PRELIMINARY

SUBJECT TO REVISION

40-Year Water Plan

City of Hobbs, New Mexico

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

October 30, 2009

DBS&A engineering hydrology geoscience

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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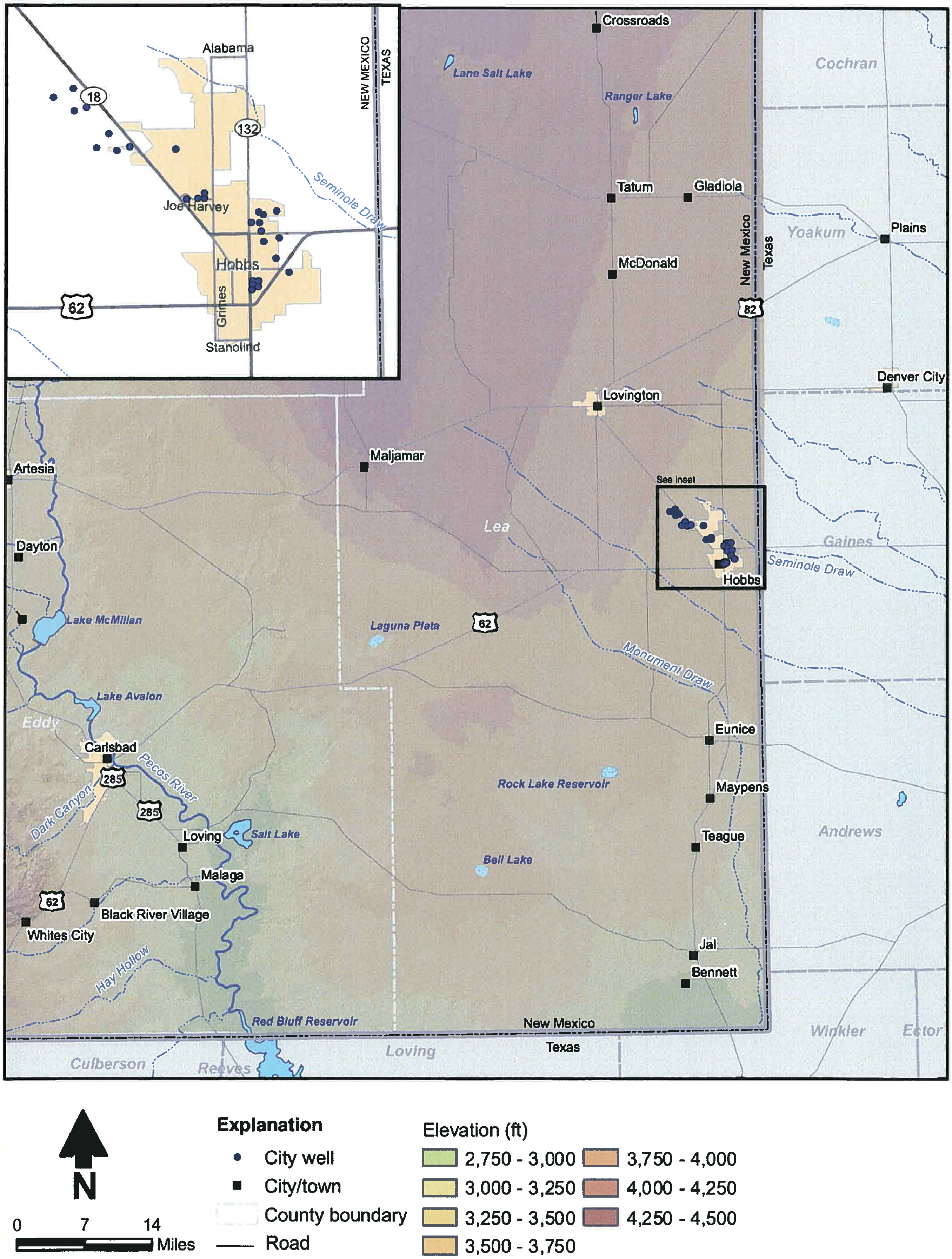

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HOBBS 40-YEAR WATER PLAN

Site Geography

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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.

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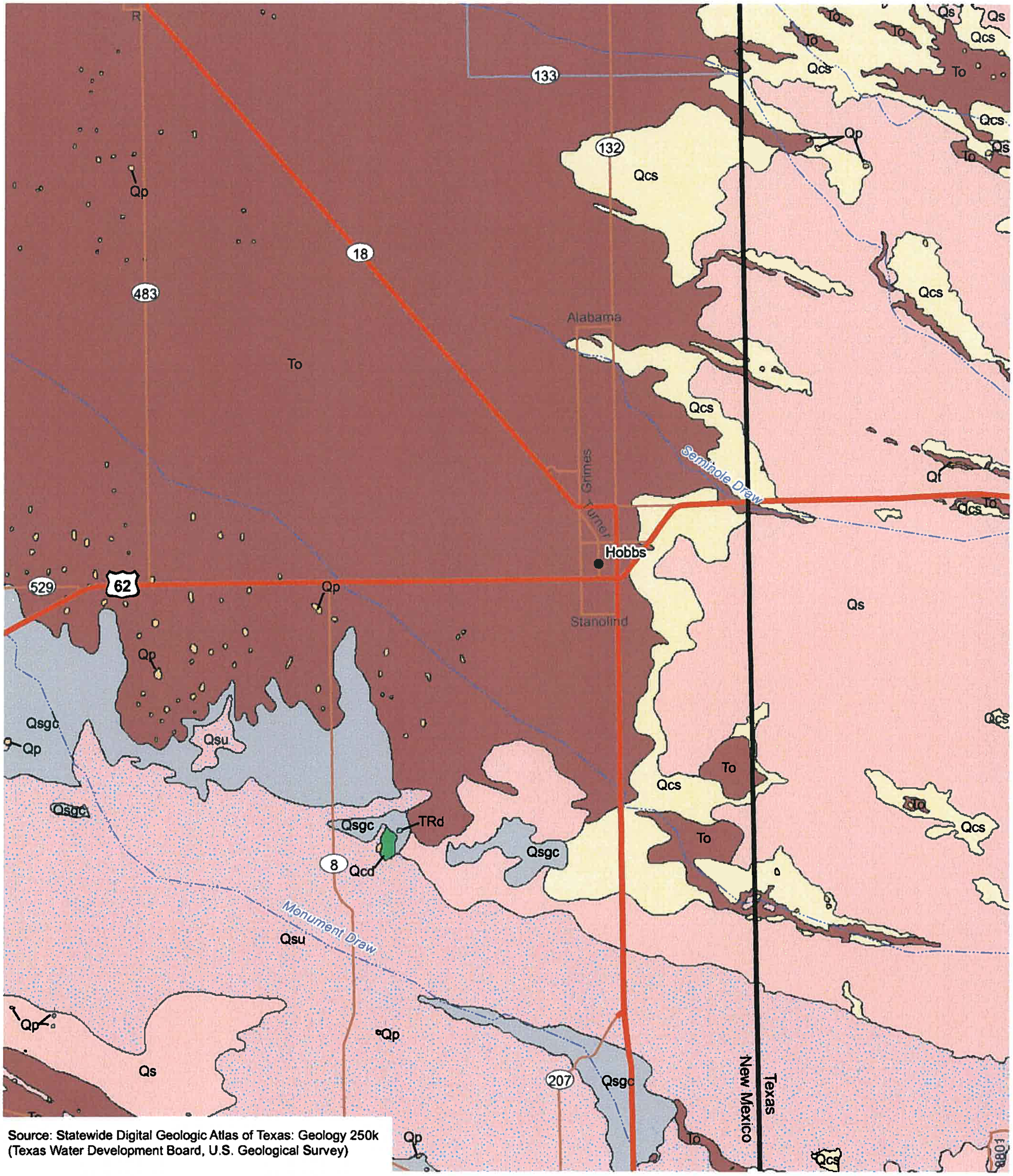

Source: Statewide Digital Geologic Atlas of Texas: Geology 250k (Texas Water Development Board, U.S. Geological Survey)

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

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HOBBS 40-YEAR WATER PLAN

Surficial Geology

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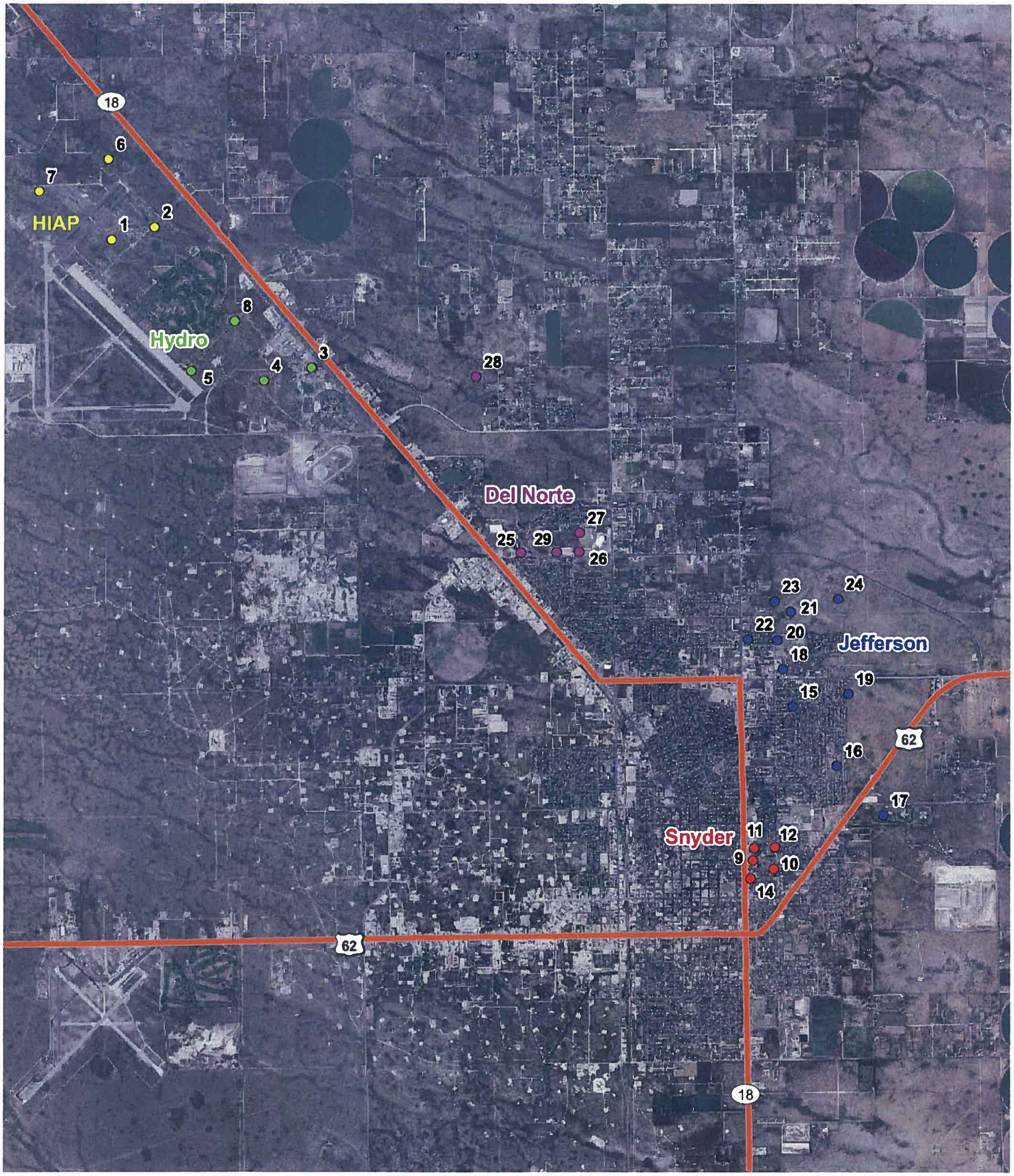
Figure 2

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.



N

0 3000 6000
Feet

Explanation

2 ● City well

Jefferson Well field

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HOBBS 40-YEAR WATER PLAN
City Wells

Figure 3

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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.

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.

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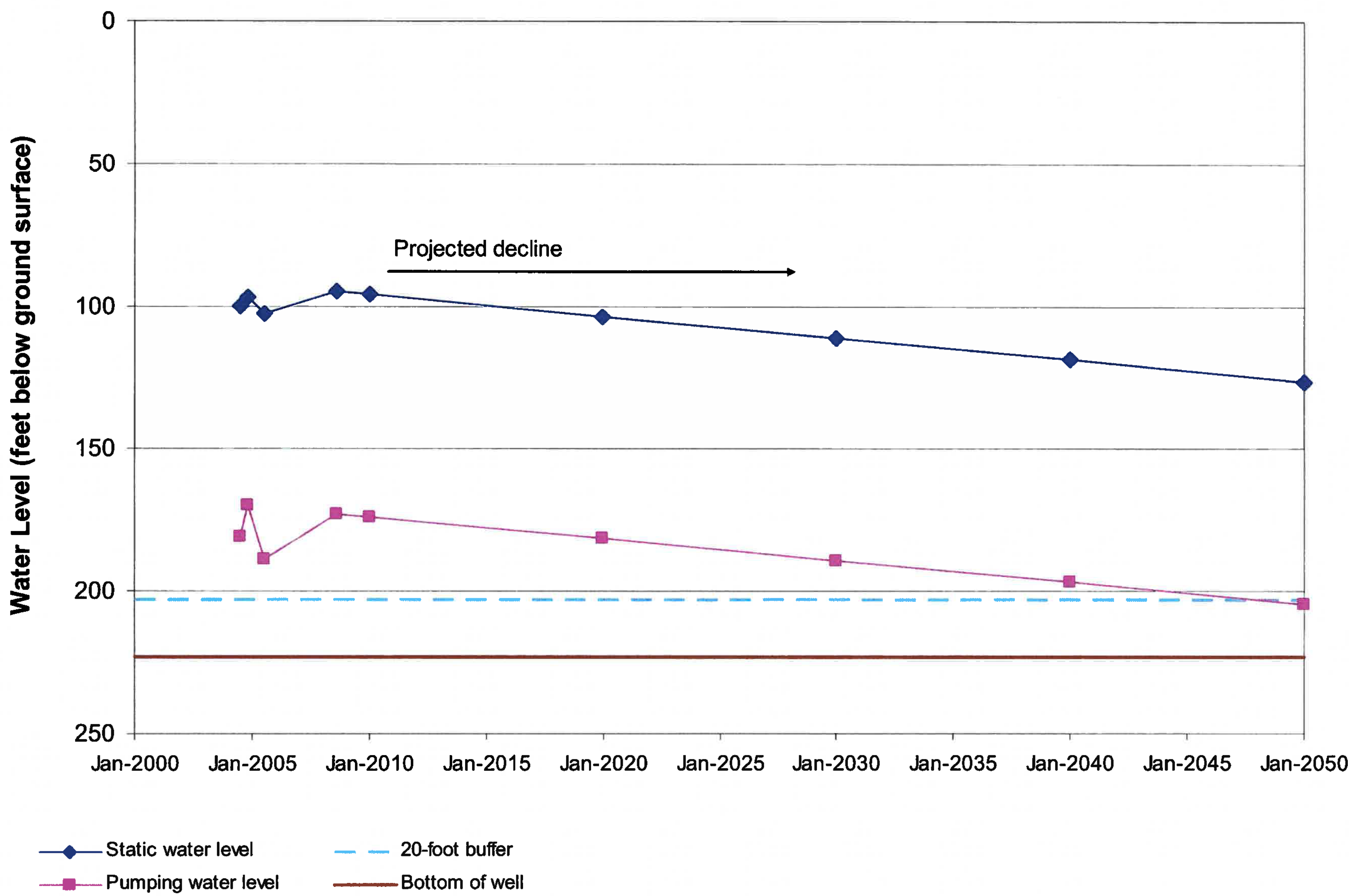

HOBBS 40-YEAR WATER PLAN
Del Norte Well Field
Well 29 Water Levels

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Figure 4

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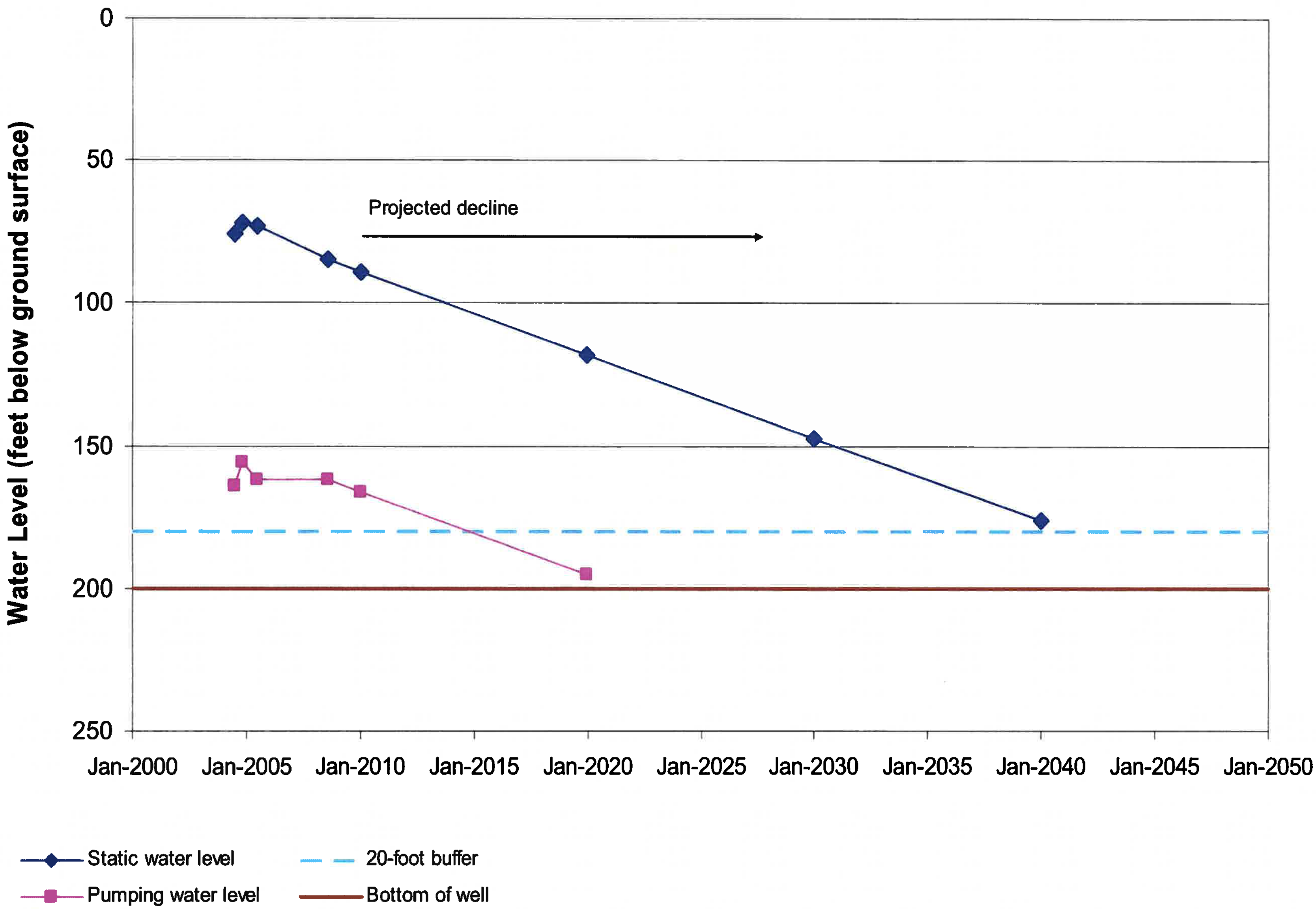

HOBBS 40-YEAR WATER PLAN
Hiap Well Field
Well 6 Water Levels

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Figure 5

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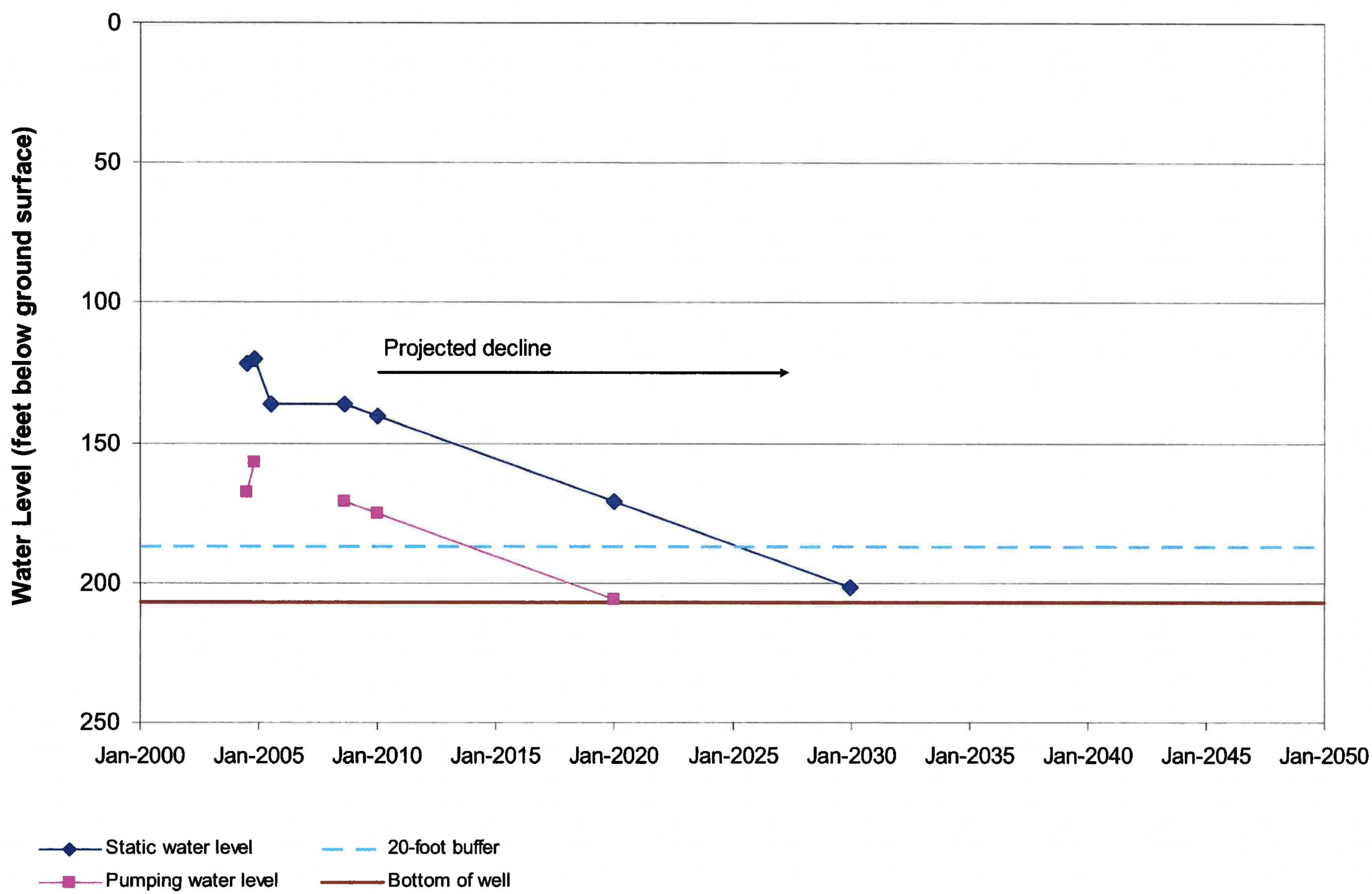

HOBBS 40-YEAR WATER PLAN

Snyder Well Field

Well 9 Water Levels

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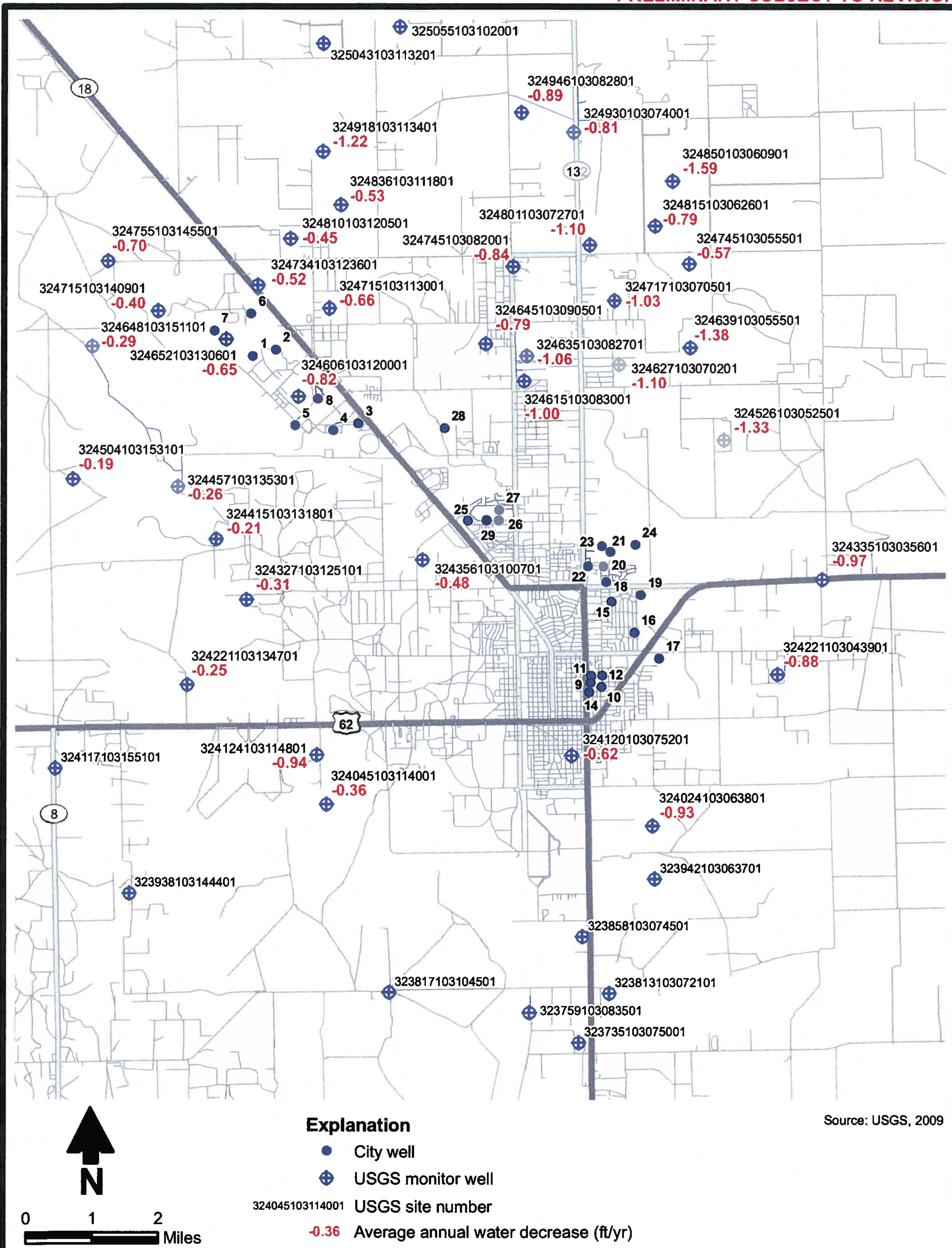
Figure 6



HOBBS 40-YEAR WATER PLAN

USGS Monitor Well Trends

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JN WR08.0083

Figure 7

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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

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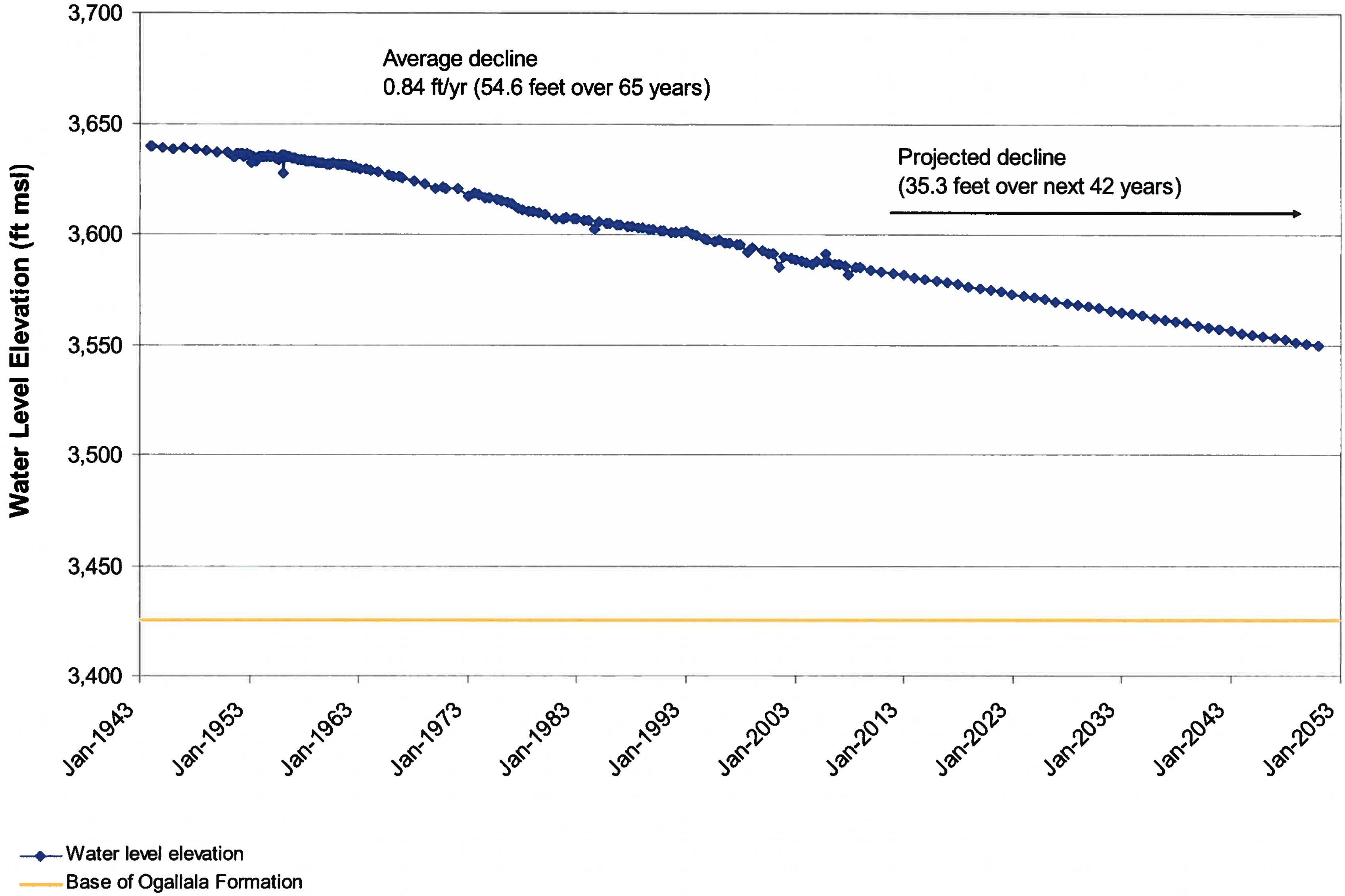

HOBBS 40-YEAR WATER PLAN

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

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10/30/09

Figure 8

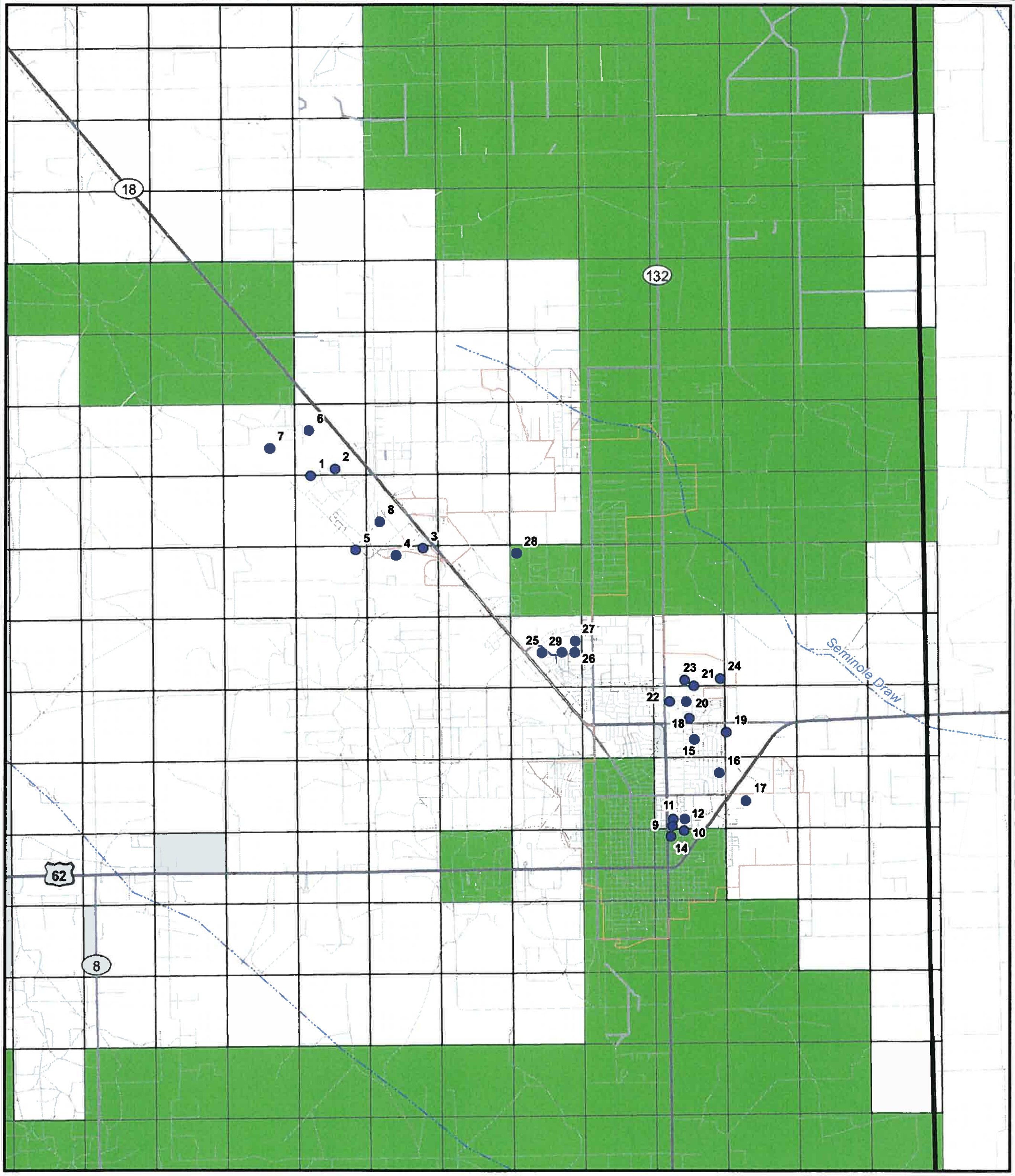
A groundwater model developed by the OSE predicts similar water level decline rates as those observed in the USGS monitor wells. The OSE model estimates a 0.5- to 2.5-ft/yr decline in the water table using 1999 withdrawal rates (Musharrafieh and Chudnoff, 1999). By 2040, the simulated remaining saturated 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).



Explanation

- City well

Critical management areas

- Saturated thickness less than 55 feet in 2045
- Saturated thickness greater than 55 feet in 2045

HOBBS 40-YEAR WATER PLAN

2045 Saturated Thickness Near Hobbs

Figure 9

S:/PROJECTS/WR08.0083 HOBBS 40-YEAR PLAN/GIS/MXDS/REPORT/FIG09 2045 SATURATED THICKNESS.MXD 907190

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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

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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)

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Table 6. Leaking Underground Storage Tank Sites in Hobbs
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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)

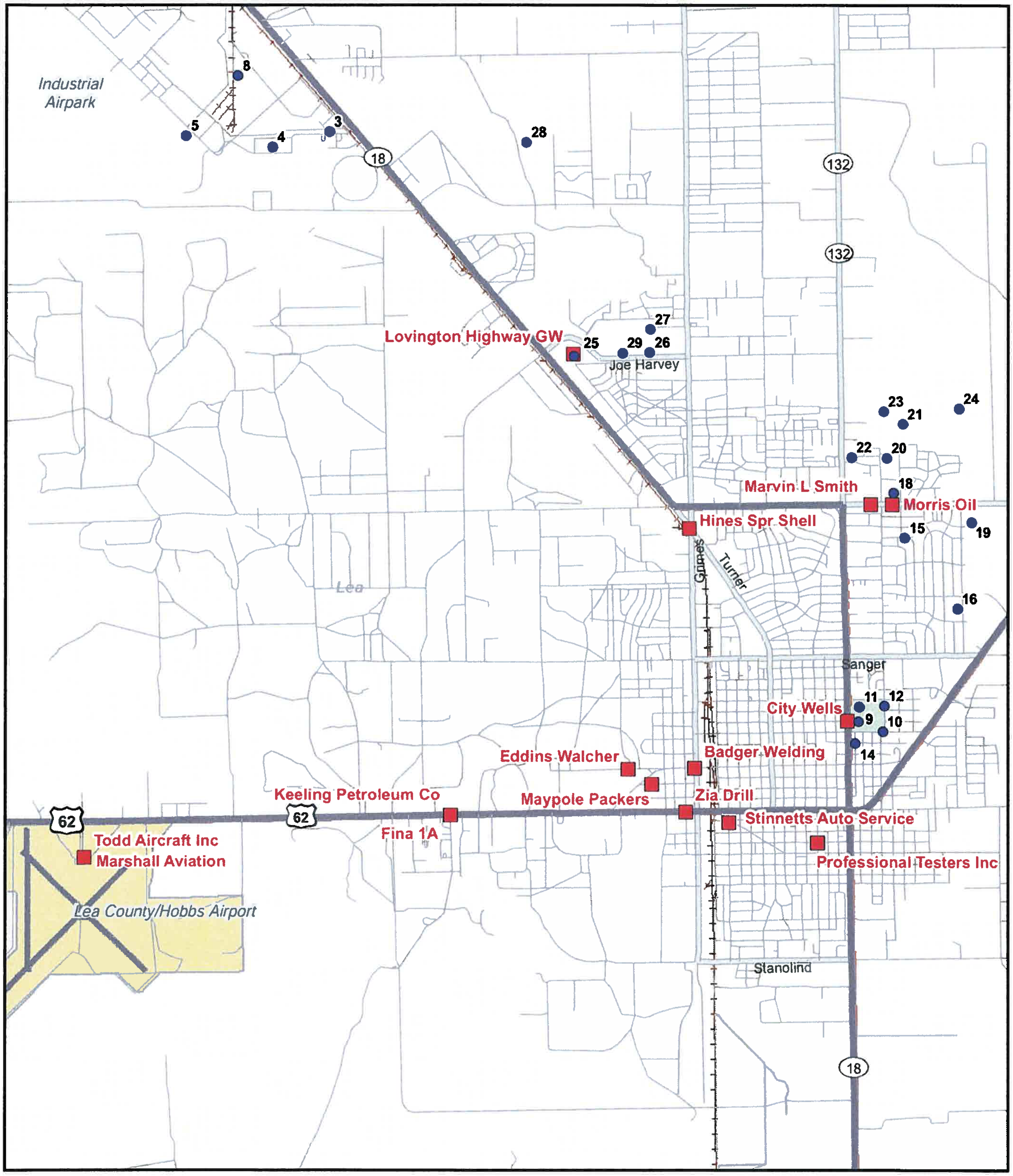
[a] NMED, 2009
[b] SMA, 2007

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)

PRELIMINARY SUBJECT TO REVISION



Source: NMED, 2008b

N

0 2500 5000
Feet

Explanation

- City well
- Active release location

S:/PROJECTS/WR08.0083 HOBBS 40-YEAR PLAN/GIS/MXDS/REPORT/FIG10 LPSTS.MXD 907190

HOBBS 40-YEAR WATER PLAN

Petroleum Storage Tank Releases

Daniel B. Stephens & Associates, Inc.
10/16/2009 JN WR08.0083

Figure 10

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.

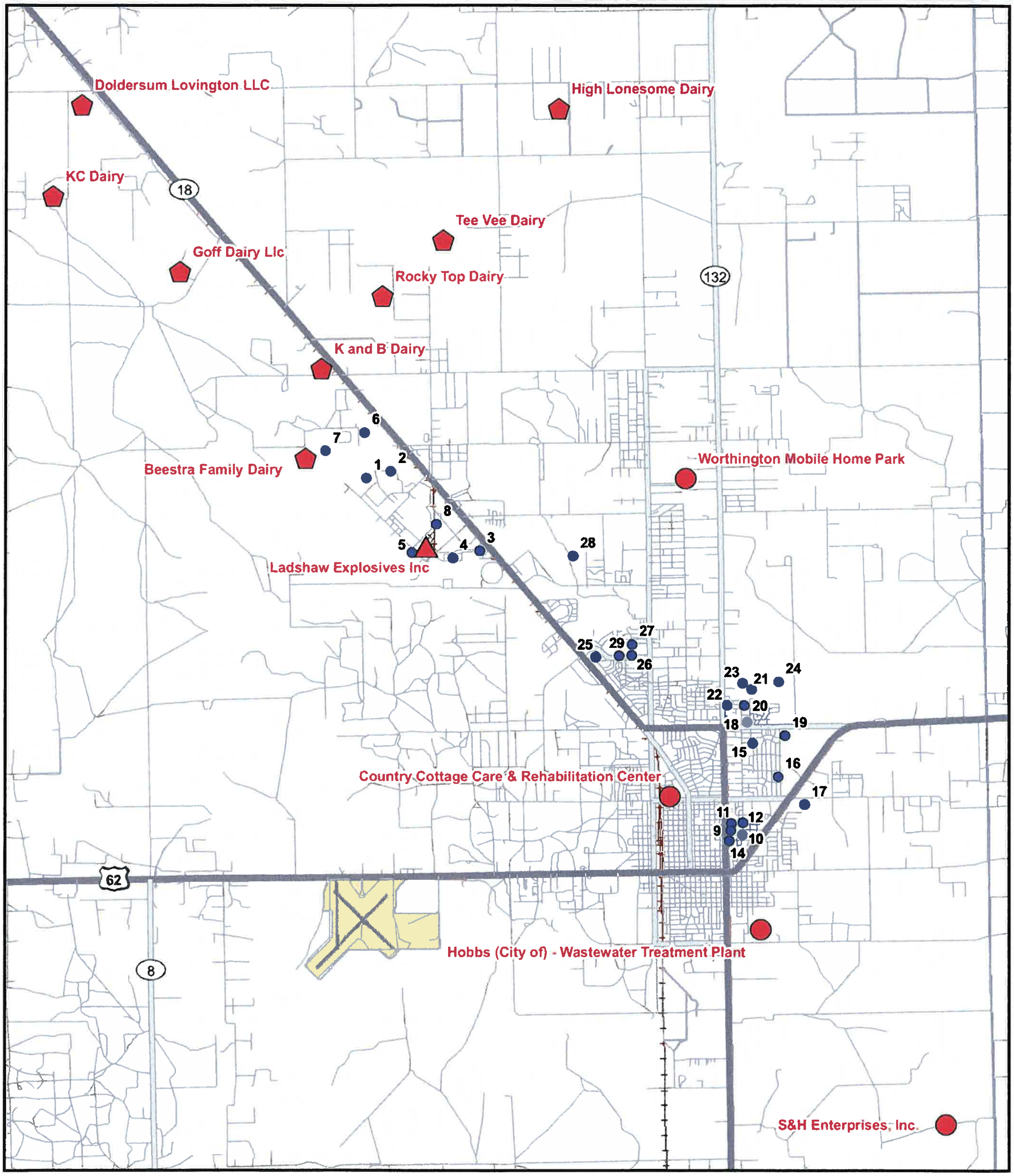
A summary list of the discharge plans near Hobbs is provided in Table 7 (NMED, 2008a); their locations are shown in Figure 11. Details indicating the status of discharge plans, waste type, and treatment for individual permittees can be obtained from the NMED website (http://www.nmenv.state.nm.us/gwb/New_Pages/docs_policy/web_dp _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