
 TECHNICAL MEMORANDUM

SUBJECT: **Green River Basin Plan**
 Cropping Patterns in the Basin

PREPARED BY: Pat Tyrrell, States West Water Resources Corporation

Introduction

According to the 1970 Wyoming Water Planning Program Report No. 3, *Water and Related Land Resources of the Green River Basin, Wyoming*, over 90 percent of the average annual depletions in the basin were attributed to agricultural uses. Because overall irrigated acres have not changed appreciably, but industrial and municipal uses have increased, a somewhat smaller percentage of use by agriculture exists today. Because agriculture is the largest user in the basin, and because different crops consume water in different amounts and at different rates, an understanding of the crop distribution within the basin is needed. An accurate crop distribution is important in both the modeling of consumptive uses in the basin and in valuing the agricultural sector dependent on those crops. Consumptive agricultural uses are described in the Agricultural Use technical memorandum.

Report No. 3 did not publish cropping distributions by sub-basin or agricultural region; it instead provided a crop summary for the entire basin. The following breakdown was given in that report:

Crop Distribution, Wyoming Water Planning Report No. 3 (Wyoming Water Planning Program, September 1970)		
<i>Crop</i>	<i>Acres</i>	<i>Percent</i>
Alfalfa	20,335	6.1
Improved Grass Hay	75,780	22.8
Native Hay	99,360	29.9
Barley	3,710	1.1
Oats	970	0.3
Pasture	101,985	30.7
Other	1,000	0.3
Idle	29,120	8.8
Total	332,260	100.0

As the distribution above shows, alfalfa and grass hay (and pasture) heavily dominate cropping in the basin, and this is especially true for the regions north of Fontenelle Reservoir. While small grains are locally important (e.g. Eden Valley), these crops are harvested in small quantities and are not considered a significant part of the overall agricultural picture. The data above are given for comparison to data developed for the current planning study, which follows.

The shortness of the growing season is a primary reason for the relative scarcity of crops other than hay. In some parts of the basin, such as along drainages emanating from the Wyoming Range near Big Piney, a lack of storage water is also a reason for lackluster late-season harvests. Therefore, virtually all irrigators in the basin achieve only one cutting of hay per summer. After the first cutting is made, sometime between the middle of July and early August, there simply is not enough time for a second growth. Fields are dried before harvest, and water may not be applied again until fall to add moisture to the soil profile, or to fill ponds for winter stock water. Isolated areas where alfalfa crops are harvested are reported to get second cuttings.

Several sources were contacted to determine the current cropping distribution in the Green River Basin, and they are listed in the References section. The data reported either come from producer reports, extension agency knowledge of the areas, or from previous irrigator interviews, and comprise the best available sources of information. The basin is quite large, and the agricultural valleys often are so far apart that they exhibit significantly different weather patterns as well as hydrology, soil type, and, likely, crop mixes. Because of the desire to quantify the consumptive use of locally important crops in the spreadsheet surface water model, cropping patterns were determined for the major agricultural areas of the basin. These include the Little Snake River Valley, The Lyman/Fort Bridger (Blacks Fork/Smiths Fork) Valley, the Henrys Fork Valley, Eden Valley, and the remainder of the basin. North of LaBarge Creek on the western edge, and from the East Fork River north along the flank of the Wind River Mountains on the east, the central and upper Green River Basin is described as irrigating virtually nothing but grass hay and pasture, although some alfalfa fields exist.

Table 1 shows the cropping distributions obtained from the cited sources. Figure 1 shows the regions to which these patterns can be applied, with percentages rounded to the nearest whole number.

References

- Annual Crop Production and Water Utilization Data, 1989-1999, Eden Valley Irrigation and Drainage District.
- Grasmick, Tami, Program Technician, Uinta County USDA Service Center, April 2000, Personal Communication.
- Kennington, Jody, District Conservationist, USDA, NRCS, Star Valley Office, April 2000, Personal Communication.
- Western Water Consultants, December 1992, Little Snake River Basin Planning Study, Volume III, Irrigation Reservoir Investigations. Prepared for the Wyoming Water Development Commission.
- Wyoming Water Planning Program, September 1970, "Water and Related Land Resources of the Green River Basin, Wyoming," Wyoming Water Planning Program Report No. 3, Wyoming State Engineer's Office.

Table 1 - Green River Basin Cropping Patterns, by Sub-Basin

Big Sandy/Eden Valley:

	Acres							Total
	Other Hay	Alfalfa	Irr. Pasture	Silage	Oats	Corn	Barley	
1989	5,971	1,997	1,390	125	140	0	70	9,693
1990	6,545	2,083	1,609	0	152	0	65	10,454
1991	8,514	2,611	1,581	96	0	378	48	13,228
1992	9,301	2,751	2,057	96	0	0	15	14,220
1993	10,073	2,954	2,057	96	0	0	34	15,214
1994	No Report							NR
1995	10,153	3,274	2,040	96	120	0	60	15,743
1996	7,877	5,672	2,040	96	160	0	74	15,919
1997	6,820	5,345	3,298	96	220	0	320	16,099
1998	6,406	5,640	3,298	96	290	0	580	16,310
1999	6,960	4,420	3,298	96	360	0	640	15,774
Total	78,620	36,747	22,668	893	1,442	378	1,906	
Avg	7,862	3,675	2,267	89	144	38	191	14,265
%	55%	26%	16%	1%	1%	0%	1%	

Source: Annual Crop Production and Water Utilization Data, Eden Valley Irrigation and Drainage District

Southwest Green River Basin:

	Acres			Total
	Grass Hay	Alfalfa	Grain	
Blacks Fork	25,266	2,297	442	28,005
	90.2%	8.2%	1.6%	
Smiths Fork	10,107	322	100	10,529
	96.0%	3.1%	0.9%	
Henrys Fork	7,251	0	0	7,251
	100.0%			

Source: Ms. Tami Grasmick, Program Technician, Uinta County USDA Service Center

Little Snake River Valley:

Grass Hay	Alfalfa	Irr. Pasture	Total
75%	11%	14%	100%

Source: Western Water Consultants, 1992, Little Snake River Basin Planning Study, Volume III, Irrigation Reservoir Investigations

Lincoln County (Hams Fork, Fontenelle Creek, LaBarge Creek)

Grass Hay & Pasture	Alfalfa	Total
95%	5%	100%

Source: Mr. Jody Kennington, USDA NRCS District Conservationist, Star Valley Office

Upper Green River Basin:

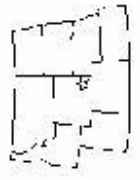
The Upper Green River Basin contains some alfalfa fields under center-pivot installations. However, the aggregated acreage is so small that no appreciable error is introduced if the entire upper basin is assumed to be grass hay and pasture.

Percentages Reported by Sub-basin

	Pasture Grass or Grass Hay	Alfalfa	Small Grains
Henry's Fork, Muddy, New Fork, Slate, Other Upper Green	100	0	0
Smiths Fork	96	3	1
Fontenelle Creek, Hams Fork, LaBarge Creek	95	5	0
Blacks Fork	90	8	2
Little Snake	89	11	0
Big Sandy	71	26	3

- Henry's Fork, Muddy, New Fork, Slate, Other Upper Green
- Smiths Fork
- Fontenelle Creek, Hams Fork, LaBarge Creek
- Blacks Fork
- Little Snake
- Big Sandy

State Well Water Basins Outlets



Irrigation in uncolored areas in Wyoming is unreported and is assumed 100% Pasture Grass or Grass Hay

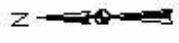
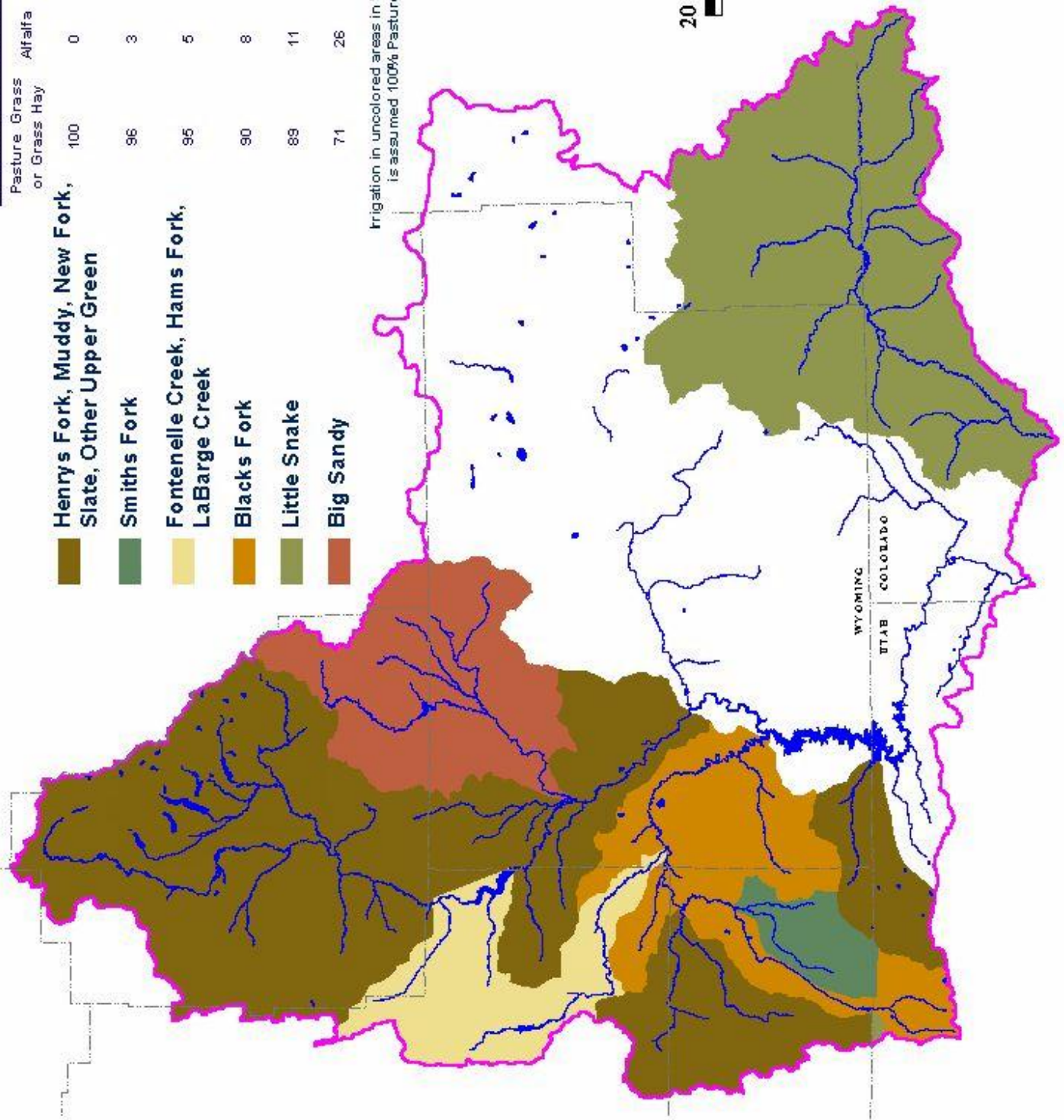


Figure 1
Cropping Patterns
Green River Basin
Wyoming