BIG GOOSE CREEK

ALLIANCE DITCH DIVERSION
BIG GOOSE & BEAVER DITCH DIVERSION, NOS. 1 & 2
GRINNELL DITCH DIVERSION ON BIG GOOSE CREEK
PARK DIVERSION DITCH
PK (PATRICK) DITCH DIVERSION
SHERIDAN CITY INTAKES – BIG GOOSE CANYON DIVERSION

BIG GOOSE CREEK DRAINAGE
INTRODUCTION

BACKGROUND

The Big Goose flows out of the east slope of the Bighorn Mountains, between the Little Goose drainage to the south and the Wolf Creek drainage to the north. In Sheridan, it joins the Little Goose, then commences north to join the Tongue River east of Ranchester. The Big Goose's upper reaches include a number of reservoirs, many of which are shared with Little Goose users through transbasin diversions like the Peralta Ditch.

CHARACTERISTICS

State Engineer's Office water commissioners/hydrographers set a maximum loss on the creek at 10 percent (head to mouth), thanks in part to the creek's steep descent to the valley.

Available reservoir storage water in the Big Goose drainage helps moderate changes in irrigation practices from dry years to wet years. Return flows are reduced in dry years in comparison to wet or average years, requiring water commissioners to maintain more water in the main stem to serve downstream demands.

In addition, irrigators are tending toward more conservation of the water they use, increasing the use of sprinkler irrigation. This has the effect of reducing return flows to the creek.

The Big Goose drainage very seldom goes into regulation.

Water commissioners allow 15-20 cfs of diversion into the Little Goose drainage via the Peralta Ditch and Park Diversion to enhance flows in the Little Goose as long as there is ample supply in Big Goose Creek.

USAGE

The Big Goose's diversions are primarily used for agricultural irrigation but are also used to supply stock, municipal, and industrial demands.

Stored Water Use

Water commissioners estimate that irrigators on the Big Goose typically begin to use their stored water according to the following timing:

Wet Year	Average Year	Dry Year
End of July	Mid-July	June

Agriculture

Growers in the Big Goose drainage tend to plant acreage as approximately 50 percent grass hay and 50 percent alfalfa.

Irrigation Practices

Irrigation practices are broken out per diversion in the following diversion memoranda.

The typical irrigation season runs from April 15-May 1 (depending on whether the spring runoff is delayed by a cold weather) to early October (depending on when the first snows fall and the ground freezes). Post season irrigation is not practiced in the Big Goose drainage as a rule because reservoirs are shut off on the first of October.

Double Appropriation

Irrigation water rights with priority dates of March 1, 1945 or earlier are entitled to an additional 1cfs per 70 acres under Wyoming's surplus water statutes. Whenever the supply in a stream exceeds the amount required to satisfy all existing appropriations established prior to March 1, 1985, the stream is said to be in an excess flow condition and water right holders with priorities between March 2, 1945 and March 1, 1985 may use an additional 1 cfs for each 70 acres irrigated.

On the Big Goose, this practice is limited primarily by the condition of ditches. Many of the ditches are not capable of carrying all of the water an irrigator could use.

% of appropriation	% of ditches in drainage capable of flow
200	20
150	60
100-150	90

Permitted Uses

Permits granted for water appropriation are granted for specific uses. The following pages contain tables of permits and their associated uses. The following table provides a key to those uses:

Code	Use
Chem	Chemical
Com	Commercial
Cul	Culinary
D	Domestic
Drl	Drilling
Eng	Steam Engines
Fire	Fire Protection
Fish	Fish Propogation
F.C.	Flood Control
I	Irrigation
Ind	Industrial
I.F.	Instream Flow
Mech	Mechanical
Mfg	Manufacturing
Mil	Milling

Code	Use
Min	Mining
Misc	Miscellaneous
Mun	Municipal
Oil	Oil Refining or Production
P.C.	Pollution Control
Power	Power Development
R.R.	Railroad
Rec	Recreational
Ref	Refining
Res. Supply	Supply Facility for a Reservoir
S	Stock
T	Transportation

WATER RIGHTS

Two water rights summary tables are provided for each diversion serving irrigation referenced here. The first, included in the body of the diversion synopsis, refers to the rights on record with the State Engineer's Office and is derived from that office's *Tabulation of Adjudicated Surface Water Rights of the State of Wyoming, Water Division Number Two* (Oct. 1999).

Because this rights summary is pulled directly from the SEO *Tab,* the rights cited follow the SEO's priority order:

Hierarchy	Format of right	Example
1	Day, Month, Year	05-15-1884
2	Month and Year	05-00-1884
3	Specified Season and Year	Spring 1884
4	Year Only	1884
5	Before Year	Before 1884

Board orders or court orders may also establish a specific priority.

Irrigated Lands Water Rights Database

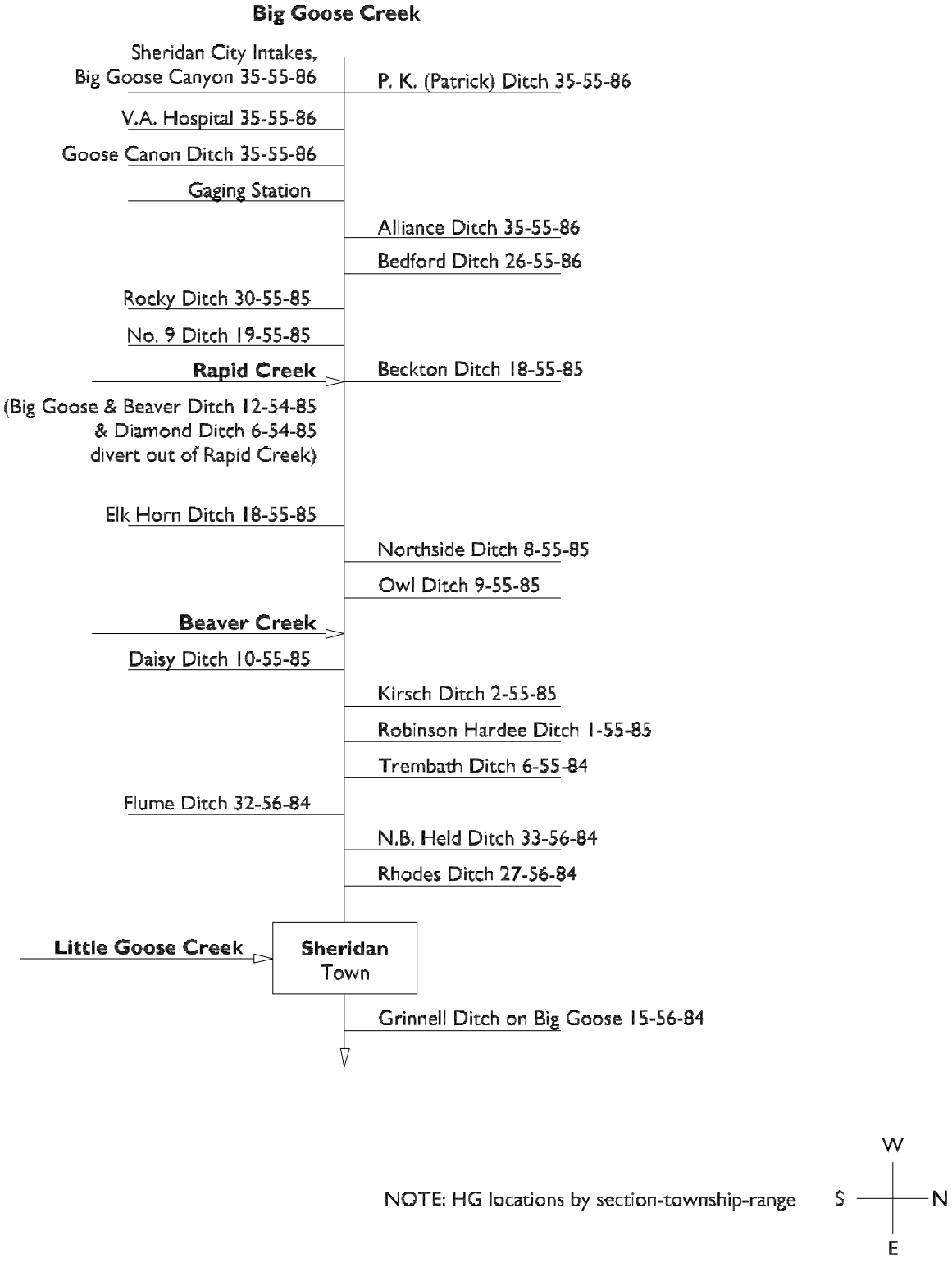
The second table, which follows the diversion synopsis, is taken from the irrigated lands water rights database developed for the basin plan. It can be used as a reference with the following caveats: It only lists water rights associated with the irrigated lands polygons mapped by HKM. The table does not include nonirrigation rights devoted to reservoir supply, municipal, fish propagation, etc. The rights on this table are associated only with those irrigated lands identified through the course of this study, both actively irrigated and currently idle.

Column Heading Key

PerNo	Permit Number	"Terr" denotes a territorial right.
PerSfx	Permit Suffix	D = direct flow E = enlargement R = reservoir
Facility Name		Parentheses denote the former means of conveyance for the water right.
Unit	Flow or volume	CFS = cubic feet per second AF = acre-feet GPM = gallons per minute
SupTyp	Supply Type	OS = original supply SS = supplement supply, for lands having an original supply from another source Sec = secondary supply, for water stored in a reservoir
Status	Status of adjudication	Adj = adjudicated Una = unadjudicated
Source	Source water	Parentheses denote the permit number of the related storage right.

Schematic diagram of the Big Goose drainage:

(Not to scale.)



KEY DIVERSIONS

Diversion: **ALLIANCE DITCH DIVERSION**

Date: 5 Sep. 2000

Note: Despite its relatively junior right, this ditch diverts all of the flow in Big Goose Creek under normal conditions, allowing return flows to satisfy downstream (and senior) rights. In addition, the ditch traverses gravel benches, resulting in higher than typical seepage losses.

Alliance headgate.

Diversion Description: Headgate consists of a single, 3.5 x 2.5-foot steel gate in steel slides operated with a Waterman-type screw, mounted in a steel headwall. Water is carried through a 3.5-foot corrugated metal pipe directly behind the headgate.

Alliance flume and recorder.

Diversion Location: The Alliance Ditch diversion is located on the main stem of the Big Goose, well down stream of the canyon.

Headgate:

Lat.	Long.
N 44° 42' 9.9"	W 107° 10' 48.3"

Flume:

Lat.	Long.
N 44° 42' 13.5"	W 107° 10' 45.1"

Conveyance Description: Open channel canal, approximately 26.4 miles long.

Direct Flow Water Rights: The summary of direct flow rights follows:

Permit	Priority Date	Permitted Use	Acres	Flow (cfs)	Cumulative (cfs)
83	06-29-1891	I	50.00	0.71	0.71
83	06-29-1891	I	50.00	0.71	1.42
83	06-29-1891	I	50.00	0.71	2.13
83	06-29-1891	I	70.00	1.00	3.13
83	06-29-1891	I	70.00	1.00	4.13
83	06-29-1891	I	70.00	1.00	5.13
83	06-29-1891	I	74.13	1.06	6.19
83	06-29-1891	I	80.00	1.14	7.33
83	06-29-1891	I	80.00	1.14	8.47
83	06-29-1891	I	80.00	1.14	9.61
83	06-29-1891	I	82.50	1.17	10.78
83	06-29-1891	I	100.00	1.43	12.21

Direct Flow Water Rights cont'd:

Permit	Priority Date	Permitted Use	Acres	Flow (cfs)	Cumulative (cfs)
83	06-29-1891	I	100.00	1.43	13.64
83	06-29-1891	I	120.00	1.71	15.35
83	06-29-1891	I	147.50	2.10	17.45
83	06-29-1891	I	150.00	2.14	19.59
83	06-29-1891	I	162.50	2.31	21.90
83	06-29-1891	I	175.00	2.50	24.40
83	06-29-1891	I	320.00	4.57	28.97
624E	02-25-1901	I	12.50	0.16	29.13
642E	04-01-1901	I	15.00	0.21	29.34
642E	04-01-1901	I	30.00	0.42	29.76
761E	12-14-1901	I	30.00	0.42	30.18
1063E	05-26-1903	D,I	40.00	0.57	0.57
1314E	07-12-1904	I	10.00	0.14	0.71
1297E	11-23-1904	I	35.00	0.50	1.21
1372E	03-04-1905	I	15.00	0.21	1.42
1678E	11-23-1906	D,I,S	80.00	1.14	2.56
1678E	11-23-1906	I	962.89	13.76	16.32
2490E	04-06-1911	D,I,S	12.50	0.18	16.50
2756E	12-24-1912	I	25.00	0.36	16.86
2770E	03-24-1913	I	40.00	0.57	17.43
2811E	04-07-1913	I	30.00	0.43	30.61

Note: The point of diversion and means of conveyance for 3.85 cfs of Permit No. 83 have been changed to the P.K. (Patrick) Ditch.

Associated Storage Rights: Irrigators use water stored in Park, Sawmill, and Dome Lake No. 1 reservoirs.

Irrigation Practices: Irrigators apply water diverted through approximately 50 percent sprinkler and 50 percent ditch-flood practices.

Return Flows: Estimated percentage of total diversion developing into return flows:

Destination	Wet yr.	Mid yr.	Dry yr.
Soldier Creek	40	30	20

Losses: Approximately 40 percent by end

References: Div. II superintendent Mike Whitaker, State Engineer's Office, Interview, 5 Sept. 2000

Irrigated Lands Water Rights Database

PerNo	PerSfx	Facility Name	Priority	Acres	Amount	Unit	SupTyp	Status	Source
Terr	D	Beck No. 1 (Alliance)	June 30, 1884	641.5	9.16	CFS	OS	Adj	Big Goose Creek
83	D	Alliance (P.K. or Patrick)	June 29, 1891	2031.63	28.97	CFS	SS	Adj	Big Goose Creek
624	E	Enl. Alliance	Feb. 25, 1901	12.5	0.16	CFS	OS	Adj	Big Goose Creek
640	E	Enl. Beck #1 (Alliance)	March 30, 1901	50	0.71	CFS	OS	Adj	Big Goose Creek
642	E	Enl. Alliance	April 1, 1901	45	0.63	CFS	OS	Adj	Big Goose Creek
761	E	Enl. Alliance	Dec. 14, 1901	30	0.42	CFS	OS	Adj	Big Goose Creek
1063	E	Enl. Alliance	May 26, 1903	40	0.57	CFS	OS	Adj	Big Goose Creek
1297	E	Enl. Alliance	Nov. 23, 1904	35	0.5	CFS	OS	Adj	Big Goose Creek
1314	E	Enl. Alliance	July 12, 1904	10	0.14	CFS	OS	Adj	Big Goose Creek
1372	E	Enl. Alliance	March 4, 1905	15	0.21	CFS	OS	Adj	Big Goose Creek

Irrigated Lands Water Rights Database cont'd.

PerNo	PerSfx	Facility Name	Priority	Acres	Amount	Unit	SupTyp	Status	Source
1678	E	Enl. Alliance & Alliance Lateral (P.K. or Patrick)	Nov. 23, 1906	1042.89	14.9	CFS	OS	Adj	Big Goose Creek
2365	E	Enl. Ashley & Kerr/Alliance	Nov. 21, 1910	15	0.21	CFS	OS	Adj	Big Goose Creek
2490	E	Enl. Alliance	April 6, 1911	12.5	0.18	CFS	OS	Adj	Big Goose Creek
2587	E	Enl. Ashley & Kerr/Alliance	Dec. 2, 1911	35	0.5	CFS	OS	Adj	Big Goose Creek
2756	E	Enl. Alliance & Alliance Lateral (P.K. or Patrick)	Dec. 24, 1912	25	0.36	CFS	OS	Adj	Big Goose Creek
2770	E	Enl. Alliance	March 24, 1913	40	0.57	CFS	OS	Adj	Big Goose Creek
2811	E	Enl. Alliance	April 7, 1913	30	0.43	CFS	OS	Adj	Big Goose Creek
4769	E	Enl. Alliance	April 21, 1930	59	0		SS	Una	Big Goose Creek
6740	E	Enl. Alliance	July 29, 1981	58.4	0		SS	Una	Big Goose Creek
2755	E	Enl. Alliance	Dec. 24, 1912	25	0		Sec	Adj	W Fk Big Goose Ck (688R & 961R)
2857	E	Enl. Alliance	Sep. 20, 1913	175	0		Sec	Una	West Fork Big Goose Creek (961R)

Name	Alliance Ditch Diversion
Source	Big Goose Creek
District	4
Data	Total monthly flow in AF

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1970													
1971	0.00						0.00	684.69	1157.35	1241.06	1030.49	742.83	4856.42
1972	0.00						0.00	447.35	1456.07	1283.42	1392.00	961.65	5540.49
1973	24.83						0.00	115.83	1486.81	1497.92	1200.59	958.41	5284.39
1974	0.00						0.00	782.68	1441.59	1498.11	1454.28	1099.24	6275.90
1975	0.00						0.00	0.00	412.54	1195.24	1495.93	1043.11	4146.82
1976	0.00						0.00	850.81	1578.64	1456.66	1231.73	1075.24	6193.08
1977	0.00						0.00	809.65	1550.28	1165.69	1031.21	700.52	5257.35
1978	0.00						0.00	0.00	648.59	1600.26	1529.45	1244.83	5023.13
1979													
1980	0.00						0.00	1116.00	1490.00	976.00	992.00	804.00	5378.00
1981	0.00						161.00	917.00	1206.00	1106.00	878.00	635.00	4903.00
1982	0.00						0.00	342.00	1130.00	1270.00	1350.00	1070.00	5162.00
1983	0.00						0.00	274.00	986.00	1510.00	1160.00	942.00	4872.00
1984	0.00						0.00	0.00	626.57	1500.93	1392.71	1307.84	4828.05
1985	0.00						0.00	1124.39	125.02	1088.15	1174.33	820.04	4331.93
1986	0.00						0.00	1040.64	1518.29	1448.39	1297.63	900.47	6205.42
1987	0.00						0.00	1470.00	1616.00	1574.00	1232.00	1338.00	7230.00
1988	0.00						0.00	738.00	1905.00	1395.00	1045.00	1046.00	6129.00
1989	0.00						0.00	1093.90	1682.40	1544.80	1306.80	1268.80	6896.70
1990	0.00						0.00	224.40	1563.40	1604.00	1460.60	1077.60	5930.00
1991	0.00						0.00	172.90	1328.20	1342.50	1404.90	840.30	5088.80
1992	0.00						51.00	1411.50	1427.20	1159.60	1284.40	1060.70	6394.40
1993	0.00						0.00	787.70	1118.50	953.50	1144.20	1032.10	5036.00
1994	0.00						0.00	465.80	1466.10	1277.90	1033.50	821.00	5064.30
1995	0.00						0.00	0.00	571.10	1307.20	1034.50	1178.80	4091.60
1996	0.00						0.00	35.80	1308.70	1363.80	1073.40	855.60	4637.30
1997	0.00						0.00	297.70	1142.00	1149.50	1252.60	877.30	4719.10
1998	0.00						0.00	902.20	1501.60	1669.60	1575.80	1192.70	6841.90
1999	0.00						0.00	199.40	1270.90	1484.40	1683.00	1439.00	6076.70
Mean	0.89						7.57	582.30	1239.82	1345.13	1255.04	1011.90	5442.64
Max	24.83						161.00	1470.00	1905.00	1669.60	1683.00	1439.00	7230.00
Min	0.00						0.00	0.00	125.02	953.50	878.00	635.00	4091.60

Notes: 1. Monthly data is from Hydrographers' Annual Reports for years 1980 and later, and from WRDS for years prior to 1980
2. Zero flow is assumed prior to the first and after the last measurement

Name	Alliance Ditch Diversion		
Source	Big Goose Creek		
District	4		
Data	First & Last Dates, Max. Days		
Water Year	First Date of Measurement	Last Date of Measurement	Maximum Days Missing
1970			
1971	12-May	30-Sep	0
1972	17-May	2-Oct	0
1973	29-May	27-Sep	0
1974	13-May	30-Sep	0
1975	10-Jun	30-Sep	0
1976	11-May	30-Sep	0
1977	12-May	30-Sep	0
1978	11-Jun	30-Sep	0
1979			
1980	6-May	30-Sep	0
1981	23-Apr	30-Sep	0
1982	18-May	30-Sep	0
1983	23-May	30-Sep	0
1984	14-Jun	30-Sep	0
1985	7-May	30-Sep	0
1986	3-May	30-Sep	0
1987	5-May	30-Sep	0
1988	12-May	30-Sep	0
1989	1-May	30-Sep	0
1990	22-May	30-Sep	0
1991	21-May	30-Sep	0
1992	28-Apr	30-Sep	0
1993	10-May	30-Sep	0
1994	20-May	30-Sep	0
1995	7-Jun	30-Sep	0
1996	29-May	30-Sep	0
1997	21-May	30-Sep	0
1998	13-May	30-Sep	0
1999	25-May	30-Sep	0
Avg.	17-May	29-Sep	0
Earliest	23-Apr	27-Sep	0
Latest	14-Jun	2-Oct	0

Notes: 1. Data is from Hydrographers' Annual Reports for years 1980 and later, and from WRDS for years prior to 1980.

KEY DIVERSIONS

Diversion: **BIG GOOSE & BEAVER DITCH DIVERSION, NOS. 1 & 2**

Date: 5 Sep. 2000

Big Goose & Beaver Ditch

Diversion Description: Headgate consists of a two, 10 x 4.5-foot steel gates in steel sliders operated with Waterman-type screws, mounted in a concrete headwall with a bypass gate for the continuation of Rapid Creek.

Diversion Location: The Big Goose & Beaver diversion is located on Rapid Creek, just upstream of that stream's confluence with the Big Goose.

Headgate:

Lat.	Long.
N 44° 40' 12.0"	W 107° 9' 19.1"

Flume:

Lat.	Long.
N 44° 40' 12.2"	W 107° 9' 15.8"

Big Goose & Beaver Ditch Flume

Conveyance Description: Open channel canal. No. 1 (from East Fork Big Goose to Rapid Creek) is approximately 2.4 miles long. No. 2 (from Rapid to Beaver creeks) is approximately 7.8 miles long.

Direct Flow Water Rights: The summary for direct flow rights follows:

Permit	Priority Date	Permitted Use	Acres	Flow (cfs)	Cumulative (cfs)
Terr.	08-29-1885	I	20	0.30	0.30
Terr.	08-29-1885	I	40	0.57	0.87
Terr.	08-29-1885	I	40	0.57	1.44
Terr.	08-29-1885	I	40	0.57	2.01
Terr.	08-29-1885	I	45	0.65	2.66
Terr.	08-29-1885	I	45	0.65	3.31
Terr.	08-29-1885	I	50	0.71	4.02
Terr.	08-29-1885	I	50	0.71	4.73
Terr.	08-29-1885	I	60	0.85	5.58
Terr.	08-29-1885	I	60	0.86	6.44
Terr.	08-29-1885	I	60	0.86	7.30
Terr.	08-29-1885	I	70	1.00	8.30
Terr.	08-29-1885	D,I	80	1.14	9.44
Terr.	08-29-1885	I	80	1.14	10.58
Terr.	08-29-1885	I	80	1.14	11.72
Terr.	08-29-1885	I	88	1.26	12.98
Terr.	08-29-1885	D,I	90	1.29	14.27
Terr.	08-29-1885	D,I	90	1.29	15.56
Terr.	08-29-1885	D,I	100	1.50	18.48
Terr.	08-29-1885	D,I	100	1.43	19.91
Terr.	08-29-1885	I	100	1.43	21.34
Terr.	08-29-1885	I	100	1.43	22.77
Terr.	08-29-1885	I	115	1.65	24.42
Terr.	08-29-1885	I	120	1.71	26.13

Direct Flow Water Rights cont'd:

Permit	Priority Date	Permitted Use	Acres	Flow (cfs)	Cumulative (cfs)
Terr.	08-29-1885	I	125	1.78	27.91
Terr.	08-29-1885	I	140	2.00	29.91
Terr.	08-29-1885	I	142	2.03	31.94
Terr.	08-29-1885	I	150	2.14	34.08
Terr.	08-29-1885	I	160	2.28	36.36
Terr.	08-29-1885	I	160	2.29	38.65
Terr.	08-29-1885	D,I	168	2.40	41.05
Terr.	08-29-1885	I	195	2.78	43.83
Terr.	08-29-1885	I	200	2.85	46.68
Terr.	08-29-1885	I	200	2.85	49.53
Terr.	08-29-1885	I	220	3.15	52.68
Terr.	08-29-1885	I	240	3.42	56.10
Terr.	08-29-1885	D,I	280	4.10	60.20
Terr.	08-29-1885	D,I	300	4.28	64.48
Terr.	08-29-1885	I	315	4.51	68.99
Terr.	08-29-1885	I	320	4.57	73.56
Terr.	08-29-1885	I	332	4.74	78.30
Terr.	08-29-1885	I	420	6.00	84.30
Terr.	08-29-1885	I	540	7.71	92.01
1205E	11-16-1903	I	55	0.78	92.79
1479E	11-27-1905	I	7	0.10	92.89
1479E	11-27-1905	I	7	0.10	92.99

Note: Many of the rights in the Big Goose & Beaver Ditch stem from water in the East Fork of the Big Goose.

Associated Storage Rights: The Big Goose & Beaver ditches convey Park Reservoir water.

Irrigation Practices: Irrigators tend to use approximately 40 percent sprinklers and 60 percent ditch-flood irrigation to deliver water to their crops.

Return Flows: Estimated percentage of total diversion developing into return flows:

Destination	Wet Yr.	Avg. Yr.	Dry Yr.
Big Goose Creek	40	30	20

Losses: 20 percent by the end of the ditch

References: Div. II superintendent Mike Whitaker, State Engineer's Office, Interview, 5 Sept. 2000

Irrigated Lands Water Rights Database

PerNo	PerSfx	Facility Name	Priority	Acres	Amount	Unit	SupTyp	Status	Source
Terr	D	Big Goose & Beaver (Peralta, Colorado Colony)	Aug. 29, 1885	6430	92.01	CFS	OS	Adj	East Fork Big Goose Creek
Terr	D	Peralta (Colorado Colony, Red Hill, Big Goose & Beaver)	Nov. 1, 1885	3971.5	56.7	CFS	OS	Adj	Cross Creek
Terr	D	Peralta (Big Goose & Beaver)	Nov. 1, 1885	70.5	1	CFS	OS	Adj	East Fork Big Goose Creek
Terr	D	Rapid Creek Canon No. 2 (Big Goose & Beaver)	Nov. 1, 1885	70	1	CFS	OS	Adj	Rapid Creek
1486	D	Snively (Big Goose & Beaver)	May 20, 1897	781	11.16	CFS	OS	Adj	East Fork Big Goose Creek
1205	E	Enl. Big Goose & Beaver	Nov. 16, 1903	55	0.78	CFS	OS	Adj	East Fork Big Goose Creek

Irrigated Lands Water Rights Database cont'd.

PerNo	PerSfx	Facility Name	Priority	Acres	Amount	Unit	SupTyp	Status	Source
16678	D	Big Goose & Beaver No. 5	Sep. 22, 1923	115	0		SS	Adj	Beaver Creek
19394	D	Big Goose & Beaver Lateral	June 29, 1940	88	1.26	CFS	OS	Adj	Jackson Creek
21803	D	Big Goose & Beaver	Dec. 19, 1956	300	0		SS	Adj	Rapid Creek
5937	E	Enl. Big Goose & Beaver	March 15, 1957	91	0		SS	Adj	Rapid Creek
6482	E	Enl. Big Goose & Beaver	July 11, 1973	33.4	0		SS	Una	East Fork Big Goose Creek

Name	Big Goose & Beaver No.1 Ditch Diversion
Source	East Fork Big Goose Creek
District	4
Data	Total monthly flow in AF

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1970													
1971								287.62	3377.97	4530.05	2370.44	1069.49	11635.57
1972								0.00	4640.92	4009.39	3264.39	1845.62	13760.32
1973								0.00	3773.95	3342.94	2836.96	2319.67	12273.52
1974								0.00	3183.87	3775.54	2878.01	1052.43	10889.85
1975								0.00	496.07	4672.86	3163.24	870.54	9202.71
1976								0.00	4761.12	3980.43	2727.47	1775.01	13244.03
1977								0.00	4167.87	2115.17	2103.67	898.79	9285.50
1978								0.00	0.00	3079.67	3333.42	1816.66	8229.75
1979													
1980								1650.00	4223.00	2624.00	1086.00	1435.00	11018.00
1981								2799.00			907.00	531.00	
1982								373.00	2990.00	3480.00	2910.00	1110.00	10863.00
1983								0.00	2540.00	3390.00	2400.00	730.00	9060.00
1984								0.00	0.00	3683.89	2492.66	588.25	6764.80
1985								1416.54	4052.48	2717.49	1453.31	702.03	10341.85
1986								247.14	4104.30	3589.48	2380.42	461.70	10783.04
1987								1931.00	3645.00	2252.00	2482.00	1693.00	12003.00
1988								578.00	4546.00	2439.00	875.00	0.00	8438.00
1989								1432.84	4222.20	4147.90	2580.70	812.90	13196.54
1990								0.00	3461.40	4321.40	3054.90	1164.80	12002.50
1991								0.00	3322.30	3239.70	1919.60	782.30	9263.90
1992								2227.80	3278.20	2243.80	2609.40	1264.90	11624.10
1993								701.20	3753.50	4069.50	2831.70	1482.90	12838.80
1994								1871.90	3726.00	2334.90	1598.70	1147.70	10679.20
1995								0.00	1292.40	4110.10	2254.90	1160.80	8818.20
1996								0.00	2978.30	3087.40	2015.30	592.60	8673.60
1997								0.00	3597.50	3659.70	2401.90	1642.70	11301.80
1998								1475.30	4250.00	3299.90	2667.20	2199.90	13892.30
1999								0.00	3150.70	3461.90	1905.60	972.60	9490.80
Mean								606.83	3242.04	3394.74	2339.42	1147.26	10724.99
Max								2799.00	4761.12	4672.86	3333.42	2319.67	13892.30
Min								0.00	0.00	2115.17	875.00	0.00	6764.80

Notes:
1. Monthly data is from Hydrographers' Annual Reports for years 1980 and later, and from WRDS for years prior to 1980
2. Zero flow is assumed prior to the first and after the last measurement
3. Monthly data for 1984 is derived from spot measurements in the Hydrographers' Annual Reports.

Name	Big Goose & Beaver No. 1 Ditch Diversion		
Source	East Fork Big Goose Creek		
District	4		
Data	First & Last Dates, Max. Days		
Water Year	First Date of Measurement	Last Date of Measurement	Maximum Days Missing
1970			
1971	28-May	30-Sep	0
1972	1-Jun	30-Sep	0
1973	4-Jun	30-Sep	0
1974	9-Jun	30-Sep	0
1975	20-Jun	30-Sep	0
1976	2-Jun	30-Sep	0
1977	1-Jun	30-Sep	0
1978	1-Jul	30-Sep	0
1979			
1980	21-May	30-Sep	0
1981	1-May	30-Sep	60
1982	23-May	30-Sep	0
1983	6-Jun	30-Sep	0
1984	3-Jul	19-Sep	11
1985	21-May	26-Sep	0
1986	28-May	15-Sep	0
1987	7-May	28-Sep	0
1988	23-May	28-Aug	0
1989	17-May	30-Sep	0
1990	6-Jun	30-Sep	0
1991	5-Jun	29-Sep	0
1992	13-May	30-Sep	0
1993	25-May	30-Sep	0
1994	16-May	30-Sep	0
1995	20-Jun	29-Sep	0
1996	6-Jun	30-Sep	0
1997	5-Jun	30-Sep	0
1998	18-May	28-Sep	0
1999	1-Jun	30-Sep	0
Avg.	30-May	27-Sep	3
Earliest	1-May	28-Aug	0
Latest	3-Jul	30-Sep	60

Notes: 1. Data is from Hydrographers' Annual Reports for years 1980 and later, and from WRDS for years prior to 1980.

Name	Big Goose & Beaver No. 2 Ditch Diversion
Source	Rapid Creek
District	4
Data	Total monthly flow in AF

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1970													
1971	0.00						0.00	0.00	1593.04	2991.07	1982.48	908.83	7475.42
1972	0.00						0.00	724.16	3220.76	3198.35	2778.44	1443.45	11365.16
1973	45.02						0.00	131.70	3351.27	2515.44	2115.97	1703.80	9863.20
1974	0.00						0.00	277.29	3415.93	2281.39	2002.71	626.78	8604.10
1975	0.00						0.00	285.42	1611.57	2832.79	2250.05	653.95	7633.78
1976	0.00						0.00	833.65	3247.34	2733.22	1890.25	1159.73	9864.19
1977	0.00						0.00	1408.66	2682.84	1579.24	1500.30	516.04	7687.08
1978	0.00						0.00	0.00	754.31	1852.36	2302.41	1326.94	6236.02
1979													
1980	0.00						0.00	2124.00	3009.00	1868.00	866.00	968.00	8835.00
1981	0.00						249.00	2233.00	2145.00	1849.00	503.00	271.00	7250.00
1982	0.00						0.00	716.00	3020.00	2910.00	2240.00	660.00	9546.00
1983	0.00						0.00	391.00	2540.00	2590.00	1690.00	434.00	7645.00
1984	0.00						0.00	0.00	1732.63	2941.27	2151.80	761.33	7587.03
1985	0.00						0.00	2220.49	3062.92	2192.92	1262.87	492.50	9231.70
1986	0.00						0.00	689.13	2777.42	2654.26	2216.05	583.35	8920.21
1987	0.00						256.00	2133.00	3091.00	1997.00	2107.00	1394.00	10978.00
1988	0.00						67.00	1249.00	2792.00	1570.00	542.00	0.00	6220.00
1989	0.00						0.00	1119.90	3106.00	3015.70	1778.10	508.80	9528.50
1990	0.00						0.00	313.70	2065.50	2971.10	2227.80	1038.80	8616.90
1991	0.00						0.00	0.00	2014.90	2511.30	1450.10	625.40	6601.70
1992	0.00						0.00	2009.90	3077.70	2227.10	2266.20	964.90	10545.80
1993	0.00						0.00	897.20	3045.20	2447.40	1941.90	1265.10	9596.80
1994	0.00						0.00	1388.90	2931.90	2187.00	1609.90	1158.30	9276.00
1995	0.00						0.00	0.00	1188.50	2511.80	2067.20	1151.00	6918.50
1996	0.00						0.00	148.90	2503.50	2617.00	1685.00	653.30	7607.70
1997	0.00						0.00	434.00	2735.30	2463.10	2090.40	1409.50	9132.30
1998	0.00						0.00	1640.90	3343.20	2700.60	2634.70	2270.30	12589.70
1999	0.00						0.00	0.00	2301.20	2539.40	1534.00	829.50	7204.10
Mean	1.61						20.43	834.64	2584.28	2455.28	1845.95	920.66	8662.85
Max	45.02						256.00	2233.00	3415.93	3198.35	2778.44	2270.30	12589.70
Min	0.00						0.00	0.00	754.31	1570.00	503.00	0.00	6220.00

Notes: 1. Monthly data is from Hydrographers' Annual Reports for years 1980 and later, and from WRDS for years prior to 1980
2. Zero flow is assumed prior to the first and after the last measurement

Name	Big Goose & Beaver No. 2 Ditch Diversion		
Source	Rapid Creek		
District	4		
Data	First & Last Dates, Max. Days		
Water Year	First Date of Measurement	Last Date of Measurement	Maximum Days Missing
1970			
1971	16-Jun	30-Sep	0
1972	15-May	2-Oct	0
1973	30-May	27-Sep	0
1974	27-May	30-Sep	0
1975	27-May	30-Sep	0
1976	20-May	30-Sep	0
1977	10-May	30-Sep	0
1978	19-Jun	30-Sep	0
1979			
1980	1-May	30-Sep	0
1981	23-Apr	30-Sep	0
1982	7-May	30-Sep	0
1983	23-May	30-Sep	0
1984	14-Jun	30-Sep	0
1985	2-May	30-Sep	0
1986	19-May	19-Sep	0
1987	25-Apr	28-Sep	0
1988	28-Apr	25-Aug	0
1989	19-May	30-Sep	0
1990	23-May	30-Sep	0
1991	10-Jun	29-Sep	0
1992	9-May	30-Sep	0
1993	13-May	30-Sep	0
1994	16-May	30-Sep	0
1995	20-Jun	29-Sep	0
1996	16-May	30-Sep	0
1997	23-May	30-Sep	0
1998	5-May	28-Sep	0
1999	5-Jun	30-Sep	0
Avg.	20-May	28-Sep	0
Earliest	23-Apr	25-Aug	0
Latest	20-Jun	2-Oct	0

Notes: 1. Data is from Hydrographers' Annual Reports for years 1980 and later, and from WRDS for years prior to 1980.

KEY DIVERSIONS

Diversion: **GRINNELL DITCH DIVERSION ON BIG GOOSE CREEK**
AKA: Grinnell Livestock Co. (on Big Goose Creek)

Date: 5 Sep. 2000


Grinnell Ditch Headgate & Dam

Note: The Grinnell Ditch's supplementary rights reverted back to their original appropriation from Wolf Creek in 2000.

Diversion Description: Headgate consists of four, 2.8 x 2-foot rectangular steel gates in steel slides operated with Waterman-type screws, mounted in a concrete-and-rock headwall. The headgate is adjacent to a similarly constructed bypass gate used to control head on the main gates. All gates appear in good condition.


Grinnell Ditch 2nd Headgate

Diversion Location: The Grinnell Ditch diversion is located on the main stem of Big Goose Creek, below the confluence of the Big Goose and Little Goose creeks and downstream of Sheridan.

Headgate:

Lat.	Long.
N 44° 49' 26.0"	W 106° 57' 56.2"

Conveyance Description: Open channel canal, approximately 4.0 miles long traversing silt/clay substrate.

Direct Flow Water Rights: The summary of direct flow rights follows:

Permit	Priority Date	Permitted Use	Acres	Flow (cfs)	Cumulative (cfs)
Terr.	09-17-1890	I	525	7.5	7.5

Associated Storage Rights: Windy Reservoir (6567R)

Irrigation Practices: Irrigators tend to use 65 percent sprinklers and 35 percent ditch-flood irrigation to water their crops.

Return Flows: Estimated percentage of total diversion developing into return flows:

Destination	Wet Yr.	Avg. Yr.	Dry Yr.
Big Goose	40	30	20

Losses: Approximately 20 percent by the end of the ditch

References: Div. II superintendent Mike Whitaker, State Engineer's Office, Interview, 5 Sept. 2000

Irrigated Lands Water Rights Database

PerNo	PerSfx	Facility Name	Priority	Acres	Amount	Unit	SupTyp	Status	Source
Terr	D	Grinnell Live Stock Co.	Sep. 17, 1890	525	7.5	CFS	OS	Adj	Big Goose Creek

Name	Grinnell Ditch Diversion on Big Goose Creek
Source	Big Goose Creek
District	4
Data	Total monthly flow in AF

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1970													
1971													
1972													
1973													
1974										340.74	581.41		922.15
1975													
1976													
1977													
1978													
1979													
1980													
1981													
1982													
1983													
1984													
1985													
1986													
1987													
1988													
1989													
1990													
1991													
1992													
1993													
1994													
1995													
1996													
1997													
1998													
1999													
Mean										340.74	581.41		922.15
Max										340.74	581.41		922.15
Min										340.74	581.41		922.15

Notes: 1. Monthly data is derived from spot measurements in the Hydrographers' Annual Reports for years 1980 and later, and from WRDS for years prior to 1980
2. Zero flow is assumed prior to the first and after the last measurement

Name	Grinnell Ditch Diversion on Big Goose Creek		
Source	Big Goose Creek		
District	4		
Data	First & Last Dates, Max. Days		
Water Year	First Date of Measurement	Last Date of Measurement	Maximum Days Missing
1970			
1971			
1972			
1973			
1974	5-Jul	31-Aug	0
1975			
1976			
1977			
1978			
1979			
1980			
1981			
1982			
1983			
1984			
1985			
1986			
1987			
1988			
1989			
1990			
1991			
1992			
1993			
1994			
1995			
1996			
1997			
1998			
1999			
Avg.	5-Jul	31-Aug	0
Earliest	5-Jul	31-Aug	0
Latest	5-Jul	31-Aug	0

Notes: 1. Data is from Hydrographers' Annual Reports for years 1980 and later, and from WRDS for years prior to 1980.

KEY DIVERSIONS

Diversion: **PARK DIVERSION DITCH**
AKA: Park Reservoir Diversion, Park Diversion below Park Reservoir

Date: 5 Sep. 2000

Note: The Park Diversion Ditch represents a transbasin diversion, conveying water from the East Fork of Big Goose Creek to Willow Creek, a tributary of Little Goose Creek.

Diversion Description: Headgate consists of a single, large concrete structure built as part of the Park Reservoir outlet.

Diversion Location: The Park Diversion Ditch is located at the outlet of Park Reservoir, in the headwaters of Big Goose Creek. It conveys water from just below Park Reservoir to Willow Creek, which joins the Little Goose.

Headgate:

Lat.	Long.
N 44° 34' 12.2"	W 107° 12' 37.9"

Conveyance Description: Open channel canal, approximately 1.5 miles long.

Direct Flow Water Rights: None. The structure was built to accommodate transfers of stored water from Park Reservoir into the Little Goose Creek drainage.

Associated Storage Rights: Park, Bighorn, and Cross Creek reservoir water can be conveyed through the Park Diversion Ditch.

Irrigation Practices: No irrigation diversions occur along this ditch.

Return Flows: The lack of irrigation obviates return flows.

Losses: Information not available

References: Div. II superintendent Mike Whitaker, State Engineer's Office, Interview, 5 Sept. 2000

Name	Park Diversion Ditch
Source	East Fork of Big Goose Creek
District	4
Data	Total monthly flow in AF

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1970													
1971								0.00	0.00	1460.37	2852.82	815.64	5128.83
1972								0.00	1443.27	1399.79	2405.16	1499.11	6747.33
1973								0.00	624.00	1349.75	2845.88	1719.07	6538.70
1974								0.00	1481.65	1321.39	2384.73	1472.13	6659.90
1975								0.00	0.00	1374.15	2229.62	2525.55	6129.32
1976								0.00	2018.08	1320.79	2772.89	1548.89	7660.65
1977								0.00	1497.74	1816.86	1953.32	961.78	6229.70
1978								0.00	0.00	107.35	1142.48	1504.66	2754.49
1979													
1980													
1981													
1982								0.00	0.00	1190.00	2780.00	1460.00	5430.00
1983								0.00	2600.00	1570.00	1780.00	1230.00	7180.00
1984								0.00	1216.54	1983.94	1848.13	1458.27	6506.88
1985								261.64	545.46	1903.66	1277.87	519.14	4507.77
1986								0.00	1025.85	1298.50	1612.35	654.44	4591.14
1987								327.00	901.00	570.00	1246.00	628.00	3672.00
1988								0.00	1074.00	2060.00	1724.00	616.00	5474.00
1989								0.00	142.40	520.20	2148.30	1412.40	4223.30
1990								0.00	1369.50	1625.60	1987.60	1172.50	6155.20
1991								0.00	957.70	1449.90	2303.50	974.20	5685.30
1992								0.00	159.10	352.80	1382.90	1558.20	3453.00
1993								0.00	474.20	436.40	1518.80	1548.10	3977.50
1994								259.20	770.10	1486.70	1782.50	1495.50	5794.00
1995								0.00	0.00	169.40	1293.10	1307.00	2769.50
1996								0.00	379.60	1345.40	1630.30	1249.00	4604.30
1997								0.00	156.80	196.80	464.10	1692.90	2510.60
1998								2.40	987.00	1598.70	1477.90	1573.20	5639.20
1999								0.00	433.10	747.20	1555.00	880.60	3615.90
Mean								32.70	779.12	1179.06	1861.51	1287.55	5139.94
Max								327.00	2600.00	2060.00	2852.82	2525.55	7660.65
Min								0.00	0.00	107.35	464.10	519.14	2510.60

Notes: 1. Monthly data is from Hydrographers' Annual Reports for years 1980 and later, and from WRDS for years prior to 1980
2. Zero flow is assumed prior to the first and after the last measurement

Name	Park Diversion Ditch		
Source	East Fork of Big Goose Creek		
District	4		
Data	First & Last Dates, Max. Days		
Water Year	First Date of Measurement	Last Date of Measurement	Maximum Days Missing
1970			
1971	1-Jul	30-Sep	0
1972	10-Jun	30-Sep	0
1973	25-Jun	24-Sep	0
1974	13-Jun	30-Sep	0
1975	8-Jul	30-Sep	0
1976	7-Jun	28-Sep	0
1977	3-Jun	30-Sep	0
1978	26-Jul	30-Sep	0
1979			
1980			
1981			
1982	14-Jul	30-Sep	0
1983	1-Jun	30-Sep	0
1984	1-Jun	30-Sep	0
1985	25-May	25-Sep	0
1986	4-Jun	15-Sep	0
1987	16-May	26-Sep	0
1988	1-Jun	30-Sep	0
1989	23-Jun	30-Sep	0
1990	6-Jun	30-Sep	0
1991	5-Jun	29-Sep	0
1992	23-Jun	30-Sep	0
1993	3-Jun	30-Sep	0
1994	16-May	27-Sep	0
1995	17-Jul	29-Sep	0
1996	12-Jun	30-Sep	0
1997	1-Jun	30-Sep	0
1998	26-May	30-Sep	0
1999	1-Jun	29-Sep	0
Avg.	12-Jun	28-Sep	0
Earliest	16-May	15-Sep	0
Latest	26-Jul	30-Sep	0

Notes: 1. Data is from Hydrographers' Annual Reports for years 1980 and later, and from WRDS for years prior to 1980.

KEY DIVERSIONS

Diversion: **PK (PATRICK) DITCH DIVERSION**

Date: 9/5/2000

Note: The PK Ditch crosses a number of gravel seams, losing much water in conveyance. The recent acquisition of the PK Ranch by the Nature Conservancy and Bob Barry has meant increased sprinkler usage and a heightened interest in water conservation and instream flows. The two new owners have approximately 2,000 acre-feet of storage between them.

PK Ditch Headgate

Diversion Description: Headgate consists of a single, 4.2 x 3.5-foot steel gate in a wooden frame operated with a Waterman-type screw, mounted in a concrete headwall.

Diversion Location: The PK Ditch diversion is located on the main stem of the Big Goose, adjacent to the City of Sheridan's intake. These diversions represent the first diversions on lower Big Goose.

Headgate:

Lat.	Long.
N 44° 41' 47.6"	W 107° 11' 24.8"

Flume:

Lat.	Long.
N 44° 53' 30.0"	W 107° 11' 11.5"

Conveyance Description: Open channel canal, approximately 22.2 miles long.

Direct Flow Water Rights: The summary of direct flow rights follows:

Permit	Priority Date	Permitted Use	Acres	Flow (cfs)	Cumulative (cfs)
Terr.	06-01-1881	I	146	2.08	2.08
Terr.	10-01-1885	I	320	4.57	6.65
Terr.	10-01-1885	I	200	2.85	9.50
Terr.	08-17-1887	I	1855	26.5	36.00
1669E	07-20-1906	I	160	2.28	38.28
4689E	06-30-1930	D,S	0	4.30	42.58
4688E	06-30-1930	D,S	0	0.02	42.60
17791	06-30-1930	D,S	0	4.30	46.90

Associated Storage Rights: Irrigators on the PK use stored water from Park, Dome Lake No. 1, and Sawmill reservoirs.

Irrigation Practices: Irrigators tend to use approximately 60 percent sprinklers and 40 percent ditch-flood irrigation to serve their crops.

Return Flows: Estimated percentage of return flows:

Destination	Wet Yr.	Avg. yr.	Dry Yr.
Soldier Creek	40	35	25

Losses: Approximately 35 percent by the end of the ditch.

References: Div. II superintendent Mike Whitaker, State Engineer's Office, Interview, 5 Sept. 2000

Irrigated Lands Water Rights Database

PerNo	PerSfx	Facility Name	Priority	Acres	Amount	Unit	SupTyp	Status	Source
Terr	D	P.K. or Patrick	Aug. 17, 1887	1855	26.5	CFS	OS	Adj	Big Goose Creek
83	D	Alliance (P.K. or Patrick)	June 29, 1891	2031.63	28.97	CFS	OS	Adj	Big Goose Creek
1669	E	Enl. Patrick	July 20, 1906	160	2.28	CFS	OS	Adj	Big Goose Creek
1678	E	Enl. Alliance (P.K. or Patrick)	Nov. 23, 1906	1042.89	14.9	CFS	OS	Adj	Big Goose Creek
2756	E	Enl. Alliance & Alliance Lateral (P.K. or Patrick)	Dec. 24, 1912	25	0.36	CFS	OS	Adj	Big Goose Creek
4803	E	Enl. Patrick, Enl. P.K.	Jan. 15, 1932	781.4	0		SS	Una	Big Goose Creek
4803	E	Enl. Patrick, Enl. P.K.	Jan. 15, 1932	669.4	9.56	CFS	OS	Una	Big Goose Creek

Name	PK (Patrick) Ditch Diversion
Source	Big Goose Creek
District	4
Data	Total monthly flow in AF

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1970													
1971	0.00						0.00	0.00	0.00	2551.54	2249.25	1674.05	6474.84
1972	0.00						1.27	1191.67	2509.29	2590.61	2331.37	1992.20	10616.41
1973	73.79						0.00	0.00	2161.78	2642.58	2605.49	1643.90	9127.54
1974	0.00						0.00	1225.19	2359.34	2549.55	2358.35	1871.60	10364.03
1975	0.00						0.00	208.66	1801.78	2307.37	2462.68	2297.25	9077.74
1976	0.00						0.00	1466.18	2229.62	2335.54	2304.00	2047.73	10383.07
1977	0.00						0.00	1637.35	2346.84	2014.81	1698.64	1468.16	9165.80
1978	0.00						0.00	138.29	1692.10	2415.87	2238.15	1028.43	7512.84
1979													
1980	0.00						0.00	2388.00	2390.00	2056.00	1805.00	1196.00	9835.00
1981	0.00						306.00	1500.00	1750.00	3445.00	1612.00	1237.00	9850.00
1982	0.00						0.00	1640.00	2190.00	1970.00	2390.00	1520.00	9710.00
1983	0.00						0.00	620.00	2230.00	2350.00	1970.00	1720.00	8890.00
1984	0.00						0.00	0.00	1393.31	2289.00	2562.28	291.32	6535.91
1985	0.00						0.00	2081.90	2383.21	2198.67	1845.51	1388.97	9898.26
1986	0.00						0.00	1779.81	2130.00	2261.50	2122.19	922.33	9215.83
1987	0.00						0.00	1653.00	1942.00	2163.00	2204.00	1695.00	9657.00
1988	0.00						0.00	1337.00	2206.00	2286.00	1820.00	975.00	8624.00
1989	0.00						246.20	1367.70	2068.90	2009.60	1912.90	1328.80	8934.10
1990	0.00						0.00	553.80	1719.60	2122.80	1965.60	1640.90	8002.70
1991	0.00						0.00	340.70	1810.90	1976.90	1920.00	1197.20	7245.70
1992	0.00						0.00	1180.70	1563.30	1282.50	1828.50	1146.80	7001.80
1993	0.00						0.00	772.00	1195.90	1671.60	2020.10	1504.40	7164.00
1994	0.00						0.00	1126.60	2096.90	1970.70	1632.50	1433.00	8259.70
1995	0.00						0.00	202.00	1397.00	2024.90	2253.20	803.30	6680.40
1996	0.00						0.00	1.50	1181.60	2037.00	1924.50	1357.60	6502.20
1997	0.00						0.00	238.20	1155.70	1449.60	1599.60	1267.60	5710.70
1998	0.00						0.00	1219.50	1506.00	1980.00	1889.30	1702.60	8297.40
1999	0.00						0.00	180.00	1193.00	2027.00	2228.00	1682.00	7310.00
Mean	2.64						19.77	930.35	1807.29	2177.84	2062.61	1429.76	8430.25
Max	73.79						306.00	2388.00	2509.29	3445.00	2605.49	2297.25	10616.41
Min	0.00						0.00	0.00	0.00	1282.50	1599.60	291.32	5710.70

Notes: 1. Monthly data is from Hydrographers' Annual Reports for years 1980 and later, and from WRDS for years prior to 1980
2. Zero flow is assumed prior to the first and after the last measurement

Name	PK (Patrick) Ditch Diversion		
Source	Big Goose Creek		
District	4		
Data	First & Last Dates, Max. Days		
Water Year	First Date of Measurement	Last Date of Measurement	Maximum Days Missing
1970			
1971	1-Jul	30-Sep	0
1972	27-Apr	2-Oct	0
1973	1-Jun	27-Sep	0
1974	14-May	30-Sep	0
1975	28-May	30-Sep	0
1976	7-May	30-Sep	0
1977	9-May	30-Sep	0
1978	26-May	22-Sep	0
1979			
1980	1-May	30-Sep	0
1981	23-Apr	30-Sep	0
1982	6-May	30-Sep	0
1983	23-May	30-Sep	0
1984	4-Jun	5-Sep	0
1985	1-May	30-Sep	0
1986	1-May	30-Sep	0
1987	5-May	30-Sep	0
1988	9-May	30-Sep	0
1989	21-Apr	30-Sep	0
1990	15-May	30-Sep	0
1991	21-May	30-Sep	0
1992	16-May	30-Sep	0
1993	19-May	30-Sep	0
1994	6-May	30-Sep	0
1995	23-May	30-Sep	0
1996	30-May	30-Sep	0
1997	19-May	30-Sep	0
1998	6-May	30-Sep	0
1999	26-May	30-Sep	0
Avg.	15-May	28-Sep	0
Earliest	21-Apr	5-Sep	0
Latest	1-Jul	2-Oct	0

Notes: 1. Data is from Hydrographers' Annual Reports for years 1980 and later, and from WRDS for years prior to 1980.

KEY DIVERSIONS

Diversion: **SHERIDAN CITY INTAKES - BIG GOOSE CANYON DIVERSION**
AKA: Sheridan Intake Ditch

Date: 5 Sep. 2000

Diversion Description: Diversion dam and intake facility consist of a concrete structure keyed into the limestone bedrock in the Big Goose Channel, a sand trap bar and weir, and two 24-inch pipelines to carry water by gravity into Sheridan.

Sheridan intake facilities

Diversion Location: The Sheridan Intake diversion is located on Big Goose Creek, adjacent to the PK Ditch. These diversions represent the first diversions below the mountain.

Headgate:

Lat.	Long.
N 44° 41' 46.8"	W 107° 11' 15.6"

Conveyance Description: Underground pipeline, approximately 1 mile long (to Big Goose Water Treatment Plant).

Direct Flow Water Rights: The summary for direct flow rights follows:

Permit	Priority Date	Permitted Use	Acres	Flow (cfs)	Cumulative (cfs)
Terr.	11-00-1882	Mun	0	16.00	16.00
7021E	10-23-1989	Mun,Ind,D		7.14	23.14
7022E	12-20-1991	Mun,Ind,D		13.33	36.47
7023E	12-20-1991	Mun,Ind,D		30.06	66.53

Associated Storage Rights: The City of Sheridan uses water stored in Twin Lakes Reservoir.

Irrigation Practices: The intake is devoted entirely to non-irrigation uses.

Return Flows: Sheridan's wastewater treatment plant discharges an average of 2.5 mgd, or 3.9 cfs into Big Goose Creek. In June, 1995, it had a peak discharge of 11 mgd, or 17 cfs.

Losses: None

References: Div. II superintendent Mike Whitaker, State Engineer's Office, Interview, 5 Sept. 2000

Sheridan Utilities Master Plan, HKM Engineering, June 1998, Sheridan, Wyoming

Name	Sheridan City Intakes - Big Goose Canyon Diversion
Source	Big Goose Creek
District	4
Data	Total monthly flow in AF

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1970													
1971		307.60	320.37							743.72	731.29	514.51	
1972	342.01			326.46	302.66	339.37	360.18	406.77	496.98	510.33	550.97	430.75	
1973													
1974													
1975													
1976													
1977													
1978													
1979													
1980	408.00	332.00	340.00	390.00	392.00	438.00	415.00	523.00	620.00	596.00	609.00	501.00	5564.00
1981	445.00	353.00	343.00	342.00	313.00	348.00	409.00	560.00	524.00	716.00	534.00	531.00	5418.00
1982	440.00	310.00	320.00	430.00	390.00	430.00	420.00	500.00	470.00	640.00	670.00	540.00	5560.00
1983	472.00	448.00	413.00	365.00	329.00	359.00	352.00	389.00	540.00	614.00	649.00	485.00	5415.00
1984	323.71	301.73	317.97	336.16	318.29	348.40	337.33	410.88	515.69	652.29	608.89	585.49	5056.83
1985	392.53	328.66	338.38	336.44	355.40	364.21	345.84	602.90	638.59	715.00	729.27	556.71	5703.93
1986	345.31	325.77	348.06	366.83	331.24	381.03	413.92	516.64	661.62	730.32	753.43	622.62	5796.79
1987	511.92	276.79	459.30	438.25	254.40	417.10	458.41	678.40	731.30	737.20	762.40	522.60	6248.07
1988	455.00	394.00	394.00	396.00	372.00	400.00	434.00	510.00	798.00	885.00	831.00	352.00	6221.00
1989	307.80	299.60	328.13	323.30	335.60	384.90	325.00	395.80	716.10	750.50	803.40	497.70	5467.83
1990	366.70	295.60	309.30	316.40	291.10	332.80	333.20	386.20	550.10	769.40	736.50	553.50	5240.80
1991	375.20	353.10	361.30	359.40	326.60	398.60	387.00	386.80	516.80	789.20	738.00	529.00	5521.00
1992	389.70	373.40	355.00	316.60	290.50	323.10	364.90	574.00	661.20	677.30	806.20	568.90	5700.80
1993	532.00	490.90	415.90	394.40	375.40	435.70	385.00	477.80	532.40	703.50	714.00	656.70	6113.70
1994	619.00	522.30	552.00	475.90	404.30	475.90	414.60	565.70	768.10	904.20	801.00	716.80	7219.80
1995	557.80	466.70	446.20	451.70	404.80	405.60	436.60	495.00	594.30	724.20	919.20	778.50	6680.60
1996	591.00	525.40	551.00	553.20	459.30	481.70	478.20	492.20	656.40	1058.50	936.60	680.90	7464.40
1997	624.00	473.20	510.30	1151.70	675.70	660.50	419.20	494.90	446.60	748.80	724.10	663.50	7592.50
1998	462.00	368.80	308.90	318.60	298.90	303.60	297.20	738.80	784.60	1102.80	904.60	823.10	6711.90
1999	608.00	559.20	580.10	573.60	426.00	441.40	476.10	516.90	701.00	1031.90	928.10	614.80	7457.10
Mean	455.65	385.99	395.82	426.76	364.10	403.28	393.46	505.79	615.42	763.64	747.32	578.41	6107.70
Max	624.00	559.20	580.10	1151.70	675.70	660.50	478.20	738.80	798.00	1102.80	936.60	823.10	7592.50
Min	307.80	276.79	308.90	316.40	254.40	303.60	297.20	386.20	446.60	510.33	534.00	352.00	5056.83

Notes: 1. Monthly data is from Hydrographers' Annual Reports for years 1980 and later, and from WRDS for years prior to 1980

Name	Sheridan City Intakes - Big Goose Canyon Diversion		
Source	Big Goose Creek		
District	4		
Data	First & Last Dates, Max. Days		
Water Year	First Date of Measurement	Last Date of Measurement	Maximum Days Missing
1970			
1971	1-Nov	30-Sep	166
1972	1-Oct	30-Sep	61
1973			
1974			
1975			
1976			
1977			
1978			
1979			
1980	1-Oct	30-Sep	0
1981	1-Oct	30-Sep	0
1982	1-Oct	30-Sep	0
1983	1-Oct	30-Sep	0
1984	1-Oct	30-Sep	0
1985	1-Oct	30-Sep	0
1986	1-Oct	30-Sep	0
1987	1-Oct	30-Sep	0
1988	1-Oct	30-Sep	0
1989	1-Oct	30-Sep	0
1990	1-Oct	30-Sep	0
1991	1-Oct	30-Sep	0
1992	1-Oct	30-Sep	0
1993	1-Oct	30-Sep	0
1994	1-Oct	30-Sep	0
1995	1-Oct	30-Sep	0
1996	1-Oct	30-Sep	0
1997	1-Oct	30-Sep	0
1998	1-Oct	30-Sep	0
1999	1-Oct	30-Sep	0
Avg.	2-Oct	30-Sep	10
Earliest	1-Oct	30-Sep	0
Latest	1-Nov	30-Sep	166

Notes: 1. Data is from Hydrographers' Annual Reports for years 1980 and later, and from WRDS for years prior to 1980.