New Mexico

WATER USE BY CATEGORIES 2010

NEW MEXICO OFFICE OF THE STATE ENGINEER TECHNICAL REPORT 54

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WATER USE BY CATEGORIES
2010

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EXECUTIVE SUMMARY

The *New Mexico Water Use by Categories* report (Report) is prepared once every five years by the Water Use and Conservation Bureau of the New Mexico Office of the State Engineer. The purpose of this Report is to provide the public with the most comprehensive, current, and useful water use data available.

The Report contains statewide water use data for the 2010 calendar year. Water withdrawals in New Mexico counties and river basins were tabulated for nine water use categories:

1. Public Water Supply
2. Self-Supplied Domestic
3. Irrigated Agriculture
4. Self-Supplied Livestock
5. Self-Supplied Commercial
6. Self-Supplied Industrial
7. Self-Supplied Mining
8. Self-Supplied Power
9. Reservoir Evaporation

Each water use category is defined in the chapters of this Report. The procedures used to quantify withdrawals are presented in a step-by-step format. Water use tables, located in **Appendix B** and organized by county and river basin, provide details on the state's water use.

State Summary

The population of New Mexico increased from 1,968,353 in 2005 to 2,059,179 in 2010, an increase of 90,826, or almost 5%.

In 2010, withdrawals for all water use categories combined totaled 3,815,945 acre-feet (AF). Surface water accounted for 2,041,844 AF (53.51%) of the total withdrawals, and groundwater accounted for 1,774,101 AF (46.49%) of the total withdrawals. A summary of withdrawals for 2010 by category and source are provided below.

Public Water Supply accounted for 317,410 AF (8.32%) of the total withdrawals, consisting of:

- 81,114 AF (25.55%) of surface water.
- 236,296 AF (74.45%) of groundwater.

Self-Supplied Domestic accounted for 28,952 AF (0.76%) of the total withdrawals, consisting entirely of groundwater.

Irrigated Agriculture accounted for 3,000,155 AF (78.62%) of the total withdrawals, consisting of:

- 1,633,940 AF (54.46%) of surface water.
- 1,366,215 AF (45.54%) of groundwater.

  Surface water diverted for irrigation resulted in off-farm conveyance losses in canals and laterals, which amounted to 570,340 AF (34.91%).

The total acreage irrigated (TAI) on farms in 2010 was 872,664 AF. Approximately 252,576 acres (28.94%) were irrigated with surface water, 501,865 acres (57.51%) were irrigated with groundwater, and 118,223 acres (13.55%) were irrigated with a combination of groundwater and surface water.

Drip irrigation (TDA) accounted for 19,567 acres (2.24%), flood irrigation (TFA) accounted for 397,203 acres (45.52%), and sprinkler irrigation (TSA) accounted for 455,894 acres (52.24%). In some areas of the state, surface water was not sufficient to meet the irrigation demand.

Livestock accounted for 40,180 AF (1.05%) of the total withdrawals, consisting of:

- 3,431 AF (8.54%) of surface water.
- 36,749 AF (91.46%) of groundwater.

Commercial uses accounted for 54,693 AF (1.43%) of the total withdrawals, consisting of:

- 1,938 AF (3.54%) of surface water.
- 52,755 AF (96.46%) of groundwater.

Industrial uses accounted for 12,440 AF (0.33%) of the total withdrawals, consisting of:

- 926 AF (7.44%) of surface water.
- 11,514 AF (92.56%) of groundwater.

Mining accounted for 41,559 AF (1.09%) of the total withdrawals, consisting of:

- 10,845 AF (26.10%) of surface water.
- 30,714 AF (73.90%) of groundwater.

Power accounted for 58,339 AF (1.53%) of the total withdrawals, consisting of:

- 47,434 AF (81.30%) of surface water.
- 10,905 AF (18.70%) of groundwater.

Evaporation from reservoirs with a storage capacity of 5,000 AF or more amounted to 262,216 AF (6.87%) of total withdrawals.

Basin Summary

The State of New Mexico contains six river basins:

1. Arkansas-White-Red
2. Lower Colorado
3. Pecos
4. Rio Grande
5. Texas Gulf
6. Upper Colorado

The **Arkansas-White-Red River Basin** (AWR) includes all or parts of Colfax, Curry, Harding, Mora, Quay, San Miguel, and Union counties. The population in the basin in 2010 was 35,812 (2% of the state total).

The **Lower Colorado River Basin** (LC) includes all or parts of Catron, Grant, Hidalgo, and McKinley counties. The population in 2010 was 62,819 (3% of the state total).

The **Pecos River Basin** (P) includes all or parts of Chaves, De Baca, Eddy, Guadalupe, Lea, Lincoln, Otero, Quay, Roosevelt, San Miguel, Santa Fe, and Torrance counties. The population in 2010 was 185,300 (9% of the state total).

The **Rio Grande Basin** (RG) is the largest and most populated river basin in the state and includes all or parts of Bernalillo, Catron, Cibola, Doña Ana, Grant, Hidalgo, Lincoln, Los Alamos, Luna, McKinley, Otero, Rio Arriba, Sandoval, Santa Fe, Sierra, Socorro, Taos, Torrance, and Valencia counties. The population in 2010 was 1,500,696 (73% of the state total).

The **Texas Gulf River Basin** (TG) includes all or parts of Curry, Lea, and Roosevelt counties. The population in 2010 was 125,121 (6% of the state total).

The **Upper Colorado River Basin** (UC) includes all or parts of McKinley, Rio Arriba, Sandoval, and San Juan counties. The population in 2010 was 149,431 (7% of the state total).

A summary of the total surface water and groundwater withdrawals by river basin is presented below in **Table ES.1.**

Table ES.1. Summary of withdrawals in acre-feet and as a percentage of the basin totals for New Mexico's six river basins.

River Basin	Withdrawals Surface Water (WSW)		Withdrawals Groundwater (WGW)		Total Withdrawals (TW)	
	acre-feet	% of basin total	acre-feet	% of basin total	acre-feet	% of state total
Arkansas-White-Red	163,347	66	83,349	34	246,696	6
Lower Colorado	58,861	45	73,313	55	132,174	3
Pecos	242,338	36	433,988	64	676,325	18
Rio Grande	1,163,929	66	609,592	34	1,773,521	46
Texas Gulf	237	0	569,830	100	570,068	15
Upper Colorado	413,131	99	4,029	1	417,160	11
State Totals	2,041,844		1,774,101		3,815,945	100.0

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ACRONYMS AND ABBREVIATIONS

ABCWUA	Albuquerque Bernalillo County Water Utility Authority
AF	acre-feet
A_g	gross irrigated acreage
A_n	net irrigated acreage
AWR	Arkansas-White-Red River Basin
BCCP	Blaney-Criddle Computer Program
CIR	Consumptive Irrigation Requirement
CIR_a	the Weighted Consumptive Irrigation Requirement recomputed using the consumptive use predicted by the crop production function for alfalfa
CIR_m	Multi-Crop Adjusted Consumptive Irrigation Requirement
CIR_w	Weighted Consumptive Irrigation Requirement
CO	Commercial
DO	Self-Supplied Domestic
E_c	off-farm conveyance efficiency
E_f	on-farm irrigation efficiency
EPAct	Energy Policy Act of 1992
ET	evapotranspiration
FDR	farm delivery requirement
gal	gallon(s)
GPCD	gallons per capita per day
gpm	gallons per minute
IN	Industrial
LC	Lower Colorado River Basin
LRG	Lower Rio Grande
LS	Livestock
MBC method	Modified Blaney-Criddle method
MDWC	Mutual Domestic Water Community/Coop
MDWCA	Mutual Domestic Water Community/Coop Association
MDWUA	Mutual Domestic Water Users Association
MI	Mining
NASS	National Agriculture Statistics Service (USDA)
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMISC	New Mexico Interstate Stream Commission
NMOSE	New Mexico Office of the State Engineer
NMSA	New Mexico Statutes Annotated (1978)
NMSU	New Mexico State University
NOAA	National Oceanic and Atmospheric Administration

OBC method	Original Blaney-Criddle method
P	Pecos River Basin
PDR	Project Diversion Requirement
PNM	Public Service Company of New Mexico
PO	Power
POP	population
PS	Public Water Supply
PWS	Public Water Supplier
R	Monthly Rainfall
R_e	Effective Rainfall
REEM	Regional Evapotranspiration Estimation Model
Report	Water Use by Categories Report
RG	Rio Grande Basin
SCS	Soil Conservation Service
SIC	Standard Industrial Classification
T	temperature
T or C	Truth or Consequences
TAI	total acreage irrigated
TDA	acreage irrigated by drip
TFA	acreage irrigated by flood
TG	Texas Gulf River Basin
TSA	acreage irrigated by sprinkler
TW	total withdrawals
U *or* u_m	Consumptive Use
UC	Upper Colorado River Basin
UNM BBER	University of New Mexico Bureau of Business and Economic Research
USBR	U.S. Bureau of Reclamation
USDA	U.S. Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	U.S. Geological Survey
WEC	Water exchange codes
WGW	withdrawal groundwater
WSW	withdrawal surface water
WUA	Water Users Association
WUCB	Water Use and Conservation Bureau
WWC	Water Withdrawal Code

1 INTRODUCTION

Inventorying water use in the State of New Mexico has long been a necessary activity, with formal investigations dating back to at least 1896 (Follett). These inventories provide a unique picture of the activities involving water use for the period of analysis. The New Mexico Office of the State Engineer (NMOSE) began its regular quantitative estimates of water use for the state in 1975 and has since prepared reports every five years. These reports are recognized as valuable documents to the NMOSE, the U.S. Geological Survey (USGS), the New Mexico Legislature, state and regional water planners, municipalities, consultants, and others. This *New Mexico Water Use by Categories* report (Report) presents water use as withdrawals for the 2010 calendar year. The purpose of this Report is to make available the most comprehensive, current, and useful water use withdrawal data to the public.

Data from this Report can be used for many analyses, most notably for regional planning and for tracking changes in water use in various categories over time. For example, as communities in the Rio Grande Basin continue to experience rapid population growth, a correlated increase in public water supply use will also increase. Over time, other communities in the state may notice marked increases or decreases in the amount of irrigated acreage in production or in the growth or reduction in livestock. Legislators may find it helpful to consider trends in water use when determining which projects should be funded or discontinued. Making this type of data available to citizens throughout the state will help ensure that informed decisions can be made with regard to our limited water resources.

The results of the 2010 water use inventory are presented in this Report. Categories inventoried include:

- Public Water Supply and Self-Supplied Domestic (Chapter 2)
- Irrigated Agriculture (Chapter 3)
- Self-Supplied Livestock (Chapter 4)
- Self-Supplied Commercial, Industrial, Mining, and Power (Chapter 5)
- Reservoir Evaporation (Chapter 6)

1.1 History of Water Use Inventories

In 1950, the U.S. Bureau of Reclamation (USBR) published water withdrawals and depletions in drainage basins and the state for the period from 1945 to 1949. Reynolds (1959) reported similar data for 1955 to the U.S. Senate Select Committee on National Water Resources. The New Mexico State Engineer's Office compiled withdrawals and depletions for 1965. The New Mexico State Planning Office published those data in 1967. Data for 1970 were compiled by the NMOSE and published by the USBR and the New Mexico Interstate Stream Commission (NMISC) (1976). Data for 1975, 1980, 1985, 1990, 1995, 2000, and 2005 were compiled and published by the NMOSE (Sorensen, 1977 and 1982; Wilson, 1986 and 1992a; Wilson and Lucero, 1997; Wilson, Lucero, Romero, and Romero, 2003; Longworth, Valdez, Magnuson, Sims Albury, and Keller, 2008).

1.2 The 2010 Water Use Report

The 2010 Report is similar to the 2005 Report in text, format, and content. As in the 2005 Report, depletion calculations are excluded from the Report. Therefore the statistics presented here are principally withdrawals. Notably, significant work has been completed by the NMISC to calculate depletions in some of the state's interstate river basins (e.g., Pecos River, Colorado River, and Rio Grande Basins). To incorporate the depletion methodologies developed by the NMISC into the depletion calculation methods used in previous water use reports was beyond the scope of resources allocated for this Report.

Previous water use reports included a definition for each water use category and a series of category classification numbers established by the Standard Industrial Classification (SIC) Manual (U.S. Office of Management and Budget, 1987) to facilitate the assimilation of data into the USGS National Water Use Information Program. In 2002, the SIC Manual was significantly modified to comply with the North American Free Trade Agreement. While the definition of each water use category is still included in this Report, the convention of identifying the category reporting code has been discontinued. Previous water use reports also contained lengthy discussions on topics such as water requirements for various types of turfgrass, benchmark studies of indoor water use, factors that affect water use in communities, causes of poor irrigation efficiency, and factors that affect livestock water use. This type of information is still valuable and can be reviewed in Technical Report 51 (Wilson, et al., 2003) and Technical Report 52 S (Longworth, et al., 2008).

Chapters 2 through 6 contain information pertinent to the nine water use categories. The Public Water Supply and Self-Supplied Domestic categories are combined in Chapter 2. This chapter includes a description of the procedures used to calculate residential water use in gallons per capita per day (GPCD) and total withdrawals for residential purposes. Additionally, it identifies some of the unique water circumstances experienced by communities across the state and how those conditions were accounted for in this Report. Chapter 3, Irrigated Agriculture, describes the procedures used to determine irrigation withdrawals and provides information on two significant New Mexican crops, alfalfa and pecans. Explanations of the Blaney-Criddle and Modified Blaney-Criddle methods for calculating consumptive irrigation requirements (CIRs) for a cropping pattern are also included in Chapter 3. Chapter 4, Self-Supplied Livestock, presents trends in livestock populations throughout the state, with an emphasis on the dairy industry, and explains the procedure for calculating livestock withdrawals. Chapter 5 discusses the general procedure used to calculate withdrawals for the Self-Supplied Commercial, Industrial, Mining, and Power categories, which are grouped together because of the similar methods that are used to calculate and report withdrawals for these categories. In Chapter 6, two methods for calculating reservoir evaporation as a function of data availability are presented

Appendix A is a glossary of terms used in this Report.

Appendix B contains a series of tables that report population and water use data for New Mexico counties and river basins for 2010. Withdrawals are calculated for each of the nine water use categories.

- Table 1 contains population data for the Self-Supplied Domestic and Public Water Supply categories, by river basin.
- Table 2 is a summary of withdrawals by category, in acre-feet (AF).
- Table 3 is a summary of withdrawals expressed as a percentage of the total withdrawals in the state, by category.

- Table 4 includes a summary of the percentage of measured withdrawals for each category.
- A summary of water use by county and category is provided in Table 5.
- Similar data is presented in Table 6, organized by river basin.
- Table 7 is dedicated to the Public Water Supply and Self-Supplied Domestic categories. It lists individual water systems by county and river basin and includes information on population, per capita water use, and withdrawals by source.
- Tables 8 through 12 focus on irrigated agriculture. Table 8 is organized by county, river basin, and location and presents information on irrigated acreage, CIRs, irrigation efficiencies, and withdrawals.
- Table 9 includes information on irrigated acreage, type of irrigation system, irrigation water source, and withdrawals organized by river basin.
- Tables 10 and 11, both organized by county, present data on irrigated acreage by water source type and type of irrigation system, respectively.
- Finally, Table 12 includes information on the number of acres irrigated by each system type, organized by river basin.

Appendix C contains two maps that illustrate the state's counties, river basins, and declared groundwater basins, and a table of counties and their associated river basins.

Authors' Note: There are three terms frequently used when discussing water that may be confusing or misunderstood. They are (1) consumed, (2) consumption, and (3) consumptive use.

Water consumed and water consumption are terms often thought of as water delivered to a water user, whether the user is a water utility, individual household, or commercial or industrial enterprise. Water consumption in this context **is not** synonymous with consumptive use as it is defined in this report.

When water consumed and water consumption are used in reference to a human or an animal taking a drink of water, or water that is evaporated from a water body or land surface, these terms become synonymous with consumptive use.

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2 PUBLIC WATER SUPPLY AND SELF-SUPPLIED DOMESTIC

This chapter includes:

- Definitions of water supply categories.
- Summaries of state and county populations for 2010.
- An explanation of the GPCD values used to calculate withdrawals for self-supplied domestic uses.
- A description of the procedure used to quantify self-supplied domestic withdrawals.
- A description of the procedure used to quantify public water supply withdrawals and GPCD.
- Water exchange codes.
- Water withdrawal codes.
- Information about individual water systems.

A summary of 2010 public water supply and self-supplied domestic withdrawals can be found in **Appendix B, Table 7.** (Note: Tables in the appendices that use abbreviations include a key at the bottom of the page.) Total withdrawals are tallied by county and river basin.

2.1 Definition of Categories

2.1.1 Public Water Supply (PS)

The Public Water Supply category includes community water systems that rely on surface water and groundwater diversions **other than** wells permitted by the NMOSE under 72-12-1.1 New Mexico Statutes Annotated (NMSA) 1978, and that consist of common collection, treatment, storage, and distribution facilities operated for the delivery of water to multiple service connections. For the purposes of this Report, these systems will be known as Public Water Suppliers (PWS) and this definition will include mutual domestic systems, mutual domestic water user associations, etc. Following are examples of multiple service connection systems:

- Municipalities that serve residential, commercial, and industrial water users
- Prisons
- Residential and mixed-use subdivisions
- Mobile home parks

The Public Water Supply category is intended to capture water uses associated with PWSs such as irrigation of golf courses, parks, athletic fields, or ponds/lakes.

2.1.2 Self-Supplied Domestic (DO)

The Self-Supplied Domestic category includes self-supplied residences that may be single family or multi-family dwellings with well permits issued by the NMOSE under 72-12-1.1 NMSA 1978. This category includes water used for domestic purposes as defined under 19.27.5.7.F New Mexico Administrative Code (NMAC).

2.2 Population

2.2.1 State Population

New Mexico was ranked twelfth in growth rate in 2010 by the U.S. Census Bureau. The total population for 2010 was 2,059,179 based on data from the 2010 U.S. Census (see **Table 2.1,** below). This total represents an increase of 6.57% over the 2005 population. Growth in New Mexico from 2005-2010 exceeded the national growth rate of 4.48%. All of New Mexico's neighboring states rank in the top ten for growth.

Table 2.1. Annual population estimates for selected western states.

Geographic Area	Population estimates July 1, 2005 [1]	2010 Census Data [1]	Percent Growth 2005-2010	National Rank of % Growth 2005-2010
United States	**295,516,599**	**308,745,538**	**4.48%**	
Utah	2,457,719	2,763,885	12.46%	1
Nevada	2,432,143	2,700,551	11.04%	2
Texas	22,778,123	25,145,561	10.39%	3
Idaho	1,428,241	1,567,582	9.76%	4
Arizona	5,839,077	6,392,017	9.47%	7
Colorado	4,631,888	5,029,196	8.58%	8
New Mexico	1,932,274	2,059,179	6.57%	12

[1] Source: U.S. Census Bureau, Population Division Intercensal Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2000 to July 1, 2010 (ST-EST00INT-01). Release Date: September 2011. 2010 US Census Data uses Census Count.

NOTE: The 2005 data in this table differ from the data in the 2005 Water Use Report because the estimations in the 2005 Report (provided by the University of New Mexico Bureau of Business and Economic Research [UNM BBER]) were projections based on 2000 data, whereas data in this table are derived from the above-referenced 2010 U.S. Census source.

2.2.2 County Populations

County populations are provided in **Table 2.2,** below. Counties are ranked from highest to lowest based on percentage change. Counties with the highest growth rate are Sandoval (22.43%), Union (18.16%), Lea (14.12%), Doña Ana (10.45%), and Valencia (10.3%). Sixteen counties (compared to two counties in 2005) experienced a decrease in population during the five-year period. Nine of the 33 counties in the state are growing faster than the 6.78% state growth rate.

Table 2.2. County Populations by Percent Growth Change.

County Number	County	2005 Estimate[1]	2010 Census[2]	Percent Change
State of New Mexico		1,928,384	2,059,179	6.78%
43	Sandoval	107,460	131,561	22.43%
59	Union	3,850	4,549	18.16%
25	Lea	56,719	64,727	14.12%
13	Doña Ana	189,444	209,233	10.45%
61	Valencia	69,417	76,569	10.30%
1	Bernalillo	603,562	662,564	9.78%
3	Catron	3,409	3,725	9.27%
41	Roosevelt	18,238	19,846	8.82%
19	Guadalupe	4,369	4,687	7.28%
5	Chaves	61,860	65,645	6.12%
9	Curry	45,846	48,376	5.52%
15	Eddy	51,437	53,829	4.65%
55	Taos	31,722	32,937	3.83%
45	San Juan	126,208	130,044	3.04%
49	Santa Fe	140,855	144,170	2.35%
35	Otero	63,538	63,797	0.41%
11	DeBaca	2,016	2,022	0.30%
7	Colfax	13,755	13,750	-0.04%
47	San Miguel	29,530	29,393	-0.46%
31	McKinley	71,918	71,492	-0.59%
17	Grant	29,747	29,514	-0.78%
39	Rio Arriba	40,828	40,246	-1.43%
6	Cibola	27,620	27,213	-1.47%
53	Socorro	18,148	17,866	-1.55%
37	Quay	9,259	9,041	-2.35%
27	Lincoln	21,007	20,497	-2.43%
33	Mora	5,107	4,881	-4.43%
28	Los Alamos	18,822	17,950	-4.63%
23	Hidalgo	5,139	4,894	-4.77%
29	Luna	26,498	25,095	-5.29%
21	Harding	740	695	-6.08%
57	Torrance	17,501	16,383	-6.39%
51	Sierra	12,815	11,988	-6.45%

[1] Source: Population Division, U.S. Census Bureau; Table 1: Annual Estimates of the Population for Counties of New Mexico: April 1, 2000 to July 1, 2005 (CO-EST2005-01-35).

[2] Data from U.S. Census Bureau, 2010 Census.

NOTE: The 2005 data in this table differ from the data in the 2005 Water Use Report because the estimations in the 2005 Report (provided by UNM BBER) were projections based on 2000 data, whereas data in this table are derived from the above-referenced 2010 U.S. Census source.

Appendix B, Table 1, provides the distribution of population by river basin in New Mexico. The distribution was determined by tabulating the total population served for the Public Water Supply and Self-Supplied Domestic categories for each of the six river basins. The populations for each basin are as follows:

- Rio Grande – 1,500,696
- Pecos – 185,300
- Upper Colorado – 149,431
- Texas Gulf – 125,121
- Lower Colorado – 62,819
- Arkansas-White – 35,812

2.3 Per Capita Water Use for the Self-Supplied Domestic Category

For the purpose of estimating withdrawals for the self-supplied domestic population, in most counties, an area-wide average of 80 GPCD was used. This GPCD value was selected based upon research completed by Brown and Caldwell (1984), which is summarized in **Table 2.3,** below. In counties where, due to climatic conditions, additional water requirements for landscape irrigation and evaporative cooling are required, an area-wide average of 100 GPCD was used. In Catron, Cibola, McKinley, and San Juan counties, where a segment of the population does not have indoor running water, an area-wide average of 70 GPCD was used.

Table 2.3. Indoor water use in single- and multi-family dwelling units without water-conserving plumbing fixtures and appliances, in gallons per capita per day (GPCD).

Items and Assumptions	GPCD[1]
Toilets (5.5 gal/flush x 4 flush/capita day)	22
Toilet leakage (0.17 x 24 capita/gal day)	4.1
Showers (3.4 gpm x 4.8 minute)	16.3
Baths (50 gal/bath x .14 bath/capita day)	7
Faucets (estimated)	9
Dishwasher (14 gal/load x .17 load/capita day)	2.4
Washing machine (55 gal/load x .30 load/capita day)	16.5
Total	77.3
Note: Evaporative cooling and water softener regeneration may increase the water requirements by up to 25 GPCD.	

[1]Source: Brown and Caldwell, 1984.

During the development of this Report, the GPCD data that were utilized for this category did not include indoor water conservation measures. The Brown and Caldwell (1984) research that was used is from studies completed in the 1980s. The most recent NMOSE indoor GPCD estimations are provided in NMOSE's Technical Report No. 48 (Wilson, 1996). These values are used for planning or benchmarking purposes. The values from Technical Report No. 48 include conservation measures available during the early 1990s, and an indoor GPCD is estimated to be 58.9. It is well established that there have been significant advances in the efficiency of indoor

plumbing fixtures since both the Brown and Caldwell study and Technical Report No. 48 were published.

As part of this Report, an assessment was completed (NMOSE & Aquacraft, 2013) to review recent studies that directly measured indoor water use. This assessment provided information on three efficiency classes:

- Class 1 represents high-efficiency homes that comply with United States Environmental Protection Agency (USEPA) Water Sense Standards.
- Class 2 represents homes that are intermediate-efficiency homes and generally fall into compliance with the Energy Policy Act of 1992 (EPAct) standards.
- Class 3 represents home groups that generally pre-date the EPAct standards.

The result of this assessment supported the conclusion that indoor water use can be reduced with USEPA Water Sense and EPAct fixtures. **Table 2.4,** below, provides a breakdown, by fixture, of the average measured water use for each class. All of these values are lower than the GPCD values utilized in this Report. This information also provides evidence that reductions in water use are obtainable with conservation measures.

Table 2.4. Indoor water use in single family dwelling unit plumbing fixtures and appliances, in gallons per capita per day (GPCD).

Items and Assumptions	Class 1	Class 2	Class 3
Toilets	9.2	12.34	16.6
Leakage	5.68	8.11	11.49
Showers	10.89	11.66	9.8
Baths	2.09	1.19	1.64
Faucets	8.43	9.47	9.46
Dishwasher	0.85	0.67	1.02
Washing machine	8.03	10.46	14.57
Other (includes miscellaneous uses that do not fit other categories)	0.38	1.26	2.44
Total	45.55	55.16	67.02

Given the resources available for this Report, it is not possible to disaggregate Self-Supplied Domestic Use by class of water users. Therefore, the withdrawal values utilized in this Report should be considered conservative in nature, that is, they are higher than what was found in the assessment. This is an area for consideration in future reports.

2.4 Procedure for Quantifying Self-Supplied Domestic Withdrawals

Step 1. Determine Self-Supplied Domestic Population

The self-supplied domestic population in a county is determined by subtracting the population served by PWSs from the total population in that county. When a county has two or more river basins, the total county population must be calculated by its basin components. The distribution of the population in each county by river basin is based upon ratios derived from 1990 census block and tract data that were overlaid with hydrologic cataloging units. The population served by

PWSs in each basin is then subtracted from the total population of the respective basins to yield the self-supplied domestic population.

Step 2. Determine Total Withdrawals
Self-supplied domestic withdrawals are computed using the following equation:

$$W = (POP)(GPCD)/892.74 \quad (2.1)$$

where W is the annual withdrawal in acre-feet, POP is the population, and GPCD is gallons per capita per day.

2.5 Procedure for Quantifying Public Water Supply Withdrawals and GPCD

Step 1. Identify All PWSs
The first step toward quantifying public water supply withdrawals is to identify all PWSs in the state. The NMOSE used the list of PWSs from 2005 and cross-checked/consolidated that list with a 2010 list of active and inactive PWSs provided by the New Mexico Environment Department (NMED). For the purposes of this Report, the NMOSE's definition of PWSs is reasonably consistent with the NMED non-transient community water systems. The NMOSE also contacted some of the listed PWSs to resolve questions concerning the status of those PWSs.

Step 2. Distribute Questionnaires to PWSs
Many PWSs are required by permit conditions to report their annual withdrawals (sometimes referred to as diversions) to the NMOSE. However, some PWSs are not subject to annual reporting requirements because they have pre-basin wells that do not have such conditions. To obtain information from both reporting and non-reporting PWSs, the NMOSE's Water Use and Conservation Bureau (WUCB) sends a survey to all PWSs. PWSs who do not respond to the questionnaires are contacted by phone, which often yields additional, valuable information.

Step 3. Determine Total Withdrawals for Each PWS
Withdrawal data for the majority of PWSs were obtained directly via survey or phone call, or indirectly from NMOSE records. For entities for which data were unavailable, information was either taken from the *Water Use by Categories 2005* report or updated based on the estimated population multiplied by the appropriate GPCD value for the Self-Supplied Domestic category.

Step 4. Determine Public Water Utility Population Served
In census years, population figures for many of the communities served by water utilities can be extracted from statistics published by the U.S. Census Bureau. It is important that these figures be compared with the data reported by PWSs. Any discrepancies between census data and PWS data are investigated and resolved prior to calculating PWS withdrawals. **An important step in determining the utility's population served is to separate the population of self-supplied residents from the total population of the larger community served by the PWS.**

Populations of communities not identified in the census must be obtained from the water system manager, city clerk, or regulatory agency, or estimated by some other means. Many water utilities estimate, with reasonable accuracy, the population they serve based on the total number of connections and the average number of residents per connection.

Step 5. Determine the GPCD
Equation 2.1 is rearranged to solve for GPCD:

$$GPCD = (W)(892.74)/POP \qquad (2.2)$$

where W is the sum of the annual surface water and groundwater withdrawals in acre-feet, and POP is the population. The GPCD may be used to check the water use figures reported by the water supplier. An unusually high or low GPCD indicates a possible error in either the population data or the water withdrawal data. When data appear to be erroneous, the water supplier is contacted by phone to discuss the discrepancies.

The state's most popular resort areas have a number of communities with a very small permanent residential population. In the summertime, these communities experience a large influx of seasonal residents. Other communities may experience the inverse of this, i.e., a large influx of seasonal visitors during the winter months.

A similar phenomenon occurs on the state's military bases, but on a daily basis. While the residential population of enlisted personnel and their families may be relatively small, there is a large influx of civilians working on the base during the day. In addition, many military installations have a golf course, resulting in an unusually high GPCD relative to the residential population. (Military golf courses are discussed in more detail in Chapter 5.)

The withdrawals reported in this inventory for communities that experience a seasonal influx of temporary residents and military bases that experience a daily influx of civilian workers are reflected in the total water use. However, because the population and per capita water requirements reported are based on the number of New Mexico residents who live in the community year-round, these influx communities will generally exhibit a higher GPCD.

An alternative method to calculating the GPCD using the formula provided above is to use NMOSE's GPCD Calculator. The NMOSE developed the GPCD Calculator to provide a standardized methodology for GPCD calculations. The methodology provides the PWS with a categorized baseline of historical and current water use, which can be used to assist the PWS in planning, tracking, programming, and reporting water uses. PWSs that used the NMOSE GPCD Calculator to determine their GPCD are identified with Water Withdrawal Code number four (4) (see **2.7 Water Withdrawal Codes,** below).

2.6 Water Exchange Codes

Water exchange codes (WEC) are used in this Report to identify water exchange transactions that occur among PWSs. These exchanges occur outside of the NMOSE water rights transfer permit process. WECs cover the following types of transactions:

- Water imports and exports over or between political and physical boundaries.
- The transfer of water from one PWS to another.
- The transfer of water from a PWS to a facility that is also self-supplied.
- Other aspects of a water system that may be of interest.

The codes were developed using information provided by PWSs and military bases or internal knowledge of a particular water system. Explanations of the WECs are provided in **Table 2.5,** below, and the WECs are used in **Appendix B, Table 7.**

Table 2.5. Water exchange codes.

Water Exchange Code (WEC)	Explanation
0	No water exchanges occurred.
1	Water is **imported** over or between political and physical boundaries.
2	Water is **exported** over or between political and physical boundaries.
3	Water delivered to customers (e.g., a water utility, commercial and industrial enterprises, or individual residences) outside of the city or village in which the water supplier is based **is not** included in the withdrawal shown.
4	Water delivered to customers outside of the city or village in which the water supplier is based **is** included in the withdrawal shown, and the population reported also reflects the additional population served.
5	Water delivered to customers outside of the city or village in which the water supplier is based **is** included in the withdrawal shown, but a reasonable estimate of the additional population served is unavailable; or customers served are commercial and industrial enterprises for which population figures are not relevant.
6	All water distributed in this community is received from another water utility.
7	Part of the water distributed in this community is received from another water utility and is included in the withdrawal shown.
8	Part of the water used at this self-supplied facility is received from a water utility or another organization. The water transferred to this facility is not included in the withdrawal shown.
9	Water is provided to seasonal visitors in addition to the established residential population. The withdrawal shown reflects the total water use. However, the population and per capita use reported are based on the number of residents who live in the community year-round.
10	This military installation experiences a daily influx of civilian workers. The withdrawal shown reflects the total water use. However, the population and per capita use reported are based on the number of residents who live on the installation year-round.
11	This water utility provides water to a facility that experiences a daily influx of population. The withdrawal shown reflects the total water use. However, the population and per capita water use reported are based on the potential number of people who visit the center on a daily basis.
12	This water utility provides water to a training facility that houses a constant population year-round. The withdrawal shown reflects the total water use. However, the reported population and per capita use are based upon the facility's residential population.
13	This water utility provides water to a golf course.

2.7 Water Withdrawal Codes

Water withdrawal codes (WWC) in this Report are used to identify the estimation or calculation of withdrawals in cases where data for a PWS could not be obtained, or a more detailed analysis of water use within a PWS was available through the NMOSE GPCD Calculator.

A WWC identifies:

- PWSs with no 2010 withdrawal data
- PWSs that submitted 2010 NMOSE GPCD calculator data

The codes were developed based on the way the PWS's withdrawal was estimated or computed. Explanations of the WWCs are listed in **Table 2.6,** below, and are used in **Appendix B, Table 7.**

Table 2.6. Water withdrawal codes.

Water Withdrawal Code (WWC)	Explanation
1	Withdrawals were computed using the rural-supply GPCD.
2	Withdrawals were computed using this system's 2005 GPCD.
3	Withdrawals were computed using a similar system's 2005 GPCD.
4	Withdrawals were obtained from the NMOSE GPCD calculator.

2.8 Information About Individual Water Systems

Information about individual water systems is provided by county in the text that follows. County numbers are identified in parentheses (00). Only counties that have unique circumstances relating to their water systems are included below. Except where stated otherwise, water exchanged from one water utility to another is added to the withdrawal of the receiving organization and is subtracted from the withdrawal of the utility from which the water was purchased.

Bernalillo County (01):

- The population reported by the 2010 U.S. Census for the City of Albuquerque was 545,852. The Albuquerque Bernalillo County Water Utility Authority (ABCWUA) serves the City of Albuquerque as well as a population of 60,928 outside the city limits, for a total population of 606,780. This total does not include the residential population at Kirtland Air Force Base, which has its own water system and is recorded separately in **Appendix B, Table 7.**
- ABCWUA supplies water to the Quail Run Puerto del Sol golf course.
- Kirtland Air Force Base treated effluent is reused to irrigate the Tijeras Arroyo and Kirtland Air Force Base golf courses.
- ABCWUA treated effluent is reused to irrigate the Tanoan Country Club.
- ABCWUA includes Paradise Hills-NM Utilities.
- The Entranosa Water Co-Op delivers water to a population of about 7,844 in Bernalillo County and 4,224 in Santa Fe County.
- The Lost Horizon Co-Op Association purchases all of its water from ABCWUA.
- Aquaman Water Hauling purchases water from the Cedar Crest MDWC therefore, the Cedar Crest GPCD appears elevated relative to the population.

Chaves County (05):

- In addition to producing municipal drinking water, the Village of Dexter also pumps groundwater to maintain the water level in Lake Van, which is outside the village limits, and to irrigate park areas around the lake; therefore, Dexter's GPCD appears elevated relative to the population.

Cibola County (06):

- Grants reuses treated sewage effluent to irrigate the Coyote del Malpais Golf Course; therefore, the water used for irrigation purposes at the golf course was not reported separately as part of the Public Water Supply or Commercial categories.

Colfax County (07):

- The Raton Domestic Water System exports approximately 8 AF of water to the Carisbrook Property Owners Association; therefore this withdrawal is included under the Raton Domestic Water System in **Appendix B, Table 7.**
- The Village of Angel Fire provides approximately 69 AF of water to the Angel Fire Resort golf course.
- Springer Water System supplies all water to French MDWCA.

Doña Ana County (13):

- The population served by the Hatch water system as reflected in **Appendix B, Table 7,** includes residents in Placitas and Rodey, which are outside the Hatch city limits.
- The population served by the Las Cruces water system excludes residents served by private water systems within the city.
- The Picacho Hills Water System owns and operates a self-supplied golf course and delivers water to various nearby subdivisions. The population of Picacho Hills included in **Appendix B, Table 7,** includes these nearby subdivisions.
- The Mountain View MDWCA and the Organ Water & Sewer Association are combined and are reported under the name Butterfield Park in **Appendix B, Table 7.**
- Berino Water Users Association (WUA), Desert Air, La Mesa MDWCA, Mesquite MDWCA and Vado MDWCA were combined to form the Lower Rio Grande Public Water Works Authority.

Eddy County (15):

- The population served by the City of Carlsbad includes residents in La Huerta, which is outside of the city limits and it is reported as such in **Appendix B, Table 7.**
- The 2010 irrigation withdrawals for the Lake Carlsbad Golf Course, which is a self-supplied municipal facility, are included in the withdrawal reported for the City of Carlsbad; therefore, the city's GPCD appears elevated relative to the population.
- While Loving supplies all of the water distributed in Malaga, withdrawals for both cities are recorded separately in the withdrawal column in **Appendix B, Table 7.**
- Caprock delivers approximately 78 AF to DCP Midstream and 2 AF to the Loco Hills Community; therefore, Caprock's GPCD appears to be slightly elevated relative to the population.

Grant County (17):

- Silver City delivers water to Pinos Altos and Rosedale. The quantity of water delivered to these systems is unknown; therefore, these water systems were excluded from **Appendix B, Table 7.**
- Silver City delivers water to Arenas Valley; this withdrawal is recorded separately in **Appendix B, Table 7.**
- Silver City's treated sewage effluent is reused to irrigate the Silver City Golf Course; therefore, the golf course was not included in the Commercial category.
- The Hurley Water System imports approximately 127 AF from Freeport-McMoRan Chino Mines.
- The Hurley Water System exports approximately 30 AF to North Hurley MDWCA; these withdrawals are recorded separately in **Appendix B, Table 7.**

Guadalupe County (19):

- Vaughn exports water to Duran and Encino in Torrance County; these withdrawals are recorded under Vaughn in **Appendix B, Table 7.**
- Santa Rosa Water Supply exports to Hollywood Ranch Domestic WUA, Rio Pecos MD, River's MDWUA, and Puerto de Luna MDWCA; these water systems were excluded from **Appendix B, Table 7.**

Lea County (25):

- Eunice provides part of the water used at Warren Petroleum's gas processing plant located outside of the city limits. This withdrawal was included in the city's withdrawal and was not included in the Industrial category of this Report.

Lincoln County (27):

- Altos Lakes Golf Course & Country Club receives water from Altos Lakes Water Co-op that is not included in the Altos Lakes Water Co-op total water use. This withdrawal is included in the Commercial category in this Report.
- Rancho Ruidoso Village provides approximately 120 AF of water to the Golf Course at Rainmakers.

Los Alamos County (28):

- Withdrawals from the Los Alamos National Laboratory and the City of White Rock were included as part of City of Los Alamos withdrawals in the Public category.
- Los Alamos and White Rock's treated sewage effluent is reused to irrigate the Los Alamos golf course and numerous athletic fields, and to cool tower makeup water at electric power generating stations; it was not accounted for in any other category within this Report.

McKinley County (31):

- The City of Gallup delivers water to Fort Wingate and Gamerco; these withdrawals are recorded separately in **Appendix B, Table 7.**
- The City of Gallup's treated effluent is reused to irrigate the Fox Run Golf Course.

Otero County (35):

- Alamogordo's treated sewage effluent is reused to irrigate the Desert Lakes Golf Course; therefore, the water used for irrigation purposes at the golf course will not be listed under the Public Water Supply or Commercial categories.
- Orogrande delivers water to the Bureau of Land Management, the U.S. Forest Service, and two private ranches. Since the withdrawal reported for Orogrande reflects these deliveries, the GPCD appears elevated relative to population.
- The Timberon Water & Sanitation District GPCD appears elevated because the withdrawal accounts for seasonal population.

Quay County (37):

- The 2010 population reported by the U.S. Census Bureau for the City of Tucumcari is 5,363. The Tucumcari water system serves the City of Tucumcari as well as a population of 637 outside of the city limits (residents in Liberty, Rad, Tuc-Cam, and Hill Village), for a total population of 6,000.
- Irrigation water for the Tucumcari Golf Course was supplied by the City of Tucumcari and is included in the city's withdrawals; therefore, the City of Tucumcari's GPCD appears to be slightly elevated relative to the population.

Rio Arriba County (39):

- La Puebla MDWCA is now Cuatro Villas WUA.
- The City of Española supplied all of the water distributed by Cuatro Villas WUA; this withdrawal and population are reported under the City of Española.

Roosevelt County (41):

- The City of Portales supplied all of the water distributed by the Roosevelt County Water Co-Op; these withdrawals are recorded separately in **Appendix B, Table 7.**

Sandoval County (43):

- Rio Rancho's treated sewage effluent is reused to irrigate the Chamisa Hills Golf & Country Club; therefore, the water used for irrigation purposes at the golf course was not reported separately as part of the Public Water Supply or Commercial categories.

San Juan County (45):

- The City of Aztec supplied water to the Southside WUA; withdrawals and population data were recorded separately in **Appendix B, Table 7.**
- The City of Aztec supplied approximately 30 AF of water to Hydro Pure Technology Inc.
- Bloomfield supplied water to the Southside WUA and the Aztec and Blanco Mutual Domestic Water Consumers Associations; these withdrawals are recorded separately in **Appendix B, Table 7.**
- The City of Farmington supplied Bluff View Power plant with approximately 336 AF of water; this withdrawal is reported separately as part of the Power category.
- The Lower Valley WUA supplied water to Upper La Plata WUA; these withdrawals are recorded separately.

- The 2010 irrigation withdrawals for the Civitan Golf Course and Piñon Hills Golf Course, which are self-supplied municipal facilities, were included in the withdrawals reported for the City of Farmington; therefore, the city's GPCD appears elevated relative to the population.
- North Star WUA and Dutchmans Hill Water Company are combined and reported under North Star WUA.
- The City of Farmington supplies water to the Civitan Golf Course.

Santa Fe County (49):

- The City of Santa Fe served a 2010 population of 67,625 inside the city limits and 12,118 outside the city limits, for a total population of 79,743. Las Campanas, which is reported as a separate entity in **Appendix B, Table 7,** accounts for 400 of the 12,118 people who live outside of the city limits.
- In 2010, the City of Santa Fe supplied approximately 1550 AF of treated effluent water to the following entities: Santa Fe River, Marty Sanchez Golf Course (multi-use recreation), Las Campanas, Santa Fe Country Club Golf Course, and the Santa Fe Downs. The water provided to these entities is recorded as part of the city's withdrawals in **Appendix B, Table 7.**
- Thunder Mountain Water System imports water from the town of Estancia in Torrance County; this withdrawal and population is reported under the Estancia water system.
- Santa Fe County supplies water to the Quail Run Golf Course.

Sierra County (51):

- Water supplied to the Truth or Consequences (T or C) golf course by the City of T or C is treated effluent water and therefore is not accounted for separately in this Report.

Taos County (55):

- Treated sewage effluent is reused to irrigate the Taos Country Club Golf Course and therefore is not accounted for separately in this Report.
- The Twining Water and Sanitation District (also known as the Taos Ski Valley) supplies all of the potable water for the condominiums, hotels, restaurants, and shops in Taos Ski Valley. The water used for snowmaking at Taos Ski Valley is reported in the Commercial category rather than in the Public Water Supply category since it is permitted separately.

Torrance County (57):

- Duran and Encino both import water from the City of Vaughn in Guadalupe County; these withdrawals are recorded separately in **Appendix B, Table 7.**
- The Thunder Mountain Water System, located in Santa Fe County, imports water from the town of Estancia; this withdrawal and population are reported under the Estancia water system.

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3 IRRIGATED AGRICULTURE

This chapter includes:

- A definition of the water supply category.
- An overview of the Original Blaney-Criddle (OBC) method and Modified Blaney-Criddle (MBC) method for computing the consumptive irrigation requirement (CIR) of crops.
- A description of the procedure used to quantify irrigation withdrawals.
- A discussion of the methods used to calibrate the consumptive use for two important New Mexican crops: alfalfa and pecans.
- An overview of the irrigated acreage data used in this Report.
- A discussion of surface water shortages.

The Irrigated Agriculture category topped the list of water withdrawals in 2010, which accounted for 3,000,155 AF, or 78.62% of total withdrawals. Summaries of irrigation withdrawals can be found in **Appendix B, Tables 8-12.**

CIRs in this Report are primarily calculated using the OBC method. However, the MBC method is used to compute consumptive use in the Upper Colorado River Basin so it is consistent with NMISC compact accounting. Additionally, this Report uses Colorado River Basin withdrawal data identical to those reported by the NMISC.

3.1 Definition of Category

The Irrigated Agriculture category includes all withdrawals of water for the irrigation of crops grown on farms, ranches, and wildlife refuges.

3.2 The OBC Method

3.2.1 Consumptive Use (U)

The OBC method (Blaney and Criddle, 1950, 1962) for determining consumptive use was born out of studies conducted in New Mexico during 1939 and 1940 for the Pecos River Joint Investigation initiated by the National Resources Planning Board.

The OBC method uses mean monthly air temperatures (T) expressed in degrees Fahrenheit, monthly percentage of annual daylight hours (P) based on latitude of the area under study, seasonal consumptive use coefficients (K), and length of growing season. These are used to estimate the total consumptive use (U), or evapotranspiration (ET), of water during the growing season for a crop. The consumptive use in inches for each month is expressed in equation 3.1 as:

$$U=ET=[(T)(P)/100](K) \qquad (3.1)$$

Adding the consumptive use computed for each month yields the total consumptive use for a specific crop during the growing season.

The distinctive feature of this method is that the consumptive use coefficient (K) remains constant throughout the frost-free period. A different consumptive use coefficient is used for that part of a

crop's growing season that occurs before the last spring frost (T<32°F) or past the first fall frost (T<32°F). The consumptive use coefficient during the frost period is lower than the consumptive use coefficient during the frost-free period of the growing season. For crops that have a growing season that begins before or extends beyond a frost date—in a month in which a frost occurs—the days inside and outside the frost-free period must be counted separately so that the appropriate consumptive use coefficients can be applied. In a month during which the growing season begins or ends, the consumptive use coefficient is multiplied by the ratio of the number of days in the month the crop is "growing" to the total number of days in that month.

3.2.2 USBR Effective Rainfall (R_e)

The amount of rainfall available to crops is influenced by the following factors:

- Duration and intensity of rainfall
- Antecedent moisture condition of the soil
- Infiltration capacity of the soil
- Presence of surface seals and crusts
- Slope of fields
- Root development of the crop
- Interception by the plant canopy

The OBC method did not have a procedure for estimating effective rainfall. In 1962, Blaney and Criddle adopted a USBR method. The USBR method expresses effective rainfall (R_e) as a percentage of the total monthly rainfall. For each 1-inch increment in rainfall, there is a corresponding decrease in the percentage of effective rainfall. This method was originally published as a table of values that has since been changed to a set of equations (**Table 3.1**). **Note: Effective rainfall (R_e) cannot exceed the consumptive use (U).** Adding the effective rainfall computed for each month yields the total effective rainfall for a specific crop during the growing season.

Table 3.1. USBR effective rainfall.

Monthly Rainfall (R) (inches)	Effective Rainfall (R_e) (inches)
$1 \leq R$	$R_e=0.95R$
$1 < R \leq 2$	$R_e=0.95+0.90(R-1)$
$2 < R \leq 3$	$R_e=1.85+0.82(R-2)$
$3 < R \leq 4$	$R_e=2.67+0.65(R-3)$
$4 < R \leq 5$	$R_e=3.32+0.45(R-4)$
$5 < R \leq 6$	$R_e=3.77+0.25(R-5)$
$R > 6$	$R_e=4.02+0.05(R-6)$
Key: (<) means less than; (≤) means less than or equal to; (>) means greater than	

3.3 The MBC Method

3.3.1 Consumptive Use (u_m)

The U.S. Department of Agriculture (USDA) Soil Conservation Service (SCS) introduced the MBC method in 1967. In 1970 it was revised and published (USDA, 1970).

The MBC method uses mean monthly air temperatures (t) expressed in degrees Fahrenheit, monthly percentage of annual daylight hours (p) based on the latitude of the area under study, monthly consumptive use coefficients (k), and length of growing season to estimate the total monthly consumptive use (u_m) of water for a crop that is well watered and free of disease. The consumptive use in inches for each month is expressed as:

$$u_m = [(t)(p)/100](k) \qquad (3.2)$$

where $k = (k_t)(k_c)$. The climatic coefficient (k_t) equals 0.0173t-0.314, and k_c is the crop growth stage coefficient.

The procedure used to calculate the final *monthly* consumptive use coefficient (k) distinguishes the MBC method from the OBC method, which uses a *seasonal* consumptive use coefficient.

- The climatic coefficient (k_t), expressed as a function of the mean monthly temperature, is computed.
- The value of the crop growth stage coefficient (k_c) is obtained from a curve plotted on a graph. Because the growth characteristics of each crop are different, a separate curve is generally required for each crop. Curves for a limited number of crops were published in SCS Technical Release 21 (USDA, 1970).
- Multiplying k_t by k_c yields the final consumptive use coefficient (k) for a specific crop and month.
- In a month in which the growing season begins or ends, the consumptive use coefficient is multiplied by the ratio of the number of days in the month the crop is "growing" to the total number of days in that month.
- Adding the consumptive use computed for each month yields the total consumptive use for a specific crop during the growing season.

3.3.2 SCS Effective Rainfall (r_e)

The SCS developed a method for estimating effective rainfall as a function of consumptive use and rainfall. This method was established as the result of research that analyzed the soil-moisture balance from 50 years of precipitation records at each of 22 Weather Bureau stations in the United States (now part of the National Weather Service). To calculate effective rainfall (r_e) in inches, the SCS method uses the following equation:

$$r_e = (0.70917r^{0.82416} - 0.11556)(10^{0.02426u_m})(f) \qquad (3.3)$$

where r is the rainfall in inches, u_m is the monthly consumptive use in inches, and

$$f = 0.531747+0.295164D-0.057697D^2+0.003804D^3 \qquad (3.4)$$

where D is the net depth of irrigation water in inches normally applied to the field.

In New Mexico, the default depth of irrigation is three inches. If other depth information is available, it is used in equation 3.4. **Note: The effective rainfall (r_e) cannot exceed the**

consumptive use (u_m). The monthly CIR for each crop in the cropping pattern is computed by subtracting the effective rainfall (r_e) from the consumptive use (u_m). Adding the computed effective rainfall for each month yields the total effective rainfall for a specific crop during the growing season.

3.4 Procedure for Quantifying Irrigation Withdrawals

This section discusses irrigation water requirements, separated by irrigation system type and water source, as well as factors that influence the CIR and how the CIR is computed using the Blaney-Criddle Computer Program (BCCP) developed by NMOSE staff (Wilson, 1990). The BCCP uses three electronic data files that include (1) crop acreages, (2) temperature and precipitation data, and (3) growing season data. Summaries of irrigation withdrawals can be found in **Appendix B, Tables 8-12.**

Note: Multiple steps are necessary to calculate the final CIR. The steps used to calculate the final CIR vary as a function of the crop species and cropping pattern. Interim CIRs, represented by CIR_w, CIR_a, and CIR_m, are used in this procedure as a placeholder for entry into Step 8 as CIR. A final CIR is calculated in Step 11.

The step-by-step procedure used for quantifying irrigation withdrawals is described below.

Step 1. Calculate Gross Actively Irrigated Acreage by Type of Irrigation System
Cropping patterns and irrigated acreage data were compiled, where possible, from data obtained from the USBR, the USDA Farm Service Agency, the National Agricultural Statistics Service, irrigation districts, conservancy districts, and county extension agents. Data were also obtained from the NMISC. Accurate cropping patterns and irrigated acreage data were more difficult to obtain for this Report than for past reports due to the following reasons:

- The USBR no longer requires irrigation districts to fill out Crop and Water Data reports.
- The USDA Farm Service Agency and the National Agricultural Statistics Service can both provide county data, but they are unable to provide county data by location in the county. The NMOSE needs location information in order to attribute irrigated acreage to the correct river basin.
- New Mexico State University (NMSU) County Extension Agents are increasingly unable to provide irrigated acreage and cropping pattern data due to limited resources.

The irrigated acreage in each cropping pattern was compiled by crop type and irrigation method, as on-farm irrigation efficiencies are used to determine farm delivery requirements (which vary by irrigation method). The types of irrigation systems used to irrigate cropland are classified as drip, flood, and sprinkler.

Once irrigated acreages and cropping patterns were identified, the gross irrigated acreage for each individual crop was tabulated by irrigation system type. The gross irrigated acreage is the sum of the irrigated acreage and the multiple-cropped acreage.

The NMOSE explored alternative methods to obtain cropping patterns and irrigated acreage data, as explained below.

USDA Cropland Data Layer – The U.S. Department of Agriculture-National Agriculture Statistics Service (USDA-NASS) 2010 Cropland Data Layer (CDL) was used to assess cropping patterns for some river basins. If cropping patterns corresponding to this Report's defined river

basins could not be obtained, or if the accuracy of cropping patterns was in question, CDL was used to generate cropping patterns and validate data. According to the USDA-NASS website (*http://www.nass.usda.gov/research/Cropland/metadata/metadata_nm10.htm*), *"The CDL Program is a unique agricultural-specific land cover geospatial product that is reproduced annually in participating states"* and *"builds upon NASS' traditional crop acreage estimation program and integrates Farm Service Agency (FSA) grower-reported field data with satellite imagery to create an unbiased statistical estimator of crop area at the state and county level for internal use."*

CDL classification includes both irrigated and non-irrigated lands. For the purpose of this Report, only CDL classified irrigated land has been considered. Where CDL was used, a basin-level analysis was performed to remove non-irrigated lands. This provided an estimate of irrigated lands, but there may be some non-irrigated lands included in the results due to the large area of each analysis.

In an effort to refine this estimate, the NMOSE used imagery along with CDL data to generate crop acreage boundaries. These boundaries were created for some areas where major agriculture occurs or where current cropping patterns were not available. A study was then performed to compare the differences between CDL-extracted data based on the NMOSE-defined river basins and CDL-extracted data based on generated crop acreage boundaries. The study areas included:

- Roosevelt County
  - Scattered Pecos Basin
  - Portales Basin
  - Causey Lingo Texas Gulf
- Chaves County
  - Rio Peñasco
  - RAB & Pecos Pumpers
- DeBaca County
  - Fort Sumner and Scattered Areas

Without the crop acreage boundary refinement, an overestimation (approximately 20% in the study areas) of irrigated lands occurred, which would result in an overestimation of water use. In Roosevelt County, CDL data were used to generate cropping patterns. In Chaves and DeBaca counties, CDL data were used to validate cropping patterns.

Step 2. Obtain Temperature and Precipitation Data

Calculations in this Report used 2010 weather data from weather stations around the state. Parameter-elevation Regressions on Independent Slopes Model (PRISM) climate mapping system data were used in situations where weather stations were no longer in operation or when gaps in weather data existed. According to the Prism Climate Group website (http://prism.oregonstate.edu/), *"PRISM is a unique knowledge-based system that uses point measurements of precipitation, temperature, and other climatic factors to produce continuous, digital grid estimates of monthly, yearly, and event-based climatic parameters."*

Before using PRISM data, the data accuracy was validated by comparing Hydrosphere climate data (Hydrosphere, 2010) with stations with complete data sets to corresponding PRISM data based on station locations. Analyses were performed within ArcGIS, and data was processed to correspond to existing weather station locations.

The average temperature and total recorded rainfall for each month were obtained from the weather station or PRISM location most representative of a specific crop area. In some instances, data from two weather stations were averaged to obtain the temperature and precipitation for calculations for an irrigated area.

Step 3. Determine Irrigation Season

The irrigation season for each crop is defined by the earliest and latest moisture-use dates. For annual crops, the earliest moisture-use date is assumed to be the planting date, and the latest moisture-use date is assumed to be the day before harvest begins. Additionally, for some annual crops such as corn, spring small grains, and cotton, farmers may apply a pre-plant irrigation. Readily available documents were reviewed to identify areas where these practices are common. In such cases, a 15-day pre-plant irrigation period was added to the date of planting, resulting in a longer growing season and therefore a higher consumptive use.

For perennial crops such as alfalfa and permanent pasture grasses, the earliest moisture-use date correlates with the mean daily air temperature that activates the transpiration process. This date is extrapolated from mean monthly temperature values. The latest moisture-use date correlates with the mean daily air temperature that signals the cessation of transpiration on the next day.

Step 4. Calculate Weighted Consumptive Irrigation Requirement (CIR_w)

The CIR for each crop in the cropping pattern was computed using the BCCP. The BCCP uses three electronic data files that include (1) crop acreages, (2) temperature and precipitation data, and (3) irrigation season data as determined above in Step 3. For accurate computer processing, all electronic files must conform to the format described in pages 9-13 of the NMOSE Interoffice Training Manual (Wilson, 1992b). Separate CIRs are computed for each type of irrigation system (drip, flood, and sprinkler). The BCCP calculates additional information such as the crop distribution ratio, effective rainfall, and theoretical consumptive use for individual crops by irrigation system. Wilson (1992b) describes the calculation procedures and resulting outputs in detail.

The CIR was multiplied by the crop distribution ratio to obtain the weighted CIR for a crop. The weighted CIRs for each crop were added to obtain the weighted CIR (CIR_w) for the cropping pattern.

Step 5. Alfalfa Adjustment of CIR_w

For cropping patterns that contain alfalfa, Section 3.5.1., below, discusses how to determine if an alfalfa yield adjustment to the CIR_w is necessary.

- If an alfalfa adjustment is made, the CIR_w is recomputed using the consumptive use predicted by the crop production function for alfalfa. The adjusted CIR_w is renamed CIR_a and is used in the remaining steps outlined below.
- If no alfalfa yield adjustment is made, the CIR_w value and nomenclature remain unchanged.

Step 6. Calculate the Multi-Crop Adjusted CIR (CIR_m)

If the cropping pattern includes multiple-cropped acreage, that is, acreage on which two or more crops are produced in the same year, the appropriate CIR (CIR_w or CIR_a) must be adjusted. It is important to establish whether the cropping pattern in question includes multiple-cropped acreage. If multiple-cropped acreage exists, the CIR must be adjusted upward to account for the increase in water requirements necessary to produce more than one crop on the same land. This multi-crop adjustment (CIR_m) is made by multiplying the CIR_w or CIR_a, as appropriate (see Steps 4 and 5 above), by the ratio of the gross irrigated acreage (A_g) to the net irrigated acreage (A_n):

$$CIR_m = CIR_{(w,a)}[A_g/A_n] \quad (3.5)$$

The net irrigated acreage is the difference between the gross irrigated acreage and the multiple-cropped acreage ($A_n = A_g - A_m$).

If no multi-crop adjustment is made, the CIR_w or CIR_a value and nomenclature, as appropriate, remain unchanged.

Note: There are two potential adjustments that could be made to the weighted CIR established in Step 4:

1. Alfalfa adjustment (Step 5), which results in CIR_a, and/or
2. Multi-crop adjustment (Step 6), which results in CIR_m.

Consequently, there are three possible CIRs that may be entered into the remaining steps used to calculate the irrigation withdrawals: CIR_w, CIR_a, or CIR_m. For convenience, the appropriate consumptive irrigation requirement value will be referred to simply as CIR in the remaining steps.

Step 7. Identify Irrigation Water Source

The irrigated acreage tabulated for each type of irrigation system is further identified by irrigation water source. Sources of water include surface water, groundwater, and combined water. Combined water exists when a field is irrigated with both groundwater and surface water. Combined water typically has surface water as the primary source of water, supplemented by groundwater pumped from a well.

Step 8. Calculate Farm Delivery Requirement

The farm delivery requirement (FDR) is computed by dividing the appropriate CIR (see steps 4-7, above) expressed as a depth or volume by the on-farm irrigation efficiency (E_f):

$$FDR = CIR/E_f \quad (3.6)$$

For example, if the CIR is 2.0 acre-feet per acre and E_f = 60%, using equation 3.6, the FDR = 2.0/0.60 = 3.33 acre-feet per acre.

The on-farm irrigation efficiency is affected by farm and field conditions, such as:

- Soil type
- Slope, length, and width of field
- Land surface preparation (leveling and tillage)
- Root depth of crop at the time of each irrigation event (the root depth of annual crops changes throughout the growing season)
- Antecedent soil moisture conditions
- Quality of irrigation water
- Type of irrigation system
- Available head at the farm headgate
- Frequency and amount of water applications
- Farm water management practices

To be consistent with previous water use reports, historic on-farm efficiencies were used. If the type of irrigation system changed, the on-farm efficiency was updated.

An efficient irrigation system may result in higher plant transpiration rates than an inefficient system because there will be fewer dry spots on the field (causing better uniform water distribution). The crop yield per unit of water transpired will be higher under good management than under poor management (Burt, 1995).

Step 9. Calculate Project Diversion Requirement
The project diversion requirement (PDR), or off-farm diversion requirement, is computed by dividing the farm delivery requirement (FDR) by the off-farm conveyance efficiency (E_c).

$$PDR=FDR/ E_c \qquad (3.7)$$

For example, if the FDR=3.33 acre-feet per acre, and E_c=70%, the PDR = 3.33/0.70 = 4.76 acre-feet per acre. If the water source is located on the farm, there is no E_c.

Step 10. Determine Amounts of Groundwater and Surface Water Used
Acreage irrigated by combined water must be separated into its groundwater and surface water components. The components are calculated after the withdrawal has been computed. In 2010, 47% of the total withdrawals for irrigation purposes were measured (**Appendix B, Table 4**). When measured withdrawals are not available, the groundwater and surface water components must be estimated. Estimates are made by (1) examining historical water right diversion records, (2) comparing recorded stream flows with the estimated demand, (3) contacting personnel in the Cooperative Extension Service and the Natural Resources Conservation Service, or individual farmers who know the area well, or (4) using component estimates from the previous *Water Use by Categories* report.

If records of measured withdrawals are available, the groundwater and surface water components for combined water can be determined by comparing the total withdrawal (PDR) with the measured withdrawal. If a shortage occurs, that is, the measured surface water withdrawal is less than the computed withdrawal; it is assumed that the difference is made up with groundwater. The acreage irrigated by surface water is then calculated as the product of the surface water withdrawal and irrigation efficiency divided by the CIR. The acreage irrigated by groundwater is the difference between the total acreage irrigated and the estimated acreage irrigated by surface water.

When separating combined water into its groundwater and surface water components, it is important that the appropriate irrigation efficiencies are used. Irrigation efficiencies differ between surface water (off-farm source) and groundwater (on-farm source).

Step 11. Adjust CIR
Any event or condition imposed by man or nature that affects the health of irrigated crops during the growing season will generally reduce the amount of water consumptively used by plants to a level below that predicted by the Blaney-Criddle methods. Thus, it may be necessary to adjust the CIR and estimated diversion requirements to reflect these conditions. Conditions that should be taken into consideration when estimating crop water requirements are weather, soil, biological, and economic conditions, as well as farm operations.

When measured withdrawals are available, they are compared with computed withdrawals. CIRs are adjusted downward where measured withdrawals are less than the computed withdrawals. A superscript in **Appendix B, Table 8,** indicates the locations where the CIR was adjusted. When measured withdrawals are not available, water shortages and necessary adjustments to CIRs may be estimated by the comparison of recorded stream flows with irrigation demand.

Remote sensing techniques were also investigated as a way to quantify basin-wide agricultural water use in the Mesilla Valley in Doña Ana County. The Regional ET Estimation Model **(**REEM**),** which uses an energy balance to calculate ET, was used with Landsat Imagery for 2010. NMOSE staff was trained by NMSU's Dr. Zohrab Samani, the developer of REEM, to use this method. The training consisted of satellite imagery processing techniques, weather data analysis, running REEM, and statistical evaluation of data produced by REEM.

REEM produced a CIR of 2.31 acre-feet per annum for the Mesilla Valley. NMOSE calculated a CIR of 2.49 acre-feet per annum for the same area using the steps listed above. There is a difference of 7% between these calculation results. This could be due in part to inaccuracies in the reported cropping patterns from USBR or from the field boundaries used in REEM. A 7% difference is reasonable given the assumptions utilized in both processes, and therefore both results are within an acceptable range.

In 2010, groundwater meter data and surface water diversion data were used for reporting withdrawal numbers for agricultural water use in the Lower Rio Grande (LRG) located within Sierra and Doña Ana counties. This is the first Report where groundwater meter data was available and used for the LRG. Surface water diversion data, obtained from USBR, was prorated between these counties based on Elephant Butte Irrigation District irrigated acreage. Previous Reports for the LRG used the aforementioned method for calculating CIRs.

3.5 Calibration of Consumptive Use for Alfalfa and Pecans

In New Mexico, the primary use of irrigation water is for the production of alfalfa. NMSU has conducted extensive research on alfalfa water use. This research has been incorporated into the water use estimates in this Report, as described in Section 3.5.1. In 2010, the value of pecan production totalled slightly under $187,000,000, the highest in the nation (NMDA, 2011). Pecan water use has been the subject of much research, and for this Report, water use was estimated as described in Section 3.5.2.

3.5.1 Alfalfa

Many researchers have developed crop production functions for alfalfa that relate ET (for these equations, ET is the same as consumptive use, with ET being the more common terminology) and yield. To adjust the ET for alfalfa to reflect reported yields, the NMOSE evaluated several of the equations that have been used in New Mexico. Equations developed in different climates/ elevations/latitudes or using yields outside of the range of reported yields for New Mexico were not considered for this analysis.

Sammis Crop Production Function

In the late 1970s, researchers at NMSU developed a crop production function for alfalfa that correlates annual ET (consumptive use) with annual crop yield (Sammis et al., 1982). The Sammis crop production function was developed for statewide use.

This crop production function is a linear relationship expressed in the following equation:

$$Y = 0.1473\ ET - 0.553 \qquad (3.8)$$

where Y is the annual yield in tons per acre at 0% moisture content, and ET is the annual evapotranspiration in inches. Rearranging equation 3.8 to solve for ET results in the following expression:

$$ET = (Y + 0.553)/0.1473 \quad (3.9)$$

Smeal Crop Production Function

In the 1980s, an alfalfa water use study at the NMSU Agricultural Science Center in Farmington, New Mexico, resulted in a regional crop production function for alfalfa. The results of this research were published in 1995 in Agricultural Experiment Station Bulletin 770 (Smeal et al., 1995). Farmington is located in northwestern New Mexico, and for this reason, this regional crop production function is more applicable in this area than the statewide function. The Smeal crop production function is used to estimate ET based upon reported alfalfa yields.

The Smeal crop production function is shown in the following equation (in English units):

$$Y = -3786+403\ ET \quad (3.10)$$

where Y is the annual yield in pounds per acre at 0% moisture content, and ET is the seasonal evapotranspiration in inches. Rearranging equation 3.10 to solve for ET results in the following expression:

$$ET = (Y + 3786)/403 \quad (3.11)$$

Because consumptive use equals ET, substituting the annual yield reported for a specific calendar year into equation 3.9 results in consumptive use. The weighted CIR for the cropping pattern is adjusted if the conditions described below are met.

For the purpose of this water use inventory, alfalfa yields reported by the New Mexico Agricultural Statistics Service for 2010 were used in either equation 3.9 or equation 3.11 to calibrate ET for alfalfa in several counties. If the ET predicted by equation 3.9 or equation 3.11 was higher than the value obtained using the OBC method, then the predicted ET was used in determining the CIR for alfalfa. Using this method results in a higher estimate of water use and was only done in cases where sufficient water was available to meet irrigation demand. The Smeal crop production function was used for Bernalillo, Cibola, McKinley, Rio Arriba, Sandoval, San Juan, Santa Fe, and Taos counties if the above criteria were met. The Sammis crop production function was used for the remaining counties in the state if the above criteria were met. For the 2010 Report, the alfalfa adjustment was made in Bernalillo, Chaves, Doña Ana, Hidalgo, Luna, Otero, Socorro, and Torrance counties.

3.5.2 Pecan Orchards

It is generally accepted among pecan producers and agricultural researchers that the water requirements for pecan orchards are much higher than those for other deciduous orchards. Studies conducted in the Rio Grande Valley near Las Cruces, New Mexico, and El Paso, Texas, by the USBR in 1972-73 and Seiichi Miyamoto in 1981 (Miyamoto, 1983), indicate that the growing season consumptive water use of mature pecan trees ranges from 39.36 to 51.24 acre-inches per acre, depending on the tree size and planting density.

Historically, the NMOSE has estimated the water requirement for pecan orchards using the OBC method and a seasonal consumptive use coefficient (K) of 0.65. The research conducted by the USBR and Miyamoto indicates that a K of 0.65 is much too low and needs to be revised. Evidence also suggests that threshold temperatures normally used to define the growing season for deciduous orchards are inappropriate for pecan orchards. Transpiration in these orchards generally begins when the mean daily air temperature reaches 60°F in the spring, and it ends in

the fall after a reasonably hard freeze (Miyamoto, 1983). Because the first fall frost of 28°F or below is a readily available date, it is considered the end of the growing season.

By using the above temperature criteria to define the growing season—and assuming the growing season consumptive use of water is at least 39.36 inches and the consumptive use coefficient outside the frost-free period is 0.40—the NMOSE has calibrated the seasonal consumptive use coefficient for the frost-free period. This calibration results in a seasonal consumptive use coefficient (K) of 0.90 inside the frost-free period. This value was used to calculate the CIR of pecan orchards included in 2010 cropping patterns. Various researchers are currently investigating pecan water use; consumptive use coefficients may be revised in the future.

3.6 Irrigated Acreage

This Report uses irrigated crop acreage and weather data for the 2010 calendar year; WUCB staff compiled the data. The NMISC conducted irrigated acreage inventories for the Upper Colorado River Basin in 2010, and this Report uses their data for portions of McKinley and Rio Arriba counties and all of San Juan County. Also used were NMISC's irrigated acreage and diversion data for the Gila River Basin.

The total acreage irrigated (**Appendix B, Table 8**) on farms in 2010 was 872,664 acres; 252,576 acres, or 28.94%, were irrigated with surface water, and 501,865 acres, or 57.51%, were irrigated with groundwater (**Appendix B, Table 9**). The remaining 118,223 acres (13.55%) were irrigated with a combination of surface water and groundwater.

The total acres irrigated in New Mexico for the time period 1980-2010 are summarized below in **Table 3.2.** The number of irrigated acres in production has varied substantially over the past 30 years. The 872,664 acres in production in 2010 represent a less than 1% decrease from the 875,415 acres in production in 2005.

Table 3.2. Irrigated acreage in New Mexico, 1980-2010, and percent change in irrigated acreage.

Year	Acres	Percent Change from Previous Inventory
1980	1,087,120	
1985	941,245	-13.42
1990	984,285	4.57
1995	963,050	-2.16
1999	998,793	3.71
2005	875,415	-12.35
2010	872,664	-0.31

Acreage irrigated by drip (TDA), flood (TFA), and sprinkler (TSA) methods, as well as sources of irrigation water in New Mexico counties in 2010, are presented in **Appendix B, Table 11.** Similar data, organized by river basin, are presented in **Appendix B, Table 12.** Drip irrigation accounted for 19,567 acres (2.24%); flood irrigation accounted for 397,203 acres (45.52%); and sprinkler irrigation accounted for 455,894 acres (52.24%). Sprinkler irrigation experienced the most growth over the last five years, increasing from 46.6% to 52.2% of the total acreage irrigated. Flood irrigation decreased the most, while drip irrigation remained largely unchanged.

3.7 Surface Water Shortages

Because New Mexico has long periods of drought and inconsistent precipitation, irrigators who rely on surface water often experience shortages. In most cases, shortage adjustments were made to the CIR as reflected in **Appendix B, Table 8** (see superscript next to the locale). However, where NMISC data were used, the on-farm efficiency was adjusted to reflect the shortage.

Table 3.3 summarizes the percentage of surface water shortages, by river basin, for 2010. The Texas Gulf basin did not experience surface water shortages.

Table 3.3. 2010 Surface water shortages.

River Basin	Shortage Location	Surface Water Shortage (%)
Arkansas-White-Red	Colfax County (Cimarron River)	35
	Quay County (Arch Hurley Conservancy District)	69
	Vermejo Conservancy District	29
Lower Colorado	Catron, Grant, and Hidalgo Counties (Gila and San Francisco Rivers)	up to 35
Pecos	Eddy County (Carlsbad Irrigation District)	0, offset by supplemental well pumping
	San Miguel County (Gallinas River)	21
Rio Grande	Cibola County	75
	Doña Ana County	0, offset by supplemental well pumping
	McKinley County	90
	Pojoaque Valley Irrigation District	51
	Santa Fe County and part of Rio Arriba County (Santa Cruz Irrigation District)	39
Upper Colorado	San Juan County (Chaco River)	80
	San Juan County (La Plata River)	48

4 SELF-SUPPLIED LIVESTOCK

This chapter includes:

- A definition of the water supply category.
- A summary of the livestock population changes from 2005 to 2010 for non-dairy cattle, dairy cattle, sheep, hogs, chickens, and horses, as well as details regarding the changes in dairy cattle populations in several counties over the 35-year history for which this Report has been produced.
- An explanation of the per capita water use assumptions for livestock.
- A description of the procedure used to quantify self-supplied livestock withdrawals.

Withdrawals for self-supplied livestock accounted for just over 40,180 AF, or 1.05 %, of total withdrawals in 2010 (**Appendix B, Tables 2 and 3**).

4.1 Definition of Category

The Livestock (LS) category includes water used to raise livestock, maintain self-supplied livestock facilities, and provide for on-farm processing of poultry and dairy products.

4.2 Livestock Population

All livestock totals are reported in **Table 4.1,** below. The 2010 year-end totals for non-dairy cattle in New Mexico were estimated at 1,327,584 head, a 1.52% increase from 2005. The dairy cattle population decreased from 2005 to 2010. The number of dairy cattle in 2010 was estimated at 319,552, a decrease of nearly 16% from 2005. The sheep and lamb population decreased by 23%, from 160,555 in 2005 to 123,679 in 2010. The New Mexico Agricultural Statistics Service no longer reports the number of hogs, pigs, and chickens. Data for hogs and horses were obtained from county assessor offices. The hog and pig population, which continues to decline, was estimated to be 801, and the horse population was estimated to be 34,287. The number of chickens was estimated to be 807,660 based on 2005 and 2010 data.

Table 4.1. New Mexico livestock population in 2005 and 2010.

Species[1]	2005	2010	Percent Change
All Cattle (Non-dairy)	1,307,703	1,327,584	2
Dairy Cattle	379,472	319,552	-16
Sheep/Lambs	160,555	123,679	-23
Hogs/Pigs	2,551	801	-69
Chickens	1,400,852	807,660	-42
Horses	31,799	34,287	8

[1]Sources: New Mexico Department of Agriculture and county assessor offices.

Dairies continue to be a dominant component of the LS category in the eastern and southeastern portions of the state and in Doña Ana County, located in the Lower Rio Grande Basin (**Table 4.2**). However, there was a decrease in the number of dairy cows in these areas.

Table 4.2. Number of milk cows in Chaves, Doña Ana, Roosevelt, and Curry counties as of January 1 for selected years during the period from 1976 to 2010.

Year[1]	Chaves		Doña Ana		Roosevelt		Curry	
	No. Head	Percent Change	No. Head	Percent Change	No. Head	Percent Change	No. Head	Percent Change
1976	2,700	–	5,500	–	5,000	–	400	–
1980	4,000	48	9,200	67	5,100	2	1,200	200
1985	12,000	200	23,800	159	7,600	49	1,600	33
1990	19,000	58	24,000	1	9,000	18	1,100	-31
1995	70,000	268	31,000	29	20,400	127	13,000	1082
2000	80,000	14	36,000	16	35,000	72	30,000	131
2005	99,797	25	58,227	62	65,000	86	76,820	156
2010	82,000	-18	49,000	-16	60,000	-8	65,000	-15

[1]Sources: New Mexico Department of Agriculture-Agricultural Statistics Service and county assessor offices.

4.3 Per Capita Water Use for Livestock

As with human consumption of water, livestock water used for drinking and other uses, such as dairy sanitation, are estimated on a per capita basis. Daily requirements in gallons per capita for all livestock species analyzed in this Report are presented in **Table 4.3.** Dairy cattle require the most water (primarily for drinking and facility sanitation).

Efforts have been made in past years by the dairy industry to reduce the amount of water used in facility sanitation. This has resulted in a lower GPCD for dairy cattle in this Report. Previous reports used a GPCD of 100 for dairy cattle, but based upon current information from area studies and experts, a GPCD of 65 was used in calculations for water use. Comparisons of dairy cattle water use in 2010 to past reports of dairy cattle water use will reflect this change.

Table 4.3. Drinking and miscellaneous water requirements for livestock in gallons per capita (animal) per day (GPCD).

Species	Drinking Water (GPCD)[1]	Miscellaneous Water (GPCD)[1]	Total (GPCD)[1]
Non-Dairy Cattle	9	1	10
Chickens	0.06	0.02	0.08
Hogs	2	1	3
Horses and Mules	12	1	13
Dairy Cattle	38	27	65
Sheep	2	0.2	2.2

[1]Sources: Beef cattle—Sweeten et al., 1990; Horses—Van der Leeden et al., 1990; Dairy cattle—Hagevoort, 2012 correspondence, and Lovelace, 2009; all others—Soil Conservation Service, 1975; Sykes, 1955.

4.4 Procedure for Quantifying Livestock Withdrawals

Step 1. Determine Number of Livestock (by Species) per County

The New Mexico Department of Agriculture, Agricultural Statistics Service, reports livestock population data annually, by species and county, in a report titled *New Mexico Agricultural Statistics* (NMDA, 2011). Livestock population data for this Report (*New Mexico Water Use by Categories 2010*) were taken not only from the agricultural statistics report, but also from county assessor offices and the New Mexico Taxation and Revenue Department. Where discrepancies existed among sources, data were chosen based on previous reports and local knowledge. When a county includes two or more river basins, the number of livestock in each basin was estimated based on information such as location of ranches, feedlots, and dairies.

Step 2. Determine Withdrawals

Withdrawals were calculated and reported for each species by county and river basin. Measured withdrawals, when available, were used in this Report. Most notably, all dairies in Chaves County are metered. Non-metered withdrawals were computed using the following equation:

$$W = (GPCD)(POP)/892.74 \qquad (4.1)$$

where W is the annual withdrawal in acre-feet, POP is the population of each species, and GPCD is gallons per capita per day (taken from **Table 4.3** above). Only 18% of withdrawals for livestock were measured in 2010 (**Appendix B, Table 4**). The remaining 82% of withdrawals were calculated using **equation 4.1.** It is assumed in this Report that water for chickens, hogs, horses, mules, and dairy cows comes from groundwater sources. It is also assumed that drinking water for non-dairy cattle and sheep comes from a combination of groundwater and surface water sources (groundwater sources are used where surface water supplies are either unreliable as a year-round source or offer unsatisfactory quality for livestock consumption).

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5 SELF-SUPPLIED COMMERCIAL, INDUSTRIAL, MINING, AND POWER

This chapter includes:

- Definitions of water supply categories.
- A description of the general procedure used to quantify withdrawals.
- A summary of withdrawals for each of the following self-supplied categories:
  - Commercial
  - Industrial
  - Mining
  - Power

Withdrawals for the Self-Supplied Commercial, Industrial, Mining, and Power categories accounted for 167,032 AF, or 4.38% of total withdrawals in 2010 (**Appendix B, Tables 2** and **3**).

5.1 Definition of Categories

5.1.1 Commercial (CO)

The Commercial category includes self-supplied businesses (e.g., motels, restaurants, recreational resorts, and campgrounds) and public and private institutions (e.g., public and private schools and hospitals) involved in the trade of goods or provision of services; self-supplied golf courses that are not supplied by entities covered in the Public Water Supply category; greenhouses and nurseries that both produce and sell products to the general public on the same premises; and off-stream fish hatcheries that produce fish for release.

The procedures used to calculate withdrawals for these categories, as well as those for non-metered schools, are included in the Self-Supplied Commercial category. In addition to discussing the water use reporting categories, golf courses and associated water supplies are described in Section 5.3.2.

5.1.2 Industrial (IN)

The Industrial category includes self-supplied enterprises that process raw materials or manufacture durable or nondurable goods. This category also includes water used for the construction of highways, subdivisions, and other construction projects.

5.1.3 Mining (MI)

The Mining category includes the following self-supplied enterprises that extract minerals occurring naturally in the earth's crust:

- Solids, such as potash, coal, and smelting ores
- Liquids, such as crude petroleum
- Gases, such as natural gas

This category includes water used for oil and gas production (well drilling and secondary recovery of oil), quarrying, milling (crushing, screening, washing, flotation, etc.), and other processing done at the mine site or as part of a mining activity, as well as water removed from

underground excavations (mine dewatering) and stored in—and evaporated from—tailings ponds. The Mining category also includes water used to irrigate new vegetative covers at former mine sites that have been reclaimed. It does not include the processing of raw materials, such as smelting ores, unless this activity occurs as an integral part of a mining operation and is included in an NMOSE permit.

New Mexico continues to be one of the top 20 mineral resource producing states in the nation. Section 5.5 describes some of the mining activities that occur in New Mexico and their associated water use.

5.1.4 Power (PO)

The Power category includes all self-supplied power generating facilities and water used in conjunction with coal-mining operations that are directly associated with a power generating facility that owns and/or operates the coal mines. Section 5.6 describes some power generating facilities and their associated water use.

5.2 General Procedure for Quantifying Withdrawals

The procedures for quantifying withdrawals for facilities in the Self-Supplied Commercial, Industrial, Mining, and Power categories are similar. The following steps outline the general procedure.

Step 1. Compile Metered Withdrawals
Some facilities in the Self-Supplied Commercial, Industrial, Mining, and Power categories report their metered diversions to NMOSE, and those reports are identified in agency databases or through district office communications. NMOSE agency databases identify withdrawals by use, which is the method by which metered withdrawal categories in this chapter are separated.

Step 2. Estimate Non-Reported Withdrawals That are Required to be Metered
While most self-supplied facilities are required to be metered and to report their annual water use, many do not. When metered records for the water-use inventory year are incomplete, water use is estimated based on earlier records (as with other categories in this Report) or prorated based on similar operations.

Step 3. Compile Non-Metered Withdrawals
Some facilities are unmetered, and these can be difficult to identify if a declaration has never been required or has never been filed with the NMOSE. Consequently, many of these facilities are not captured in the water-use inventory. When possible, these entities are identified through directories maintained by various business associations and regulatory agencies. The executive director or operator is then contacted by phone or mail to obtain an estimate of water use.

5.3 Self-Supplied Commercial Withdrawals

5.3.1 Schools

Water withdrawals for K-12 schools that are not metered, but are self-supplied as identified by NMED, are computed by multiplying the student population by a per capita water requirement. For this Report, the requirements listed in **Table 5.1,** below, were used to quantify water use in non-metered schools.

Table 5.1. Water requirements in gallons per capita per day (GPCD) for schools without water conserving plumbing fixtures (Vickers, 2001).

Type of Facility	Water Requirement (GPCD)
Day school	20
Boarding school	100

5.3.2 Golf Courses

In many communities, self-supplied golf courses are the largest water users in the Commercial category. There are approximately 72 golf courses in New Mexico (Golf New Mexico Magazine website), and they range from 9-hole par-three courses that cover as little as 20 acres to 18-hole courses that cover 200 acres or more. The major urban areas of the state usually have some combination of public, private, university, and military golf courses.

The amount of water used at golf courses is as varied as the golf courses themselves. Annual water use ranges from less than 100 AF to more than 500 AF, depending upon climate, species of turfgrass, irrigation management practices, number of ponds, and clubhouse facilities. Many well-established 18-hole private courses have clubhouse facilities that include a snack bar and restaurant, locker rooms with showers, and swimming pools, all of which can increase water withdrawals.

There are four types of water that golf courses can use: groundwater, surface water, municipal treated drinking water, and municipal treated effluent. Accounting for how these facilities obtain their water is a challenge. They might use only one source, or they might use several. Public and private golf courses that are self-supplied are included in this category. If a golf course is supplied with municipal treated effluent, the withdrawal has already been accounted for in the Public Water Supply category. Regardless of the type of water used at military and university courses, they are always categorized as either Public Water Supply (military) or Commercial (university). Golf courses for which water use is categorized as Public Water Supply are included in Chapter 2 discussions.

Many golf course water supply systems in the state are metered and report their annual diversions to NMOSE. For those self-supplied courses that are not metered, withdrawals are estimated using the procedure outlined in Chapter 3, Irrigated Agriculture. This procedure requires the golf course superintendent to report the acreage irrigated and the species of fairway turfgrass that is used. It is important that the species of turfgrass be identified because the CIR will vary depending on the type of grass that is grown and local climatic conditions. The CIR is assumed to be 100% met by the irrigation of the golf course. Withdrawals are calculated by dividing the CIR by an assumed efficiency. For golf courses for which turfgrass species are unknown, water use was estimated using the number of holes and known water use at nearby courses.

5.4 Self-Supplied Industrial Withdrawals

Water is used in the manufacturing industry for heating, cooling, conveying materials, washing, pollution control, and as part of product sales (AWWA, 1985). Water used for restrooms, showers, cafeterias, air conditioning, landscaping, fire protection, and other minor uses normally accounts for less than 5% of industrial intake water. Manufacturing-plant water intake depends on the type of raw material involved, the product produced, the design of the plant, and the efficiency of the industrial process (California Department of Water Resources, 1982). In many

industrial plants, water is recirculated, particularly water used for cooling. As identified by Kollar and Brewer (1980), the quantity of intake water recirculated is affected by the following factors:

- The availability and cost of water delivered to the plant
- The quality of raw water
- Plant processes and technology
- Recovery of materials, by-products, and energy
- Consumptive loss
- Air and water pollution control regulations
- Cost avoidance
- The age of the plant

In 2010, self-supplied natural gas processing plants and oil refineries accounted for about 16.31% of withdrawals for this category. Water introduced into these facilities for cooling is generally recirculated. Water separated from petroleum during processing (produced water) is usually either discharged into lagoons where it is evaporated or injected into deep aquifers. Produced water quantities are not readily available and are outside the scope of this Report; therefore, those quantities are not reported.

5.5 Self-Supplied Mining Withdrawals

New Mexico ranks twentieth in the U.S. in the production of non-energy minerals. During 2010, New Mexico ranked thirteenth in the production of coal, the state's most significant mineral commodity. Additionally, New Mexico ranked fourth in the production of copper and first in the production of potash. New Mexico is also a leading producer of industrial minerals and the top producer of perlite and zeolite in the nation (New Mexico Energy, Minerals and Natural Resources Department, 2011).

Before the start of any mining operations, the operator must register the mine, mill, smelter, or pit with the Mining and Minerals Division of the New Mexico Energy, Minerals, and Natural Resources Department. A directory of all of the mines and mills registered in the state is updated annually. This directory is used to identify the mines and mills that are not required to report their annual water withdrawals directly to the NMOSE. Those operations are then contacted by mail or phone to obtain withdrawal data.

Brine water pumped from a depth of 4,000 to 5,000 feet, which is returned by injection into deep brine aquifers, is not included in this inventory since its impact on the net supply of fresh water is zero. However, water pumped from freshwater aquifers for the secondary recovery of oil, which is later disposed of by injection into deep brine aquifers or spread on the land surface where it evaporates, is treated as a withdrawal.

The mining industry accounted for 41,559 AF, or 1% of the total withdrawals in the state (**Appendix B, Tables 2** and **3**). A breakdown of the major industries in the Mining category and their associated percentage of water withdrawals are identified in **Table 5.2.** The production of metals, including copper, molybdenum, gold, silver, and manganese, accounted for over half of the water withdrawals in the Mining category (64%). Potash mining also used significant quantities of water (22%). The remaining portion of water use, about 14%, is used in oil and gas production and to produce aggregate (i.e., sand, gravel, crushed rock, base course, and caliche), industrial materials and minerals (i.e., calcite, silica, flux, pumice, mica, humate, gypsum, zeolites, perlite, limestone, and travertine), coal, and coalbed methane.

Table 5.2. Percent water use by mining industry, 2010.

Mining Industry	Percent Water Use
Metals	64.0
Oil & Gas	5.4
Potash	22.0
Aggregate	3.8
Industrial	2.5
Coal	2.3
Geothermal	trace
Total	100.0

5.6 Self-Supplied Power Withdrawals

The New Mexico Public Regulation Commission maintains a directory of all power-generating facilities in the state. This directory is used to identify electric utility companies that are not required to report their annual withdrawals directly to NMOSE. As with other non-reporting entities, these facilities are contacted by mail and/or phone to obtain withdrawal data.

BHP Billiton in San Juan County has a complex water budget. For this Report, water used at BHP's Navajo Mine, and water that evaporates from Morgan Lake—which is filled by water pumped from the San Juan River to supply the Arizona Public Service Four Corners Power Plant—is included in the Self-Supplied Power category rather than the Self-Supplied Mining category. For similar reasons, the Public Service Company of New Mexico's San Juan Generating Station and BHP Billiton's La Plata and San Juan coal mines are also accounted for in the Self-Supplied Power category.

Withdrawals in the Self-Supplied Power category decreased approximately 8% between 2005 and 2010. Of these withdrawals, 47,434 AF (81.3%) were from surface water and 10,905 AF (18.7%) were from groundwater sources.

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6 RESERVOIR EVAPORATION

This chapter includes:

- A definition of the water supply category.
- An overview of the National Weather Service Class A Land Pan.
- A description of the procedure for estimating reservoir evaporation using the pan approach.
- A description of the procedure for estimating evaporation from small reservoirs using empirical data.

Reservoirs provide many benefits to New Mexicans, but due to evaporation from their exposed water surfaces, they consume a significant part of available surface water supplies. Average annual gross evaporation from reservoirs ranges from around 40 inches in the mountains of northern New Mexico to about 75 inches in the valleys near the southern border of the state. In 2010, this amounted to 262,215 AF, or 6.87%, of total withdrawals.

In many cases, evaporation information for a reservoir was provided by the agency responsible for operation of that reservoir, and the computational method was not provided. Reservoir evaporation is generally calculated using National Weather Service Class A Land Pan data. The pan approach is discussed in detail in this chapter, along with an empirical method that is applied when there is a lack of data. Where no data were available, evaporation quantities from the 2000 Water Use by Categories report (Wilson et. al., 2003) were used.

The stock pond evaporation calculation was eliminated from this study in approximately 1985 for the following reasons: (1) there is no comprehensive and accurate accounting of stock ponds for the state, and (2) the volume of water and associated surface area varies from stock pond to stock pond and within a year for an individual stock pond. The associated evaporation is very difficult to quantify under these conditions.

Please see **Appendix B, Table 6,** for a summary of evaporation withdrawals by river basin.

6.1 Definition of Category

For the purpose of this water use inventory, reservoir evaporation is defined as net evaporation from man-made reservoirs with a storage capacity of approximately 5,000 AF or more.

As a matter of convenience, net evaporation from the Bosque del Apache Wildlife Refuge is also included in this category due to the large volume of water that is diverted from the Rio Grande and ultimately evaporated from the wetlands.

6.2 The National Weather Service Class A Land Pan

It is generally accepted that the most practical method for estimating reservoir evaporation is the pan approach because the hydrologic and meteorological data required is readily available. A description of the National Weather Service Class A Land Pan and a procedure for application of the pan approach are outlined below.

The National Weather Service Class A Land Pan is 4 feet in diameter and 10 inches deep (**Figure 6.1** (Photo source: Wikipedia™)). It is made of unpainted, 22-gage galvanized iron and sits on a wooden pallet so that the bottom of the pan is raised 6 inches above the ground, allowing air to circulate. Site requirements specify that the pan be located on level ground, unobstructed by trees or buildings, so maximum exposure to sunlight is possible. The pan is filled with water to within 2 inches of the top and is refilled as soon as the water level drops 1 inch. The depth of water is measured with a micrometer hook gage located in a stilling well that supports the gage. An anemometer, which is used to measure wind movement, is mounted on the pallet, with the cups positioned 24 inches above the base of the pan. Maximum/minimum thermometers (which are stored in an instrument shelter) and a rain gage are also installed at the site. A 5-foot-high wire-mesh fence encloses the entire installation. A pan reading is taken every morning.

Figure 6.1. Class A Land Pan

Unlike a lake, the Class A pan permits considerable transfer of heat to and from its sides and bottom due to radiation exchange and transfer of sensible heat caused by a difference in water and air temperature. The effects of pan color and water depth on emission and absorption of radiant energy, the effects of pan rims on air turbulence, and the convection of heat within the water in the pan, produce an evaporation rate that is greater than that from a lake or reservoir surface. The ratio of lake evaporation to pan evaporation is referred to as "the pan coefficient."

Studies conducted by the USDA indicate that coefficients for Class A land pans range from 0.60 to 0.82; however, a coefficient of 0.70 is recommended for most applications (Subcommittee on Evaporation, 1934). A coefficient of 0.77 is used in the Pecos River Basin, consistent with the Pecos River Master's Manual (NMISC, 2003) used to calculate annual Pecos River Compact delivery obligations to Texas.

While the pan approach has a wide application, consideration should be given to the fact that in winter months in cold climates, water in the pan may freeze while water in the reservoir remains unfrozen.

6.3 Procedure for Estimating Reservoir Evaporation Using the Pan Approach

Step 1. **Determine Average Monthly Reservoir Gage Height (Content)**
Compute the average gage height of the water surface level, or the average reservoir content for each month, from daily measurements reported by the agency responsible for managing the reservoir. Sources of data include the NMISC, the U.S. Army Corps of Engineers, the USBR, the USGS, the National Oceanic and Atmospheric Administration (NOAA), and irrigation districts.

Step 2. Determine Reservoir Surface Area
Determine the average water surface area in acres for each month from a curve or equation that correlates gage height or content with surface area. Area-gage height or area-capacity data can be obtained from the agencies mentioned in Step 1.

Step 3. Account for Winter Ice Surface Area
Winter evaporation estimates must take into account the possible effects of ice cover. Partial ice cover will inhibit evaporation; complete ice cover will reduce water surface evaporation to zero. Thus, the average surface area computed in Step 2 must be adjusted to reflect the surface area covered by ice. For large reservoirs, daily measurements of ice cover may be available. Some agencies have developed tables showing the percentage of ice cover by month, based on historical records, which may be used when no other data are available.

Step 4. Obtain Class A Land Pan Evaporation Data
Obtain Class A land pan evaporation data recorded for each month from the weather station that best represents climate conditions in the study area. Measurements of monthly and annual evaporation from U.S. Weather Bureau Class A land pans are generally available from NOAA.

Step 5. Calculate Monthly Gross Evaporation Rate
The gross evaporation rate for each month is computed by multiplying the pan evaporation, which is expressed as a depth of water in feet, by the pan coefficient. In winter, if the evaporation pan is iced over, but the water surface of a nearby reservoir remains unfrozen, agencies such as the USBR have developed empirical equations based on temperature that can be used to estimate gross evaporation.

Step 6. Obtain Rainfall Data
Obtain the total rainfall recorded for each month. These data are published monthly for most weather stations operated by the NOAA. When a reservoir is completely covered with ice for part of a month, recorded precipitation should include only those days when the water surface was exposed.

Step 7. Calculate Monthly Net Evaporation Rates
The net evaporation rate for each month, expressed as a depth of water in feet, is calculated by subtracting the measured rainfall, in feet, from the gross evaporation rate obtained in Step 5.

Step 8. Calculate Monthly Evaporation (AF)
The net volume of water evaporated in each month, expressed in acre-feet, is calculated by multiplying the exposed surface area, expressed in acres, by the net evaporation rate, expressed in feet.

Step 9. Calculate Annual Evaporation (AF)
Add the net evaporation for each month to get the net evaporation for the calendar year.

6.4 Procedure for Estimating Evaporation from Small Reservoirs Using Empirical Data

In some areas there are small reservoirs that are not monitored on a regular basis. Many of these are not equipped with a gage to measure the water level, and area capacity curves are frequently not available. The NMOSE Dam Safety Bureau provided the most up-to-date area capacity data where possible for use in estimating evaporation. Because these reservoirs are small, and hydrological and meteorological data are typically unavailable, spending extensive time and effort to estimate annual evaporation is not recommended. The following procedure was used to estimate evaporation for these smaller reservoirs.

Step 1. Obtain Reservoir Surface Area
Refer to the area capacity curves to obtain the mean reservoir surface area using the mean gage height of the reservoir.

Step 2. Estimate Annual Gross Evaporation
The annual gross evaporation is estimated by reading values from isopleths drawn on maps prepared by the Soil Conservation Service (NMSE/SCS, 1972).

Step 3. Estimate Monthly Rainfall
The monthly rainfall is obtained from nearby climate stations.

Step 4. Calculate Net Evaporation Rate
Subtract the rainfall from the gross evaporation rate to get the net evaporation rate.

Step 5. Calculate Annual Net Evaporation (acre-feet)
Multiply the mean water surface area, expressed in acres, by the net evaporation rate, expressed in feet, to get the net evaporation for the calendar year in acre-feet.

APPENDIX A: GLOSSARY

Acre-foot (AF)

The quantity of water required to cover one acre (43,560 square feet) of land with one foot of water. There are 325,851 gallons in one acre-foot of water.

Aquifer

A saturated underground formation of permeable rock or unconsolidated materials, such as gravel, silt, or clay, capable of storing water and transmitting it to wells, springs, or streams.

Combined water

The combination of groundwater and surface water used on-site for the same purpose, such as crop irrigation.

Consumptive irrigation requirement (CIR)

The quantity of irrigation water expressed as a depth or volume, exclusive of effective rainfall, that is consumptively used by plants or is evaporated from the soil surface in a specific period of time. It does not include water requirements for leaching, frost protection, wind erosion protection, or plant cooling. Such requirements are accounted for in on-farm efficiency values. The consumptive irrigation requirement may be numerically determined by subtracting effective rainfall from the consumptive use.

Consumptive use (U, u_m) or evapotranspiration (ET)

The unit amount of water consumed on a given area in transpiration, building of plant tissue, and evaporated from adjacent soil, water surface, snow, or intercepted rainfall in a specific period of time. The term includes effective rainfall. Consumptive use may be expressed either in volume per unit area, such as area-inches or acre-feet per acre, or depth, such as in inches or feet.

Crop distribution ratio (CDR)

A ratio computed by dividing the acreage planted in a specific crop by the total acreage for all crops included in the cropping pattern.

Cropping pattern

The distribution of the total irrigated acreage in a specific area according to the acreage planted in each individual crop.

Diversion

The quantity of metered water taken from a surface water or groundwater source.

Drip irrigation

The precise application of water on, above, or beneath the soil by surface drip, subsurface drip, bubbler, spray, mechanical move, and pulse systems. Water is applied as discrete or continuous drops, tiny streams, or miniature spray through emitters or applicators placed along a water delivery line near the plant(s). This may also be referred to as trickle irrigation.

Effective rainfall (R_e, r_e)

Rainfall that occurs during the growing period of a crop that becomes available to meet its consumptive irrigation requirements. It does not include rain that is intercepted by the plant canopy, surface runoff, or deep percolation below the root zone.

Evapotranspiration (ET)

See consumptive use.

Farm delivery requirement (FDR)

The quantity of water exclusive of effective rainfall, that is delivered to the farm headgate or is diverted from a source of water that originates on the farm itself, such as a well or spring, to satisfy the consumptive irrigation requirements of crops grown on a farm in a specific period of time. The farm delivery requirement is computed by dividing the consumptive irrigation requirement, expressed as depth or volume, by the on-farm irrigation efficiency, expressed as a decimal.

Field application efficiency

The ratio of the volume of irrigation water added to the root zone to the depth or volume of water applied to the soil. The application efficiency does not account for conveyance losses that may occur between the farm headgate and the fields that are irrigated (see On-farm irrigation efficiency).

Flood irrigation

Includes furrow, border-strip, level-basin, and wild flooding. It is often referred to as "surface irrigation" because the water applied flows over the surface of the irrigated field, or "gravity irrigation" because free water runs downhill.

Gallons per capita per day (GPCD)

The average quantity (gallons) of water used per person, or per head of livestock, per day.

Groundwater

Water stored in the zone of saturation of an aquifer.

Idle and fallow

Acreage plowed and cultivated during the current year but left unseeded or acreage that is left unused one or more years.

Instream use

Water use that occurs within a stream channel. Instream use is not dependent on withdrawal or diversion from groundwater or surface water sources; it is usually classified as a flow use. Examples of flow uses that depend on water running freely in a channel are hydroelectric power generation, recreation, fish propagation, and water quality improvement.

Irrigable acreage

The sum of irrigated crop acreage and idle and fallow acreage. Such acreage is developed for farming and irrigation works to apply water to the land. It does not include farmstead, feedlots, road areas, ditches, and the like.

Irrigated acreage (net)

Includes agricultural land to which water was artificially applied by controlled means during the calendar year. It includes pre-plant, partial, supplemental, and semi-irrigation applications. Land flooded during high water periods is included as irrigation only if the water was diverted to agricultural land by dams, canals, or other works. It is equal to the sum of all irrigated crop acreage minus the multiple-cropped acreage.

Multiple-cropped acreage

The same acreage used to produce two or more crops in the same year. When conducting inventories of irrigated acreage, each irrigated crop is included as part of the planted acreage, but the multiple-cropped acreage is subtracted from the sum of all crop acreage to obtain the net acreage irrigated.

Off-farm conveyance efficiency (E_c)

The ratio, expressed as a percentage of the quantity of water delivered to the farm headgate by an open or closed conveyance system, to the quantity of water introduced into the conveyance system at the source or sources of supply.

On-farm distribution system

A system that conveys diverted water to the appropriate field on the farm. On-farm distribution systems may consist of a series of ditches or pipes.

On-farm irrigation efficiency (E_f)

The ratio, expressed as a percentage, of the volume of irrigation water infiltrated and stored in the root zone to the depth or volume of water diverted from the farm headgate or a source of water originating on the farm itself, such as a well or spring. The on-farm irrigation efficiency reflects the efficiency of the on-farm distribution and application system, and includes deep percolation losses necessary as a beneficial use for leaching excess salts from the root zone. The on-farm irrigation efficiency is used to calculate the farm delivery requirement.

Pre-plant irrigation

Water applied to fields before seed is sown to provide optimum soil moisture conditions for germination and for storage in the soil profile for later consumptive use by plants during the growing season.

Project diversion requirement or off-farm diversion requirement (PDR)

When the source of irrigation water does not originate on the farm, the project diversion requirement, or off-farm diversion requirement, is defined as the quantity of water, exclusive of effective rainfall, that is diverted from an off-farm source to satisfy the farm delivery requirement in a specific period of time. An additional quantity of water must be diverted from the ultimate source of supply to make up for conveyance losses between the farm headgate and the source of water. Estimated conveyance losses are added to the farm delivery requirement to arrive at the project diversion requirement. The off-farm diversion requirement may also be calculated by dividing the farm delivery requirement by the off-farm conveyance efficiency, expressed as a decimal.

Project or system irrigation efficiency (E_j)

The combined efficiency of the entire irrigation system, from the original diversion point to the crop root zone. It is the product of the on-farm efficiency (E_f) and the off-farm conveyance efficiency (E_c) and is expressed as a percentage. When the irrigation source originates on-farm, such as from a well or spring, the off-farm conveyance efficiency does not apply; therefore, the project or system efficiency is the same as the on-farm irrigation efficiency.

River basin (RVB)

The entire area drained by a stream (or river) or system of connecting streams so that all the streamflow originating in the area is discharged through a single outlet.

Self-supplied

Water users who withdraw water directly from a groundwater or surface water source.

Sprinkler irrigation

A method of applying irrigation water (similar to rainfall) to farm crops, golf courses, and residential yards and gardens. On a farm, the water is distributed through a system of pipes, by a pump, and is sprayed through the air. Sprinkler irrigation systems can be divided into periodic move systems that remain at a fixed position while irrigating, and continuous move systems that move in either a circular or straight path while irrigating.

Surface water

Water stored in ponds, lakes, rivers, and streams.

Transpiration

The process by which water in plants is transferred into water vapor in the atmosphere.

Weighted consumptive irrigation requirement (WCIR)

The CIR for a crop multiplied by the crop distribution ratio for that crop. Summing the WCIR for all the crops in a cropping pattern equals a WCIR for that cropping pattern.

Withdrawal

The quantity of calculated, metered, or estimated water taken from a surface water or groundwater source.

APPENDIX B: 2010 POPULATION AND WATER USE TABLES

For many readers, the water use tables represent the heart of this Report. This appendix contains the following 12 water use tables:

Table 1. Populations in New Mexico River Basins, 2010.

Table 2. Summary of withdrawals (acre-feet) in New Mexico, 2010.

Table 3. Water Use by category expressed as a percentage of state totals in New Mexico, 2010.

Table 4. Percent of withdrawals measured in each water use category in New Mexico, 2010.

Table 5. Summary of water use in acre-feet in New Mexico counties, 2010.

Table 6. Summary of withdrawals in acre-feet in New Mexico River Basins, 2010.

Table 7. Public Water Supply and Self-Supplied Domestic. Withdrawals in acre-feet, in New Mexico counties, 2010.

Table 8. Irrigated Agriculture. Withdrawals in acre-feet in New Mexico counties, 2010.

Table 9. Irrigated Agriculture. Summary of acreage irrigated, withdrawals, and conveyance losses (acre-feet) in New Mexico River Basins, 2010.

Table 10. Irrigated acreage and sources of irrigation in New Mexico counties, 2010.

Table 11. Acreage irrigated by drip, flood, and sprinkler application methods and sources of irrigation water in New Mexico, 2010.

Table 12. Acreage irrigated by drip, flood, and sprinkler application methods and sources of irrigation water in New Mexico river basins, 2010.

The equations listed below were used to compute the irrigation withdrawals shown in this appendix:

$$TFWSW=CIRSW(ASWO+ASWC)/E_f$$

$$TFWGW=CIRGW(AGWO+AGWC)/E_f$$

$$TPWSW=TFWSW/Ec \text{ where } Ec > 0$$

$$TPWGW=TFWGW \text{ (assuming the source of water is on-farm)}$$

$$CLSW=TPWSW-TFWSW$$

Results from these calculations are presented in **Tables 8 and 9.** Listed below are descriptions of the acronyms used in these equations. These acronyms appear as column headings in **Tables 8 and 9.**

AGWC	Groundwater component of acreage irrigated with both surface water and groundwater (combined water)
AGWO	Acreage irrigated with groundwater only
ASWC	Surface water component of acreage irrigated with both surface water and groundwater (combined water)
ASWO	Acreage irrigated with surface water only
CIRGW	Consumptive irrigation requirement for acreage irrigated with groundwater
CIRSW	Consumptive irrigation requirement for acreage irrigated with surface water
CLSW	Surface water conveyance losses in canals and laterals from stream or reservoir to farm headgate
E_f	On-farm irrigation efficiency
E_c	Off-farm conveyance efficiency
TFWGW	Total farm withdrawal, groundwater
TFWSW	Total farm withdrawal, surface water
TPWGW	Total project withdrawal, groundwater
TPWSW	Total project withdrawal, surface water

Table 1. Populations in New Mexico River Basins, 2010.

River Basin	Category	Population	% Population
Arkansas-White-Red	Domestic (self-supplied)	6,022	0.29
Arkansas-White-Red	Public Water Supply	29,790	1.45
	River Basin Totals	35,812	2
Lower Colorado	Domestic (self-supplied)	26,783	1.30
Lower Colorado	Public Water Supply	36,036	1.75
	River Basin Totals	62,819	3
Pecos	Domestic (self-supplied)	23,915	1.16
Pecos	Public Water Supply	161,385	7.84
	River Basin Totals	185,300	9
Rio Grande	Domestic (self-supplied)	182,791	8.88
Rio Grande	Public Water Supply	1,317,904	64.00
	River Basin Totals	1,500,696	73
Texas Gulf	Domestic (self-supplied)	19,041	0.92
Texas Gulf	Public Water Supply	107,080	5.15
	River Basin Totals	125,121	6
Upper Colorado	Domestic (self-supplied)	37,142	1.80
Upper Colorado	Public Water Supply	112,289	5.45
	River Basin Totals	149,431	7
	State Totals	2,059,179	100

Table 2. Summary of withdrawals (acre-feet) in New Mexico, 2010.

Category	WSW	WGW	TW
Public Water Supply	81,114	236,296	317,410
Domestic (self-supplied)	0	28,952	28,952
Irrigated Agriculture	1,633,940	1,366,215	3,000,155
Livestock (self-supplied)	3,431	36,749	40,180
Commercial (self-supplied)	1,938	52,755	54,693
Industrial (self-supplied)	926	11,514	12,440
Mining (self-supplied)	10,845	30,714	41,559
Power (self-supplied)	47,434	10,905	58,339
Reservoir Evaporation	262,216	0	262,216
State Totals	2,041,844	1,774,101	3,815,945

Key: WSW= withdrawal, surface water; WGW=withdrawal, groundwater; TW=total withdrawal

Table 3. Water use by category expressed as a percent of state totals in New Mexico, 2010. Surface water and groundwater component of each category is identified.

Category	% TW	% WSW	% WGW
Public Water Supply	8.32	25.55	74.45
Domestic (self-supplied)	0.76	0.00	100.00
Irrigated Agriculture	78.62	54.46	45.54
Livestock (self-supplied)	1.05	8.54	91.46
Commercial (self-supplied)	1.43	3.54	96.46
Industrial (self-supplied)	0.33	7.44	92.56
Mining (self-supplied)	1.09	26.10	73.90
Power (self-supplied)	1.53	81.32	18.68
Reservoir Evaporation	6.87	100.00	0.00
State Totals	**100.00**		

Key: TW=total withdrawal; WSW= withdrawal, surface water; WGW=withdrawal, groundwater

Table 4. Percent of withdrawals measured in each water use category in New Mexico, 2010.

Category	MSW	MGW	MTW
Public Water Supply	93	83	85
Domestic (self-supplied)	0	0	0
Irrigated Agriculture	61	30	47
Livestock (self-supplied)	0	19	18
Commercial (self-supplied)	86	93	93
Industrial (self-supplied)	100	100	100
Mining (self-supplied)	97	97	97
Power (self-supplied)	100	100	100
Reservoir Evaporation	96	0	96

Key: MSW= percent of surface water withdrawals measured; MGW=percent of groundwater withdrawals measured; MTW=percent of total withdrawals that were measured

Table 5. Summary of water use in acre-feet in New Mexico counties, 2010.

CN	COUNTY	CATEGORY	WSW	WGW	TW
1	Bernalillo	Commercial (self-supplied)	0	9,032	9,032
1	Bernalillo	Domestic (self-supplied)	0	2,996	2,996
1	Bernalillo	Industrial (self-supplied)	0	1,072	1,072
1	Bernalillo	Irrigated Agriculture	43,309	2,604	45,913
1	Bernalillo	Livestock (self-supplied)	4	252	257
1	Bernalillo	Mining (self-supplied)	0	89	89
1	Bernalillo	Power (self-supplied)	0	466	466
1	Bernalillo	Public Water Supply	45,152	64,991	110,143
1	Bernalillo	Reservoir Evaporation	0	0	0
		County Totals	88,466	81,502	169,967
3	Catron	Commercial (self-supplied)	0	235	235
3	Catron	Domestic (self-supplied)	0	161	161
3	Catron	Industrial (self-supplied)	0	0	0
3	Catron	Irrigated Agriculture	21,056	327	21,384
3	Catron	Livestock (self-supplied)	214	241	455
3	Catron	Mining (self-supplied)	0	15	15
3	Catron	Power (self-supplied)	0	0	0
3	Catron	Public Water Supply	46	160	206
3	Catron	Reservoir Evaporation	0	0	0
		County Totals	21,316	1,139	22,456
5	Chaves	Commercial (self-supplied)	199	2,591	2,789
5	Chaves	Domestic (self-supplied)	0	1,120	1,120
5	Chaves	Industrial (self-supplied)	0	63	63
5	Chaves	Irrigated Agriculture	15,840	225,759	241,598
5	Chaves	Livestock (self-supplied)	231	8,112	8,342
5	Chaves	Mining (self-supplied)	0	225	225
5	Chaves	Power (self-supplied)	0	0	0
5	Chaves	Public Water Supply	0	16,559	16,559
5	Chaves	Reservoir Evaporation	0	0	0
		County Totals	16,269	254,429	270,698

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal, groundwater; TW=total withdrawal

Table 5. Summary of water use in acre-feet in New Mexico counties, 2010.

CN	COUNTY	CATEGORY	WSW	WGW	TW
6	Cibola	Commercial (self-supplied)	0	45	45
6	Cibola	Domestic (self-supplied)	0	1,063	1,063
6	Cibola	Industrial (self-supplied)	0	2,749	2,749
6	Cibola	Irrigated Agriculture	1,591	3,855	5,446
6	Cibola	Livestock (self-supplied)	40	166	206
6	Cibola	Mining (self-supplied)	0	21	21
6	Cibola	Power (self-supplied)	0	0	0
6	Cibola	Public Water Supply	0	2,947	2,947
6	Cibola	Reservoir Evaporation	1,080	0	1,080
		County Totals	2,711	10,847	13,558
7	Colfax	Commercial (self-supplied)	124	134	258
7	Colfax	Domestic (self-supplied)	0	56	56
7	Colfax	Industrial (self-supplied)	0	49	49
7	Colfax	Irrigated Agriculture	46,091	3,712	49,803
7	Colfax	Livestock (self-supplied)	199	219	418
7	Colfax	Mining (self-supplied)	308	0	308
7	Colfax	Power (self-supplied)	0	0	0
7	Colfax	Public Water Supply	2,103	853	2,956
7	Colfax	Reservoir Evaporation	6,725	0	6,725
		County Totals	55,549	5,024	60,573
9	Curry	Commercial (self-supplied)	0	1,418	1,418
9	Curry	Domestic (self-supplied)	0	743	743
9	Curry	Industrial (self-supplied)	0	0	0
9	Curry	Irrigated Agriculture	0	167,172	167,172
9	Curry	Livestock (self-supplied)	174	6,297	6,471
9	Curry	Mining (self-supplied)	0	7	7
9	Curry	Power (self-supplied)	0	0	0
9	Curry	Public Water Supply	0	8,219	8,219
9	Curry	Reservoir Evaporation	0	0	0
		County Totals	174	183,856	184,029

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal, groundwater; TW=total withdrawal

Table 5. Summary of water use in acre-feet in New Mexico counties, 2010.

CN	COUNTY	CATEGORY	WSW	WGW	TW
11	De Baca	Commercial (self-supplied)	0	3	3
11	De Baca	Domestic (self-supplied)	0	29	29
11	De Baca	Industrial (self-supplied)	0	0	0
11	De Baca	Irrigated Agriculture	45,173	12,076	57,249
11	De Baca	Livestock (self-supplied)	78	319	397
11	De Baca	Mining (self-supplied)	0	25	25
11	De Baca	Power (self-supplied)	0	0	0
11	De Baca	Public Water Supply	0	392	392
11	De Baca	Reservoir Evaporation	8,958	0	8,958
		County Totals	54,209	12,845	67,054
13	Dona Ana	Commercial (self-supplied)	0	7,875	7,875
13	Dona Ana	Domestic (self-supplied)	0	653	653
13	Dona Ana	Industrial (self-supplied)	0	120	120
13	Dona Ana	Irrigated Agriculture	271,569	121,911	393,480
13	Dona Ana	Livestock (self-supplied)	148	4,245	4,393
13	Dona Ana	Mining (self-supplied)	0	74	74
13	Dona Ana	Power (self-supplied)	0	1,966	1,966
13	Dona Ana	Public Water Supply	0	41,434	41,434
13	Dona Ana	Reservoir Evaporation	0	0	0
		County Totals	271,717	178,279	449,996
15	Eddy	Commercial (self-supplied)	0	504	504
15	Eddy	Domestic (self-supplied)	0	203	203
15	Eddy	Industrial (self-supplied)	0	2,109	2,109
15	Eddy	Irrigated Agriculture	78,488	109,738	188,226
15	Eddy	Livestock (self-supplied)	88	1,246	1,335
15	Eddy	Mining (self-supplied)	0	9,303	9,303
15	Eddy	Power (self-supplied)	0	0	0
15	Eddy	Public Water Supply	0	15,465	15,465
15	Eddy	Reservoir Evaporation	13,540	0	13,540
		County Totals	92,116	138,568	230,684

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal, groundwater; TW=total withdrawal

Table 5. Summary of water use in acre-feet in New Mexico counties, 2010.

CN	COUNTY	CATEGORY	WSW	WGW	TW
17	Grant	Commercial (self-supplied)	0	163	163
17	Grant	Domestic (self-supplied)	0	185	185
17	Grant	Industrial (self-supplied)	0	0	0
17	Grant	Irrigated Agriculture	31,709	4,461	36,170
17	Grant	Livestock (self-supplied)	149	175	324
17	Grant	Mining (self-supplied)	3,662	7,882	11,544
17	Grant	Power (self-supplied)	0	4	4
17	Grant	Public Water Supply	0	3,919	3,919
17	Grant	Reservoir Evaporation	0	0	0
		County Totals	35,520	16,789	52,309
19	Guadalupe	Commercial (self-supplied)	0	66	66
19	Guadalupe	Domestic (self-supplied)	0	39	39
19	Guadalupe	Industrial (self-supplied)	0	0	0
19	Guadalupe	Irrigated Agriculture	18,728	1,890	20,617
19	Guadalupe	Livestock (self-supplied)	79	318	398
19	Guadalupe	Mining (self-supplied)	0	0	0
19	Guadalupe	Power (self-supplied)	0	0	0
19	Guadalupe	Public Water Supply	0	799	799
19	Guadalupe	Reservoir Evaporation	11,535	0	11,535
		County Totals	30,342	3,112	33,454
21	Harding	Commercial (self-supplied)	0	1	1
21	Harding	Domestic (self-supplied)	0	25	25
21	Harding	Industrial (self-supplied)	0	0	0
21	Harding	Irrigated Agriculture	0	3,073	3,073
21	Harding	Livestock (self-supplied)	82	347	429
21	Harding	Mining (self-supplied)	0	0	0
21	Harding	Power (self-supplied)	0	0	0
21	Harding	Public Water Supply	0	69	69
21	Harding	Reservoir Evaporation	0	0	0
		County Totals	82	3,514	3,596

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal, groundwater; TW=total withdrawal

Table 5. Summary of water use in acre-feet in New Mexico counties, 2010.

CN	COUNTY	CATEGORY	WSW	WGW	TW
23	Hidalgo	Commercial (self-supplied)	0	204	204
23	Hidalgo	Domestic (self-supplied)	0	131	131
23	Hidalgo	Industrial (self-supplied)	0	783	783
23	Hidalgo	Irrigated Agriculture	6,754	58,615	65,369
23	Hidalgo	Livestock (self-supplied)	54	227	281
23	Hidalgo	Mining (self-supplied)	1,689	0	1,689
23	Hidalgo	Power (self-supplied)	0	47	47
23	Hidalgo	Public Water Supply	0	629	629
23	Hidalgo	Reservoir Evaporation	0	0	0
		County Totals	8,497	60,637	69,134
25	Lea	Commercial (self-supplied)	0	1,866	1,866
25	Lea	Domestic (self-supplied)	0	1,498	1,498
25	Lea	Industrial (self-supplied)	0	270	270
25	Lea	Irrigated Agriculture	0	172,297	172,297
25	Lea	Livestock (self-supplied)	75	2,111	2,186
25	Lea	Mining (self-supplied)	0	2,006	2,006
25	Lea	Power (self-supplied)	0	3,781	3,781
25	Lea	Public Water Supply	0	13,195	13,195
25	Lea	Reservoir Evaporation	0	0	0
		County Totals	75	197,024	197,099
27	Lincoln	Commercial (self-supplied)	0	2,680	2,680
27	Lincoln	Domestic (self-supplied)	0	185	185
27	Lincoln	Industrial (self-supplied)	0	1	1
27	Lincoln	Irrigated Agriculture	15,393	4,706	20,099
27	Lincoln	Livestock (self-supplied)	223	252	476
27	Lincoln	Mining (self-supplied)	0	12	12
27	Lincoln	Power (self-supplied)	0	0	0
27	Lincoln	Public Water Supply	1,085	2,744	3,829
27	Lincoln	Reservoir Evaporation	0	0	0
		County Totals	16,702	10,580	27,282

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal, groundwater; TW=total withdrawal

Table 5. Summary of water use in acre-feet in New Mexico counties, 2010.

CN	COUNTY	CATEGORY	WSW	WGW	TW
28	Los Alamos	Commercial (self-supplied)	0	0	0
28	Los Alamos	Domestic (self-supplied)	0	0	0
28	Los Alamos	Industrial (self-supplied)	0	0	0
28	Los Alamos	Irrigated Agriculture	0	0	0
28	Los Alamos	Livestock (self-supplied)	0	0	0
28	Los Alamos	Mining (self-supplied)	0	0	0
28	Los Alamos	Power (self-supplied)	0	0	0
28	Los Alamos	Public Water Supply	21	4,044	4,065
28	Los Alamos	Reservoir Evaporation	0	0	0
		County Totals	21	4,044	4,065
29	Luna	Commercial (self-supplied)	0	314	314
29	Luna	Domestic (self-supplied)	0	868	868
29	Luna	Industrial (self-supplied)	1	12	13
29	Luna	Irrigated Agriculture	66,633	49,132	115,765
29	Luna	Livestock (self-supplied)	47	523	570
29	Luna	Mining (self-supplied)	12	154	166
29	Luna	Power (self-supplied)	0	1,219	1,219
29	Luna	Public Water Supply	0	4,055	4,055
29	Luna	Reservoir Evaporation	0	0	0
		County Totals	66,693	56,276	122,970
31	McKinley	Commercial (self-supplied)	0	60	60
31	McKinley	Domestic (self-supplied)	0	3,128	3,128
31	McKinley	Industrial (self-supplied)	0	800	800
31	McKinley	Irrigated Agriculture	1,095	0	1,095
31	McKinley	Livestock (self-supplied)	99	400	499
31	McKinley	Mining (self-supplied)	0	2,372	2,372
31	McKinley	Power (self-supplied)	0	3,415	3,415
31	McKinley	Public Water Supply	0	4,123	4,123
31	McKinley	Reservoir Evaporation	0	0	0
		County Totals	1,194	14,298	15,492

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal, groundwater; TW=total withdrawal

Table 5. Summary of water use in acre-feet in New Mexico counties, 2010.

CN	COUNTY	CATEGORY	WSW	WGW	TW
33	Mora	Commercial (self-supplied)	0	237	237
33	Mora	Domestic (self-supplied)	0	87	87
33	Mora	Industrial (self-supplied)	0	0	0
33	Mora	Irrigated Agriculture	12,914	0	12,914
33	Mora	Livestock (self-supplied)	188	213	400
33	Mora	Mining (self-supplied)	0	39	39
33	Mora	Power (self-supplied)	0	0	0
33	Mora	Public Water Supply	0	563	563
33	Mora	Reservoir Evaporation	0	0	0
		County Totals	13,101	1,139	14,240
35	Otero	Commercial (self-supplied)	189	1,655	1,844
35	Otero	Domestic (self-supplied)	0	613	613
35	Otero	Industrial (self-supplied)	0	33	33
35	Otero	Irrigated Agriculture	6,741	15,928	22,669
35	Otero	Livestock (self-supplied)	104	114	218
35	Otero	Mining (self-supplied)	0	273	273
35	Otero	Power (self-supplied)	0	0	0
35	Otero	Public Water Supply	4,831	3,894	8,725
35	Otero	Reservoir Evaporation	0	0	0
		County Totals	11,865	22,511	34,376
37	Quay	Commercial (self-supplied)	0	164	164
37	Quay	Domestic (self-supplied)	0	66	66
37	Quay	Industrial (self-supplied)	0	0	0
37	Quay	Irrigated Agriculture	36,212	7,947	44,159
37	Quay	Livestock (self-supplied)	50	464	514
37	Quay	Mining (self-supplied)	0	0	0
37	Quay	Power (self-supplied)	0	0	0
37	Quay	Public Water Supply	0	1,701	1,701
37	Quay	Reservoir Evaporation	28,097	0	28,097
		County Totals	64,359	10,343	74,702

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal, groundwater; TW=total withdrawal

Table 5. Summary of water use in acre-feet in New Mexico counties, 2010.

CN	COUNTY	CATEGORY	WSW	WGW	TW
39	Rio Arriba	Commercial (self-supplied)	0	1,566	1,566
39	Rio Arriba	Domestic (self-supplied)	0	1,459	1,459
39	Rio Arriba	Industrial (self-supplied)	0	0	0
39	Rio Arriba	Irrigated Agriculture	112,384	1,282	113,666
39	Rio Arriba	Livestock (self-supplied)	185	208	393
39	Rio Arriba	Mining (self-supplied)	0	546	546
39	Rio Arriba	Power (self-supplied)	0	0	0
39	Rio Arriba	Public Water Supply	706	1,835	2,540
39	Rio Arriba	Reservoir Evaporation	29,952	0	29,952
		County Totals	143,226	6,896	150,122
41	Roosevelt	Commercial (self-supplied)	0	177	177
41	Roosevelt	Domestic (self-supplied)	0	176	176
41	Roosevelt	Industrial (self-supplied)	0	0	0
41	Roosevelt	Irrigated Agriculture	0	186,021	186,021
41	Roosevelt	Livestock (self-supplied)	84	5,135	5,219
41	Roosevelt	Mining (self-supplied)	0	151	151
41	Roosevelt	Power (self-supplied)	0	0	0
41	Roosevelt	Public Water Supply	0	2,895	2,895
41	Roosevelt	Reservoir Evaporation	0	0	0
		County Totals	84	194,555	194,639
43	Sandoval	Commercial (self-supplied)	17	2,848	2,865
43	Sandoval	Domestic (self-supplied)	0	2,743	2,743
43	Sandoval	Industrial (self-supplied)	0	3,066	3,066
43	Sandoval	Irrigated Agriculture	48,322	624	48,946
43	Sandoval	Livestock (self-supplied)	62	79	141
43	Sandoval	Mining (self-supplied)	0	275	275
43	Sandoval	Power (self-supplied)	0	0	0
43	Sandoval	Public Water Supply	219	15,696	15,915
43	Sandoval	Reservoir Evaporation	5,170	0	5,170
		County Totals	53,789	25,330	79,120

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal, groundwater; TW=total withdrawal

Table 5. Summary of water use in acre-feet in New Mexico counties, 2010.

CN	COUNTY	CATEGORY	WSW	WGW	TW
45	San Juan	Commercial (self-supplied)	1,091	42	1,134
45	San Juan	Domestic (self-supplied)	0	1,710	1,710
45	San Juan	Industrial (self-supplied)	925	1	926
45	San Juan	Irrigated Agriculture	313,323	0	313,323
45	San Juan	Livestock (self-supplied)	59	258	317
45	San Juan	Mining (self-supplied)	716	146	862
45	San Juan	Power (self-supplied)	47,434	0	47,434
45	San Juan	Public Water Supply	19,275	376	19,651
45	San Juan	Reservoir Evaporation	29,505	0	29,505
		County Totals	412,329	2,534	414,862
47	San Miguel	Commercial (self-supplied)	174	987	1,161
47	San Miguel	Domestic (self-supplied)	0	654	654
47	San Miguel	Industrial (self-supplied)	0	3	3
47	San Miguel	Irrigated Agriculture	36,913	0	36,913
47	San Miguel	Livestock (self-supplied)	273	325	598
47	San Miguel	Mining (self-supplied)	0	0	0
47	San Miguel	Power (self-supplied)	0	0	0
47	San Miguel	Public Water Supply	2,887	996	3,883
47	San Miguel	Reservoir Evaporation	18,300	0	18,300
		County Totals	58,547	2,964	61,511
49	Santa Fe	Commercial (self-supplied)	0	1,692	1,692
49	Santa Fe	Domestic (self-supplied)	0	2,348	2,348
49	Santa Fe	Industrial (self-supplied)	0	0	0
49	Santa Fe	Irrigated Agriculture	18,390	20,121	38,511
49	Santa Fe	Livestock (self-supplied)	49	65	114
49	Santa Fe	Mining (self-supplied)	0	47	47
49	Santa Fe	Power (self-supplied)	0	0	0
49	Santa Fe	Public Water Supply	4,602	8,933	13,535
49	Santa Fe	Reservoir Evaporation	0	0	0
		County Totals	23,041	33,205	56,246

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal, groundwater; TW=total withdrawal

Table 5. Summary of water use in acre-feet in New Mexico counties, 2010.

CN	COUNTY	CATEGORY	WSW	WGW	TW
51	Sierra	Commercial (self-supplied)	0	1,709	1,709
51	Sierra	Domestic (self-supplied)	0	168	168
51	Sierra	Industrial (self-supplied)	0	0	0
51	Sierra	Irrigated Agriculture	21,397	23,662	45,059
51	Sierra	Livestock (self-supplied)	28	536	564
51	Sierra	Mining (self-supplied)	0	17	17
51	Sierra	Power (self-supplied)	0	0	0
51	Sierra	Public Water Supply	0	1,668	1,668
51	Sierra	Reservoir Evaporation	100,620	0	100,620
		County Totals	122,045	27,761	149,806
53	Socorro	Commercial (self-supplied)	0	1,348	1,348
53	Socorro	Domestic (self-supplied)	0	356	356
53	Socorro	Industrial (self-supplied)	0	51	51
53	Socorro	Irrigated Agriculture	110,836	30,385	141,221
53	Socorro	Livestock (self-supplied)	63	988	1,051
53	Socorro	Mining (self-supplied)	0	23	23
53	Socorro	Power (self-supplied)	0	0	0
53	Socorro	Public Water Supply	0	2,294	2,294
53	Socorro	Reservoir Evaporation	7,570	0	7,570
		County Totals	118,470	35,444	153,914
55	Taos	Commercial (self-supplied)	144	12,470	12,614
55	Taos	Domestic (self-supplied)	0	1,143	1,143
55	Taos	Industrial (self-supplied)	0	0	0
55	Taos	Irrigated Agriculture	91,065	1,218	92,283
55	Taos	Livestock (self-supplied)	46	66	112
55	Taos	Mining (self-supplied)	4,458	6,804	11,262
55	Taos	Power (self-supplied)	0	0	0
55	Taos	Public Water Supply	187	2,097	2,284
55	Taos	Reservoir Evaporation	686	0	686
		County Totals	96,586	23,799	120,385

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal, groundwater; TW=total withdrawal

Table 5. Summary of water use in acre-feet in New Mexico counties, 2010.

CN	COUNTY	CATEGORY	WSW	WGW	TW
57	Torrance	Commercial (self-supplied)	0	276	276
57	Torrance	Domestic (self-supplied)	0	488	488
57	Torrance	Industrial (self-supplied)	0	1	1
57	Torrance	Irrigated Agriculture	0	59,605	59,605
57	Torrance	Livestock (self-supplied)	49	556	605
57	Torrance	Mining (self-supplied)	0	30	30
57	Torrance	Power (self-supplied)	0	0	0
57	Torrance	Public Water Supply	0	1,634	1,634
57	Torrance	Reservoir Evaporation	0	0	0
		County Totals	49	62,589	62,638
59	Union	Commercial (self-supplied)	0	174	174
59	Union	Domestic (self-supplied)	0	172	172
59	Union	Industrial (self-supplied)	0	0	0
59	Union	Irrigated Agriculture	1,800	66,686	68,486
59	Union	Livestock (self-supplied)	159	1,449	1,608
59	Union	Mining (self-supplied)	0	0	0
59	Union	Power (self-supplied)	0	0	0
59	Union	Public Water Supply	0	564	564
59	Union	Reservoir Evaporation	478	0	478
		County Totals	2,437	69,044	71,482
61	Valencia	Commercial (self-supplied)	0	221	221
61	Valencia	Domestic (self-supplied)	0	3,686	3,686
61	Valencia	Industrial (self-supplied)	0	331	331
61	Valencia	Irrigated Agriculture	160,215	11,407	171,622
61	Valencia	Livestock (self-supplied)	47	841	888
61	Valencia	Mining (self-supplied)	0	179	179
61	Valencia	Power (self-supplied)	0	6	6
61	Valencia	Public Water Supply	0	6,554	6,554
61	Valencia	Reservoir Evaporation	0	0	0
		County Totals	160,262	23,225	183,488
		State Totals	**2,041,844**	**1,774,101**	**3,815,945**

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal, groundwater; TW=total withdrawal

Table 6. Summary of withdrawals in acre-feet in New Mexico river basins, 2010.

RVB	CATEGORY	WSW	WGW	TW
AWR	Commercial (self-supplied)	298	798	1,095
AWR	Domestic (self-supplied)	0	562	562
AWR	Industrial (self-supplied)	0	49	49
AWR	Irrigated Agriculture	107,984	74,776	182,760
AWR	Livestock (self-supplied)	878	3,309	4,187
AWR	Mining (self-supplied)	308	42	350
AWR	Power (self-supplied)	0	0	0
AWR	Public Water Supply	2,209	3,813	6,022
AWR	Reservoir Evaporation	51,671	0	51,671
	River Basin Totals	163,347	83,349	246,696
LC	Commercial (self-supplied)	0	597	597
LC	Domestic (self-supplied)	0	2,114	2,114
LC	Industrial (self-supplied)	0	1,471	1,471
LC	Irrigated Agriculture	56,720	59,430	116,150
LC	Livestock (self-supplied)	287	675	962
LC	Mining (self-supplied)	1,809	4,173	5,982
LC	Power (self-supplied)	0	0	0
LC	Public Water Supply	46	4,853	4,899
LC	Reservoir Evaporation	0	0	0
	River Basin Totals	58,861	73,313	132,174
P	Commercial (self-supplied)	199	6,615	6,814
P	Domestic (self-supplied)	0	2,474	2,474
P	Industrial (self-supplied)	0	2,440	2,440
P	Irrigated Agriculture	201,546	362,067	563,613
P	Livestock (self-supplied)	825	10,898	11,723
P	Mining (self-supplied)	0	10,634	10,634
P	Power (self-supplied)	0	0	0
P	Public Water Supply	3,806	38,859	42,666
P	Reservoir Evaporation	35,962	0	35,962
	River Basin Totals	242,338	433,988	676,325

Key: RVB=river basin, i.e., AWR=Arkansas-White-Red, LC=Lower Colorado, P=Pecos, RG=Rio Grande, TG=Texas Gulf, UC=Upper Colorado; WSW=withdrawal, surface water; WGW=withdrawal, groundwater; TW=total withdrawal

Table 6. Summary of withdrawals in acre-feet in New Mexico river basins, 2010.

RVB	CATEGORY	WSW	WGW	TW
RG	Commercial (self-supplied)	351	41,376	41,727
RG	Domestic (self-supplied)	0	18,727	18,727
RG	Industrial (self-supplied)	1	7,547	7,548
RG	Irrigated Agriculture	954,247	345,731	1,299,979
RG	Livestock (self-supplied)	1,055	8,740	9,795
RG	Mining (self-supplied)	8,012	14,669	22,681
RG	Power (self-supplied)	0	7,123	7,123
RG	Public Water Supply	55,185	165,679	220,864
RG	Reservoir Evaporation	145,078	0	145,078
	River Basin Totals	1,163,929	609,592	1,773,521
TG	Commercial (self-supplied)	0	3,326	3,326
TG	Domestic (self-supplied)	0	2,133	2,133
TG	Industrial (self-supplied)	0	5	5
TG	Irrigated Agriculture	0	524,211	524,211
TG	Livestock (self-supplied)	237	12,684	12,922
TG	Mining (self-supplied)	0	1,050	1,050
TG	Power (self-supplied)	0	3,781	3,781
TG	Public Water Supply	0	22,639	22,639
TG	Reservoir Evaporation	0	0	0
	River Basin Totals	237	569,830	570,068
UC	Commercial (self-supplied)	1,091	43	1,135
UC	Domestic (self-supplied)	0	2,943	2,943
UC	Industrial (self-supplied)	925	1	926
UC	Irrigated Agriculture	313,442	0	313,442
UC	Livestock (self-supplied)	148	444	592
UC	Mining (self-supplied)	716	146	862
UC	Power (self-supplied)	47,434	0	47,434
UC	Public Water Supply	19,868	452	20,320
UC	Reservoir Evaporation	29,505	0	29,505
	River Basin Totals	413,131	4,029	417,160
	State Totals	2,041,844	1,774,101	3,815,945

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Table 7. Public Water Supply and Self-Supplied Domestic. Withdrawals in acre-feet in New Mexico counties, 2010. Compiled by Julie Valdez, Molly Magnuson, and Kenneth Richard, New Mexico Office of the State Engineer.

CN	RVB	USER	POP	GPCD	WEC	WWC	MSW	MGW	WSW	WGW
1	RG	ABCWUA	606,780	157	4	4	Y	Y	45,099	61,618
1	RG	Baker's/ Hamilton Mobile Home Park	200	133				Y		30
1	RG	Barcelona Mobile Home Park	350	70				Y		28
1	RG	Bearcat Homeowners Assn.	100	59				Y		7
1	RG	Cedar Crest MDWC & SWC	50	188				Y		11
1	RG	Chamisa Mobile Home Park	55	100		1		N		6
1	RG	Chilili WUA	90	70		2		N		7
1	RG	Coronado Village Country Club	870	97		2		N		95
1	RG	Corrales-Self-Supplied Homes (part)	382	100				Y		43
1	RG	Desert Palms Mobile Home Park	210	101				Y		24
1	RG	Entranosa Water and Wastewater Coop (part)	7,844	59	1			Y		519
1	RG	Forest Park Property Owners Coop	235	75				Y		20
1	RG	Fox Hills WUA	69	36				Y		3
1	RG	Green Acres Mobile Home Park	150	133				Y		22
1	RG	Green Ridge MDWCA	130	32				Y		5
1	RG	Hamilton Mobile Home Park	69	59		3		N		5
1	RG	Homestead Mobile Home Community	185	46				Y		10
1	RG	Juan Road Water System	34	69				Y		3
1	RG	Kirtland Air Force Base	3,560	176		3		N		702
1	RG	La Cueva Estates Community Association	300	144				Y		48
1	RG	La Mesa Villa Mobile Home Park, LLC1	85	95				Y		9
1	RG	Liesure Mountain Mobile Home Park	162	100		1		N		18
1	RG	Lisa Property Water System	50	54		2		N		3
1	RG	Mountain View Mobile Home Park	90	97				Y		10
1	RG	New Mexico Water Service Company/Sandia Knolls/Independent Utility Co.	1,260	57				Y		81

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1	RG	NM Waterworks, LLC	115	100		1		N		13
1	RG	North Court Mobile Home Park	100	251				Y		28
1	RG	Oakland Heights Homeowners Assn.	31	108				Y		4
1	RG	Old Sandia Park Service CO-OP	200	238			Y	N	53	0
1	RG	Paakweree Village Water Co-Op Assoc, Inc	110	100		1		N		12
1	RG	Rural Self-Supplied Homes	26,363	100				N		2,953
1	RG	Safariland Mobile Home Park	40	95		2		N		4
1	RG	San Luis Cabezon MDWCA	200	100		1		N		22
1	RG	Sandia Peak Utility Company	5,935	146				Y		971
1	RG	Sierra Vista Mutual Domestic Association/Sierra Vista Utilidades Co-op	300	127				Y		43
1	RG	Sierra Vista South Water Co-Op	128	88				Y		13
1	RG	South Hills water Company	600	88				Y		59
1	RG	Sunburst Ranch--South Hills Wtr Co.	560	107		2		N		67
1	RG	Sunset Hills Estates Homeowners Ass	75	375				Y		31
1	RG	The Rincon Water Cooperative	392	63				Y		27
1	RG	Tierra Monte WUA	85	71				Y		7
1	RG	Tierra West Estates--MHP	2,000	100		1		N		224
1	RG	Tijeras Land Estates Water System	170	90				Y		17
1	RG	Tijeras Village	500	49				Y		27
1	RG	Tom's Mobile Home Park	50	56		2		N		3
1	RG	Tranquillo Pines Water System	750	52				Y		43
1	RG	Valle Grande Mobile Home Park	137	91		2		N		14
1	RG	Van Gelder, Charles	20	69				Y		2
1	RG	Ventura Estates	100	215				Y		24
1	RG	Vista Bonita Water Co-op	45	45				Y		2

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CN	RVB	USER	POP	GPCD	WEC	WWC	MSW	MGW	WSW	WGW
1	RG	Vista De Manana	80	50				Y		4
1	RG	Western Heights Mobile Home Park	168	250				Y		47
		River Basin Subtotals	662,564						45,152	67,986
		County Subtotals	662,564						45,152	67,986
3	LC	Aragon Mutual Domestic	45	73				Y		4
3	LC	Coyote Creek Mutual Domestic WUA	213	0				Y		0
3	LC	Homestead Landowners Association	100	51				Y		6
3	LC	Mojave Academy	40	36				Y		2
3	LC	Pie Town MDWCA	100	110				Y		12
3	LC	Ponderosa Estates	357	70		1		N		28
3	LC	Quemado Municipal Water & SWA	300	53				Y		18
3	LC	Rancho Grande Water Assn.	172	291			Y	Y	46	10
3	LC	Reserve Water Works	340	212				Y		81
3	LC	Rural Self-Supplied Homes	1,826	70		1		N		143
		River Basin Subtotals	3,493						46	303
3	RG	Rural Self-Supplied Homes	232	70		1		N		18
		River Basin Subtotals	232							18
		County Subtotals	3,725						46	321
5	P	Berrendo WUA	3,220	478				Y		1,723
5	P	Country Acres Mobile Home Park	35	69				Y		3
5	P	Cumberland WUA	475	215				Y		115
5	P	Dexter Municipal Water System	1,500	608				Y		1,021
5	P	Fambrough Water Co-Op	466	214				Y		111
5	P	Greenfield MDWCA	300	186				Y		62
5	P	Hagerman Water System	1,200	181				Y		244
5	P	Lake Arthur Water Co-Op	370	289				Y		120

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5	P	Roswell Municipal Water System	48,000	242				Y		12,999
5	P	Rural Self-Supplied Homes	9,999	100				N		1,120
5	P	South Springs Acres	80	1,796				Y		161
		River Basin Subtotals	65,645							17,679
		County Subtotals	65,645							17,679
6	RG	Bibo Mutual Domestic Water Association	263	70		1		N		21
6	RG	Bluewater Acres Water Association	371	41				Y		17
6	RG	Bluewater Water & Sanitation District	560	203				Y		128
6	RG	Candy Kitchen Water Coop	45	83		2		N		4
6	RG	Grants Domestic Water System	9,043	197				Y		1,991
6	RG	Milan Community Water System	1,911	292	4	2		N		625
6	RG	Moquino Water Users Association II	50	54		2		N		3
6	RG	Plano Colorado Estates	43	70		1		N		3
6	RG	Rural Self-Supplied Homes	13,559	70				N		1,063
6	RG	San Mateo MDWCA	192	64				Y		14
6	RG	San Rafael Water & Sanitation Dist.	886	108				Y		107
6	RG	Seboyeta Water System	290	103		2		N		33
		River Basin Subtotals	27,213							4,010
		County Subtotals	27,213							4,010
7	AWR	Angel Fire MHE	43	52		1		N		2
7	AWR	Angel Fire Services Corp.	2,382	218				Y		732
7	AWR	Angel Nest Apartments	57	22				Y		1
7	AWR	Cimarron Water System	874	103			Y	N	101	0
7	AWR	Eagle Nest (Village Of)	291	151				Y		49
7	AWR	Maxwell Cooperative Water	314	143				Y		50
7	AWR	Maxwell Water System	361	91		2	N	N	37	0

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7	AWR	Miami WUA	107	64			Y	N	8	0
7	AWR	Raton Domestic Water System	7,310	178	4		Y	N	1,460	0
7	AWR	Rural Self-Supplied Homes	624	80				N		56
7	AWR	Springer Water System	1,140	389			Y	N	497	0
7	AWR	Val Verde 2 Water Association	75	80		1		N		7
7	AWR	Val Verde 5 Property Owners Association	100	80		1		N		9
7	AWR	Valverde Water Assoc.	73	24		2		N		2
		River Basin Subtotals	13,750						2,103	909
		County Subtotals	13,750						2,103	909
9	AWR	Grady Water System	98	147				Y		16
9	AWR	Rural Self-Supplied Homes	995	100				N		111
		River Basin Subtotals	1,093							128
9	TG	Cannon Air Force Base	2,301	312	10			Y		804
9	TG	Desert Ranch Water System	95	139		2		N		15
9	TG	Ideal Mobile Home Park	84	100		1		N		9
9	TG	Longhorn Estates Water System	240	100		1		N		27
9	TG	Melrose Water System	800	199				Y		179
9	TG	NM American Water Co.--Clovis	36,771	169				Y		6,955
9	TG	Rural Self-Supplied Homes	5,635	100		1		N		631
9	TG	Sams Mobile Home Park	100	100		1		N		11
9	TG	Tall Pines Water Association	42	61				Y		3
9	TG	Texico Water System	1,050	156				Y		184
9	TG	Turquoise Estates Wtr Co-Op--Clovis	165	84		2		N		16
		River Basin Subtotals	47,283							8,834
		County Subtotals	48,376							8,962
11	P	Fort Sumner Municipal Water System	1,216	214	3	2		N		291

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11	P	Rural Self-Supplied Homes	326	80				N		29
11	P	Valley WUA	480	188	6	2		N		101
		River Basin Subtotals	2,022							422
		County Subtotals	2,022							422
13	RG	Alameda Mobile Home Park	285	112				Y		36
13	RG	Alto de Las Flores MDWCA	772	92				Y		80
13	RG	Anthony Water & Sanitation	8,700	114				Y		1,115
13	RG	Billy Moreno Water System	59	96		2		N		6
13	RG	Brazito MDWCA	485	177				Y		96
13	RG	Butterfield Park MDWCA	1,132	362				Y		459
13	RG	Caballo Lake MDWA	83	138				Y		13
13	RG	Camino Real/Summer Winds	551	76				Y		47
13	RG	CBG Water Company	993	203				Y		226
13	RG	CDS Rainmakers Util LLC Rancho Ruidoso	1,000	175				Y		196
13	RG	Chamberino MDW & SA	485	89				Y		48
13	RG	Charles Madrid Mobile Home Park	72	101				Y		8
13	RG	Cielo Dorado Estates Homeowners Assoc	263	158				Y		47
13	RG	Country Mobile Manor	222	113				Y		28
13	RG	Covered Wagon Mobile Home Park	101	122				Y		14
13	RG	De La Te Mobile Manor	157	100		1		N		18
13	RG	Delara Estates MDWCA	1,320	152		2		N		225
13	RG	Desert Aire	1,000	76				Y		85
13	RG	Dona Ana County Utilities-Border Region	610	189				Y		129
13	RG	Dona Ana MDWCA	10,780	124				Y		1,502
13	RG	Dove Canyon LLC0	157	100		1		N		18

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13	RG	El Patio Mobile Home Park #2	86	100		1		N		10
13	RG	Evergreen Mobile Home Park	113	539				Y		68
13	RG	Fairview Estates Water System	152	148		2		N		25
13	RG	Fort Selden Water Company	1,000	193				Y		217
13	RG	Garfield MDWCA	2,268	112				Y		285
13	RG	Hatch Water Supply	2,172	177		2		N		431
13	RG	High Valley Water Users	71	136				Y		11
13	RG	Johnson, Floyd--MHP	250	113		2		N		32
13	RG	Jornada Water Co	7,741	167				Y		1,446
13	RG	La Union MDWCA	568	71				Y		45
13	RG	Lake Section Water Company	7,980	254	7			Y		2,267
13	RG	Las Cruces Mobile Home Park	174	100		1		N		19
13	RG	Las Cruces Municipal Water System	94,398	186	3	4		Y		19,713
13	RG	Leasburg MDWCA	903	116				Y		117
13	RG	Lower Rio Grande Public Water Works Authority	12,834	99				Y		1,424
13	RG	Mesa Development Center	900	99				Y		100
13	RG	Mesilla Water System	2,180	123	6			Y		301
13	RG	Miller's Mobile Manor	116	107				Y		14
13	RG	Moongate Water System	6,840	263				Y		2,014
13	RG	Picacho Hills Water System	2,183	123	4			Y		301
13	RG	Picacho MDWCA	1,200	76				Y		102
13	RG	Rancho Vista Mobile Home Park	120	107		2		N		14
13	RG	Rincon Water Consumers Co-Op	550	159	4			Y		98
13	RG	Rural Self-Supplied Homes	5,832	100				N		653
13	RG	Santa Teresa Water System	4,335	276	6	2		N		1,341

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13	RG	Silver Spur Mobile Home Park	132	104				Y		15
13	RG	Skoshi Mobile Home Park	171	100		1		N		19
13	RG	St John's Mobile Home Park	476	100				Y		53
13	RG	Summer Wind Mobile Home Park	476	100		1		N		53
13	RG	Summit Gardens LLC	440	66				Y		33
13	RG	Sunland Park Water System	14,234	217	6			Y		3,452
13	RG	Talavera Water Co-Op	160	115				Y		21
13	RG	Terrace Mobile Home Park	10	156				Y		2
13	RG	University Estates/San Pablo MDWCA	3,970	210	7	2		N		934
13	RG	Val Verde Mobile Home Park	188	100		1		N		21
13	RG	Valle de Rio Water System	243	272				Y		74
13	RG	Villa Del Sol Mobile Home Park	516	143				Y		83
13	RG	Vista Del Rey Estates MDWCA	42	309				Y		15
13	RG	Vista Real Mobile Home Park	131	88				Y		13
13	RG	West Mesa System	1,930	240		2		N		518
13	RG	West Mesa Water Company Inc	255	147				Y		42
13	RG	White Sands Missile Range	1,503	758	10			Y		1,277
13	RG	Winterhaven MDWA	163	100		1		N		18
		River Basin Subtotals	209,233							42,087
		County Subtotals	209,233							42,087
15	P	Artesia Domestic Water System	11,304	393	3			Y		4,981
15	P	Artesia Rural Water Co-Op	2,695	143				Y		433
15	P	Carlsbad Municipal Water System	27,000	274	4			Y		8,299
15	P	Cottonwood Water Cooperative	1,245	135				Y		189
15	P	Happy Valley Water Co-Op	615	126				Y		87

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15	P	Hope Water System	102	333				Y		38
15	P	Jewel St. Water Co-op	22	112				Y		3
15	P	Loving Water System	1,700	91	3			Y		173
15	P	Malaga Water Users Co-Op	780	182	6			Y		159
15	P	Morningside Water Cooperative	500	189	6	1		N		106
15	P	North Park MDWCA	250	160				Y		45
15	P	Otis Water Co-Op	5,155	134	7			Y		771
15	P	Riverside WUA	400	67				Y		30
15	P	Rural Self-Supplied Homes	1,809	100				N		203
15	P	Westwind Mobile Home Park	165	131		2		N		24
15	P	White's City	40	841		2		N		38
		River Basin Subtotals	53,782							15,577
15	TG	Caprock Water Company	47	1,731	3			Y		91
		River Basin Subtotals	47							91
		County Subtotals	53,829							15,668
17	LC	Pinos Altos MDWCA	350	80	6	2		N		32
17	LC	Rural Self-Supplied Homes	507	80		1		N		45
17	LC	Trout Mountain Assoc, Inc	50	38				Y		2
17	LC	Tyrone Water System	795	80		1		N		71
		River Basin Subtotals	1,702							150
17	RG	Arenas Valley MDWCA	1,756	53	6			Y		104
17	RG	Bayard Municipal Water System	2,591	86				Y		250
17	RG	Casas Adobes Water Company	400	99				Y		44
17	RG	Hachita Water System	90	89		2		N		9
17	RG	Hanover MDWCA	292	74				Y		24
17	RG	Heights Water Usera Assoc.	40	48				Y		2

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CN	RVB	USER	POP	GPCD	WEC	WWC	MSW	MGW	WSW	WGW
17	RG	Hurley Water Supply System	1,250	90	6	2		N		127
17	RG	Lake Robets Water Users/Subdivision	87	28				Y		3
17	RG	North Hurley MDWCA	365	74	6	2		N		30
17	RG	Rio De Arenas, LLC	277	80		1		N		25
17	RG	Rural Self-Supplied Homes	1,556	80		1		N		139
17	RG	Santa Clara Water System	2,000	230			Y	Y	0	515
17	RG	Silver City Water System	16,870	141	3			Y		2,668
17	RG	Tyrone MDWCA	100	62	6			Y		7
17	RG	Whiskey Creek Mobile Ranch	138	45		2		N		7
		River Basin Subtotals	27,812						0	3,954
		County Subtotals	29,514						0	4,104
19	AWR	Rural Self-Supplied Homes	293	80		1		N		26
		River Basin Subtotals	293							26
19	P	Anton Chico MDWCA	365	58		2		N		24
19	P	Dilia MDWCA	102	80		1		N		9
19	P	Los Sisneros MDWCA	270	73				Y		22
19	P	Rural Self-Supplied Homes	146	80				N		13
19	P	Sangre de Cristo MDWCA	175	92		2		N		18
19	P	Santa Rosa Water Supply	2,848	208	3			Y		662
19	P	Upper Dilia MDWCA	42	80		1		N		4
19	P	Vaughn - Duran Water System	446	119		2		N		59
		River Basin Subtotals	4,394							812
		County Subtotals	4,687							838
21	AWR	Mosquero Water System	106	164		2		N		19
21	AWR	Roy (Village Of)	312	142				Y		50
21	AWR	Rural Self-Supplied Homes	277	80				N		25

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CN	RVB	USER	POP	GPCD	WEC	WWC	MSW	MGW	WSW	WGW
		River Basin Subtotals	695							94
		County Totals	695							94
23	LC	Glen Acres Community Water System	237	173				Y		46
23	LC	Lordsburg Water Supply System	2,900	168				Y		546
23	LC	Rodeo WUA	77	133				Y		12
23	LC	Rural Self-Supplied Homes	746	80				N		67
23	LC	Virden Water System	152	114				Y		19
		River Basin Subtotals	4,112							690
23	RG	New Mexico Tech, Playas Facility	65	80		1		N		6
23	RG	Rural Self-Supplied Homes	717	80				N		64
		River Basin Subtotals	782							70
		County Totals	4,894							760
25	P	Eunice Water Supply System	2,922	423	5			Y		1,385
25	P	Jal Water Supply System	1,996	100		1		N		224
25	P	Maljamar Water	50	101		2		N		6
25	P	Mescalero Ridge Water Co-Op	50	100		1		N		6
25	P	Monument WUA	150	728				Y		122
25	P	Rancho Dal Paso, LLC DBA Adobe Village	75	45				Y		4
25	P	Rural Self-Supplied Homes	1,335	100		1		N		149
		River Basin Subtotals	6,578							1,895
25	TG	Country Cottage Care And Rehabilitation	75	52				Y		4
25	TG	Hobbs Municipal Water Supply	34,122	218				Y		8,334
25	TG	Lovington Municipal Water Supply	11,009	235		2		N		2,904
25	TG	Rural Self-Supplied Homes	12,040	100				N		1,349
25	TG	Tatum Water System	798	207		2		N		185
25	TG	Triple J Trailer Park--Hobbs	105	190				Y		22
		River Basin Subtotals	58,149							12,799

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CN	RVB	USER	POP	GPCD	WEC	WWC	MSW	MGW	WSW	WGW
		County Totals	64,727							14,694
27	P	Agua Fria Water Company	186	105		2	Y	N	22	0
27	P	Alpine Village Sanitation District	112	63	9			Y		8
27	p	Alto Alps Homeowners Association	219	44				Y		11
27	P	Alto Lakes Water Co-op	1,418	78		2		N		124
27	P	Alto North Water Co-Op	93	96				Y		10
27	P	Apple Blossom & White Angel Mesa	23	133				Y		3
27	P	Capitan Water System	1,385	129	7	2		N		200
27	P	Corona Water System	209	254				Y		59
27	P	Fawn Ridge Homeowners Asso.	140	47				Y		7
27	P	Ft Stanton Medical Center	233	317	6	2		N		83
27	P	High Sierra Estates	74	74				Y		6
27	P	Lincoln MDWCA	70	187		2		N		15
27	P	Rancho Ruidoso Village	186	360				Y		196
27	P	Rocky Mountain Mobile Home & RV Pk	84	23				Y		2
27	P	Ruidoso Downs Water System	2,618	170	9			Y		497
27	P	Ruidoso Water System	9,300	214	9		Y	Y	932	1,302
27	P	Rural Self-Supplied Homes	1,236	80				N		111
27	P	Sun Valley Sanitation Dist.	353	45	9			Y		18
27	P	The Riverbend	70	70				Y		5
		River Basin Subtotals	18,008						954	2,658
27	RG	Carrizozo Water System	926	269	7		Y	Y	132	147
27	RG	Cedar Creek Cabin Owners Association	242	51				Y		14
27	RG	Enchanted Forest Water Co	279	48				Y		15
27	RG	Fort Stanton Facility	93	80		1		N		8

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CN	RVB	USER	POP	GPCD	WEC	WWC	MSW	MGW	WSW	WGW
27	RG	Loma Grande Estates Water Association	74	87				Y		7
27	RG	Nogal MDWCA	51	90	6			Y		5
27	RG	Rural Self-Supplied Homes	824	80				N		74
		River Basin Subtotals	2,490						132	271
		County Totals	20,497						1,085	2,929
28	RG	Los Alamos County	17,950	202	4		Y	Y	21	4,044
		River Basin Subtotals	17,950						21	4,044
		County Totals	17,950						21	4,044
29	RG	Columbus Water System	2,100	97				Y		227
29	RG	Deming Municipal Water System	15,000	226				Y		3,794
29	RG	Gunter's Mobile Home Rentals	54	19				Y		1
29	RG	Hidden Valley Water System	30	82				Y		3
29	RG	Pecan Park MDWCA	80	231				Y		21
29	RG	Peoples Water Coop	80	100		1		N		9
29	RG	Rural Self-Supplied Homes	7,751	100				N		868
		River Basin Subtotals	25,095							4,923
		County Subtotals	25,095							4,923
31	LC	Block a Well CO-OP/ William Acres	96	102		2		N		11
31	LC	Coal Basin Water Assn.	57	153				Y		10
31	LC	D & S Trailer Ranch	100	70		1		N		8
31	LC	Ft Wingate Army Depot	69	70	7	2		N		5
31	LC	Gallup Water System	20,209	142				Y		3,211
31	LC	Gamerco Water & Sanitation	1,610	63	6	2		N		114
31	LC	Manuelito Navajo Childrens Home	70	70		1		N		5
31	LC	Ramah Water & Sanitation Dist.	450	66				Y		33
31	LC	Rob Roy Trailer Park	95	137		2		N		15

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31	LC	Rural Self-Supplied Homes	23,704	70				N		1,859
31	LC	Sagebrush Water Co-Op	56	70		1		N		4
31	LC	St Williams Mobile Home Park	84	70				Y		7
31	LC	Whispering Cedars Water Assoc.	350	70		2		N		27
31	LC	White Cliffs MDWUA	260	70		1		N		20
31	LC	Zuni Pueblo Water Works	6,302	70		2		N		494
		River Basin Subtotals	53,512							5,823
31	RG	Bluewater Lake MDWCA	400	25		2		N		11
31	RG	Cedar Ridge Trailer Park	76	89				Y		8
31	RG	Greers Subdivision	115	70		2		N		9
31	RG	Rural Self-Supplied Homes	3,554	70				N		279
31	RG	Thoreau Water & Sanitation District	1,200	97				Y		130
		River Basin Subtotals	5,345							437
31	UC	Rural Self-Supplied Homes	12,634	70				N		991
		River Basin Subtotals	12,634							991
		County Subtotals	71,492							7,251
33	AWR	Agua Negra MDWCA	200	123		2		N		28
33	AWR	Agua Pura MDWCA	260	80		1		N		23
33	AWR	Buena Vista MDWCA	240	52				Y		14
33	AWR	Cleveland MDWCA	300	98				Y		33
33	AWR	Del Rio MDWCA	150	80		1		N		13
33	AWR	El Alto MDWCA	170	233		2		N		44
33	AWR	Guadalupita MDWCA	150	80		1		N		13
33	AWR	La Cordillera	50	74		2		N		4
33	AWR	Ledoux MDWCA	150	80		1		N		13
33	AWR	Mora MDWCA	800	286		2		N		256

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CN	RVB	USER	POP	GPCD	WEC	WWC	MSW	MGW	WSW	WGW
33	AWR	North Cleveland MDWCA	70	122		2		N		10
33	AWR	Ojo Feliz MDWCA	100	80		1		N		9
33	AWR	Rainsville Water & Sanitation District	250	80		1		N		22
33	AWR	Rancho Valmora	100	65		2		N		7
33	AWR	Rural Self-Supplied Homes	972	80				N		87
33	AWR	San Antonio De Cleveland MDWCA	300	80		1		N		27
33	AWR	South Holman MDWCA	100	32		2		N		4
33	AWR	Upper Holman	150	34		2		N		6
33	AWR	Wagon Mound MDWCA	369	87				Y		36
		River Basin Subtotals	4,881							650
		County Subtotals	4,881							650
35	P	Cloud Country Estates WUA	70	836			Y	Y	49	17
35	P	Cloud Country West Water System	200	71				Y		16
35	P	Mayhill Water Supply Company	80	52				Y		5
35	p	Pete Ragan Memorial Wua	42	100		1		N		5
35	P	Pinon WUA	100	213		2		N		24
35	P	Ponderosa Pines Property Owners Assoc	100	93				Y		10
35	P	Robinhood Park WUA	208	150				Y		35
35	P	Rural Self-Supplied Homes	1,423	100				N		159
35	P	Silver Cloud WUA	100	119		2		N		13
35	P	Twin Forks MDWCA	1,090	64		2	N	N	23	55
35	P	Weed WUA	25	97				Y		3
		River Basin Subtotals	3,438						72	342
35	RG	Alamo Heights WUA	60	103				Y		7
35	RG	Alamogordo Domestic Water System	37,290	110	3	2	Y	N	4,033	1,031
35	RG	Boles Acres Water System	975	143				Y		156

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CN	RVB	USER	POP	GPCD	WEC	WWC	MSW	MGW	WSW	WGW
35	RG	Canyon Hills WUA	50	180				Y		10
35	RG	Chippeway Water Users Association	30	100		1		N		3
35	RG	Cider Mill Farms WUA	50	120		2		N		7
35	RG	Cloudcroft Water System	1,475	99	9			Y		164
35	RG	Dog Canyon MDWCA	28	100		1		N		3
35	RG	Dungan MDWCA	90	130				Y		13
35	RG	Eileen Acres	225	195				Y		49
35	RG	Enchanted Valley Water Users	42	293		2		N		14
35	RG	Evergreen Mobile Home Park	160	100				Y		18
35	RG	Freeman's / Crossroads Mobile Home Park	60	261				Y		18
35	RG	High Rolls Community Water Users Coop	300	94				Y		32
35	RG	Holloman Air Force Base	8,600	167			Y	Y	504	1,103
35	RG	Karr Canyon Estates	75	104				Y		9
35	RG	La Luz MDWCA	2,500	48		2	N	N	64	71
35	RG	Laborcita Water Users Association	60	1,422				Y		96
35	RG	Low Mesa WUA	25	141				Y		4
35	RG	Mountain Orchard WUA	40	284				Y		13
35	RG	National Solar Observatory	100	197				Y		22
35	RG	Oasis Mobile Home Park	182	36				Y		7
35	RG	Orogrande MDWCA	67	375	5	2		N		28
35	RG	Piney Woods WUA	250	102				Y		29
35	RG	Rolling Hills WUA	30	147				Y		5
35	RG	Rural Self-Supplied Homes	4,050	100				N		454
35	RG	Timberon Water & Sanitation District	300	665			Y	Y	133	91
35	RG	Tularosa Water System	2,800	214				Y		671

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CN	RVB	USER	POP	GPCD	WEC	WWC	MSW	MGW	WSW	WGW
35	RG	Waterfall Community Water Users Assn.	100	219			Y	N	24	0
35	RG	Wright Wimberly Joint Venture	345	100				Y		39
		River Basin Subtotals	60,359						4,759	4,165
		County Subtotals	63,797						4,831	4,508
37	AWR	Hills Village Water System	114	67	6			Y		9
37	AWR	Liberty MDWUA	230	100	6			Y		26
37	AWR	Logan Water System	1,025	391	6			Y		449
37	AWR	Nara Visa Water Co-Op	69	97		2		N		7
37	AWR	Rad Water Users Coop	470	170				Y		90
37	AWR	Rural Self-Supplied Homes	656	80		1		N		59
37	AWR	San Jon Water Supply	308	147	3			Y		51
37	AWR	Tucumcari Water System	6,000	157	4	2		N		1,057
		River Basin Subtotals	8,872							1,747
37	P	House Water System	88	126				Y		12
37	P	Rural Self-Supplied Homes	81	80				N		7
		River Basin Subtotals	169							20
		County Subtotals	9,041							1,767
39	RG	Abiquiu MDWCA	400	80		1		N		36
39	RG	Agua Sana WUA	660	139				Y		102
39	RG	Alcalde MDWCA	780	80		1		N		70
39	RG	Apodaca MDWCA	135	74				Y		11
39	RG	Arroyo Del Agua MDWCA	75	80		1		N		7
39	RG	Barranco MDWCA	51	102				Y		6
39	RG	Brazos MDWCA	160	53				Y		9
39	RG	Canjilon MDWCA	330	56				Y		21
39	RG	Canon Plaza MDWCA	60	80		1		N		5

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CN	RVB	USER	POP	GPCD	WEC	WWC	MSW	MGW	WSW	WGW
39	RG	Capulin MDWCA	450	80		1		N		40
39	RG	Cebolla MDWCA	300	34				Y		11
39	RG	Chama Water System	1,250	80		1	N	N	112	0
39	RG	Chamita MDWCA	700	56		2		N		44
39	RG	Chili	51	133		2		N		8
39	RG	Christ In The Desert Monastery	30	80		1		N		3
39	RG	Cordova MDWCA	325	66		2		N		24
39	RG	Coyote MDWCA	45	80		1		N		4
39	RG	Dixon MDWCA	500	42				Y		24
39	RG	Duranes Y Gavilanes MDWCA	225	93		2		N		23
39	RG	El Llano MDWCA	105	65		2		N		8
39	RG	El Rito Canyon MDWCA	300	80		1		N		27
39	RG	El Rito MDWCA	220	42				Y		10
39	RG	Enchanted Mesa Mobile Home Park	145	97				Y		16
39	RG	Ensenada WUA--Los Ojos	150	57		2		N		10
39	RG	Espanola Water System (part)	8,384	89				Y		832
39	RG	Gallina Water System	100	79		2		N		9
39	RG	Greater Chimayo MDWCA	105	225				Y		27
39	RG	La Madera MDWCA	36	80		1		N		3
39	RG	Las Trampas MDWCA	65	80		1		N		6
39	RG	Los Brazos MDWCA/La Association De Agua De Los Brazos	30	139				Y		5
39	RG	Los Ojos MDWCA	500	80		1		N		45
39	RG	Montecito MDWCA	130	63				Y		9
39	RG	Ojo Caliente	350	80		1		N		31
39	RG	Ojo Sarco MDWCA	140	65				Y		10

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CN	RVB	USER	POP	GPCD	WEC	WWC	MSW	MGW	WSW	WGW
39	RG	Rural Self-Supplied Homes	15,799	80				N		1,416
39	RG	Rutheron Mutual Water Association	90	64				Y		6
39	RG	South Ojo Caliente MDWCA	250	152		2		N		43
39	RG	Tierra Amarilla MDWCA	470	97				Y		51
39	RG	Truchas MDWCA	650	34				Y		25
39	RG	Upper Canoncito MDWCA	50	59		2		N		3
39	RG	Vallecitos MDWCA	92	80		1		N		8
39	RG	Valley Estates MDWCA	185	319				Y		66
39	RG	Velarde MDWCA	800	60		2		N		54
39	RG	Youngsville MDWCA(est.)	40	191		2		N		9
		River Basin Subtotals	35,713						112	3,175
39	UC	Dulce--BIA, Jicarilla Agency	3,280	157			Y	N	578	0
39	UC	Lindrith Community Water Co-Op	130	64		2		N		9
39	UC	Lumberton WUA	240	60			Y	Y	16	0
39	UC	Lybrook WUA	400	147		2		N		66
39	UC	Rural Self-Supplied Homes	483	80				N		43
		River Basin Subtotals	4,533						594	119
		County Subtotals	40,246						706	3,294
41	P	Rural Self-Supplied Homes	204	100				N		23
		River Basin Subtotals	204							23
41	TG	Causey Water Association	50	99		2		N		6
41	TG	Dora Water Assn.	160	179		2		N		32
41	TG	Elida Water System	183	230		2		N		47
41	TG	Floyd Water Co-Op	350	46				Y		18
41	TG	Portales Water System	14,033	141	6			Y		2,215
41	TG	Roosevelt County Water Co-op	3,500	147	3			Y		577

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CN	RVB	USER	POP	GPCD	WEC	WWC	MSW	MGW	WSW	WGW
41	TG	Rural Self-Supplied Homes	1,366	100				N		153
		River Basin Subtotals	19,642							3,048
		County Subtotals	19,846							3,071
43	RG	Algodones WUA	675	24				Y		18
43	RG	Anasazi Trails Water Cooperative	105	174				Y		21
43	RG	Bernalillo Water System	9,200	117				Y		1,209
43	RG	Cañon MDWCA	320	129		2		N		46
43	RG	Cedar Creek Water Cooperative Inc.	153	39				Y		7
43	RG	Cielo Vista Water Cooperative	50	28				Y		2
43	RG	Cochiti Lake Water System	114	156		3		N		20
43	RG	Corrales Self-Supplied	8,424	80				Y		755
43	RG	Corrales Village	83	191				Y		18
43	RG	Cuba Water System	800	161				Y		144
43	RG	Desert Sky Mountain Water Cooperative	114	90				Y		11
43	RG	Hofheins/Marcel Thomas Assoc Coop Inc	83	69			Y	Y	6	0
43	RG	Homestead Village	120	52		2		N		7
43	RG	Jemez Canyon Estates DWCA	250	71		2		N		20
43	RG	Jemez Springs MDWCA	1,500	113			Y	Y	110	80
43	RG	La Cueva Hermosa	25	265				Y		7
43	RG	La Jara Water Users Association	450	44			Y	N	22	0
43	RG	La Mesa Water Co-Op	650	121				Y		88
43	RG	La Puerta	30	172		2	N	N	5	0
43	RG	Las Acequias De Placitas	108	607			Y	N	73	0
43	RG	North Ranchos de Placitas	426	98				Y		47
43	RG	Orchard Estates Faculty Lane Water Assoc	36	152				Y		6

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43	RG	Overlook Water Cooperative/ J & J Utilities	122	89				Y		12
43	RG	Pena Blanca MDWCA	465	82				Y		42
43	RG	Placitas Trails Water Co-op	375	105				Y		44
43	RG	Placitas West Water Co-Op	110	116				Y		14
43	RG	Ponderosa MDWCA	406	91				Y		42
43	RG	Pueblo Los Cerros Browood	200	132				Y		30
43	RG	Puesta Del Sol	30	77				Y		3
43	RG	Ranchos de Placitas Sanitation Dist	300	116				Y		39
43	RG	Regina MDWCA	550	58			Y	Y	2	33
43	RG	Rio Rancho - City of	82,154	147		4		Y		13,563
43	RG	Rio Rancho Estates (Mike Rowland)	168	46				Y		9
43	RG	Rural Self-Supplied Homes	19,966	80				N		1,789
43	RG	San Ysidro	240	113				Y		30
43	RG	Sierra Los Pinos Home Owners Ass	300	80		1		N		27
43	RG	Sile MDWCA	168	89				Y		17
43	RG	Vista del Oro de Placitas	72	97				Y		39
		River Basin Subtotals	129,342						219	18,240
43	UC	Rural Self-Supplied Homes	2,219	80				N		199
		River Basin Subtotals	2,219							199
		County Subtotals	131,561						219	18,439
45	UC	Aztec	7,084	198	3		Y	Y	1,572	0
45	UC	Blanco Water Association	1,260	71	7	2	N	N	61	40
45	UC	Bloomfield Water Supply System	7,500	166			Y	Y	1,391	0
45	UC	Farmington Water System	45,877	245	3		Y	N	12,580	0
45	UC	Flora Vista WUA	4,291	58	7		Y	Y	23	255
45	UC	Harvest Gold Subdivision	522	51	6		Y	N	30	0

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45	UC	La Vida Mission Community Water Supply	28	414				Y		13
45	UC	Lee Acres WUA	5,078	87	6		Y	N	494	0
45	UC	Lower Valley WUA	9,548	112	3		Y	N	1,197	0
45	UC	Morningstar WUA	5,950	76	3		Y	N	506	0
45	UC	Navajo Dam MDWCA	592	42				Y		28
45	UC	North Star WUA	3,864	67			Y	N	289	0
45	UC	Rosa Joint Venture	200	70		1		N		16
45	UC	Rural Self-Supplied Homes	21,805	70				N		1,710
45	UC	Shiprock--NTUA	8,156	60	6	2	N	N	552	0
45	UC	Southside WUA	1,593	53	6		Y	Y	69	25
45	UC	Upper La Plata WUA	2,524	63	6		Y	Y	179	0
45	UC	West Hammond MDWCA	4,172	71	6		Y	Y	332	0
		River Basin Subtotals	130,044						19,275	2,086
		County Subtotals	130,044						19,275	2,086
47	AWR	Big Mesa Water MDWCA	604	80			Y	Y	54	0
47	AWR	Conchas Dam	391	146		2	N	N	5	59
47	AWR	Pendaries Water System	400	103		2	N	N	46	0
47	AWR	Rural Self-Supplied Homes	284	80				N		25
		River Basin Subtotals	1,679						106	84
47	P	Benedictine Monastery	41	143	9	2		N		7
47	P	Coruco Village	43	80		1		N		4
47	P	East Pecos MDWCA	498	49				Y		27
47	P	El Ancon MDWCA	60	80		1		N		5
47	P	El Cerrito MDWCA	15	91				Y		2
47	P	El Coruco MDWCA	200	80		1		N		18
47	P	Gabaldon MDWCA	70	29				Y		2

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47	P	Gonzales Ranch MDWCA	225	24				Y		6
47	P	Ilfield MDWCA	380	22				Y		10
47	P	La Cueva MDWCA	70	80		1		N		6
47	P	La Pasada MDWCA	225	34				Y		8
47	P	Las Tusas MDWCA	28	103		2		N		3
47	P	Las Vegas Water Supply System	14,857	191			Y	Y	2,781	402
47	P	Lower Colonias MDWCA	28	80		1		N		3
47	P	North San Ysidro MDWCA	230	80		1		N		21
47	P	Pecos Water System	1,596	134		2		N		240
47	P	Ribera MDWCA	200	75		2		N		17
47	P	Rowe MDWCA	150	28				Y		5
47	P	Rural Self-Supplied Homes	7,010	80				N		628
47	P	San Jose MDWCA	200	30				Y		7
47	P	San Juan MDWCA/Soham MDWCA	200	55				Y		12
47	P	San Miguel	60	80		1		N		5
47	P	San Miguel Del Vado MDWCA	100	80		1		N		9
47	P	Sena Water System	180	80		1		N		16
47	P	South San Ysidro MDWCA	50	156				Y		9
47	P	Tecolote Domestic Water Ussers Asso	185	77		2		N		16
47	P	Tecolotito MDWCA	380	57				Y		24
47	P	Tres Lagunas Home Owners Association	73	260				Y		21
47	P	Villanueva MDWCA	240	80		1		N		22
47	P	Watrous MDWCA	120	80		1		N		11
		River Basin Subtotals	27,714						2,781	1,565
		County Subtotals	29,393						2,887	1,649

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49	P	Glorieta Baptist Conference Center	330	382	9			Y		141
49	P	Glorieta Estates Water Co-Op	60	87				Y		6
49	P	Lifeway Gloritia Conference Center	2,500	50	11			Y		141
49	P	Rural Self-Supplied Homes	238	80				N		21
		River Basin Subtotals	3,128							309
49	RG	Agua Fria Community	882	39				Y		39
49	RG	Asi La Mar Trailer Park	80	80		1		N		7
49	RG	Canada De Los Alamos MDWCA	70	36				Y		3
49	RG	Canoncito At Apache Canyon	250	64				Y		18
49	RG	Canoncito MDWCA	120	84				Y		11
49	RG	Casitas de Santa Fe	800	73		2		N		65
49	RG	Cerillos MDWCA	300	51				Y		17
49	RG	Chimayo MDWCA	150	158				Y		27
49	RG	Chupadero MDWCA	131	77				Y		11
49	RG	Cielo Lindo Mobile Home Park	26	52		2		N		2
49	RG	City of Santa Fe/Sangre de Cristo Water Company/Public Service of New Mexico	79,743	111	4	4		Y	4,576	5,353
49	RG	Country Club Estates	85	91		2		N		9
49	RG	Country Club Gardens Mobile Home Park	800	19				Y		17
49	RG	Cuatro Villas MDWCA/La Puebla MDWCA	150	72	6			Y		12
49	RG	Cundiyo MDWCA	65	42				Y		3
49	RG	East Glorieta MDWCA	50	102				Y		6
49	RG	El Rancho Mobile Home Park	50	70		2		N		4
49	RG	El Rancho Mobile Home Park	72	70		2		N		6
49	RG	El Vadito De Los Cerrillos Water Assoc	350	182				Y		71
49	RG	Eldorado de Santa Fe	7,500	61				Y		516

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49	RG	Entranosa Water and Wastewater Coop (part)	4,224	76	2			Y		359
49	RG	EPCOR/New Mexico American Water Co. (part)	4,320	114				Y		551
49	RG	Espanola Water System (Part)	1,681	89				Y		167
49	RG	Galisteo MDWCA	167	87				Y		16
49	RG	Glorieta MDWCA	200	36				Y		8
49	RG	Hyde Park Estates	183	21				Y		4
49	RG	Juniper Hills Mobile Park	60	61		2		N		4
49	RG	Juniper Hills PT Ranch	65	25		2		N		2
49	RG	La Cienega Lakeside Mobile Home Park	60	40				Y		3
49	RG	La Cienega MDWCA	525	43				Y		26
49	RG	La Cienega Owners Association Water Sys.	60	40				Y		3
49	RG	La Vista Homeowners Assn.	48	66				Y		4
49	RG	Lamy Domestic Water User Association	150	80		1		N		13
49	RG	Las Campanas	400	500	6	2		N		224
49	RG	Lone Star Mobile Home Park	95	27		2		N		3
49	RG	Madrid Water Co-Op	300	33				Y		11
49	RG	Penitentiary of New Mexico	2,200	64		2		N		159
49	RG	Pojoaque Terraces Mobile Home Park	200	71				Y		16
49	RG	Ranchitos de Galisteo WUA	70	163				Y		13
49	RG	Rio Chiquito MDWCA	200	40				Y		9
49	RG	Rio En Medio MDWCA	130	45		2		N		7
49	RG	Rural Self-Supplied Homes	24,370	80				N		2,184
49	RG	Santa Cruz MDWCA	73	47		2		N		4
49	RG	Santa Fe - Urban Self-Served Homes	980	130				Y		143
49	RG	Santa Fe County South Sector	4,000	85	6	2	Y	N	26	355

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49	RG	Santa Fe West Mobile Home Park	200	41		2		N		9
49	RG	Shalom Mobile Home Park	50	72		2		N		4
49	RG	Solacito Homeownerns Assn.	44	153		2		N		8
49	RG	Sunlit Hills of Santa Fe	990	115				Y		127
49	RG	Tesuque MDWCA (1990)	370	44				Y		18
49	RG	Thunder Mountain Water System	1,800	113	6			Y		227
49	RG	Trailer Ranch Mobile Home Park	210	69				Y		16
49	RG	Valle Vista Subdivision	455	30		2		N		16
49	RG	Valley Cove Mobile Home Park	75	135		2		N		11
49	RG	Village Mobile Home Park	150	97		2		N		16
49	RG	Vista Redonda MDWCA	150	146				Y		25
49	RG	West Alameda	20	145				Y		3
49	RG	Wild And Wooley Trailer Ranch	93	80				Y		8
		River Basin Subtotals	141,042						4,602	10,971
		County Subtotals	144,170						4,602	11,280
51	RG	Caballo Estates Water	25	196				Y		5
51	RG	Caballo Lake MDWA	47	243				Y		13
51	RG	City of Elephant Butte/Lakeshore Sanitation District	984	95	9			Y		105
51	RG	Desertaire Water Company, LLC	57	61				Y		4
51	RG	Elephant Butte/Caballo MOB	50	207				Y		12
51	RG	Hillsboro MDWCA	167	60	6			Y		11
51	RG	Monticello Canyon Domestic Water Cooperative Association	86	57				Y		5
51	RG	Monticello Mutual Domestic Water Users	64	58				Y		4
51	RG	New Mexico Water Service Company/National Utilities Elephant Butte	1,429	104				Y		167
51	RG	Rural Self-Supplied Homes	1,879	80				N		168

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51	RG	Truth or Consequences	7,200	159	4			Y		1,342
		River Basin Subtotals	11,988							1,836
		County Subtotals	11,988							1,836
53	RG	La Joya MDWCA	68	58				Y		4
53	RG	Magdalena Water Supply System	1,179	169		2		N		223
53	RG	New Mexico Boys Ranch	60	80		1		N		5
53	RG	Polvadera MDWCA	1,600	94				Y		168
53	RG	Rural Self-Supplied Homes	3,976	80				N		356
53	RG	San Acacia MDWCA	165	82				Y		15
53	RG	San Antonio MDWCA	948	117	7			Y		124
53	RG	Socorro Water System	9,870	159				Y		1,753
		River Basin Subtotals	17,866							2,650
		County Subtotals	17,866							2,650
55	RG	Arroyo Seco MDWCA	546	38				Y		23
55	RG	Canon MDWCA	591	131		2		N		87
55	RG	Cerro East MDWCA	250	20				Y		5
55	RG	Chamisal MDWCA	550	29				Y		18
55	RG	Costilla MDWCA	300	90				Y		30
55	RG	Cuchilla Del Llano MDWCA	400	14				Y		6
55	RG	Eagle Rock Village	81	80		1		N		7
55	RG	El Prado Water & Sanitation Dist.	1,008	87				Y		98
55	RG	El Rancho Mobile Home Park	72	80		1		N		6
55	RG	El Salto MDWCA	232	62				Y		16
55	RG	Enchanted Mobile Home Park	150	17				Y		3
55	RG	La Lama MDWCA	80	64		2		N		6
55	RG	La Lomita Mobile Home Park	100	64		2		N		7

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55	RG	Las Colonias Moblie Home Park	120	37				Y		5
55	RG	Las Haciendas Homeowners WUA	72	80		1		N		6
55	RG	Llano Quemado MDWCA	850	38				Y		36
55	RG	Llano San Juan MDWCA	84	52		2		N		5
55	RG	Lower Arroyo Hondo MDWCA	250	60		2		N		17
55	RG	Lower Des Montes MDWCA	350	54		2		N		21
55	RG	Ojo Caliente MDWCA	350	55				Y		22
55	RG	Penasco MDWCA	700	39		2		N		31
55	RG	Plaza De Retiro	80	80		1		N		7
55	RG	Questa Water System	1,820	130				Y		265
55	RG	Ranchos de Taos MDWCA	900	62				Y		62
55	RG	Red River Water System	500	933	9		Y	Y	187	335
55	RG	Rio Lucio MDWCA	500	36				Y		20
55	RG	Rodarte MDWCA	75	86				Y		7
55	RG	Rural Self-Supplied Homes	12,759	80				N		1,143
55	RG	San Cristobal MDWCA	139	36		2		N		6
55	RG	Sanchez Mobile Home Park	80	80		1		N		7
55	RG	Talpa MDWCA	1,100	31				Y		38
55	RG	Taos Municipal Water System	5,301	111				Y		657
55	RG	Trampas MDWCA	200	24				Y		5
55	RG	Tres Piedras MDWCA	315	36				Y		13
55	RG	Twining Water Sys--Taos Ski Valley	500	111	9			Y		62
55	RG	Upper Arroyo Hondo MDWCA	198	57		2		N		13
55	RG	Upper Des Montes MDWCA	280	180		3		N		56
55	RG	Upper Ojito MDWCA	45	80		1		N		4

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55	RG	Upper Ranchitos MDWCA	270	87		2		N		26
55	RG	Vadito MDWCA	76	80		1		N		7
55	RG	Valdez MDWCA	100	54				Y		6
55	RG	Valle Escondido Water System	300	53				Y		18
55	RG	Vigils Trailer Park	150	89				Y		15
55	RG	West Rim MDWUA	113	80		1		N		10
		River Basin Subtotals	32,937						187	3,240
		County Subtotals	32,937						187	3,240
57	P	Clines Corners Water System	40	368				Y		16
57	P	Duran Water System2	70	76				Y		6
57	P	Rural Self-Supplied Homes	109	80				N		10
		River Basin Subtotals	219							32
57	RG	Carlos Lucero Subdivision (Gilbert Lucero)	75	50				Y		4
57	RG	Cassandra Water System	54	80		1		N		5
57	RG	Echo Valley Water Co.	408	79				Y		36
57	RG	Edgewood Meadows Water Co-Op	100	62				Y		7
57	RG	Encino Water System	100	126				Y		14
57	RG	EPCOR/New Mexico American Water Co Edgewood District (part)	1,081	114	4			Y		138
57	RG	Estancia, Town of	2,200	138				Y		341
57	RG	Homestead Estates	230	156				Y		40
57	RG	Indian Hills Water Company	460	80		1		N		41
57	RG	Manzano MDWCA	95	43		2		N		5
57	RG	Melody Ranch Water Co	193	81				Y		18
57	RG	Moriarty Water System	1,763	266				Y		525
57	RG	Mountainair	1,600	125		2		N		224
57	RG	Pine Canyon Ranch	1,366	80				Y		122

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Table 7. Public Water Supply and Self-Supplied Domestic. Withdrawals in acre-feet in New Mexico counties, 2010. Compiled by Julie Valdez, Molly Magnuson, and Kenneth Richard, New Mexico Office of the State Engineer.

CN	RVB	USER	POP	GPCD	WEC	WWC	MSW	MGW	WSW	WGW
57	RG	Punta De Agua MDWCA	50	80		1		N		4
57	RG	Rural Self-Supplied Homes	5,332	80				N		478
57	RG	Squaw Valley Water Supply System	216	80		1		N		19
57	RG	Sunset Acres Subdivision	300	63				Y		21
57	RG	Tajique MDWCA	181	102				Y		21
57	RG	Torreon MDWCA	150	23		2		N		4
57	RG	Willard Water Supply System	210	91				Y		21
		River Basin Subtotals	16,164							2,089
		County Subtotals	16,383							2,121
59	AWR	Clayton Municipal Supply	2,401	200				Y		538
59	AWR	Des Moines Water System	200	111				Y		25
59	AWR	Grenville Water System	27	58		2		N		2
59	AWR	Rural Self-Supplied Homes	1,921	80				N		172
		River Basin Subtotals	4,549							736
		County Subtotals	4,549							736
61	RG	Belen Water System	9,780	165				Y		1,813
61	RG	Bosque Farms Water Supply System	4,000	76				Y		339
61	RG	Bosque Gardens MDWCA	140	133				Y		21
61	RG	Central New Mexico Correctional Facility	1,620	52				Y		94
61	RG	Correo Water Association	222	100		1		N		25
61	RG	D & J Mobile Home Park	17	96				Y		2
61	RG	El Shaddai Mobile Home Park	75	130		2		N		11
61	RG	Hi Mesa Estates Water Coop	134	72				Y		11
61	RG	Highland Meadows Estates MDWCA	61	112		2		N		8
61	RG	JC Mobile Home Park	35	92		2		N		4
61	RG	Loma Escondida Water Association	50	100		1		N		6

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61	RG	Los Lunas Water System	14,284	157				Y		2,508
61	RG	Meadow Lake Water System (operator: NMWSC)	2,310	93				Y		240
61	RG	Monterey Water Company, Inc.	1,840	49				Y		101
61	RG	New Mexico Water Service Company (Cypress Gardens Water Users Association)	1,448	66				Y		107
61	RG	New Mexico Water Service Company/Rio Del Oro/Rio Communities	7,305	152				Y		1,245
61	RG	Rural Self-Supplied Homes	32,910	100				N		3,686
61	RG	Santa Socorro Trailer Park	48	28		2		N		1
61	RG	Senior Living Systems, Inc.	50	49				Y		3
61	RG	Silver Spruce Estates Water Company	70	130				Y		10
61	RG	Trails End Mobile Home Park	120	28				Y		4
61	RG	Trinity Mobile Home Park	50	30				Y		2
		River Basin Subtotals	76,569							10,240
		County Subtotals	76,569							10,240
		State Totals	2,059,179						81,114	265,249

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Table 8. Irrigated Agriculture. Withdrawals in acre-feet in New Mexico counties, 2010. Data compiled by Julie Valdez, Molly Magnuson, and Kenneth Richard, New Mexico Office of the State Engineer.

CN	RVB	LOCALE	T	CIRSW	CIRGW	ASWO	AGWO	ASWC	AGWC	TAI	EF	EC	EJ	TFWSW	CLSW	TPWSW	TPWGW
1	RG	MRGCD & Vicinity	F	2.48	2.48	3,664	0	1,575	525	5,764	0.50	0.60	0.30	25,985	17,324	43,309	2,604
				River Basin Subtotals		3,664	0	1,575	525	5,764				25,985	17,324	43,309	2,604
				County Totals		3,664	0	1,575	525	5,764				25,985	17,324	43,309	2,604
3	LC	Luna--SFR[2]	F	1.06	0.00	192	0	0	0	192	0.62	0.17	0.11	328	1,560	1,888	0
3	LC	Glenwood--SFR[2]	F	2.05	0.00	505	0	0	0	505	0.59	0.18	0.10	1,764	8,263	10,027	0
3	LC	Apache/Aragon--SFR[2]	F	1.69	0.00	289	0	0	0	289	0.50	0.67	0.34	972	472	1,444	0
3	LC	Reserve--SFR[2]	F	1.87	0.00	256	0	0	0	256	0.57	0.11	0.06	846	6,851	7,697	0
				River Basin Subtotals		1,242	0	0	0	1,242				3,910	17,146	21,056	0
3	RG	San Augustin	F	0.00	1.80	0	100	0	0	100	0.55	0.00	0.00	0	0	0	327
				River Basin Subtotals		0	100	0	0	100				0	0	0	327
				County Totals		1,242	100	0	0	1,342				3,910	17,146	21,056	327
5	P	RAB & Pecos Pumpers[1]	D	0.00	1.40	0	420	0	0	420	0.85	0.00	0.00	0	0	0	692
5	P	RAB & Pecos Pumpers[1]	F	1.72	1.72	144	42,386	1,708	0	44,238	0.60	0.75	0.45	5,318	1,773	7,091	121,718
5	P	Scattered	F	2.40	2.40	0	38	188	375	601	0.60	0.90	0.54	752	84	836	1,652
5	P	Rio Penasco	F	2.55	2.55	38	56	901	225	1,220	0.55	0.70	0.39	4,354	1,865	6,219	1,303
5	P	Rio Hondo	F	1.89	0.00	345	0	0	0	345	0.55	0.70	0.39	1,186	508	1,694	0
5	P	RAB & Pecos Pumpers[1]	S	0.00	2.03	0	34,146	0	0	34,146	0.70	0.00	0.00	0	0	0	99,023
5	P	Rio Hondo	S	0.00	0.86	0	1,035	0	0	1,035	0.65	0.00	0.00	0	0	0	1,369
				River Basin Subtotals		527	78,081	2,797	600	82,005				11,610	4,230	15,840	225,759

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CN	RVB	LOCALE	T	CIRSW	CIRGW	ASWO	AGWO	ASWC	AGWC	TAI	EF	EC	EJ	TFWSW	CLSW	TPWSW	TPWGW
					County Totals	527	78,081	2,797	600	82,005				11,610	4,230	15,840	225,759
6	RG	Rio Grande Basin Scattered	D	0.00	1.18	0	20	0	0	20	0.85	0.00	0.00	0	0	0	28
6	RG	Rio Grande Basin Scattered[1]	F	0.44	0.44	1,056	230	352	151	1,789	0.55	0.70	0.39	1,114	477	1,591	301
6	RG	Rio Grande Basin Scattered	S	0.00	1.91	0	1,200	0	0	1,200	0.65	0.00	0.00	0	0	0	3,526
					River Basin Subtotals	1,056	1,450	352	151	3,009				1,114	477	1,591	3,855
					County Totals	1,056	1,450	352	151	3,009				1,114	477	1,591	3,855
7	AWR	Dry Cimarron	F	1.35	0.00	505	0	0	0	505	0.55	0.70	0.39	1,240	531	1,771	0
7	AWR	Vermejo Cons. Dist.[1]	F	1.14	0.00	2,755	0	0	0	2,755	0.55	0.82	0.45	5,710	1,253	6,964	0
7	AWR	Cimarron River[1]	F	0.90	0.00	5,600	0	0	0	5,600	0.55	0.60	0.33	9,164	6,109	15,273	0
7	AWR	Purgatoire	F	1.28	0.00	160	0	0	0	160	0.55	0.70	0.39	372	160	532	0
7	AWR	Canadian River	F	1.43	0.00	3,580	0	0	0	3,580	0.55	0.60	0.33	9,308	6,205	15,513	0
7	AWR	Near Capulin	F	1.66	0.00	380	0	0	0	380	0.55	0.70	0.39	1,147	492	1,638	0
7	AWR	Cimarron River	S	0.00	1.27	0	1,900	0	0	1,900	0.65	0.00	0.00	0	0	0	3,712
7	AWR	Canadian River	S	1.32	0.00	1,300	0	0	0	1,300	0.65	0.60	0.39	2,640	1,760	4,400	0
					River Basin Subtotals	14,280	1,900	0	0	16,180				29,581	16,510	46,091	3,712
					County Totals	14,280	1,900	0	0	16,180				29,581	16,510	46,091	3,712
9	TG	Texas Gulf Basin	S	0.00	1.25	0	106,990	0	0	106,990	0.80	0.00	0.00	0	0	0	167,172
					River Basin Subtotals	0	106,990	0	0	106,990				0	0	0	167,172
					County Totals	0	106,990	0	0	106,990				0	0	0	167,172

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11	P	Ft. Sumner Irrigation District	F	1.95	0.00	8,108	0	0	0	8,108	0.50	0.70	0.35	31,621	13,552	45,173	0
11	P	Scattered	S	0.00	2.23	0	3,520	0	0	3,520	0.65	0.00	0.00	0	0	0	12,076
				River Basin Subtotals		8,108	3,520	0	0	11,628				31,621	13,552	45,173	12,076
				County Totals		8,108	3,520	0	0	11,628				31,621	13,552	45,173	12,076
13	RG	Hueco GW Basin	D	0.00	3.15	0	180	0	0	180	0.85	0.00	0.00	0	0	0	667
13	RG	EBID[3] Inside/Outside/Santa Teresa	F	0.00	0.00	0	1,843	34,689	28,160	64,692	0.00	0.00	0.00	147,645	123,924	271,569	120,800
13	RG	Nutt-Hockett	F	0.00	1.69	0	10	0	0	10	0.60	0.00	0.00	0	0	0	28
13	RG	Nutt-Hockett	S	0.00	1.59	0	170	0	0	170	0.65	0.00	0.00	0	0	0	416
				River Basin Subtotals		0	2,203	34,689	28,160	65,052				147,645	123,924	271,569	121,911
				County Totals		0	2,203	34,689	28,160	65,052				147,645	123,924	271,569	121,911
15	P	Rio Penasco	F	0.00	2.28	0	3,467	0	0	3,467	0.55	0.70	0.39	0	0	0	14,372
15	P	Carlsbad Basin	F	2.33	2.33	271	2,356	0	0	2,627	0.55	0.80	0.44	1,148	287	1,435	9,981
15	P	Black River	F	2.24	2.24	670	609	0	0	1,279	0.55	0.80	0.44	2,729	682	3,411	2,480
15	P	Carlsbad Irrigation District	F	2.49	2.49	2,503	0	9,327	5,291	17,121	0.60	0.70	0.40	49,095	24,547	73,642	21,958
15	P	Roswell Artesian Basin	F	0.00	1.78	0	19,962	0	0	19,962	0.60	0.00	0.00	0	0	0	59,221
15	P	Rio Penasco	S	0.00	2.60	0	75	0	0	75	0.65	0.00	0.00	0	0	0	300
15	P	Roswell Artesian Basin	S	0.00	2.08	0	480	0	0	480	0.70	0.00	0.00	0	0	0	1,426
				River Basin Subtotals		3,444	26,949	9,327	5,291	45,011				52,972	25,516	78,488	109,738
				County Totals		3,444	26,949	9,327	5,291	45,011				52,972	25,516	78,488	109,738

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17	LC	Gila River--Upper Gila[2]	F	1.57	37	0	0	0	37	0.45	0.10	0.05	128	1,103	1,230	0	
17	LC	Lordsburg Valley	F	0.00	1.85	0	189	0	0	189	0.55	0.00	0.00	0	0	0	636
17	LC	Gila River--Cliff[2]	F	1.43	1.43	1,553	0	70	70	1,693	0.56	0.16	0.09	4,144	21,644	25,788	179
17	LC	Gila River - Red Rock[2]	F	1.99	129	0	0	0	129	0.66	0.38	0.25	389	637	1,027	0	
17	LC	Gila River - Red Rock CRP[2,3]	F	1.00	43	0	0	0	43	1.01	1.00	1.01	43	0	43	0	
17	LC	Gila River - Red Rock[2]	S	1.99	5	0	0	0	5	0.59	0.38	0.22	12	20	32	0	
				River Basin Subtotals		1,767	189	70	70	2,096				4,716	23,404	28,120	815
17	RG	Mimbres River	F	1.65	1.65	382	860	401	268	1,911	0.55	0.65	0.36	2,349	1,240	3,589	3,384
17	RG	Mimbres River	S	0.00	1.55	0	110	0	0	110	0.65	0.00	0.00	0	0	0	262
				River Basin Subtotals		382	970	401	268	2,021				2,349	1,240	3,589	3,646
				County Totals		2,149	1,159	471	338	4,117				7,065	24,644	31,709	4,461
19	P	Anton Chico	F	1.95	0.00	2,532	0	0	0	2,532	0.55	0.60	0.33	8,977	5,985	14,962	0
19	P	Puerto de Luna	F	2.15	0.00	578	0	0	0	578	0.55	0.60	0.33	2,259	1,506	3,766	0
19	P	Scattered	F	0.00	1.27	0	292	0	0	292	0.55	0.00	0.00	0	0	0	674
19	P	Colonias	F	0.00	2.12	0	300	0	0	300	0.55	0.00	0.00	0	0	0	1,156
19	P	Scattered	S	0.00	2.16	0	15	0	0	15	0.55	0.00	0.00	0	0	0	59
				River Basin Subtotals		3,110	607	0	0	3,717				11,237	7,491	18,728	1,890
				County Totals		3,110	607	0	0	3,717				11,237	7,491	18,728	1,890
21	AWR	Arkansas-White-Red Scattered	F	0.00	1.11	0	20	0	0	20	0.55	0.00	0.00	0	0	0	40

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21	AWR	Arkansas-White-Red Scattered	S	0.00	1.46	0	1,350	0	0	1,350	0.65	0.00	0.00	0	0	0	3,032
				River Basin Subtotals		0	1,370	0	0	1,370				0	0	0	3,073
				County Totals		0	1,370	0	0	1,370				0	0	0	3,073
23	LC	Playas	D	0.00	1.79	0	2,175	0	0	2,175	0.55	0.00	0.00	0	0	0	7,079
23	LC	Animas Valley	F	0.00	2.17	0	3,461	0	0	3,461	0.55	0.00	0.00	0	0	0	13,655
23	LC	San Simon[2]	F	0.00	2.38	0	89	0	0	89	4.34	0.98	4.26	49	0	0	50
23	LC	Gila River--Virden Valley	F	1.97	1.97	0	1,356	1,337	892	3,585	0.55	0.70	0.39	4,789	1,965	6,754	8,052
23	LC	Gila River--Virden Valley	S	0.00	1.97	0	213	0	0	213	0.65	0.70	0.39	0	0	0	646
23	LC	Animas Valley	S	0.00	1.31	0	639	0	0	639	0.65	0.00	0.00	0	0	0	1,288
23	LC	Lordsburg Valley	S	0.00	2.94	0	2,681	0	0	2,681	0.55	0.00	0.00	0	0	0	14,331
23	LC	San Simon[2]	S	0.00	2.38	0	189	0	0	189	9.23	0.46	4.26	49	0	0	105
23	LC	Playas	S	0.00	1.99	0	4,380	0	0	4,380	0.65	0.00	0.00	0	0	0	13,410
				River Basin Subtotals		0	15,183	1,337	892	17,412				4,886	1,965	6,754	58,615
				County Totals		0	15,183	1,337	892	17,412				4,886	1,965	6,754	58,615
25	P	Pecos River Basin Scattered	D	0.00	2.21	0	220	0	0	220	0.85	0.00	0.00	0	0	0	572
				River Basin Subtotals		0	220	0	0	220				0	0	0	572
25	TG	Texas Gulf Basin Scattered	S	0.00	2.29	0	48,743	0	0	48,743	0.65	0.00	0.00	0	0	0	171,725
				River Basin Subtotals		0	48,743	0	0	48,743				0	0	0	171,725
				County Totals		0	48,963	0	0	48,963				0	0	0	172,297

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27	P	Rio Hondo & Tributaries	D	0.00	1.28	0	5	0	0	5	0.85	0.00	0.00	0	0	0	8
27	P	Scattered	F	0.00	1.28	0	2	0	0	2	0.45	0.70	0.00	0	0	0	6
27	P	Rio Hondo & Tributaries	F	2.03	2.03	1,465	380	1,189	509	3,543	0.50	0.70	0.35	10,775	4,618	15,393	3,609
27	P	Rio Hondo & Tributaries	S	0.00	2.09	0	330	0	0	330	0.65	0.00	0.00	0	0	0	1,061
				River Basin Subtotals		1,465	717	1,189	509	3,880				10,775	4,618	15,393	4,683
27	RG	Carrizozo & Vicinity	F	0.00	1.39	0	9	0	0	9	0.55	0.00	0.00	0	0	0	23
				River Basin Subtotals		0	9	0	0	9				0	0	0	23
				County Totals		1,465	726	1,189	509	3,889				10,775	4,618	15,393	4,706
29	RG	Mimbres Basin	D	0.00	1.74	0	10,650	0	0	10,650	0.85	0.00	0.00	0	0	0	21,801
29	RG	Nutt-Hockett	D	0.00	2.18	0	4,800	0	0	4,800	0.85	0.00	0.00	0	0	0	12,311
29	RG	Nutt-Hockett	F	0.00	1.43	0	850	0	0	850	0.60	0.00	0.00	0	0	0	2,026
29	RG	Mimbres River	F	2.16	2.16	200	1,950	600	600	3,350	0.55	0.65	0.36	3,142	1,658	4,800	10,015
29	RG	Mimbres--Wild Flooding	F	2.65	0.00	10,500	0	0	0	10,500	0.45	1.00	0.45	61,833	0	61,833	0
29	RG	Mimbres River	S	0.00	2.80	0	300	0	0	300	0.65	0.00	0.00	0	0	0	1,292
29	RG	Nutt-Hockett	S	0.00	2.15	0	510	0	0	510	0.65	0.00	0.00	0	0	0	1,687
				River Basin Subtotals		10,700	19,060	600	600	30,960				64,975	1,658	66,633	49,132
				County Totals		10,700	19,060	600	600	30,960				64,975	1,658	66,633	49,132
31	LC	Zuni & Ramah	F	0.40	0.00	760	0	0	0	760	0.55	0.70	0.39	553	237	790	0
				River Basin Subtotals		760	0	0	0	760				553	237	790	0

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31	RG	Scattered--RG	F	1.09	0.00	75	0	0	0	75	0.55	0.80	0.44	149	37	186	0
				River Basin Subtotals		75	0	0	0	75				149	37	186	0
31	UC	Scattered--UC[2]	F	2.22	0.00	85	0	0	0	85	2.25	0.70	1.58	84	36	120	0
				River Basin Subtotals		85	0	0	0	85				84	36	120	0
				County Totals		920	0	0	0	920				785	310	1,095	0
33	AWR	Scattered	F	1.16	0.00	4,286	0	0	0	4,286	0.55	0.70	0.39	9,040	3,874	12,914	0
				River Basin Subtotals		4,286	0	0	0	4,286				9,040	3,874	12,914	0
				County Totals		4,286	0	0	0	4,286				9,040	3,874	12,914	0
35	P	Rio Penasco	F	1.21	0.00	630	0	0	0	630	0.55	0.70	0.39	1,386	594	1,980	0
				River Basin Subtotals		630	0	0	0	630				1,386	594	1,980	0
35	RG	Tularosa GW Basin	D	0.00	1.96	0	260	0	0	260	0.85	0.00	0.00	0	0	0	600
35	RG	Salt Basin	D	0.00	2.15	0	59	0	0	59	0.85	0.00	0.00	0	0	0	149
35	RG	Salt Basin	F	0.00	2.34	0	140	0	0	140	0.60	0.00	0.00	0	0	0	546
35	RG	Tularosa GW Basin	F	2.58	2.58	250	2,870	525	525	4,170	0.60	0.70	0.42	3,333	1,428	4,761	2,258
35	RG	Tularosa GW Basin	S	0.00	2.65	0	2,610	0	0	2,610	0.65	0.00	0.00	0	0	0	10,641
35	RG	Salt Basin	S	0.00	2.33	0	484	0	0	484	0.65	0.00	0.00	0	0	0	1,735
				River Basin Subtotals		250	6,423	525	525	7,723				3,333	1,428	4,761	15,928
				County Totals		880	6,423	525	525	8,353				4,719	2,022	6,741	15,928
37	AWR	Outside Arch Hurley CD	D	0.00	1.25	0	30	0	0	30	0.85	0.00	0.00	0	0	0	44

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37	AWR	Outside Arch Hurley CD	F	0.00	1.11	0	143	0	0	143	0.60	0.00	0.00	0	0	0	265
37	AWR	Inside Arch Hurley CD[1]	F	0.76	0.76	8,100	0	0	0	8,100	0.60	0.29	0.17	10,260	25,952	36,212	0
37	AWR	Outside Arch Hurley CD	S	0.00	1.77	0	366	0	0	366	0.65	0.00	0.00	0	0	0	997
				River Basin Subtotals		8,100	539	0	0	8,639				10,260	25,952	36,212	1,305
37	P	House & Vicinity--Pecos	F	0.00	1.52	0	166	0	0	166	0.55	0.00	0.00	0	0	0	459
37	P	House & Vicinity--Pecos	S	0.00	1.60	0	2,512	0	0	2,512	0.65	0.00	0.00	0	0	0	6,183
				River Basin Subtotals		0	2,678	0	0	2,678				0	0	0	6,642
				County Totals		8,100	3,217	0	0	11,317				10,260	25,952	36,212	7,947
39	RG	Velarde & Vicinity	D	0.00	1.24	0	35	0	0	35	0.85	0.00	0.00	0	0	0	51
39	RG	Dulce & Vicinity	F	1.35	0.00	46	0	0	0	46	0.50	0.70	0.35	124	53	177	0
39	RG	Velarde & Vicinity	F	1.74	0.00	2,458	0	0	0	2,458	0.50	0.70	0.35	8,554	3,666	12,220	0
39	RG	Truchas & Vicinity	F	1.30	0.00	2,889	0	0	0	2,889	0.40	0.70	0.28	9,389	4,024	13,413	0
39	RG	Santa Cruz & Vicinity[1]	F	0.92	0.00	4,226	0	0	0	4,226	0.55	0.70	0.39	7,069	3,030	10,099	0
39	RG	Rio Chama	F	1.08	1.08	21,033	500	210	70	21,813	0.50	0.60	0.30	45,885	30,590	76,475	1,231
				River Basin Subtotals		30,652	535	210	70	31,467				71,021	41,363	112,384	1,282
				County Totals		30,652	535	210	70	31,467				71,021	41,363	112,384	1,282
41	P	Scattered--Pecos R. Basin	S	0.00	1.10	0	450	0	0	450	0.70	0.00	0.00	0	0	0	707
				River Basin Subtotals		0	450	0	0	450				0	0	0	707
41	TG	Portales Basin	D	0.00	1.54	0	43	0	0	43	0.85	0.00	0.00	0	0	0	78

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41	TG	Portales Basin	S	0.00	1.25	0	93,958	0	0	93,958	0.70	0.00	0.00	0	0	0	167,782
41	TG	Causey-Lingo--Texas Gulf	S	0.00	1.25	0	9,774	0	0	9,774	0.70	0.00	0.00	0	0	0	17,454
				River Basin Subtotals		0	103,775	0	0	103,775				0	0	0	185,314
				County Totals		0	104,225	0	0	104,225				0	0	0	186,021
43	RG	Cuba & Vicinity	F	1.34	0.00	1,665	0	0	0	1,665	0.50	0.70	0.35	4,446	1,905	6,351	0
43	RG	MRGCD	F	2.31	2.31	4,370	0	404	135	4,909	0.50	0.60	0.30	22,056	14,704	36,760	624
43	RG	Jemez River Basin	F	1.12	0.00	1,381	0	0	0	1,381	0.50	0.70	0.35	3,093	1,326	4,419	0
43	RG	Outside MRGCD	S	2.04	0.00	233	0	0	0	233	0.60	1.00	0.60	792	0	792	0
					River Basin Subtotals		7,649	0	404	135	8,188			30,387	17,935	48,322	624
					County Totals		7,649	0	404	135	8,188			30,387	17,935	48,322	624
45	UC	Animas River	F	2.41	0.00	3,665	0	0	0	3,665	0.55	0.70	0.39	16,061	6,883	22,945	0
45	UC	Chaco Canyon[2]	F	2.22	0.00	372	0	0	0	372	2.25	0.70	1.58	366	157	524	0
45	UC	Hammond Irrigation District	F	2.47	0.00	244	0	0	0	244	0.55	0.72	0.40	1,097	427	1,524	0
45	UC	La Plata River[2]	F	2.46	0.00	2,240	0	0	0	2,240	1.07	0.70	0.75	5,160	2,211	7,372	0
45	UC	Pine River Irrigation District	F	1.83	0.00	325	0	0	0	325	0.55	0.75	0.41	1,081	360	1,441	0
45	UC	San Juan River	F	2.42	0.00	8,297	0	0	0	8,297	0.55	0.70	0.39	36,496	15,641	52,137	0
45	UC	La Plata River[2]	S	2.46	0.00	414	0	0	0	414	1.26	0.70	0.88	808	346	1,154	0
45	UC	Hammond Irrigation District	S	2.47	0.00	2,810	0	0	0	2,810	0.65	0.72	0.47	10,677	4,152	14,829	0
45	UC	Animas River	S	2.41	0.00	1,158	0	0	0	1,158	0.65	0.70	0.46	4,292	1,839	6,131	0

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45	UC	Pine River Irrigation District	S	1.83	0.00	81	0	0	0	81	0.65	0.75	0.49	229	76	305	0
45	UC	San Juan River	S	2.42	0.00	1,616	0	0	0	1,616	0.65	0.70	0.46	6,015	2,578	8,593	0
45	UC	Navajo Indian Irrigation Project	S	2.11	0.00	63,832	0	0	0	63,832	0.76	0.90	0.69	176,843	19,526	196,369	0
				River Basin Subtotals		85,054	0	0	0	85,054				259,125	54,198	313,323	0
				County Totals		85,054	0	0	0	85,054				259,125	54,198	313,323	0
47	AWR	Sapello Creek	F	1.23	0.00	1,795	0	0	0	1,795	0.45	0.70	0.32	4,906	2,103	7,009	0
47	AWR	Canadian River	F	1.63	0.00	935	0	0	0	935	0.55	0.70	0.39	2,771	1,188	3,959	0
				River Basin Subtotals		2,730	0	0	0	2,730				7,677	3,290	10,968	0
47	P	Scattered--Pecos River	F	1.24	0.00	3,477	0	0	0	3,477	0.50	0.60	0.30	8,623	5,749	14,372	0
47	P	Storrie Irrigation Project[1]	F	0.73	0.00	4,478	0	0	0	4,478	0.50	0.60	0.30	6,538	4,359	10,896	0
47	P	Storrie Irrigation Project	S	0.80	0.00	550	0	0	0	550	0.65	1.00	0.65	677	0	677	0
				River Basin Subtotals		8,505	0	0	0	8,505				15,838	10,107	25,945	0
				County Totals		11,235	0	0	0	11,235				23,515	13,398	36,913	0
49	RG	Santa Cruz & Vicinity	D	0.00	1.11	0	5	0	0	5	0.85	0.00	0.00	0	0	0	7
49	RG	Pojoaque Valley ID	D	0.00	0.77	0	25	0	0	25	0.85	0.00	0.00	0	0	0	23
49	RG	Estancia Basin	D	0.00	1.14	0	40	0	0	40	0.85	0.00	0.00	0	0	0	54
49	RG	Santa Fe & Vicinity	D	0.00	0.74	0	20	0	0	20	0.85	0.00	0.00	0	0	0	17
49	RG	Santa Fe & Vicinity[1]	F	0.97	0.97	1,222	0	110	110	1,442	0.50	0.70	0.35	2,584	1,107	3,692	213
49	RG	Santa Cruz & Vicinity[1]	F	1.00	0.00	4,375	0	0	0	4,375	0.55	0.70	0.39	7,955	3,409	11,364	0

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49	RG	Pojoaque Valley ID[1]	F	0.77	0.77	1,496	25	280	95	1,896	0.55	0.75	0.41	2,486	849	3,335	168
49	RG	Estancia Basin	F	0.00	1.27	0	4,327	0	0	4,327	0.60	0.00	0.00	0	0	0	9,159
49	RG	Estancia Basin	S	0.00	1.39	0	4,901	0	0	4,901	0.65	0.00	0.00	0	0	0	10,481
				River Basin Subtotals		7,093	9,343	390	205	17,031				13,025	5,366	18,390	20,121
				County Totals		7,093	9,343	390	205	17,031				13,025	5,366	18,390	20,121
51	RG	Above Elephant Butte--Engle	D	0.00	1.51	0	145	0	0	145	0.85	0.00	0.00	0	0	0	258
51	RG	Above Elephant Butte	D	0.00	2.05	0	20	0	0	20	0.85	0.00	0.00	0	0	0	48
51	RG	Lake Valley & Vicinity	F	0.00	2.95	0	128	0	0	128	0.55	0.00	0.00	0	0	0	687
51	RG	Truth or Consequences	F	0.00	2.36	0	842	0	0	842	0.60	0.00	0.00	0	0	0	3,312
51	RG	Nutt-Hockett	F	0.00	2.39	0	180	0	0	180	0.60	0.00	0.00	0	0	0	717
51	RG	Los Animas Creek and others	F	2.36	2.36	200	556	230	80	1,066	0.55	0.70	0.39	1,845	757	2,602	2,729
51	RG	EBID[3]	F	0.00	0.00	0	69	2,913	555	3,537	0.00	0.00	0.00	7,771	6,522	14,293	13,654
51	RG	Above Elephant Butte	F	2.90	2.90	300	350	352	117	1,119	0.60	0.70	0.42	3,151	1,351	4,502	2,257
				River Basin Subtotals		500	2,290	3,495	752	7,037				12,767	8,630	21,397	23,662
				County Totals		500	2,290	3,495	752	7,037				12,767	8,630	21,397	23,662
53	RG	MRGCD Only	D	0.00	1.62	0	6	0	0	6	0.85	0.00	0.00	0	0	0	11
53	RG	La Jolla Area	F	2.20	2.20	26	40	285	190	541	0.55	0.70	0.39	1,244	510	1,754	920
53	RG	MRGCD Only	F	2.62	2.62	3,261	0	8,282	5,521	17,064	0.50	0.60	0.30	60,485	40,324	100,809	28,930
53	RG	Bosque del Apache	F	2.88	0.00	1,106	0	0	0	1,106	0.55	0.70	0.39	5,791	2,482	8,273	0

Key: CN=county number; RVB=river basin, i.e., AWR=Arkansas-White-Red, LC=Lower Colorado, P=Pecos, RG=Rio Grande, TG=Texas Gulf, UC=Upper Colorado; T=type of irrigation system, i.e., drip (D), flood (F), or sprinkler (S); CIRSW=consumptive irrigation requirement for acreage irrigated with surface water; CIRGW=consumptive irrigation requirement for acreage irrigated with groundwater; ASWO=acreage irrigated with surface water only; AGWO=acreage irrigated with groundwater only; ASWC=surface water component of acreage irrigated with combined water, i.e., both surface and groundwater; AGWC=groundwater component of acreage irrigated with combined water; TAI=total acreage irrigated; EF=on-farm irrigation efficiency; EC=off-farm conveyance efficiency; EJ=project efficiency; TFWSW=total farm withdrawal, surface water; CLSW=surface water conveyance losses from stream or reservoir to farm headgate; TPWSW=total project withdrawals, surface water; TPWGW=total project withdrawals, groundwater; 1=Adjusted CIR in the area please see Chapter 3 for a description; 2=Due to report format and water shortages, this Ef is not a true measure of efficiency; 3=metered and diversion data reported; 4=NIIP numbers are as reported by NMISC.

Table 8. Irrigated Agriculture. Withdrawals in acre-feet in New Mexico counties, 2010. Data compiled by Julie Valdez, Molly Magnuson, and Kenneth Richard, New Mexico Office of the State Engineer.

CN	RVB	LOCALE	T	CIRSW	CIRGW	ASWO	AGWO	ASWC	AGWC	TAI	EF	EC	EJ	TFWSW	CLSW	TPWSW	TPWGW
53	RG	San Augustin Plains	S	0.00	1.89	0	180	0	0	180	0.65	0.00	0.00	0	0	0	523
				River Basin Subtotals		4,393	226	8,567	5,711	18,897				67,520	43,316	110,836	30,385
				County Totals		4,393	226	8,567	5,711	18,897				67,520	43,316	110,836	30,385
55	RG	Costilla	F	1.13	0.00	4,310	0	0	0	4,310	0.50	0.60	0.30	9,741	6,494	16,234	0
55	RG	Embudo & Vicinity	F	1.28	0.00	4,805	0	0	0	4,805	0.50	0.70	0.35	12,301	5,272	17,573	0
55	RG	Pilar & Ojo Caliente	F	1.86	0.00	650	0	0	0	650	0.50	0.90	0.45	2,418	269	2,687	0
55	RG	Cerro & Questa	F	1.13	0.00	5,020	0	0	0	5,020	0.50	0.60	0.30	11,345	7,563	18,909	0
55	RG	Taos & Vicinity	F	1.11	0.00	11,245	0	0	0	11,245	0.50	0.70	0.35	24,964	10,699	35,663	0
55	RG	Costilla	S	0.00	0.97	0	330	0	0	330	0.65	0.00	0.00	0	0	0	492
55	RG	Embudo & Vicinity	S	0.00	0.78	0	10	0	0	10	0.65	0.00	0.00	0	0	0	12
55	RG	Taos & Vicinity	S	0.00	0.59	0	50	0	0	50	0.65	0.00	0.00	0	0	0	45
55	RG	Cerro & Questa	S	0.00	0.79	0	550	0	0	550	0.65	0.00	0.00	0	0	0	668
				River Basin Subtotals		26,030	940	0	0	26,970				60,769	30,296	91,065	1,218
				County Totals		26,030	940	0	0	26,970				60,769	30,296	91,065	1,218
57	RG	Estancia Basin	D	0.00	1.06	0	54	0	0	54	0.85	0.00	0.00	0	0	0	67
57	RG	Estancia Basin	F	0.00	1.67	0	6,952	0	0	6,952	0.60	0.00	0.00	0	0	0	19,350
57	RG	Estancia Basin	S	0.00	1.68	0	15,549	0	0	15,549	0.65	0.00	0.00	0	0	0	40,188
				River Basin Subtotals		0	22,555	0	0	22,555				0	0	0	59,605
				County Totals		0	22,555	0	0	22,555				0	0	0	59,605

Key: CN=county number; RVB=river basin, i.e., AWR=Arkansas-White-Red, LC=Lower Colorado, P=Pecos, RG=Rio Grande, TG=Texas Gulf, UC=Upper Colorado; T=type of irrigation system, i.e., drip (D), flood (F), or sprinkler (S); CIRSW=consumptive irrigation requirement for acreage irrigated with surface water; CIRGW=consumptive irrigation requirement for acreage irrigated with groundwater; ASWO=acreage irrigated with surface water only; AGWO=acreage irrigated with groundwater only; ASWC=surface water component of acreage irrigated with combined water, i.e., both surface and groundwater; AGWC=groundwater component of acreage irrigated with combined water; TAI=total acreage irrigated; EF=on-farm irrigation efficiency; EC=off-farm conveyance efficiency; EJ=project efficiency; TFWSW=total farm withdrawal, surface water; CLSW=surface water conveyance losses from stream or reservoir to farm headgate; TPWSW=total project withdrawals, surface water; TPWGW=total project withdrawals, groundwater; 1=Adjusted CIR in the area please see Chapter 3 for a description; 2=Due to report format and water shortages, this Ef is not a true measure of efficiency; 3=metered and diversion data reported; 4=NIIP numbers are as reported by NMISC.

Table 8. Irrigated Agriculture. Withdrawals in acre-feet in New Mexico counties, 2010. Data compiled by Julie Valdez, Molly Magnuson, and Kenneth Richard, New Mexico Office of the State Engineer.

CN	RVB	LOCALE	T	CIRSW	CIRGW	ASWO	AGWO	ASWC	AGWC	TAI	EF	EC	EJ	TFWSW	CLSW	TPWSW	TPWGW
59	AWR	Clayton & Vicinity	D	0.00	1.64	0	20	0	0	20	0.85	0.00	0.00	0	0	0	39
59	AWR	Tramperos Creek	F	0.00	1.31	0	200	0	0	200	0.55	0.00	0.00	0	0	0	372
59	AWR	Dry Cimarron	F	1.26	0.00	550	0	0	0	550	0.55	0.70	0.39	1,260	540	1,800	0
59	AWR	Clayton & Vicinity	F	0.00	1.64	0	100	0	0	100	0.60	0.00	0.00	0	0	0	273
59	AWR	Clayton & Vicinity	S	0.00	1.00	0	40,285	0	0	40,285	0.65	0.00	0.00	0	0	0	61,977
59	AWR	Dry Cimarron	S	0.00	1.09	0	2,400	0	0	2,400	0.65	0.00	0.00	0	0	0	4,025
				River Basin Subtotals		550	43,005	0	0	43,555				1,260	540	1,800	66,686
				County Totals		550	43,005	0	0	43,555				1,260	540	1,800	66,686
61	RG	MRGCD Only	D	0.00	1.71	0	335	0	0	335	0.85	0.00	0.00	0	0	0	674
61	RG	MRGCD Only	F	2.25	2.25	15,489	0	5,873	1,958	23,320	0.50	0.60	0.30	96,129	64,086	160,215	8,811
61	RG	MRGCD Only	S	0.00	2.45	0	510	0	0	510	0.65	0.00	0.00	0	0	0	1,922
				River Basin Subtotals		15,489	845	5,873	1,958	24,165				96,129	64,086	160,215	11,407
				County Totals		15,489	845	5,873	1,958	24,165				96,129	64,086	160,215	11,407
				State Totals		252,576	501,865	71,801	46,422	872,664				1,063,696	570,340	1,633,940	1,366,215

Key: CN=county number; RVB=river basin, i.e., AWR=Arkansas-White-Red, LC=Lower Colorado, P=Pecos, RG=Rio Grande, TG=Texas Gulf, UC=Upper Colorado; T=type of irrigation system, i.e., drip (D), flood (F), or sprinkler (S); CIRSW=consumptive irrigation requirement for acreage irrigated with surface water; CIRGW=consumptive irrigation requirement for acreage irrigated with groundwater; ASWO=acreage irrigated with surface water only; AGWO=acreage irrigated with groundwater only; ASWC=surface water component of acreage irrigated with combined water, i.e., both surface and groundwater; AGWC=groundwater component of acreage irrigated with combined water; TAI=total acreage irrigated; EF=on-farm irrigation efficiency; EC=off-farm conveyance efficiency; EJ=project efficiency; TFWSW=total farm withdrawal, surface water; CLSW=surface water conveyance losses from stream or reservoir to farm headgate; TPWSW=total project withdrawals, surface water; TPWGW=total project withdrawals, groundwater; 1=Adjusted CIR in the area please see Chapter 3 for a description; 2=Due to report format and water shortages, this Ef is not a true measure of efficiency; 3=metered and diversion data reported; 4=NIIP numbers are as reported by NMISC.

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Table 9. Irrigated Agriculture. Summary of acreage irrigated, withdrawals, and conveyance losses (acre-feet) in New Mexico river basins, 2010.

RVB	T	ASWO	AGWO	ASWC	AGWC	TAI	TFWSW	CLSW	TPWSW	TPWGW
AWR	D	0	50	0	0	50	0	0	0	83
AWR	F	28,646	463	0	0	29,109	55,178	48,406	103,584	951
AWR	S	1,300	46,301	0	0	47,601	2,640	1,760	4,400	73,743
River Basin Subtotals		29,946	46,814	0	0	76,760	57,818	50,166	107,984	74,776
LC	D	0	2,175	0	0	2,175	0	0	0	7,079
LC	F	3,764	5,095	1,407	962	11,228	14,004	42,732	56,688	22,571
LC	S	5	8,102	0	0	8,107	61	20	32	29,780
River Basin Subtotals		3,769	15,372	1,407	962	21,510	14,065	42,752	56,720	59,430
P	D	0	645	0	0	645	0	0	0	1,272
P	F	25,239	70,014	13,313	6,400	114,966	134,761	66,108	200,869	238,589
P	S	550	42,563	0	0	43,113	677	0	677	122,206
River Basin Subtotals		25,789	113,222	13,313	6,400	158,724	135,438	66,108	201,546	362,067
RG	D	0	16,654	0	0	16,654	0	0	0	36,765
RG	F	107,700	22,831	57,081	39,060	226,672	596,376	357,080	953,456	235,074
RG	S	233	27,464	0	0	27,697	792	0	792	73,892
River Basin Subtotals		107,933	66,949	57,081	39,060	271,023	597,168	357,080	954,247	345,731
TG	D	0	43	0	0	43	0	0	0	78
TG	F	0	0	0	0	0	0	0	0	0
TG	S	0	259,465	0	0	259,465	0	0	0	524,133
River Basin Subtotals		0	259,508	0	0	259,508	0	0	0	524,211
UC	D	0	0	0	0	0	0	0	0	0
UC	F	15,228	0	0	0	15,228	60,345	25,716	86,061	0
UC	S	69,911	0	0	0	69,911	198,863	28,518	227,381	0
River Basin Subtotals		85,139	0	0	0	85,139	259,209	54,234	313,442	0
State Totals		252,576	501,865	71,801	46,422	872,664	1,063,696	570,340	1,633,940	1,366,215

Key: RVB=river basin, i.e., AWR=Arkansas-White-Red, LC=Lower Colorado, P=Pecos, RG=Rio Grande, TG=Texas Gulf, UC=Upper Colorado; T=type of irrigation system, i.e., drip (D), flood (F), or sprinkler (S); ASWO=acreage irrigated with surface water only; AGWO=acreage irrigated with groundwater only; ASWC=surface water component of acreage irrigated with combined water, i.e., both surface water and groundwater; AGWC=groundwater component of acreage irrigated with combined water; TAI=total acreage irrigated; TFWSW=total farm withdrawal, surface water; CLSW=surface water conveyance losses from stream or reservoir to farm headgate; TPWSW=total project withdrawals, surface water; TPWGW=total project withdrawals, groundwater

Table 10. Irrigated acreage and sources of irrigation in New Mexico counties, 2010.

CN	ASWO	AGWO	ASWC	AGWC	TAI
Bernalillo	3,664	0	1,575	525	5,764
Catron	1,242	100	0	0	1,342
Chaves	527	78,081	2,797	600	82,005
Cibola	1,056	1,450	352	151	3,009
Colfax	14,280	1,900	0	0	16,180
Curry	0	106,990	0	0	106,990
De Baca	8,108	3,520	0	0	11,628
Dona Ana	0	2,203	34,689	28,160	65,052
Eddy	3,444	26,949	9,327	5,291	45,011
Grant	2,149	1,159	471	338	4,117
Guadalupe	3,110	607	0	0	3,717
Harding	0	1,370	0	0	1,370
Hidalgo	0	15,183	1,337	892	17,412
Lea	0	48,963	0	0	48,963
Lincoln	1,465	726	1,189	509	3,889
Los Alamos	0	0	0	0	0
Luna	10,700	19,060	600	600	30,960
McKinley	920	0	0	0	920
Mora	4,286	0	0	0	4,286
Otero	880	6,423	525	525	8,353
Quay	8,100	3,217	0	0	11,317
Rio Arriba	30,652	535	210	70	31,467
Roosevelt	0	104,225	0	0	104,225
San Juan	85,054	0	0	0	85,054
San Miguel	11,235	0	0	0	11,235
Sandoval	7,649	0	404	135	8,188
Santa Fe	7,093	9,343	390	205	17,031
Sierra	500	2,290	3,495	752	7,037
Socorro	4,393	226	8,567	5,711	18,897
Taos	26,030	940	0	0	26,970
Torrance	0	22,555	0	0	22,555
Union	550	43,005	0	0	43,555
Valencia	15,489	845	5,873	1,958	24,165
State Totals	252,576	501,865	71,801	46,422	872,664

Key: CN=county number; ASWO=acreage irrigated with surface water only; AGWO=acreage irrigated with groundwater only; ASWC=surface water component of acreage irrigated with combined water, i.e., both surface water and groundwater; AGWC=groundwater component of acreage irrigated with combined water; TAI=total acreage irrigated

Table 11. Acreage irrigated by drip, flood, and sprinkler application methods and sources of irrigation water in New Mexico, 2010. Data reported in acres.

County	DASW	DAGW	TDA	FASW	FAGW	TFA	SASW	SAGW	TSA	TAI
Bernalillo	0	0	0	5,239	525	5,764	0	0	0	5,764
Catron	0	0	0	1,242	100	1,342	0	0	0	1,342
Chaves	0	420	420	3,324	43,080	46,404	0	35,181	35,181	82,005
Cibola	0	20	20	1,408	381	1,789	0	1,200	1,200	3,009
Colfax	0	0	0	12,980	0	12,980	1,300	1,900	3,200	16,180
Curry	0	0	0	0	0	0	0	106,990	106,990	106,990
De Baca	0	0	0	8,108	0	8,108	0	3,520	3,520	11,628
Dona Ana	0	180	180	34,689	30,013	64,702	0	170	170	65,052
Eddy	0	0	0	12,771	31,685	44,456	0	555	555	45,011
Grant	0	0	0	2,615	1,387	4,002	5	110	115	4,117
Guadalupe	0	0	0	3,110	592	3,702	0	15	15	3,717
Harding	0	0	0	0	20	20	0	1,350	1,350	1,370
Hidalgo	0	2,175	2,175	1,337	5,798	7,135	0	8,102	8,102	17,412
Lea	0	220	220	0	0	0	0	48,743	48,743	48,963
Lincoln	0	5	5	2,654	900	3,554	0	330	330	3,889
Los Alamos	0	0	0	0	0	0	0	0	0	0
Luna	0	15,450	15,450	11,300	3,400	14,700	0	810	810	30,960
McKinley	0	0	0	920	0	920	0	0	0	920
Mora	0	0	0	4,286	0	4,286	0	0	0	4,286
Otero	0	319	319	1,405	3,535	4,940	0	3,094	3,094	8,353
Quay	0	30	30	8,100	309	8,409	0	2,878	2,878	11,317
Rio Arriba	0	35	35	30,862	570	31,432	0	0	0	31,467
Roosevelt	0	43	43	0	0	0	0	104,182	104,182	104,225
San Juan	0	0	0	15,143	0	15,143	69,911	0	69,911	85,054
San Miguel	0	0	0	10,685	0	10,685	550	0	550	11,235
Sandoval	0	0	0	7,820	135	7,955	233	0	233	8,188
Santa Fe	0	90	90	7,483	4,557	12,040	0	4,901	4,901	17,031
Sierra	0	165	165	3,995	2,877	6,872	0	0	0	7,037
Socorro	0	6	6	12,960	5,751	18,711	0	180	180	18,897
Taos	0	0	0	26,030	0	26,030	0	940	940	26,970
Torrance	0	54	54	0	6,952	6,952	0	15,549	15,549	22,555
Union	0	20	20	550	300	850	0	42,685	42,685	43,555
Valencia	0	335	335	21,362	1,958	23,320	0	510	510	24,165
State Totals	0	19,567	19,567	252,378	144,825	397,203	71,999	383,895	455,894	872,664

Key: DASW=drip irrigated acreage supplied by surface water; DAGW=drip irrigated acreage supplied by groundwater; TDA=total drip irrigated acreage; FASW=flood irrigated acreage supplied by surface water; FAGW=flood irrigated acreage supplied by groundwater; TFA=total flood irrigated acreage; SASW=sprinkler irrigated acreage supplied by surface water; SAGW=sprinkler irrigated acreage supplied by groundwater; TSA=total sprinkler irrigated acreage; TAI=total acres irrigated.

Table 12. Acreage irrigated by drip, flood, and sprinkler application methods and sources of irrigation water in New Mexico River Basins, 2010. Data reported in acres.

River Basin	DASW	DAGW	TDA	FASW	FAGW	TFA	SASW	SAGW	TSA	TAI
Arkansas-White-Red	0	50	50	28,646	463	29,109	1,300	46,301	47,601	76,760
Lower Colorado	0	2,175	2,175	5,171	6,057	11,228	5	8,102	8,107	21,510
Pecos	0	645	645	38,552	76,414	114,966	550	42,563	43,113	158,724
Rio Grande	0	16,654	16,654	164,781	61,891	226,672	233	27,464	27,697	271,023
Texas Gulf	0	43	43	0	0	0	0	259,465	259,465	259,508
Upper Colorado	0	0	0	15,228	0	15,228	69,911	0	69,911	85,139
State Totals	0	19,567	19,567	252,378	144,825	397,203	71,999	383,895	455,894	872,664

Key: DASW=drip irrigated acreage supplied by surface water; DAGW=drip irrigated acreage supplied by groundwater; TDA=total drip irrigated acreage; FASW=flood irrigated acreage supplied by surface water; FAGW=flood irrigated acreage supplied by groundwater; TFA=total flood irrigated acreage; SASW=sprinkler irrigated acreage supplied by surface water; SAGW=sprinkler irrigated acreage supplied by groundwater; TSA=total sprinkler irrigated acreage; TAI=total acres irrigated.

APPENDIX C: COUNTIES AND RIVER BASINS, AND MAPS

Table 1. County code numbers (CN) are established by the National Bureau of Standards, and whole or part counties are included in each river basin.

County Number (CN)	County Name	River Basin					
		Arkansas-White-Red (AWR)	Lower Colorado (LC)	Pecos (P)	Rio Grande (RG)	Texas Gulf (TG)	Upper Colorado (UC)
1	Bernalillo				X		
3	Catron		X		X		
5	Chaves			X			
6	Cibola		X		X		
7	Colfax	X					
9	Curry	X				X	
11	DeBaca			X			
13	Doña Ana				X		
15	Eddy			X			
17	Grant		X		X		
19	Guadalupe	X		X			
21	Harding	X					
23	Hidalgo		X		X		
25	Lea			X		X	
27	Lincoln			X	X		
28	Los Alamos				X		
29	Luna		X		X		
31	McKinley		X		X		X
33	Mora	X					
35	Otero			X	X		
37	Quay	X		X			
39	Rio Arriba				X		X
41	Roosevelt					X	
43	Sandoval				X		X
45	San Juan						X
47	San Miguel	X		X	X		
49	Santa Fe			X	X		
51	Sierra				X		
53	Socorro				X		
55	Taos				X		
57	Torrance			X	X		
59	Union	X					
61	Valencia				X		

Figure 1. River basins in New Mexico

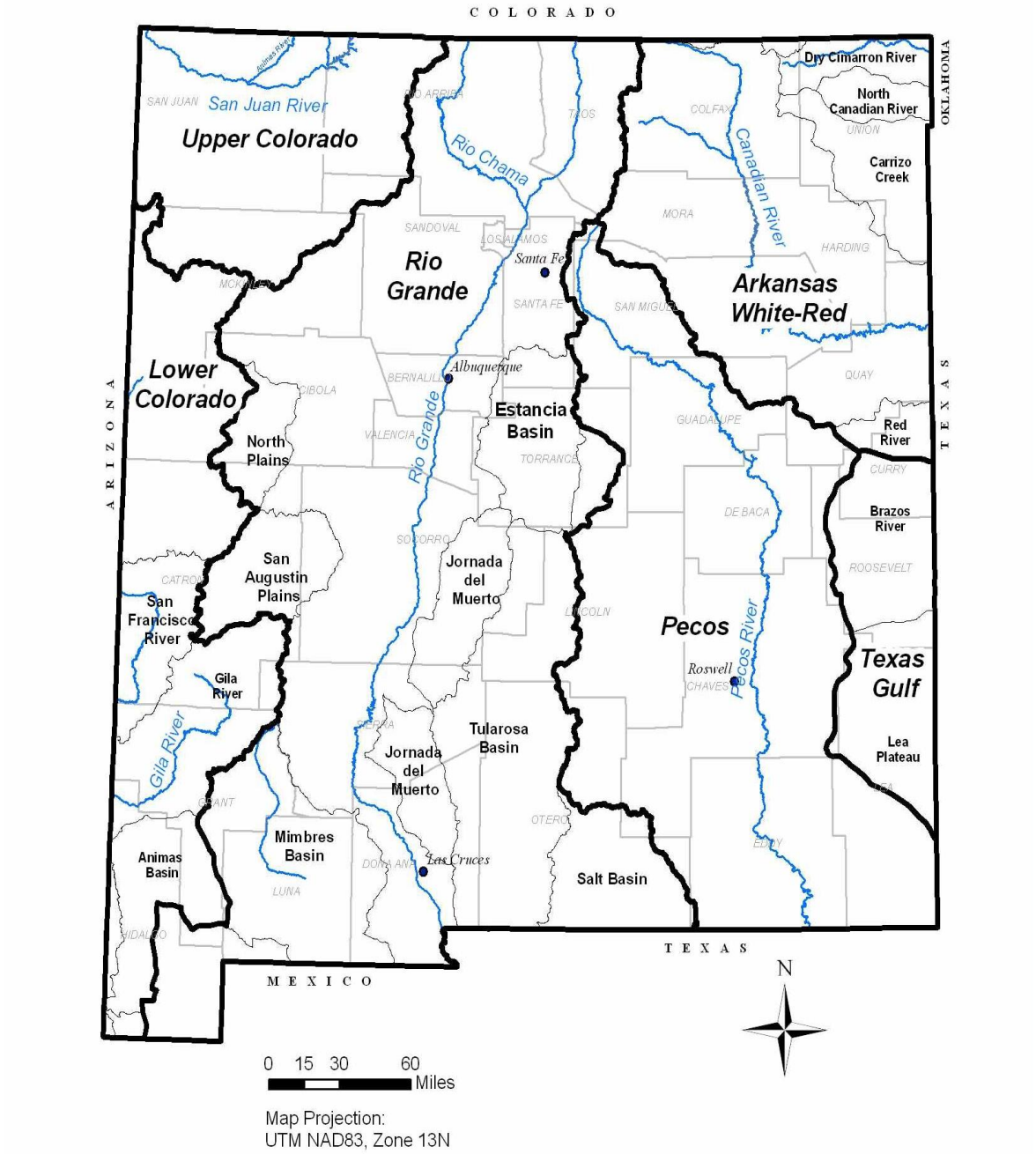
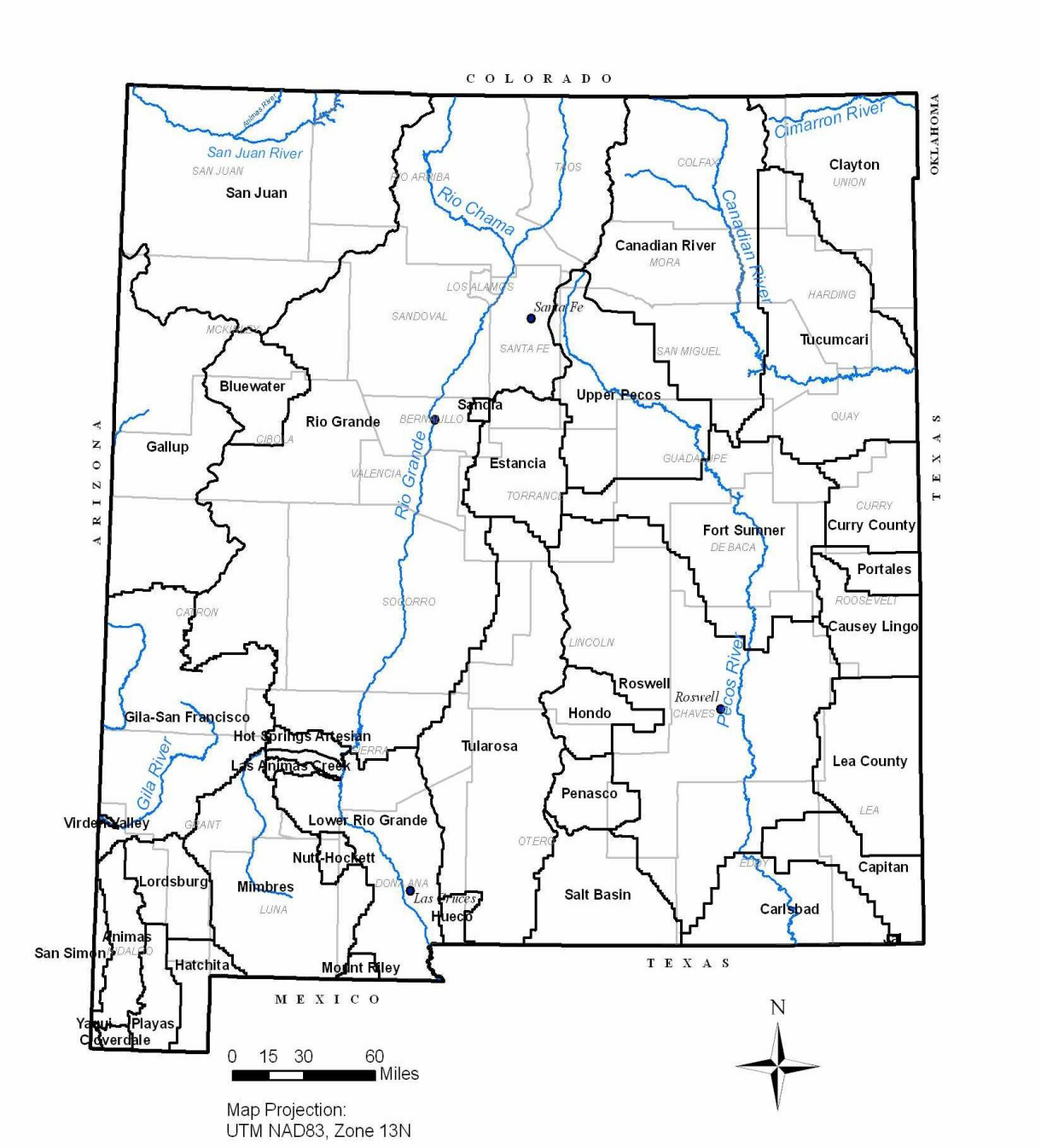


Figure 2. Groundwater basins in New Mexico



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