TECHNICAL MEMORANDUM

SUBJECT: **Green River Basin Plan II**
Domestic Water Use Projections

DATE: 5/28/2009

PREPARED BY: WWC Engineering

Introduction

The purpose of this technical memorandum is to project future water use for the rural domestic water users that are not supplied by a municipal or joint powers water board system. These are independently operated systems or are an individual's system. Due to the cost and difficulty in operating surface water systems, these systems are typically groundwater based systems.

Methodology

In the population projections technical memorandum, estimates were prepared of the rural residents by county for the Green River Basin. These numbers were adjusted to remove those supplied by municipal and joint powers board systems. As records of these uses are not measured or recorded, estimates of per capita per day use are necessary. In the 2001 Green River Basin plan rural domestic use was estimated to be between 150 gallons per capita per day (gpcpd) and 300 gallons per capita per day (Purcell, 2000). The derived populations are then multiplied by the two assumed water use rates to give a range of use that should include the actual uses of these people.

Conclusions

The estimated independently supplied rural population presented in the Technical Memorandum, Basin Water Use Profile – Domestic (WWC, 2008) are shown in Table 1 below along with the projected rural independently supplied populations for the three growth scenarios.

Table 1 - Current and Projected Green River Basin Independently Supplied Rural Population

	Current	Low Level Growth			Moderate Level Growth			High Level Growth		
	2005	**2015**	**2035**	**2055**	**2015**	**2035**	**2055**	**2015**	**2035**	**2055**
Carbon Co.										
Municipal Supplied Rural	0	0	0	0	0	0	0	0	0	0
Independently Supplied Rural	671	598	462	321	672	629	504	672	845	649
Basin Rural	671	598	462	321	672	629	504	672	845	649
Lincoln Co.										
Municipal Supplied Rural	695	900	1200	1600	1200	1700	2200	1200	2284	2890
Independently Supplied Rural	3311	3334	3728	4125	3563	5015	6777	3563	6739	8671
Basin Rural	4006	4234	4928	5725	4763	6715	8977	4763	9023	11561
Sublette Co.										
Municipal Supplied Rural	142	207	500	750	350	1500	3000	350	2016	3000
Independently Supplied Rural	3475	4649	6663	8953	5112	8260	12215	5112	11099	16594
Basin Rural	3617	4856	7163	9703	5462	9760	15215	5462	13115	19594
Sweetwater Co.										
Municipal Supplied Rural	4441	4300	4200	4000	4841	5400	5900	4841	6841	7106
Independently Supplied Rural	2269	2270	1948	1790	2549	2977	3180	2549	4416	4587
Basin Rural	6710	6570	6148	5790	7390	8377	9080	7390	11257	11693
Uinta Co.										
Municipal Supplied Rural	1400	1200	1000	900	1500	1600	1600	1500	2350	2140
Independently Supplied Rural	2340	2283	1961	1544	2418	2435	2232	2418	3072	2796
Basin Rural	3740	3483	2961	2444	3918	4035	3832	3918	5422	4936
TOTAL BASIN	**12066**	**13135**	**14761**	**16733**	**14314**	**19316**	**24908**	**14314**	**26171**	**33297**

Source: WDA&I, US Census Bureau, Green River Domestic Use Technical Memorandum 2008

The estimated future water use based on 150 gpcpd, by growth scenario, are presented in Table 2. The future uses are also shown graphically in Figure 1.

Table 2 - Green River Basin Independently Supplied Rural Domestic Water Use - 150 gpcpd

Scenario	2005	2015	2035	2055
	Use In Acre-Feet Per Year			
Low Growth	2027	2207	2480	2811
Moderate Growth	2027	2405	3246	4185
High Growth	2027	2405	4397	5595

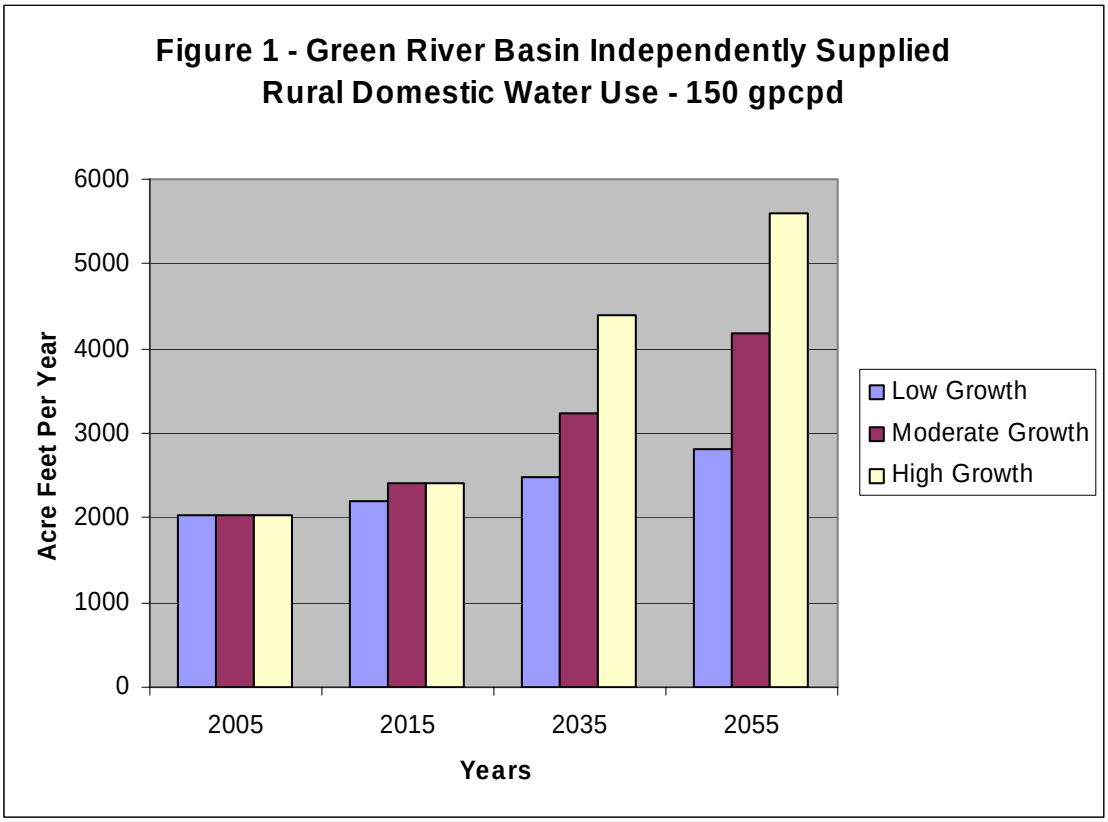


Table 2 and Figure 1 show that rural domestic independently supplied water use will more than double between the current, 2005, use of 2,027 acre-feet annually and the high growth, 2055, projected use of about 5,600 acre-feet per year at 150 gallons per capita per day.

The estimated future water use based on 300 gpcpd, by growth scenario, are presented in Table 3. The future uses are also shown graphically in Figure 2.

Table 3 - Green River Basin Independently Supplied Rural Domestic Water Use - 300 gpcpd

Scenario	2005	2015	2035	2055
	Use In Acre-Feet Per Year			
Low Growth	4055	4414	4961	5623
Moderate Growth	4055	4810	6491	8370
High Growth	4055	4810	8795	11189

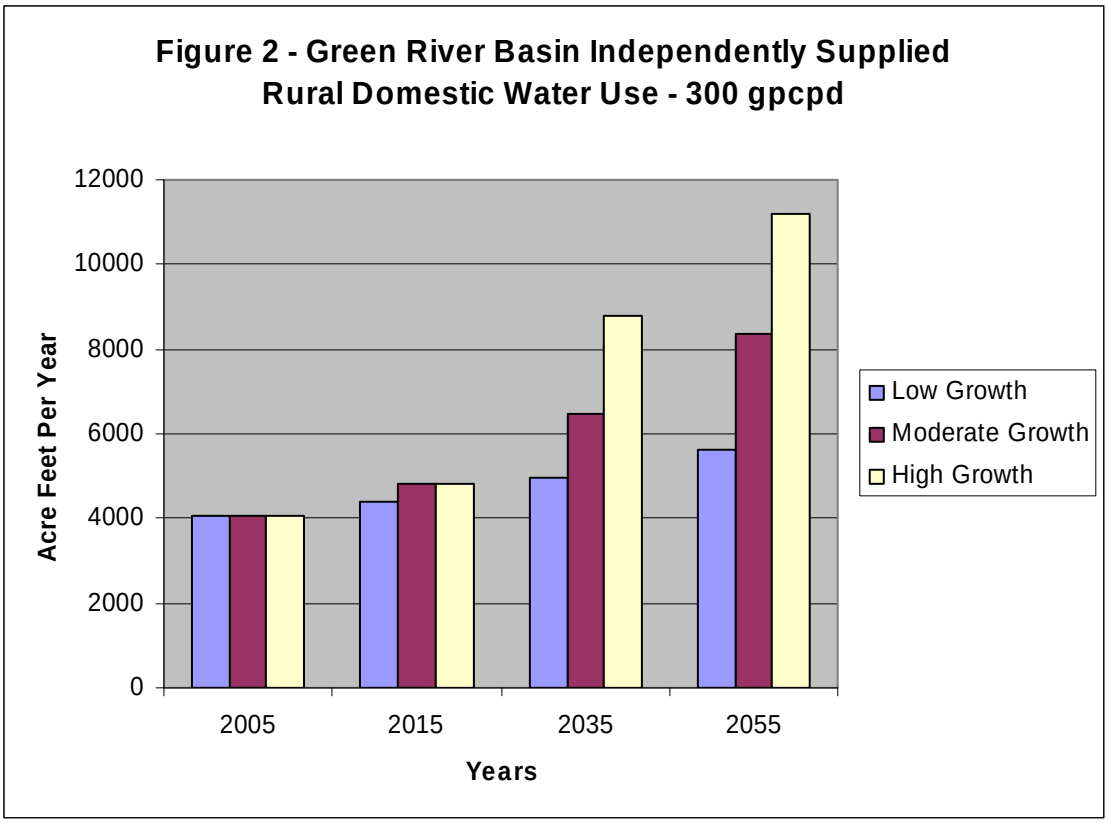


Table 3 and Figure 2 show that rural domestic independently supplied water use will increase by over two and three fourths (2.76) times between the current, 2005, use of 4,055 acre-feet annually and the high growth, 2055, projected use of about 11,189 acre-feet per year at 300 gallons per capita per day.

When the 2000 level of rural independently supplied domestic use is compared to the current projections in this plan, current projections exceed the growth projected in the 2000 plan. Table 4 and Table 5 display the comparison of projections from the two plans. The comparisons are also shown graphically on Figures 3 through 8 for the three scenarios.

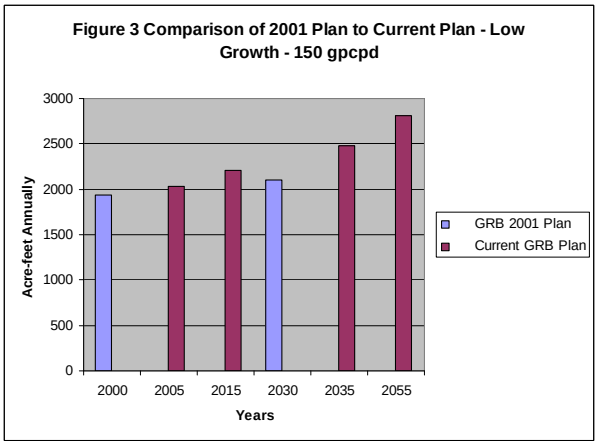
Rural domestic independently supplied water will be primarily groundwater and the projections will be impacted by decisions of the basin municipalities. The projections are extensions of historic trends. If the municipalities change their annexation policies or move toward supplying adjacent rural areas, these projections could diminish somewhat. During times of fast growth or boom times, it is much faster for people to secure a well driller and provide for their own water supply rather than wait for a municipality to extend its infrastructure to supply them.

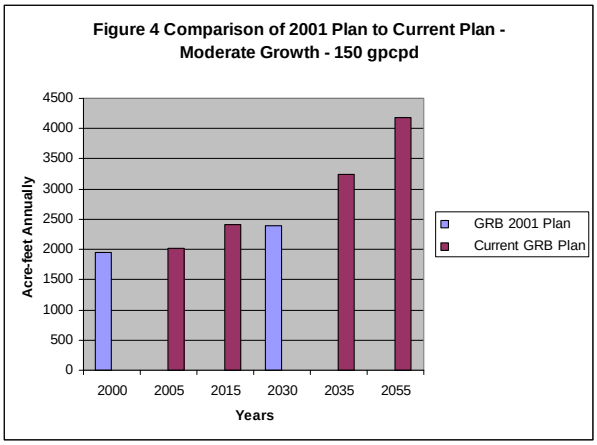
Table 4 - Comparison of Rural Domestic Water Use - 2001 Plan to Current Plan - 150 gpcd

Scenario/Basin Plan	Year					
	2000	2005	2015	2030	2035	2055
	Use In Acre-Feet Per Year					
LOW GROWTH						
GRB 2001 Plan	1940			2100		
Current GRB Plan		2027	2207		2480	2811
MODERATE GROWTH						
GRB 2001 Plan	1940			2400		
Current GRB Plan		2027	2405		3246	4185
HIGH GROWTH						
GRB 2001 Plan	1940			2540		
Current GRB Plan		2027	2405		4397	5595

Table 5 - Comparison of Rural Domestic Water Use - 2001 Plan to Current Plan - 300 gpcd

Scenario/ Basin Plan	Year					
	2000	2005	2015	2030	2035	2055
	Use In Acre-Feet Per Year					
LOW GROWTH						
GRB 2001 Plan	3880			4200		
Current GRB Plan		4055	4414		4961	5623
MODERATE GROWTH						
GRB 2001 Plan	3880			4800		
Current GRB Plan		4055	4810		6491	8370
HIGH GROWTH						
GRB 2001 Plan	3880			5080		
Current GRB Plan		4055	4810		8795	11189





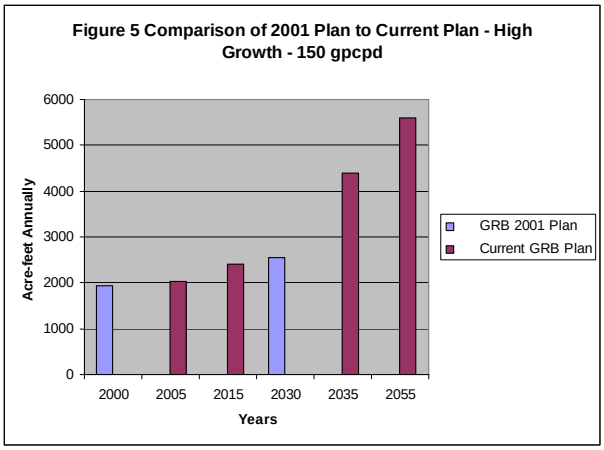


Figure 5 Comparison of 2001 Plan to Current Plan - High Growth - 150 gpcpd
Acre-feet Annually
6000
5000
4000
3000
2000
1000
0
2000
2005
2015
2030
2035
2055
Years
GRB 2001 Plan
Current GRB Plan

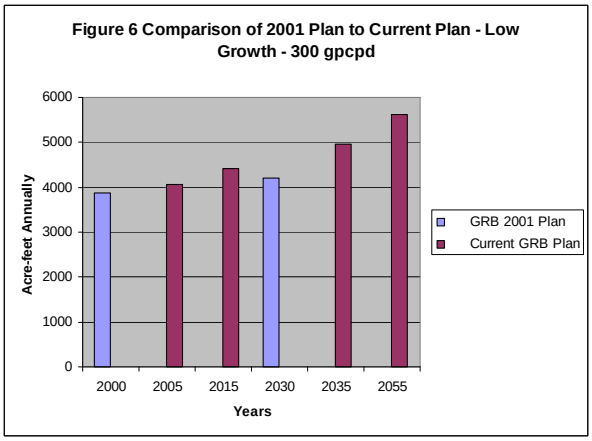


Figure 6 Comparison of 2001 Plan to Current Plan - Low Growth - 300 gpcpd
Acre-feet Annually
6000
5000
4000
3000
2000
1000
0
2000
2005
2015
2030
2035
2055
Years
GRB 2001 Plan
Current GRB Plan

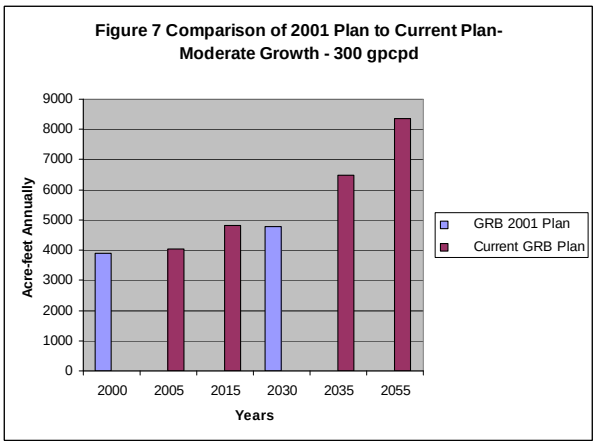


Figure 7 Comparison of 2001 Plan to Current Plan- Moderate Growth - 300 gpcpd
Acre-feet Annually
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
2000
2005
2015
2030
2035
2055
Years
GRB 2001 Plan
Current GRB Plan

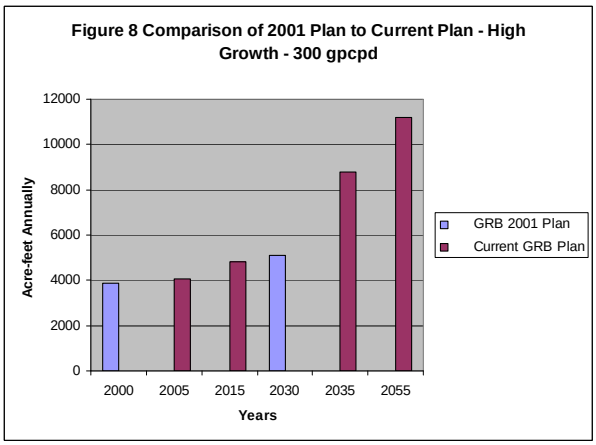


Figure 8 Comparison of 2001 Plan to Current Plan - High Growth - 300 gpcpd
Acre-feet Annually
12000
10000
8000
6000
4000
2000
0
2000
2005
2015
2030
2035
2055
Years
GRB 2001 Plan
Current GRB Plan

References

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