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**MEMORANDUM**

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

**Date:**         August 7, 2000

**Diversion Description:** The diversion structure consists of a single 60-inch CMP culvert, concrete headwall with wings, and a steel slide gate.

**Diversion Location:** Diversion is on the Upper Bear in Wyoming. Irrigated lands are located in Wyoming as shown in the location map hereafter.

Latitude        N 41° 03' 15.5"  
Longitude      W 110° 55' 45.3"



*Lewis Headgate*

**Conveyance Description:** Open channel canal, approximately 15,840 feet in length.<sup>1</sup>

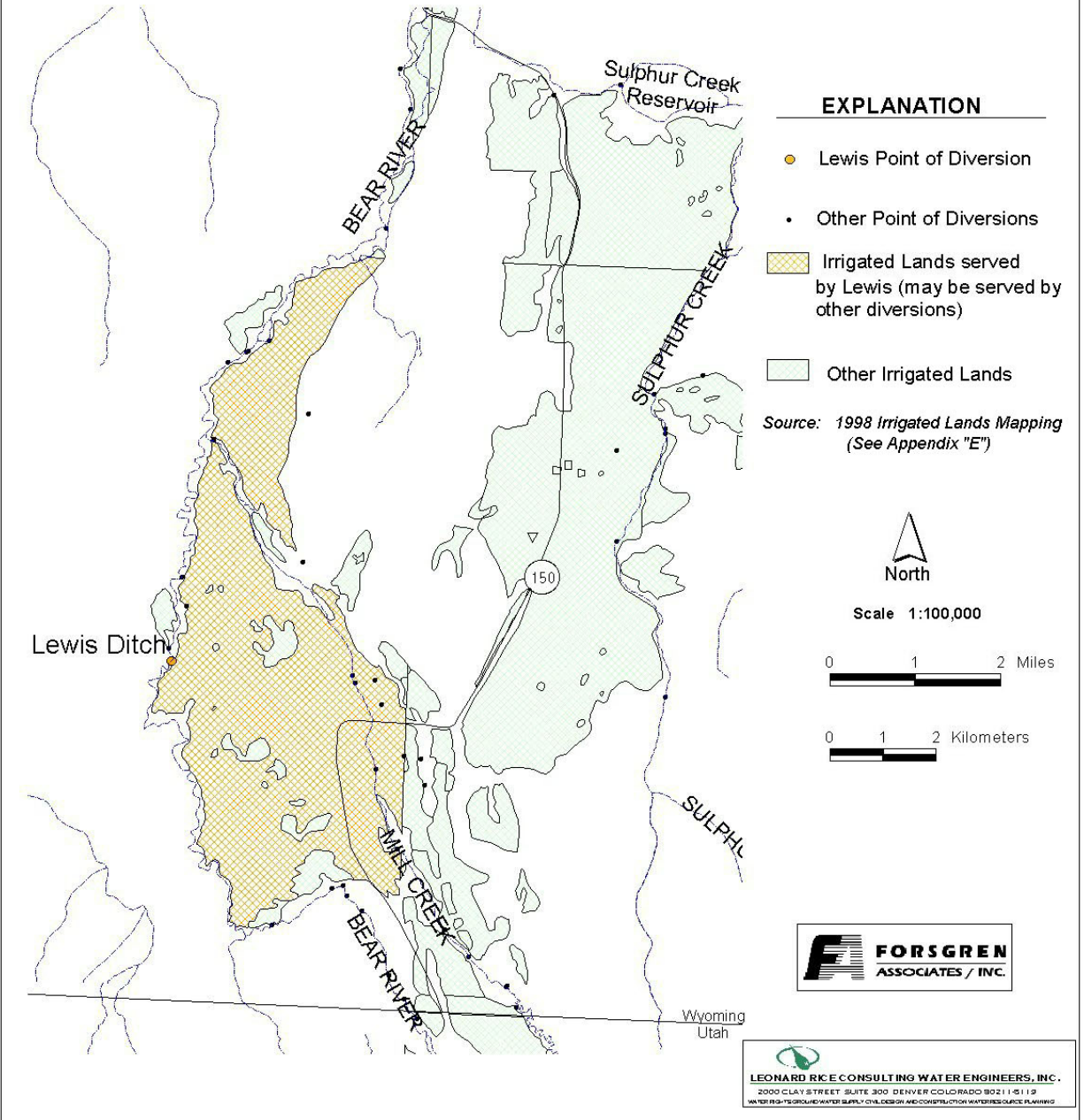
**Direct Flow Water Rights:**<sup>2</sup>

Priority Date	Permit Number	Permitted Use	Permitted Acres	Flow (CFS)	Cumulative (CFS)	Comments
09-23-1888	TERR	Irrigation	20	0.29	0.29	<i>Morse &amp; Coffman</i>
10-04-1888	TERR	Irrigation	360	5.14	5.43	
04-20-1900	523E	Irrigation	460	6.57	12.00	

**Associated Storage Rights:**

Reservoir	Shareholder	Volume (Acre-ft)	Est. % of Shares Used this Diversion <sup>3</sup>	Comments
Whitney	Moe Jackson	123.75	25%	
Whitney	Darrell Goodfellow	168.75	50%	

## Lewis Point of Diversion Bear River Basin, Wyoming



**Irrigation Practices:** Land is all flood irrigated.<sup>3</sup>

**Estimated Diversion Efficiency:** Canal losses are relatively high due to porous nature of soils in the higher reaches of the Upper Bear.

Calculated Diversion Efficiency = Conveyance Efficiency X Application Efficiency:

Conveyance Efficiency:	55%
Application Efficiency:	<u>55%</u>
<b>Overall Diversion Efficiency:</b>	<b>30%</b>

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

**Crop Types / Consumptive Use:** Water is used entirely to irrigate meadow grasses, primarily Timothy, Meadow Foxtail, etc.<sup>3</sup>

**Return Flows:** Return flow is intercepted by Myers No. 1 Ditch.

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	70%
1	20%
2	10%
3	<u>0%</u>
	100%

**Other Operational Information:** The Lewis Canal intercepts virtually all of the return flow and runoff from the Crown & Pine Grove Canals. During low flow periods, observed runoff has contributed as much as 3 CFS. The Lewis ditch converges with Mill Creek. Irrigation water diverted back out of Mill Creek approximately ¼ mile downstream.<sup>3</sup>

**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. Don Shoemaker, Water Hydrographer-Commissioner – November 6,1999.*
- 4) *State of Utah Natural Resources, Water Budget Studies – Utah, Bear River Study Area, September 1994*

**BEAR RIVER WYOMING DIVERSIONS  
MONTHLY DIVERSION RECORDS**

**LEWIS**

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															
1971	0	0.0	0.0	0	0.0	0.0	330	10.6	654.5	219	7.1	434.4	100	3.3	198.3
1972	0	0.0	0.0	78	2.6	154.7	310	10.0	614.9	186	6.0	368.9	0	0.0	0.0
1973	140	4.5	277.7	393	13.1	779.5	280	9.0	555.4	142	4.6	281.7	78	2.6	154.7
1974	196	6.3	388.8	374	12.5	741.8	190	6.1	376.9	96	3.1	190.4	73	2.4	144.8
1975	0	0.0	0.0	242	8.1	480.0	228	7.4	452.2	297	9.6	589.1	257	8.6	509.8
1976	0	0.0	0.0	190	6.3	376.9	349	11.3	692.2	139	4.5	275.7	78	2.6	154.7
1977	128	4.1	253.9	208	6.9	412.6	144	4.6	285.6	0	0.0	0.0	3	0.1	6.0
1978	22	0.7	43.6	252	8.4	499.8	216	7.0	428.4	171	5.5	339.2	48	1.6	95.2
1979	36	1.2	71.4	284	9.5	563.3	239	7.7	474.0	180	5.8	357.0	59	2.0	117.0
1980	19	0.6	37.7	129	4.3	255.9	211	6.8	418.5	161	5.2	319.3	35	1.2	69.4
1981	0	0.0	0.0	245	8.2	486.0	168	5.4	333.2	48	1.5	95.2	0	0.0	0.0
1982	1	0.0	2.0	344	11.5	682.3	336	10.8	666.4	114	3.7	226.1	140	4.7	277.7
1983	39	1.3	77.4	41	1.4	81.3	115	3.7	228.1	199	6.4	394.7	144	4.8	285.6
1984	0	0.0	0.0	88	2.9	174.5	232	7.5	460.2	94	3.0	186.4	53	1.8	105.1
1985	80	2.6	158.7	148	4.9	293.6	305	9.8	605.0	282	9.1	559.3	70	2.3	138.8
1986	205	6.6	406.6	405	13.5	803.3	279	9.0	553.4	244	7.9	484.0	78	2.6	154.7
1987	225	7.3	446.3	66	2.2	130.9	282	9.1	559.3	178	5.7	353.1	45	1.5	89.3
1988	45	1.5	89.3	131	4.4	259.8	205	6.6	406.6	22	0.7	43.6	13	0.4	25.8
1989	36	1.2	71.4	186	6.2	368.9	209	6.7	414.5	91	2.9	180.5	16	0.5	31.7
1990	33	1.1	65.5	61	2.0	121.0	234	7.5	464.1	106	3.4	210.2	22	0.7	43.6
1991	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
1992	131	4.2	259.8	178	5.9	353.1	96	3.1	190.4	11	0.4	21.8	12	0.4	23.8
1993	2	0.1	4.0	101	3.4	200.3	210	6.8	416.5	146	4.7	289.6	83	2.8	164.6
1994	88	2.8	174.5	146	4.9	289.6	201	6.5	398.7	31	1.0	61.5	3	0.1	6.0
1995	0	0.0	0.0	131	4.4	259.8	179	5.8	355.0	104	3.4	206.3	65	2.2	128.9
1996	100	3.2	198.3	189	6.3	374.9	89	2.9	176.5	130	4.2	257.9	59	2.0	117.0
1997	19.8	0.6	39.3	137.2	4.6	272.1	96.4	3.1	191.2	117.4	3.8	232.9	155.9	5.2	309.2
1998	40.7	1.3	80.7	188.4	6.3	373.7	247.1	8.0	490.1	126.3	4.1	250.5	32.6	1.1	64.7
1999	7	0.2	13.9	235	7.8	466.1	114	3.7	226.1	70	2.3	138.8	21	0.7	41.7

**AVERAGES**      **1.8**    **109.0**      **5.9**    **353.6**      **6.8**    **416.8**      **4.1**    **253.4**      **2.0**    **119.2**

Notes: \*1. No published records are available for this diversion for 1970