PRELIMINARY

SUBJECT TO REVISION

40-Year Water Plan

City of Hobbs, New Mexico

Prepared for **City of Hobbs, New Mexico**

October 30, 2009

Daniel B. Stephens & Associates, Inc.

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1. Introduction

James Isaac Hobbs homesteaded the area that would later become the City of Hobbs in 1907; that same year, the New Mexico Territorial Legislature enacted the New Mexico Water Code. Homesteaders trickled in over the next few years and a post office was established in 1910. With the discovery of oil in 1927, the town's population began to boom and it grew rapidly from 600 people in 1930 to 26,000 in 1960 (Hinshaw, 1976). The town has now grown to almost 30,000, and future growth is anticipated given the historical resilience (despite global volatility) of the oil and gas industry and efforts to diversify the economy (SWPM, 2008).

Maintaining a high-quality sustainable water supply and adequate infrastructure to meet current and future demand is a key objective for the City of Hobbs. In 2004, the City prepared a municipal water system hydraulic analysis and water master plan, and in 2008, contracted with Parkhill, Smith and Cooper to develop an updated water infrastructure master plan. To further facilitate these water planning efforts, the City retained Daniel B. Stephens & Associates, Inc. (DBS&A) to prepare a 40-year water plan and updated conservation plan to ensure that the City's water rights are protected and will be available to meet future needs.

In addition to planning to meet future water demand, a 40-year water plan addresses several regulatory requirements regarding water rights and water conservation. In particular, a water development plan allows certain organizations, including municipalities, to set aside water for use in the future. Although this notion is contrary to the "use it or lose it" concept of New Mexico's prior appropriation system, it is essential for long-term water planning. Accordingly, Section 72-1-9 (B) of the New Mexico Water Code allows covered entities such as the City of Hobbs to legally appropriate and reserve water that they cannot currently use but will need in the future to meet projected water requirements for the City. Additionally, municipalities and counties are specifically exempt from forfeiture of unused water rights if those rights have been appropriated for the implementation of a water development plan or for preservation of water supplies (NMSA 72-12-8 (F)). These provisions are the same for both surface water and groundwater (NMSA 72-5-28 (C)).

In addition to protecting water rights, this 40-year water plan contains an update to the Hobbs 2005 conservation plan that addresses New Mexico Office of the State Engineer (OSE) requirements for conservation. The conservation plan also fulfills the statutory requirement (NMSA 1978 Section 72-14-3.2) that calls for conservation planning as a prerequisite for applying for funding from key state funding agencies. Specifically, ". . . any public supply system with diversions of at least 500 acre-feet annually for domestic, commercial, industrial, or government customers for other than agricultural purposes, may develop, adopt and submit to the State Engineer, by December 31, 2005, a comprehensive water conservation plan, including a drought management plan." According to the statute, as of December 31, 2005, the Water Trust Board and the New Mexico Finance Authority shall no longer accept an application for financial assistance from these public supply systems ". . . for the construction of any water diversion, storage, conveyance, water treatment or wastewater treatment facility unless the covered entity includes a copy of its water conservation plan" (NMSA 1978, Section 72-14-3.2(G).

The remainder of this water plan synthesizes relevant information on the available water supply, the quality of that supply, and projected demand, summarizes the City's water conservation plan, and recommends measures that the City of Hobbs may consider in planning for an adequate future water supply.

2. Water Supply

This section presents an overview of the water resources in the vicinity of the City of Hobbs, including the sources of water, available water supply, reasonable projections of future availability, and current and anticipated future water quality. Water availability is defined in this section in the hydrologic rather than the legal sense; availability of water based on the City's water right portfolio and the State Engineer's administrative criteria for the Lea County Underground Water Basin (Lea County Basin) is discussed in Section 4. Sections 2.1 and 2.2 describe groundwater and surface water resources, respectively. Section 2.3 describes the quality of area groundwater, which is the current source of the City's supply.

2.1 Geography and Climate

The City of Hobbs is within the High Plains section of the Great Plains province (Figure 1). About three quarters of Lea County, including Hobbs, lies within the Llano Estacado region of the High Plains section. The Llano Estacado is defined in the western part of Lea County by the Mescalero Ridge, but the border is less well defined to the south and is no longer considered a ridge. In the eastern portion of the county, it is hardly visible and mostly buried by sand dunes. The Llano Estacado is covered by the caprock, a thick layer of caliche (Leedshill-Herkenhoff et al., 2000).

The climate in Hobbs is characterized as semiarid with cool, dry winters and warm summers with high evaporation rates (Leedshill-Herkenhoff et al., 2000). Average total annual precipitation in Hobbs was 15.94 inches for the period of 1912 through 2007 (WRCC, 2009); most precipitation occurs as heavy thunderstorms during May through October. Hobbs also receives precipitation in the form of snow, on average about 5.3 inches per year (WRCC, 2009).

2.2 Groundwater

The City of Hobbs is located within the declared Lea County Basin, which provides the only water source for the City of Hobbs. As administratively defined by the State Engineer, the Lea

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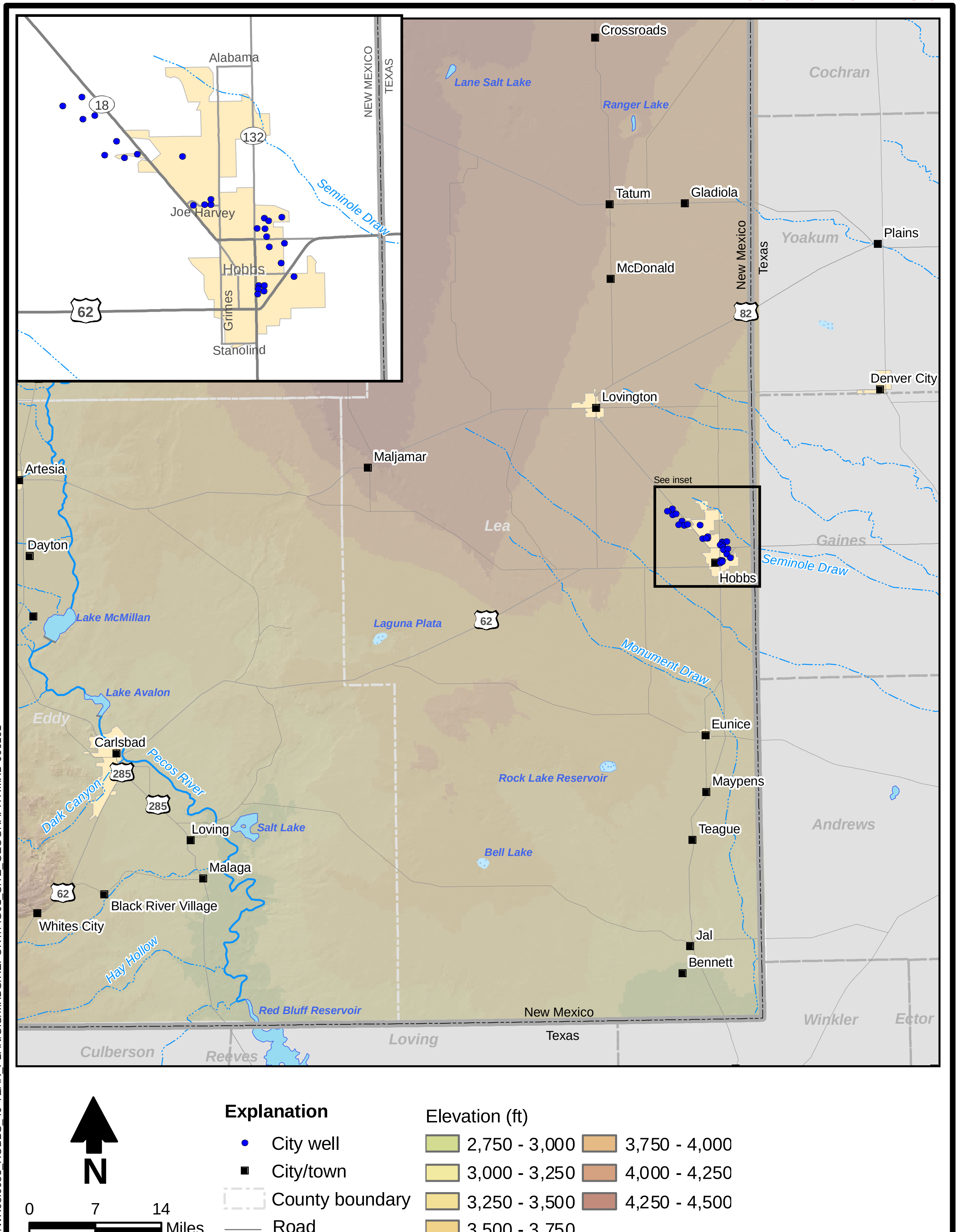

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HOBBS 40-YEAR WATER PLAN

Site Geography

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JN WR08.0083

Figure 1

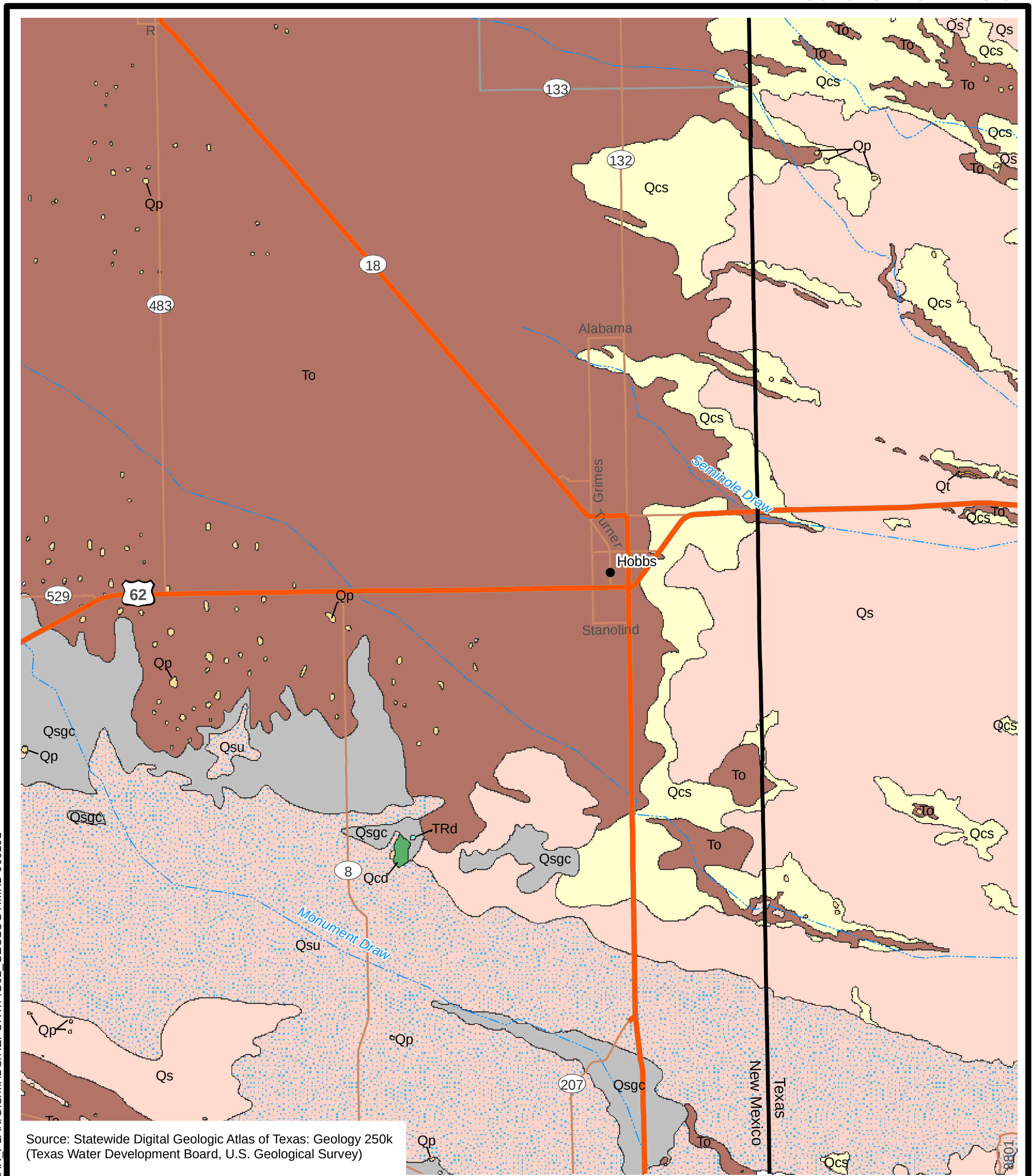
County Basin (Section 4) encompasses 2,180 square miles and covers most of northern Lea County and small portions of eastern Chaves and Eddy Counties.

2.2.1 Hydrogeology

The City of Hobbs and the Lea County Basin are located within the High Plains aquifer, which includes the Tertiary-age Ogallala Formation and Quaternary-age alluvial, dune sand, and valley fill deposits (Figure 2). The High Plains aquifer overlies Triassic-, Jurassic-, and Cretaceous-age deposits that provide a relatively impermeable barrier restricting downward water movement (Leedshill-Herkenhoff et al., 2000). The Ogallala Formation consists of fluvial sandstones and eolian siltstone and clay (Gutentag et al., 1984). Generally, there is an upward fining of sediments, which may have a significant effect on the distribution of porosity and permeability in the Ogallala aquifer (Nativ, 1988), controlling both the amount of water that can be stored and its movement through the aquifer.

The Ogallala Formation is the primary aquifer of the Lea County Basin, which extends the width of Lea County to the east and west. To the south the declared basin is bounded by the Mescalero Ridge and associated escarpment. Groundwater is unconfined and generally flows to the southeast. The maximum saturated thickness of the Ogallala aquifer within the declared basin is about 250 feet (Leedshill-Herkenhoff et al., 2000). Depths to groundwater range from 20 feet in the Monument area to 250 feet near the exposed caprock of the Mescalero Ridge (Musharrafieh and Chudnoff, 1999), which indicates the southern extent of the High Plains aquifer.

The hydraulic conductivity, or the rate at which water flows through the geologic formation, of the Ogallala aquifer in the Lea County Basin as reported by a number of different studies ranges from 3 to 262 feet per day, with higher hydraulic conductivities near Hobbs and eastward toward the Texas border (Leedshill-Herkenhoff et al., 2000). Musharrafieh and Chudnoff (1999) reported specific yields for the Ogallala aquifer, representing the amount of water stored within the aquifer, ranging from 0.10 to 0.28.



Explanation

- Qcd - eolian deposits
- Qs - windblown sand
- Qsu - windblown sand
- Qp - playa deposits
- Qsgc - colluvial deposits
- Qt - fluviatile terrace deposits
- Qcs - windblown cover sand
- To - Ogallala Formation
- TRd - Dockum Group

HOBBS 40-YEAR WATER PLAN
Surficial Geology

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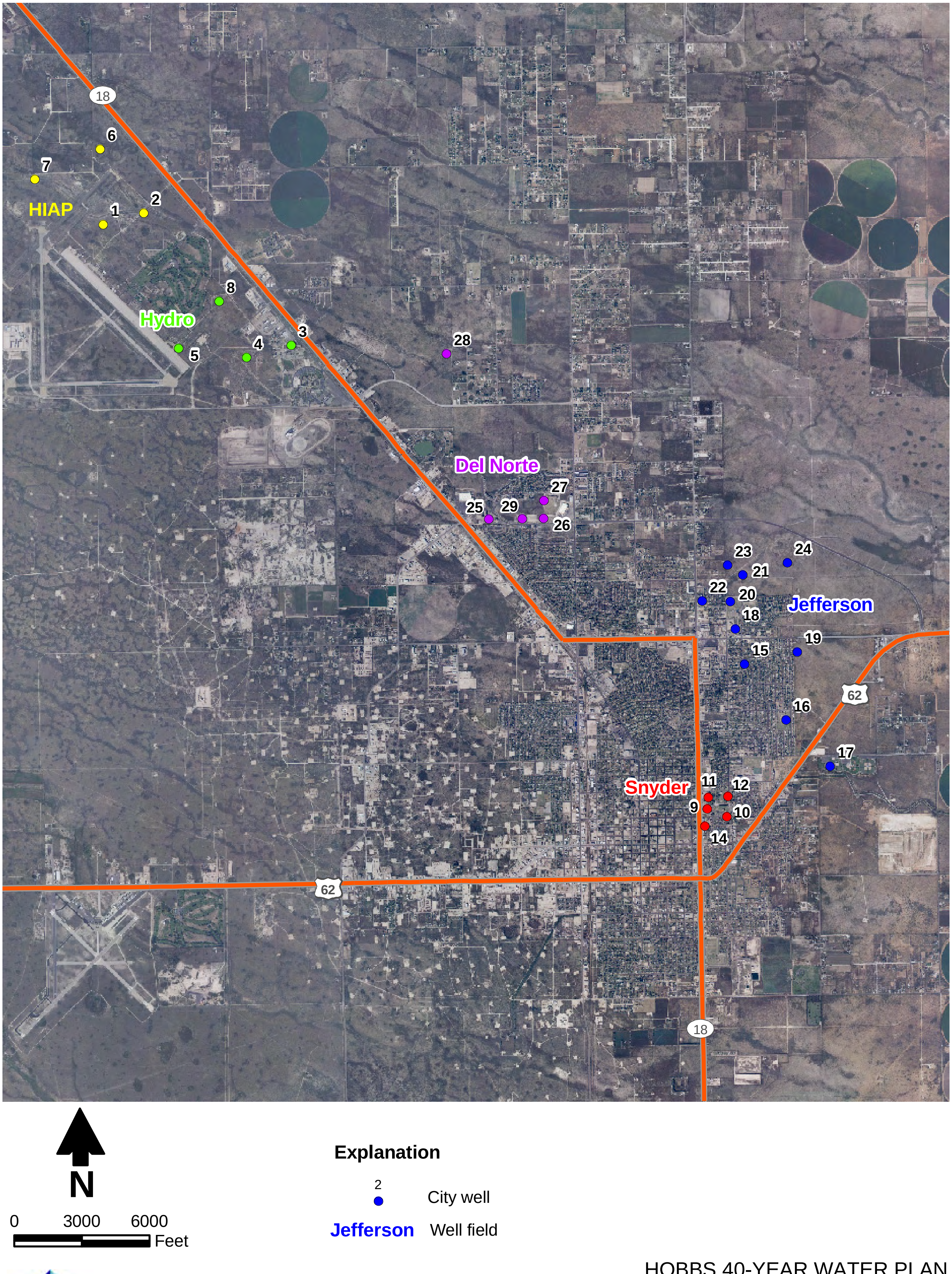
Figure 2

Recharge of water to the aquifer occurs from precipitation infiltrating into the subsurface, primarily in areas covered by dune sand or playa lakes. Annual average recharge is estimated to range from 0.25 to 0.5 inch (Leedshill-Herkenhoff et al., 2000). For the Lea County Regional Water Plan, it was calculated that approximately 31,100,000 acre-feet of groundwater is presently in storage in the basin, of which only 45 percent (approximately 14,000,000 acre-feet) can actually be recovered, because the saturated thickness of much of the aquifer is too shallow for water recovery to be feasible (Leedshill-Herkenhoff et al., 2000).

2.2.2 Hobbs Well Field and Water Level Trends

Figure 3 shows the locations of the 28 active supply wells within the City of Hobbs, which are divided into five well fields or systems (Figure 3); Table 1 lists the construction details of these wells. The wells range from 177 to 268 feet deep, and the depth to water ranges from about 75 to 167 feet. Static depth to water in the Hobbs production wells ranges from 60 to 167 feet (Table 2), and pumping levels range from 72 to 201 feet. Yields for individual wells range from 245 to 900 gallons per minute (gpm). The combined yield from the five systems is estimated at 15,750 gpm, which equates to 69.6 acre-feet per day (ac-ft/d) when the pumps are running 24 hours a day, or 46.4 ac-ft/d when the pumps are running 16 hours a day.

The static depth to water measurements over the past five years (Table 2) reveal that most wells have a declining water level trend. Based on these data, the average rates of change in water levels were calculated for the five systems (Table 3). For the systems with declining water level trends (Del Norte, Hiap, and Snyder), the well with the most drawdown in these well fields was selected for additional analysis.



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HOBBS 40-YEAR WATER PLAN

City Wells

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Figure 3

Table 1. City of Hobbs Water Supply Wells

Well Number/ Name	OSE File Number	Year Drilled	Well Depth (feet)	Latest Water Level Measurement		Water Column (feet)
				Depth to Water (feet)	Date	
1	L-114	—	179	86	Aug-08	93
2	L-115	—	—	85	Aug-08	—
3	L-3274	—	178	84	Jul-05	94
4	L-220-S-9	1971	177	101	Aug-08	76
5	L-3045	—	202	61	Aug-08	141
6	L-3066	—	200	85	Aug-08	115
7	L-3042	—	243	78	Aug-08	165
8	L-3035-L-3046 Comb.S-4	—	201	75	Aug-08	126
9	L-221	—	207	136	Aug-08	71
10	L-220	—	212	129	Jul-05	84
11	L-220-S	1951	220	144	Aug-08	76
12	L-1805	—	211	124	Aug-08	87
14	L-1778	—	205	131	Aug-08	74
15	L-942	—	227	140	Aug-08	87
16	L-943	—	230	134	Aug-08	96
17	L-1779	—	207	129	Aug-08	78
18	L-3064	—	224	130	Nov-04	94
19	L-3063	—	253	146	Jul-05	107
20	L-3065	—	218	161	Aug-08	57
21	L-941	—	221	158	Aug-08	63
22	L-940	—	222	138	Aug-08	84
23	L-944	—	230	167	Aug-08	63
24	L-1804	—	240	147	Jul-05	94
25	L-220-S-2	1966	208	132	Aug-08	76
26	L-220-S-4	1966	195 or 200?*	113	Aug-08	82 87
27	L-220-S-3	1966	202 or 196*	112	Aug-08	90 84
28	L-220-S-8	1978	240 or 268*	103	Aug-08	137 165
29	L-220-S-12	2003	223	95	Aug-08	128

— = Not available

*Can the City please verify which of these well depths is correct? The first value is from the OSE well log.

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Table 2. Hobbs Production Well
Static Depth to Water Measurements

Well Number	Static Depth to Water (ft bgs)			
	July 2004	Nov 2004	July 2005	Aug 2008
1	—	—	69	86
2	77	75	73	85
3	86	80	84	—
4	86	82	81	101
5	76	60	76	61
6	76	72	73	85
7	70	66	67	78
8	72	68	70	75
9	122	120	136	136
10	122	119	129	—
11	124	121	133	144
12	126	125	—	124
14	127	124	126	131
15	135	131	132	140
16	134	128	133	134
17	131	128	128	129
18	—	130	—	—
19	154	149	146	—
20	148	145	138	161
21	162	143	160	158
22	135	129	131	138
23	162	155	161	167
24	150	145	147	—
25	118	101	128	132
26	109	104	108	113
27	114	109	116	112
28	99	93	97	103
29	100	97	103	95

ft bgs = Feet below ground surface
— = Not available

Table 3. Hobbs Well System Water Level Trends

Well Field or System	Wells	Rate of Change in Water Level [a] (ft/yr)	
		Average	Maximum [b]
Del Norte	25, 26, 27, 28, 29 [c]	–0.76	1.22
Hiap	1, 2, 6 [c], 7	–2.91	–2.20
Hydro	3, 4, 5, 8 [c]	0.19	–0.73
Jefferson	15, 16, 17, 18, 19, 20, 21, 22 [c], 23, 24	0.72	–0.86
Snyder	9 [c], 10, 11, 12, 14	–3.06	–3.42

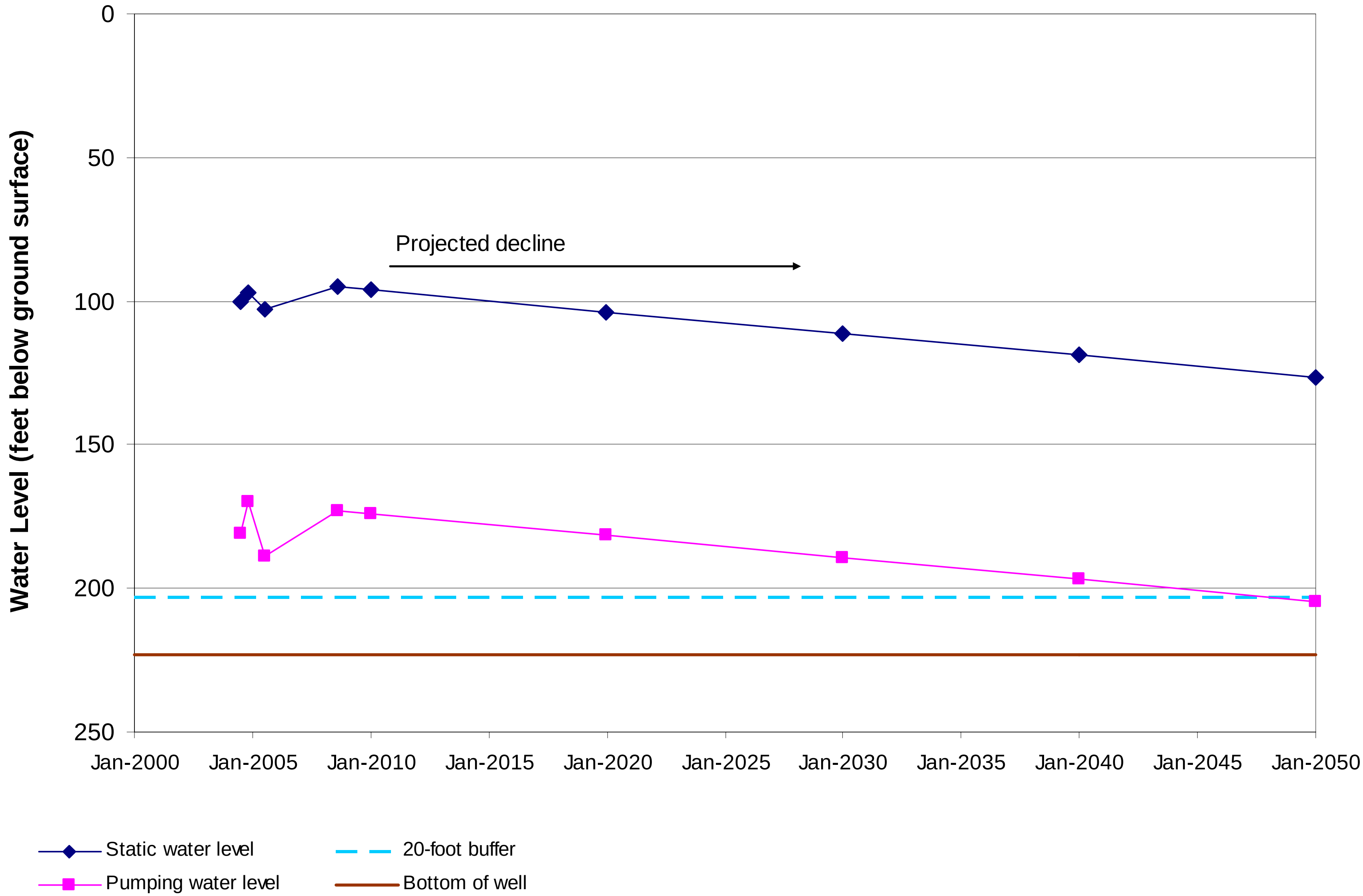
[a] Negative numbers signify a drop in water levels.
[b] Rate of change in water level for well with the most drawdown
[c] Well with the most drawdown.

ft/yr = Feet per year

Figures 4 through 6 show current and predicted future static and pumping water levels for Del Norte well 29, Hiap well 6, and Snyder well 9, respectively. Also shown on these figures is the bottom of the well (assumed to be the base of the aquifer) and an allowance for a water level buffer at 20 feet above the bottom of the well. Once the pumping water level reaches the 20-foot buffer, well production will be highly compromised due to the water level dropping below the pump. Based on current trends, this situation could potentially happen by 2015 for wells 6 and 9 (Figures 5 and 6) and by 2050 for well 29 (Figure 4).

2.2.3 Ogallala Aquifer Water Level Trends near the City of Hobbs

The U.S. Geological Survey (USGS) monitors approximately 40 wells near Hobbs (Figure 7) with water level data starting in 1939. In 2007 the USGS estimated the remaining saturated thickness of the Ogallala aquifer in the Hobbs area to range from 80 to 140 feet, based on water level declines varying from 11 to 60 feet since predevelopment (Tillery, 2008). Water levels in the USGS-monitored wells have decreased at an average rate of 0.75 foot per year (ft/yr) (Table 4). Figure 8, developed by projecting the historical water level decline to 2050, shows the water level trend in one of the monitored wells located near Hobbs. This projection shows that about 125 feet of saturated thickness would remain in 2050 if the current trends continue.



HOBBS 40-YEAR WATER PLAN
Del Norte Well Field
Well 29 Water Levels

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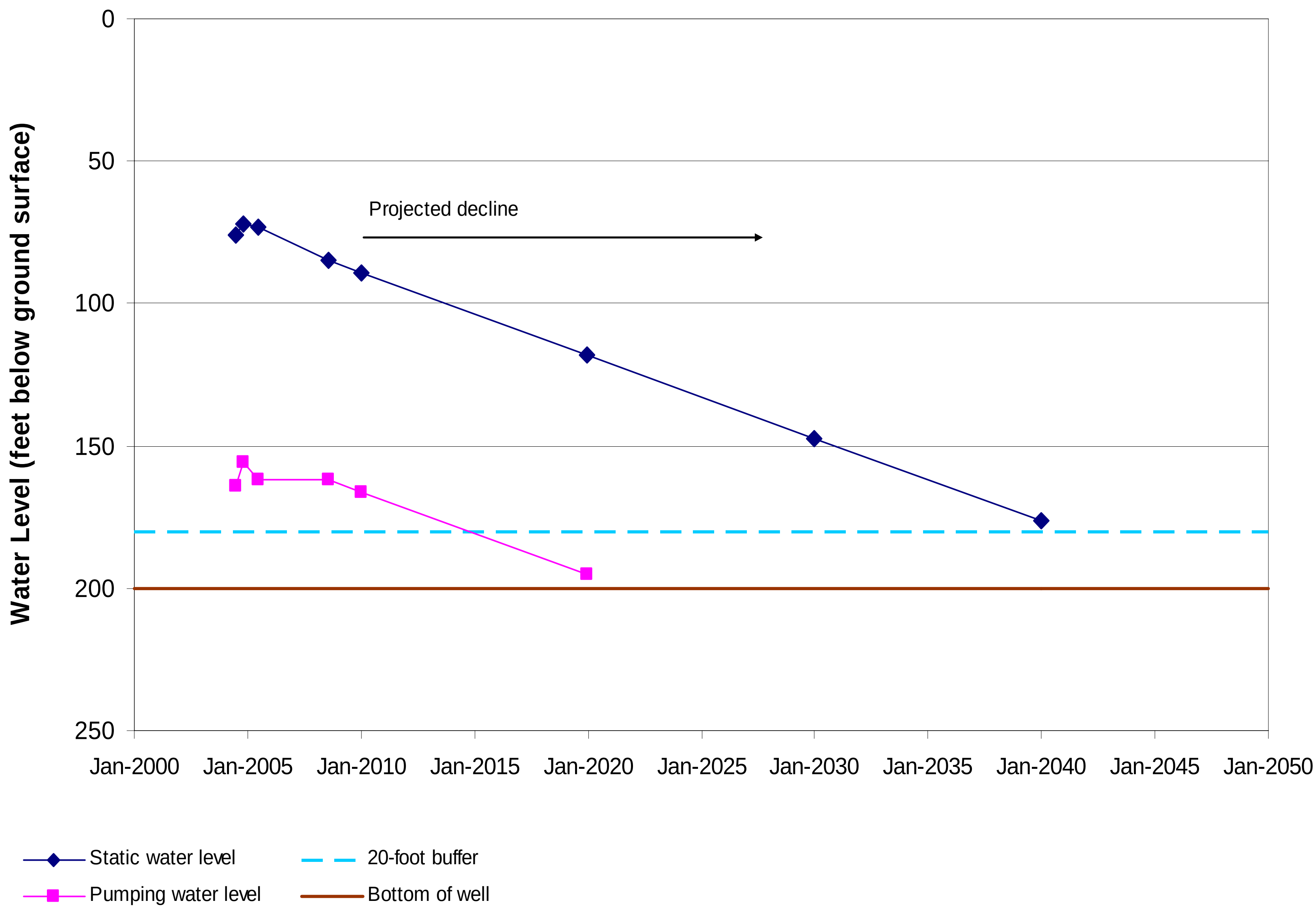
Figure 4

Preliminary – Subject to Revision



HOBBS 40-YEAR WATER PLAN

Hiap Well Field

Well 6 Water Levels

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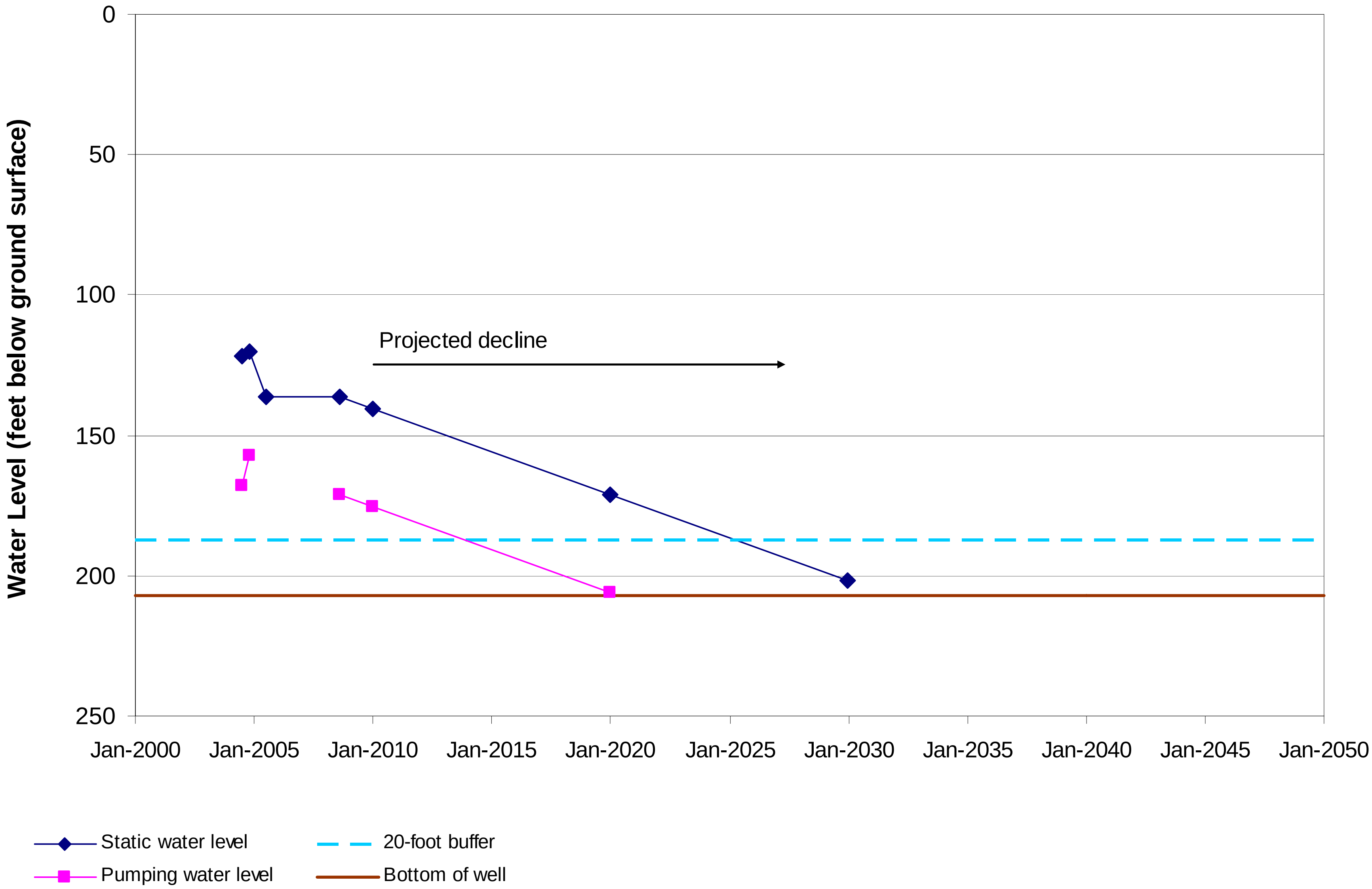
Figure 5



HOBBS 40-YEAR WATER PLAN

Snyder Well Field

Well 9 Water Levels

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Figure 6

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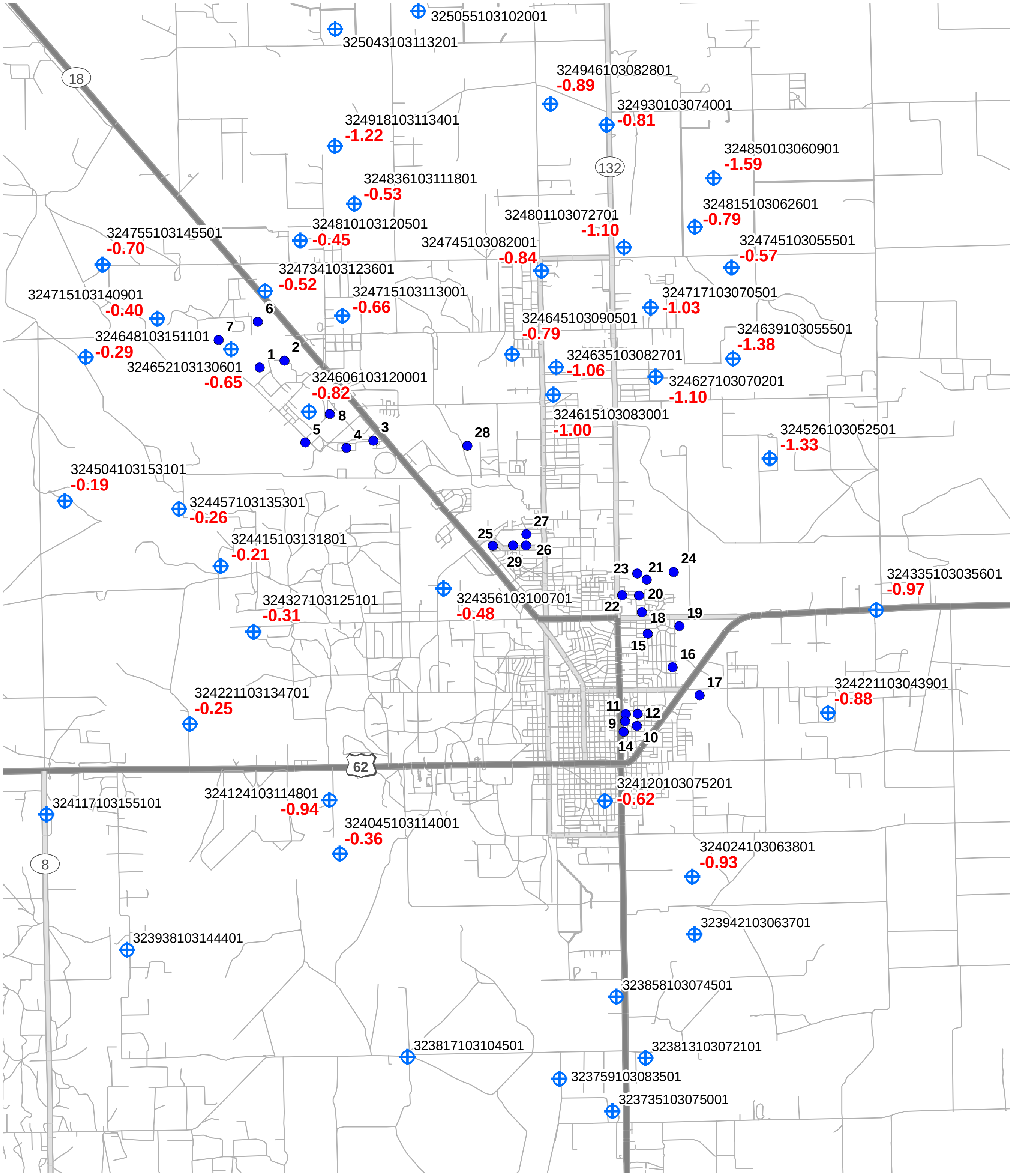

N

0 1 2 Miles

Explanation

- City well
- USGS monitor well
- 324045103114001 USGS site number
- -0.36 Average annual water decrease (ft/yr)

Source: USGS, 2009

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HOBBS 40-YEAR WATER PLAN

USGS Monitor Well Trends

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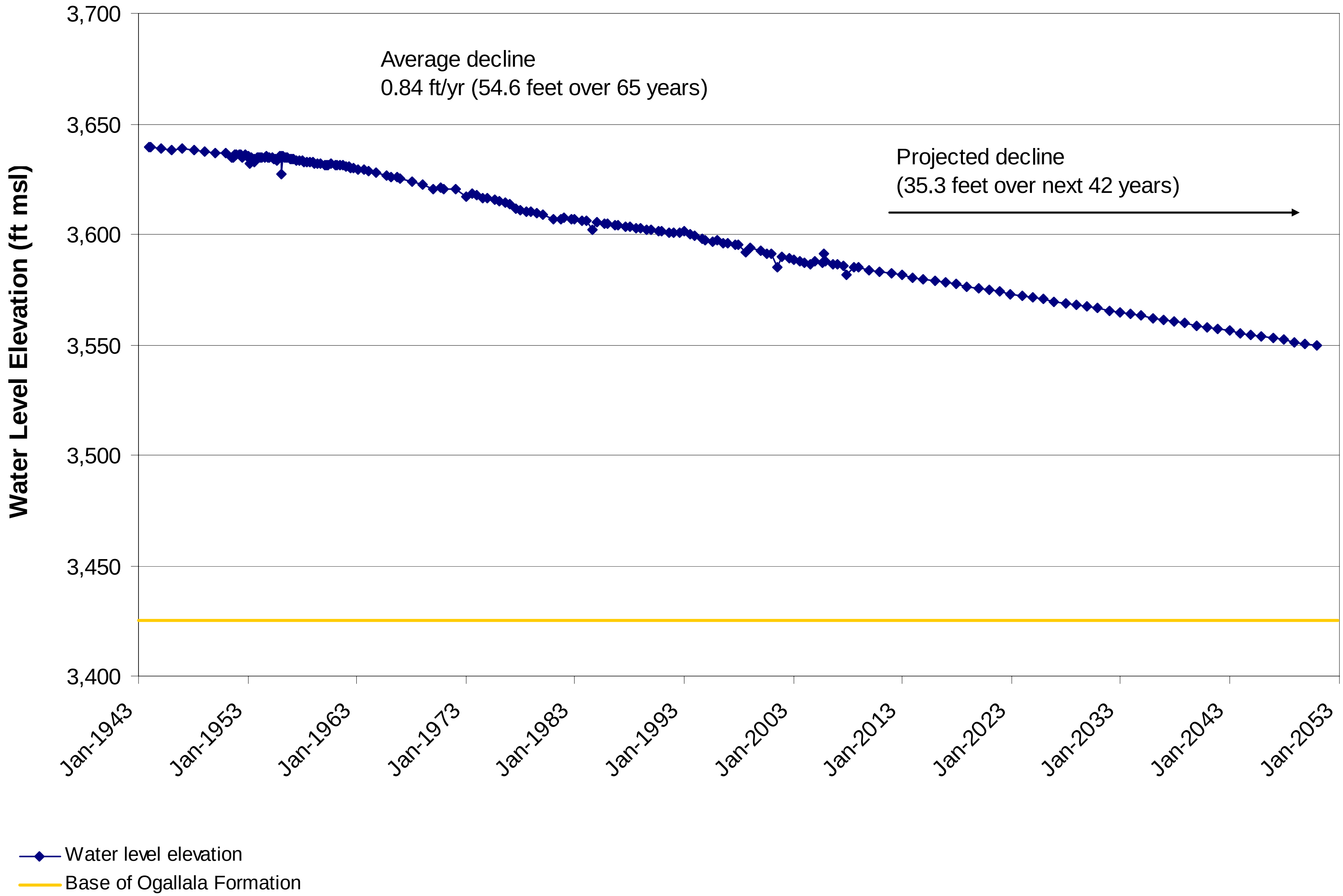
JN WR08.0083

Figure 7

Table 4. Change in Water Levels in USGS-Monitored Wells near Hobbs

Aquifer	Well ID	Change in Water Level			
		Period of Record		Amount [a] (feet)	Average Rate [a] (ft/yr)
		Dates	No. of Years		
Ogallala	324024103063801	1971-2008	38	–35.39	–0.75
	324045103114001	1981-1996	15	–5.40	
	324120103075201	1981-2001	20	–12.47	
	324124103114801	1961-2008	48	–45.03	
	324221103043901	1961-1996	35	–30.63	
	324221103134701	1961-1996	35	–8.81	
	324327103125101	1957-2008	51	–15.67	
	324335103035601	1961-2001	40	–38.57	
	324356103100701	1961-2001	40	–19.08	
	324415103131801	1961-1996	35	–7.21	
	324457103135301	1961-2006	45	–11.45	
	324504103153101	1986-2007	22	–4.08	
	324526103052501	1966-2008	43	–56.89	
	324606103120001	1961-2008	48	–38.96	
	324615103083001	1952-1998	46	–46.19	
	324627103070201	1961-2001	40	–43.89	
	324635103082701	1961-1996	35	–37.05	
	324639103055501	1961-2006	45	–62.07	
	324645103090501	1944-1996	51	–40.53	
	324648103151101	1961-2006	45	–12.96	
	324652103130601	1961-1996	35	–22.85	
	324715103113001	1948-2008	60	–39.57	
	324715103140901	1954-1996	42	–16.69	
	324717103070501	1961-1996	35	–35.87	
	324734103123601	1939-1996	57	–29.50	
	324745103055501	1950-1996	46	–26.39	
	324745103082001	1943-2008	65	–54.60	
	324755103145501	1957-2008	52	–36.53	
	324801103072701	1966-1996	30	–32.85	
	324810103120501	1961-1996	35	–15.87	
	324815103062601	1961-1996	35	–27.56	
	324836103111801	1961-1996	35	–18.60	
	324850103060901	1980-2008	29	–46.14	
	324918103113401	1981-2008	28	–33.99	
	324930103074001	1949-1996	47	–38.20	
	324946103082801	1961-2008	47	–41.85	

Source: USGS, 2009a [a] Negative numbers signify a drop in water levels. ft/yr = Feet per year



HOBBS 40-YEAR WATER PLAN

Water Level Trend in USGS Ogallala Formation Well 324745103082001, T17S R38E 34.113143

Figure 8

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A groundwater model developed by the OSE predicts similar water level decline rates as those observed in the USGS monitor wells. The OSE model estimates a 0.5- to 2.5-ft/yr decline in the water table using 1999 withdrawal rates (Musharrafieh and Chudnoff, 1999). By 2040, the simulated remaining saturated thickness near Hobbs ranged from 50 to 100 feet to the north and less than 50 feet to the south. Approximately 10 feet of drawdown in the Hobbs area is estimated to be a result of pumping from across the state line in Texas, primarily for agricultural purposes.

Figure 9 shows the critical management areas for the Lea County Groundwater Basin based on the current OSE administrative model. Green sections indicate areas where the saturated thickness is predicted to be less than 55 feet in 2045 (NM OSE, 2009). The current model predicts water level declines by 2045 of 70 to 90 feet in the Hiap and Hydro wells and 90 to 120 feet in the Jefferson and Snyder wells and Del Norte well 28, based on the assumption that all wells are pumping at their full water right each year. Del Norte wells 25, 26, 27, and 29 were predicted to be dry by 2045. The OSE model-predicted water level declines are greater than those shown in Figures 4 and 8 and less than those shown in Figures 5 and 6, which are based on historical water level trends. Critical management areas and water right administration near Hobbs are further discussed in Section 4.

Water levels in the vicinity of Hobbs are also impacted by local irrigation wells. Longworth et al. (2008) reports that 46,835 acres in Lea County are irrigated with groundwater. In 2005, 135,371 acre-feet was diverted from the aquifer (with depletions estimated to be equal to withdrawals).

2.3 Surface Water

The City of Hobbs is located within the Monument-Seminole Draws watershed of the Texas Gulf surface water basin. Surface water occurs only in response to heavy rainfall events, during which it collects in ephemeral streams and fills playa lakes. The USGS does not have any gages that measure daily surface flows in Lea County. Peak flows have been occasionally recorded at a tributary to Monument Draw near Monument, New Mexico (USGS, 2009b).

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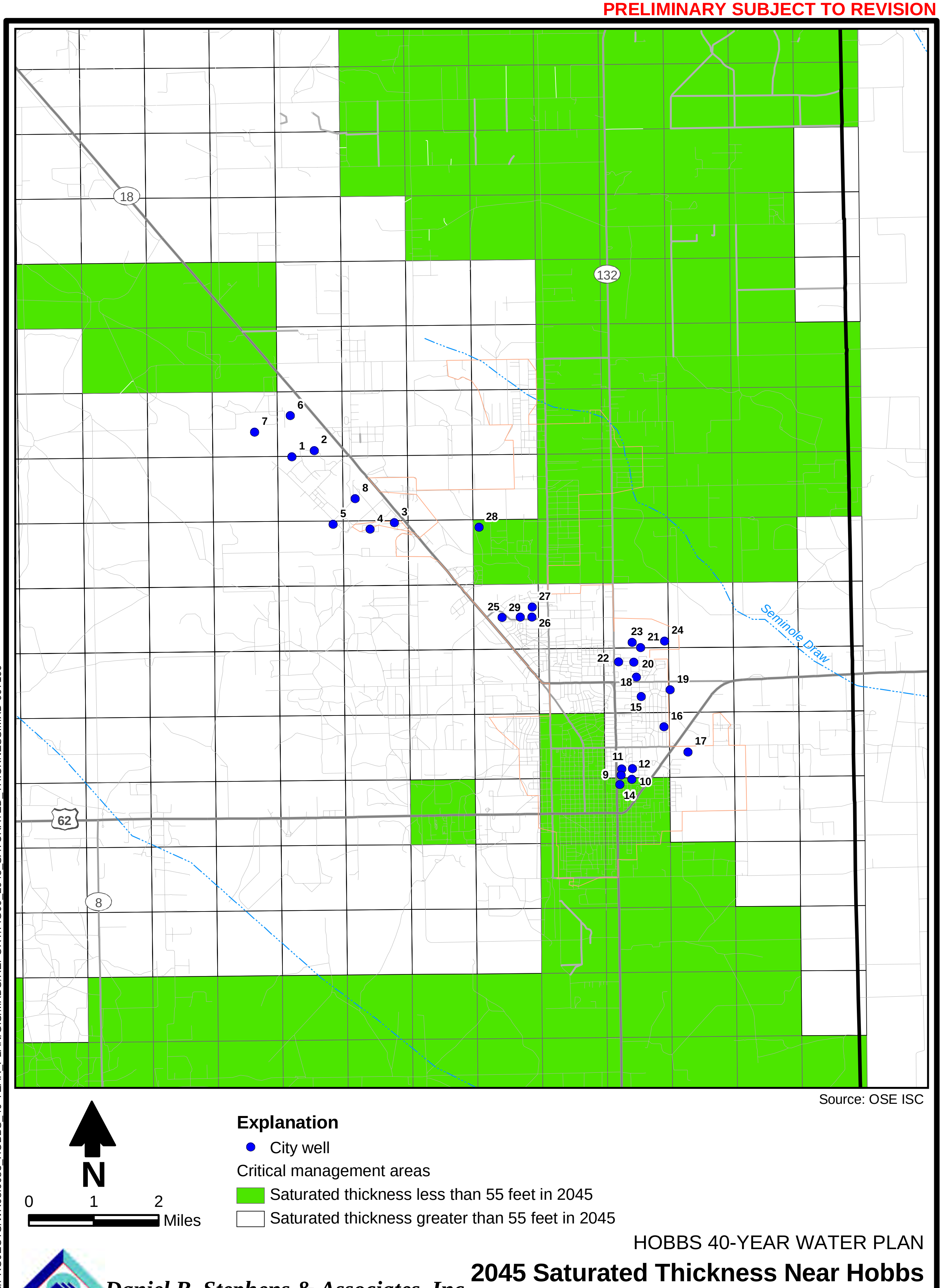

HOBBS 40-YEAR WATER PLAN

2045 Saturated Thickness Near Hobbs

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Figure 9

2.4 Water Quality

The City of Hobbs relies entirely on groundwater for its drinking water supplies; therefore, protecting this resource from contamination and ensuring a sustainable, high-quality water supply is an important goal for the City. To understand the threats to water quality within and surrounding the City's service area, this section reviews (1) point sources, originating from a single location, and (2) nonpoint sources, originating over a more widespread or unspecified location. Additionally, naturally occurring constituents can be a source of poor quality or contamination in groundwater. Water quality in the City of Hobbs supply wells is discussed in Section 2.3.1; point and nonpoint contamination sources in the Hobbs vicinity are discussed in Sections 2.3.2 and 2.3.3, respectively.

2.4.1 Hobbs Municipal Supply Well Drinking Water Quality

Hobbs production wells withdraw water from the Lea County Basin, which locally consists of the Ogallala aquifer portion of the High Plains aquifer (Section 2.2.1). Hart and McAda (1985) concluded that the water quality in the High Plains aquifer is good with higher concentrations of calcium, magnesium, bicarbonate, and, in some areas, high concentrations of fluoride and/or chloride.

Water quality sample results for the Hobbs production wells are available from the New Mexico Environment Department (NMED) Drinking Water Bureau (DWB) and from the City of Hobbs website. Table 5 summarizes the range of detections for the water quality parameters in the NMED Drinking Water Bureau database since 2005. Review of Hobbs water quality data over the last 5 years indicates that water quality is good and water quality standard exceedances are rare. Total dissolved solids values for groundwater samples collected from the City of Hobbs municipal supply wells ranged from 305 to 1,376 milligrams per liter (mg/L) in 2009 (City of Hobbs, 2009b). <Water quality data on the City's website for TDS are the same as the conductivity values for wells 21 through 29; these numbers should be about half and appear to be a data error. Can the City of Hobbs double check the TDS values and/or provide the lab reports?>

Table 5. Hobbs Municipal Water System Water Quality Data Statistical Summary of Detections since 2005

Parameter	MCL [a] (µg/L [b])	Number of Detections	Detected Concentrations (µg/L [b])		
			Minimum	Maximum	Average
1,2-Dichloroethane	5	3	0.47	0.61	0.52
Antimony, total	6	4	0.09	0.13	0.11
Arsenic	10	13	6.5	8.1	7.29
Barium	2,000	13	43.51	89	69.77
Benzene	5	2	0.58	0.81	0.70
Beryllium, total	4	1	0.25	0.25	0.25
Bromodichloromethane	100	3	0.08	0.3	0.16
Bromoform	100	4	0.092	12	6.43
Chloroform	100	4	0.057	0.24	0.13
Chromium	100	13	2.9	18.8	7.09
Combined uranium	30	6	0.00321	0.00927	0.01
Dibromochloromethane	100	3	0.055	0.37	0.23
Dichloromethane	5	5	4.35	5.62	4.89
Ethylbenzene	700	1	0.5	0.5	0.50
Fluoride (mg/L)	4	13	0.719	1.13	0.91
Gross beta particle activity (pCi/L)	4	6	2.869	7.305	4.33
Iron (mg/L)	0.3 [c]	1	0.0134	0.0134	0.0134
Nickel	100	13	0.3	3.51	1.46
Nitrate (as N) (mg/L)	10	12	2.69	5.82	4.01
Nitrate plus nitrite (as N) (mg/L)	10	30	2.7	6.97	4.24
pH (s.u.)	6.5 / 8.5 [c]	1	7.24	7.24	7.24
Radium-226 (pCi/L)	5	2	0.175	0.382	0.28
Radium-228 (pCi/L)	5	1	1.082	1.082	1.082
Selenium	50	13	0.00589	18	5.24
Total dissolved solids (mg/L)	500 [c]	1	662	662	662
Total haloacetic acids (HAA5)	60	11	1	105.3	14.01
Total trihalomethanes (TTHM)	80	20	0.602	13.95	6.85
Thallium, total	2	2	0.05	0.05	0.05
Xylenes, total	10,000	6	0.7	2.05	1.37

Note: Includes water quality data for the five ground storage reservoirs and Well 5, which pumps directly into the distribution system.

Source: Clark, 2009

[a] Maximum contaminant level specified in National Primary Drinking Water Regulations (40 CFR 141 (2008))

[b] Unless otherwise noted

[c] National Secondary Drinking Water Regulations (40 CFR 143 (2008))

µg/L = Micrograms per liter
mg/L = Milligrams per liter
pCi/L = picoCuries per liter
s.u. = Standard units

The NMED Drinking Water Bureau completed a source water assessment for the City of Hobbs system (NMED, 2003) (well 29 was installed in 2003 and was not included in this analysis). The susceptibility rankings for individual supply wells determined during the assessment ranged from high to moderately low, as follows:

- High: Wells 9, 10, 11, 12, 16, 18, 19, and 20
- Moderately high: Wells 14, 15, 17, 22, 25, and 27
- Moderate: Wells 3, 6, 8, 21, 23, and 24
- Moderately low: Wells 1, 2, 4, 5, 7, 26, and 28

The overall susceptibility ranking for the Hobbs water system was determined to be moderately low (NMED, 2003). Based on these assessment findings, a source water protection plan needs to be completed by the City of Hobbs. Protection measures may include a water quality management plan to ensure that water quality is maintained or wellhead protection measures (protecting the area immediately surrounding the well), or they can address contaminant threats in the surrounding area by restricting land use and/or septic tanks near supply wells. Regardless of the selected strategy, the City of Hobbs should implement a source water protection plan to ensure the future safety of its water supply.

2.4.2 Point Sources of Groundwater Contamination

Within New Mexico, the New Mexico Water Quality Control Commission (NMWQCC) reports the following statewide frequency of groundwater impacts from various point sources:

- Underground (fuel) storage tanks (USTs) 58.5 percent
- Oil and gas 13.7 percent
- Miscellaneous industry 10.1 percent
- Centralized sewage works 4.5 percent
- Mining 3.7 percent
- Aboveground (fuel) storage tanks/pipelines 3.4 percent
- Dairies and meat packing 2.8 percent

- Landfills 0.8 percent
- Unknown/other 2.5 percent

The NMWQCC (2002) reports 190 cases of point source contamination of groundwater and 280 contaminated supply wells in Lea County. A review of NMED records of existing facilities that may have the potential to impact groundwater quality indicated that the majority of point source groundwater contamination concerns in Hobbs are from leaking USTs and nitrates from explosives manufacturing and disposal sites (NMWQCC, 2004).

2.4.2.1 Petroleum Storage Tanks

Leaking petroleum storage tanks (PSTs) are one of the most significant point source contamination threats. As of August 2006, NMED had reported 65 leaking PST cases in Hobbs (Table 6), 15 of which were active (NMED, 2008b) (active cases include those in the investigation, cleanup, and monitoring phases). These leaking PSTs may represent releases of oil, gasoline, diesel, and aviation fuel containing petroleum constituents that are common groundwater contaminants, such as benzene, toluene, ethylbenzene, xylenes (BTEX), and methyl tertiary-butyl ether (MTBE).

Figure 10 shows the locations of 15 active PST cases near the City's Hydro, Del Norte, Jefferson, and Snyder well fields. The most extensive contamination from PSTs is from the Hobbs City Wells PST site, located off State Highway 18 near the Snyder well field; this leaking PST site was discovered in 1989 when benzene was detected in well 9. The site has since been remediated and the groundwater remediation system was shut down in September 2002. Currently, the groundwater quality at this site meets drinking water standards (Shapard, 2009a).

Groundwater has been impacted by MTBE and benzene contamination at the Marvin L. Smith site and by naphthalene and BTEX contamination at the Morris Oil site (Shapard, 2009b). These are both active PST sites with routinely monitored wells near Jefferson Well 18. Groundwater has also been impacted by MTBE contamination at the Lovington Highway Groundwater PST site near Del Norte Well 25 (SMA, 2007); monitoring wells at this site are still under investigation and being sampled.

Table 6. Leaking Underground Storage Tank Sites in Hobbs
Page 1 of 3

Name	Facility ID	Physical Address	Status
AA Oil Field	823	3221 W County Rd	No Further Action Required
Allsups 144 Marland	26536	100 E Marland	No Further Action Required
Allsups 146	3979	5312 Lovington Hwy	No Further Action Required
Allsups 245	904	105 E Main	No Further Action Required
Allsups 268	907	1100 E Sanger	No Further Action Required
Ark Junction Conoco	29728	10 Miles W Hobbs, Us 62 180	No Further Action Required
Armstrong Construction Hobbs	51744	3320 Enterprise Rd	No Further Action Required
Atlas Wireline	26775	1718 S Dal Paso	No Further Action Required
Badger Welding	26829	810 W Broadway	Cleanup, Responsible Party
Belaire Exxon	950	2228 N Dal Paso	No Further Action Required
Blocker Shell	15681	601 W Broadway	No Further Action Required
Bull Rogers Inc	27155	N of Hobbs Hwy 18 5 Miles	No Further Action Required
Carl's Pumpjack Service	27237	1801 W Broadway Place	No Further Action Required
Centergas (abandoned tanks)	26363	1935 N Turner	No Further Action Required
City Garage	27390	1200 S Fourth	No Further Action Required
City Wells	28023	501 N Dal Paso	Aggressive Cleanup Completed, State Lead, Corrective Action Fund
Clarke Oil Well Servicing, Inc	27413	6120 Lovington Hwy	No Further Action Required
Conoco Trans	27497	W County Rd	No Further Action Required
Eddins Walcher	27853	1400 W Broadway	Investigation, Responsible Party
Eddins Walcher #2	27853	1400 W Broadway	No Further Action Required
Eddins Walcher Co Security	27853	1400 W Broadway	No Further Action Required
Ferguson Construction Company	31014	6601 Carlsbad Hwy	No Further Action Required
Fina 1A	1240	2902 W Marland	Cleanup, Responsible Party
Fire Station 3	28035	1717 Joe Harvey Blvd	No Further Action Required
Globe Construction Company	28345	4630 Lovington Hwy	No Further Action Required
Gte Southwest	1313	1600 W Bender	No Further Action Required
Gtsw Hobbs Buckeye Micro	1383	20 Miles W Of Hobbs, S Of Buckeye	No Further Action Required

Source: NMED, 2008b (unless otherwise noted)

Table 6. Leaking Underground Storage Tank Sites in Hobbs
Page 2 of 3

Name	Facility ID	Physical Address	Status
Halliburton Services	28451	Hobbs Industrial Park, Po Box 2568	No Further Action Required
Herring Dist Co	28515	Lovington Hwy	No Further Action Required
Hines Spr Shell	1391	2208 N Turner	Referred to Ground Water Quality Bureau
Hobbs Central Fire	28034	301 E White	No Further Action Required
Hobbs North Service Station	28553	3704 Lovington Hwy	No Further Action Required [a]
Hobbs Wholesale Keyl	28562	501 N Leech	No Further Action Required
K & K Grocery	28809	803 W Kansas	No Further Action Required
K & S Electric	28810	1901 N Grimes	No Further Action Required
Kat Sav-Mor	30631	321 E Sanger	No Further Action Required
Keeling Petroleum Company	1441	2900 W Marland	Referred to Ground Water Quality Bureau
Kirkmeyer Electric	28865	2024 N Dal Paso	No Further Action Required
Lea County Road Department	29063	5915 Lovington Hwy	No Further Action Required
Lovington Highway GW	53751	Joe Harvey Blvd at Lovington Hwy [b]	Investigation, State Lead, Corrective Action Fund
Marshall Aviation	26365	Hobbs Lea County Airport	Cleanup, Responsible Party
Marvin L Smith	30644	1021 E Bender	Monitoring, Responsible Party
Maypole Packers	29305	1203 W Dunham	Investigation, Responsible Party
May's Exxon	1513	2602 N Turner	No Further Action Required
Morris Oil	1836	1214 E Bender	Aggressive Cleanup Completed, Responsible Party
P & W Wrecker	29828	1212 W Broadway	No Further Action Required
Pennell Car Wash	29912	1902 N Grimes	No Further Action Required
Petrotherm Corp.	29942	1201 W Bender Blvd	No Further Action Required
Professional Testers Inc	30058	800 S Houston	Investigation, Responsible Party
Queen Oil	2000	2112 W County Rd	No Further Action Required
Rudy's Chevron	27623	1630 N Dal Paso	No Further Action Required
Rust Tractor Hobbs	30362	Po Box 856	No Further Action Required
Smith Energy Service	30639	1000 W County Rd	No Further Action Required
Stinnetts Auto Service	27421	617 S Cochran	Investigation, Responsible Party

Source: NMED, 2008b (unless otherwise noted)

[a] NMED, 2009
[b] SMA, 2007

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Table 6. Leaking Underground Storage Tank Sites in Hobbs
Page 3 of 3

Name	Facility ID	Physical Address	Status
SW Public Service	28554	221 E Dunham	No Further Action Required
Todd Aircraft Inc	27608	Hobbs Lea County Airport	Aggressive Cleanup Completed, Responsible Party
Total Fuels	1928	400 N Grimes	No Further Action Required
Town & Country	1950	712 W Marland	No Further Action Required
Town & Country 183	1945	3400 N Dal Paso	No Further Action Required
Town & Country 51	1949	1007 N Coleman	No Further Action Required
Town & Country 59	1951	1003 E Marland	No Further Action Required
Walton Construction Company	31531	314 W Marland	No Further Action Required
Waste Management	31540	2608 Lovington Hwy	No Further Action Required
Wastewater Treatment Plant	31548	1200 S Fourth	No Further Action Required
Zia Drill	29468	901 W Marland	Cleanup, Responsible Party

Source: NMED, 2008b (unless otherwise noted)

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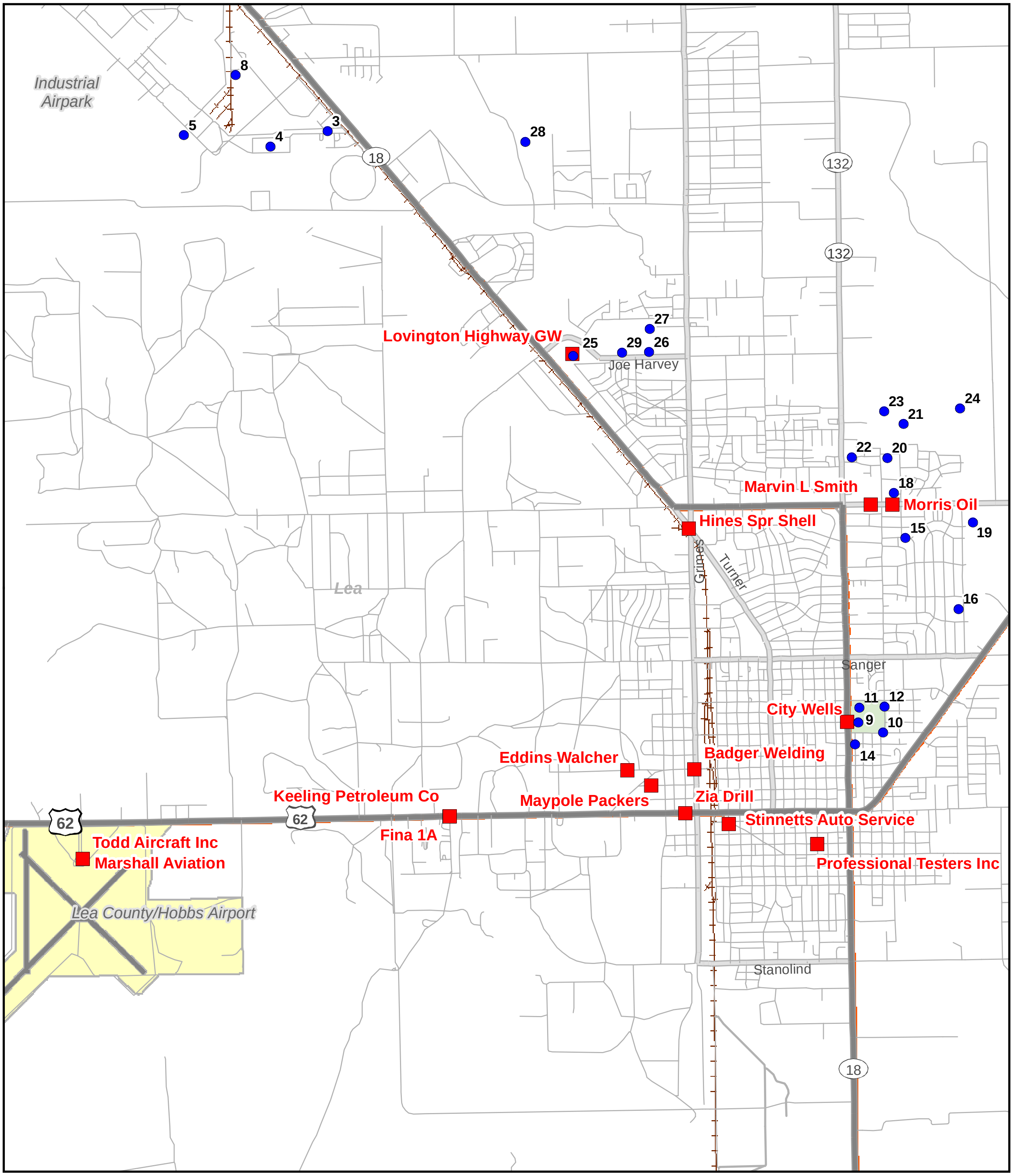

Source: NMED, 2008b

N

0 2500 5000 Feet

Explanation

- City well
- Active release location

HOBBS 40-YEAR WATER PLAN

Petroleum Storage Tank Releases

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Figure 10

S:/PROJECTS/WR08.0083_HOBBS_40-YEAR_PLAN/GIS/MXDS/REPORT/FIG10_LPSTS.MXD 907190

The petroleum contaminants present at these active PST sites are absent from the municipal water supply reservoirs (where water from City supply wells 18 and 25 is pumped) with the exception of benzene, which was detected in March 2005 at the Jefferson and Del Norte Reservoirs at concentrations less than 1 µg/L (Clark, 2009), below the EPA maximum contaminant level (MCL) of 5 µg/L. Since that time (March 2005), benzene has not been detected above the laboratory detection limit in water samples collected at these two reservoirs.

Many additional facilities with registered PSTs that are not currently leaking are included in the NMED UST database. These PSTs could rupture and leak, thereby presenting a potential for groundwater quality impacts to occur that could affect available water resources in and near the population centers in the region. A list of these sites is available upon request from the NMED website (http://www.nmenv.state.nm.us/ust/lists.html).

2.4.2.2 Groundwater Discharge Plans

The NMED Ground Water Quality Bureau regulates facilities with wastewater discharges that have a potential to impact groundwater quality. These facilities must comply with NMWQCC regulations and obtain an approved discharge plan that stipulates measures to be taken to prevent, detect, and if necessary, remediate groundwater contamination. Facilities that are required to obtain discharge plans include mines, sewage discharge facilities, dairies, food processors, sludge and septage disposal operations, and other industries.

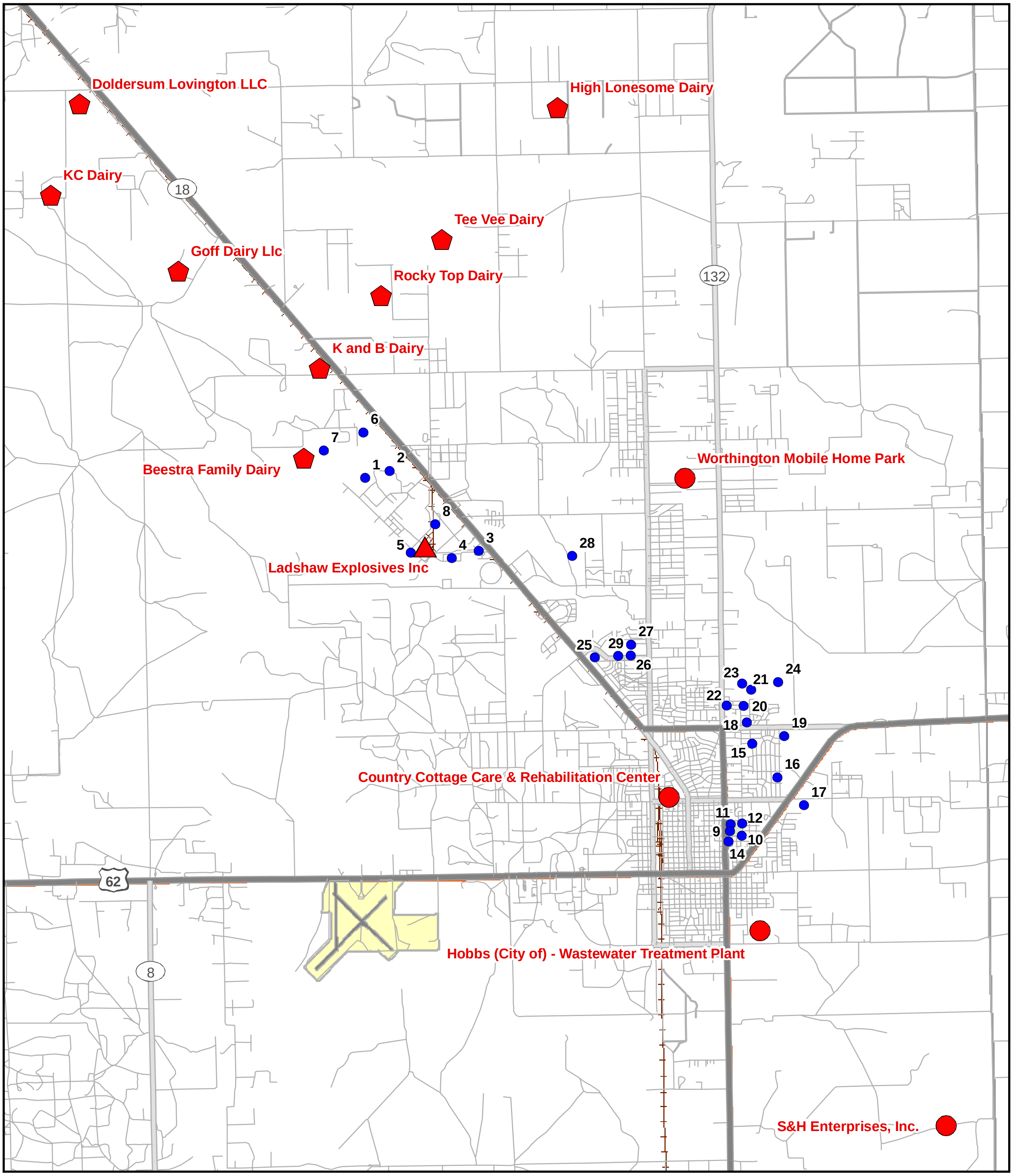
A summary list of the discharge plans near Hobbs is provided in Table 7 (NMED, 2008a); their locations are shown in Figure 11. Details indicating the status of discharge plans, waste type, and treatment for individual permittees can be obtained from the NMED website (http://www.nmenv.state.nm.us/gwb/New_Pages/docs_policy/web_dp _list.xls). The only discharge permit site near the City wells is Ladshaw Explosives, a former explosives manufacturing site that is located within the Hiap and Hydro well fields (Figures 12 and 13). Groundwater samples collected from monitoring wells located at the site showed elevated levels of nitrate, ranging between 4.4 and 120 mg/L (BBC International, 2008). Groundwater samples collected from nearby City wells 1 through 8 in 2009 showed nitrate concentrations ranging between 2.2 and 2.9 mg/L (City of Hobbs, 2009b). Water quality samples collected between 2005 and 2009 at the reservoirs into which these wells discharge water exhibit nitrate concentrations between 3.3 and 4.5 mg/L, below the MCL of 10 mg/L.

Table 7. Discharge Permits in the City of Hobbs

Facility	DP Number	Facility Type	Waste Type	Activity Status
Beestra Family Dairy	DP-461	AGS-Dairy	Agricultural	Issued
Country Cottage Care & Rehabilitation Center	DP-657	Lodging	Domestic	Issued
Doldersum Lovington LLC	DP-1025	AGS-Dairy	Agricultural	Report submitted
Goff Dairy Llc	DP-1168	AGS-Dairy	Agricultural	Issued
High Lonesome Dairy	DP-762	AGS-Dairy	Agricultural	Issued
Hobbs (City of) - Wastewater Treatment Plant	DP-37	MUNI-Wastewater	Domestic	Issued
K and B Dairy	DP-699	AGS-Dairy	Agricultural	Deemed administratively complete
KC Dairy	DP-1376	AGS-Dairy	Agricultural	Issued
Ladshaw Explosives Inc	DP-439	Manufacturing	Industrial	Case canceled with no further action
Rocky Top Dairy	DP-1559	AGS-Dairy	Agricultural	Issued
S&H Enterprises, Inc.	DP-875	MUNI-Wastewater	Domestic	Deemed administratively complete
Tee Vee Dairy	DP-909	AGS-Dairy	Agricultural	Issued
Worthington Mobile Home Park	DP-1581	Mobile Home Park/ Subdivision	Domestic	Deemed administratively complete

Source: NMED, 2008a

PRELIMINARY SUBJECT TO REVISION



Source: NMED, 2008a

N

0 1 2 Miles

Explanation

City well

Discharge permit site (waste type)

Agricultural

Domestic

Industrial

HOBBS 40-YEAR WATER PLAN

Discharge Permits

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Figure 11

S:/PROJECTS/WR08.0083_HOBBS_40-YEAR_PLAN/GIS/MXDS/REPORT/FIG11_DISCHARGE_PERMITS.MXD 906101

*Source: BBC International, 2008

N

0 900 1800
Feet

Explanation

- City well
- Monitoring well*
- Groundwater elevation*

HOBBS 40-YEAR WATER PLAN

Location of Ladshaw Explosives

S:/PROJECTS/WR08.0083_HOBBS_40-YEAR_PLAN/GIS/MXDS/REPORT/FIG12_LADSHAW_EXPLOSIVES_ZOOM_OUT.MXD 907190

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Figure 12

PRELIMINARY SUBJECT TO REVISION

*Source: BBC International, 2008

N

0 200 400 Feet

Explanation

- City well
- Monitoring well*
- Groundwater elevation*

S:/PROJECTS/WR08.0083_HOBBS_40-YEAR_PLAN/GIS/MXDS/REPORT/FIG13_LADSHAW_EXPLOSIVES.MXD 907190

HOBBS 40-YEAR WATER PLAN

Groundwater Elevations in Vicinity of Ladshaw Explosives

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Figure 13

It appears that none of the City of Hobbs wells are currently threatened by the high-nitrate water detected at the Ladshaw Explosives site: the groundwater impacts are downgradient from Well 5, and the other wells in the two well fields are quite distant from and/or outside the path of the plume (Figure 12). Nevertheless, the City may wish to conduct further water quality analysis before purchasing water rights and wells in the vicinity of this plume. The City's plans to site a new well north of the plume should avoid any impacts from the contamination (Crane, 2009).

Several dairy facilities are located north of the City of Hobbs, near the HIAP well field. Waste streams produced by dairies are high in nitrates and can lead to groundwater contamination, potentially due to the intermittent land application of the wastewater effluent. Presently no contamination appears to be affecting City wells; additional testing near well 7, located adjacent to the Beestra Dairy, would be necessary to make such a determination.

2.4.2.3 Oil and Gas

Potential threats to groundwater include contamination from industrial sources, especially from the oil and gas industry, which is heavily concentrated in and around Hobbs. The past practice of disposing produced water (the water produced along with pumped oil) in unlined pits is the most prevalent cause of contamination in oil fields (NMWQCC, 2002). Disposal of produced water into the subsurface through injection wells also has the potential to affect groundwater quality.

The Oil Conservation Division (OCD) of the New Mexico Energy, Minerals, and Natural Resources Department regulates facilities with waste streams associated with oil, gas, and geothermal activities (NMEMNRD OCD, 2009). These facilities have the potential to contaminate groundwater in ways that may affect the quantity and availability of water supplies and therefore must comply with the division's rules and the New Mexico oil and gas statutes in order to obtain a permit for new oil, gas, and injection wells.

The permit process requires that potential contamination of surface water, groundwater, or other media be mitigated and that a contingency plan for remediation be in place. Details indicating the status of permits, waste types, and treatment for individual permittees can be obtained from the OCD web site (http://www.emnrd.state.nm.us/OCD/OCDPermitting/OperatorData/Permit

StatusParameters.aspx). More than 2,800 permits have been requested and/or granted in Lea County.

Information on permitted locations where groundwater impacts have occurred can be found at http://www.emnrd.state.nm.us/OCD/documents/rptGeneralizedGWImpact.pdf. This report lists 265 active groundwater impact sites in Lea County. Figure 14 shows the locations of oil and gas groundwater impacts in relation to the City of Hobbs supply wells. Although none of the city wells are located in the same section as a known groundwater impact, Del Norte wells 25, 26, 27, and 29 are adjacent to a section noted as having groundwater impacts, but the web site does not provide the exact location(s) of the impacts.

2.4.2.4 Superfund Sites

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) was enacted by the U.S. Congress on December 11, 1980. This law created the Superfund program to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. Information regarding the locations and status of sites in Hobbs that are listed by EPA as Superfund hazardous waste sites is provided in Table 8. In addition, the EPA prepares a National Priorities List (NPL) that identifies, through a hazard ranking system, which Superfund sites warrant remedial action. Currently, no sites within Hobbs are included on the NPL (U.S. EPA, 2008). No further action is planned at Highway 18 Solvents and Hobbs Army Airfield.

Table 8. Superfund Sites in the City of Hobbs

EPA ID	Site Name		Site Status	NPL Status
NM0000605161	Highway 18 Solvents		NFRAP	Not listed
NM0000605944	Hobbs Army Airfield		NFRAP	Not listed
NM0000605159	Snyder Street PCE		SI ongoing	Not listed
NMN000605617	Linam Ranch Site		PA needed	Not listed

Source: U.S. EPA, 2008
EPA = U.S. Environmental Protection Agency
NPL = National Priorities List
NFRAP = No further remedial action planned
PCE = Tetrachloroethene
SI = Site inspection
PA = Preliminary assessment

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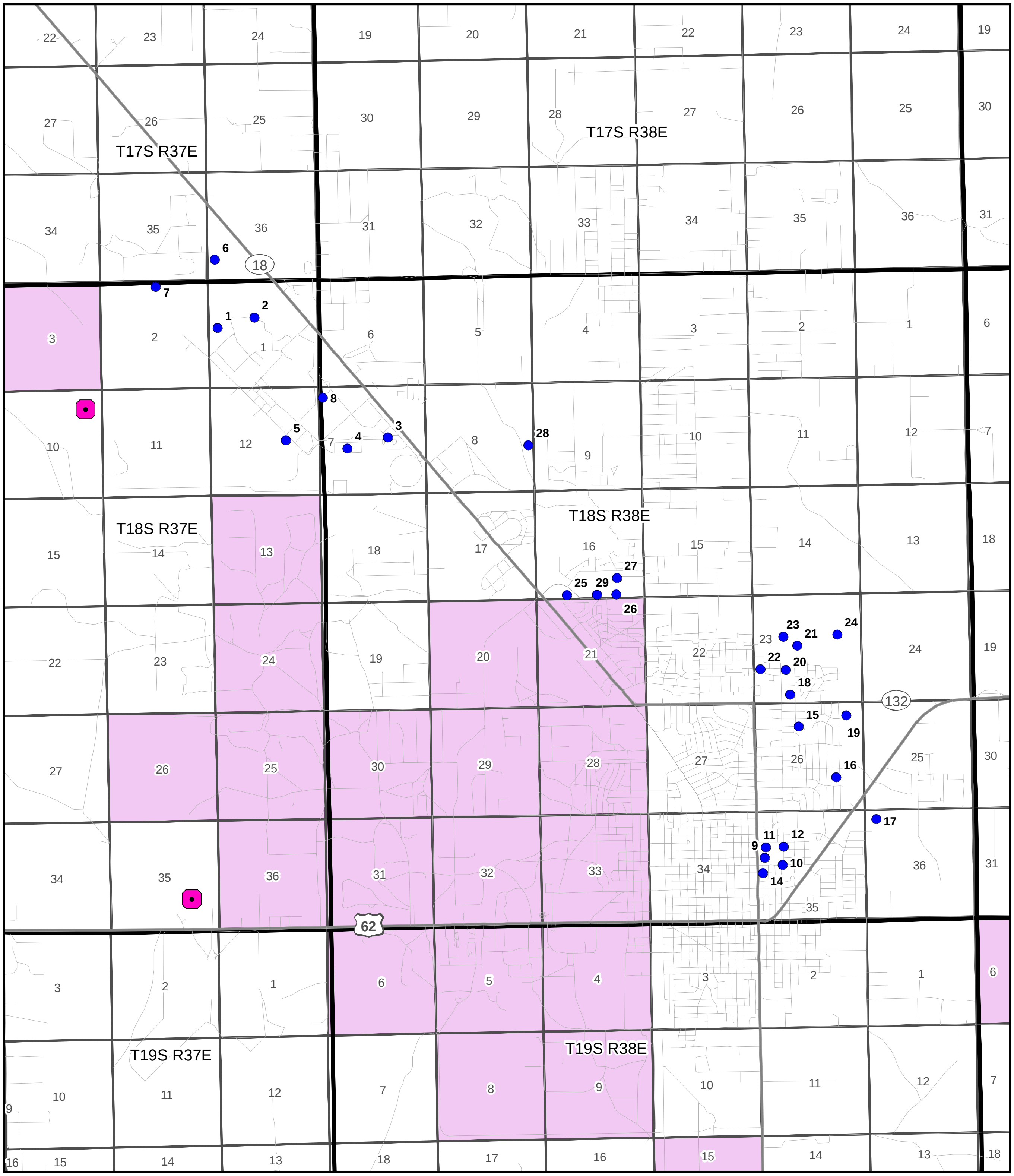

N

0 3500 7000 Feet

Explanation

- Groundwater impact location
- City well
- Towship and range
- Section
- Section with groundwater impact

HOBBS 40-YEAR WATER PLAN

Locations of Groundwater Impact from Oil and Gas

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10/10/2009

JN WR08.0083

Figure 14

S:/PROJECTS/WR08.0083 HOBBS 40-YEAR PLAN/GIS/MXDS/REPORT/FIG14 GW IMPACT LOCS.MXD 907190

2.4.2.5 Landfills

Landfills used for the disposal of municipal and industrial solid waste can contain a variety of potential contaminants that present concerns for water quality, because leachate, landfill gas, and stormwater runoff may transport those contaminants to groundwater. Landfills operated since 1989 have been regulated under the New Mexico Solid Waste Management Regulations, and many small landfills throughout New Mexico closed before 1989 to avoid the more stringent final closure requirements contained in these regulations.

The City of Hobbs is served by the Lea County Regional Landfill, which is located approximately 5 miles east of Eunice. The landfill has a geocomposite liner and a leachate collection system to protect groundwater quality (Lea County, 2009).

2.4.2.6 Hazardous Waste

The Resource Conservation and Recovery Act (RCRA) of 1976 gave the U.S. EPA the authority to control hazardous waste, including the generation, transportation, treatment, storage, and disposal of hazardous waste. Under RCRA, the NMED Hazardous Waste Bureau (HWB) provides regulatory oversight and technical guidance to hazardous waste generators and to treatment, storage, and disposal facilities in New Mexico. The objective of the HWB is to ensure protection of human health and the environment and to ensure that hazardous wastes are handled and disposed of and/or treated properly.

Two permitted hazardous waste facilities, BJ Chemical Services and Champion Technologies, are located in the vicinity of Hobbs (U.S. EPA, 2009). The wastes generated by these facilities are shipped out of state and are not managed on-site (U.S. EPA, 2009).

2.4.3 Nonpoint Sources of Groundwater Contamination

A primary water quality concern in New Mexico is shallow groundwater contamination due to septic systems (NMWQCC, 2002) which, because they are generally spread throughout rural and urban areas, are considered a nonpoint source. Most of the serious septic system impacts occur where groundwater is shallow. In these areas, septic system discharges can percolate rapidly to the underlying aquifer and increase concentrations of:

- Total dissolved solids
- Iron, manganese, and sulfides (anoxic contamination)
- Nitrate
- Potentially toxic organic chemicals
- Bacteria, viruses, and parasites (microbiological contamination)

Septic systems and other on-site domestic wastewater disposal collectively constitute the single largest known source of groundwater contamination in New Mexico (NMWQCC, 2002, 2004). Many of these occurrences are in the shallow water table areas. According to the 2004-2006 Clean Water Act (§303(d)/§305(b) report, Hobbs is an area of “widespread nitrate contamination and/or anoxic conditions” (NMWQCC, 2004).

Protection of shallow groundwater quality in the populous areas plays an important role in maintaining the available water resources in these areas. The NMED Liquid Waste (Septic Tank) Program regulates on-site disposal of liquid wastes, including septic tanks, under the Liquid Waste Disposal and Treatment Regulations, 20.7.3 NMAC (NMEIB, 2005). A list of permitted liquid waste systems in and around Hobbs can be found on the NMED Liquid Waste (Septic Tank) Program web site (http://www.nmenv.state.nm.us/fod/LiquidWaste). More than 500 permitted septic tanks are present in and around Hobbs.

Other nonpoint sources of pollution include those associated with agriculture. The application of agricultural chemicals, such as pesticides and fertilizers, has led to the contamination of groundwater at various locations in New Mexico with trace concentrations of various pesticides and nitrate (NMWQCC, 2002, 2004).

3. Water Demand

As discussed in Section 1, the primary purpose of this 40-year water plan is to assess water needs in relation to water rights. Accordingly, this section describes the City of Hobbs existing water infrastructure and discusses the current and projected water demand for the City.

3.1 Existing Water System Description

The City of Hobbs water system is divided into two distinct systems: the North Hobbs Water System and the Hobbs Water System. The North Hobbs Water System is located between Joe Harvey Boulevard and College Lane and is controlled by the elevation of the Hiap water tower. The Hobbs Water System is located between Joe Harvey Boulevard and Stanolind Road and is controlled by the elevation of the Arriba water tower. Both systems are connected, but due to the difference in elevation, a valve keeps both systems running independently.

The City of Hobbs has five ground storage reservoirs (Table 9). These reservoirs receive water directly from the production wells (except for Hydro well 5, which pumps water directly into the water distribution system) and provide control, equalization, and fire storage for the system. Each ground storage reservoir has a booster pump station that discharges directly into the distribution system.

The water system also has three elevated storage tanks: two in the Hobbs Water System and one in the North Hobbs Water System (Table 9). These elevated tanks receive water from the booster pump system and provide equalization and fire storage for the system.

The water transmission and distribution system is shown in Appendix A. Most of the water distribution piping was constructed prior to 1965, during the years when the City experienced its highest growth rates. The distribution system consists of water lines ranging in size from 2 inches to 42 inches in diameter. Overall the most common type of pipe is asbestos-cement. Other common water pipe materials found in the existing distribution system are steel (in the older parts of town and usually 2-inch-diameter), cast iron, ductile iron, and concrete steel cylinder. On new installations, the City of Hobbs has used polyvinyl chloride (PVC) (C-900) and

Table 9. Hobbs Water System Summary

Well Field Production Capacity				Ground Storage Capacity [a]		Booster Pump Station Capacity				Elevated Tanks		
Well Field	Number of Wells	Production Pumping (mgd) 24 hr/d	Production Pumping (mgd) 16 hr/d	Capacity (M gal)	Overflow Elevation (feet)	Station Location	Pumping Capacity (mgd) 24 hr/d	Pumping Capacity (mgd) 16 hr/d	Expansion Potential	Tank	Capacity (M gal)	Overflow Elevation (feet)
Hobbs Water System												
Snyder	5	5.03	3.35	1.0	3616	Snyder	4.03	2.69	At capacity	Harden Tower	0.5	3733
Jefferson	10	7.35	4.9	2.0	3627	Jefferson	18.73	12.49	At capacity	Arriba Tower	1.0	3755.5
Del Norte	5	3.82	2.55	5.0	3649	Del Norte	12.1	8.07	Yes	None	—	—
Total	20	16.2	10.8	8.0			34.86	23.25			1.5	
North Hobbs Water System												
Hiap	4	3.95	2.63	0.6	3698	Hiap	3.89	2.59	To 8.06 mgd	Hiap	0.5	3815
Hydro	4	2.53	1.69	0.6	3698	Hydro	1.74	1.16	To 2.66 mgd	None	—	—
Total	8	6.48	4.32	1.2			5.63	3.75			0.5	
Grand total	28	22.68	15.12	9.2			40.49	27.0			2.0	

[a] All ground storage is located at corresponding pump station.

mgd = Million gallons per day
hr/d = Hours per day
M gal = Million gallons
— = Not applicable

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some high-density polyethylene (HDPE) piping. Table 10 provides information regarding the piping in the water distribution system.

Table 10. City Of Hobbs Water Distribution System Piping

Pipe Size (inches)	Total Length (feet)	Area (square feet)	Capacity	
			cubic feet	gallons
2	59,531	0.02	1,299	9,724
3	73,786	0.05	3,622	27,118
4	63,931	0.09	5,579	41,771
6	478,696	0.20	93,992	703,723
8	290,030	0.35	101,240	757,990
10	93,484	0.55	50,988	381,750
12	101,703	0.79	79,877	598,047
14	4,924	1.07	5,263	39,407
16	24,828	1.40	34,666	259,548
18	14,715	1.77	26,003	194,686
20	6,375	2.18	13,907	104,125
24	25,450	3.14	79,953	598,613
30	214	4.91	1,050	7,859
36	150	7.07	1,061	7,942
42	220	9.62	2,117	15,848
			Total capacity	3,748,151

In the last couple of years, some upgrades have been made to the distribution system. Most of these upgrades have been replacement of existing 2-, 3-, and 4-inch water lines with bigger lines and new connections to new subdivisions. Planned near-future improvements to the water system include replacement of all remaining 2-, 3-, and 4-inch lines with bigger water lines and a complete rehabilitation of the Hydro booster pump station. This rehabilitation will include a new building that will have two new booster pumps (1.25 million gallons per day [mgd], 100 horsepower each) with the capacity to add a third one. Also, the Hydro well field capacity will be increased with the addition of a new well.

The total capacity from the supply wells is estimated at 15,750 gallons per minute, which equates to 69.6 acre-feet per day (ac-ft/d) when the pumps are running 24 hours a day, or

46.4 ac-ft/d when the pumps are running 16 hours a day. System capacity to meet future demand is discussed in Section 3.5.

3.2 Current Water Demand

This section provides an accounting of residential, commercial, municipal, and irrigation water use by the City of Hobbs in 2006 through 2008. Section 3.2.1 presents a water audit that was conducted using the City's meter and billing records, and Section 3.2.2 discusses the City's water rates.

The City has approximately 11,845 accounts (City of Hobbs, 2009c) serving a population of about 30,500 (BBER, 2009). The City categorizes its water data into five demand sectors:

- *Residential:* Single family homes.
- *Commercial:* Local business operations such as gas stations and multi-family housing.
- *Municipal:* Buildings that are a division of City government.
- *Irrigation:* Watering of landscaping, lawns, and turfs.
- *Special rates:* Watering of the golf course and a City park

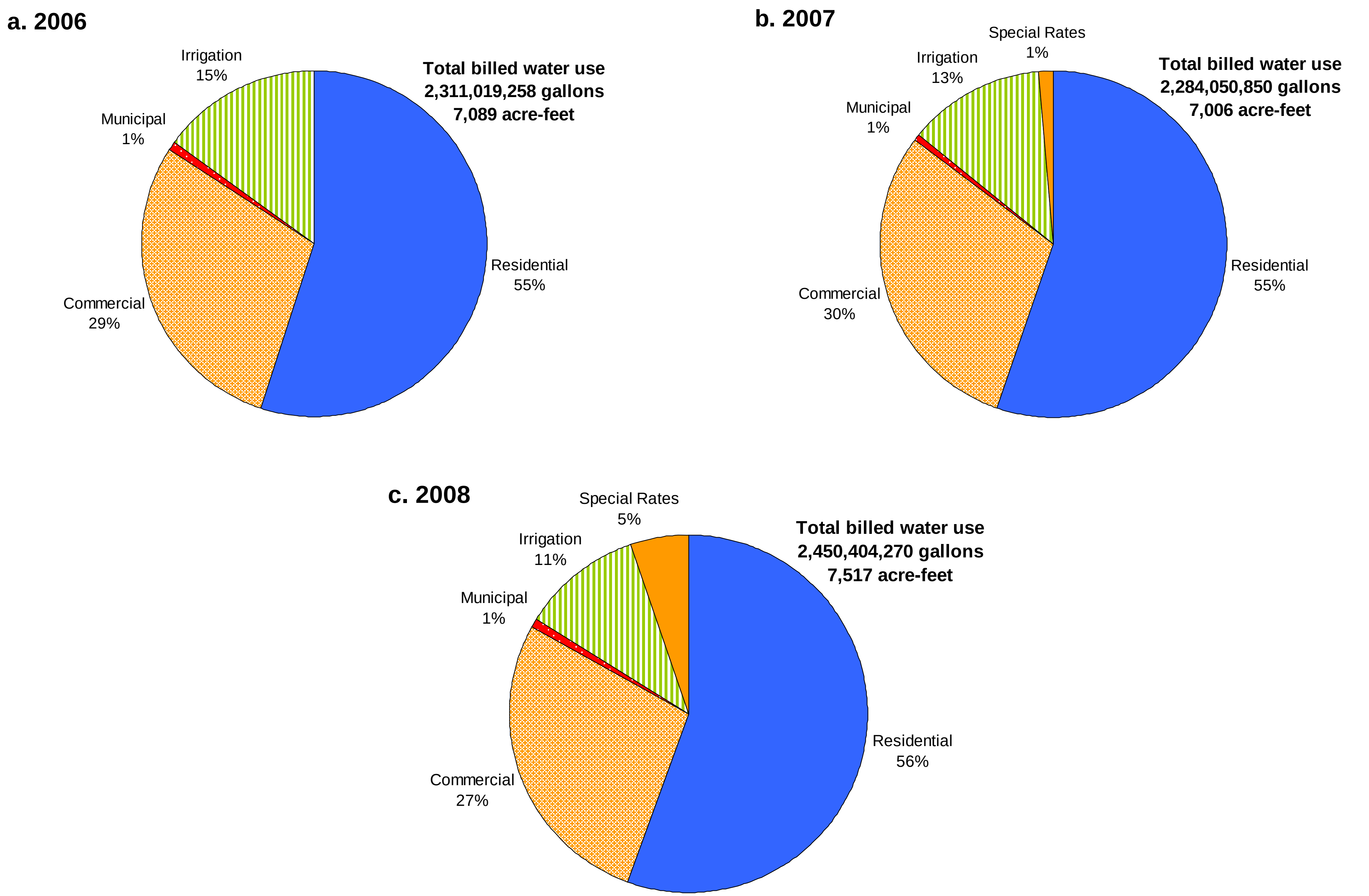
The amount of water billed by month in 2006 through 2008 for each of these sectors is provided in Table 11. The breakdown of billed water by demand sector in 2006 through 2008 (Figure 15) indicates that the residential sector used the majority of water. Figure 16 demonstrates that water use by the residential sector is highest during the summer months. Monthly water use by commercial and irrigation accounts also increases during the summer months, while municipal use remains relatively constant throughout the year.

The increase in summer water use was calculated by subtracting the mean billed winter water use (January, February, and December) from the mean billed summer water use (June, July, and August) for each demand sector (Table 12). Figure 17, which shows the difference between winter and summer average billed use, indicates that the biggest increase occurs in the residential sector. The difference is traditionally attributed to outdoor uses, such as irrigation, car washing, and swimming pools.

Table 11. Billed Water Use by Demand Category in 2006 through 2008

Month	Metered Water Use (gallons)													
	2006 [a]				2007					2008				
	Residential	Commercial	Municipal	Irrigation	Residential	Commercial	Municipal	Irrigation	Special rates	Residential	Commercial	Municipal	Irrigation	Special rates
January	71,174,200	39,937,055	1,674,800	18,385,200	89,123,500	55,831,800	517,600	11,810,230	272,200	78,473,300	51,417,170	1,741,900	16,522,900	8,937,400
February	64,347,200	54,493,095	1,669,200	30,904,700	68,076,000	49,040,900	398,600	14,022,500	98,600	83,039,200	45,955,800	1,618,500	7,624,500	3,043,800
March	69,014,800	36,582,100	1,472,400	8,843,700	83,068,700	53,792,700	764,800	19,371,400	—	73,001,700	41,230,200	1,717,700	7,982,500	8,780,500
April	105,251,000	54,246,240	876,500	21,207,700	93,187,900	51,293,500	804,900	15,663,200	200,400	110,290,400	47,117,300	2,083,900	18,798,800	16,168,400
May	105,388,450	46,844,816	1,192,900	37,587,400	105,275,900	55,849,800	903,600	20,846,100	—	154,398,300	64,621,000	3,323,700	29,028,000	3,316,300
June	161,706,815	60,549,900	1,906,900	40,160,360	128,458,800	58,767,200	1,811,000	35,346,700	—	187,490,000	69,390,500	3,034,100	39,632,400	10,511,000
July	182,098,617	76,941,380	1,568,500	56,459,430	142,573,220	63,695,300	1,968,000	39,673,500	575,900	149,056,600	62,152,000	2,712,600	29,849,000	17,584,200
August	143,000,200	65,950,100	2,562,100	42,520,500	138,920,400	63,725,200	1,410,800	37,170,900	284,800	148,457,400	60,051,900	1,684,500	31,432,100	15,977,600
September	115,928,300	74,781,100	1,337,600	29,184,500	153,608,600	73,359,300	2,132,400	41,513,800	321,900	118,991,800	64,214,700	2,803,000	31,373,400	7,344,600
October	88,084,900	46,795,500	2,415,500	26,618,500	89,914,900	51,233,900	1,667,300	24,064,600	5,367,900	99,644,800	54,913,100	1,143,800	22,954,800	21,205,500
November	89,990,900	60,768,300	1,375,300	26,125,900	98,183,100	56,954,300	2,382,300	21,552,100	21,600,100	90,861,900	60,049,200	1,173,500	17,367,300	7,781,500
December	77,528,100	50,604,700	1,136,000	11,825,900	74,067,900	47,909,800	932,800	11,617,700	1,069,600	70,953,200	47,302,100	812,700	8,812,900	11,451,400
Total (gallons)	1,273,513,482	668,494,286	19,187,700	349,823,790	1,264,458,920	681,453,700	15,694,100	292,652,730	29,791,400	1,364,658,600	668,414,970	23,849,900	261,378,600	132,102,200
Total (acre-feet)	3,906	2,051	59	1,073	3,879	2,090	48	898	91	4,186	2,050	73	802	405

[a] The uses now included in the Special Rates category were not tracked separately in 2006; instead they were included in the existing categories.



HOBBS 40-YEAR WATER PLAN

Billed Water Use by Demand Sector

Figure 15

Preliminary – Subject to Revision

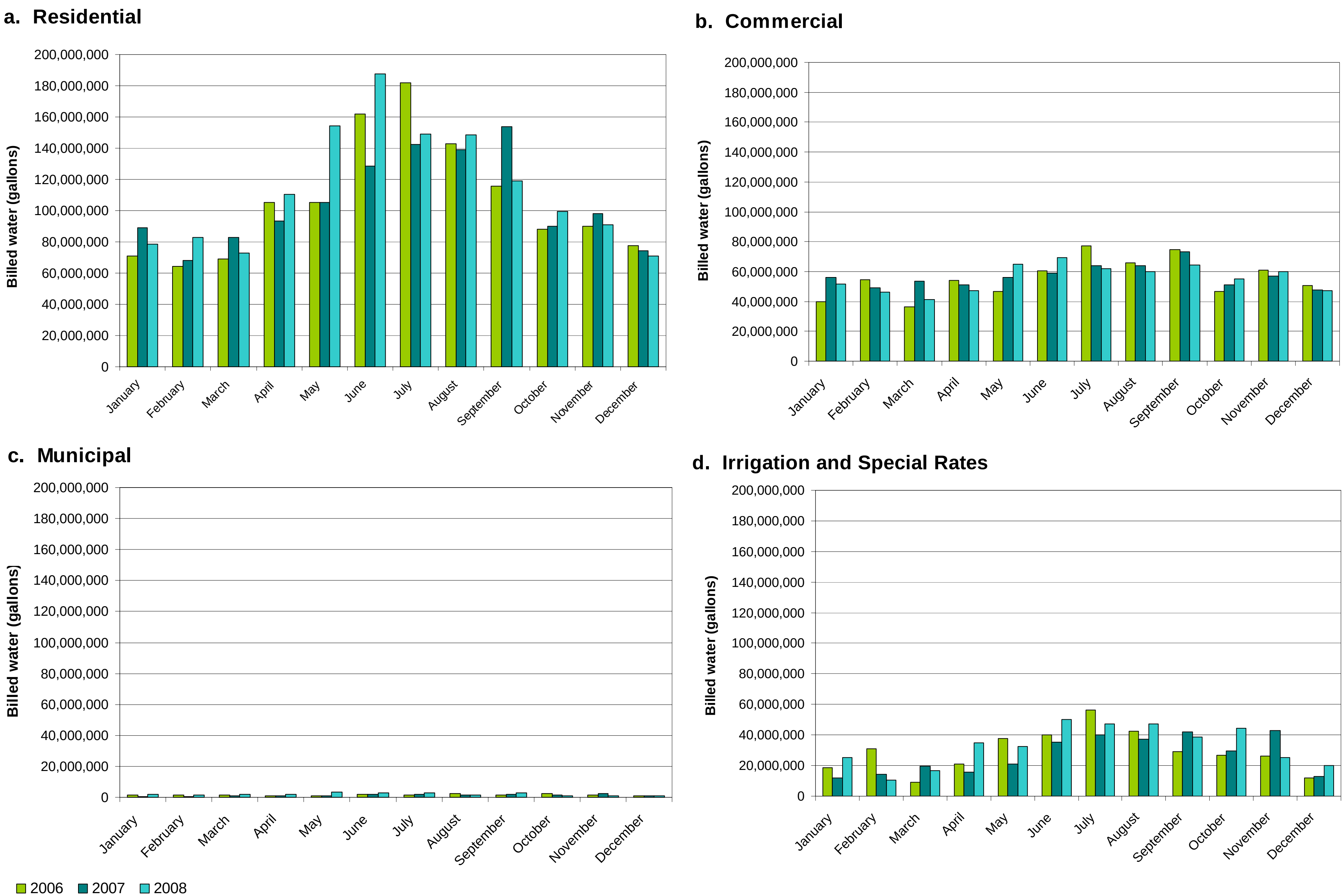


Figure 16

HOBBS 40-YEAR WATER PLAN

Monthly Billed Water by Demand Sector

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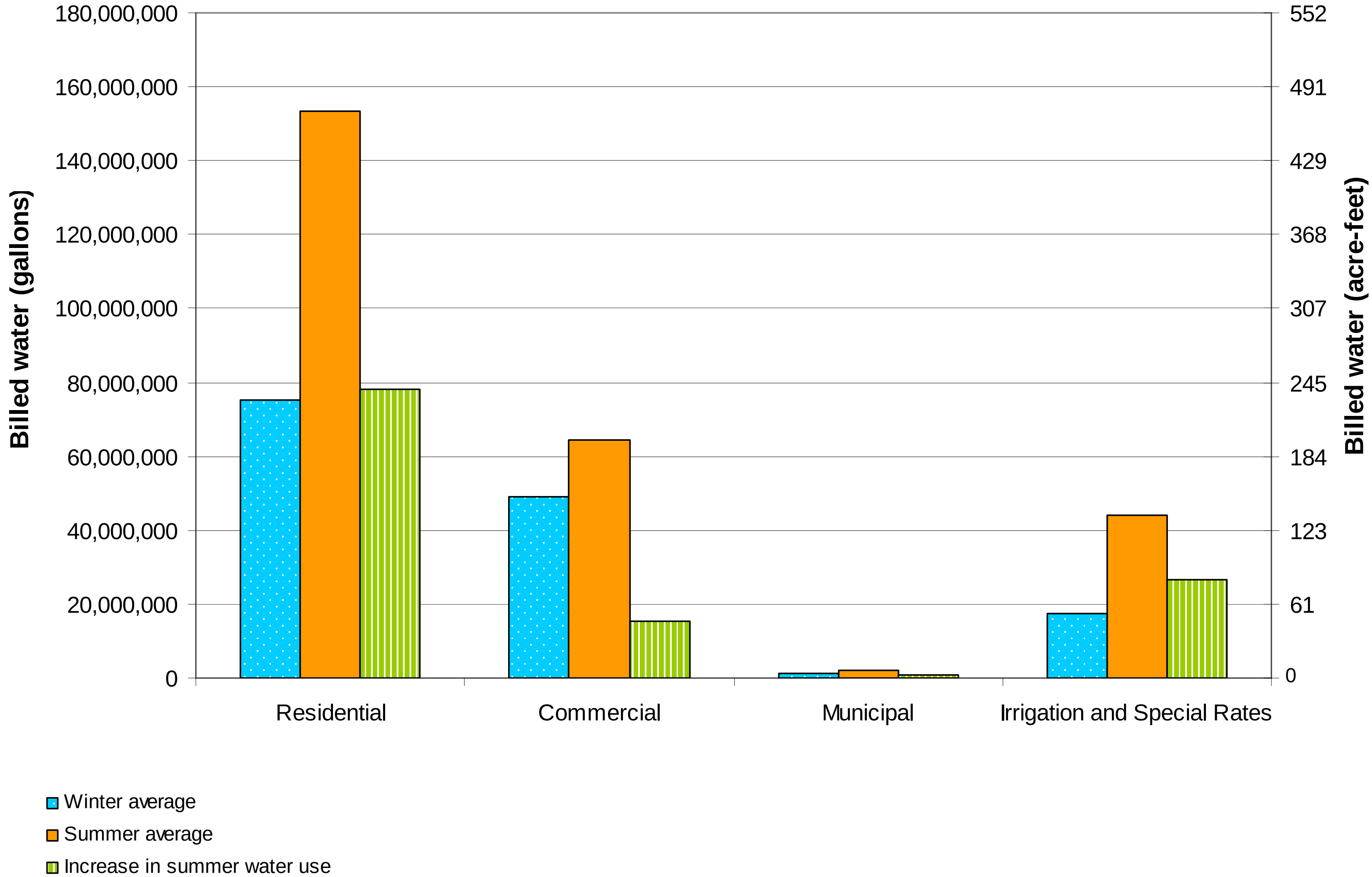

HOBBS 40-YEAR WATER PLAN

Increase in Summer Water Use by Sector
2006 through 2008

Figure 17

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Table 12. Calculated Increase in Summer Water Use 2006 through 2008

Season	Metered Water Use Average, 2006 to 2008 (gallons)				
	Residential	Commercial	Municipal	Irrigation and Special Rates	Total
Winter mean	75,198,067	49,165,824	1,166,900	17,377,726	142,908,517
Summer mean	153,529,117	64,580,387	2,073,167	44,130,932	264,313,602
Increase in summer water use	78,331,050	15,414,562	906,267	26,753,207	121,405,086

Figure 18 shows the annual amounts of water pumped from production wells, distributed from the reservoirs, and then billed to costumers by the City of Hobbs from 2000 to 2008. Increased diversions in 2003 correlate with a decrease in precipitation; generally, more water is needed for outdoor watering during dry years, causing an increase in pumping. Despite another period of low precipitation, water demand has remained relatively steady the last several years, likely a result of the conservation efforts initiated by the City of Hobbs.

3.2.1 Water Audit

The international standard water audit format is illustrated in Table 13. Tables 14 through 16 summarize the comprehensive water audit balance for the City in 2006, 2007, and 2008, respectively. Because the production meter error and customer meter error were estimated for the audit, the values presented in Tables 14 through 16 for total potential real water loss and total non-revenue water are also estimates. Total potential real water loss is defined as the highest possible amount of actual water lost in a given year or analysis period.

Figure 19 shows the breakdown between revenue and non-revenue water for the City in 2006, 2007, and 2008. Revenue water consists of billed water by demand sector (Figure 15); non-revenue categories include total authorized unbilled unmetered use, total apparent losses (estimated customer meter error), and total potential real water loss (calculated by subtracting authorized consumption and apparent losses from adjusted production) (Table 17).

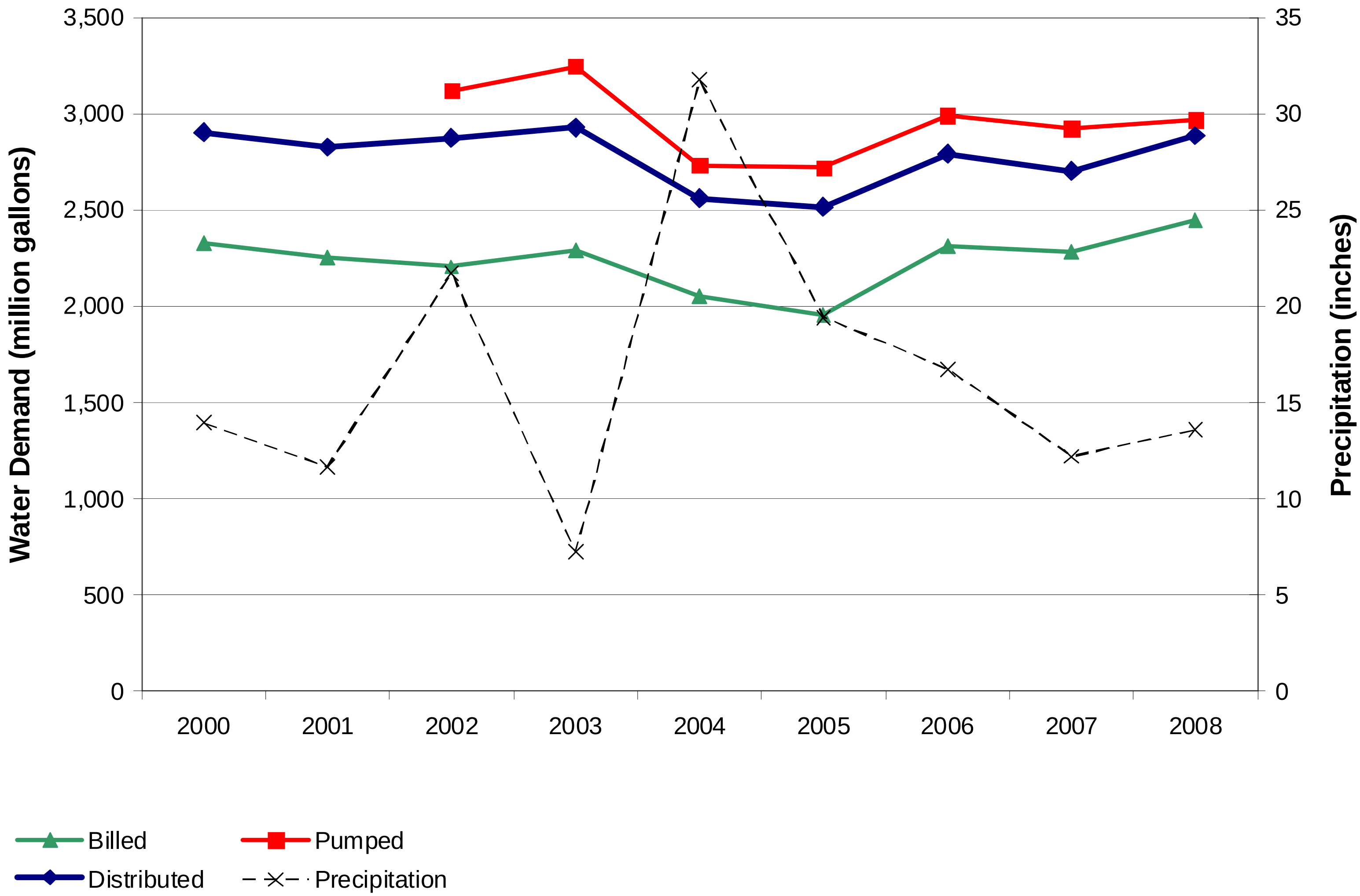

Figure 18

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HOBBS 40-YEAR WATER PLAN

Annual Demand and Precipitation

Table 13. International Standard Water Audit Format

Own sources	System input (allow for known errors)	Water exported	Authorized consumption	Billed authorized consumption	Revenue water	Billed water exported
						Billed metered consumption
						Billed unmetered consumption
				Unbilled authorized consumption	Non-revenue water	Unbilled metered consumption
						Unbilled unmetered consumption
Water imported		Water supplied	Water losses	Apparent losses		Unauthorized consumption
						Customer metering inaccuracies and data handling error
				Real losses [a]		Leakage on mains
						Leakage and overflows at storages
						Leakage on service connections up to point of customer metering

Source: AWWA, 2003 (after Alegre et al., 2000)
[a] Annual audit forms (Tables 14 through 16) refer to this as the “Total potential real water loss.”

Table 14. City of Hobbs Comprehensive Water Audit Balance
January 1 through December 31, 2006

Item	Amount	
	Gallons	% of Total
Water Production		
1a. Metered production	2,990,849,300	
1b. Production meter error [a]	44,862,740	
1c. Exported water		
1d. Adjusted production	*3,035,712,040*	*100*
Authorized Consumption		
2a. Billed metered, residential	1,273,513,482	42.0
2b. Billed metered, commercial	668,494,286	22.0
2c. Billed metered, municipal	19,187,700	0.6
2d. Billed metered, irrigation	349,823,790	11.5
2d. Billed metered, special rates	0	0.0
2e. Total billed metered	*2,311,019,258*	*76.1*
3. Total billed unmetered		0.0*
4. Total unbilled metered		0.0*
5. Total unbilled unmetered		0.0*
6. Total authorized consumption	*2,311,019,258*	*76.1*
Apparent Losses		
7. Estimated customer meter error [b]	92,440,770	3.0
8. Additional loss to low-flow inaccuracies		0.0*
9. Illegal connections and theft		0.0*
10. Database errors [c]		0.0*
11. Total apparent losses	*92,440,770*	*3.0*
Real Water Loss Potential		
12a. Reported water loss		0.0*
12b. Identified water loss		0.0*
12c. Total potential real water loss [d]	*632,252,011*	*20.8*
Non-Revenue Water		
5. Total authorized unbilled unmetered	0	0.0*
11. Total apparent losses	92,440,770	3.0
12c. Total potential real water loss	632,252,011	20.8
13. Total non-revenue water	*724,692,782*	*23.9*

Source: City of Hobbs, 2009c

[a] The production total has been adjusted upward to account for production meter error, based on the assumption that production meters are underreporting by 1.5%.

[b] Estimates that customer meters are underreporting by 4%.

[c] Database errors were not estimated as a part of this analysis, but are not expected to be zero.

[d] Value calculated by subtracting authorized consumption and apparent losses from adjusted production.

* We have assumed that this number is 0, but does the City have any data or information that would allow us to allocate a percentage?

Table 15. City of Hobbs Comprehensive Water Audit Balance
January 1 through December 31, 2007

Item	Amount	
	Gallons	% of Total
Water Production		
1a. Metered production	2,926,471,135	
1b. Production meter error [a]	43,897,067	
1c. Exported water		
1d. Adjusted production	*2,970,368,202*	*100*
Authorized Consumption		
2a. Billed metered, residential	1,264,458,920	42.6
2b. Billed metered, commercial	681,453,700	22.9
2c. Billed metered, municipal	15,694,100	0.5
2d. Billed metered, irrigation	292,652,730	9.9
2d. Billed metered, special rates	29,791,400	1.0
2e. Total billed metered	*2,284,050,850*	*76.9*
3. Total billed unmetered		0.0*
4. Total unbilled metered		0.0*
5. Total unbilled unmetered		0.0*
6. Total authorized consumption	*2,284,050,850*	*76.9*
Apparent Losses		
7. Estimated customer meter error [b]	91,362,034	3.1
8. Additional loss to low-flow inaccuracies		0.0*
9. Illegal connections and theft		0.0*
10. Database errors [c]		0.0*
11. Total apparent losses	*91,362,034*	*3.1*
Real Water Loss Potential		
12a. Reported water loss		0.0*
12b. Identified water loss		0.0*
12c. Total potential real water loss [d]	*594,955,318*	*20.0*
Non-Revenue Water		
5. Total authorized unbilled unmetered	0	0.0*
11. Total apparent losses	91,362,034	3.1
12c. Total potential real water loss	594,955,318	20.0
13. Total non-revenue water	*686,317,352*	*23.1*

Source: City of Hobbs, 2009c

[a] The production total has been adjusted upward to account for production meter error, based on the assumption that production meters are underreporting by 1.5%.

[b] Estimates that customer meters are underreporting by 4%.

[c] Database errors were not estimated as a part of this analysis, but are not expected to be zero.

[d] Value calculated by subtracting authorized consumption and apparent losses from adjusted production.

* We have assumed that this number is 0, but does the City have any data or information that would allow us to allocate a percentage?

Table 16. City of Hobbs Comprehensive Water Audit Balance January 1 through December 31, 2008

Item	Amount	
	Gallons	% of Total
Water Production		
1a. Metered production	2,970,895,300	
1b. Production meter error [a]	44,563,430	
1c. Exported water		
1d. Adjusted production	*3,015,458,730*	*100*
Authorized Consumption		
2a. Billed metered, residential	1,364,658,600	45.3
2b. Billed metered, commercial	668,414,970	22.2
2c. Billed metered, municipal	23,849,900	0.8
2d. Billed metered, irrigation	261,378,600	8.7
2d. Billed metered, special rates	132,102,200	4.4
2e. Total billed metered	*2,450,404,270*	*81.3*
3. Total billed unmetered		0.0*
4. Total unbilled metered		0.0*
5. Total unbilled unmetered		0.0*
6. Total authorized consumption	*2,450,404,270*	*81.3*
Apparent Losses		
7. Estimated customer meter error [b]	98,016,171	3.3
8. Additional loss to low-flow inaccuracies		0.0*
9. Illegal connections and theft		0.0*
10. Database errors [c]		0.0*
11. Total apparent losses	*98,016,171*	*3.3*
Real Water Loss Potential		
12a. Reported water loss		0.0*
12b. Identified water loss		0.0*
12c. Total potential real water loss [d]	*467,038,289*	*15.5*
Non-Revenue Water		
5. Total authorized unbilled unmetered	0	0.0*
11. Total apparent losses	98,016,171	3.3
12c. Total potential real water loss	467,038,289	15.5
13. Total non-revenue water	*565,054,460*	*18.7*

Source: City of Hobbs, 2009c

[a] The production total has been adjusted upward to account for production meter error, based on the assumption that production meters are underreporting by 1.5%.

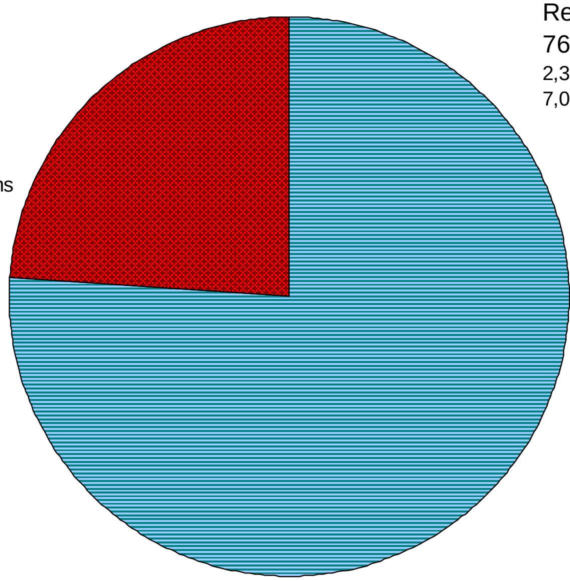
[b] Estimates that customer meters are underreporting by 4%.

[c] Database errors were not estimated as a part of this analysis, but are not expected to be zero.

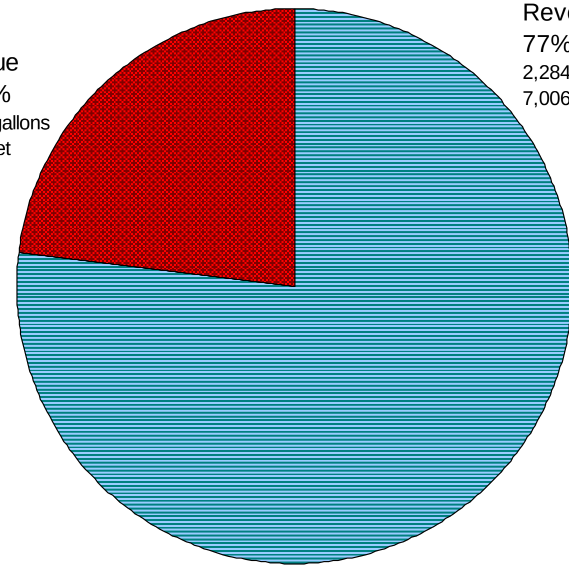
[d] Value calculated by subtracting authorized consumption and apparent losses from adjusted production.

* We have assumed that this number is 0, but does the City have any data or information that would allow us to allocate a percentage?

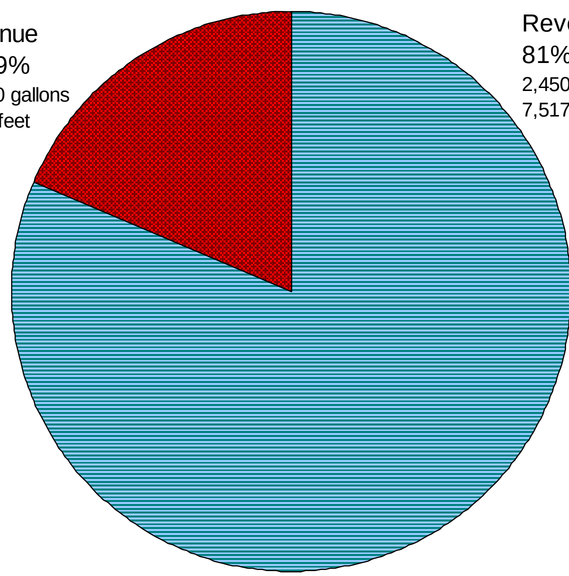
a. 2006



b. 2007



c. 2008



HOBBS 40-YEAR WATER PLAN

Revenue vs. Non-Revenue Water
2006 Through 2008

Figure 19

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Table 17. City of Hobbs Non-Revenue Water 2006 through 2008

Non-Revenue Water	2006			2007			2008		
	gallons	acre-feet	%	gallons	acre-feet	%		acre-feet	%
Total authorized unbilled unmetered	0	0	0	0	0	0	0	0	0
Total apparent losses	92,440,770	284	13	91,362,034	280	13	98,016,171	301	17
Total potential real water loss	632,252,011	1,939	87	594,955,318	1,825	87	467,038,289	1,433	83
Total	724,692,782	2,223	100	686,317,352	2,105	100	565,054,460	1,733	100

3.2.2 Water Rates

The City of Hobbs has increasing billing rates for units of water consumption at higher levels of usage (referred to as an inclining block or inverted block rate structure). That is, as the water consumption increases, the cost per 1,000 gallons increases, giving individuals who want to reduce their cost an incentive to use less water.

City water rates were updated in June 2008 and include a provision for annual adjustments based on the New Mexico Consumer Price Index (City of Hobbs, 2008). The rates include a flat fee based on water meter size with an additional charge ranging from $1.00 to $1.45 per 1,000 gallons (Tables 18 and 19). The same inclining block rates apply to all water accounts (e.g. residential, commercial); however customers outside the corporate boundaries of the City of Hobbs pay higher rates for water, and irrigation accounts pay the same rate for 2001 to 50,000 gallons (Tables 18 and 19). The first annual rate increase took effect July 1, 2009 and was 1.8 percent (Lewis, 2009).

Table 18. City of Hobbs Minimum Monthly Charge

Meter Size (inches)	Minimum Charge (up to 2,000 gallons) ($)	
	Inside City Limits	Outside City Limits
5/8	6.50	9.75
1	9.10	13.65
2	18.85	28.43
3	71.50	107.25
4	91.00	136.50
6	136.50	204.75
8	188.50	282.75

Source: City of Hobbs, 2008

Table 19. City of Hobbs Inclining Block Rate Structure

Range of Usage (gallons)	Cost per 1,000 Gallons ($)	
	Inside City Limits	Outside City Limits
2,001-10,000	1.00 [a]	1.50 [b]
10,001-25,000	1.10 [a]	1.65 [b]
25,001-50-000	1.20 [a]	1.80 [b]
50,001-100,000	1.30	1.95
Above 100,000	1.45	2.18

Source: City of Hobbs, 2008
[a] For irrigation accounts, the rate is $1.20 for 2,001 to 50,000 gallons.
[b] For irrigation accounts, the rate is $1.80 for 2,001 to 50,000 gallons.

3.2.3 City of Hobbs Population Projections

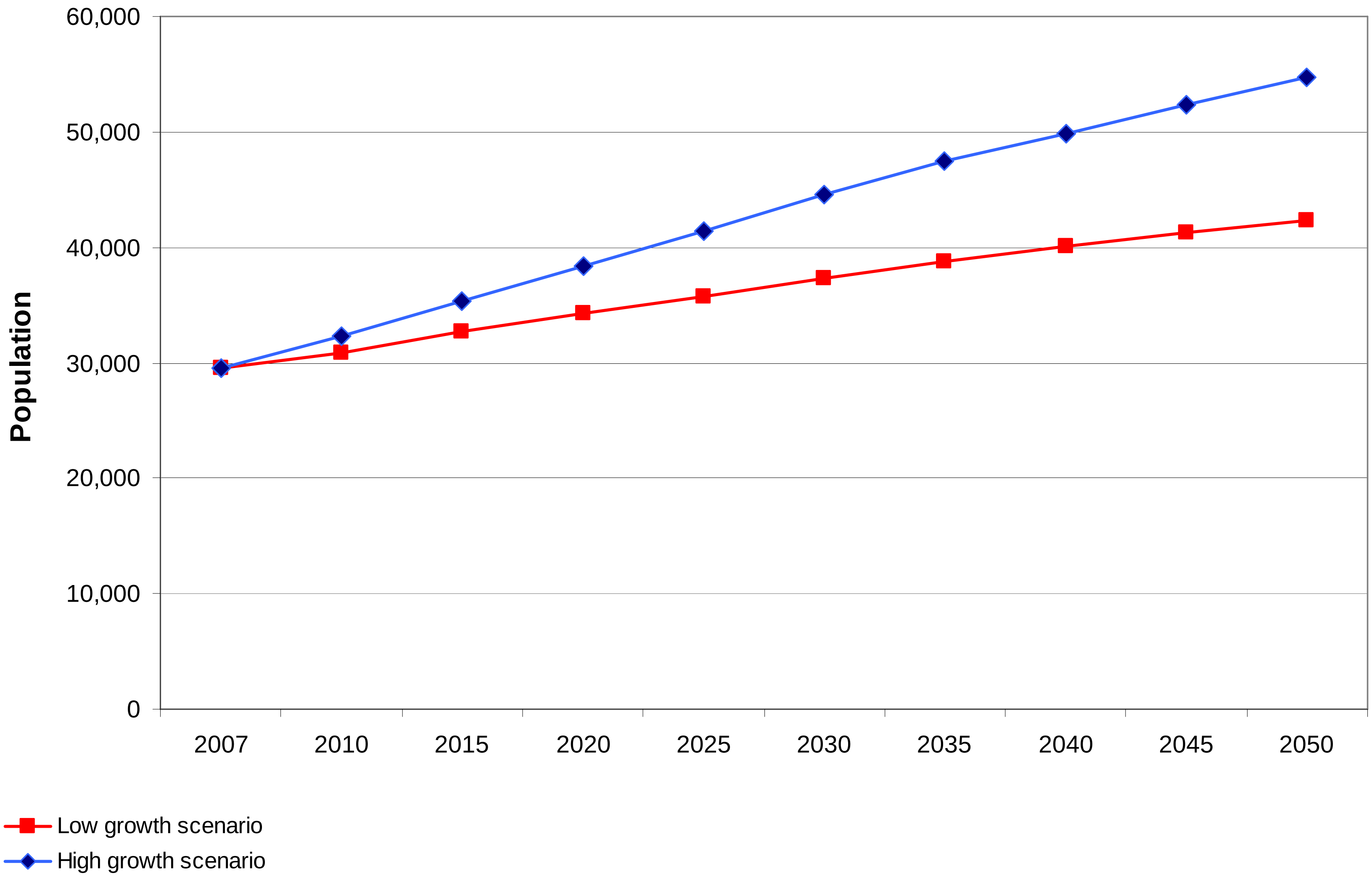
In 2007, the City of Hobbs had a population of 29,602 people, and Southwest Planning and Marketing projected population through 2050 based on two scenarios (Table 20, Figure 20). The low estimate tracks well with the mid-level Bureau of Business and Economic Research (BBER) projections for the area, while the high estimate is based on the 2008 BBER population projection update in conjunction with interviews of various local experts (SWPM, 2008). Projected growth rates take into consideration the effects of the City's new commercial developments, as well as the expected growth of the oil and gas industry.

Table 20. City of Hobbs Population Projections, 2010-2050

Year	Low Scenario	High Scenario
2007	29,602	29,602
2010	30,865	32,356
2015	32,713	35,340
2020	34,314	38,410
2025	35,797	41,440
2030	37,326	44,554
2035	38,728	47,480
2040	40,082	49,902
2045	41,279	52,292
2050	42,363	54,660

Source: SWPM, 2008

Preliminary – Subject to Revision



HOBBS 40-YEAR WATER PLAN

City of Hobbs Population Projections
2010 Through 2050

Figure 20

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Under the low growth scenario, the City is projected to grow at an annual average rate of 0.85 percent, and the total Lea County population is projected to grow at an annual average rate of 0.82 percent (SWPM, 2008). Under the high growth scenario, the City is projected to grow at an annual average rate of 1.42 percent, and the total Lea County population is projected to grow at an annual average rate of 1.13 percent (SWPM, 2008). The high projection totals are supported by the recent trends in City and County growth.

3.2.4 City of Hobbs Economic Growth Trends

Lea County has long been the leading oil producing county in the State of New Mexico, and the City of Hobbs has been described as a boom-bust town, due to the impact of the oil and gas industry's volatility on the City's population (SWPM, 2008). The Southwest Planning and Marketing study cites the 2008 BBER population projection update as saying that Lea County is one of the fastest growing counties in the State of New Mexico (SWPM, 2008). Population trends for Lea County between 1990 and 2005 are shown on Table 21.

Table 21. Historical Population of Lea County

Year	Population
1990	55,765
2000	55,511
2001	55,587
2002	55,644
2003	55,783
2004	56,657
2005	57,006
Annual Growth Rate (%)	
1990-2000	–0.05
2000-2005	0.53

Source: SWPM, 2008

The City has been working to diversify its economy, by revitalizing its downtown, adding a casino that includes a race track (which opened in 2004), opening the recently completed 550-megawatt combined-cycle generating power plant, and increasing revenues from tourism.

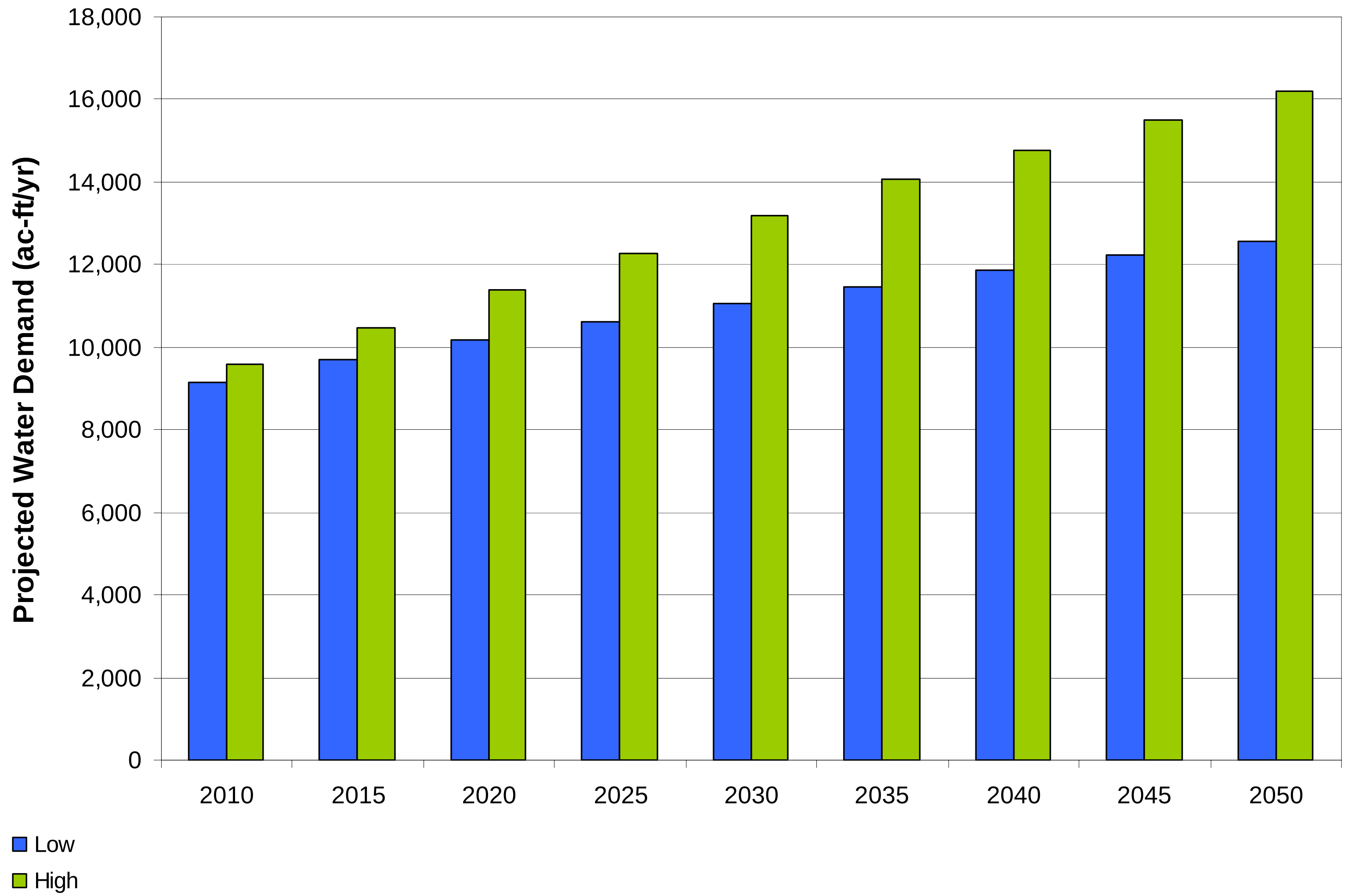
These efforts have contributed to an increase (by 3,383) in the total number of jobs in the county between 2001 and 2006 (SWPM, 2008).

Construction on the Louisiana Energy Services gas centrifuge uranium enrichment plant in Eunice, New Mexico (20 miles south of Hobbs) began in 2007 and will also contribute to the region's growth (SWPM, 2008). In addition, a Global Nuclear Energy Partnership (GNEP) nuclear fuel recycling facility that would employ up to 5,000 people is proposed for the Hobbs area. A draft environmental impact statement for the facility has been completed, but the facility has not yet been approved (SWPM, 2008).

Continued development in Hobbs is hampered by a lack of vacant land that is serviced by municipal infrastructure. Also, some land owners are resistant to developing land for which they also own mineral rights, as they could be leased for drilling in the future (SWPM, 2008).

3.3 Future Water Use Projections

Future water demand for the City of Hobbs was projected through 2050 using the population estimates presented in Section 3.3. The calculated projected demand ranges from 9,142 ac-ft/yr (low projection for 2010) to 16,190 ac-ft/yr (high projection for 2050) (Table 22, Figure 21). Total production by the City of Hobbs has ranged between approximately 8,349 and 9,174 ac-ft/yr during the last four years (City of Hobbs, 2009c). By 2050, water demand in Hobbs is projected to increase by 3,434 ac-ft/yr under the low projection or 7,077 ac-ft/yr under the high projection (based on 2008 production amount of 9,113 acre-feet). Figure 22 shows recent water production and predicted future water demand, as well as the potential reduction in water use if demand is reduced by 10 percent through implementing conservation measures (actual demand reductions may be more or less).



HOBBS 40-YEAR WATER PLAN

City of Hobbs

Projected Water Demand

Figure 21

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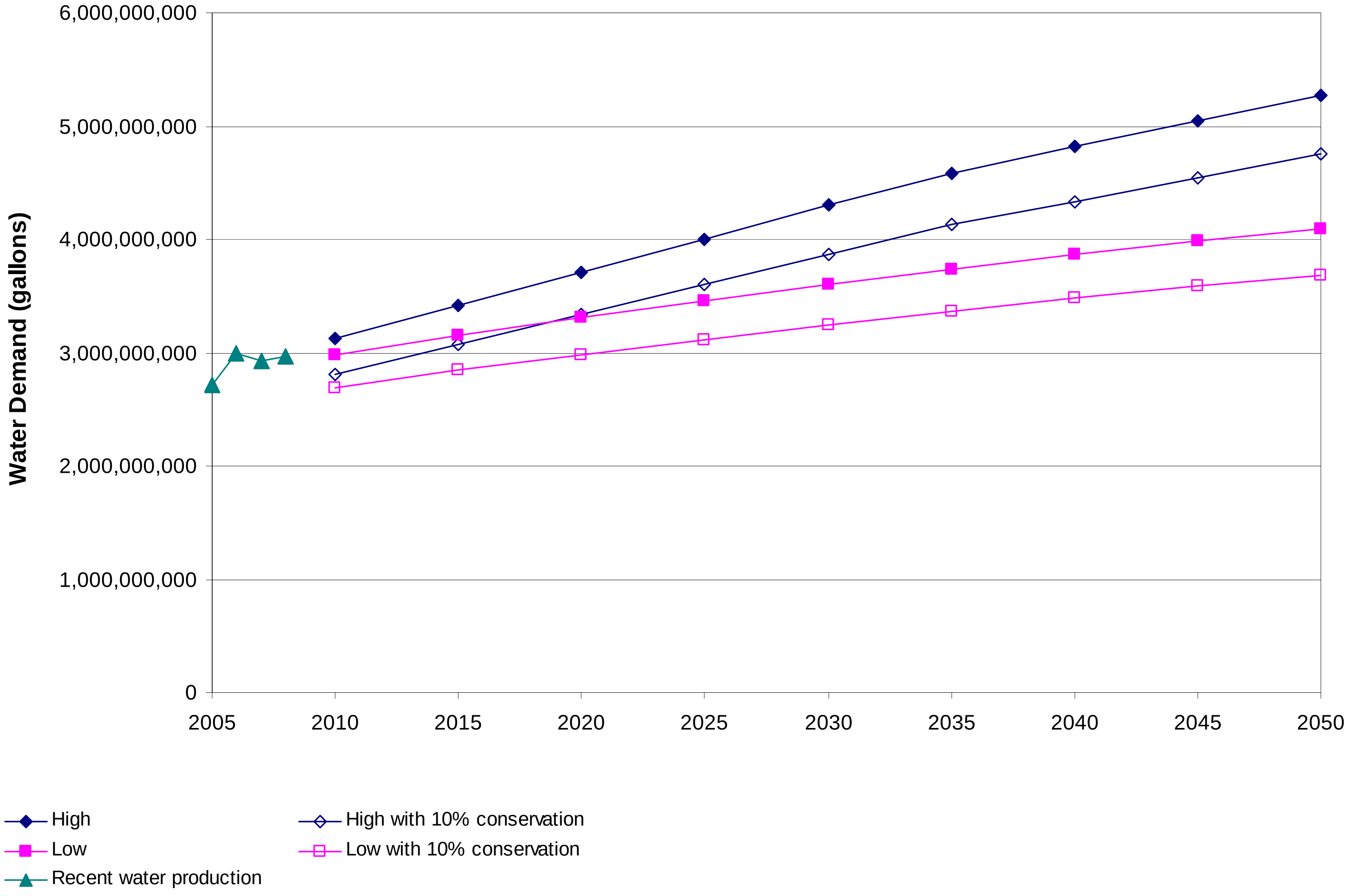


HOBBS 40-YEAR WATER PLAN

Recent Water Production and Projected Water Demand

Figure 22

Table 22. Projected City of Hobbs Water Demand

Year	City of Hobbs Population [a]		Projected Water Use [b] (ac-ft/yr)	
	Low	High	Low	High
2010	30,865	32,356	9,142	9,583
2015	32,713	35,340	9,689	10,467
2020	34,314	38,410	10,163	11,377
2025	35,797	41,440	10,603	12,274
2030	37,326	44,554	11,055	13,196
2035	38,728	47,480	11,471	14,063
2040	40,082	49,902	11,872	14,780
2045	41,279	52,292	12,226	15,488
2050	42,363	54,660	12,547	16,190

[a] Source: SWPM, 2008
[b] Based on per capita demand of 0.30 ac-ft/yr (264.5 gallons per capita per day), the Hobbs 2008 per capita demand based on well production.

3.4 System Capacity to Meet Future Demand

Table 23 shows the projected annual water demand, including fire flow, for the next 40 years. Figure 23 shows a schematic of the existing system along with the water demand and production for the system. The worst-case scenario for any water system is complying with the service demand during summer, when it is approximately double the average annual demand, while providing the necessary fire flow demand. Table 24 shows the projected summer service demand, fire flow, and the existing water system's capacity to supply that demand, based on the system's ground storage reservoirs. The booster pump systems are capable of pumping up to 40.49 mgd, which is more than the necessary capacity for the worst-case scenario.

Although the water system has the capacity to produce the necessary water demand during a fire event up to the projected flow in 2050 (Table 24), it is also necessary to determine whether the distribution system contains any bottlenecks and whether water can be delivered for emergencies at any point in the system. After speaking with the City of Hobbs Water Operators, Frank Crane and Lonnie Creed (September 30, 2009), it was determined that no such bottlenecks or problems with the distribution system exist and water can be delivered where it is needed in the worst-case scenario.

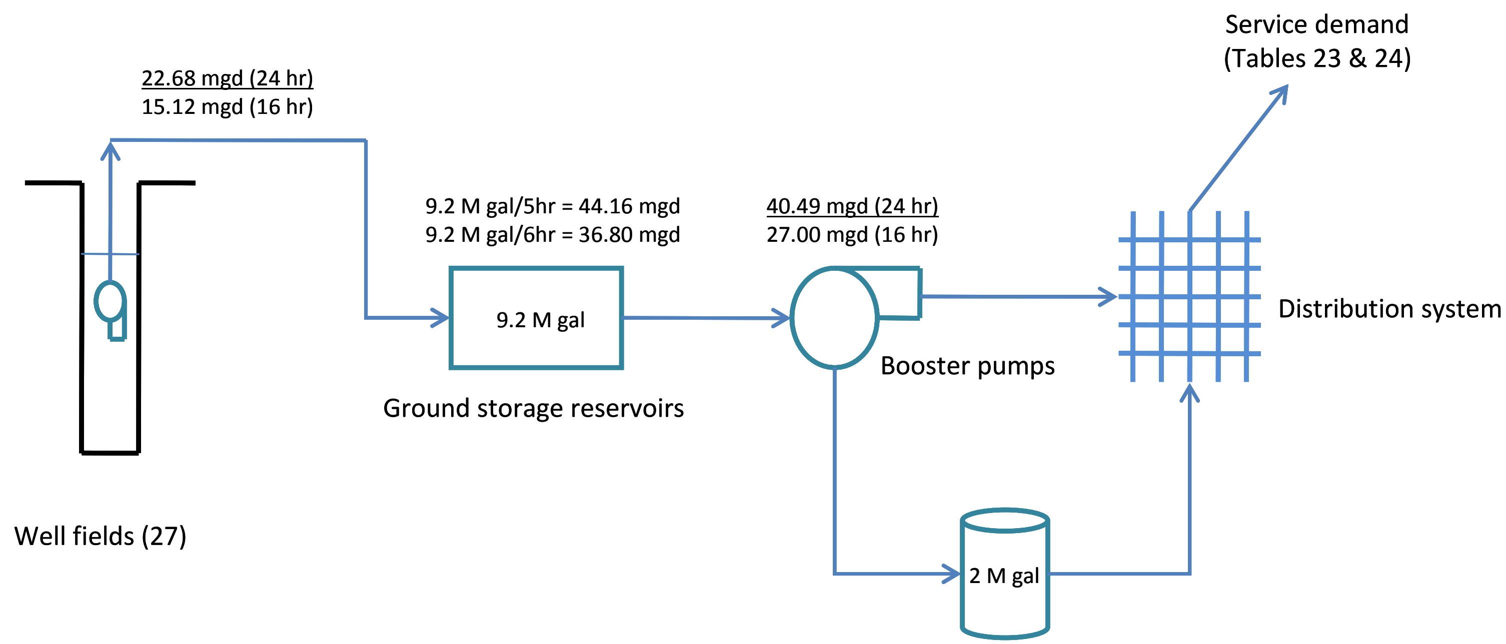
Table 23. Projected Average Annual Water Demand for the City of Hobbs

Years	Estimate	Population [a]	Water System Demand (gpd) Fire Flow [b]	Service Demand [c]	Emergency Demand
2008	Low	30,000 [d]	7,604,309	7,546,837 [e]	15,151,146
	High	30,000 [d]	7,604,309	7,546,837 [e]	15,151,146
2010	Low	30,865	7,706,761	8,168,622	15,875,383
	High	32,356	7,879,632	8,562,667	16,442,300
2015	Low	32,713	7,920,354	8,657,381	16,577,735
	High	35,340	8,212,568	9,352,545	17,565,114
2020	Low	34,314	8,099,955	9,080,913	17,180,868
	High	38,410	8,538,840	10,165,655	18,704,494
2025	Low	35,797	8,262,131	9,474,065	17,736,196
	High	41,440	8,846,569	10,967,148	19,813,717
2030	Low	37,326	8,425,390	9,877,939	18,303,329
	High	44,554	9,149,652	11,790,980	20,940,632
2035	Low	38,728	8,571,774	10,249,646	18,821,420
	High	47,480	9,423,488	12,565,668	21,989,155
2040	Low	40,082	8,710,299	10,607,950	19,318,250
	High	49,902	9,642,841	13,206,326	22,849,167
2045	Low	41,279	8,830,548	10,924,259	19,754,807
	High	52,292	9,853,299	13,838,943	23,692,242
2050	Low	42,363	8,937,731	11,211,081	20,148,812
	High	54,660	10,056,345	14,466,199	24,522,544

[a] SWPM, 2008
[b] Calculation based on the American Insurance Association's population-based formula.
[c] Based on information received by the City of Hobbs.
[d] Approximate population in 2008.
[e] Actual water demand for the City of Hobbs in 2008.

gpd = Gallons per day

Preliminary – Subject to Revision



Source: Smith Engineering, Inc., 2009

HOBBS 40-YEAR WATER PLAN

Flow Schematic for Emergency Demand During Summer

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10/30/09

Table 24. Projected Summer Water Demand for the City of Hobbs

Years	Estimate	Water System Demand (gpd [a])				System Capacity (gpd)
		Fire Flow [b]	Required Duration [c] (hours)	Summer Projected Demand [d]	Total Demand	
2008	Low	7,604,309	5	15,093,674	22,697,983	44,160,000
	High	7,604,309	5	15,093,674	22,697,983	44,160,000
2010	Low	7,706,761	4	16,337,244	24,044,005	55,200,000
	High	7,879,632	4	17,125,335	25,004,967	55,200,000
2015	Low	7,920,354	4	17,314,763	25,235,117	55,200,000
	High	8,212,568	4	18,705,090	26,917,659	55,200,000
2020	Low	8,099,955	4	18,161,826	26,261,781	55,200,000
	High	8,538,840	4	20,331,309	28,870,149	55,200,000
2025	Low	8,262,131	4	18,948,130	27,210,261	55,200,000
	High	8,846,569	4	21,934,296	30,780,865	55,200,000
2030	Low	8,425,390	4	19,755,878	28,181,268	55,200,000
	High	9,149,652	4	23,581,960	32,731,612	55,200,000
2035	Low	8,571,774	4	20,499,292	29,071,066	55,200,000
	High	9,423,488	4	25,131,335	34,554,823	55,200,000
2040	Low	8,710,299	4	21,215,901	29,926,200	55,200,000
	High	9,642,841	4	26,412,653	36,055,493	55,200,000
2045	Low	8,830,548	4	21,848,518	30,679,066	55,200,000
	High	9,853,299	4	27,677,887	37,531,186	55,200,000
2050	Low	8,937,731	4	22,422,162	31,359,893	55,200,000
	High	10,056,345	4	28,932,398	38,988,743	55,200,000

[a] Unless otherwise noted

[b] Calculation based on the American Insurance Association's population-based formula.

[c] Required duration of flow during fire (Lindeburg, 2006)

[d] Double the service demand detailed in Table 23

gpd = Gallons per day

4. City of Hobbs Water Rights and State Engineer Groundwater Administration in the Lea County Basin

The City of Hobbs owns a total of 18,962 acre-feet of municipal- and irrigation-use water rights in the Lea County Basin (Table 25). The irrigation water rights (60 acres in L-146 and L-306 [Table 25]) will need to be transferred to municipal use before they can be used as municipal supply.

The City's options for exercising its water rights are specified in the City's OSE-approved water right permits and associated permit conditions. The ability of the City to move or change the place and purpose of use of these water rights is governed to a large extent by the OSE administrative criteria for the Lea County Basin (NMAC 19.27.40; NM OSE, 2009), in which all of the City's water rights are located. The basin, which encompasses 2,772 square miles, was originally declared in 1931 and was open to new appropriations and water development for many years. However, the Lea County Basin is a mined basin, which means that annual well withdrawals exceed recharge and water levels subsequently decline over time. Based on declining water levels and model predictions that areas of the basin will lose saturated thickness, essentially becoming dry, the State Engineer issued a final order closing the High Plains (Ogallala) portion of the basin in September 2009. Consequently, no water is available in the basin for new appropriations, except for domestic wells, and stringent limitations will apply to transfers of existing water rights to new locations.

The Lea County Basin guidelines are based on a hydrologic model developed in 1999 (Musharrafieh and Chudnoff, 1999). The criteria divide the basin into model cells, each of which encompasses a 1-square-mile section (Figure 9). The model has predicted the remaining saturated thickness for each of the cells based on historical and current pumping of water in those cells. Model sections where saturated thickness of the aquifer is predicted to be less than 55 feet by the year 2045 (Figure 9) are deemed to be critical management areas (CMAs). The remaining part of the basin is considered to be a non-CMA area. The criteria limit transferability and specify an allowable rate and cumulative amount of drawdown in the CMA and non-CMA areas as outlined in Table 26.

Table 25. City of Hobbs Water Rights
Page 1 of 4

Well Field / Location	OSE File Number	Purpose of Use	Wells or Well Field	Water Rights Consumptive Use (acre-feet)	Comments
HIAP	L-114, L-115 Comb.	MUN	1, 2	2900	Proof of beneficial use due November 30, 2009.
T19S R38E Sec 2	L-146-L-306	IRR	Irrigation well, not part of municipal system	96 [b]	Leased to Gary Schubert.
Snyder Jefferson	L-220 et al.	MUN	9,10,11,12, 14 15, 16, 17, 21, 22, 23, 24	7300	This permit includes the majority of the wells located within the municipal service area. Proof of beneficial use due March 31, 2010. Proof of completion of work for well L-220 S-12 filed November 2008. Extension for filing the proof of completion of works for L-220-S-11 filed November 2008. Proof of well completion is due November 2009.
Del Norte			25, 26, 27, 28, 29		
Municipal water system	L-383 into L-220	MUN	1	120	Proof of beneficial use for L-383 into L-220 due August 31, 2009. Transferred into L-220 for use within the municipal service area. Permit approved August 29, 1967. OSE refers to L-220 as having a right of 7420 ac-ft, which adds the L-383 to the total for the originally permitted L-220. Permit to change location of well and place of use was approved August 29, 1967 to use well L-220. Meter readings will be required once diversion of the 120 ac-ft permitted under this right takes place.

[a] Consumptive for this right is based on conversion to municipal use at 1.6 acre feet per acre multiplied by the 60 acres of water right permitted land.

ac-ft = Acre-feet
ac-ft/yr = Acre-feet per year

PRELIMINARY
SUBJECT TO REVISION

Table 25. City of Hobbs Water Rights

Well Field / Location	OSE File Number	Purpose of Use	Wells or Well Field	Water Rights Consumptive Use (acre-feet)	Comments
T18S R38E Sec. 2	L-745 & L-745 Enlarged B & C	MUN	Not one of the municipal supply wells	31.5	Type of use not specified in the change of ownership. The file indicates a domestic/municipal use, because the tracts are listed as part of the Imperial Subdivision. Change of ownership shows 10.5 acres being conveyed to the City of Hobbs with a 31.5-ac-ft diversion right. If the original right is permitted as a municipal right, then the consumptive use amount of 31.5 ac-ft is correct. If it must be converted from irrigation to municipal use, the consumptive use would be 16.80. This right is located in the northeast corner of T18S R38E, approximately 3 miles north of well 24.
T18S R38E Sec. 16	L-745B; L-815B-A, L2444 Comb.; L-4008 & L-4009 Comb C	MUN	Any of the municipal wells permitted under L-220	604.22	Change of ownership from Del Norte Heights to City of Hobbs submitted April 1999. Permit to change place and purpose of use of water rights appurtenant to 302.11 acres of land approved August 2, 1999 for transfer into L-220 et al. for use within the municipal service area. Quarterly meter readings required.
T18S R38E Sec. 16	L-745B; L-815B-A, L2444 Comb.; L-4008 & L-4009 Comb B	MUN	Any of the municipal wells permitted under L-220	16.82	Change of ownership from Del Norte Heights to City of Hobbs submitted September 1998. Permit to change purpose and place of use of water rights appurtenant to 8.41 acres of land approved for transfer into L-220 et al. for use within the municipal service area August 2, 1999. Quarterly meters readings required.
Multiple wells within the City of Hobbs water system	L-3035–L-3046	MUN	5, 7, Ocotillo Golf 1 and 2	5169	Permits No. L3035 thru L-3046 approved July 9, 1956 for the appropriation of 5169 ac-ft/yr for municipal purposes. Several other permits have been approved allowing diversion of portions of the 5169-ac-ft water right from different wells. Extensions of time for the main permit have been filed yearly since that time. Several existing municipal wells have been drilled and are being used under the original permit: Proof of completion of works on wells L-3035–L-3041, L-3043, and L-3046 due July 31, 2010.

ac-ft = Acre-feet

ac-ft/yr = Acre-feet per year

Table 25. City of Hobbs Water Rights
Page 3 of 4

Well Field / Location	OSE File Number	Purpose of Use	Wells or Well Field	Water Rights Consumptive Use (acre-feet)	Comments
Part of the Hydro well field	L-3035–L-3046 Comb S-4	MUN	8	Part of original 5169	Permit L-3035-L-3046 Comb S-4 approved November 4, 1998 for the diversion of a maximum of 920 ac-ft/yr for municipal purposes. Quarterly meter readings are due to the State Engineer by the 10th of the months of January, April, July, and October of each year. Under the permit, diversions at this well are limited to 960 ac-ft.
T18S R37E Sec. 1 McAdams Park irrigation	L-3035–L-3046 Comb. S	MUN/REC	McAdams	Part of original 5169	L-3035 – L3046 Comb. S well was drilled in 1980; 500 ac-ft of the total permitted right was leased to New Mexico Natural Resources Department Park and Recreation division until 1998, when the City assumed responsibility for the Henry McAdams Park. Proof of beneficial use due July 31, 2010.
Multiple wells within the City of Hobbs water system	L-3063, L-3064, L-3065 & L-3274 Comb	MUN	Wells 3, 18, 19, 20	2000	Original permits L-3063, L-3064, L-3065, and L-3274 approved July 8, 1957. Wells L-3063, L-3064, L-3065, and L-3274 have been drilled and proofs of completion of wells filed. Proof of beneficial use due July 31, 2010 Several water reclamation wells were drilled un in 1986, 1987, 1988 for a combined diversion of 290 ac-ft out of the 2000-ac-ft total. The status of the diversions under these wells is not known.
Part of the Jefferson well field	L-605 B into L-3063, L-3064, L-3065 & L3274 Comb.S	MUN	Wells 18, 19, 20	20.68	Transferred into L-3063, L-3064, L-3065, and L- 3274 Combined. Proof of beneficial use due July 31, 2009.

ac-ft = Acre-feet   ac-ft/yr = Acre-feet per year

Table 25. City of Hobbs Water Rights

Well Field / Location	OSE File Number	Purpose of Use	Wells or Well Field	Water Rights Consumptive Use (acre-feet)	Comments
T18S R38E, Sec. 17	L-5119	MUN	Well not connected to municipal system	98	City purchased water right from Rohloff in 1983. Change of ownership states other uses including domestic, recreational, and commercial. Water right has not been transferred to the municipal system.
T18S R 37E, Sec. 11	L-10,110	MUN (drinking and sanitary)	Well not connected to municipal system	3	72-12-1 permit. OSE file indicates use at Gun Club.
T18S R 37E, Sec. 12	L-10,109	MUN (drinking and sanitary)	Well not connected to municipal system	3	72-12-1 permit. OSE file indicates use at Drag Strip.
			Total	18962.22	

ac-ft = Acre-feet

ac-ft/yr = Acre-feet per year

Table 26. Summary of Lea County Basin Guideline Requirements Within and Outside Active Management Areas

Location of Application	Allowable Drawdown	Change Point of Diversion
Within CMA	Drawdowns up to 0.025 foot per year times the number of years in the simulation period are allowed, unless the cumulative effect of these drawdowns becomes excessive. [a]	Change from non-CMA location to location within CMA not allowed. Change from a location in a contiguous CMA to another CMA will be considered.
Outside CMA	Drawdowns up to 0.20 feet per year times the number of years in the simulation period are allowed until saturated thickness reaches 55 feet by 2045. If drawdowns estimated within simulation period will bring saturated thickness to 55 feet, the cell becomes a CMA and drawdowns of 0.025 foot per year times the simulation period are allowed.	Change from a CMA location to a non-CMA location will be considered.
Near water supply well (inside and outside CMA)	Water levels at an existing well site may be reduced up to 70 percent of the current aquifer thickness. • At domestic well sites, the aquifer may be reduced to 20 feet. • For non-domestic well sites, the aquifer thickness may be reduced to 55 feet. If the above limits are reached, the application may be permitted to induce a drawdown up to 1.0 foot in 40 years.	If move-to location is near a water supply well, drawdown limits apply.

[a] The term *excessive* is not defined in the guidelines. CMA = Critical management area

The criteria are intended to protect the aquifer while allowing use of the aquifer's remaining water. Even with these strict guidelines, the OSE is allowed a certain amount of flexibility and discretion in its decision making. For example, local impairment (i.e., whether a water right application will impair a nearby well) is determined on a case-by-case basis and allows the OSE to take into account "other considerations the OSE may deem appropriate" (NM OSE, 2009, ¶III.A.5(c)). Even when certain drawdown limits are met, the OSE may issue conditional approval if the application includes an acceptable monitoring and mitigation plan (NM OSE, 2009, ¶III.A.5(d)). Circumstances the State Engineer may consider in making its decision on an application include (Morrison, 2006):

- Validity of the water right of the affected well.
- Age of well relative to anticipated well life and ability to deepen to regain supply
- Whether the well completion is reasonable in relation to average well completions in the area
- Potential to approve the application for less than the requested diversion to maintain water level declines within allowable limits
- Potential to condition approval upon the acceptance of a groundwater monitoring and remediation plan
- Potential to condition approval upon a plausible pumping distribution that provides acceptable impacts.

Consequently, as the City continues to grow and to potentially need to acquire additional water rights to meet future demand, the criteria may limit the options available to the City to maximize the use of existing infrastructure and municipal supply wells. However, the ability of the OSE to review applications and take into consideration local conditions may provide enough flexibility so that the City does not incur excess costs in piping water to its current well fields.

The key consideration for the City and for the State Engineer is whether the aquifer can produce sufficient water. Because of the declining water levels, the City will likely have to drill replacement wells and move its water rights to the more productive areas of the aquifer. Mindful of those limitations, the City has drafted a water rights acquisition policy (Appendix B) to ensure that future water right purchases will present the greatest benefit to the City in terms of location and the ability to transfer the water right to existing facilities.

5. Water Conservation

The City of Hobbs completed a water conservation plan in December 2006 (DBS&A, 2006). The conservation plan discussed Hobbs existing conservation practices and established conservation goals and measures to support those goals. The plan also provided estimates of potential water savings, strategies for funding and implementation, a drought management plan, and recommendations. The current status of conservation plan implementation is discussed in Sections 5.1 through 5.3.

5.1 Water Efficiency Improvements by the City of Hobbs

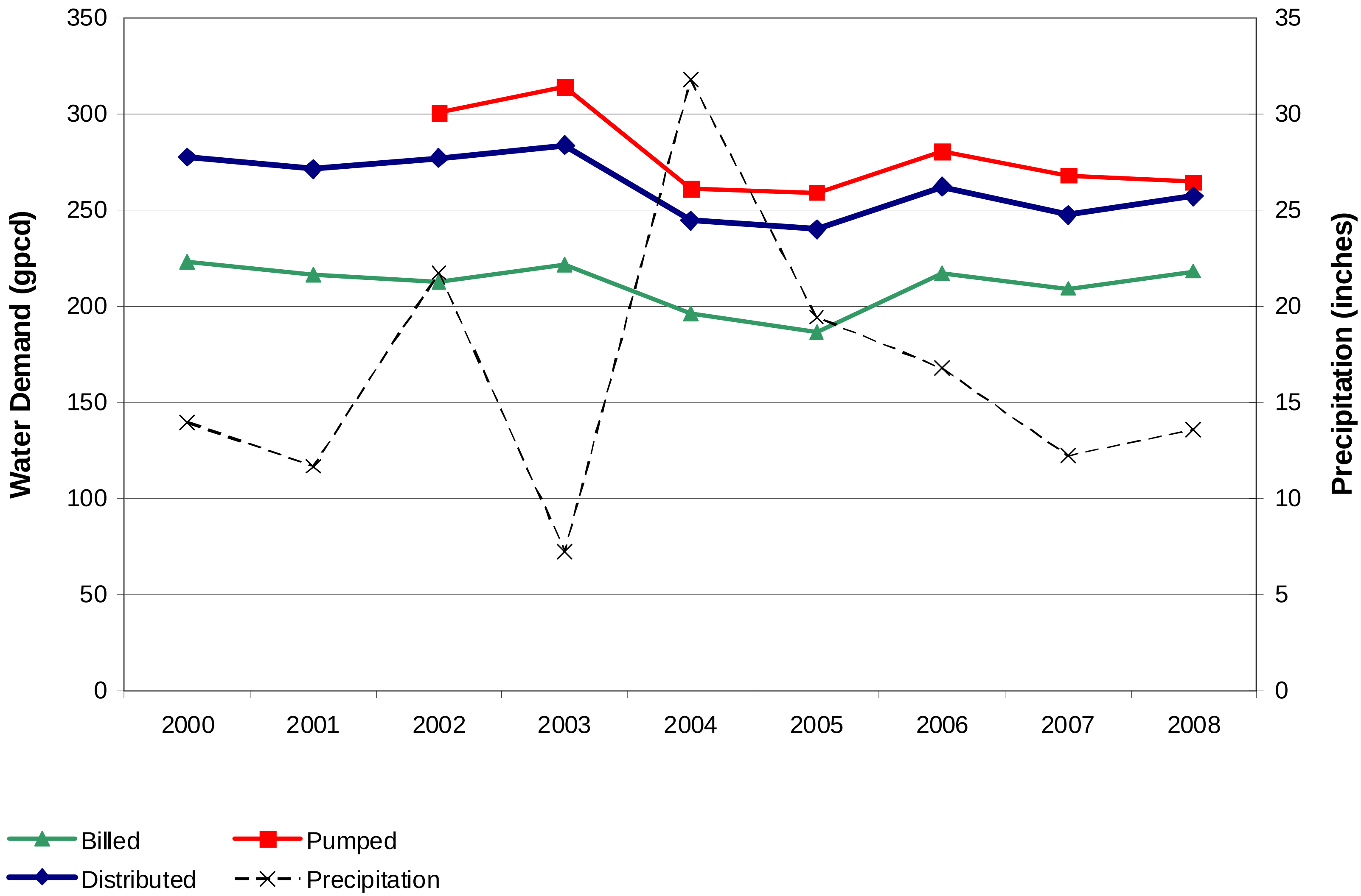
The audit of the City's water use (Section 3.2.1) shows improvements in efficiency since the passage of the conservation plan in 2006. Non-revenue water has decreased each year, from 2,223 acre-feet (24 percent) in 2006 to 2,105 acre-feet (23 percent) in 2007, and down to 1,733 acre-feet (19 percent) in 2008 (Figure 19). Figure 24 shows the annual per capita water demands for pumped, distributed, and billed water from 2000 to 2008. The difference between billed and distributed water has decreased in recent years, and amount of water pumped for 2008 is just above the amount distributed. Per capita demand has remained relatively steady despite the lack of precipitation, likely a result of the conservation efforts initiated by the City of Hobbs.

5.2 Updates to Existing Conservation Practices

The City of Hobbs has continued to promote conservation through several activities and programs. Changes since the 2006 conservation plan was prepared are detailed below.

5.2.1 Limitations to Outdoor Watering

The newly published Municipal Code (June 2009) shows no changes to the water rationing ordinance (Sec. 13.20. 010).



HOBBS 40-YEAR WATER PLAN

Annual Per Capita Demand
2000 Through 2008

Daniel B. Stephens & Associates, Inc.

10/30/09

Figure 24

Has the City invoked this ordinance and declared any "emergency water restriction periods in the last 3 years?" Have any fines been levied under this section?

5.2.2 Water Rates

In June 2008 City water rates, which are set up on a conservation-friendly inclining block rate structure, were increased 1.8 percent over the previous rates that were set in 2001 (City of Hobbs, 2009a). Additional information on the current water rates is provided in Section 3.2.2.

5.2.3 Automated Billing System

Has the City made any changes to automated billing system? Flagged accounts still investigated for potential leaks? How many leaks have been investigated and repaired?

5.2.4 Meter Maintenance and Replacement

Have all customer meters been replaced as planned? Where new meters were added to previously unmetered City departments? Has the City made any other changes to meters?

5.2.5 Leak Detection Program

Has the City implemented a formal leak detection program? Conducted any leak detection studies?

5.2.6 Water Pressure Maintenance

Any changes here?

5.2.7 Standards for Water Line Construction

Any changes here?

5.2.8 Wastewater Reuse

Upgrades to improve and increase the capacity of City's wastewater treatment plant are schedule for completion at the end of October 2009 (Hahn, 2009).

More info on expected use, treatment upgrades? Plan to replace irrigation using potable water supply with treated wastewater, how much?

5.2.9 Subdivision Regulations

Review of the 2009 code shows no changes to subdivision regulations.

5.2.10 Education

Any changes here?

5.3 Conservation Goal Implementation Progress

5.3.1 Public Education Program for Residential and Commercial Users

Any changes here?

5.3.2 Efficient Water System Management

Any progress on leak detection program, meter replacement, new wastewater reuse lines?

5.3.3 Reducing Water Waste

Review of 2009 municipal code shows no new ordinance prohibiting fugitive or water waste. Was this idea proposed? Any plans to implement this concept?

5.3.4 Improvements to Park Irrigation

Conservation activities implemented by Parks Division? Drip irrigation for municipal parks?

5.3.5 Promotion of Xeriscaping

Other than subdivision regulations recommending the use of drought tolerant plans, has the City implemented other programs to promote Xeriscaping?

5.3.6 Indoor Conservation Incentives

Has the City developed an incentive program for its customers?

5.3.7 New Construction Standards

Any changes here?

6. Recommendations

The City of Hobbs relies solely on the declining Ogallala aquifer for its future water supply and will face water supply challenges in meeting future demand for future generations. To ensure that the City can continue to supply high-quality, sustainable supplies for future generations, the following initiatives should be considered:

- Use treated municipal effluent to reduce demand for water pumped from the Ogallala aquifer.
- Use treated municipal effluent to reduce water level declines through aquifer storage and recovery.
- Continue to implement water conservation measures to improve efficiency.
- Implement measures to reduce pumping in critical management areas where municipal wells are located.
- Investigate opportunities to lessen drawdowns in well fields located in critical management areas.
- Investigate locations to change points of diversion of existing water rights and develop replacement wells in non-critical management areas.
- Review the feasibility of obtaining water from the Eastern New Mexico Rural Water Supply.

6.1 Use treated municipal effluent to reduce demand for water pumped from the Ogallala aquifer.

The City of Hobbs will have 1.4 billion gallons per year of water available from the new treatment plant once it is complete. This water could be used for municipal irrigation, sold to customers for irrigation, or used for aquifer storage and recovery (ASR) to help restore declining water levels near city production wells.

6.2 Use treated municipal effluent to reduce water level declines through aquifer storage and recovery.

ASR is the returning of water to the aquifer from which it can later be recovered for use. Typically, if the source of water for the ASR is treated effluent, it must be treated to meet drinking water standards before it is reinjected or infiltrates back to the aquifer. Permitting for such a project is required from the OSE (NMSA 72-5A-1 [Groundwater Storage and Recovery Act]) and from the New Mexico Environment Department (NMSA 74-6-1).

6.3 Continue to implement water conservation measures to improve efficiency.

As discussed in Section 5, the City is actively implementing its water conservation program and has seen a reduction in per capita demand. Ongoing implementation will assist the City in ensuring efficient use of its water supplies.

6.4 Investigate opportunities to lessen drawdowns in well fields located in critical management areas.

The City could run scenarios using the OSE administrative model for the Lea Basin to determine the effect of different pumping schedules in reducing drawdown in CMAs. Retiring non-municipal water rights in those areas could also be beneficial to the City.

6.5 Investigate locations in non-critical management areas to change points of diversion of existing water rights and develop replacement or supplemental wells.

The Lea County Basin guidelines (NM OSE, 2009) allow for water rights in CMAs to be moved to non-CMAs. Whether the OSE will allow water to be pumped in a non-CMA and piped to the municipal reservoirs in nearby CMAs will be decided on a case-by-case basis. However, if relocating existing water rights to more productive areas of the aquifer will not result in impairment or cause a non-CMA to become a CMA, then the OSE could approve the application to change the location of the water rights. Water pumped from these new wells would have to be piped to the existing distribution system.

A hydrologic study to determine optimal areas of the aquifer for relocation of wells would assist the City in developing a plan for future well field development. Paleochannels, areas of the aquifer with unconsolidated sediments that correspond to ancient rivers or streams, tend to be more productive and can often be the best location for larger municipal wells.

The City is in the process of applying for a supplemental well for the HIAP well field. Based on historical water level declines and predictions in the OSE model, the need to drill additional wells near the Hiap, Del Norte and Snyder well fields in the next 5 to 15 years is anticipated.

An initiative by the City in the 1970s to acquire additional water rights in areas with less drawdown failed, in large part because the OSE found that the City had sufficient water rights and would not be able to put new water rights to beneficial use. However, had the City attempted to move existing water rights to the new locations listed in the applications, the OSE might have issued a different decision.

In 1976, the City submitted applications to appropriate 10,704 acre-feet of water in addition to the 18,088 acre-feet of permitted water rights held by the City at that time in anticipation of municipal well fields going dry by 2045 (NM OSE, 1976). These applications (numbered L-7474 through L-7474-S-11, L-7475 & L-7475-S, L-7476, L-7477, L-7496 through L-7496-S-32) were located in T12S R33, T12S R34E, T13S R34E, T13S, R33E, T14SR33E, and T15S, R34E. In reviewing the application, the OSE found that by the year 2044, the correct estimation volume of water stored in T18S R37E would be equal to 25 percent of the volume of water estimated to be in storage in 1952. For T18S R38E, the OSE found that this same reduction in water stored would occur by the year 2036.

The OSE denied all the applications and stated, “There is nothing to indicate that the City of Hobbs can reasonably apply any amount of water to beneficial use over and above the 18,088 acre feet that is now appropriated to them under existing permits." The City had submitted a technical study in support of the applications that predicted demand to reach 22,969 acre-feet by the year 2075 (based on a population estimate of 85,000 and a 240-gpd per capita use).

6.6 Review feasibility of obtaining water from the Eastern New Mexico Rural Water Supply.

Ute Reservoir was completed in 1962 to capture Canadian River water that New Mexico is entitled to, under the 1952 Canadian River Compact (NM ISC, 2000), for the purpose of municipal and industrial use in eastern New Mexico. In March 1997, the ISC and Ute Water Commission entered into an agreement that provides for the reservation by several municipalities and counties of 24,000 acre-feet of Ute Reservoir water (NM ISC, 2000). While no water is currently being withdrawn from Ute Reservoir, the Eastern New Mexico Rural Water Supply (ENMRWS) project has been authorized and plans to supply communities in Curry and Roosevelt Counties with water for municipal and industrial use. The proposed ENMRWS project would distribute a total of 16,450 acre-feet of water (Verhines, 2005) to the eight Eastern New Mexico Rural Water Authority (ENMRWA) members, including (along with their reservation amounts):

- City of Clovis (12,292 acre-feet) (including Cannon Air Force Base, which has a long-term lease agreement with the City of Clovis for a portion of the City's reservation)
- Curry County (100 acre-feet)
- Town of Elida (50 acre-feet)
- Village of Grady (75 acre-feet)
- Village of Melrose (250 acre-feet)
- City of Portales (3,333 acre-feet)
- Roosevelt County (100 acre-feet)
- Village of Texico (250 acre-feet)

Tucumcari, Logan, San Jon, and Quay County also have Ute Reservoir water reserved; however, these entities will draw their water through other means (CH2M Hill, 2005).

In order for the City of Hobbs to be able to supplement its municipal water supply using renewable surface water from Ute Reservoir, they would need to enter into an agreement to buy water from one of the entities that is under contract with the ISC for purchase of this water and then determine how to transport that water to Hobbs. The ENMRWS project design is 30 percent complete, and the lateral pipelines are designed to deliver water to communities as far south as the Town of Elida, the southern extent of the project. Hobbs is approximately 110 miles further to the southeast, and a project extension to deliver water to Hobbs would require extensive feasibility studies and would likely have very high costs.

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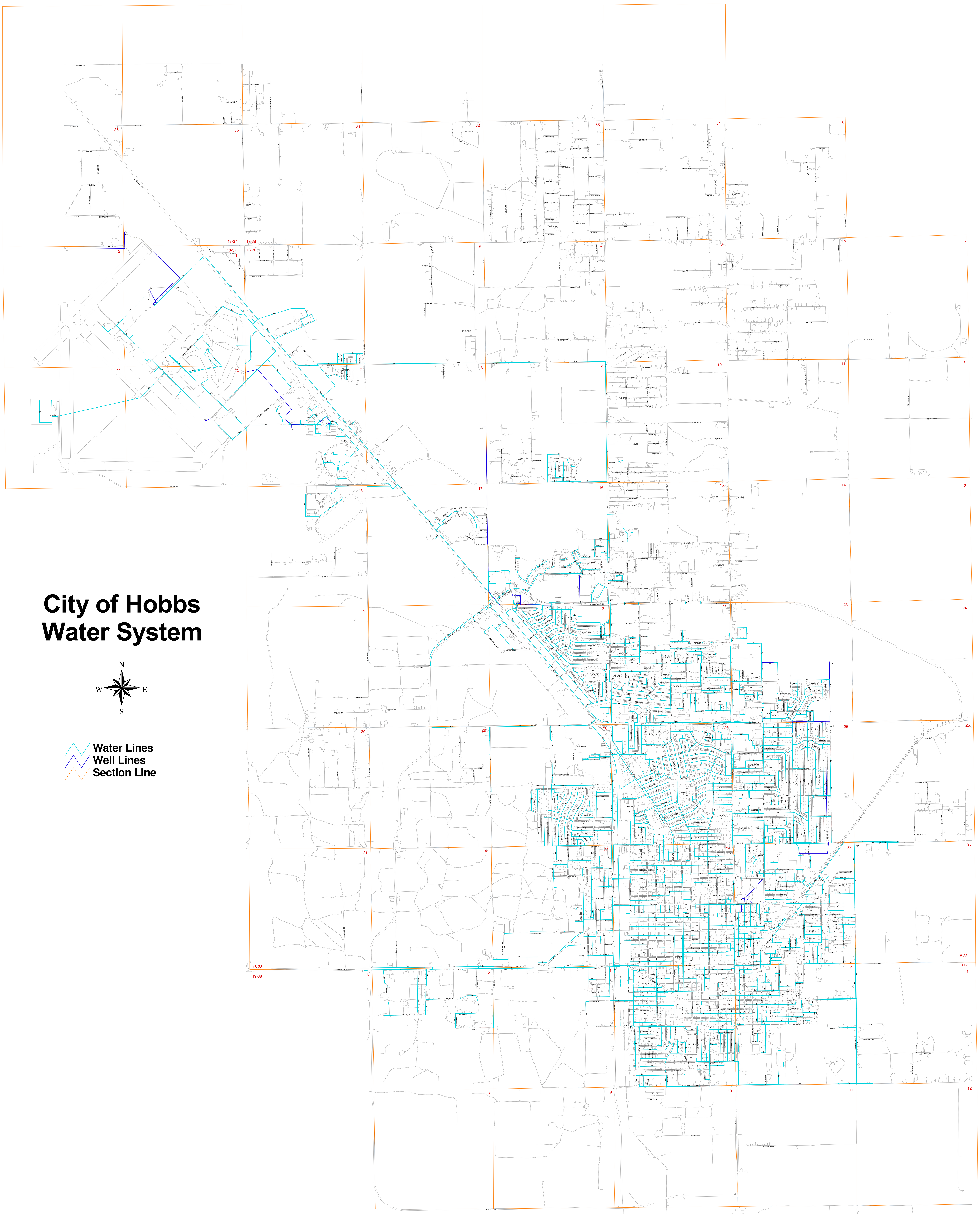
Appendix A

Water Transmission and Distribution System


City of Hobbs
Water System
N
W
E
S
Water Lines
Well Lines
Section Line

Appendix B

Water Rights Acquisition Policy

City of Hobbs Water Rights Acquisition Policy

1. Background

Whereas, the City of Hobbs may need additional water rights to meet increased demand resulting from population growth and the expansion of municipal, commercial, industrial, and other beneficial uses within and adjacent to the City limits;

Whereas, the City of Hobbs lies within the Office of the State Engineer Declared Lea County Underground Water Basin (19.27.40 NMAC), which is closed to new appropriations and where water rights transfers are limited;

Whereas, a some of the water rights currently owned by the City are located in or near Critical Management Areas whose saturated thickness will be less than 55 feet by 2045 (OSE Lea Basin Guidelines);

Whereas, the City will need to acquire or move additional water rights in non-Critical Management Areas;

Whereas it is in the City's best interest to purchase and retire water rights in the administrative blocks where municipal well fields are located to lessen water level decline in those areas;

Whereas, acquisition of water rights in the administrative blocks surrounding the City is in the best interest of the City and its residents;

Whereas, economic and engineering efficiencies are best served by having water supply available from multiple locations within and around the City limits rather than in only one location, which would require the City to pump water longer distances through the City's distribution system;

Whereas, the City receives offers to purchase water rights from water rights holders on an annual basis;

Whereas, the City will use an approved procurement process to identify and purchase water rights for future use;

Therefore, this Water Rights Acquisition Policy is part of the City's 40-Year Water Plan, which allows the City to reserve water rights for future use.

2. Purpose

This policy establishes a framework to assist the City in identifying, selecting, and acquiring water rights in the most efficient manner, and to meet the City's goals and objectives in developing a water rights portfolio that will best meet future water demand.

3. Goals and Objectives

The City of Hobbs has identified the following goals and objectives for its water rights acquisition policy and will acquire water rights:

- on a periodic basis in order to develop and maintain a water rights portfolio that best meets future water demand;
- that are within the same administrative block as existing municipal water supply and distribution infrastructure (e.g., wells or supply lines) if possible;
- that will not cause water quality impacts should the City choose to pump water at the existing water right well location;
- within the administrative blocks that include and surround the City, ensuring that water rights will be available in all areas of the City where future growth may occur;
- that have a municipal, commercial, industrial, or agricultural purpose of use;
- that have the most senior priority date;
- that have the lowest purchase price and the lowest associated engineering and construction costs, unless other compelling factors provide the basis for purchasing a water right with higher costs;
- through purchases, options or right of first refusal agreements with water rights holders who are not yet willing to sell, but who own water rights that meet the goals and objectives of this policy.

4. Water Rights to be Acquired

City staff have the discretion to identify and select water rights for purchase or reservation and must do so in accordance with the goals and objectives set forth in Section 3, taking into consideration market factors such as availability and price.

5. Determination of Annual Number Water Rights to be Acquired

The City will periodically purchase sufficient water rights to meet additional demand as identified by the City's 40-year water plan demand projections. The City has the discretion to determine the rate of water right acquisition based on the water right offers received as well as funds available to the City for water rights acquisitions.