Factor 2 – Water Supply Needs and Water Management Strategies included in the State Water Plan

GMA-1 Joint Planning Committee

May 30, 2014

GMA-1 2016 RWP Total Demand

County	2020	2030	2040	2050	2060	2070
Armstrong	5,286	5,077	4,792	4,381	3,971	3,563
Carson	58,087	55,269	51,246	45,855	40,481	35,113
Dallam	376,493	354,620	326,399	291,512	256,648	221,798
Donley	26,033	25,141	23,771	21,338	18,912	16,486
Gray	33,028	32,992	32,153	31,495	29,986	28,620
Hansford	140,242	131,355	120,762	108,106	95,468	82,836
Hartley	353,377	334,425	309,375	276,595	243,872	211,201
Hemphill	4,574	4,191	4,090	3,982	3,871	3,758
Hutchinson	71,429	70,588	68,951	66,351	64,583	62,970
Lipscomb	22,607	21,198	19,840	17,960	16,078	14,194
Moore	161,131	153,836	144,157	131,886	119,980	108,177
Ochiltree	65,253	60,780	56,600	51,456	46,354	41,276
Oldham	6,276	6,227	6,054	5,699	5,375	5,059
Potter	69,373	74,223	79,446	84,517	92,868	100,989
Randall	50,260	52,199	53,903	55,267	57,048	59,012
Roberts	7,126	6,331	5,823	5,246	4,672	4,098
Sherman	225,156	212,100	195,232	174,274	153,326	132,393
Wheeler	11,409	10,938	10,363	9,568	8,783	8,002
Total	**1,687,140**	**1,611,490**	**1,512,957**	**1,385,488**	**1,262,276**	**1,139,545**

GMA-1 2016 RWP estimated irrigation water demand by county for selected years (ac-ft)

County	2020	2030	2040	2050	2060	2070
Armstrong	4,194	3,999	3,789	3,368	2,947	2,526
Carson	55,702	50,339	47,689	40,337	37,092	31,793
Dallam	369,864	344,388	326,263	290,011	253,760	217,509
Donley	24,080	22,496	21,312	18,944	16,576	14,208
Gray	21,291	20,330	19,260	17,120	14,980	12,840
Hansford	134,902	130,548	123,677	109,935	96,193	82,451
Hartley	345,365	294,013	278,538	247,590	216,641	185,692
Hemphill	1,907	1,589	1,506	1,339	1,171	1,004
Hutchinson	40,008	38,669	36,634	32,564	28,493	24,423
Lipscomb	20,009	19,225	18,213	16,189	14,166	12,142
Moore	143,028	137,390	130,159	115,697	101,234	86,772
Ochiltree	57,243	54,456	51,589	45,857	40,125	34,393
Oldham	3,937	3,557	3,370	2,995	2,621	2,246
Potter	3,427	2,633	2,495	2,217	1,940	1,663
Randall	18,000	17,370	16,456	14,627	12,799	10,971
Roberts	5,958	5,669	5,371	4,774	4,177	3,581
Sherman	220,966	212,269	200,042	178,753	156,409	134,064
Wheeler	8,203	8,113	7,686	6,832	5,978	5,124
Total	**1,478,084**	**1,367,053**	**1,294,049**	**1,149,149**	**1,007,302**	**863,402**

GMA-1 2016 RWP estimated livestock water use by county for selected years (ac-ft).

County	2010	2020	2030	2040	2050	2060	2070
Armstrong	541	645	649	652	656	659	663
Carson	588	692	696	700	704	709	713
Dallam	4,739	4,437	4,669	4,920	5,191	5,485	5,803
Donley	1,329	1,330	1,332	1,333	1,335	1,337	1,339
Gray	1,249	1,352	1,378	1,407	1,438	1,473	1,511
Hansford	3,425	3,432	3,574	3,724	3,881	4,046	4,219
Hartley	4,676	6,498	6,977	7,498	8,066	8,684	9,359
Hemphill	1,270	1,275	1,279	1,284	1,289	1,295	1,302
Hutchinson	843	847	873	903	935	971	1,010
Lipscomb	945	947	969	993	1,020	1,050	1,083
Moore	3,021	3,676	3,906	4,155	4,424	4,716	5,032
Ochiltree	4,769	4,216	3,632	3,729	3,832	3,942	4,058
Oldham	1,126	1,229	1,231	1,234	1,237	1,240	1,243
Potter	479	481	482	484	486	488	491
Randall	2,646	2,654	2,665	2,677	2,690	2,704	2,719
Roberts	368	369	369	370	371	372	373
Sherman	2,990	3,449	3,631	3,825	4,034	4,257	4,497
Wheeler	1,575	1,577	1,680	1,682	1,684	1,687	1,689
Total	**36,579**	**39,106**	**39,992**	**41,570**	**43,273**	**45,115**	**47,104**

GMA-1 Draft 2016 RWP estimated manufacturing water use by county for selected years (ac-ft).

County	2020	2030	2040	2050	2060	2070
Armstrong	0	0	0	0	0	0
Carson	419	460	499	532	576	624
Dallam	9	9	10	10	11	11
Donley	0	0	0	0	0	0
Gray	4,350	4,418	4,463	4,481	4,301	4,129
Hansford	58	61	63	65	70	74
Hartley	5	5	5	5	5	5
Hemphill	6	6	6	6	6	6
Hutchinson	25,347	26,827	28,249	29,483	31,540	33,741
Lipscomb	147	155	161	167	180	193
Moore	9,052	9,549	10,038	10,469	11,179	11,937
Ochiltree	0	0	0	0	0	0
Oldham	0	0	0	0	0	0
Potter	9,713	10,461	11,191	11,823	12,691	13,622
Randall	589	638	684	722	784	852
Roberts	0	0	0	0	0	0
Sherman	0	0	0	0	0	0
Wheeler	0	0	0	0	0	0
Total	**49,695**	**52,589**	**55,369**	**57,763**	**61,343**	**65,194**

GMA-1 2012 SWP estimated mining water use by county for selected years (ac-ft).

County	2020	2030	2040	2050	2060
Armstrong	12	12	12	12	12
Carson	1,412	1,393	1,376	1,360	1,339
Dallam	0	0	0	0	0
Donley	14	14	14	14	14
Gray	1,999	2,028	2,056	2,083	2,118
Hansford	533	529	525	521	516
Hartley	0	0	0	0	0
Hemphill	2,575	2,314	1,844	1,479	1,183
Hutchinson	393	394	395	396	396
Lipscomb	1,235	1,114	887	713	574
Moore	700	630	567	510	459
Ochiltree	1,148	1,027	818	661	522
Oldham	341	347	352	357	364
Potter	367	392	417	442	462
Randall	19	20	21	22	23
Roberts	1,270	1,148	922	731	592
Sherman	16	16	16	16	16
Wheeler	2,001	1,810	1,444	1,148	922
Total	**14,035**	**13,188**	**11,666**	**10,465**	**9,512**

GMA-1 Draft Projections 2017 SWP estimated mining water use by county for selected years (ac-ft).

County	2020	2030	2040	2050	2060	2070
Armstrong	0	0	0	0	0	0
Carson	13	13	13	13	13	13
Dallam	0	0	0	0	0	0
Donley	0	0	0	0	0	0
Gray	17	15	15	15	15	15
Hansford	731	80	13	13	13	13
Hartley	0	0	0	0	0	0
Hemphill	442	69	26	22	19	17
Hutchinson	136	65	52	49	45	41
Lipscomb	563	65	13	13	13	13
Moore	13	12	13	13	13	13
Ochiltree	728	80	13	13	13	13
Oldham	463	551	627	662	728	800
Potter	940	1,148	1,340	1,452	1,629	1,830
Randall	0	0	0	0	0	0
Roberts	526	77	26	22	20	17
Sherman	87	20	13	13	13	13
Wheeler	556	189	146	140	138	135
Total	**5,215**	**2,384**	**2,310**	**2,440**	**2,672**	**2,933**

GMA-1 Draft Projections 2017 SWP estimated steam electric water use by county for selected years (ac-ft).

County	2020	2030	2040	2050	2060	2070
Armstrong	0	0	0	0	0	0
Carson	0	0	0	0	0	0
Dallam	0	0	0	0	0	0
Donley	0	0	0	0	0	0
Gray	1,409	2,112	2,299	2,952	3,087	3,320
Hansford	0	0	0	0	0	0
Hartley	0	0	0	0	0	0
Hemphill	0	0	0	0	0	0
Hutchinson	0	0	0	0	0	0
Lipscomb	0	0	0	0	0	0
Moore	200	200	200	200	213	216
Ochiltree	0	0	0	0	0	0
Oldham	0	0	0	0	0	0
Potter	25,387	26,804	28,408	30,011	34,115	37,669
Randall	0	0	0	0	0	0
Roberts	0	0	0	0	0	0
Sherman	0	0	0	0	0	0
Wheeler	0	0	0	0	0	0
Total	26,996	29,116	30,907	33,163	37,415	41,205

GMA-1 Total 2020-2070 estimated demand compared to 2010-2013 average production (ac-ft)

Geographic Area	Year						
	2010-2013 AVG Prod.	**2020**	**2030**	**2040**	**2050**	**2060**	**2070**
1	1,376,913	1,116,157	1,054,981	975,163	874,267	773,826	673,569
2	17,328	4,574	4,191	4,090	3,982	3,871	3,758
3	740,088	566,409	552,318	533,704	507,239	484,579	462,218
Total	**2,123678**	**1,687,140**	**1,611,490**	**1,512,957**	**1,385,488**	**1,262,276**	**1,139,545**

Panhandle Regional Water Planning Group Preliminary Data for 2017 State Water Plan & District Data (Provisional Data Subject to Review)

GMA-1 Draft estimated need compared to total demand and predictive MAG

Geographic Area	Total Demand Year						
	2010-2013 AVG Prod.	2020	2030	2040	2050	2060	2070
1	1,376,913	1,116,157	1,054,981	975,163	874,267	773,826	673,569
2	17,328	4,574	4,191	4,090	3,982	3,871	3,758
3	740,088	566,409	552,318	533,704	507,239	484,579	462,218
Total	**2,123678**	**1,687,140**	**1,611,490**	**1,512,957**	**1,385,488**	**1,262,276**	**1,139,545**

Panhandle Regional Water Planning Group Preliminary Data for 2017 State Water Plan & District Data (Provisional Data Subject to Review)

Geographic Area	Predictive MAG Simulation						
	2010	2020	2030	2040	2050	2060	2070
1	1,387,054	1,242,284	1,083,811	938,150	806,832	691,874	619,662
2*	45,170	41,759	42,398	42,777	42,989	43,159	39,900
3	2,234,035	2,026,120	1,885,847	1,726,720	1,568,980	1,416,370	1,284,553
Total	**3,666,259**	**3,310,163**	**3,012,056**	**2,707,647**	**2,418,801**	**2,151,403**	**1,942,442**

SWP Region A Population, Water Supply Demand and Needs 2010-2060

	2010	2020	2030	2040	2050	2060
Projected Population	388,104	423,380	453,354	484,954	516,729	541,035
Existing Supplies (acre-feet per year)						
Surface water	40,636	47,381	47,348	47,284	47,189	47,043
Groundwater	1,131,151	1,018,554	951,799	877,961	790,795	714,438
Reuse	25,129	28,928	30,620	32,528	34,598	37,577
Total Water Supply	**1,196,916**	**1,094,863**	**1,029,767**	**957,773**	**872,582**	**799,058**
Demands (acre-feet per year)						
Municipal	68,137	72,793	76,638	80,648	84,614	87,658
County-other	9,468	11,097	12,550	14,035	15,516	16,584
Manufacturing	43,930	47,275	49,998	52,612	54,860	58,231
Mining	14,012	14,065	13,218	11,696	10,495	9,542
Irrigation	1,429,990	1,311,372	1,271,548	1,203,332	1,066,736	936,929
Steam-electric	25,139	26,996	29,116	30,907	33,163	37,415
Livestock	37,668	43,345	45,487	47,842	50,436	53,285
Total Water Demands	**1,628,344**	**1,526,943**	**1,498,555**	**1,441,072**	**1,315,820**	**1,199,644**
Needs (acre-feet per year)						
Municipal	0	967	7,354	13,968	20,492	25,712
County-other	0	108	1,190	2,663	4,235	5,502
Manufacturing	173	800	1,317	2,845	4,212	5,866
Irrigation	454,628	452,144	477,338	482,226	433,155	381,180
Steam-electric	75	99	117	128	136	154
Total Water Needs	**454,876**	**454,118**	**487,316**	**501,830**	**462,230**	**418,414**

SWP Select Major Water Management Strategies 2010-2060

- Roberts County Well Field (City of Amarillo) would provide up to 22,420 acre-feet per year of groundwater in the year 2060 with a capital cost of $287 million.
- Roberts County Well Field (Canadian River Municipal Water Authority) would provide 15,000 acre-feet per year of groundwater starting in 2030 with a capital cost of $22 million.
- Potter County Well Field would provide up to 11,182 acre-feet per year of groundwater starting in 2020 with a capital cost of $129 million.
- Irrigation conservation would provide up to 552,385 acre-feet per year of water in 2060 with no capital cost.