TONGUE RIVER

HIGH LINE DITCH DIVERSION
INTERSTATE (PENNOYER) DITCH DIVERSION
OZ & K & HANOVER DITCH DIVERSION
SOUTH SIDE DITCH DIVERSION
TONGUE RIVER NO. 1 DITCH DIVERSION
YORK DITCH DIVERSION

TONGUE RIVER DRAINAGE
INTRODUCTION

BACKGROUND

The Tongue River flows out of the northeastern end of the Big Horn Mountains in Wyoming. It gathers the North and South forks in the higher elevations, then drops through a canyon to the foothills and the river valley below, collecting flows of Columbus Creek, Wolf Creek, and Goose Creek before it meanders into Montana to the north.

CHARACTERISTICS

The limestone in the mountain and canyon, where the Tongue gathers its North and South forks, gives way to clay loams, sands, and gravels of old channels. Particularly downstream of Ranchester, the Tongue begins to meander on the landscape and broaden out. Downstream of the Tongue's confluence with Goose Creek, it widens to 200 yards in places, requiring much ingenuity and investment from anyone who wishes to make a lasting diversion dam.

Though many of the Tongue's tributaries are stopped at headgates (such as the Alliance Ditch on the Big Goose and Colorado Colony Ditch on the Little Goose), irrigation return flows help to ensure that users downstream on those tributaries receive their allocation. These return flows also keep the Tongue flowing in the driest of water years.

USAGE

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

Regulation

Water commissioners are typically not called to put the main stem of the Tongue and its diversions under regulation.

Agriculture

Agricultural irrigation practices are detailed in the individual ditch memoranda that follow.

The typical irrigation season runs from April 15-May 1 (depending on whether the spring runoff is delayed by colder 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 Tongue River, this practice is limited primarily by the condition of ditches. Most of the ditches are not capable of carrying all of the water an irrigator could use.

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.

KEY DIVERSIONS

Diversion: **HIGH LINE DITCH DIVERSION**

Date: 12 Sep. 2000

Note: As one of the ditches that diverts from the main stem of the Tongue, the High Line Ditch typically does not fall under regulation by the State Engineer's Office. Nevertheless, irrigators note the presence of a stream gage on the ditch.

High Line Ditch headgate

Diversion Description: Headgate consists of a single, 2.6 x 3.4-foot steel gate in a steel frame operated with a Waterman-type screw, mounted in a concrete headwall, guarded by a large trash rack.

Diversion Location: The High Line Ditch diversion is located on the main stem of the Tongue River, adjacent to the Town of Ranchester's municipal intake at the mouth of the Tongue River Canyon.

Headgate:

Lat.	Long.
N 44° 50' 48.9"	W 107° 18' 50.7"

Conveyance Description: Approx. 60 mi. long, approx. 2 miles of which are in underground pipe just downstream of the headgate, the remainder of which is open channel canal.

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

Permit	Priority Date	Permitted Use	Acres	Flow (cfs)	Cumulative (cfs)
167	11-09-1891	I	25	0.35	0.35
167	11-09-1891	I	25	0.35	0.70
167	11-09-1891	I	37.95	0.54	1.24
167	11-09-1891	I	86.70	1.24	2.48
167	11-09-1891	I	120	1.71	4.19
167	11-09-1891	I	125	1.78	5.97
167	11-09-1891	I	125	1.78	7.75
167	11-09-1891	I	200	2.85	10.60
632E	03-06-1901	I	100	1.43	12.03
1822E	01-25-1908	I	125	1.78	13.81

Note: Permit No. 167 contains original and supplementary supply sources.

Associated Storage Rights: None

Irrigation Practices: Irrigators tend to use approx. 30 percent hand lines and sideroll sprinklers, 30 percent pivots, and 40 percent ditch-flood irrigation (or "contour flood") to deliver water to their crops.

Return Flows: Estimated percentage of total diversion developing into return flows (surface flow only):

Destination	Wet yr.	Mid yr.	Dry yr.
Columbus Creek	1 cfs (all)	1 cfs (Aug.)	0 (Aug.)

A good estimate of subsurface return flows to the Tongue was not available.

Losses: Approx. 15-30 percent by the end of the ditch.
The length of the ditch and its path through a variety of substrates running from clay to rock increase the potential for of losses.

References:

Pat Boyd, Water Commissioner, State Engineer's Office, interview, 12 Sept. 2000

Greg Benzel, Padlock Ranch Manager, Padlock Ranch, interview, 29 Jan. 2001

Don Luse, Padlock Ranch Resource Manager, Padlock Ranch, interview, 29 Jan. 2001

Irrigated Lands Water Rights Database

PerNo	PerSfx	Facility Name	Priority	Acres	Amount	Unit	SupTyp	Status	Source
Terr	D	Hepp No. 1 (Highline)	May 2, 1884	50	0.71	CFS	OS	Adj	Piney Creek
Terr	D	Hepp No. 1 (Highline)	May 2, 1884	50	0.71	CFS	OS	Adj	Piney Creek
6675	D	Highline	May 4, 1905	20	0.29	CFS	OS	Una	Piney Creek
6676	D	Highline	May 4, 1905	86	1.23	CFS	OS	Adj	Piney Creek
3154	E	Enl. Highline	Jan. 3, 1911	128	1.83	CFS	OS	Adj	Piney Creek
3154	E	Enl. Highline	Jan. 3, 1911	128	1.83	CFS	OS	Adj	Piney Creek
20325	D	Highline (Shatt Pipeline)	Jan. 23, 1950	3.3			SS	Adj	Clear Creek
20325	D	Highline (Shatt Pipeline)	Jan. 23, 1950	246.4	3.52	CFS	OS	Adj	Clear Creek
20325	D	Highline (Shatt Pipeline)	Jan. 23, 1950	246.4	3.52	CFS	OS	Adj	Clear Creek
20325	D	Highline (Shatt Pipeline)	Jan. 23, 1950	246.4	3.52	CFS	OS	Adj	Clear Creek
5528	E	Enl. Highline	Feb. 26, 1951	41.5			SS	Una	Jeffers Draw #2
5529	E	Enl. Highline	Feb. 26, 1951	28.4			SS	Una	Jeffers Draw #3

Name	High Line Ditch Diversion
Source	Tongue River
District	5
Data	Total monthly flow in AF

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1970	490.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	367.00	1230.00	1130.00	797.00	4014.00
1971	353.00	0.00	0.00	0.00	0.00	0.00	0.00	125.00	974.00	1380.00	1350.00	1100.00	5282.00
1972	727.00	0.00	0.00	0.00	0.00	0.00	0.00	440.00	1290.00	884.00	1090.00	1300.00	5731.00
1973	266.00	0.00	0.00	0.00	0.00	0.00	0.00	74.00	1200.00	1240.00	1330.00	671.00	4781.00
1974	0.00	0.00	0.00	0.00	0.00	0.00	0.00	141.00	1290.00	1440.00	1300.00	1100.00	5271.00
1975	830.00	0.00	0.00	0.00	0.00	0.00	0.00	45.00	673.00	946.00	1260.00	1070.00	4824.00
1976	480.00	0.00	0.00	0.00	0.00	0.00	0.00	446.00	1120.00	894.00	726.00	624.00	4290.00
1977	96.00	0.00	0.00	0.00	0.00	0.00	0.00	1370.00	1260.00	1230.00	1100.00	998.00	6054.00
1978	83.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	392.00	1440.00	1240.00	774.00	3929.00
1979	73.00	0.00	0.00	0.00	0.00	0.00	0.00	260.00	1620.00	1420.00	1250.00	1000.00	5623.00
1980	381.00	0.00	0.00	0.00	0.00	0.00	0.00	929.00	1170.00	1470.00	1450.00	891.00	6291.00
1981	373.00	0.00	0.00	0.00	0.00	0.00	511.00	845.00	238.00	1320.00	1280.00	1230.00	5797.00
1982	93.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	706.00	1070.00	1520.00	741.00	4130.00
1983	197.00	18.00	0.00	0.00	0.00	0.00	0.00	723.00	1560.00	1650.00	1700.00	1120.00	6968.00
1984	393.00	0.00	0.00	0.00	0.00	0.00	0.00	149.00	1580.00	1700.00	1540.00	1330.00	6692.00
1985	430.00	83.00	0.00	0.00	0.00	0.00	0.00	1410.00	1680.00	1710.00	1280.00	1070.00	7663.00
1986	42.00	0.00	0.00	0.00	0.00	0.00	0.00	633.00	1080.00	1390.00	1230.00	308.00	4683.00
1987	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1560.00	1540.00	1280.00	1420.00	1090.00	6890.00
1988	119.00	0.00	0.00	0.00	0.00	0.00	0.00	1060.00	1490.00	1530.00	1520.00	1020.00	6739.00
1989	149.00	0.00	0.00	0.00	0.00	0.40	0.00	48.00	1270.00	1500.00	1320.00	1030.00	5317.40
1990	507.00	8.70	0.00	0.00	0.00	0.00	0.00	194.00	1300.00	1630.00	1350.00	674.00	5663.70
1991	42.00	0.00	0.00	0.00	0.00	0.00	0.00	27.00	1420.00	1360.00	1560.00	630.00	5039.00
1992	124.00	0.00	0.00	0.00	0.00	0.00	0.00	1240.00	869.00	173.00	1400.00	250.00	4056.00
1993	68.00	0.00	0.00	0.00	0.00	0.00	0.00	574.00	1180.00	1020.00	1230.00	745.00	4817.00
1994	59.00	0.00	0.00	0.00	0.00	0.00	0.00	772.00	1460.00	1060.00	1220.00	959.00	5530.00
1995	62.00	2.10	0.00	0.00	0.00	0.00	0.00	226.00	1050.00	1680.00	1620.00	710.00	5350.10
1996	60.00	5.80	0.00	0.00	0.00	0.00	0.00	387.00	1810.00	1900.00	1690.00	1010.00	6862.80
1997	84.00	0.00	0.00	0.00	0.00	0.00	0.00	702.00	1040.00	1200.00	950.00	722.00	4698.00
1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1670.00	1400.00	1390.00	1110.00	847.00	6417.00
1999	112.00	4.90	0.00	0.00	0.00	0.00	1.40	771.00	861.00	1070.00	1240.00	932.00	4992.30
Mean	223.10	4.08	0.00	0.00	0.00	0.01	17.08	560.70	1163.00	1306.90	1313.53	891.43	5479.84
Max	830.00	83.00	0.00	0.00	0.00	0.40	511.00	1670.00	1810.00	1900.00	1700.00	1330.00	7663.00
Min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	238.00	173.00	726.00	250.00	3929.00

Notes: 1. Monthly data is from the local USGS office in Cheyenne (Station 06297500).

Name	High Line Ditch Diversion		
Source	Tongue River		
District	5		
Data	First & Last Dates, Max. Days		
Water Year	First Date of Measurement	Last Date of Measurement	Maximum Days Missing
1970	22-Jun	11-Oct	0
1971	26-May	26-Oct	0
1972	22-May	7-Oct	0
1973	29-May	26-Sep	0
1974	26-May	30-Oct	0
1975	30-May	14-Oct	0
1976	13-May	5-Oct	0
1977	1-May	Not Available	
1978	Not Available	Not Available	
1979	Not Available	12-Oct	
1980	3-May	28-Oct	0
1981	14-Apr	23-Oct	0
1982	4-Jun	4-Nov	0
1983	5-May	22-Oct	0
1984	29-May	10-Nov	0
1985	2-May	22-Oct	0
1986	19-May	16-Sep	0
1987	5-May	20-Oct	0
1988	1-May	6-Oct	0
1989	6-Mar	6-Nov	0
1990	26-May	12-Oct	0
1991	30-May	25-Oct	0
1992	5-May	15-Oct	0
1993	17-May	13-Oct	0
1994	12-May	7-Nov	0
1995	23-May	6-Nov	0
1996	24-May	8-Oct	0
1997	19-May	24-Sep	0
1998	4-May	24-Nov	0
1999	7-Apr	30-Sep	0
Avg.	13-May	18-Oct	0
Earliest	6-Mar	16-Sep	0
Latest	22-Jun	24-Nov	0

Notes: 1. Data is from USGS published data (Station 06297500).

KEY DIVERSIONS

Diversion: **INTERSTATE (PENNOYER) DITCH DIVERSION**

Date: 12 Sep. 2000

Diversion Description: Headgate consists of two, 3 x 4.3-foot wood-and-steel gates in steel slides operated with a Waterman-type screw, mounted in a concrete headwall. The structure adjoins a long concrete dam that is raised with 2 x 10-inch boards to push more water through the ditch during critical times. Irrigators also lodge straw bales in the 36-inch–diameter pipe that serves as a high-water bypass when necessary to divert more water.

Interstate Ditch headgate

Diversion Location: The Interstate Ditch diversion is located on the main stem of the Tongue and is the last diversion from the Tongue before it leaves the state.

Headgate:

Lat.	Long.
N 44° 56' 22.5"	W 106° 57' 42.8"

Conveyance Description: Open channel canal, approx. 9 miles long.

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

Permit	Priority Date	Permitted Use	Acres	Flow (cfs)	Cumulative (cfs)
3998	06-21-1902	I	30	0.43	0.43
3998	06-21-1902	I	155	2.21	2.64
3998	06-21-1902	I	249	3.55	6.19
2016E	04-25-1907	I	15	0.21	6.90
1724E	06-03-1907	I	46	0.65	7.55
1724E	06-03-1907	I	56	0.80	8.35
1724E	06-03-1907	I	96	1.37	9.72
1724E	06-03-1907	I	190	2.71	12.43
5555E	04-23-1951	I	12	0.17	12.60
5798E	04-27-1955	I	56	0.80	13.40
6226E	03-05-1963	I	69	0.99	14.39

The Tongue River and the Interstate Ditch are typically never under regulation. They "take whatever we can get and as much as we can get," as one irrigator explained. The size of the ditch governs the diversion, allowing for approximately 120 percent of the total rights to be diverted.

Flows in the diversion are approximated as follows:

	Flows as Percentage of Total Right		
Month	*Wet yr.*	*Avg. yr.*	*Dry yr.*
June	120	120	120
Mid-July	120	80	75
Sept.	120	55	55

Associated Storage Rights: None

Agricultural Practices: Irrigators plant approx. 25 percent grass, 65 percent alfalfa, and 10 percent oats or barley.

In contrast, 50 years ago, much more of the water and land were devoted to corn for dairy feed. The last dairy in the area closed approx. 20 years ago.

Irrigation Practices: Irrigators tend to distribute their allocations with 50 percent sprinkler (14 siderolls and two pivots) and 50 percent ditch-flood irrigation practices.

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

Destination	Wet yr.	Avg. yr.	Dry yr.
Tongue River	65	45	0

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

References: Pat Boyd, Water Commissioner, State Engineer's Office, interview, 12 Sept. 2000

Chuck Larson, local rancher, interview, 29 Jan. 2001

Irrigated Lands Water Rights Database

PerNo	PerSfx	Facility Name	Priority	Acres	Amount	Unit	SupTyp	Status	Source
2016	E	Enl. Interstate or Pennoyer	April 25, 1907	15	0.21	CFS	OS	Adj	Tongue River
1724	E	Enl. Interstate or Pennoyer	June 3, 1907	388	4.48	CFS	OS	Adj	Tongue River
1724	E	Enl. Interstate or Pennoyer	June 3, 1907	388	5.53	CFS	OS	Adj	Tongue River
5555	E	Enl. Interstate	April 23, 1951	12	0.17	CFS	OS	Adj	Tongue River
5555	E	Enl. Interstate	April 23, 1951	35	0		SS	Adj	Tongue River
5765	E	Enl. Interstate	Oct. 20, 1954	25	0		SS	Adj	Tongue River
5767	E	Enl. Interstate	Oct. 20, 1954	25	0		SS	Una	Tongue River
5798	E	Enl. Interstate	April 27, 1955	56	0.8	CFS	OS	Adj	Tongue River
5798	E	Enl. Interstate	April 27, 1955	91.8	0		SS	Adj	Tongue River
6226	E	Enl. Interstate or Pennoyer	March 5, 1963	50	0		SS	Adj	Tongue River
6226	E	Enl. Interstate or Pennoyer	March 5, 1963	69	0.99	CFS	OS	Adj	Tongue River
6206	E	O'Connor Sprinkler System Enlargement of Interstate or Pennoyer	May 20, 1963	41	0.58	CFS	OS	Adj	Tongue River

Name	Interstate (Pennoyer) Ditch Diversion
Source	Tongue River
District	5
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										1466.78	1048.24		2515.02
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										1466.78	1048.24		2515.02
Max										1466.78	1048.24		2515.02
Min										1466.78	1048.24		2515.02

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	Interstate (Pennoyer) Ditch Diversion		
Source	Tongue River		
District	5		
Data	First & Last Dates, Max. Days		
Water Year	First Date of Measurement	Last Date of Measurement	Maximum Days Missing
1970			
1971			
1972			
1973			
1974	1-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.	1-Jul	31-Aug	0
Earliest	1-Jul	31-Aug	0
Latest	1-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: **OZ & K & HANOVER DITCH DIVERSION**

Date: 9/12/2000

Note: OZ & K Ditch has a bottleneck at a 3-foot-diameter, 70-foot-long flume. It also suffers from maintenance problems, increasing the ditch loss. Fortunately, the ditch crosses primarily clay loams, reduce the seepage losses.

OZ&K & Hanover ditch headgate

Diversion Description: Headgate consists of two, 5 x 4-foot wood-and-steel gates in steel sliders operated with Waterman-type screws, mounted in a concrete headwall with a bypass gate upstream.

Diversion Location: The OZ & K diversion is located on the main stem of the Tongue, just outside of Dayton.

OZ & K Headgate:

Lat.	Long.
N 44° 52' 49.2"	W 107° 15' 29.9"

Hanover Headgate:

Lat.	Long.
N 44° 54' 22.0"	W 107° 9' 37.4"

Conveyance Description: Open channel canal, approx. 10 mi. long.

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

Permit	Priority Date	Permitted Use	Acres	Flow (cfs)	Cumulative (cfs)
Terr.	04-01-1883	I	387	5.52	5.52
Terr.	04-01-1883	I	660	9.43	14.95
Terr.	Spring 1888	I	80	1.14	16.09
Terr.	Spring 1888	D,I,S	120	1.91	18.00
938E	10-23-1902	I	15	0.21	18.21
1298E	12-10-1904	I	70	1.00	19.21
1838E	06-04-1906	I	18	0.25	19.46
1838E	06-04-1906	I	26	0.37	19.83
1838E	06-04-1906	I	68	0.97	20.80
1838E	06-04-1906	I	144	2.05	22.85
2993E	07-13-1914	I	224	3.20	26.05

Note: The Hanover Ditch diverts from the OZ & K Ditch. The rights listed above represent a compendium of the rights for the two ditches.

Associated Storage Rights: None

Agricultural Practices: Irrigators tend to work 30 percent alfalfa and 70 percent grass hay.

Irrigation Practices: Irrigators tend to use approx. 20 percent sprinklers and 80 percent ditch-flood irrigation to serve their crops.

Return Flows: Irrigators were not able to estimate the return flows for the OZ&K Ditch.

Losses: Approx. 25 percent by the end of the ditch

References: Pat Boyd, water commissioner, State Engineer's Office, interview, 12 Sept. 2000

Greg Benzel, Padlock Ranch ranch manager, Padlock Ranch, interview, 29 Jan. 2001

Don Luse, Padlock Ranch resource manager, Padlock Ranch, interview, 29 Jan. 2001

Irrigated Lands Water Rights Database

PerNo	PerSfx	Facility Name	Priority	Acres	Amount	Unit	SupTyp	Status	Source
Terr	D	OZ&K	April 30, 1883	1046.5	14.95	CFS	OS	Adj	Tongue River
Terr	D	OZ&K 2nd App	June 20, 1888	200	3.05	CFS	OS	Adj	Tongue River
90	D	Hanover (OZ&K, Ranchester Water Works System)	July 6, 1891	580	21.14	CFS	OS	Adj	Tongue River
90	D	Hanover (OZ&K, Ranchester Water Works System)	July 6, 1891	580	21.14	CFS	OS	Adj	Tongue River
249	E	Hanover thru OZ&K	April 24, 1897	140	2	CFS	OS	Adj	Tongue River
1838	E	Enl. OZ&K & Hanover	June 4, 1906	256	3.64	CFS	OS	Adj	Tongue River
2993	E	Enl. OZ&K & Hanover	July 13, 1914	224	3.2	CFS	OS	Adj	Tongue River

Name	OZ & K & Hanover Ditch Diversion
Source	Tongue River
District	5
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									157.29	1003.70	1886.28	0.00	3047.27
1975													
1976													
1977													
1978													
1979													
1980													
1981													
1982													
1983													
1984									1137.74	1530.03	1678.02	1071.07	5416.86
1985													
1986													
1987													
1988													
1989													
1990													
1991													
1992													
1993													
1994													
1995													
1996													
1997													
1998													
1999													
Mean									647.52	1266.87	1782.15	535.54	4232.07
Max									1137.74	1530.03	1886.28	1071.07	5416.86
Min									157.29	1003.70	1678.02	0.00	3047.27

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	OZ & K & Hanover Ditch Diversion		
Source	Tongue River		
District	5		
Data	First & Last Dates, Max. Days		
Water Year	First Date of Measurement	Last Date of Measurement	Maximum Days Missing
1970			
1971			
1972			
1973			
1974	26-Jun	31-Aug	0
1975			
1976			
1977			
1978			
1979			
1980			
1981			
1982			
1983			
1984	11-Jun	18-Sep	36
1985			
1986			
1987			
1988			
1989			
1990			
1991			
1992			
1993			
1994			
1995			
1996			
1997			
1998			
1999			
Avg.	18-Jun	9-Sep	18
Earliest	11-Jun	31-Aug	0
Latest	26-Jun	18-Sep	36

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

KEY DIVERSIONS

Diversion: **SOUTH SIDE DITCH DIVERSION**

Date: 9/12/2000

Diversion Description: Headgate consists of a single, 5.4 x 2.1-foot wooden gate in steel slides operated with a Waterman-type screw, mounted in a concrete headwall.

South Side Ditch headgate

Diversion Location: The South Side Ditch diversion is located on the main stem of the Tongue.

Headgate:

Lat.	Long.
N 44° 56' 22.5"	W 106° 57' 42.8"

Conveyance Description: Open channel canal, approx. 10.6 miles long.

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

Permit	Priority Date	Permitted Use	Acres	Flow (cfs)	Cumulative (cfs)
Terr.	Spring 1884	I	105	1.50	1.50
Terr.	Spring 1891	I	60	0.85	2.35
14E	01-26-1892	I	285	4.07	6.42
39E	06-02-1893	I	208	2.97	9.39
	12-31-1893	I	300	4.30	13.69
219E	07-30-1896	I	355	5.07	18.76
1098E	07-30-1903	I	215	3.07	21.83
1184E	03-04-1904	I	10	0.13	21.96
3031E	09-08-1914	I	25	0.36	22.32
6489E	10-09-1973	I	9	0.13	22.45

Associated Storage Rights: None

Agricultural Practices: Irrigators plant approx. 70 percent grass and 30 percent alfalfa.

Irrigation Practices: Irrigators tend to distribute their allocations with 10 percent sprinkler (hand lines and siderolls) and 90 percent ditch-flood irrigation practices.

Return Flows: An estimation of the return flows to the Tongue River is not available.

Losses: Approx. 40 percent by end

References: Pat Boyd, water commissioner, State Engineer's Office, interview, 12 Sept. 2000

Greg Benzel, Padlock Ranch manager, Padlock Ranch, interview, 29 Jan. 2001

Don Luse, Padlock Ranch resource manager, Padlock Ranch, interview, 29 Jan. 2001

Irrigated Lands Water Rights Database

PerNo	PerSfx	Facility Name	Priority	Acres	Amount	Unit	SupTyp	Status	Source
Terr	D	South Side Tongue River	June 20, 1884	105	1.5	CFS	OS	Adj	Tongue River
Terr	D	Huntington (South Side Tongue River)	Oct. 1, 1884	300	4.3	CFS	OS	Adj	Tongue River
Terr	D	South Side Tongue River 2nd App	June 20, 1891	60	0.85	CFS	OS	Adj	Tongue River
14	E	Enl. South Side Tongue River	Jan. 26, 1892	285	4.07	CFS	OS	Adj	Tongue River
39	E	Enl. South Side Tongue River	June 2, 1893	208	2.97	CFS	OS	Adj	Tongue River
219	E	Enl. South Side Tongue River (Dayton Mill)	July 30, 1896	355	5.07	CFS	OS	Adj	Tongue River
1098	E	Enl. South Side Tongue River & Dayton	July 30, 1903	215	3.07	CFS	OS	Adj	Tongue River
1184	E	Enl. South Side Tongue River & Dayton	March 4, 1904	10	0.13	CFS	OS	Adj	Tongue River
3031	E	Enl South Side Tongue River & Dayton	Sep. 8, 1914	25	0.36	CFS	OS	Adj	Tongue River
6489	E	Enl. South Side Tongue River	Oct. 9, 1973	9	0.13	CFS	OS	Adj	Tongue River
6489	E	Enl. South Side Tongue River	Oct. 9, 1973	4	0		SS	Adj	Tongue River
301086	D	White Enl. South Side	March 13, 2000	0	0		OS	Una	Tongue River

Name	South Side Ditch Diversion
Source	Tongue River
District	5
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									76.52	1104.10	1429.29	0.00	2609.91
1975													
1976													
1977													
1978													
1979													
1980													
1981													
1982													
1983													
1984									0.00	476.03	980.50	546.78	2003.31
1985													
1986													
1987													
1988													
1989													
1990													
1991													
1992													
1993													
1994													
1995													
1996													
1997													
1998													
1999													
Mean									38.26	790.07	1204.90	273.39	2306.61
Max									76.52	1104.10	1429.29	546.78	2609.91
Min									0.00	476.03	980.50	0.00	2003.31

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	South Side Ditch Diversion		
Source	Tongue River		
District	5		
Data	First & Last Dates, Max. Days		
Water Year	First Date of Measurement	Last Date of Measurement	Maximum Days Missing
1970			
1971			
1972			
1973			
1974	26-Jun	31-Aug	0
1975			
1976			
1977			
1978			
1979			
1980			
1981			
1982			
1983			
1984	17-Jul	18-Sep	27
1985			
1986			
1987			
1988			
1989			
1990			
1991			
1992			
1993			
1994			
1995			
1996			
1997			
1998			
1999			
Avg.	6-Jul	9-Sep	14
Earliest	26-Jun	31-Aug	0
Latest	17-Jul	18-Sep	27

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

KEY DIVERSIONS

Diversion: **TONGUE RIVER NO. 1 DITCH DIVERSION**

Date: 9/12/2000

Diversion Description: Headgate consists of a single, 4.6 x 5.1-foot wooden gate in steel slides mounted in a concrete throat operated with a Waterman-type screw.

Tongue River No. 1 headgate

Diversion Location: The Tongue River No. 1 Ditch diversion is located on the main stem of the Tongue.

Headgate:

Lat.	Long.
N 44° 52' 4.5"	W 107° 16' 55.2"

Conveyance Description: Open channel canal, approximately 2.9 miles long.

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

Permit	Priority Date	Permitted Use	Acres	Flow (cfs)	Cumulative Flow (cfs)
Terr.	Spring 1882	I	100	1.43	1.43
Terr.	Spring 1882	I	170	2.43	3.86
Terr.	Spring 1882	I	225	3.21	7.07
Terr.	Summer 1884	I	35	0.50	7.57

Associated Storage Rights: None

Agricultural Practices: Irrigators plant approx. 70 percent grass and 30 percent alfalfa.

Irrigation Practices: Irrigators tend to distribute their allocations with 10 percent sprinkler (hand lines and siderolls) and 90 percent ditch-flood irrigation practices.

Return Flows: A good estimation of the return flows to the Tongue River could not be obtained.

Losses: Unknown

References: Pat Boyd, water commissioner, State Engineer's Office, interview, 12 Sept. 2000

Irrigated Lands Water Rights Database

PerNo	PerSfx	Facility Name	Priority	Acres	Amount	Unit	SupTyp	Status	Source
Terr	D	Tongue River No.1	June 20, 1882	495	7.02	CFS	OS	Adj	Tongue River
Terr	D	Thorn Bros. Enl Tongue River No. 1	Sep. 21, 1884	35	0.5	CFS	OS	Adj	Tongue River

Name	Tongue River No. 1 Ditch Diversion
Source	Tongue River
District	5
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													
1975													
1976													
1977													
1978													
1979													
1980													
1981													
1982													
1983													
1984									793.39	1155.37	1109.09	591.74	3649.59
1985													
1986													
1987													
1988													
1989													
1990													
1991													
1992													
1993													
1994													
1995													
1996													
1997													
1998													
1999													
Mean									793.39	1155.37	1109.09	591.74	3649.59
Max									793.39	1155.37	1109.09	591.74	3649.59
Min									793.39	1155.37	1109.09	591.74	3649.59

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	Tongue River No. 1 Ditch Diversion		
Source	Tongue River		
District	5		
Data	First & Last Dates, Max. Days		
Water Year	First Date of Measurement	Last Date of Measurement	Maximum Days Missing
1970			
1971			
1972			
1973			
1974			
1975			
1976			
1977			
1978			
1979			
1980			
1981			
1982			
1983			
1984	11-Jun	18-Sep	36
1985			
1986			
1987			
1988			
1989			
1990			
1991			
1992			
1993			
1994			
1995			
1996			
1997			
1998			
1999			
Avg.	11-Jun	18-Sep	36
Earliest	11-Jun	18-Sep	36
Latest	11-Jun	18-Sep	36

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

KEY DIVERSIONS

Diversion: **YORK DITCH DIVERSION**

Date: 12 Sep. 2000

Diversion Description: Headgate consists of a single, 6.0 x 2.6-foot steel radial gate mounted in a concrete headwall. The gate is no longer operational from its appearance, and is wired open. The gate is also placed higher than the adjacent river often reaches, reducing the amount of water that can be diverted into the York Ditch.

Diversion Location: The York Ditch diversion is located on the main stem of the Tongue.

Headgate:

Lat.	Long.
N 44° 52' 57.1"	W 107° 13' 43.9"

Conveyance Description: Open channel canal, approximately 7.2 miles long.

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

Permit	Priority Date	Permitted Use	Acres	Flow (cfs)	Cumulative Flow (cfs)
388	01-06-1893	I	80.00	1.14	1.14
388	01-06-1893	I	140.00	2.00	3.14
388	01-06-1893	I	140.00	2.00	5.14
388	01-06-1893	I	180.00	2.57	7.71
388	01-06-1893	I	200.00	2.85	10.56
1128E	11-09-1903	I	55.00	0.79	11.35
1129E	11-12-1903	I	30.00	0.42	11.77
4396E	11-30-1923	I	27.40	0.39	12.16
4467E	04-10-1925	I	78.10	1.11	13.27

Associated Storage Rights: None

Agricultural Practices: Irrigators plant approx. 70 percent grass and 30 percent alfalfa.

Irrigation Practices: Irrigators tend to distribute their allocations with 10 percent sprinkler (hand lines and siderolls) and 90 percent ditch-flood irrigation practices.

Return Flows: Estimations of the return flows to the Tongue River were not available.

Losses: Unknown

References: Pat Boyd, water commissioner, State Engineer's Office, interview, 12 Sept. 2000

Irrigated Lands Water Rights Database

PerNo	PerSfx	Facility Name	Priority	Acres	Amount	Unit	SupTyp	Status	Source
388	D	York (11 diversion points)	Jan. 16, 1893	740	10.56	CFS	OS	Adj	Tongue River
4396	E	Enl. York	Nov. 30, 1923	532.2	0		SS	Adj	Tongue River
4467	E	Enl. York	April 10, 1925	78.1	1.11	CFS	OS	Adj	Tongue River

Name	York Ditch Diversion
Source	Tongue River
District	5
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									63.31	421.21	589.41	0.00	1073.93
1975													
1976													
1977													
1978													
1979													
1980													
1981													
1982													
1983													
1984									0.00	267.77	573.22	357.02	1198.01
1985													
1986													
1987													
1988													
1989													
1990													
1991													
1992													
1993													
1994													
1995													
1996													
1997													
1998													
1999													
Mean									31.66	344.49	581.32	178.51	1135.97
Max									63.31	421.21	589.41	357.02	1198.01
Min									0.00	267.77	573.22	0.00	1073.93

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	York Ditch Diversion		
Source	Tongue River		
District	5		
Data	First & Last Dates, Max. Days		
Water Year	First Date of Measurement	Last Date of Measurement	Maximum Days Missing
1970			
1971			
1972			
1973			
1974	26-Jun	31-Aug	0
1975			
1976			
1977			
1978			
1979			
1980			
1981			
1982			
1983			
1984	17-Jul	18-Sep	27
1985			
1986			
1987			
1988			
1989			
1990			
1991			
1992			
1993			
1994			
1995			
1996			
1997			
1998			
1999			
Avg.	6-Jul	9-Sep	14
Earliest	26-Jun	31-Aug	0
Latest	17-Jul	18-Sep	27

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