

Table 1. Tally of water in storage in the Ogallala aquifer in the PWPA estimated using the water-budget method  
From Dutton and Reedy (2000).

County	Area <sup>1</sup> (1,000 acres)	Average specific yield <sup>2</sup> (%)	Volume in storage <sup>3</sup> (million acre-feet)		Depletion (%)		Average saturated thickness <sup>4</sup> (feet)	
			Predevelopment	1998	Predevelopment	1998	Predevelopment	1998
Armstrong	369	14.1	4.48	3.95	11.2	78	72	6
Carson	605	17	19.17	14.85	22.6	184	146	38
Dallam	951	17.1	26.15	20.26	22.5	158	126	32
Donley	360	16.2	7.21	7.25	-0.6	99	94	5
Gray	570	18	14.85	14.12	4.9	141	133	8
Hansford	576	17.4	28.42	21.17	25.5	282	209	73
Hartley	910	17.9	35.19	28.10	20.1	211	169	42
Hemphill	584	17.2	16.99	16.60	2.3	171	169	2
Hutchinson	456	16.8	15.41	12.09	21.5	197	156	41
Lipscomb	576	14.9	20.02	16.94	15.4	228	195	33
Moore	534	14.7	18.87	13.36	29.2	232	169	63
Ochiltree	580	15.5	22.61	17.60	22.2	247	195	52
Oldham	383	13.7	3.26	2.84	12.9	20	21	-1
Potter	251	14.9	3.11	2.75	11.6	76	75	1
Randall	543	15	6.39	4.88	23.6	86	64	22
Roberts	573	17.7	27.97	26.92	3.8	278	267	11
Sherman	597	17.5	28.73	19.17	33.3	276	186	90
Wheeler	363	17.2	8.28	7.09	14.4	130	106	24
Total*/Average	9,781*	16.3	307.11*	249.94*	16.4	172	142	30

Footnotes:

<sup>1</sup> Aquifer area was determined in GIS from assigning model grid cells within counties.

<sup>2</sup> Specific yield is an average of all cells in a county; the average cannot be used to consistently convert between volume and saturated thickness.

<sup>3</sup> Volume is weighted value determined in GIS by multiplying saturated thickness by specific yield for each cell, multiplying by the 1-square-mile area of each cell, and summing for all cells in each county. Different numbers will be obtained by multiplying average saturated thickness by average specific yield for each county.

<sup>4</sup> Saturated thickness was determined directly in GIS as the difference in elevations of the water table and the base of aquifer.

Table 2. Weighting factors for recharge rates. Soil data compiled from USDA-NRCS. Recharge rates were assigned in the model on the basis of long-term average precipitation and adjusted on the basis of weighting factors. Weighting factors in Dutton and others (2000) on the basis of recharge rates assigned to Ogallala and Blackwater Draw Formations by Mullican and others (1997). Weighting factors revised in this report to improve model calibration.

Soil group	Soil textures	Area in model (square miles)	Soil permeability (inches per hour)	Dutton and others (2000) weighting factor	Revised weighting factor
1	Loam–Silt loam	6,933	1.0	1.0	1.2
2	Loamy sand–Sandy loam	8,280	14.6	1.0	1.2
3	Sandy loam–Clayey loam–Silty clay loam	2,255	4.4	1.0	1.2
4	Silty clay loam–Silty clay	5,311	0.1	0.67	0.4
5	Silt loam–Clayey loam	517	0.5	0.67	0.4
6	Clay loam–Clay	341	0.3	0.67	0.4
7	Sandy loam–Loam–Clay loam	124	4.4	0.67	0.4
8	Sand	957	29.7	2.77	2.0

Table 3. Rates of groundwater withdrawal (thousand acre-feet) applied in the model. Note negative signs for well discharge removed for convenience of presentation.

	1950– 1959	1950– 1969	1970– 1979	1980– 1989	1990– 1999	2000	2001– 2010	2011– 2021	2021– 2030	2031– 2040	2041– 2050
<b>Irrigation</b>											
Armstrong	79	152	117	81	43	5	46	46	46	46	46
Carson	295	803	1,043	979	744	93	927	927	927	927	927
Dallam	449	1,114	1,860	2,910	3,095	369	3,692	3,692	3,692	3,692	3,692
Donley	23	77	116	158	154	17	170	170	170	170	170
Gray	35	125	151	101	123	22	222	222	222	222	222
Hansford	231	1,202	1,924	1,423	1,217	121	1,215	1,215	1,215	1,215	1,215
Hartley	152	873	1,977	2,278	1,703	186	1,862	1,862	1,862	1,862	1,862
Hemphill	1	5	6	2	18	4	44	44	44	44	44
Hutchinson	174	490	707	622	324	42	417	417	417	417	417
Lipscomb	14	42	124	170	222	35	351	351	351	351	351
Moore	402	1,447	2,237	2,140	1,665	183	1,831	1,831	1,831	1,831	1,831
Ochiltree	91	524	993	843	440	47	473	473	473	473	473
Oldham	0	0	0	0	0	0	0	0	0	0	0
Potter	31	60	62	37	60	15	149	149	149	149	149
Randall	110	184	142	97	76	12	116	116	116	116	116
Roberts	17	57	73	50	46	6	58	58	58	58	58
Sherman	395	2,095	3,419	2,829	1,881	195	1,952	1,952	1,952	1,952	1,952
Wheeler	9	22	35	24	22	3	34	34	34	34	34
<b>Municipal and Public Water Supply</b>											
Armstrong	0	1	1	2	2	0	2	2	2	2	2
Carson	6	10	17	22	84	23	233	246	261	279	300
Dallam	23	7	9	10	9	1	11	11	11	10	10
Donley	4	4	4	4	2	0	0	0	0	0	0
Gray	31	39	19	24	34	3	29	29	26	24	23
Hansford	6	12	13	14	12	1	14	14	14	13	13
Hartley	1	1	2	3	4	1	12	13	12	12	12
Hemphill	2	3	10	12	7	1	8	8	8	8	7
Hutchinson	23	29	28	33	30	3	25	24	23	22	21
Lipscomb	3	4	6	8	8	1	8	8	8	8	7
Moore	15	21	34	54	58	4	44	47	50	53	57
Ochiltree	10	13	13	20	21	3	27	27	27	26	25
Oldham	0	0	0	0	0	0	0	0	0	0	0
Potter	0	0	1	4	6	1	10	10	10	11	11
Randall	55	81	43	75	76	3	28	31	33	37	41
Roberts	1	1	2	2	2	0	467	657	757	802	802
Sherman	3	3	6	7	7	1	7	7	7	6	6
Wheeler	12	11	11	11	8	1	8	8	8	7	7
<b>Industrial and Manufacturing</b>											
Armstrong	0	0	0	0	0	0	0	0	0	0	0
Carson	68	103	88	63	26	6	65	71	76	83	92
Dallam	0	0	2	0	0	0	2	2	2	2	2
Donley	18	50	52	32	37	4	40	42	43	45	48
Gray	3	7	11	0	0	0	0	1	1	1	1
Hansford	0	0	0	0	0	0	0	0	0	0	0
Hartley	0	0	5	0	0	0	0	0	0	0	0
Hemphill	0	0	0	1	0	0	0	0	0	0	0
Hutchinson	113	199	144	160	149	15	155	167	177	190	207
Lipscomb	0	0	0	0	0	0	2	2	2	2	2
Moore	65	147	126	57	43	7	75	79	82	86	92
Ochiltree	0	0	0	0	0	0	0	0	0	0	0
Oldham	0	0	0	0	0	0	0	0	0	0	0
Potter	8	16	18	5	0	0	0	0	0	0	0
Randall	0	0	0	0	0	0	1	1	1	1	1
Roberts	0	0	0	0	0	0	0	0	0	0	0
Sherman	0	0	0	0	0	0	0	0	0	0	0
Wheeler	1	2	2	0	0	0	0	0	0	0	0
<b>Power Generation</b>											
Potter	0	1	2	14	12	1	11	11	11	11	11

Table 3 (cont.)

	1950– 1959	1950– 1969	1970– 1979	1980– 1989	1990– 1999	2000	2001– 2010	2011– 2021	2021– 2030	2031– 2040	2041– 2050
<b>Domestic and Stock</b>											
Armstrong	1	1	2	4	5	0	5	5	6	6	7
Carson	2	2	2	9	13	1	11	12	13	13	14
Dallam	2	3	4	16	31	7	89	114	129	146	165
Donley	1	2	1	0	1	1	6	7	7	7	8
Gray	2	3	4	4	5	2	22	26	29	32	35
Hansford	1	4	6	26	26	5	73	96	108	120	134
Hartley	1	1	4	17	20	3	30	33	36	38	41
Hemphill	1	2	3	3	9	1	15	16	18	19	21
Hutchinson	1	2	2	1	1	0	5	5	6	6	7
Lipscomb	0	0	1	1	3	1	18	25	28	32	37
Moore	2	3	6	26	38	4	55	77	86	97	108
Ochiltree	2	3	4	10	12	7	70	78	88	100	113
Oldham	0	0	0	0	0	0	1	1	1	1	1
Potter	2	3	3	1	1	0	3	3	3	3	4
Randall	0	1	1	4	6	1	6	6	7	8	8
Roberts	0	1	1	1	1	1	6	6	6	7	8
Sherman	1	2	4	22	29	4	48	60	66	74	82
Wheeler	1	2	1	2	3	1	10	11	12	12	13

Table 4. River conductance values assigned in the “River” module of MODFLOW. Conductance varies with the tortuosity and length of the river segment in each cell of the model.

River	River conductance (square feet per day)		
	Maximum	Minimum	Average
Cimarron River	8,057	258	5,446
Beaver River	5,351	7	604
Wolf Creek	5,351	33	3,176
Canadian River	3,726	43	2,665
Sweetwater Creek	1,121	41	551

Table 5. Summary of groundwater discharge (cubic feet per second) to major rivers included in the model. Note that discharge from the aquifer to rivers is represented here as a positive value.

	Observed steady state*	Steady state	1960	1970	1980	1990	2000	2010	2020	2030	2040	2050
Cimarron River	60	52	50	45	38	31	25	19	13	8	5	1
Beaver River	30	94	93	91	87	83	78	73	68	63	59	54
Wolf Creek	30	59	58	56	52	47	40	33	27	22	18	14
Canadian River	45	66	66	65	65	64	63	62	61	59	57	55
Sweetwater Creek	nr	13	13	13	13	13	13	13	13	13	13	12

\*Based on Luckey and others (1999, p.25)

nr – not reported

Table 6. Simulated annual water budgets for the Ogallala aquifer in the model area. All values in acre-feet per year except percent error. The amount of assigned pumping that is actually included in the simulation decreases as model cells with assigned pumping become dewatered and are made inactive in the model.

Year	Well pumping (assigned)	Well pumping	Drains <sup>1</sup>	Rivers <sup>2</sup>	Head- dependant cells <sup>3</sup>	Recharge <sup>4</sup>	Storage <sup>5</sup>	Water balance error	Percent error
"Predevelopment"	0	0	-241,510	-149,073	1,835	387,903	-36	-809	0.21%
1998	1,808,327	-1,663,932	-197,295	-75,099	8,058	453,868	-1,473,933	-466	0.02%
2010	2,283,146	-1,931,362	-186,627	-53,214	8,859	436,041	-1,726,016	-286	0.01%
2020	2,312,205	-1,847,915	-178,925	-38,542	9,029	427,412	-1,628,654	-286	0.01%
2030	2,340,392	-1,703,531	-171,851	-26,303	9,205	418,566	-1,473,578	-336	0.02%
2040	2,370,965	-1,561,637	-165,452	-15,825	9,394	412,048	-1,321,116	-356	0.02%
2050	2,431,697	-1,502,936	-159,404	-6,501	9,572	409,173	-1,249,621	-474	0.03%

- <sup>1</sup> Drains represent seepage and springs at the edge of the Ogallala aquifer, for example, in the Canadian River valley and along the Caprock Escarpment. Also may include some discharge to upstream reaches of rivers and creeks (see fig. 24).
- <sup>2</sup> Discharge of Ogallala groundwater to springs and seeps along major reaches of rivers. Discharge from the aquifer to rivers continues through 2050 given model assumptions.
- <sup>3</sup> Boundary of model in southern Potter and northern Randall Counties accounts for ~2 percent of total inflow to model. Positive value indicates net inflow to model.
- <sup>4</sup> Includes natural recharge from precipitation and return flow from irrigation as described in text. Simulated rate decreases as model cells become dewatered and are made inactive in the model.
- <sup>5</sup> Withdrawal of water from storage.

Table 7. Ranked order of the 15 driest years in the PWPA from 1940 to 1998. The five consecutive years from 1952 to 1956 are among the 15 driest years during this period.

Year	Annual precipitation (inches)	Rank
<b>1956</b>	<b>12.19</b>	<b>1</b>
1970	13.17	2
<b>1954</b>	<b>13.54</b>	<b>3</b>
<b>1952</b>	<b>13.64</b>	<b>4</b>
1945	14.7	5
1943	15.31	6
1940	15.37	7
1976	15.45	8
<b>1953</b>	<b>15.47</b>	<b>9</b>
1963	15.92	10
1964	16.51	11
1966	16.72	12
1980	17.21	13
<b>1955</b>	<b>17.3</b>	<b>14</b>
1983	17.33	15

Table 8a. Average simulated saturated thickness (feet) in the modeled part of the Ogallala aquifer assuming average precipitation.

County	1950	1998	2000	2010	2020	2030	2040	2050
Armstrong	122	115	115	114	113	112	111	110
Carson	233	192	190	178	167	155	144	133
Dallam	182	130	126	107	96	86	81	78
Donley	125	117	117	115	113	110	108	107
Gray	156	147	146	143	140	137	134	131
Hansford	283	227	225	214	204	193	183	172
Hartley	197	156	154	144	134	125	120	121
Hemphill	161	160	160	159	159	158	158	157
Hutchinson	184	145	144	136	128	121	114	108
Lipscomb	222	216	215	212	209	206	203	201
Moore	233	139	136	115	96	80	68	58
Ochiltree	262	233	232	227	221	216	210	205
Oldham*	60	60	60	60	60	59	59	59
Potter	123	110	109	104	101	99	96	94
Randall*	154	125	124	121	118	116	113	110
Roberts	269	265	265	261	256	253	250	247
Sherman	303	210	207	189	172	154	136	120
Wheeler	136	134	134	133	133	132	132	131

\*Includes only that part of county in model area

Table 8b. Average simulated saturated thickness (feet) in the modeled part of the Ogallala aquifer assuming future drought of record conditions.

County	1950	1998	2000	2010	2020	2030	2040	2050
Armstrong	122	115	115	114	113	112	111	110
Carson	233	192	190	177	166	154	143	132
Dallam	182	130	126	106	95	86	81	78
Donley	125	117	117	115	112	110	108	106
Gray	156	147	146	143	140	136	133	131
Hansford	283	227	225	212	202	191	181	171
Hartley	197	156	154	143	133	124	121	121
Hemphill	161	160	160	159	159	158	158	157
Hutchinson	184	145	144	136	128	121	114	108
Lipscomb	222	216	215	212	209	206	203	200
Moore	233	139	136	113	94	79	67	57
Ochiltree	262	233	232	226	221	215	210	204
Oldham*	60	60	60	60	60	59	59	59
Potter	123	110	109	103	101	98	96	94
Randall*	154	125	124	121	118	115	113	110
Roberts	269	265	265	261	256	253	250	247
Sherman	303	210	207	188	170	153	135	119
Wheeler	136	134	134	133	132	132	131	131

\*Includes only that part of county in model area.

Table 9a. Percentage of county having saturated thickness of 50 ft or less in the modeled part of the Ogallala aquifer assuming average precipitation.

County	1950	1998	2000	2010	2020	2030	2040	2050
Armstrong	1.8	2.5	2.5	2.3	2.5	2.7	2.9	2.9
Carson	0.3	0.4	0.4	0.4	0.8	1.2	2.6	4.7
Dallam	3.6	5.8	6.7	16.7	27.6	39.2	47.7	52.8
Donley	0.0	0.0	0.0	0.4	1.3	2.2	4.1	6.7
Gray	2.4	2.9	3.0	3.2	3.8	4.3	4.6	5.6
Hansford	0.0	0.1	0.1	0.1	0.1	0.4	1.1	2.7
Hartley	3.5	4.8	5.1	6.5	9.7	18.6	23.7	28.1
Hemphill	2.5	2.5	2.5	2.5	2.5	2.6	2.7	2.7
Hutchinson	2.7	3.9	3.9	5.9	8.7	11.1	15.2	17.9
Lipscomb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Moore	5.9	14.2	14.9	19.2	26.6	37.4	48.0	58.5
Ochiltree	0.6	1.1	1.2	1.4	1.6	2.1	2.9	3.8
Oldham*	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3
Potter	13.1	13.9	13.6	15.5	17.9	18.4	19.5	19.5
Randall*	0.0	0.0	0.0	0.0	0.5	0.5	1.5	2.1
Roberts	0.0	0.0	0.0	0.0	0.0	0.4	0.6	0.7
Sherman	0.0	0.0	0.0	0.1	0.7	1.5	4.9	10.3
Wheeler	8.3	8.5	8.5	8.7	8.7	8.8	9.0	9.2

\*Includes only that part of county in model area

Table 9b. Percentage of county having saturated thickness of 50 ft or less in the modeled part of the Ogallala aquifer assuming future drought of record conditions.

County	1950	1998	2000	2010	2020	2030	2040	2050
Armstrong	1.8	2.5	2.5	2.3	2.5	2.7	2.9	2.9
Carson	0.3	0.4	0.4	0.4	0.8	1.2	2.6	4.7
Dallam	3.6	5.8	6.7	17.5	29.0	39.9	48.1	53.2
Donley	0.0	0.0	0.0	0.4	1.3	2.4	4.3	6.9
Gray	2.4	2.9	3.0	3.4	3.9	4.3	4.6	5.7
Hansford	0.0	0.1	0.1	0.1	0.2	0.7	1.3	2.9
Hartley	3.5	4.8	5.1	6.7	10.0	19.4	24.1	28.6
Hemphill	2.5	2.5	2.5	2.5	2.5	2.6	2.7	2.7
Hutchinson	2.7	3.9	3.9	5.9	8.7	11.1	15.0	17.7
Lipscomb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Moore	5.9	14.2	14.9	20.1	27.8	38.7	49.8	59.6
Ochiltree	0.6	1.1	1.2	1.4	1.6	2.1	2.9	3.8
Oldham*	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3
Potter	13.1	13.9	13.6	16.0	17.9	18.7	19.3	19.5
Randall*	0.0	0.0	0.0	0.0	0.5	0.5	2.1	2.1
Roberts	0.0	0.0	0.0	0.0	0.0	0.4	0.6	0.7
Sherman	0.0	0.0	0.0	0.2	0.7	1.5	5.0	10.5
Wheeler	8.3	8.5	8.5	8.7	8.8	8.8	9.0	9.2

\*Includes only that part of county in model area

Table 10a. Percentage of aquifer in modeled part of county having less than 50 percent of 1998 saturated thickness assuming average precipitation.

County	2000	2010	2020	2030	2040	2050
Armstrong	0.4	0.4	0.4	0.4	0.4	0.4
Carson	0.0	0.0	0.1	0.5	3.3	10.3
Dallam	0.0	9.1	25.0	38.7	47.4	53.7
Donley	0.0	0.0	0.0	0.0	0.0	0.0
Gray	0.1	0.3	0.4	0.7	0.7	1.0
Hansford	0.0	0.0	0.0	0.3	1.6	4.8
Hartley	0.0	1.6	9.6	19.5	26.0	28.7
Hemphill	0.0	0.0	0.0	0.0	0.0	0.0
Hutchinson	0.0	0.0	2.0	6.2	12.5	18.2
Lipscomb	0.0	0.0	0.0	0.0	0.0	0.0
Moore	0.6	5.9	21.9	41.3	62.4	70.2
Ochiltree	0.0	0.1	0.1	0.2	0.2	0.3
Oldham*	0.0	0.0	0.0	0.0	0.0	0.0
Potter	0.0	1.6	3.7	3.7	4.0	5.1
Randall*	0.0	0.0	0.5	0.5	1.0	2.1
Roberts	0.0	0.0	0.6	1.3	1.7	1.7
Sherman	0.0	0.0	0.4	4.2	16.9	34.0
Wheeler	0.0	0.0	0.0	0.0	0.0	0.0

\*Includes only that part of county in model area

Table 10b. Percentage of aquifer in modeled part of county having less than 50 percent of 1998 saturated thickness assuming future drought of record conditions.

County	2000	2010	2020	2030	2040	2050
Armstrong	0.4	0.4	0.4	0.4	0.4	0.4
Carson	0.0	0.0	0.1	0.9	3.8	11.0
Dallam	0.0	10.2	26.4	39.5	47.5	53.9
Donley	0.0	0.0	0.0	0.0	0.0	0.0
Gray	0.1	0.3	0.4	0.7	0.8	1.2
Hansford	0.0	0.0	0.0	0.4	2.0	6.2
Hartley	0.0	1.9	11.3	20.3	26.2	29.3
Hemphill	0.0	0.0	0.0	0.0	0.0	0.0
Hutchinson	0.0	0.0	2.0	6.0	12.3	18.2
Lipscomb	0.0	0.0	0.0	0.0	0.0	0.0
Moore	0.6	7.0	23.5	43.7	63.1	71.1
Ochiltree	0.0	0.1	0.1	0.2	0.2	0.3
Oldham*	0.0	0.0	0.0	0.0	0.0	0.0
Potter	0.0	2.4	3.7	3.7	4.8	5.3
Randall*	0.0	0.0	0.5	0.5	1.5	2.1
Roberts	0.0	0.0	0.6	1.3	1.7	1.7
Sherman	0.0	0.0	0.5	4.8	17.7	35.4
Wheeler	0.0	0.0	0.0	0.0	0.0	0.0

\*Includes only that part of county in model area

Table 11a. Volume of water in storage (million acre feet) projected for 2000 to 2050 in the Ogallala aquifer using TAES irrigation estimates assuming average precipitation.\*

County	2000	2010	2020	2030	2040	2050	1998 volume remaining in 2050 (%)
Armstrong	5.42	5.37	5.32	5.27	5.22	5.17	95
Carson	18.94	17.81	16.68	15.53	14.41	13.31	69
Dallam	20.91	17.43	14.33	11.85	10.03	8.77	41
Donley	6.61	6.48	6.36	6.24	6.13	6.02	91
Gray	22.63	21.58	20.52	19.47	18.42	17.36	76
Hansford	16.26	15.03	13.84	12.71	11.68	10.91	66
Hartley	25.58	23.64	21.77	19.99	18.38	17.16	66
Hemphill	15.78	15.72	15.66	15.61	15.56	15.52	98
Hutchinson	10.76	10.16	9.53	8.92	8.34	7.79	72
Lipscomb	19.28	18.98	18.71	18.44	18.19	17.95	93
Moore	11.24	9.46	7.69	6.03	4.62	3.52	30
Ochiltree	20.81	20.30	19.79	19.28	18.76	18.25	87
Oldham*	0.36	0.36	0.36	0.36	0.36	0.35	98
Potter	3.86	3.66	3.51	3.40	3.31	3.21	82
Randall*	2.35	2.29	2.23	2.18	2.13	2.07	88
Roberts	26.50	26.07	25.62	25.20	24.88	24.61	93
Sherman	21.08	19.29	17.47	15.64	13.82	12.03	56
Wheeler	7.51	7.48	7.45	7.42	7.39	7.36	98
Total	255.87	241.11	226.84	213.54	201.63	191.37	74

\*Includes only that part of county in model area

\*\*Projections should not be relied upon for anything other than their intended use in identifying areas with surpluses and deficits between supply and demand for groundwater in the PWPA, as discussed in the text.

Table 11b. Volume of water in storage (million acre feet) projected for 2000 to 2050 in the Ogallala aquifer using TAES irrigation estimates assuming future drought of record conditions.\*\*

County	2000	2010	2020	2030	2040	2050	1998 volume remaining in 2050 (%)
Armstrong	5.42	5.37	5.32	5.27	5.22	5.16	95
Carson	18.94	17.70	16.56	15.42	14.29	13.19	69
Dallam	20.91	17.20	14.15	11.70	9.93	8.70	40
Donley	6.61	6.47	6.35	6.23	6.12	6.01	91
Gray	22.63	21.38	20.33	19.27	18.22	17.17	75
Hansford	16.26	14.92	13.73	12.61	11.60	10.85	66
Hartley	25.58	23.47	21.60	19.83	18.24	17.07	66
Hemphill	15.78	15.72	15.66	15.61	15.56	15.51	98
Hutchinson	10.76	10.17	9.54	8.93	8.35	7.79	72
Lipscomb	19.28	18.95	18.67	18.41	18.16	17.92	93
Moore	11.24	9.26	7.50	5.86	4.49	3.42	30
Ochiltree	20.81	20.23	19.72	19.21	18.70	18.18	87
Oldham*	0.36	0.36	0.36	0.36	0.36	0.36	98
Potter	3.86	3.65	3.50	3.40	3.30	3.21	82
Randall*	2.35	2.28	2.23	2.17	2.12	2.07	88
Roberts	26.50	26.06	25.62	25.19	24.87	24.61	93
Sherman	21.08	19.18	17.37	15.54	13.72	11.93	56
Wheeler	7.51	7.47	7.44	7.41	7.38	7.35	98
Total	255.87	239.84	225.64	212.42	200.63	190.50	74

\*Includes only that part of county in model area

\*\*Projections should not be relied upon for anything other than their intended use in identifying areas with surpluses and deficits between supply and demand for groundwater in the PWPA, as discussed in the text.