

TO: PWPG Modeling Committee

CC: Kyle Ingham, PRPC

FROM: Simone Kiel, Van Kelley (Intera)

SUBJECT: Comparison of MAG Values for Ogallala

DATE: November 3, 2009

As part of the update for the 2011 Regional Water Plan, Intera evaluated the theoretical water availability from the Ogallala Aquifer using a methodology similar to that used by the Texas Water Development Board for the draft MAG values for GMA #1 (GR09-01draft). Intera has developed a separate memorandum describing the methodology. This memorandum compares the results of the two model runs and discusses the differences.

Table 1 shows the results of the TWDB draft MAG run, Intera model results and the differences in the two model runs. When comparing the average pumping values over each of the three major pumping zones (40%, 50% and 80%), the Intera values are very similar to the TWDB values. The major differences are seen in the approach to the spatial and temporal distribution of these values. Generally, the greatest differences are seen in the 40% storage remaining zone (Dallam, Hartley, Sherman and Moore Counties). For example, Intera shows considerably less water available in Dallam County in the early part of the planning period and more water at the end of the planning period than the TWDB values. In Sherman County, Intera shows more water available throughout the planning period. These differences are primarily due to the differences in methodologies. The TWDB set a goal of achieving 40% of storage remaining by 2060 within the four-county area. Intera's methodology is based on achieving 40% of storage remaining across the four-county area. While both model runs achieve the ultimate goal set forth by the GMA #1 as evidenced in the 50-year averages, the methodologies will result in different availabilities to counties and water user groups for regional water planning purposes.

Comparison of Ogallala Water Availability Values (Draft TWDB MAGs to Panhandle Region Values)

<All values are in acre-feet per year>

MAG Run from TWDB								Final MAG from Intera (10-28-09)								Differences in the two MAGs (AF/Y)							
February 09 - GR09-01draft																Positive # - Intera shows more water; negative # - Intera shows less water							
County	2010	2020	2030	2040	2050	2060	average	County	2010	2020	2030	2040	2050	2060	average	County	2010	2020	2030	2040	2050	2060	average
Armstrong	47,395	43,980	40,811	37,870	35,142	32,519	39,620	Armstrong	48,916	40,834	36,089	31,978	28,462	25,383	35,277	Armstrong	1,521	-3,146	-4,722	-5,892	-6,680	-7,136	-4,343
Carson	190,230	176,524	163,805	152,003	141,051	130,888	159,084	Carson	198,232	178,545	160,493	144,656	129,882	116,336	154,691	Carson	8,002	2,021	-3,312	-7,347	-11,169	-14,552	-4,393
Dallam	440,852	365,596	296,030	227,783	162,123	119,982	268,728	Dallam	290,088	253,072	225,124	198,739	173,986	151,305	215,386	Dallam	-150,764	-112,524	-70,906	-29,044	11,863	31,323	-53,342
Donley	88,024	81,682	75,797	70,336	65,268	60,565	73,612	Donley	90,450	81,347	76,005	69,672	63,613	58,017	73,184	Donley	2,426	-335	208	-664	-1,655	-2,548	-428
Gray	180,604	167,591	155,516	144,311	133,783	124,092	150,983	Gray	186,939	157,029	143,819	130,646	117,614	105,634	140,280	Gray	6,335	-10,562	-11,697	-13,665	-16,169	-18,458	-10,703
Hansford	270,396	250,913	232,835	216,029	200,464	184,990	225,938	Hansford	279,085	258,780	238,529	217,640	195,835	174,892	227,460	Hansford	8,689	7,867	5,694	1,611	-4,629	-10,098	1,522
Hartley	419,881	349,698	304,934	278,427	260,164	243,139	309,374	Hartley	413,782	361,195	314,995	273,474	236,815	204,661	300,820	Hartley	-6,099	11,497	10,061	-4,953	-23,349	-38,478	-8,554
Hemphill	54,998	54,998	54,998	54,998	54,938	54,938	54,978	Hemphill	82,951	44,654	44,129	43,784	43,673	43,579	50,462	Hemphill	27,953	-10,344	-10,869	-11,214	-11,265	-11,359	-4,516
Hutchinson	150,398	139,562	129,507	120,176	111,359	102,942	125,657	Hutchinson	153,829	129,548	119,798	108,985	98,239	87,979	116,396	Hutchinson	3,431	-10,014	-9,709	-11,191	-13,120	-14,963	-9,261
Lipscomb	246,011	228,286	211,838	196,574	182,411	169,204	205,721	Lipscomb	260,989	253,488	247,761	234,999	219,735	203,198	236,695	Lipscomb	14,978	25,202	35,923	38,425	37,324	33,994	30,974
Moore	245,736	172,489	125,173	99,568	82,879	72,600	133,074	Moore	172,388	164,319	142,529	122,138	103,539	86,974	131,981	Moore	-73,348	-8,170	17,356	22,570	20,660	14,374	-1,093
Ochiltree	256,701	238,206	221,042	205,116	190,337	176,481	214,647	Ochiltree	257,903	236,618	215,489	195,506	176,566	159,017	206,850	Ochiltree	1,202	-1,588	-5,553	-9,610	-13,771	-17,464	-7,797
Oldham	5,289	4,908	4,554	4,226	3,922	3,639	4,423	Oldham	5,288	6,434	6,090	5,571	5,079	4,658	5,520	Oldham	-1	1,526	1,536	1,345	1,157	1,019	1,097
Potter	35,950	33,360	30,957	28,726	26,656	24,660	30,052	Potter	38,084	29,224	26,093	23,205	20,684	18,459	25,958	Potter	2,134	-4,136	-4,864	-5,521	-5,972	-6,201	-4,093
Randall	19,001	17,632	16,361	15,182	14,088	13,073	15,890	Randall	19,730	18,411	16,419	14,589	12,974	11,531	15,609	Randall	729	779	58	-593	-1,114	-1,542	-281
Roberts	367,090	340,641	316,097	293,322	272,187	252,576	306,986	Roberts	375,334	339,518	322,909	301,420	277,509	251,933	311,437	Roberts	8,244	-1,123	6,812	8,098	5,322	-643	4,452
Sherman	270,088	206,430	171,137	152,122	141,468	134,488	179,289	Sherman	316,971	298,567	262,820	229,557	198,809	169,672	246,066	Sherman	46,883	92,137	91,683	77,435	57,341	35,184	66,777
Wheeler	110,041	102,113	94,755	87,928	81,593	75,616	92,008	Wheeler	120,205	114,819	112,163	106,500	99,802	92,993	107,747	Wheeler	10,164	12,706	17,408	18,572	18,209	17,377	15,739
3,398,685	2,974,609	2,646,147	2,384,697	2,159,833	1,976,392			3,311,164	2,966,402	2,711,254	2,453,059	2,202,816	1,966,221										
Four western counties (40%)							890,465								894,253								3,789
Counties with 50% Goal							1,644,618								1,657,105								12,486

Note: Wheeler County values are higher in Intera run because TWDB designated a small area as "Oklahoma" rather than Wheeler County.