
MEMORANDUM

Subject: Bear River Basin Plan
Key Structures and Diversions
TUNNEL DITCH DIVERSION

Date: August 7, 2000

Diversion Description: The headgate structure consists of a concrete headwall with a 72-inch CMP culvert and steel slide gate. The culvert was partially filled with sedimentation at the time of inspection.



Diversion Location: Diversion is on the Upper Bear in Wyoming as shown in on the location map hereafter.

Tunnel Ditch headgate

Latitude N 41° 23' 42.2"
Longitude W 111° 00' 68.9"

Conveyance Description: Open channel canal, approximately 21,120 feet in length. ¹

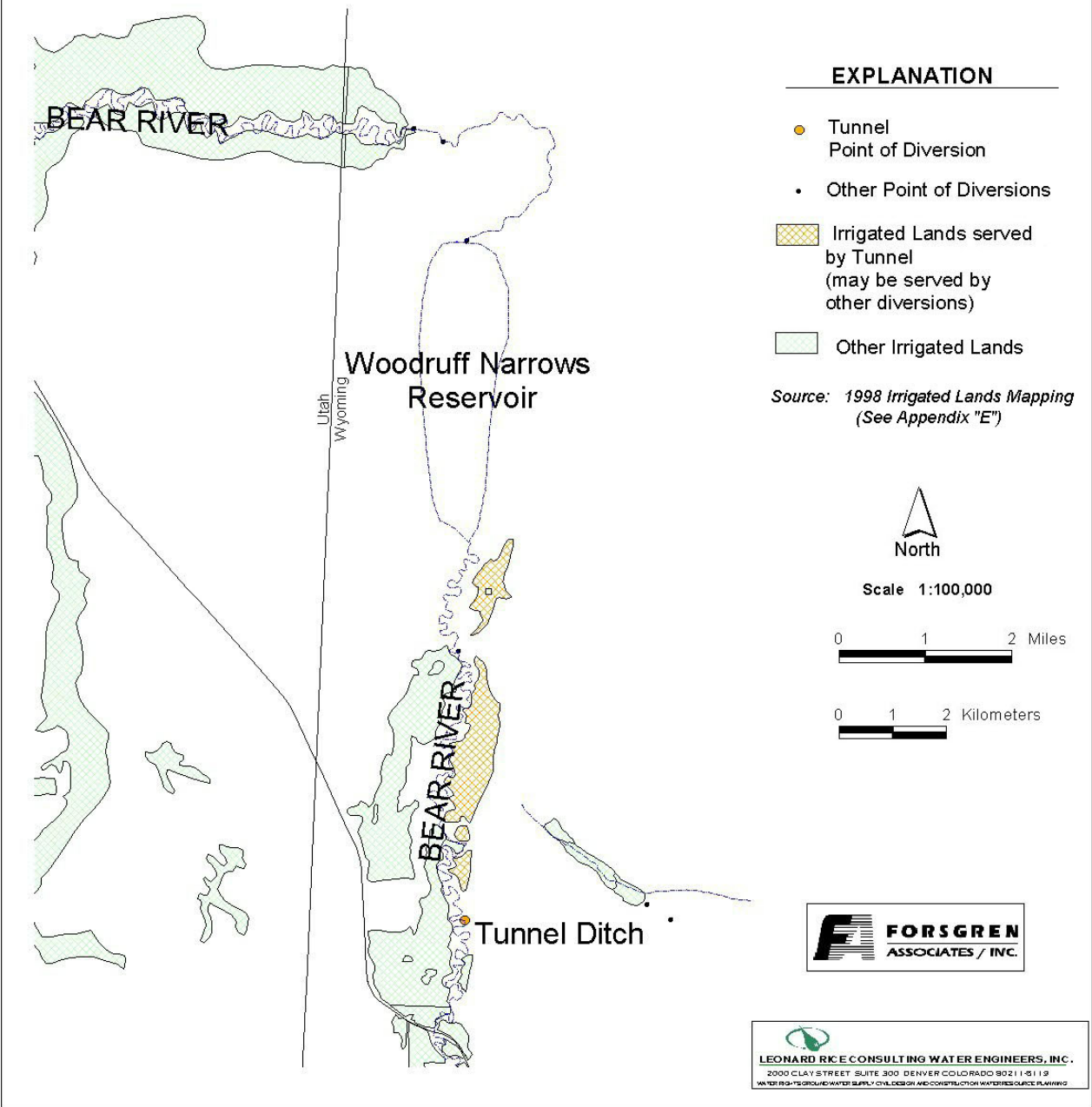
Direct Flow Water Rights:²

Priority Date	Permit Number	Permitted Use	Permitted Acres	Flow (CFS)	Cumulative (CFS)	Comments
-1886	TERR	Irrigation	80	1.14	1.14	
-1886	TERR	Irrigation	479	6.84	7.98	641 acres less 162 inundated
-1886	TERR	Irrigation	23	0.32	8.30	29 acres less 6 inundated
07-15-1912	2643E	Irrigation	38	0.54	8.84	

Associated Storage Rights: None

Irrigation Practices: Lands are flood irrigated. ³

Tunnel Point of Diversion Location Map



Estimated Diversion Efficiency:

Calculated Diversion Efficiency = Conveyance Efficiency X Application Efficiency:

Conveyance Efficiency:	65%
Application Efficiency:	<u>55%</u>
Overall Diversion Efficiency:	36%

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: Water is used entirely to irrigate mixed meadow grasses, primarily Meadow Foxtail, etc.³

Return Flows: Return flow is primarily captured by Woodruff Narrows.

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%
	100%

Other Operational Information: Part of the lands originally permitted and irrigated by this ditch (approximately 168 acres) were inundated with the enlargement of the Woodruff Narrows reservoir. No filings were ever made for abandonment or transfer of those rights.³

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 – October 29, 1999.*
- 4) *State of Utah Natural Resources, Water Budget Studies – Utah, Bear River Study Area, September 1994*

**BEAR RIVER WYOMING DIVERSIONS
MONTHLY DIVERSION RECORDS**

TUNNEL

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	179	5.8	355.0	885	29.5	1755.4	371	12.0	735.9	291	9.4	577.2	291	9.7	577.2
1972	265	8.5	525.6	1238	41.3	2455.5	422	13.6	837.0	338	10.9	670.4	224	7.5	444.3
1973	89	2.9	176.5	1031	34.4	2045.0	547	17.6	1085.0	247	8.0	489.9	150	5.0	297.5
1974	254	8.2	503.8	1145	38.2	2271.1	290	9.4	575.2	383	12.4	759.7	88	2.9	174.5
1975	19	0.6	37.7	970	32.3	1924.0	739	23.8	1465.8	290	9.4	575.2	274	9.1	543.5
1976	81	2.6	160.7	544	18.1	1079.0	282	9.1	559.3	43	1.4	85.3	61	2.0	121.0
1977	186	6.0	368.9	439	14.6	870.7	46	1.5	91.2	0	0.0	0.0	18	0.6	35.7
1978	0	0.0	0.0	920	30.7	1824.8	416	13.4	825.1	18	0.6	35.7	0	0.0	0.0
1979	281	9.1	557.4	681	22.7	1350.7	491	15.8	973.9	204	6.6	404.6	11	0.4	21.8
1980	108	3.5	214.2	893	29.8	1771.2	174	5.6	345.1	0	0.0	0.0	0	0.0	0.0
1981	304	9.8	603.0	751	25.0	1489.6	256	8.3	507.8	42	1.4	83.3	162	5.4	321.3
1982	159	5.1	315.4	901	30.0	1787.1	311	10.0	616.9	0	0.0	0.0	0	0.0	0.0
1983	8	0.3	15.9	804	26.8	1594.7	518	16.7	1027.4	44	1.4	87.3	0	0.0	0.0
1984	120	3.9	238.0	737	24.6	1461.8	179	5.8	355.0	25	0.8	49.6	169	5.6	335.2
1985	241	7.8	478.0	516	17.2	1023.5	204	6.6	404.6	171	5.5	339.2	72	2.4	142.8
1986	242	7.8	480.0	851	28.4	1687.9	149	4.8	295.5	248	8.0	491.9	223	7.4	442.3
1987	572	18.5	1134.5	1191	39.7	2362.3	146	4.7	289.6	12	0.4	23.8	191	6.4	378.8
1988	486	15.7	964.0	777	25.9	1541.2	123	4.0	244.0	4	0.1	7.9	84	2.8	166.6
1989	864	27.9	1713.7	845	28.2	1676.0	293	9.5	581.2	89	2.9	176.5	125	4.2	247.9
1990	269	8.7	533.6	994	33.1	1971.6	262	8.5	519.7	153	4.9	303.5	67	2.2	132.9
1991	720	23.2	1428.1	806	26.9	1598.7	80	2.6	158.7	67	2.2	132.9	145	4.8	287.6
1992	220	7.1	436.4	342	11.4	678.3	38	1.2	75.4	0	0.0	0.0	26	0.9	51.6
1993	410	13.2	813.2	656	21.9	1301.2	70	2.3	138.8	3	0.1	6.0	10	0.3	19.8
1994	296	9.5	587.1	315	10.5	624.8	177	5.7	351.1	2	0.1	4.0	38	1.3	75.4
1995	13	0.4	25.8	901	30.0	1787.1	402	13.0	797.4	1	0.0	2.0	0	0.0	0.0
1996	539	17.4	1069.1	839	28.0	1664.1	10	0.3	19.8	0	0.0	0.0	1	0.0	2.0
1997	334.1	10.8	662.7	145.9	4.9	289.4	7.6	0.2	15.1	59.6	1.9	118.2	64.4	2.1	127.7
1998	181.4	5.9	359.8	169.9	5.7	337.0	262.7	8.5	521.1	16.5	0.5	32.7	0	0.0	0.0
1999	236	7.6	468.1	511	17.0	1013.6	42	1.4	83.3	3	0.1	6.0	3	0.1	6.0

AVERAGES

8.5 525.0

25.1 1490.9

8.1 499.9

3.1 188.4

2.9 170.8

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