four incorporated areas and the entire County.

4) Water Supply Projections – Describes available groundwater and surface water supplies expected to be available to each of the four incorporated areas.

5) Needs Analysis and Water Supply Alternatives – Presents the projected needs for additional water supply for each incorporated area and discusses potential water supply alternatives.

6) Public Involvement in Plan Development – Summarizes the public involvement component of the plan update, including meetings with local leaders and public meetings.

1.3 Acknowledgements

HDR acknowledges and appreciates the guidance, data, and support provided throughout the development of this 40-yr Water Plan Update by the following organizations and individuals:

Quay County – Richard Primrose

City of Tucumcari – Jared Langenegger, Charlie Sandoval

Village of Logan – Larry Wallin, David Babb

Village of San Jon – Wade Lane

Arch Hurley Conservancy District – Franklin McCasland

New Mexico Office of the State Engineer and Interstate Stream Commission – Rex Stall

US Army Corps of Engineers – Roberta Ball, Michael Vollmer, Joe Martinez

12 Shores at Ute Lake – David Frank

2 Planning Area Description

2.1 Physical Description of Quay County

2.1.1 Climate

The climate of Quay County is characterized by mild temperatures and moderate rainfall amounts. The average annual temperature in Quay County is 55.5 °F with monthly averages ranging from a low of 35.8 °F in January to a high of 75.3 °F in July (Table 2-1). Average annual rainfall is 17.3 inches with monthly averages ranging from a low of 0.5 inches in January and February to a high of 3.1 inches in July and August (Table 2-1). Precipitation varies slightly across the county, influenced primarily by elevation. Weather systems may enter the county from the west (Pacific), northeast (artic air masses from the plains), and southwest (Gulf of Mexico). Each of the different types of weather systems will bring a unique set of temperatures and moisture conditions to the county.

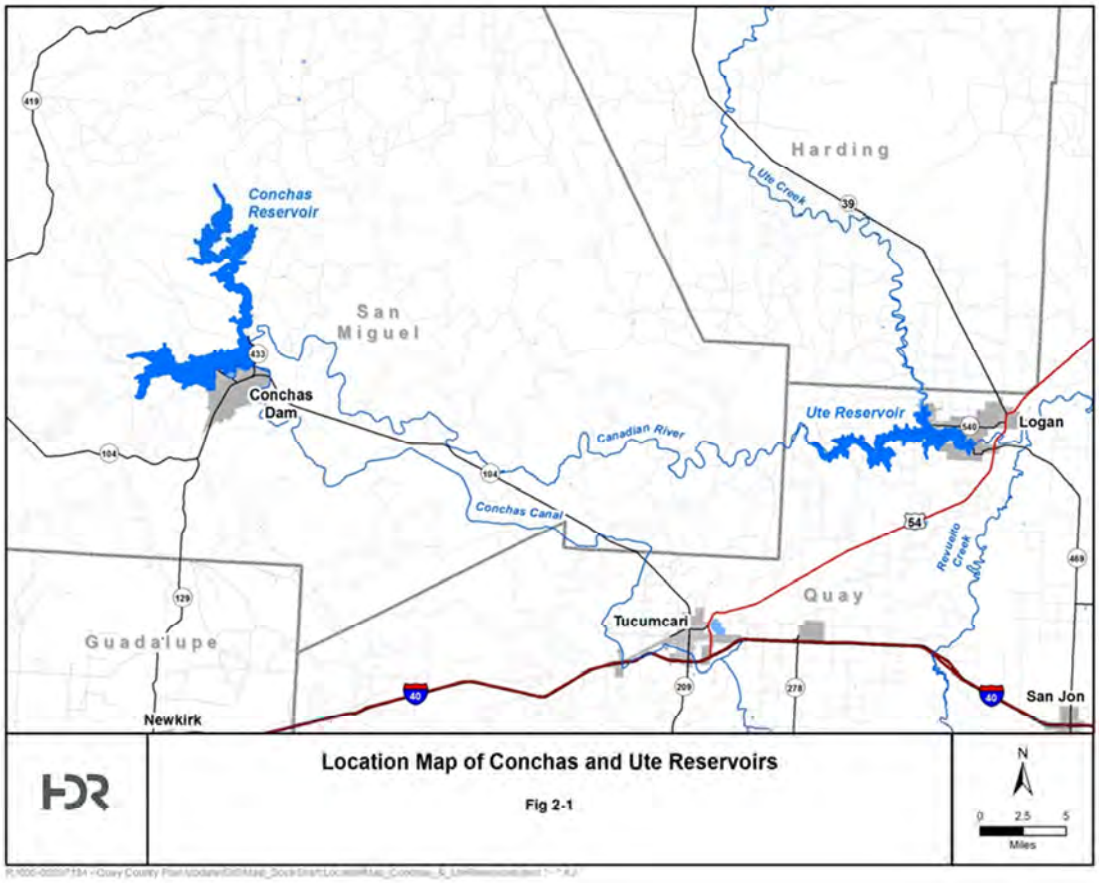
Table 2-1.
Quay County Climate Data

Item	Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Temperature (°F)	55.5	35.8	39.8	46.3	55.0	63.6	72.2	75.3	73.4	66.6	56.6	44.8	36.5
Average High Temperature (°F)	70.3	49.5	54.4	62.2	71.4	79.8	88.2	89.8	87.3	80.7	71.4	58.6	49.9
Average Low Temperature (°F)	40.7	22.1	25.2	30.4	38.4	47.4	56.3	60.7	59.5	52.5	41.7	31.1	23.2
Average Precipitation (in)	17.3	0.5	0.5	0.8	1.0	1.9	2.1	3.1	3.1	2.1	1.4	0.7	0.6
Highest Recorded Temperature (°F)	106	77	80	88	94	101	106	105	102	100	92	84	77
Lowest Recorded Temperature (°F)	-15	-15	-9	2	14	22	36	42	46	29	9	-7	-12
Average Snowfall (in)	19.4	4.1	4.5	2.6	1.5	0.0	0.0	0.0	0.0	0.0	0.2	2.0	4.5

Source: Weatherbase.com – downloaded December 19, 2014.

2.1.2 Surface Water Resources

Quay County lies almost entirely within the Canadian River Basin, which is part of the larger Arkansas-White-Red River Basin. Surface water availability varies from year to year, depending on the amount of precipitation that falls within the river basin and makes its way into Conchas and Ute Reservoirs. Figure 2-1 shows the locations of Conchas and Ute Reservoirs.



Conchas Reservoir

Conchas Reservoir is located in San Miguel County, but provides significant amounts of water supply for irrigation in Quay County through the Tucumcari Project (see discussion below). Conchas Dam, constructed by the U.S. Army Corps of Engineers (USACE) near the confluence of the Conchas and Canadian Rivers, is a concrete gravity section type dam flanked by embankment dikes. The dam is up to 235 feet high, has a crest length of 6,230 feet, and is comprised of 836,000 cubic yards of concrete and 887,000 cubic yards of earthfill. The principal spillway is a concrete overflow section 300 feet long in the main section of the dam. An emergency spillway, located on the north dike, is 3,000 feet long and is 17 feet higher than the principal spillway. The irrigation outlet works is a circular tunnel leading to a gate chamber, then into two steel penstocks in a horseshoe shaped tunnel. As of 2012, the reservoir had a capacity of 272,286 acft below the principal spillway crest at 4201 ft-msl. Of this capacity, approximately 226,000 acft above elevation 4162 ft-msl is considered active or conservation storage.

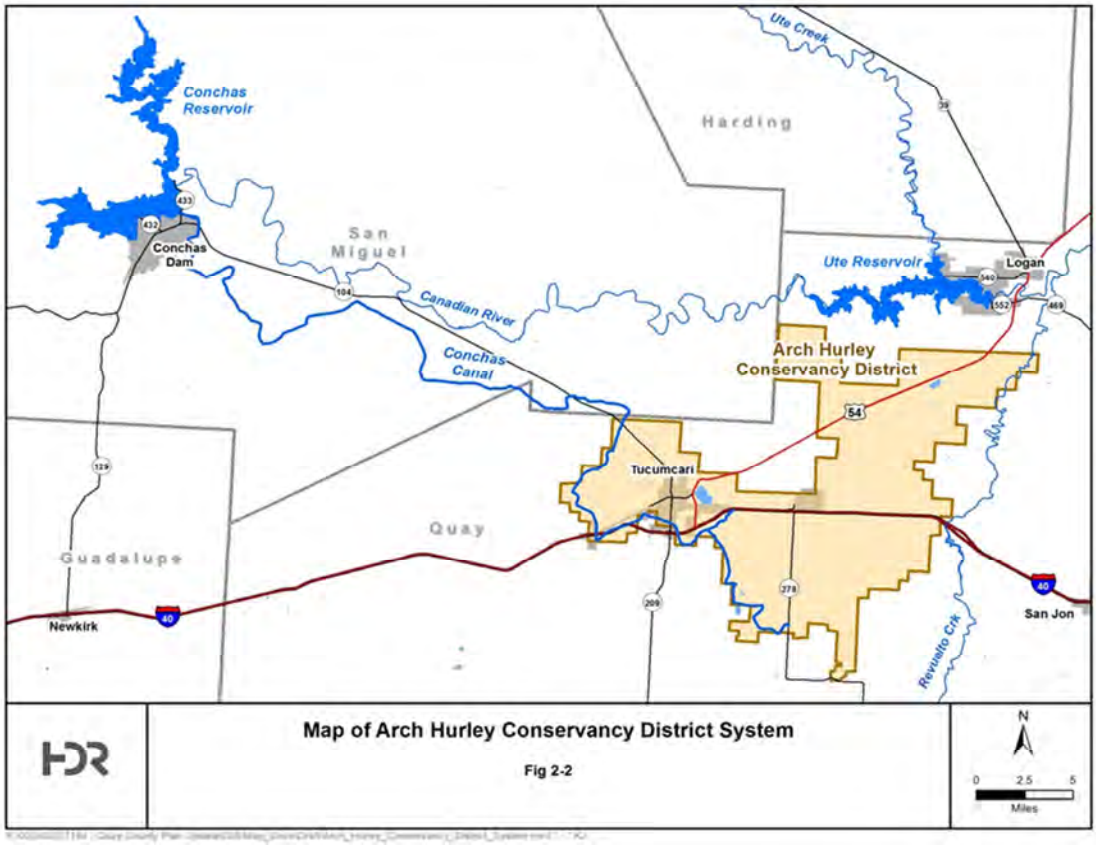
Conchas Dam and Reservoir

Tucumcari Project (Arch Hurley Conservancy District)

The Tucumcari Project, managed and maintained by the USACE and the Arch Hurley Conservancy District, includes Conchas Dam and Reservoir, canal systems, and about 41,000 acres of irrigable land surrounding the City of Tucumcari (Figure 2-2). The 84-mile long Conchas Canal has an initial capacity of 700 cfs at the outlet works from Conchas Reservoir. This canal includes 31 siphons totaling 21,921 feet in length and five tunnels with a cumulative length of 30,140 feet. Commencing at mile 56.5 on the Conchas Canal, the Hudson Canal extends 26 miles through the project lands. The initial capacity of this canal is 384 cfs and it includes one siphon that is 3,200 feet long. Many crops grown in the project area are used to sustain the regional livestock industry. Alfalfa hay, alfalfa seed, grain sorghum, cotton, and wheat are the leading crops produced.

Construction of the irrigation system began in 1940 and continued to December 1942, when work was suspended by the War Production Board. The project was reauthorized in April 1944 as a war emergency food project. The first water was delivered to project lands in 1946 and construction was essentially completed in 1950. In May 1961, the Arch Hurley Conservancy District initiated a rehabilitation and betterment program including canal and lateral linings and the addition of open drains. This program was completed during 1976.

Conchas Dam Outlet Works for Conchas Canal



Ute Reservoir

Ute Reservoir was developed as a multiple purpose project to provide municipal and industrial water supply to communities in eastern New Mexico as well as recreational opportunities associated with fishing, boating, and the adjacent Ute Lake State Park. The Interstate Stream Commission (ISC) built Ute Reservoir in 1962 by constructing a dam on the Canadian River near Logan and has operated the reservoir since that time. Addition of the largest labyrinth spillway in the United States, designed by the U.S. Bureau of Reclamation and completed in 1984, increased the potential depth of impoundment by 27 feet. Conservation storage capacity in Ute Reservoir, however, is limited by the Canadian River Compact to 200,000 acft. An early estimate of reservoir firm yield (24,000 acft/yr) is indicative of water potentially available under purchase contracts with the Ute Reservoir Water Commission. The Commission is an organization of entities, including Tucumcari, Logan, and other cities to the south that have the option to purchase water for consumptive use. Currently, water from the reservoir is only being used for recreation and limited golf course irrigation; however, an intake structure is under construction as part of the proposed Eastern New Mexico Rural Water System.

Ute Dam, Labyrinth Spillway, and Reservoir

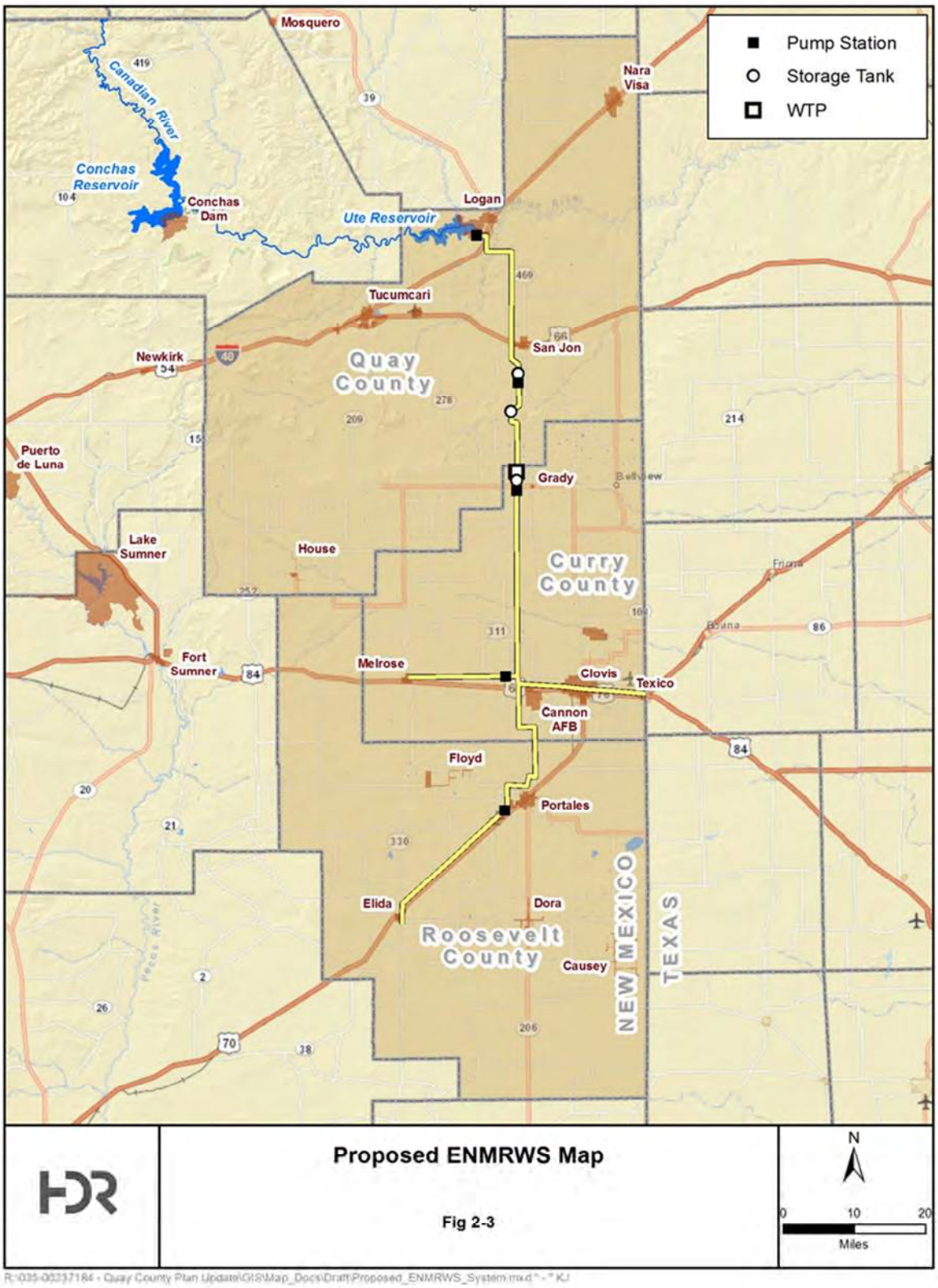
Eastern New Mexico Rural Water System

The Eastern New Mexico Rural Water System (ENMRWS) is a proposed treatment and transmission system including a 151-mile long pipeline to deliver municipal and industrial water supplies to several eastern New Mexico communities and a military base (Figure 2-3). It is envisioned that water will be pumped from Ute Reservoir to Clovis, Portales, Melrose, Texico, Grady, and Elida, as well as to Cannon Air Force Base in Curry and Roosevelt Counties. The U.S. Congress authorized federal funding for the ENMRWS in the Omnibus Public Land Management Act of 2009, but has yet to deliver significant appropriations. Current planning suggests that funding for project development would be 75% federal, 15% state, and 10% local.

The project consists of an intake facility (now under construction) on the south shore of the reservoir near the dam, a main water pipeline, and treatment, pumping, and

balancing storage facilities. The pipeline would run almost due south from Ute Reservoir as far as Elida. A number of laterals off the main line will bring water to Clovis, the other participating communities, and to some outlying areas of the counties. The current plan is to pump water from the reservoir to the rim of the Caprock, and then to a water treatment plant near Grady. The treatment plant will serve the entire system. Beyond the water treatment plant, three booster pump stations will be needed. Each participating entity will pay a share of the construction costs and the operation and maintenance cost of the pipeline and other facilities. Each participant will also pay for the water itself, based upon the amount of water each entity has reserved in the Project.

Construction of Intake Structure for the ENMRWS


Pump Station
Storage Tank
WTP
Mosquero
Canadian River
Conchas Reservoir
Conchas Dam
Ute Reservoir
Logan
Nara Visa
Tucumcari
San Jon
Newkirk
Quay County
Puerto de Luna
Grady
Bellview
Lake Sumner
House
Curry County
Fort Sumner
Melrose
Clovis
Texico
Cannon AFB
Floyd
Portales
Elida
Dora
Roosevelt County
Causey
NEW MEXICO
TEXAS
Proposed ENMRWS Map
Fig 2-3
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2.1.3 Groundwater Resources

Aside from irrigation supplies provided by the Arch Hurley Conservancy District, Quay County water demands are met almost entirely by groundwater resources, and understanding the available groundwater supply is essential to the water planning in the County. This section summarizes regional groundwater resources and recent trends in groundwater levels within Quay County. Figure 2-4 shows the water bearing formations within the County. The four incorporated communities in the County maintain water supply well fields drawing from the following aquifers:

- City of Tucumcari – Entrada Sandstone and alluvial aquifers.
- Village of Logan – Santa Rosa Sandstone and alluvial aquifers.
- Village of House – High Plains Aquifer System (Ogallala Formation).
- Village of San Jon – Supplied entirely by groundwater from the Village of Logan, delivered by pipeline. San Jon wells (which are no longer in use) are completed in an alluvial aquifer and the Chinle Formation.

Alluvial Aquifers

Alluvial deposits within the County tend to be laterally discontinuous, and range in composition from younger stream channel and eolian sand, silt, and clay deposits to older piedmont and terrace gravel deposits. Average thickness for the younger deposits is 20 feet, although thickness can reach 80 feet in some areas. Older alluvium ranges from 0 to 600 feet thick. Alluvium formations are locally water bearing, yielding up to 300 gallons per minute (gpm).[2]

Ogallala Formation

The Ogallala Formation is one of several formations comprising the High Plains Aquifer System. This aquifer underlies about 174,000 square miles in parts of eight states. Only one percent of the total High Plains Aquifer is in New Mexico.[3] The portion of the Ogallala Formation in northern Quay County is a part of the Central High Plains, while the portion of the Ogallala Formation in southern Quay County is a part of the Southern High Plains. The Ogallala Formation consists of fine- to coarse-grained sand, silt, and clay, and ledges of weathering resistant, calcium carbonate-cemented caprock are present near the top of the formation. The Aquifer is up to 260 feet thick in Quay County, but has eroded away in the central and southwestern parts of the county.[4] The Ogallala Formation serves as the principal water source for the Village of House in Quay County.

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[2] Kilmer, L.C., *Water-bearing characteristics of geologic formations in northeastern New Mexico-southeastern Colorado,* Pp. 275-279 in Lucs, S.G. and A.P. Hunt (eds.), *New Mexico Geological Society Guidebook, 38th Field Conference,* 1987.

[3] Weeks, J.B., E.D. Gutentage, F.J. Heimes, and R.R. Luckey, *Summary of the High Plains Regional Aquifer System analysis in parts of Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming*, U.S. Geological Survey Professional Paper 1400-A, 1988..

[4] Berkstresser, C.F. Jr and W.A. Mourant, *Groundwater resources and geology of Quay County, New Mexico*, State Bureau of Mines and Mineral Resources, Groundwater Report 9, 1966.

Entrada Sandstone

The Entrada Sandstone is a massive white to pink, fine-grained, eolian sandstone that forms prominent ledges. While it is generally 0 to 80 feet thick, it can reach thicknesses of up to 300 feet. The Entrada Sandstone is the principal aquifer in Quay County and wells screened in this formation can yield up to 600 gpm.[5]

Chinle Formation

The Chinle Formation is part of the Dockum Group. This formation is characteristically brownish red to purple clay, shale, and siltstone. The Chinle formation is commonly used as a source of domestic and stock water (although water quality can be a problem), with wells yielding 1 to 20 gpm.[6]

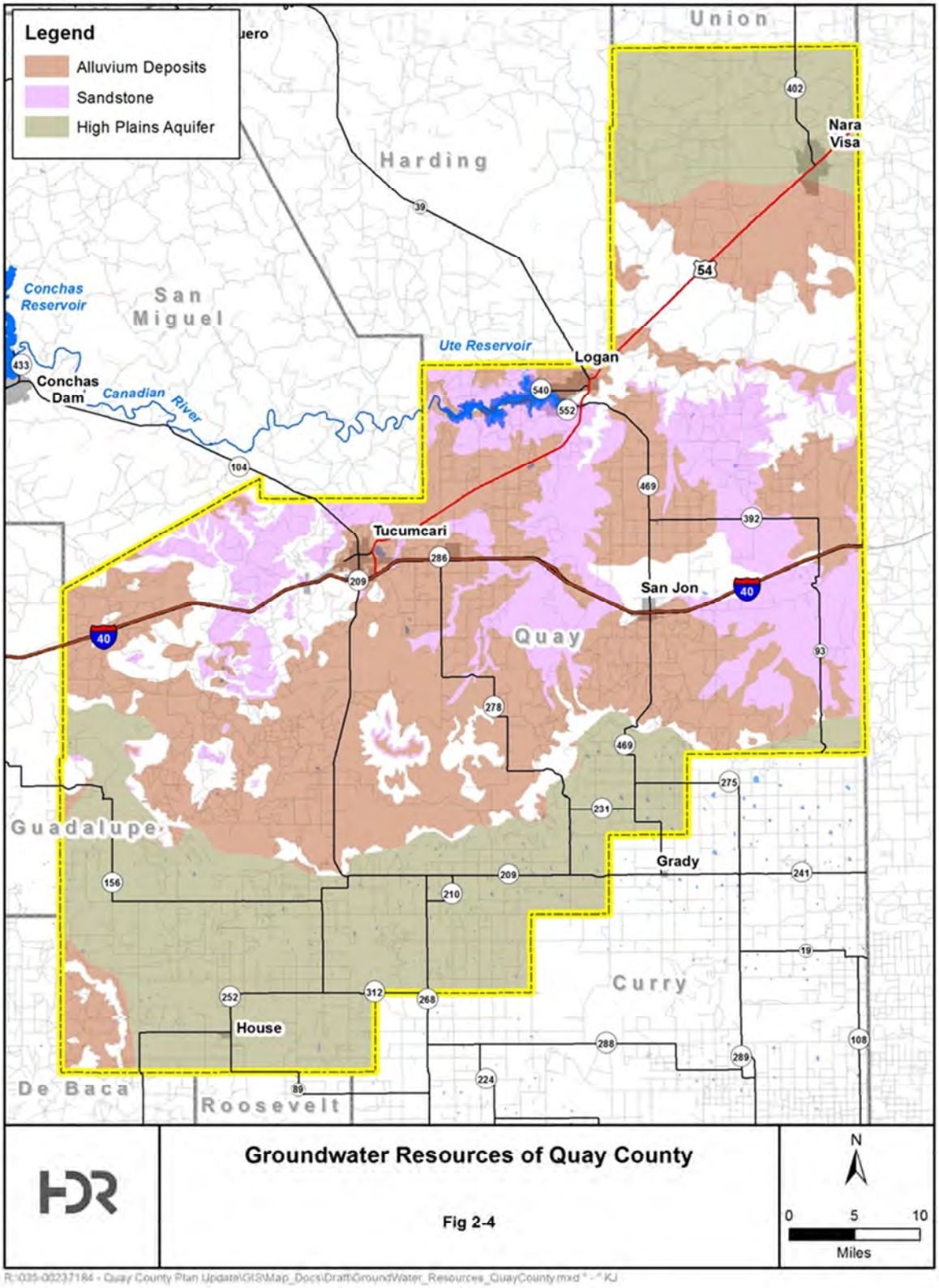
Santa Rosa Formation

The Santa Rosa Formation consists of gray sandstone interbedded with red to brown clay and shale, and igneous gravel conglomerate. Thickness generally ranges from 1 to 375 feet; however, the formation can reach a maximum thickness of 450 feet. The Santa Rosa Formation yields 1 to 50 gpm water to wells and discharges to several springs that yield 1 to 150 gpm.[7]

[5] Kilmer, L.C., *Water-bearing characteristics of geologic formations in northeastern New Mexico-southeastern Colorado,* Pp. 275-279 in Lucs, S.G. and A.P. Hunt (eds.), *New Mexico Geological Society Guidebook, 38th Field Conference,* 1987.

[6] Berkstresser, C.F. Jr and W.A. Mourant, *Groundwater resources and geology of Quay County, New Mexico*, State Bureau of Mines and Mineral Resources, Groundwater Report 9, 1966.

[7] Ibid.


Legend
Alluvium Deposits
Sandstone
High Plains Aquifer
Union
Harding
San Miguel
Quay
Guadalupe
De Baca
Roosevelt
House
Curry
Grady
San Jon
Tucumcari
Logan
Nara Visa
Conchas Reservoir
Conchas Dam
Canadian River
Ute Reservoir
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Groundwater Resources of Quay County
Fig 2-4

2.2 Demographic Characteristics of Quay County

2.2.1 Population[8]

The 2000 and 2010 populations of Quay County were 10,155 and 9,041 according to the U.S. Census Bureau (USCB). The estimated 2013 County population was 8,662, a 4.2% decrease from the Year 2010 value. Figure 2-5 shows historical population census values for the County from 1920 to 2010 by incorporated entity within the County. The "County Unincorporated" value was derived as total county population minus the populations of the incorporated areas.

Figure 2-5 shows that the highest recorded population, as measured by the census, during this time period occurred in 1950 (13,971 people). From 1970 through 2000, the County population remained relatively stable and then fell by about 10% from 2000 to 2010. It is likely that this decadal decrease in population is related to the severe and ongoing drought that began in late 1999 and has since lowered Conchas and Ute Reservoir levels and sharply reduced irrigated acreage. As shown in Figure 2-6, irrigated acres served by the Arch Hurley Conservancy District decreased from a long-term average of almost 32,900 acres through 2000 to an average of less than 10,700 acres during the drought-constrained 2001-2013 period. Clearly, these drought-induced reductions in reservoir levels and irrigated acreage adversely affect the agricultural and recreational sectors of the local economy and the populations that support these economic sectors.

In 2010, Tucumcari made up 59.3% of the total population, while Logan made up 11.5%, San Jon made up 2.4%, House made up 0.8%, and the County Unincorporated population made up 26.0% of the total population. Most communities, with the exception of Logan, have seen declining populations during the last several decades.

In 2013, it was estimated that 5.8% of the County residents were under the age of 5, slightly lower than the State average of 6.7%. It was also estimated that 23.1% of the population was 65 years of age or older, significantly higher than the State average of 14.7%. This characterizes the population of the County as older, which would tend to limit natural population growth as the death rate is equal to or higher than the birth rate.

[8] Data from State & County Quick Facts for Quay County, New Mexico published by the U.S. Census Bureau.

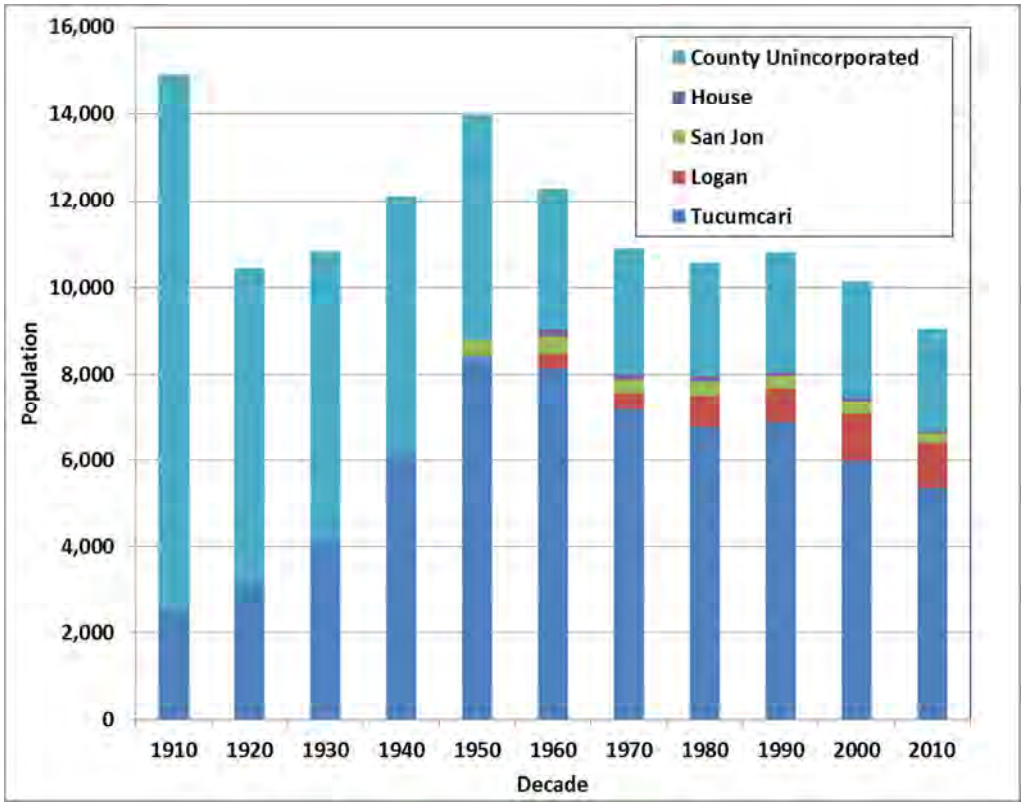


Figure 2-5.
Historical Population of Quay County (USCB)

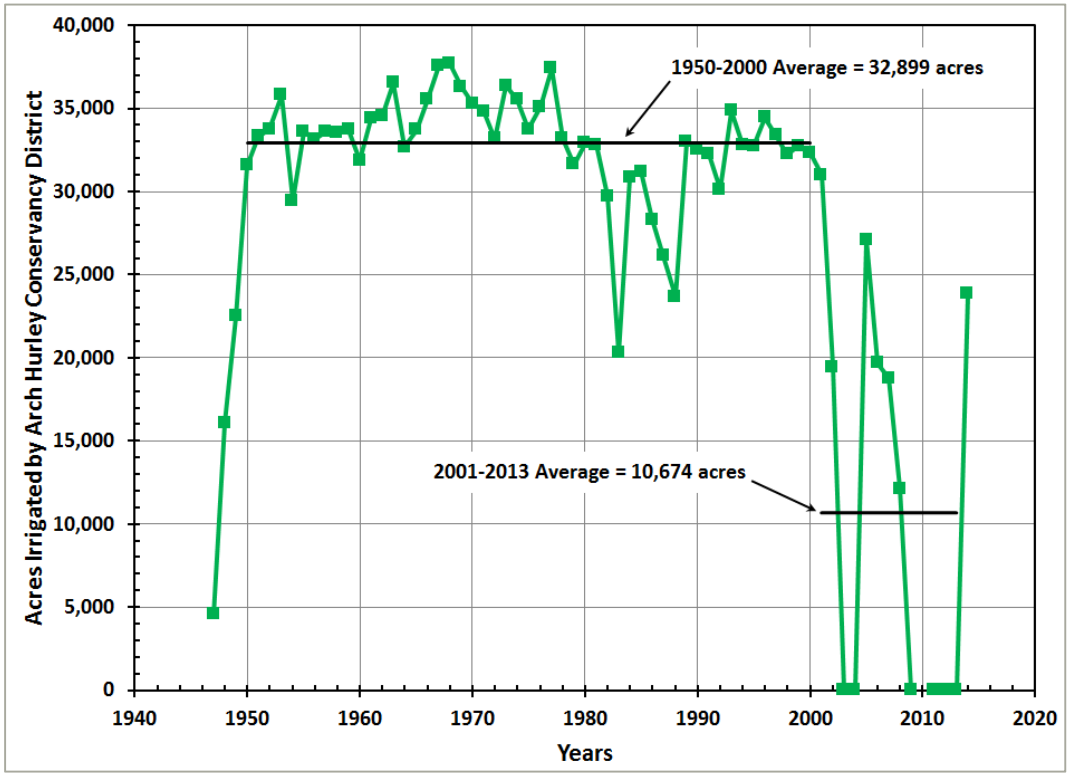


Figure 2-6.
Acres Irrigated by Arch Hurley Conservancy District

2.2.2 Water Use

Table 2-2 and Figures 2-7 and 2-8 summarize historical water use within Quay County on five-year intervals from 1990 to 2010. The highest recorded water use in the County from this data occurred in 1995, while the lowest recorded water use occurred in 2005. In 2010, irrigated agriculture accounted for nearly 95% of the total water use within the County. Most of this water was supplied from Conchas Reservoir through the Arch Hurley Conservancy District irrigation canal system. Municipal water use showed incremental growth from 1990 through 2000, but dropped to a significantly lower level for 2005 and 2010. It is inferred that this decrease in municipal use is attributable in part to the secondary effects of ongoing drought resulting in lower reservoir levels, reductions in irrigated acreage and crop production, and decreases in reservoir based recreational activities.

Table 2-2.
Historical Water Use Data for Quay County

Use Type	1990			1995			2000		
	SW	GW	Total	SW	GW	Total	SW	GW	Total
Municipal	81	2,126	2,207	81	2,199	2,280	0	2,311	2,311
Commercial	0	7	7	0	11	11	0	11	11
Industrial	0	0	0	0	0	0	0	0	0
Irrigated Agriculture	78,484	18,586	97,070	119,333	28,023	147,356	107,954	6,546	114,500
Livestock	68	652	720	72	660	732	87	792	879
Mining	0	2	2	0	0	0	0	0	0
Power	0	0	0	0	0	0	0	0	0
Total	***78,633***	***21,373***	***100,006***	***119,486***	***30,893***	***150,379***	***108,041***	***9,660***	***117,701***

Use Type	2005			2010		
	SW	GW	Total	SW	GW	Total
Municipal	0	1,756	1,756	0	1,767	1,767
Commercial	0	31	31	0	164	164
Industrial	0	0	0	0	0	0
Irrigated Agriculture	37,632	5,989	43,621	36,212	7,947	44,159
Livestock	65	601	666	50	464	514
Mining	0	0	0	0	0	0
Power	0	0	0	0	0	0
Total	***37,697***	***8,377***	***46,074***	***36,262***	***10,342***	***46,604***

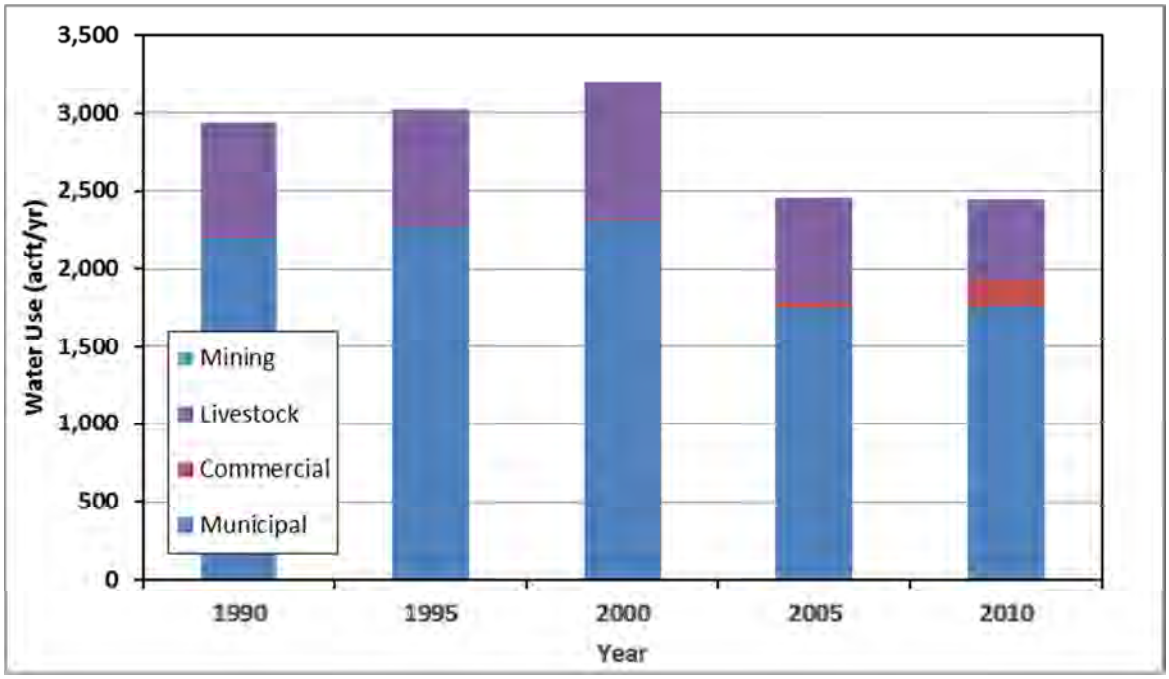


Figure 2-7.
Historical Non-Irrigation Water Use for Quay County

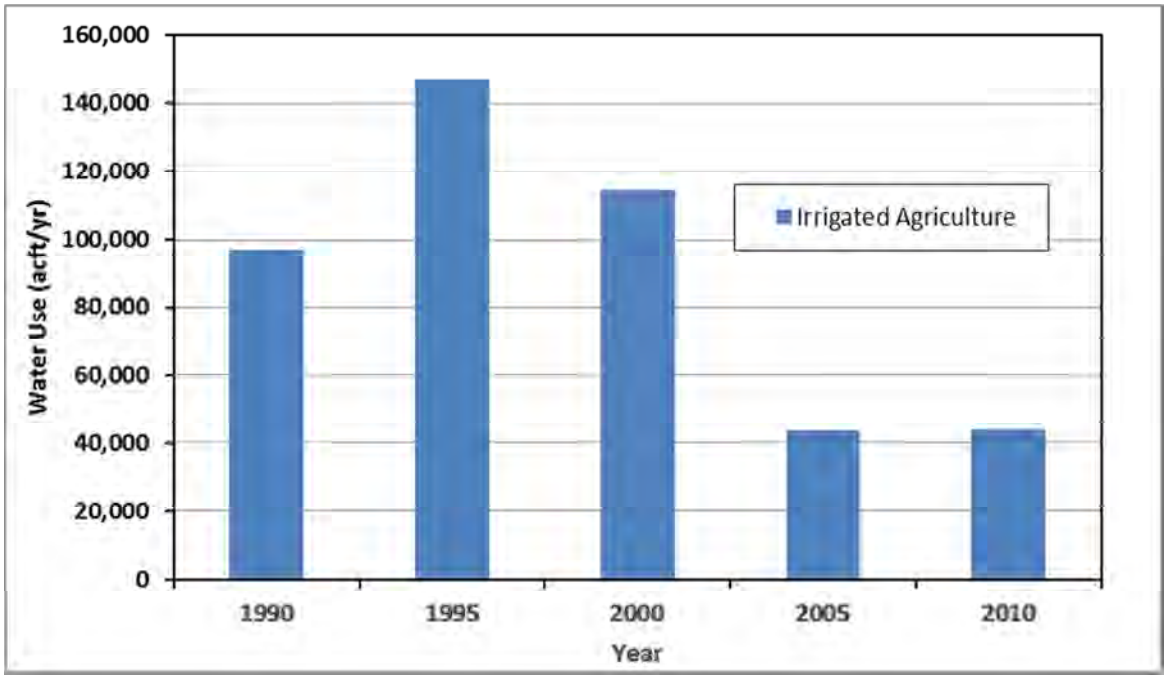


Figure 2-8.
Historical Irrigation Water Use in Quay County

2.2.3 Economy

In 2012, there were an estimated 238 private non-farm business establishments located within Quay County. This number does not include government organizations. The top five business sectors by reported numbers of employees are as follows: 1)

Education/Healthcare (811); 2) Construction (475); 3) Agriculture (337); 4) Retail trade (331); and 5) Arts/Recreation/ Accommodation/Food service (281).[9]

During the 2008-2012 period, average per capita income in the County was $18,775, or about 79% of the State of New Mexico average.[10] In 2013, it was estimated that there were 3,720 workers in the County with 3,484 of them employed (a 6.3% unemployment rate).[11]

In 2012, there were 553 farms and ranches in the County covering 1,518,085 acres (average of 2,745 acres/farm or ranch).[12]

In 2007, the latest year for which data are available, total merchant wholesale sales totaled $1.7 million, retail sales totaled $143.9 million, and accommodation and food service sales totaled $17.9 million. According to the Census data, there were no new building permits issued in 2012.

2.3 Legal and Water Right Issues

Knowledge of the legal constraints that govern the use of water in the County is needed to understand the available water supply. This section will address the federal, state, and local legal issues and administrative policies that affect water use within the County.

2.3.1 Appropriation of Surface Water

Article XVI of the New Mexico Constitution establishes the basic principles underlying New Mexico water law, including prior appropriation and beneficial use: until appropriated, all water belongs to the State of New Mexico. Thus, the State has the sole authority to grant or recognize rights to use that water. Two tenets based on the Constitution (N.M. Constit. Art. XVI Sec. 2) are: (1) water rights "are subject to appropriation for beneficial use, in accordance with the laws of the state;" and (2) "priority of appropriation shall give the better right."

The concept underlying the principle of prior appropriation is that the first person to use water for a beneficial purpose has a prior right to use that water against subsequent appropriations. "First in time, first in right" is the phrase often used to describe prior appropriation. Water rights acquired through this system of prior appropriation are a type of property right and may be sold or leased. In all cases, however, the essential basis of water right ownership is "beneficial use."

The principle of beneficial use is that a water right arises out of a use that is productive or beneficial, such as agricultural, municipal, industrial, and domestic uses, among others. "Beneficial use shall be the basis, the measure, and the limit of a water right" (N.M. Constit. Art. XVI, Sec. 3). This provision has also been incorporated into case law, which is the law developed by New Mexico courts. As recognized in State ex rel. Reynolds v.

[9] U.S. Census Bureau, 2014.

[10] U.S. Census Bureau, 2014, American Community Survey 5-Year Estimate.

[11] NM Department of Workforce Solutions, Economic Research Bureau, April 2014.

[12] USDA 2012 Census of Agriculture.

Mendenhall, beneficial use is the "measure and limit of the right to the use of waters" (68 N.M. 467, 473 (1961)).

2.3.2 Groundwater Appropriation

The New Mexico Water Code was not made applicable to groundwater until 1931 and, then, only in declared groundwater basins. In order to withdraw water from these declared basins, a user must have applied water to beneficial use prior to the basin declaration, thus creating a pre-basin water right, or the user must obtain a water permit from the Office of the State Engineer (OSE) that specifies: (1) how much water a user can withdraw within any given year; (2) the location and type of well that will be used to withdraw the water; and (3) the use to which the water will be put. The majority of Quay County is within the Tucumcari groundwater basin.

2.3.3 Canadian River Compact

The Canadian River Compact, ratified in 1951, allows New Mexico "free and unrestricted use of all waters originating in the drainage basin of the Canadian River above Conchas Dam" (Article IV(a)). Below Conchas Dam, New Mexico has the "free and unrestricted use of water originating below the dam," but the amount of water that may be stored or impounded is limited to 200,000 acft of conservation storage (Article IV(b)). Any water flowing out of Conchas Dam is considered water originating below the dam and is subject to the 200,000 acft storage limitation. New Mexico stores its Canadian River allocation in Ute Reservoir and other reservoirs subject to Article IV(b). The Compact does not require New Mexico to deliver specific amounts of water to Texas.

2.3.4 Conservancy and Irrigation Districts

New Mexico water law allows for the creation of special districts for the organization and management of water resources at the local level (NMSA Chapter 73). Irrigation, conservancy districts, water users associations, and water and sanitation districts, among others, are each governed by a separate statutory section that defines the powers, duties, and purposes of these districts.

Conservancy districts have very broad purposes and powers. General powers include "…the power to perform all acts necessary and proper for carrying out the purposes for which the district was created and for exercising the powers with which it is vested" (NMSA Section 73-14-15(B)). Specifically defined powers include the power to sue and be sued, to contract, to incur debts, to levy taxes, to exercise the right of eminent domain, to condemn property, and to issue bonds. Districts have broad control over the distribution of water within district boundaries and in particular are not subject to forfeiture of water for non-use (NMAC 73-14-47).

2.3.5 The Endangered Species Act (ESA)

The ESA, first enacted in 1973, can play a prominent role in determining the allocation of water, especially of stream and river flows. The protections of the ESA are triggered by listing a species as "threatened" or "endangered." The goal of the ESA is to protect threatened and endangered species and the habitat on which they depend, with the

ultimate goal being to "recover" species so that they no longer need protection under the ESA.

Three species in Quay County fall under the protections of the ESA. Two of the species, the Arkansas River Shiner and the Lesser Prairie-chicken are listed as threatened, while the Interior least tern is listed as endangered.

The Arkansas River Basin population of the Arkansas River shiner was listed as threatened in 1998 (63 Fed. Reg. 64772 (1998)). Threats to the shiner include habitat loss from construction of water impoundments, reduction of streamflows caused by water diversions or groundwater withdrawals, and water quality degradation. Although the USFWS has issued a final rule designating critical habitat for the Arkansas River shiner, no area within New Mexico has been included in this designation (70 Fed. Reg. 59808, 59823 (2005)). This exclusion is based on the USFWS's determination that, although the stretch of the Canadian River between Ute Reservoir in New Mexico and Lake Meredith in Texas is habitat for the shiner, the habitat is being properly managed by the Canadian River Municipal Water Authority which, in cooperation with federal, state, and private partners, completed a special management plan for the shiner in this area. With this management plan in place, the USFWS concluded that exclusion from a critical habitat designation was appropriate. Article XVI of the New Mexico Constitution establishes the basic principles underlying New Mexico water law, including prior appropriation and beneficial use: until appropriated, all water belongs to the State of New Mexico. Thus, the State has the sole authority to grant or recognize rights to use that water. Two tenets based on the Constitution (N.M. Constit. Art. XVI Sec. 2) are: (1) water rights "are subject to appropriation for beneficial use, in accordance with the laws of the state;" and (2) "priority of appropriation shall give the better right."

2.4 Water Quality Standards

2.4.1 Surface Water

Federal and state laws require that water quality meet specific standards. The Federal Clean Water Act and New Mexico surface water quality standards passed under that Act require permits for any discharges to "waters of the United States." These permits are based on water quality requirements and may place limitations on discharges to surface water. Additionally, the Act requires that water quality in streams and reservoirs also meet state standards. States are required to report water quality to the U.S. Environmental Protection Agency and conduct total maximum daily load (TMDL) activities for surface waters not meeting standards. As a result of a TMDL, discharge permit limitations can be made stricter, and efforts to improve the watershed implemented.

2.4.2 Groundwater

State law controls discharges to groundwater through the New Mexico Water Quality Act. One goal of the Act is to prevent discharges to groundwater that would impair water quality. The NMED requires groundwater discharge plants for almost all types of activities than can impact groundwater quality. The Safe Drinking Water Act sets the standards for water that is used as a drinking water supply. It also creates programs,

such as wellhead protection and sole source aquifer designation, to protect drinking water aquifers. The current use of Quay County's groundwater resources as the primary source of municipal supply requires that groundwater be protected from contamination as much as possible.

2.4.3 Drinking Water

The primary law governing public water systems is the federal Safe Drinking Water Act (SDWA). This law was first passed in 1974 and amended in 1986 and 1996. The New Mexico Environmental Department Drinking Water Bureau has primary control over the SDWA, which means is has the authority to implement and enforce the primary SDWA regulations. EPA has also published secondary SDWA regulations that control contaminants in drinking water that primarily affect aesthetic qualities relating to the public acceptance of drinking water. The State of New Mexico passed state drinking water rules under the Environmental Improvement Act (NMSA 74) that incorporated federal regulations as well as adding a few requirements not covered by the SDWA.

2.5 Current Water Quality Issues

2.5.1 Surface Water

Surface water quality within Quay County is generally considered to be good. However, both Conchas and Ute Reservoirs (as well as the intervening stretch of river) have been included on the New Mexico 303(d) list. This list is prepared by NMED to comply with Section 303(d) of the federal Clean Water Act, which requires each state to identify surface waters within its boundaries that are not meeting or not expected to meet water quality standards. These reservoirs were listed as not supporting "Warmwater Aquatic Life" uses, primarily due to the potential for mercury, aluminum, and PCBs to accumulate in fish tissues. The stretch of river between the two reservoirs was listed as not supporting "Primary Contact" use due to elevated levels of E. Coli bacteria. This condition was likely caused in part by the low water flow associated with the recent drought.

2.5.2 Groundwater

Groundwater quality within the county is generally good; however, some areas have experienced water quality concerns. For example, the Village of San Jon no longer uses its well field due to high nitrate concentrations.

2.6 Potential Water Quality Concerns

2.6.1 Surface Water

Sources of contamination are considered point sources if they originate from a single location or non-point sources if they originate over a more widespread area or unspecified location. Potential point source discharges must comply with the Clean Water Act and the New Mexico Water Quality Standards by obtaining a permit to discharge. These permits are referred to as National Pollutant Discharge Elimination

System (NPDES) permits. A summary of NPDES permitted discharges in Quay County is shown in Table 2-3.

Table 2-3.
NPDES Discharges Within Quay County

Discharge Permit Number	Facility Name	Permit Status	Facility City
330	Grain Power Tucumcari Ltd.	Inactive	Tucumcari
535	Village of San Jon Wastewater Treatment Plant	Active	San Jon
1054	Lake Meredith Salinity Control Project	Active	Logan
1666	Ute Lake Ranch Water Reclamation Facility	Active	Logan
1667	NMDOT Glen Rio Rest Area	Active	Glen Rio
1695	Tucumcari Feed Yard	Active	Tucumcari
1696	Liberty Farm Implement and Supply	Active	Tucumcari
1700	City of Tucumcari Wastewater Treatment Facility	Active	Tucumcari
1705	Village of Logan Sewer Collection System	Active	Logan
1765	Russell's Truck and Travel Center	Active	Glen Rio
1769	New Mexico State University – Ag. Center	Active	Tucumcari
1783	Driver's Travelmart	Active	San Jon
1789	Gene Smith Property – Village of Logan Sludge Application	Pending	Logan

In addition to these sources, non-point sources of pollutants can also be a concern for surface water quality in Quay County. Among the most prevalent of these sources are the effects of historical grazing practices. Additional sources of pollutants or threats to surface waters are agricultural, resource extraction, recreation, road runoff, road construction, building sites, and septic tanks. Specific pollutants or threats to surface water quality resulting from these non-point sources include turbidity, sediment accumulation, nutrients, metals, pathogens, total phosphorus, temperature extremes, total ammonia, problems with pH, habitat alteration, and overall watershed degradation.

2.6.2 Groundwater

Potential groundwater pollution may arise from many of the activities listed above. Another major potential cause of groundwater pollution is leaking underground storage tanks (USTs). As of December 2014, NMED had a list of 30 reported leaking USTs in Quay County. The majority of these groundwater contamination cases are due to oil, gasoline, diesel, and petroleum constituents such as benzene, toluene, ethyl benzene, and xylenes. The majority of these sites are concentrated around municipal and industrial areas such as Tucumcari, Logan, San Jon, and House.

3 Population and Water Demand Projections

This Section includes a brief discussion of projection methodology and presents three population and water demand projection scenarios as well as a recommendation of the planning scenario used in this report.

3.1 Population Projections

Three different population projection scenarios were developed for the County. The low case scenario is the same as the "Low Case" County population projection developed by the Bureau of Business and Economic Research (BBER) of the University of New Mexico for the 2015 Northeast Regional Water Plan. The medium case scenario used in this plan, is the "High Case" scenario used in the 2015 Regional Water Plan.[13] These County totals were then allocated to the four incorporated municipalities in the County as well as the remaining unincorporated areas (outside Tucumcari, Logan, San Jon, and House).

Finally, a high case scenario was developed relying on actual historical growth rates observed in the incorporated communities and unincorporated areas within Quay County. The high case scenario assumes growth rates as follows:

- Tucumcari - 9.6%/decade (equal to the growth rate from 1910 to 2000).
- Logan - 31.2%/decade (equal to the growth rate from 1960 to 2000).
- San Jon - 7.8%/decade (equal to the growth rate from 1990 to 2000).
- House – 0.0%/decade (projected to remain constant at 2010 population of 68).
- County Unincorporated - 1.4%/decade (equal to the growth rate from 1990 to 2000).

The census population for 2010 was excluded in calculating high case scenario growth rates as the effects of the severe drought beginning in late 1999 have constrained population growth or reduced population since that time.

Over the last two decades, only Logan has shown considerable population growth, while the other incorporated and unincorporated areas have shown declining populations. Increasing Logan population is projected to continue throughout the planning period. Tucumcari and San Jon could also see some growth due to their locations along Interstate 40 (aka. Route 66); however, there are currently no plans for large housing developments within either community. Ready transportation and tourism access certainly provides opportunity for manufacturing and commercial expansion within both Tucumcari and San Jon. As an example, the Tucumcari Mountain Cheese Factory recently announced a $4.5M expansion expected to create up to 20 new jobs. If these 20 jobs are filled by new residents relocating with their immediate families, this factory expansion could represent a one percent increase in Tucumcari population in a single

[13] Both the "Low" and "Medium" Case projections are from a presentation titled "Northeast Regional Water Plan Update Process 2014/2015," October 10, 2014.

year (which is comparable to the decadal growth rate adopted for the high case scenario).

Tucumcari Train Depot

Tucumcari Cheese Factory

Located just outside of Logan is the Ute Lake Ranch,[14] a master-planned community that encompasses almost 25,000 acres along the south shore of Ute Reservoir near Ute Lake State Park. There are two sections within this development. The estate lots portion includes 134 lots and the 12 Shores[15] portion includes 734 lots. Other developments located on or near Ute Reservoir include South Shore 1 (40 lots), South Shore 2 (33 lots), and Canadian River Bluffs (41 lots). Similar to the Ute Lake Ranch, there are only a few current homes in these developments. Potential buildout of these developments in the next several decades is generally consistent with the high case decadal growth rates adopted for Logan.

[14] http://www.utelakeranch.com/index.html

[15] http://www.12shores.com

12 Shores Entrance

South Shore Village

Homes in South Shore Village

Table 3-1 shows the values for the three population scenarios developed for Quay County and Figures 3-1 through 3-3 display these values graphically.

Table 3-1
Population Projections for Quay County

Low Case Population Scenario					
Entity	**2020**	**2030**	**2040**	**2050**	**2060**
Tucumcari	4,936	4,652	4,485	4,320	4,159
Logan	1,204	1,332	1,484	1,632	1,776
San Jon	210	194	182	171	160
House	56	48	42	36	30
County Unincorporated	2,193	2,074	2,007	1,941	1,876
County Total	***8,600***	***8,300***	***8,200***	***8,100***	***8,000***
Medium Case Population Scenario					
Entity	**2020**	**2030**	**2040**	**2050**	**2060**
Tucumcari	5,223	5,156	5,059	4,960	4,886
Logan	1,275	1,477	1,674	1,874	2,087
San Jon	223	215	205	196	188
House	59	53	47	41	36
County Unincorporated	2,321	2,299	2,264	2,228	2,204
County Total	***9,100***	***9,200***	***9,250***	***9,300***	***9,400***
High Case Population Scenario					
Entity	**2020**	**2030**	**2040**	**2050**	**2060**
Tucumcari	5,880	6,447	7,068	7,749	8,496
Logan	1,367	1,794	2,354	3,088	4,052
San Jon	233	251	271	292	315
House	68	68	68	68	68
County Unincorporated	2,385	2,419	2,453	2,488	2,523
County Total	***9,933***	***10,979***	***12,214***	***13,685***	***15,454***

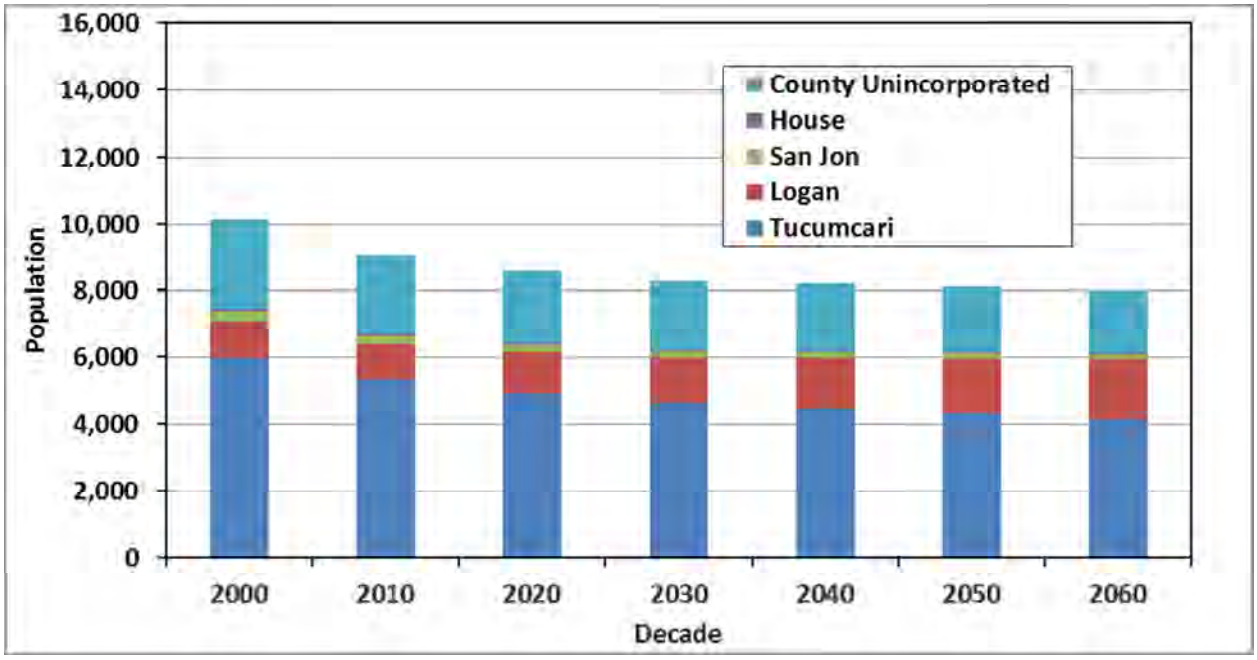


Figure 3-1.
Low Case Population Projection for Quay County

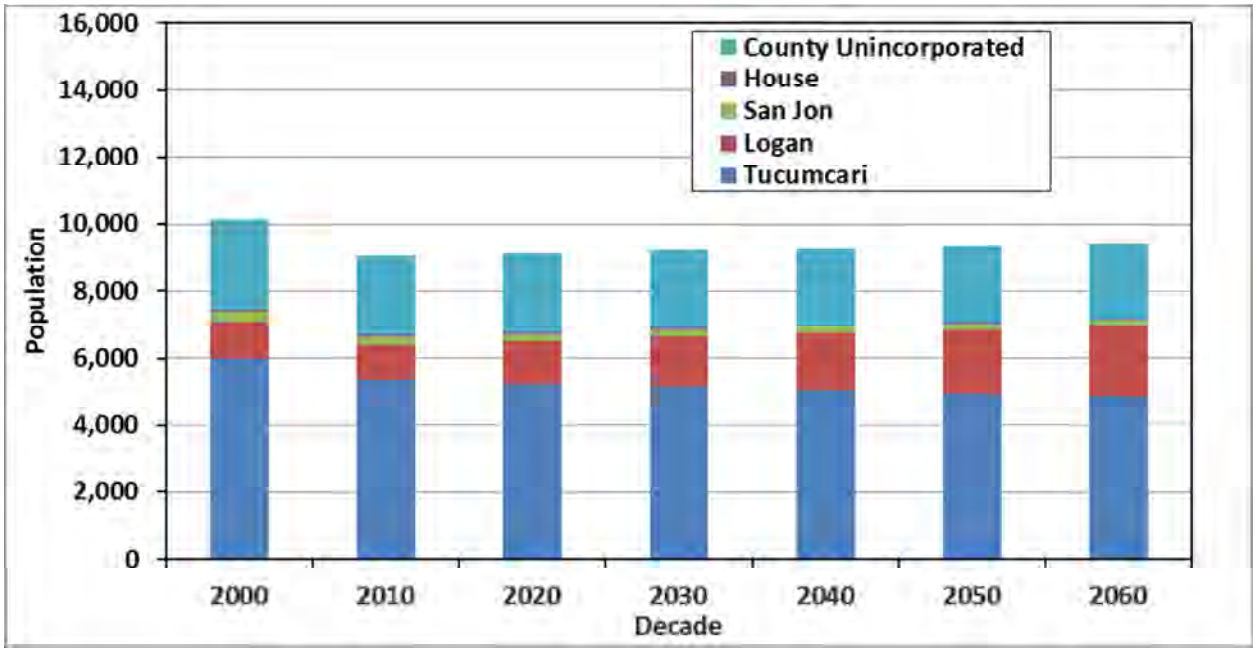


Figure 3-2.
Medium Case Population Projection for Quay County

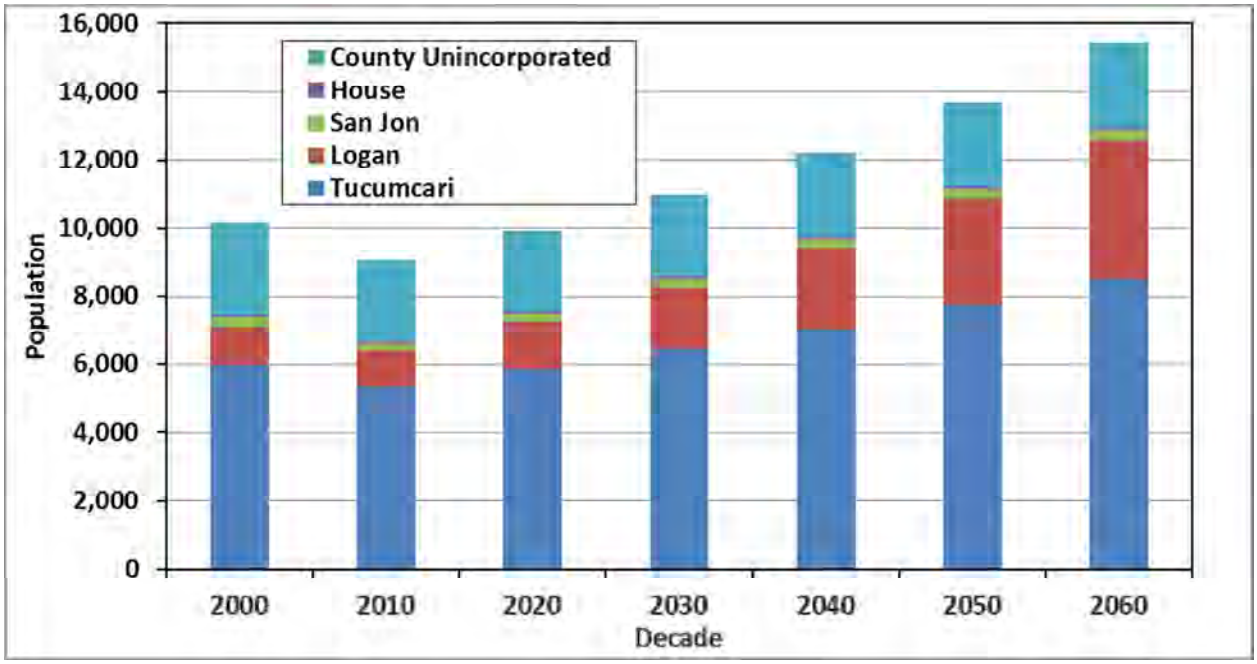


Figure 3-3.
High Case Population Projection for Quay County

3.2 Water Demand Projections

In order to calculate water demand projections, the population projections presented in the previous sub-section are multiplied by per capita water use rates. To determine these rates, averages of the gallons per capita per day (gpcd) values for 1990, 2000, and 2010 were calculated. These years were selected because of the availability of both water use and census population data. There are no discernable trends in per capita water use during the 1990-2010 period, so the average gpcd values are used throughout the projection period. The gpcd rates used are as follows:

- Tucumcari – 208;
- Logan – 308;
- San Jon – 192;
- House – 163; and
- County Unincorporated – 82.

It is important to note that these gpcd values take into account water use by travelers or non-resident populations (e.g., owners of seasonal or weekend residences). Quay County receives many travelers, tourists, and non-resident visitors with its location along the Interstate 40 corridor and proximity to Ute Reservoir and Conchas Reservoir and the recreational opportunities they provide. The water used by these visitors is included in historical production records of the incorporated communities even though the visitors are not included in their historical population data. This fact is evident in comparing the

per capita use rate for Logan with those for the other three incorporated communities. Hence, the per capita use rates used for water demand projections reflect water consumed by future visitors. Similarly, water demand projections reflect the implicit assumption that the recent historical ratio of visitor to permanent population is representative of the future.

Historic Route 66 Motel

Ute Lake State Park

Table 3-2 and Figures 3-4 through 3-6 show the water demand projections for each of the three scenarios. The values shown for Tucumcari in this table and these figures include 120 acft/yr of water demand from County Unincorporated to account for Tucumcari's sales to three entities located outside of the city. Based on local input, the High Case scenario water demand projections will be used for planning purposes.

Table 3-2.
Water Demand Projections for Quay County

Low Case Water Demand Scenario					
Entity	**2020**	**2030**	**2040**	**2050**	**2060**
Tucumcari	1,269	1,203	1,164	1,126	1,088
Logan	416	460	513	564	614
San Jon	45	42	39	37	34
House	10	9	8	7	6
County Unincorporated	81	70	63	57	51
County Total	***1,821***	***1,783***	***1,787***	***1,790***	***1,793***
Medium Case Water Demand Scenario					
Entity	**2020**	**2030**	**2040**	**2050**	**2060**
Tucumcari	1,336	1,320	1,298	1,275	1,257
Logan	440	510	578	647	721
San Jon	48	46	44	42	40
House	11	10	9	8	6
County Unincorporated	92	90	87	84	82
County Total	***1,927***	***1,977***	***2,016***	***2,056***	***2,107***
High Case Water Demand Scenario					
Entity	**2020**	**2030**	**2040**	**2050**	**2060**
Tucumcari	1,489	1,621	1,765	1,924	2,098
Logan	472	620	813	1,067	1,400
San Jon	50	54	58	63	68
House	12	12	12	12	12
County Unincorporated	98	101	104	107	111
County Total	***2,122***	***2,408***	***2,753***	***3,173***	***3,688***

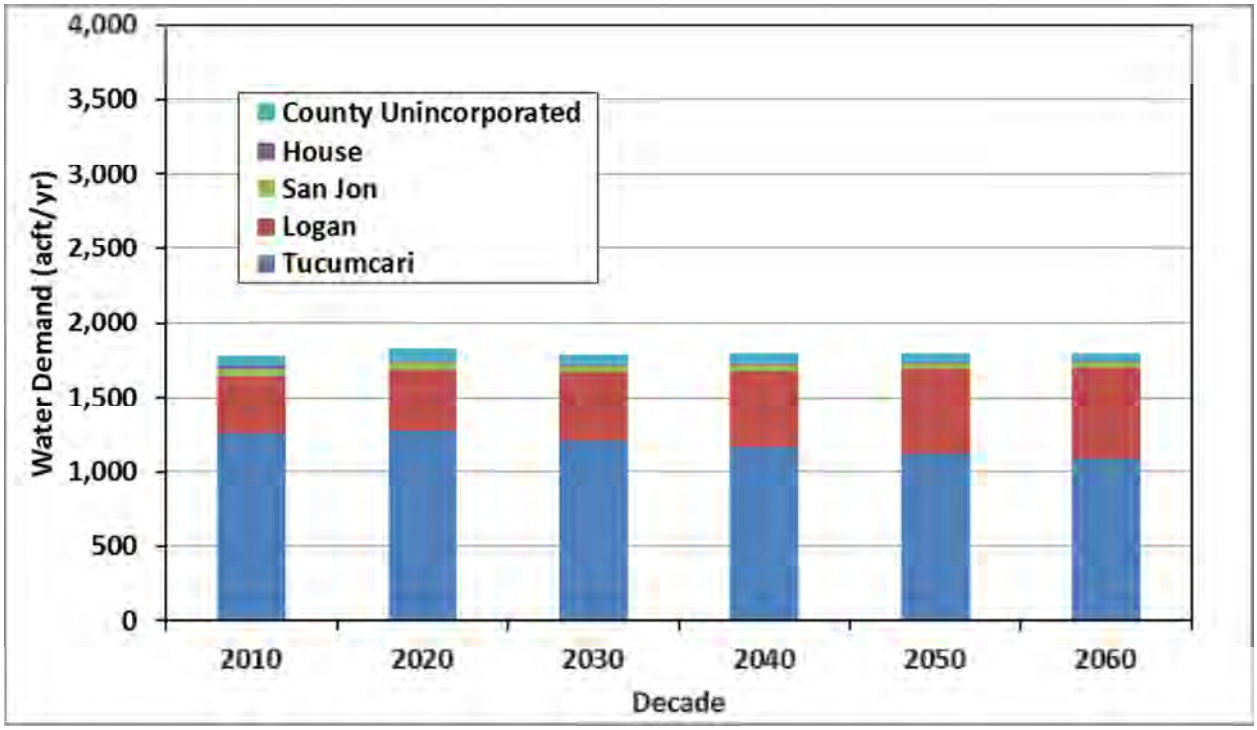


Figure 3-4.
Low Case Water Demand Projection for Quay County

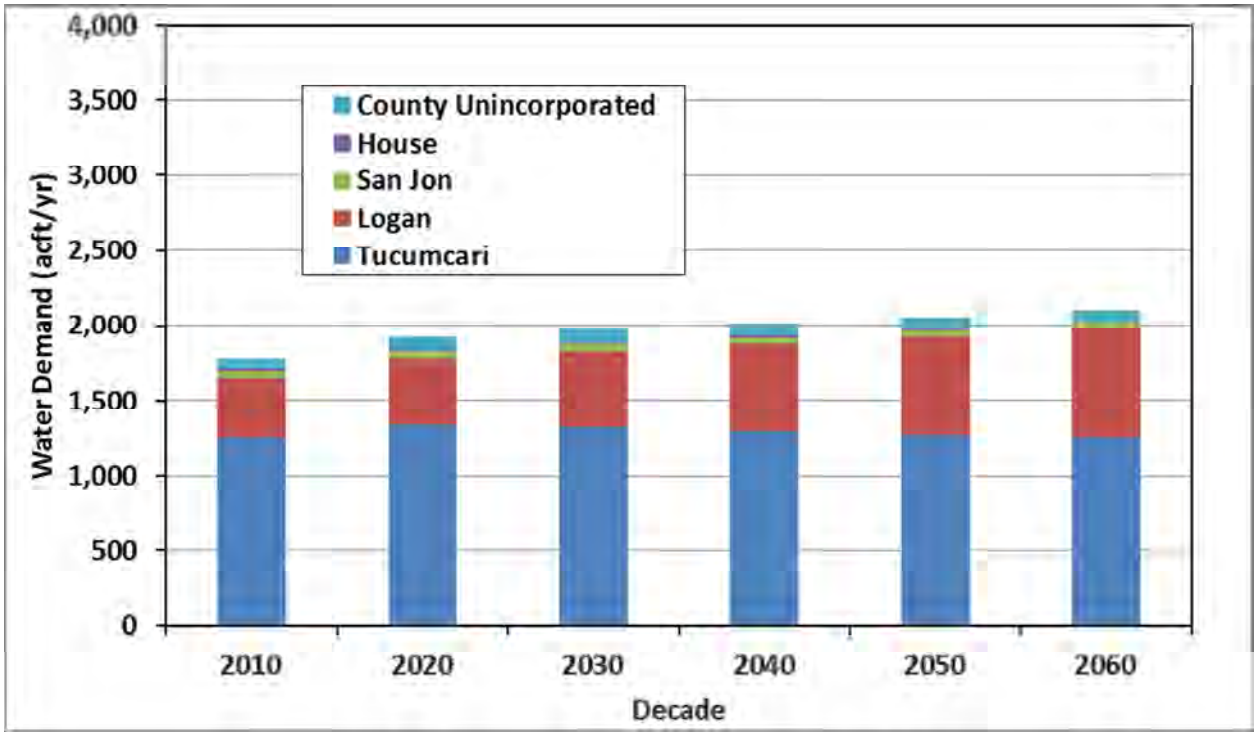


Figure 3-5.
Medium Case Water Demand Projection for Quay County

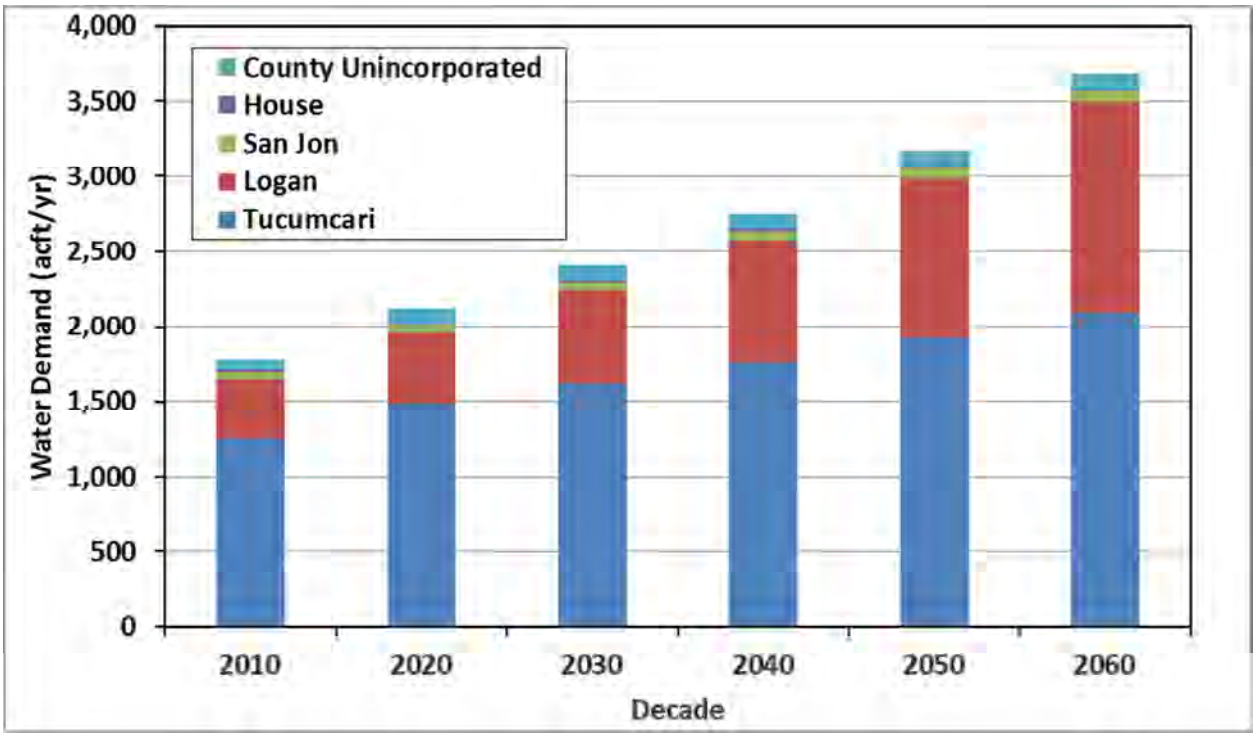


Figure 3-6.
High Case Water Demand Projection for Quay County

4 Water Supply Projections

This section presents groundwater and surface water supplies available to each of the four incorporated municipalities within Quay County. Available supplies for the remaining portions of the County are not quantified as part of this study.

4.1 Groundwater Supplies

Groundwater withdrawals in New Mexico are governed by the Office of the State Engineer and a permit is required which specifies the volume of water that may be withdrawn. The groundwater supplies shown herein for each entity were obtained from the Office of the State Engineer.

4.1.1 City of Tucumcari

The City of Tucumcari (Tucumcari) has historically relied on groundwater as its sole source of municipal supply. Tucumcari currently has 20 wells, although two of those wells are not in current use (highlighted in the table below). The wells located in the Hoover well field and the Metro well field draw water from the Entrada Sandstone formation. The remaining wells in the Town well field draw water from Alluvium deposits. Table 4-1 summarizes the wells currently used by Tucumcari. The total permitted capacity of the wells is 4,388 acft/yr (3,797 acft/yr, excluding the wells not currently in service).

Table 4-2 summarizes changes in depth to water for several USGS monitoring wells located in close proximity to Tucumcari. As can be seen from this table, water levels in the Entrada Sandstone and Alluvium formations have been increasing, suggesting that these formations can continue to serve as a stable supply source for the City.

Table 4-1.
Well Summary for the City of Tucumcari

Well Name	OSE Permit No.	Use	Capacity as Permitted	
			Annual acft/yr	Instantaneous gpm
Well #1	TU00017	MUN	160.0	160
Well #2	TU00016	MUN	155.0	182
Well #3	TU00035	MUN	125.0	110
Well #4	TU00031	MUN	97.0	140
Well #5	TU00030	MUN	194.0	115
Well #6	TU00029	MUN	145.0	160
Well #7	TU00027	MUN	155.0	170
Well #8	TU00028	MUN	155.0	185
Well #10	TU00033	MUN	194.0	260
Well #12	TU00024	MUN	300.0	410
Well #13	TU00020	MUN	402.0	405
Well #14	TU00021	MUN	300.0	
Well #15	TU00034	MUN	145.0	160
Well #16	TU00018	MUN	291.0	265
Well #17	TU00019	MUN	291.0	315
Well #18	TU00026	MUN	436.0	500
Well #19	TU00022	MUN	388.0	400
Well #20	TU00023	MUN	155.0	
Well #4 (old)	TU00032	MUN	300.0	
Well #6 (old)	TU00010	DOM	0.0	200
		Total Capacity	**4,388.0**	**3,637**

Source: New Mexico State Engineer's Office

Table 4-2.
Changes in Water Levels for Wells Located Near the City of Tucumcari

Aquifer	Well ID	Change in Water Level		
		Amount[a] (feet)	Period of record	
			Dates	No. of Years
Entrada Sandstone	350543103501401	+0.9	1988-1998	10
	350605103481701	+2.3	1988-2012	24
	351040103433602	+70.4	1952-2014	62
	351041103442201	+19.7	1983-2008	25
Alluvium	350916103380401	+1.3	1948-2012	64
	351126103423201	+3.6	1985-1998	13
	351231103421001	+1.5	1983-1998	15
Chinle Formation	351041103461901	-1.0	1952-1998	46
	351246103374801	-0.8	1983-2012	29
	351332103413501	-0.5	1988-1998	10
Morrison Formation	350950103481701	+5.0	1988-1999	11
	351158103455201	+2.2	1988-2000	12
Source: Data Available at http://nwis.waterdata.usgs.gov/nm/nwis/gwlevels				
[a] Positive numbers signify a rise in water levels. Negative numbers signify a drop in water levels.				

4.1.2 Village of Logan

The Village of Logan (Logan) is served by eight wells located inside and adjacent to the incorporated area (Table 4-3). Logan's water supply is drawn from an older alluvium deposit overlying the Chinle and Redondo formations. The Logan well field is adjacent to Ute Reservoir and, with the high transmissivity of the alluvium, is likely sustained to some degree by recharge of the aquifer from Ute Reservoir. The total permitted capacity of Logan's wells is 1,008 acft/yr.

Table 4-3.
Well Summary for the Village of Logan

Well Name	OSE Permit No.	Status	Capacity as Permitted	
			Annual acft/yr	Instantaneous gpm
Well #1	TU01329	Active	119.0	200
Well #2	TU01328	Active	46.0	90
Well #3	TU01326	Active	29.8	100
Well #4	TU01327	Active	65.0	50
Well #5	TU01325	Active	125.0	250
Well #6	TU01331	Active	150.0	270
Well #7	TU01330	Active	250.0	200
Well #8	TU01179	Active	223.0	100
		Total Capacity	**1,007.8**	**1,260**

Source: New Mexico State Engineer's Office

Changes in depth to water for proximate USGS monitoring wells are shown in Table 4-4. Logan obtains water from the Santa Rosa Sandstone, Chinle Formation, or alluvial aquifers; however, most their supply comes from the Santa Rosa Sandstone. USGS monitoring well data suggests that historical pumping of this aquifer has not caused a negative impact. Based on the most recent data, water levels in three of the four USGS wells completed in the Santa Rose Sandstone show an increase in water level, while the water level in the remaining well shows a 1.7 foot decline in 31 years (Table 4-4). The three monitoring wells completed in the Chinle Formation show increases in water levels of 0.7 feet in 15 years to 61.7 feet in 38 years. These water level data suggest that groundwater levels surrounding Logan are not declining, and are adequate to sustain current production capacity throughout the planning period.

Table 4-4.
Changes in Water Levels for Wells Located Near the Village of Logan

Aquifer	Well ID	Change in Water Level		
		Amount[a] (feet)	Period of record	
			Dates	No. of Years
Santa Rosa Sandstone	351844103254001	+13.0	1983-1998	15
	352149103284001	+46.5	1965-1998	33
	352149103264101	+22.8	1978-1998	20
	352307103274401	+11.4	1978-1998	20
Chinle Formation	351654103260701	+0.7	1983-1998	15
	351937103263102	+61.7	1960-1998	38
	352106103202401	+1.5	1988-1998	10
Source: Data Available at http://nwis.waterdata.usgs.gov/nm/nwis/gwlevels				
[a] Positive numbers signify a rise in water levels. Negative numbers signify a drop in water levels.				

4.1.3 Village of San Jon

The Village of San Jon (San Jon) well field near Porter draws water from shallow alluvium deposits overlying the Chinle Formation. San Jon has discontinued use of all wells due to water quality concerns and is obtaining water from Logan through a six-inch pipeline completed in 2004. San Jon has about 161 acft/yr in groundwater rights (Table 4-5).

USGS monitoring wells show declines in all four wells completed in the alluvial aquifer near San Jon, as well as one well completed in the Chinle Formation (Table 4-6). For the alluvial aquifer, these declines range from 1.4 feet in 10 years to 7.5 feet in 24 years (or 3.75 inches/year). This would indicate that water is being withdrawn faster than recharge; however, the decreases in water levels are not great. As stated above, San Jon no longer obtains municipal water supply from their wells due to water quality concerns.

Table 4-5.
Well Summary for the Village of San Jon

Well Name	OSE Permit No.	Use	Capacity as Permitted	
			Annual acft/yr	Instantaneous gpm
Well #1	TU01209	MUN	17.7	11
Well #2	TU01210	MUN	16.1	10
Well #3	TU01211	MUN	17.7	9
Well #4	TU01212	MUN	16.1	10
Well #20	TU01217	MUN	17.7	11
Well #21	TU01213	MUN	22.6	14
Well #22	TU01214	MUN	35.5	35
Well #23	TU01215	MUN	9.2	8
Well #24	TU01216	MUN	8.0	7
		Total Capacity	**160.6**	**115**

Source: New Mexico State Engineer's Office

Table 4-6.
Changes in Water Levels for Wells Located Near the Village of San Jon

Aquifer	Well ID	Change in Water Level		
		Amount[a] (feet)	Period of record	
			Dates	No. of Years
Alluvium	350303103212301	-6.25	1988-2003	15
	350347103173001	-1.43	1988-1998	10
	350808103224701	-2.44	1988-2003	15
	350833103230101	-7.47	1988-2012	24
Chinle Formation	350821103184201	-5.23	1988-1998	10
Source: Data Available at http://nwis.waterdata.usgs.gov/nm/nwis/gwlevels				
[a] Positive numbers signify a rise in water levels. Negative numbers signify a drop in water levels.				

4.1.4 Village of House

The Village of House (House) obtains its water from the Ogallala Formation and the aquifer is approximately 50 to 100 feet thick in this area. The well yield is about 400 gallons per minute (Table 4-7). Data from one USGS monitoring well located near the House well show that, over a 48 year period, the water levels have remained almost static, although there have been year-to-year variations during that time period (Table 4-8). This would seem to indicate that, at the current level of pumping, this source would remain a viable supply for House throughout the planning period.

Table 4-7.
Well Summary for the Village of House

Well Name	OSE Permit No.	Use	Capacity as Permitted	
			Annual acft/yr	Instantaneous gpm
Well #1	FS01129	MUN	250.0	400
		Total Capacity	**250.0**	**400**

Source: New Mexico State Engineer's Office

Table 4-8.
Changes in Water Levels for Wells Located Near the Village of House

Aquifer	Well ID	Change in Water Level		
		Amount[a] (feet)	Period of record	
			Dates	No. of Years
Ogallala	343848103555801	+0.13	1968-2013	45
Source: Data Available at http://nwis.waterdata.usgs.gov/nm/nwis/gwlevels				
[a] Positive numbers signify a rise in water levels. Negative numbers signify a drop in water levels.				

4.2 Surface Water Supplies

Surface water supplies for Quay County are available from both Conchas and Ute Reservoirs. Conchas Reservoir supplies most of the irrigation water used in Quay County, but does not deliver municipal supplies to Quay County. As stated previously, all entities participating in this study currently rely on groundwater as their sole source of municipal supply; however, Ute Reservoir could be a future source of supply for Quay County entities. The Eastern New Mexico Water Utility Authority (ENMWUA) has started the construction of an intake, including screens, tunnel, and pump forebay shaft for the planned Eastern New Mexico Water Rural Water System (ENMRWS).

ENMRWS Intake Construction Site

In 1997, the Ute Water Commission (UWC) entered into a contract with the New Mexico Interstate Stream Commission (NMISC) to maintain an option to purchase water stored in Ute Reservoir for beneficial consumptive uses. The UWC is a 12-member organization that includes the eight members of the ENMWUA. Pursuant to a Joint Powers Agreement, the annual supply from Ute Reservoir allocated to each member of the UWC is summarized in Table 4-9. The NMISC Ute Reservoir Yield Update completed in 1994, estimated the firm annual yield to be in the range of 18,000 acft/yr to 22,500 acft/yr through 2045.[16]

[16] Whipple, John J., *Memorandum: Ute Reservoir Yield Update*, New Mexico Interstate Stream Commission, December 1, 1994.

Table 4-9.
Ute Water Commission Allocations

Quay County Entities	
City of Tucumcari	6,000 acft
Village of Logan	400 acft
Village of San Jon	150 acft
Quay County	1,000 acft
ENMWUA Entities	
City of Clovis	12,292 acft
Village of Elida	50 acft
Village of Grady	75 acft
Village of Melrose	250 acft
City of Portales	3,333 acft
Town of Texico	250 acft
Curry County	100 acft
Roosevelt County	100 acft
Total Allocation	**24,000 acft**

A more recent firm yield study of Ute Reservoir completed by HDR Engineering, Inc. estimated the firm yield to be 18,800 acft/yr based on sediment accumulation through 2012. The firm yield is defined to be "the draft or withdrawal that lowers the water content in a reservoir from a full condition to a minimum level just once during the critical historical drought."[17] Assuming a firm yield value of 18,800 acft/yr and retaining the percentage share of the total allocation associated with each entity as shown in Table 4-9, new allocations could be as shown in Table 4-10.

[17] Maidment, D.R., Editor in Chief, "Handbook of Hydrology," McGraw-Hill, Inc., 1993.

Table 4-10.
Ute Water Commission Allocations (Updated Based on Firm Yield Study)

Quay County Entities	
City of Tucumcari	4,700 acft
Village of Logan	313 acft
Village of San Jon	118 acft
Quay County	783 acft
ENMWUA Entities	
City of Clovis	9,629 acft
Village of Elida	39 acft
Village of Grady	59 acft
Village of Melrose	196 acft
City of Portales	2,611 acft
Town of Texico	196 acft
Curry County	78 acft
Roosevelt County	78 acft
Total Allocation	**18,800 acft**

Ute Reservoir

5 Needs Analysis and Water Supply Alternatives

This section first presents the projected needs of each incorporated community in Quay County for additional water supply based on the "High Case" demands presented in Section 3 and the existing supplies presented in Section 4. The needs analysis only includes supplies that are readily usable by the entities. In this case, only the groundwater supplies are included as the infrastructure is in place to deliver these supplies to the entity. No surface water from Ute Reservoir was considered to be a current municipal water supply as additional infrastructure would be required in order to utilize this supply. This section also documents potential water supply alternatives for each incorporated community.

5.1 Needs Analysis

5.1.1 City of Tucumcari

Tucumcari's projected water demands are 1,489 acft/yr in 2020, increasing to 2,098 acft/yr in 2060 (Table 5-1 and Figure 5-1). This includes demands for the three water cooperatives currently served by Tucumcari (i.e. RAD, Liberty, and Hills Village). The dependable groundwater supplies available to Tucumcari are estimated to be 3,797 acft/yr. Based on comparison of projected demands and current groundwater supplies, Tucumcari is not expected to have a water shortage on an average day or a peak day demand basis during the planning period.

Table 5-1.
Needs Analysis for the City of Tucumcari

Tucumcari	2020	2030	2040	2050	2060
Current Supplies	3,797	3,797	3,797	3,797	3,797
Water Demand*	1,489	1,621	1,765	1,924	2,098
Surplus/(Shortage)	2,308	2,176	2,032	1,873	1,699

* Includes the demand for RAD, Liberty, and Hills Village.

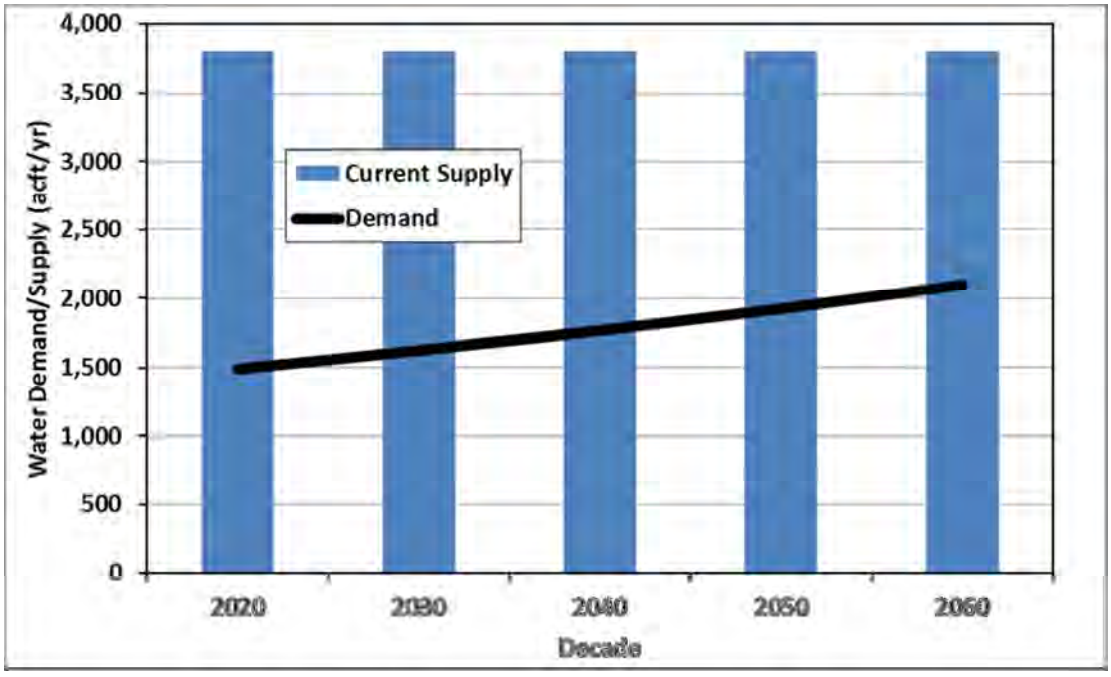


Figure 5-1.
Demand and Supply Comparison for the City of Tucumcari

5.1.2 Villages of Logan and San Jon

Logan's projected water demands are 523 acft/yr in 2020, increasing to 1,468 acft/yr in 2060 (Table 5-2 and Figure 5-2). These amounts include demands for San Jon, which are 51 acft/yr in 2020, increasing to 68 acft/yr in 2060. The dependable groundwater supplies available to Logan are estimated to be 1,008 acft/yr (excluding San Jon's available groundwater supply which has experienced water quality issues). Logan is projected to need additional water supplies on an average day demand basis during the planning period (i.e. in approximately 2045). By 2060, Logan's projected needs for additional supply may exceed its current 400 acft allocation from Ute Reservoir. Additional supply sources or facilities may be necessary to meet peak day demands well in advance of 2045. The capacity of the existing transmission system between Logan and San Jon, however, is sufficient to meet projected demands for San Jon and some potential development between the villages.

Table 5-2.
Needs Analysis for the Village of Logan

Logan	2020	2030	2040	2050	2060
Current Supplies	1,008	1,008	1,008	1,008	1,008
Water Demand*	523	674	872	1,130	1,468
Surplus/(Shortage)	485	334	136	(122)	(460)

* Includes the demand for the Village of San Jon.

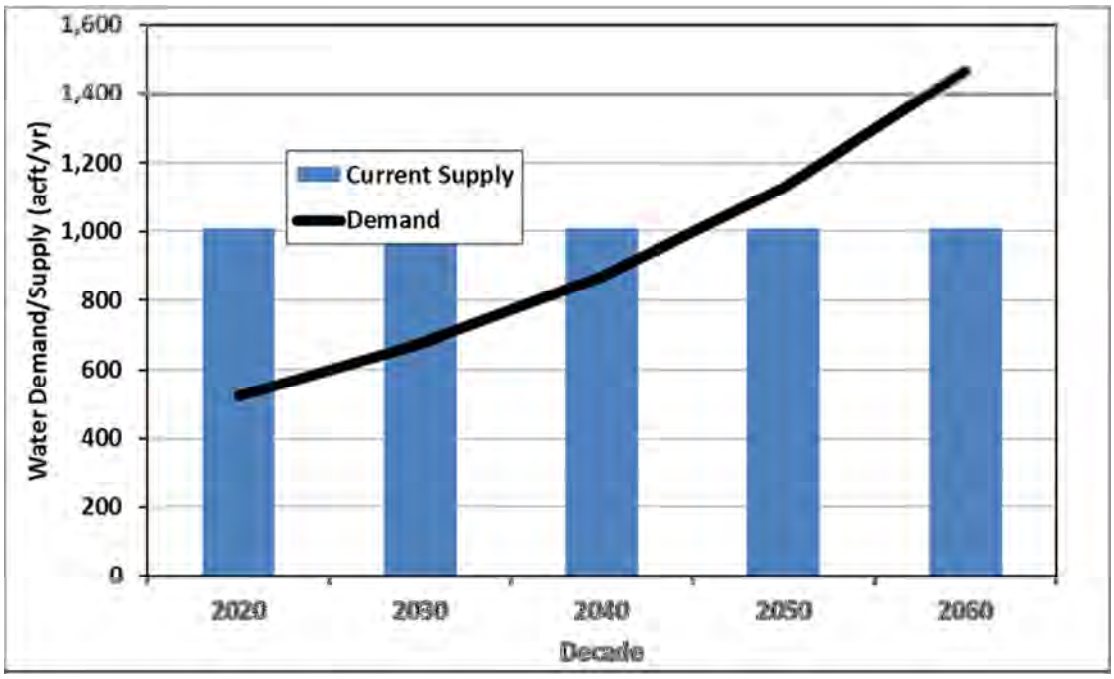


Figure 5-2.
Demand and Supply Comparison for the Village of Logan

Portion of Logan on the North Shore of Ute Reservoir

San Jon from IH 40

5.1.3 Village of House

House's projected water demands are 12 acft/yr in 2020, and are projected to remain constant during the planning period. (Table 5-3 and Figure 5-3). The dependable groundwater supplies available to House are estimated to be 250 acft/yr. House is not projected to have a water shortage on an average day or a peak day basis during the planning period.

Table 5-3.
Needs Analysis for the Village of House

House	2020	2030	2040	2050	2060
Current Supplies	250	250	250	250	250
Water Demand*	12	12	12	12	12
Surplus/(Shortage)	238	238	238	238	238

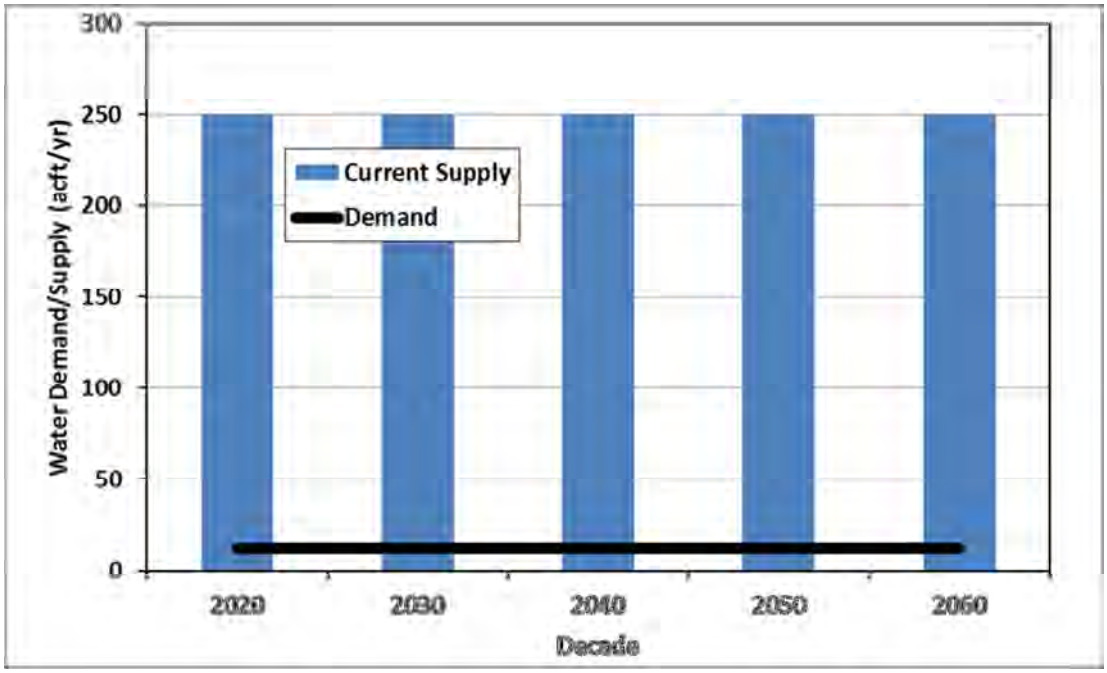


Figure 5-3.
Demand and Supply Comparison for the Village of House

5.2 Water Supply Alternatives

5.2.1 General Water Supply Alternatives

There are several water supply alternatives that need not be specific to any one entity. These include developing and implementing water conservation plans, water loss control programs, wellhead protection planning, and internal infrastructure upgrades.

Water Conservation Plans

State of New Mexico Code 72-14-3.2 requires a water conservation plan to be completed by any municipality that provides at least 500 acft/yr of water. Tucumcari is the only entity in Quay County that has formally developed a water conservation plan (and it is the only entity required to do so by New Mexico Code). This code requires that all water conservation plans contain at least the following:

- Water-efficient fixtures and appliances, including toilets, urinals, showerheads, and faucets;
- Low-water use landscaping and efficient irrigation;
- Water-efficient commercial and industrial water use processes;
- Water reuse systems for both potable and non-potable water;
- Distribution system leak repair;
- Dissemination of information regarding water use efficiency measures, including public education programs and demonstrations of water saving techniques;

- Water rate structures designed to encourage water use efficiency and reuse in a fiscally responsible manner; and
- Incentives to implement water use efficiency techniques, including rebates to customers or others, to encourage the installation of water use efficiency and reuse measures.

The remaining water purveyors within Quay County are encouraged to develop and implement water conservation plans, even if not required by the State to do so. These plans should be formalized through the village Code of Regulations to ensure that any water use restrictions and/or penalties in the plans can be enforced.

Table 5-4 provides an estimate of the potential water savings associated with some of the most common water conservation incentives offered by municipal water systems for single family (SF) and multi-family (MF) residential and commercial customers. This table also provides an estimated cost to the utility to implement each measure, including the administrative costs of the program. For example, is it estimated that it would cost a utility $85 per single-family toilet retrofit completed. This includes the cost of the rebate to the customer as well as the cost of administering the program. Finally, a cost per acft saved is provided. This cost is derived by amortizing the cost of the measure over its expected useful life. It is estimated that each acft of water conserved through single-family toilet rebates costs the utility $414. This type of estimate can be used to determine which type(s) of conservation activities are best suited to a specific entity.

Table 5-4.
Estimated Savings and Costs for Various Water Conservation Measures

Water Efficiency Measure	Costs Per Measure	Water Saved (gpd)	Cost per Acft (Amortized)
Residential			
SF Toilet Retrofit	$ 85	13.0	$ 414
SF Showerheads and Aerators	$ 7	6.8	$ 119
SF Clothes Washer Rebate	$ 120	13.8	$ 822
SF Irrigation Audit - High User	$ 70	50.0	$ 459
SF Rainwater Harvesting	$ 250	21.6	$ 940
SF Rain Barrels	$ 45	2.3	$ 1,604
MF Toilet Retrofit	$ 75	12.0	$ 408
MF Showerheads and Aerators	$ 4	5.5	$ 76
MF Clothes Washer Rebate	$ 120	30.0	$ 553
MF Irrigation Audit	$ 150	125.0	$ 393
MF Rainwater Harvesting	$ 2,050	205.7	$ 808
Commercial			
Commercial Toilet Retrofit	$ 150	26.0	$ 365
Coin-Operated Clothes Washer Rebate	$ 170	24.0	$ 522
Irrigation Audit	$ 150	125.0	$ 393
Commercial Rainwater Harvesting	$ 2,050	205.7	$ 808

Source: Quantifying the Effectiveness of Various Water Conservation Techniques in Texas, GDS & Associates.

Further analysis was done to estimate future conservation potential for each incorporated entity in Quay County using the water savings presented in Table 5-4. This analysis assumed that toilet retrofit, showerhead and aerator retrofit, and clothes washer rebate programs were undertaken by each entity. It was further assumed that these programs would be phased in over time, resulting in a 2 gallons per person per day savings in 2020, increasing to 16 gallons per person per day of savings by 2060. These savings rates were then applied to the High Case population projections to determine the potential water conservation volumes for each incorporated area (Table 5-5). This table shows that potential savings for Tucumcari are 13 acft/yr in 2020, increasing to 152 acft/yr by 2060. Likewise, potential savings for Logan are 3 acft/yr in 2020, increasing to 73 acft/yr by 2060. These values represent potential reductions in the projected demands shown in Section 3.2.

Table 5-5.
Water Conservation Savings Potential for Quay County (acft/yr)

Entity	2020	2030	2040	2050	2060
Tucumcari	13	29	63	139	152
Logan	3	8	21	55	73
San Jon	1	1	2	5	6
House	0	0	1	1	1

Water Loss Control Programs

A water loss control program helps to identify real or physical losses of water from the water system and apparent losses (i.e. water that is consumed, but not accounted for). Real losses represent costs to a water system through the additional energy and chemical usage required to treat the lost water. Apparent losses represent a loss of revenue because water is consumed, but not billed. Once a water system identifies these real and apparent losses through a water loss control program, it can implement technology and procedures to reduce them. This can reduce or defer the need for costly new facilities, upgrades, and expansions associated with increased demand. By reducing the amount of water lost, the recovered water can be sold to consumers, generate more revenue, and meet water demands. Water loss control programs are often the most economical solution to increasing demand, especially in the short term.

A water loss control program consists of three major steps. The critical first step is the water audit. A water audit identifies and quantifies the water uses and losses from a water system. The intervention process addresses the findings of the water audit through implementation of controls to reduce or eliminate water losses. The evaluation step uses performance indicators to quantify the success of the chosen intervention actions. Utilizing the standard terminology and the three steps of a water loss control program, systems can determine their baseline water use and loss, prioritize and implement water efficiency projects and operational changes, and evaluate and continuously improve their water loss management (Figure 5-4).

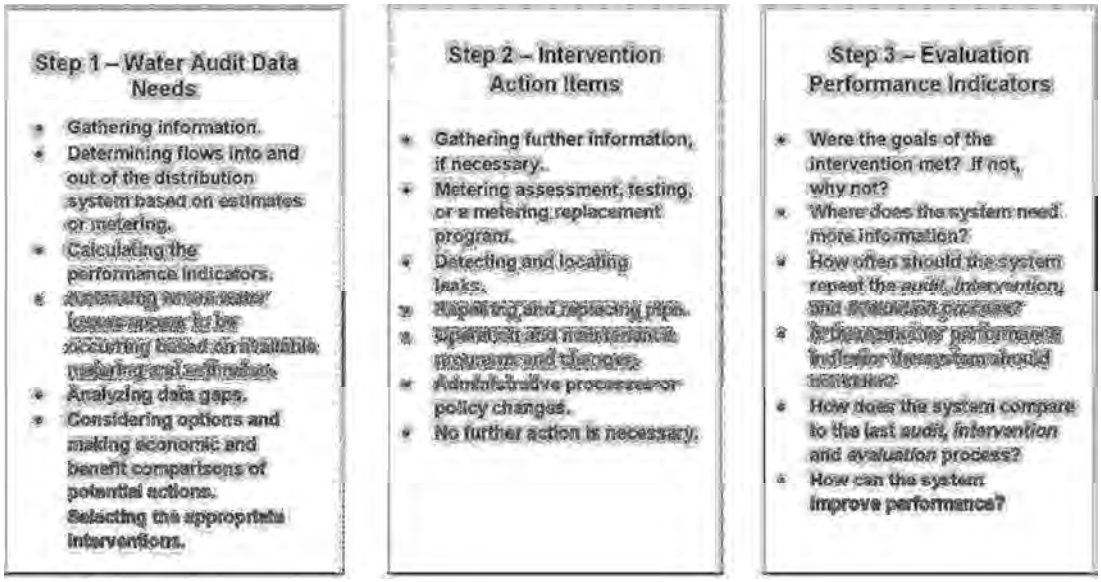


Figure 5-4.
Summary of Data Needs, Action Items, and Performance Indicators of a Water Loss Program

Water meters, both at the source and the service connection, are very important for all aspects of the water supply operations and make accurate auditing possible. They make it possible to charge customers based upon the quantities of water that the customers consume. They record usage and make billing fair for all customers. They can encourage conservation by making customers aware of their usage as well as help detect leaks and establish accountability. Meter records provide historical demand and customer use data that is used for planning purposes to determine future needs. Systems with unmetered water should consider metering these uses to address water loss in the system.

Wellhead Protection Plans

In this part of the New Mexico, with communities relying in part on shallow groundwater as an important source of water supply, protecting that supply from contamination is very important. Each of the four communities is encouraged to develop and maintain a wellhead protection program, if one does not already exist. The objective of these programs is to identify point sources and nonpoint sources of potential contamination to drinking water sources. For example, a point source may be a discharge pipe or a leaking septic system. Examples of nonpoint sources may be chemically treated agricultural land or even disturbed land on a construction site.

Key elements that should be part of a wellhead protection plan include:

- Identification and maps of the areas that influence water sources;
- Inventory of documented and potential contamination sources within the area of influence;
- Analysis of the likelihood that contamination could occur;
- Analysis of contamination impact severity; and

- Prioritization of contamination threats and vulnerabilities based on analysis.

Developing the plan will normally require a project team including representatives from not only the affected water system, but also agriculture/ commercial/ industrial/ development businesses, any local, state, or federal entities with authority to make regulatory or land use decisions in the source water protection areas, and other groups as deemed appropriate.

Internal Infrastructure Needs

During the planning period, some entities may need to upgrade or expand their existing infrastructure to accommodate growth (most notably, the Village of Logan and the City of Tucumcari). This may include adding more water storage facilities or obtaining additional water supplies to meet peak and average day needs. All entities should continue to monitor internal infrastructure and replace aging or leak-prone assets to help control water losses.

Wastewater Reuse

Two entities (Logan and Tucumcari) currently discharge wastewater in amount that may be practical to reuse for either industrial or irrigation supplies. It is estimated that Logan discharges approximately 68 acft/yr to evaporative beds, while Tucumcari discharges approximately 500 acft/yr.

5.2.2 Entity Specific Supply Alternatives

These are examples of entity specific water supply alternatives potentially applicable to meet future needs in Quay County.

Supply from Ute Reservoir

Comparison of High Case demand projections and current supplies suggests that water needs may occur during the planning period, particularly in Logan and the planned developments between Logan and Tucumcari. More specifically, Logan could have long-term needs for water supply in addition to its 400 acft/yr allocation from Ute Reservoir and shorter-term needs for additional capacity to meet peak day demands (see Section 5.1.2). Timely construction of additional wells or Ute Reservoir intake facilities with surface water treatment and distribution facilities may become important for Logan. Tucumcari, on the other hand, appears to have sufficient groundwater supplies to meet long-term demands (see Section 5.1.1). Finally, buildout of Ute Lake Ranch and other planned developments on the south side of Ute Reservoir could be supplied by Logan, Tucumcari, and/or through use of the 3,750 acft/yr portion of Tucumcari's 6,000 acft/yr Ute Reservoir allocation contracted to Ute Lake Ranch. In any case, long-term water supply service to these developments will likely require development of additional water supplies.

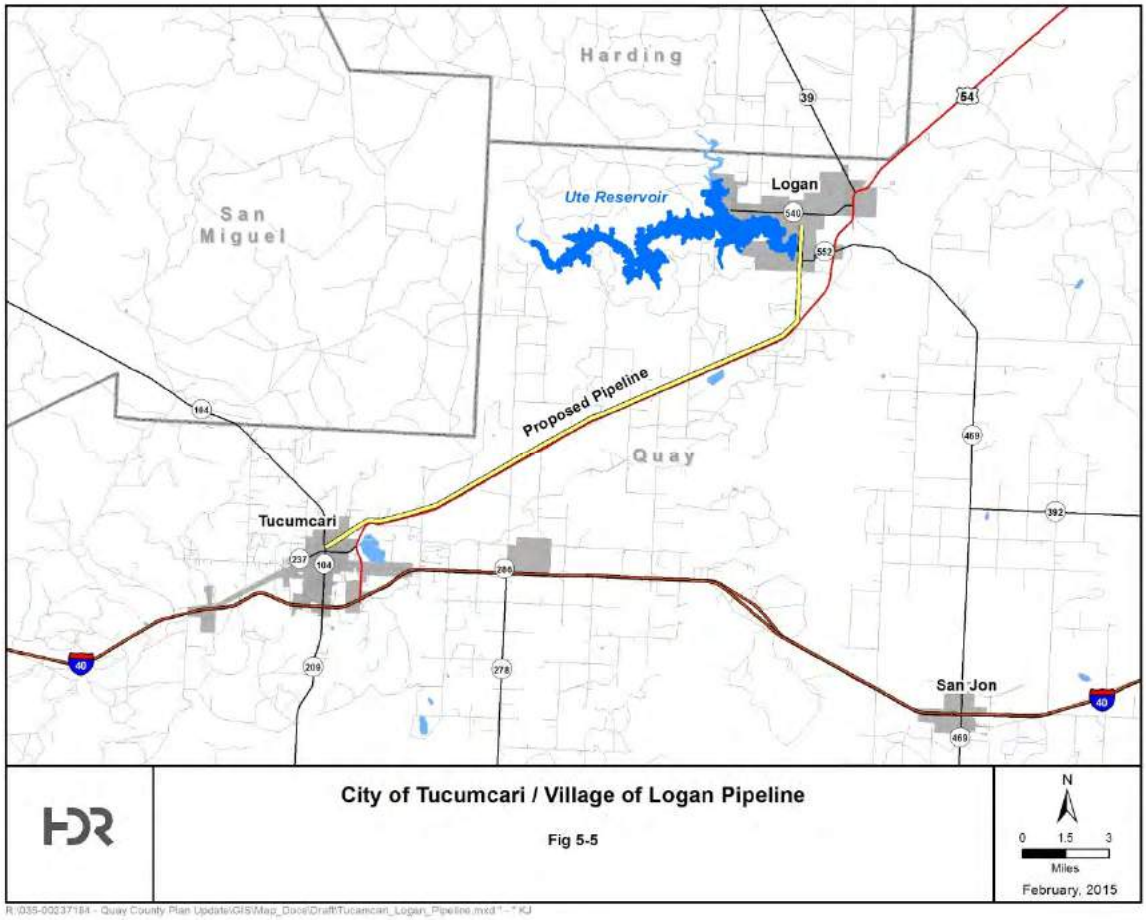
Even if future water demands are more in line with the Medium or Low Case projections presented herein, there are other reasons to obtain all or a portion of each entity's future water supply from Ute Reservoir. For example, if groundwater quantity depletion or quality degradation became matters of concern, the water suppliers could supplement with or transition to surface water supplies.

Tucumcari / Logan Pipeline

This strategy would involve constructing an approximately 22-mile pipeline between Logan and Tucumcari (Figure 5-6). This pipeline could be constructed to provide transmission capacity in either direction allowing both entities to share available water supplies with one another and intervening developments. This would ensure greater water supply reliability for both systems and provide the flexibility for one or both entities to serve connections along the pipeline route (Highway 54) on a short- or long-term basis. If this pipeline were constructed, Tucumcari, Logan, and San Jon would all be connected by pipelines, thus forming a regional water system. Water supply for potential future growth could be accommodated by intake facilities and a surface water treatment plant at Ute Reservoir.

Logan / San Jon Pipeline

This strategy would involve providing service to additional customers along the existing pipeline between the two communities. In addition, the pipeline could be extended to reach additional customers south of San Jon. Projections and local input suggest a limited number of new customers; however, this would certainly be an option for those rural customers seeking to connect to a centralized water supply system, or having quality or quantity issues with their existing groundwater supplies.



Storage Tank on Existing Logan / San Jon Pipeline

6 Public Involvement in Plan Development

Leaders responsible for management of water supplies in Quay County that have been involved in the development of this 40-year water plan update are listed and acknowledged in Section 1.3 of this document. HDR representatives met with many of these leaders personally and toured key facilities during a December 11, 2014 visit. Representatives of Quay County, Tucumcari, Logan, San Jon, and David Frank with 12 Shores at Ute Lake each provided input concerning population and water use trends as well as opportunities for future population and economic growth. Representatives from Tucumcari, Logan, and San Jon also provided data on available water supplies and local water quality issues that could affect future use of these supplies.In addition, HDR representatives met with Rex Stall, who operates Ute Dam, Franklin McCasland of the Arch Hurley Conservation District (by phone), and several representatives of the US Army Corps of Engineers at Conchas Reservoir. These individuals provided hydrologic and other relevant data regarding reservoir and canal operations.

Two public meetings were held on March 9, 2015 to receive input from the public concerning the draft 40-year water plan. The first of these meetings was held in Tucumcari during the Quay County Commissioners meeting (minutes included in Appendix A) and the second was held in the Logan Community Center immediately after the Logan City Council meeting (sign-in sheet included in Appendix B). During both of these meetings, input was received from the public, including elected officials from the incorporated areas. This input is reflected in the final version of this plan where appropriate.

Appendix A – Minutes of Quay County Commissioners Meeting (March 9, 2015)

REGULAR SESSION-BOARD OF QUAY COUNTY COMMISSIONERS

March 9, 2015

9:00 a.m.

BE IT REMEMBERED THE HONORABLE BOARD OF QUAY COUNTY COMMISSIONERS met in regular session the 9th of March, 2015, at 9:00 a.m. at the Commission Chamber, Tucumcari, New Mexico for the purpose of taking care of any business that may come before them.

PRESENT & PRESIDING:
Franklin McCasland, Chairman
Sue Dowell, Member
Mike Cherry, Member
Richard Primrose, County Manager
Veronica Marez, Quay County Clerk

OTHERS PRESENT:
Larry Moore, Quay County Road Supervisor
Vic Baum, Quay County Assessor
Stephen Hansen, Quay County Sun
Sam Vaughn, HDR
Grady Reid, HDR
Zac Stein, HDR
Russell Braziel, KTNM Radio Station
Cheryl Simpson, Quay County Manager's Office
Larry Wallin, Village of Logan Manager
Russell Ferrer, Village of Logan Council
Jared Langenegger, City of Tucumcari Manager
Robert Lumpkin, City of Tucumcari Mayor

The meeting was called to order by Chairman McCasland. Vic Baum led the Pledge of Allegiance.

A MOTION was made by Sue Dowell, SECONDED by Mike Cherry to approve the minutes from the February 27, 2015 regular commission meeting. MOTION carried. Copy of said minutes is attached and made a part of these minutes.

Commissioners Voted:

McCasland – "ABSTAINED" Dowell – "YES" Cherry –"YES"

A MOTION was made by Mike Cherry, SECONDED by Sue Dowell to approve the agenda. MOTION carried. Copy of said agenda is attached and made a part of these minutes.

Commissioners Voted:

McCasland – "YES" Dowell – "YES" Cherry –"YES"

PUBLIC COMMENT: None

PUBLIC HEARING:

Chairman McCasland called the Public Hearing to order at 9:05 a.m.

Sam Vaughn, HDR gave an overview of Quay County's 40- Year Water Plan. Copy of said overview is attached and made a part of these minutes.

Zac Stein, HDR gave an overview on Ute Reservoir Firm Yield Study. Copy of said overview is attached and made a part of these minutes.

Robert Lumpkin , City of Tucumcari Mayor inquired about changes to Yield Study. Zac Stein informed Lumpkin that the Yield Study is based on facts and data and addressed his question.

Chairman McCasland closed the Public Hearing to order at 10:15 a.m.

Chairman McCasland requested a 10 minute break. Time noted 10:15 a.m.

ONGOING BUSINESS: None

OLD BUSINESS: None

NEW BUSINESS:

Larry Moore, Quay County Road Superintendent presented the following report.

1. Presented blade report.
2. LGRF is due March 16, Moore is preparing paper work and needs Primrose approval.
3. Certified Road Mileage is due April 1.
4. Crews are blading roads.
5. Crews have finished 1.4 miles on Quay Rd U.
6. Primrose and Moore attended the RPO meeting in Las Vegas last week for the LGRF and Permit training.

Richard Primrose gave the following County Manager's Report:

Requested approval of 2014-2015 Resolution No. 30 Transfer of Budget for LEPF Fund. A MOTION was made by Sue Dowell, SECONDED Mike Cherry to approve Resolution. MOTION carried. Copy of said Resolution is attached and made a part of these minutes.

Commissioners Voted:

McCasland – "YES" Dowell – "YES" Cherry –"YES"

CORRESPONDENCE:

1. Surface Water Quality Bureau Community meeting Tuesday, March 10th at Mesalands Community College.
2. Received a letter from Senator Pete Campos informing us of what is going on at the Legislature.
3. Tucumcari Tourism Working Group will be meeting on Monday, March 9, 2015 at 6:30 pm at City Hall.
4. Mesalands 17th Annual Iron Pour is set for March 8-14.
5. Presented the monthly RPHCA report.
6. Wednesday, March 18th, 2015 at 10:00 am in the Liberty room at the Tucumcari Convention Center, a meeting will be held for stakeholders and interested public to begin developing the Ute Reservoir Watershed-Based Plan for water quality restoration.
7. Primrose invited Commissioners to the dinner for NMDOT Commissioner on March 18 at 6:00 a.m. at the Convention Center and the meeting will be held on March 19 at 8:30 a.m. at Convention Center.
8. Next Commission meeting on March 23 will be held in Nara Visa.

CHECKS WERE REVIEWED.

A MOTION was made by Sue Dowell, SECONDED by Mike Cherry to approve the expenditures as presented. MOTION carried. A copy of the expenditure report is attached and made a part of these minutes.

Commissioners Voted:

McCasland – "YES" Dowell – "YES" Cherry –"YES"

Under Other Business That May Arise During the Commission Meeting and/or Comments from the Commissioners. NONE

A MOTION was made by Mike Cherry, SECONDED by Sue Dowell, to go into executive session pursuant to the Section 10-15-1(H)7. The New Mexico Open Meetings Act to Discuss Threatened or Pending Litigation. Pursuant to Section 10-15-1(H)2. The New Mexico Open Meetings Act to Discuss Limited Personnel Matters. MOTION carried Dowell voting "aye", Cherry voting "aye", McCasland voting "aye".

Time noted 11:00 am.

----------EXECUTIVE SESSION----------

A MOTION was made by Mike Cherry, SECONDED by Sue Dowell that only pending personnel matters and threatened or pending litigation was discussed during Executive Session

and no action was taken. MOTION carried McCasland voting "aye", Cherry voting "aye", Dowell voting "aye".

Return to regular session. Time noted 11:55 a.m.

There being no further business, a MOTION was made by Sue Dowell, SECONDED by Mike Cherry to adjourn the regular meeting of the Board of Quay County Commissioners until the next regular meeting set for March 23, 2015 in Nara Visa unless sooner called. The Commissioners announced they would be having lunch at Del's and all those in attendance were invited. MOTION carried.

Commissioners Voted:

McCasland – "YES" Dowell – "YES" Cherry –"YES"

Time noted 12:00 p.m.

BOARD OF QUAY COUNTY COMMISSIONERS

Franklin McCasland, Chairman

Sue Dowell, Member

Mike Cherry, Member

ATTEST:

Veronica Marez, Quay County Clerk

Appendix B – Sign-in Sheet for Pubic Meeting in Logan (March 9, 2015)

Project:	Computed:	Date:
Subject:	Checked:	Date:
Task:	Page:	of:
Job #:	No:	

MARCH 9, 2015
6 PM @
LOGAN CIVIC CENTER

PUBLIC MEETING IN LOGAN
QUAD CO 40-YR PLAN UPDATE
UTE RESERVOIR FIRM YIELD STUDY

PARTICIPANTS

NAME	ADDRESS	PHONE
Marsha Reid	610 Bass Aly	487-3732
Rosemarie Lower	707 Cougar	487-2816
Apolonio Lopez	716 Vigil St, Logan	403-7348
Russell Lamm	PO Box 175, Logan	403-8890
Robert Bradshaw	PO Box 6, Logan	487-2961
TJ Smith	PO Box 164, Logan	403-7500
Robert Lumpkin	Tucumcari	403-8909
Richard Dahl	PO Box 56 Logan	925-683-8095
FRANCES DAHL	P.O. Box 56 Logan	"
BEN NEWTON	6009 540 Loop	487-2678
DAVID BABB	PO BOX 396	403-8220
Larry Wallin	Box 7 Logan	487-2239
SAM VAUGH	AUSTIN, TEXAS (HDR)	(512) 912-5142
ZACH STEIN	AUSTIN, TEXAS (HDR)	(512) 498-4702
GRADY REED	AUSTIN, TEXAS (HDR)	(512) 912-5174