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**MEMORANDUM**

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**Subject: Bear River Basin Plan  
Key Structures and Diversions  
WHITES WATER DIVERSION**

**Date:** August 7, 2000

**Diversion Description:** The Whites Water headgate consists of a concrete headwall with a single 9-foot wide rectangular wooden gate.



*Whites Water headgate structure*

**Diversion Location:** The Whites Water diversion is located on the Smiths Fork, tributary to the Bear River. The diversion is regulated as part of the Central Division of the Bear River Compact. See location map hereafter.

Latitude      N 42° 05' 52.2"  
Longitude     W 110° 56' 14.5"

**Conveyance Description:** Open channel canal, approximately 29,040 feet in length.<sup>1</sup>

**Direct Flow Water Rights:**<sup>2</sup>

Priority Date	Permit Number	Permitted Use	Acres	Flow (CFS)	Cumulative (CFS)	Comments
06-10-1885	TERR	Irrigation	105	1.50	1.50	
06-10-1885	TERR	Irrigation, Domestic, Storage	870	12.42	13.92	
10-01-1889	TERR	Irrigation	11	0.15	14.07	
10-01-1889	TERR	Irrigation, Domestic, Storage	110	1.57	15.64	
10-01-1889	TERR	Irrigation, Storage	90	1.28	16.92	

10-01-1889	TERR	Irrigation, Domestic, Storage	35	0.50	17.42	
10-01-1889	TERR	Irrigation, Storage	17	0.24	17.66	
04-02-1906	1516E	Irrigation	55	0.78	18.44	

**Associated Storage Rights:** None

**Irrigation Practices:** Lands west of Highway 89 are flood irrigated (approx. 60%). Lands on the east side of Highway 89 are sprinkler irrigated using hand lines and side wheel rolls (approx. 40%).<sup>3</sup>

**Estimated Diversion Efficiency:**

Calculated Diversion Efficiency = Conveyance Efficiency X Application Efficiency:

Conveyance Efficiency:	60%
Application Efficiency:	<u>65%</u>
<b>Overall Diversion Efficiency:</b>	<b>40%</b>

Conveyance efficiency is estimated based on total length of main canal. Application efficiency for flood irrigation and sprinkler irrigation is estimated at 55% and 85% respectively.

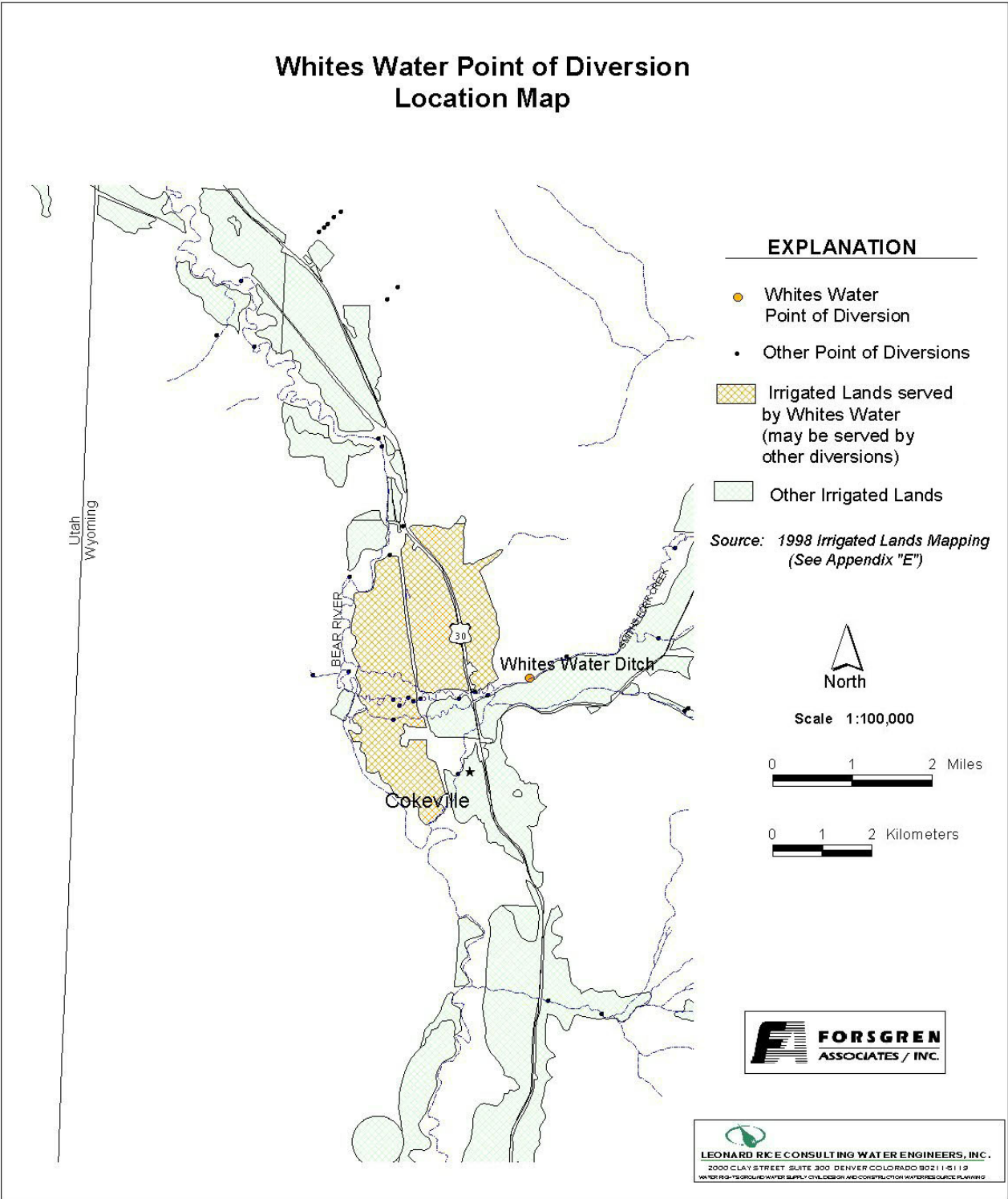
**Crop Types / Consumptive Use:** Irrigated lands are mostly alfalfa (approx. 70%) with some grains. The remainder of the acreage is meadow grasses.<sup>3</sup>

**Return Flows:** Return flow reportedly surfaces at Garrett springs, tributary to the Bear River.

The following return flow pattern was adopted for modeling in this study are as follows:

<u>Month</u> <u>(after initial Diversion)</u>	<u>Percent of Return</u>
0	50%
1	25%
2	15%
3	<u>10%</u>
	100%

## Whites Water Point of Diversion Location Map



### EXPLANATION

- Whites Water Point of Diversion
- Other Point of Diversions
- ▨ Irrigated Lands served by Whites Water (may be served by other diversions)
- ▭ Other Irrigated Lands

Source: 1998 Irrigated Lands Mapping (See Appendix "E")



North

Scale 1:100,000

0 1 2 Miles

0 1 2 Kilometers



**LEONARD RICE CONSULTING WATER ENGINEERS, INC.**  
 2000 CLAY STREET SUITE 300 DENVER COLORADO 80211-5113  
 WATER RIGHTS-GROUNDWATER SUPPLY CIVIL DESIGN AND CONSTRUCTION WATER RESOURCES PLANNING

## References:

- 1) *USDA -Soil Conservation Service Economic Research Service-Forest Service in Cooperation with the States of Idaho, Utah, Wyoming, Irrigation Conveyance Systems, Working Paper for the Bear River Basin Type IV Study, Idaho-Utah-Wyoming, April 1976*
- 2) *Water rights summary obtained from State Engineer Interstate Reglist – revised April 14, 1999*
- 3) *Irrigation practices based on field investigation and interview with Mr. Kevin Wilde, Water Hydrographer-Commissioner – November 30, 1999.*
- 4) *State of Utah Natural Resources, Water Budget Studies – Utah, Bear River Study Area, September 1994*

**BEAR RIVER WYOMING DIVERSIONS  
MONTHLY DIVERSION RECORDS**

**WHITES WATER  
(on Smith's Fork)**

YEAR	MAY			JUNE			JULY			AUGUST			SEPTEMBER		
	Total of Daily Ave for Month	Average CFS	Monthly Total Ac-Ft	Total of Daily Ave for Month	Average CFS	Monthly Total Ac-Ft	Total of Daily Ave for Month	Average CFS	Monthly Total Ac-Ft	Total of Daily Ave for Month	Average CFS	Monthly Total Ac-Ft	Total of Daily Ave for Month	Average CFS	Monthly Total Ac-Ft
1970	217	7.0	430.4	839	28.0	1664.1	832	26.8	1650.2	480	15.5	952.1	699	23.3	1386.4
1971	112	3.6	222.1	473	15.8	938.2	134	4.3	265.8	696	22.5	1380.5	119	4.0	236.0
1972	258	8.3	511.7	631	21.0	1251.6	472	15.2	936.2	674	21.7	1336.9	459	15.3	910.4
1973	202	6.5	400.7	1359	45.3	2695.5	696	22.5	1380.5	451	14.5	894.5	446	14.9	884.6
1974	202	6.5	400.7	1075	35.8	2132.2	800	25.8	1586.8	797	25.7	1580.8	432	14.4	856.9
1975	144	4.6	285.6	910	30.3	1805.0	786	25.4	1559.0	759	24.5	1505.5	417	13.9	827.1
1976	156	5.0	309.4	1070	35.7	2122.3	909	29.3	1803.0	747	24.1	1481.7	18	0.6	35.7
1977	53	1.7	105.1	414	13.8	821.2	331	10.7	656.5	0	0.0	0.0	179	6.0	355.0
1978	78	2.5	154.7	924	30.8	1832.7	789	25.5	1565.0	447	14.4	886.6	0	0.0	0.0
1979	293	9.5	581.2	833	27.8	1652.2	478	15.4	948.1	578	18.6	1146.4	372	12.4	737.9
1980	112	3.6	222.1	960	32.0	1904.1	807	26.0	1600.7	731	23.6	1449.9	164	5.5	325.3
1981	552	17.8	1094.9	879	29.3	1743.5	930	30.0	1844.6	536	17.3	1063.1	233	7.8	462.1
1982	157	5.1	311.4	991	33.0	1965.6	803	25.9	1592.7	767	24.7	1521.3	407	13.6	807.3
1983	190	6.1	376.9	935	31.2	1854.5	794	25.6	1574.9	576	18.6	1142.5	282	9.4	559.3
1984	1059	34.2	2100.5	1055	35.2	2092.6	1158	37.4	2296.9	644	20.8	1277.4	400	13.3	793.4
1985	812	26.2	1610.6	1178	39.3	2336.5	844	27.2	1674.0	730	23.5	1447.9	395	13.2	783.5
1986	442	14.3	876.7	1153	38.4	2286.9	984	31.7	1951.7	672	21.7	1332.9	126	4.2	249.9
1987	1439	46.4	2854.2	778	25.9	1543.1	495	16.0	981.8	456	14.7	904.5	445	14.8	882.6
1988	526	17.0	1043.3	920	30.7	1824.8	696	22.5	1380.5	419	13.5	831.1	150	5.0	297.5
1989	531	17.1	1053.2	605	20.2	1200.0	546	17.6	1083.0	321	10.4	636.7	360	12.0	714.0
1990	93	3.0	184.5	155	5.2	307.4	136	4.4	269.8	96	3.1	190.4	0	0.0	0.0
1991	536	17.3	1063.1	696	23.2	1380.5	631	20.4	1251.6	464	15.0	920.3	315	10.5	624.8
1992	396	12.8	785.5	420	14.0	833.1	434	14.0	860.8	238	7.7	472.1	0	0.0	0.0
1993	534	17.2	1059.2	906	30.2	1797.0	711	22.9	1410.2	590	19.0	1170.2	54	1.8	107.1
1994	843	27.2	1672.1	571	19.0	1132.6	454	14.6	900.5	41	1.3	81.3	34	1.1	67.4
1995	593	19.1	1176.2	747	24.9	1481.7	659	21.3	1307.1	774	25.0	1535.2	161	5.4	319.3
1996	435	14.0	862.8	1213	40.4	2406.0	728	23.5	1444.0	506	16.3	1003.6	174	5.8	345.1
1997	348	11.2	690.2	1209.5	40.3	2399.0	1027.5	33.1	2038.0	590.1	19.0	1170.4	150.4	5.0	298.3
1998	747.4	24.1	1482.4	1261.8	42.1	2502.7	902.9	29.1	1790.9	603	19.5	1196.0	231.7	7.7	459.6

**AVERAGES**

**13.4    824.9**

**28.9    1720.9**

**22.2    1365.7**

**17.1    1052.1**

**8.3    494.0**