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Hydraulics

Hydrology

Water Resources

September 1, 1999

Mr. Allen Merritt
Idaho Department of Water Resources
1341 Fillmore Street, Suite 200
Twin Falls, ID 83301

Re: Gerald Bashaw water right transfers
Project No. 010-01-1992

Dear Allen:

Enclosed are two water right transfer applications for groundwater and surface water applicable to the Picabo Ranch. I spoke with you earlier regarding the proposed changes for this property.

The transfers would create a permissible place of use within the ranch, to which both groundwater and surface water would be appurtenant. I have included a narrative with several maps to explain the current water rights structure, the historical and current water usage on the ranch, and the intent of the applicant in these transfers.

Please do not hesitate to call if you have any questions.

Sincerely,


Charles G. Brockway

CHARLES E.
BROCKWAY,
PH.D., P.E.

CHARLES G.
BROCKWAY,
PH.D., P.E.

cc: Gerald Bashaw

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Southern Region

T # 5815

NARRATIVE IN SUPPORT OF WATER RIGHT TRANSFER APPLICATIONS

Picabo Ranch – G. Bashaw

Brockway Engineering, PLLC 9/1/99

The Picabo Ranch property is owned by Gerald B. Bashaw, and is located northwest of Picabo primarily in sections 17 and 18, T. 1 S., R. 20 E. Irrigation on the property has historically been accomplished by both surface water and groundwater diversions. Surface water is delivered from Loving Creek via the Gillihan Ditch, conveyed to the main irrigation pond located near the owner's residence, and pumped to a sprinkler irrigation system. Groundwater is supplied by four wells which deliver either to the main pond or directly to the irrigation mainlines. This has been the method of water delivery and irrigation since 1977 or earlier. The attached vicinity map shows the location of the ranch, the diversion from Loving Creek, the wells, and the main pond.

Because of irrigation changes on the property, it is necessary to modify the existing water rights to reflect actual practices. Also, the structure of the rights will be modified to increase flexibility and acres will be recorded on the surface rights, which were decreed without acres.

Surface Water Rights

Sixteen decreed surface rights are applicable to the property. The priority dates and diversion rates are given in Table 1.

Table 1. Decreed surface rights.

Right No.	Priority	Rate	Watermaster
37-01082D	7/8/1884	0.40	0.38
37-00448	6/15/1887	2.70	1.30
37-00237B	6/15/1887	0.89	0.22
37-00137	6/1/1889	0.80	0.38
37-01067B	4/1/1890	0.80	0.77
37-00207A	4/1/1890	1.00	0.96
37-00138	5/15/1890	1.20	0.57
37-00944D	None listed	0.40	6.6 inches
37-00950	None listed	1.60	32.23% of K & L drains
37-00945	None listed	3.20	46.6% of 1/8 of C drain
37-00951	None listed	3.00	46.6% of 1/2 of D drain
37-00706B	3/15/1883	0.924	0.23
37-00426A	4/1/1887	0.825	0.20
37-00095D	5/29/1893	0.657	0.21
37-00632D	6/3/1897	0.758	0.24
37-00943D	None listed	0.809	8.25% of J drain
TOTAL		19.96 cfs	5.59 cfs (w/o drains)

The place of use differs among the surface rights, but taken together they generally cover the south portion of the ranch and the portion south of Picabo road (see the attached map showing current water right coverage). No acres are listed on any of the surface rights.

The diversion rates recorded on the water right records differ considerably from the rates listed in the watermaster decree book (the "Watermaster" column in the above table). For all rights, the rate listed by the watermaster is less than the recorded rate. Also, according to the watermaster, the rights decreed from the various drains in the area cannot be delivered because the drains have been filled in for farm ground.

The Gillihan headgate, denoted as #11 by the watermaster, is located on Loving Creek in SE1/4 NW1/4 Sec. 24, T. 1 S., R. 20 E. Historically, a ditch delivered water to the main pond on the subject property. Since then, water has been conveyed to the property in an 18-inch PVC pipe from the point where the ditch crosses Gannett Road to the main pond.

Groundwater Rights

Nine groundwater rights are appurtenant to the property. The priority dates and diversion rates are given in Table 2.

Table 2. Groundwater rights.

Right No.	Priority	Rate (cfs)	Acres
37-02566B	2/26/1955	2.97	561
37-02594B	2/25/1957	2.41	561
37-02612B	4/1/1959	3.18	561
37-07239B	6/5/1973	1.61	561
37-02615	5/28/1959	1.80	90
37-02566A	2/26/1955	0.11	21
37-02594A	2/25/1957	0.09	21
37-02612A	4/1/1959	0.12	21
37-07239A	6/5/1973	0.06	21
TOTAL		12.35 cfs	672 acres

The groundwater rights are all licenses and are appurtenant to the subject property. They are structured in three distinct groups: the 561-acre rights are located on the main portion of the property north of Picabo Road; the 90-acre right is located south of the road in the southeast portion of the property (between the road and Silver Creek); and the 21-acre rights are located in SW1/4 SW1/4 Section 16. See the attached map showing current water right coverage. The 21-acre rights were split from the original rights and retained by Willis Castle in 1990. Mr. Bashaw subsequently purchased this land from Mr. Castle.

None of the groundwater groups overlap in terms of acreage. Therefore, the total allowable irrigation from groundwater is $561 + 90 + 21 = 672$ acres. The total diversion rate of 12.35 cfs equates to 0.0184 cfs/ac (0.92 inches/acre).

Historical and Future Irrigation

A review was made of available aerial photo information for the years 1977 through 1998 to assess the extent of irrigation on the property. Because the surface rights do not indicate the allowable irrigated acres, the “worth” of these rights, i.e. the total acres which will be allowed in a transfer, must be substantiated by historical evidence.

Aerial photos or slides provided by the Farm Service Agency were utilized where available for 1977 through 1997. When only slides were available, the FSA’s projection equipment was used to view the slides, and a trace was made of the irrigated lands. The traces were then digitized and rectified to correct for distortion inherent in aerial photography. The areas were then calculated. For 1987, the acres were determined by IDWR using GIS methods with rectified infrared photographs. To determine 1998 irrigation, a system plan showing the locations of center pivots and wheel lines systems was used. Table 3 shows the results of these analyses.

Table 3. Historical irrigation.

Year	Acres
1977	619
1978 – 1983	No photo or slide available
1984	611
1985 – 1986	No photo or slide available
1987	629
1988 – 1990	No photo or slide available
1991	669
1992	611
1993	No photo or slide available
1994	637
1995	665
1998	604

This analysis shows that the maximum irrigation occurred in 1991 and 1995, with an average of these two years being 667 acres. This is very close to the 672 acres authorized by the groundwater rights. According to Rule 020.10 of the latest Water Management Rules adopted in 1998, forfeiture of a portion of a water right shall not occur if “an irrigation system substantially irrigates the parcel to which the license or decree has been made appurtenant and the parts of the parcel which are not irrigated have not been permanently converted to another use.” Clearly, substantially all of the authorized acres have been irrigated on the Picabo Ranch, and none of the authorized acres have been converted to other uses. Therefore, the full 672 acres should be allowed.

A reduction in irrigation has occurred due to installation of center pivot systems in 1998 and a removal of several areas (chiefly the pivot corners) which were previously irrigated with wheel lines or hand lines. According to Mr. Bashaw, the irrigation occurring in 1998 is the maximum amount anticipated to occur in the future.

Since 672 acres can be justified by historical evidence, and is fully covered by the applicable water rights, a reduction of irrigation to 604 acres will allow 68 acres to be sold and moved to other property.

Historic Surface Water Diversions

All but two of the surface rights are late priority (1887 or later) rights. On the Silver Creek system, rights with priority dates of 1883 to 1885 are considered reliable, while those with later dates do not generally provide a sufficient water supply for irrigation. Historical deliveries of surface water to the subject property have been obtained by the watermaster to determine the extent of beneficial use of the surface rights. Table 4 is a summary of deliveries from 1989 through 1998 from the Gillihan headgate, showing the number of days water was delivered and the total volume of water delivered. Prior to 1989, the watermaster did not separately track amounts delivered to each user, so the Gillihan ditch data for this earlier period is not meaningful.

Table 4. Watermaster diversions at Gillihan #11.

Year	No. of days	Volume (ac-ft)
1989	133	373
1990	144	413
1991	31	50
1992	135	202
1993	147	1316
1994	143	311
1995	132	889
1996	141	558
1997	7	28
1998	111	500
Average	112	464

Because most of the surface rights have late priority dates, a relatively small percentage of the irrigation water requirements has historically been supplied by surface water, with most of the water coming from the existing wells.

Because the degree to which the groundwater rights are supplemental has a significant bearing on water rights transactions, an analysis was performed for each year for which irrigated area was calculated (see Table 3) to determine the percentage of the total irrigation requirement supplied by the surface rights. An estimate of the average crop evapotranspiration was made using the FAO Blainey-Criddle method (Allen and Brockway, 1983). The attached spreadsheet details the calculations.

The percentage met by surface water ranged from 2% to 39%, with an average of 18%; i.e. the groundwater rights supplied an average of 82% of the irrigation water for the Picabo Ranch. Thus, the groundwater is supplemental only to a minor extent, and the wells have been operated essentially as primary sources in many years, e.g. 1991 and 1997, as shown by the data in Table 4.

SRBA Claim Analysis

The adjudication claims are structured as three non-overlapping groups, where all water rights within a group have the same place of use.

Group 1: 60 acres, 5 surface water, 1 groundwater
Group 2: 617 acres, 8 surface water, no groundwater
Group 3: 561 acres, no surface water, 4 groundwater

The 561-acre group lists the same place of use as the licenses. The 60-acre group has a place of use south of Picabo Road in the same area as the 90-acre groundwater license. The 617-acre group lists acres which correspond relatively closely to actual irrigation north of Picabo Road.

All of the claims will need to be amended in the transfer process to reflect the proposed changes. In particular, the groundwater claims should be amended to reflect 672 acres, as authorized under the licenses.

Proposed Water Right Transfers

It is proposed to create a permissible place of use of the entire Picabo Ranch, with the maximum allowable irrigation within the PPU being 672 acres. The place of use on both the surface rights and the groundwater rights will be changed accordingly so that full overlap will exist between the two. There is precedent for this approach: a transfer was approved in 1998 for Picabo Livestock, in which a nearly identical water right structure was proposed.

No split of any right is proposed in this transfer. It is recognized that 68 acres will eventually be sold, but these acres will remain in the permissible place of use and will be available for use on the Picabo Ranch until they are sold.

The acres listed for the permissible place of use were determined by calculating the irrigable area in each 40-acre tract, using aerial photographs and the USGS topographic map as guides. This total is 770 acres. Within this PPU, no more than 672 acres will be irrigated in any one season.

Separate transfer applications are being submitted for the surface water and groundwater rights, in accordance with the IDWR policy requiring one transfer for each hydraulically separate system.

The attached map shows the acres comprising the PPU after the transfer is complete. Again, these are irrigable acres in each forty, not actual irrigation. For informational

purposes, the map also shows the boundaries of center pivots and wheel lines as of 1998, and the current irrigation totaling 603.8 acres.

Summary of Water Right Components After Transfer

All surface rights and groundwater rights should list the same 770-acre permissible place of use, with conditions limiting the total irrigation in any one season to 672 acres.

The diversion rates should be the same as those listed on the existing licenses and decrees.

The groundwater rights should have a condition or a remark indicating that they are primary rights and have supplied 82% of the total water requirements. This is necessary to clarify the fact that, even though the surface and groundwater rights will be modified to have fully overlapping places of use, the groundwater should not be treated as supplemental in future water right transactions.

WATERMASTER DIVERSIONS TO PICABO RANCH VIA GILLIHAN #1

Compiled by Brockway Engineering, PLLC 8/17/99

Castle 1978 - 1989
Amaral 1989 - 1996
Bashaw 1997 - 1998

NOTE: 1978 - 1988 data is ALL USERS
in Gillihan ditch, not just Picabo Ranch.
After 1988, data is for Picabo Ranch only.

Year	No. of days	Total ac-ft		
1978	145	3006	1989 - 1998 average	464.0 ac-ft
1979	139	2069	1991 - 1998 average	481.75 ac-ft
1980	148	3186		
1981	153	3557		
1982	142	3549		
1983	133	2781		
1984	134	2802		
1985	115	2298		
1986	135	2690		
1987	162	2625		
1988	148	1551		
1989	133	373		
1990	144	413		
1991	31	50		
1992	135	202		
1993	147	1316		
1994	143	311		
1995	132	889		
1996	141	558		
1997	7	28		
1998	111	500		

HISTORICAL IRRIGATION WATER REQUIREMENTS

Picabo Ranch - G. Bashaw

Crop ET was computed using FAO Blainey-Criddle method
(Allen and Brockway, 1983).

Assume crop of alfalfa hay

Average seasonal crop ET

759 mm

Overall system efficiency

0.7

Year	Acres*	Acres minus Castle's 20	Crop ET (in.)	Volume requirement (inches)	(ac-ft)	Sfc water Diversion (ac-ft)	Percent of total
1977	619	599	29.88	42.69	2131		
1984	611	591	29.88	42.69	2102		
1987	629	609	29.88	42.69	2166		
1991	669	649	29.88	42.69	2309	50	2%
1992	611	591	29.88	42.69	2102	202	10%
1994	637	617	29.88	42.69	2195	311	14%
1995	665	645	29.88	42.69	2295	889	39%
1998	604	584	29.88	42.69	2078	500	24%
Average					2172	390	18%

* Total acres including Castle's 20 ac in SW1/4 SW1/4 Section 16

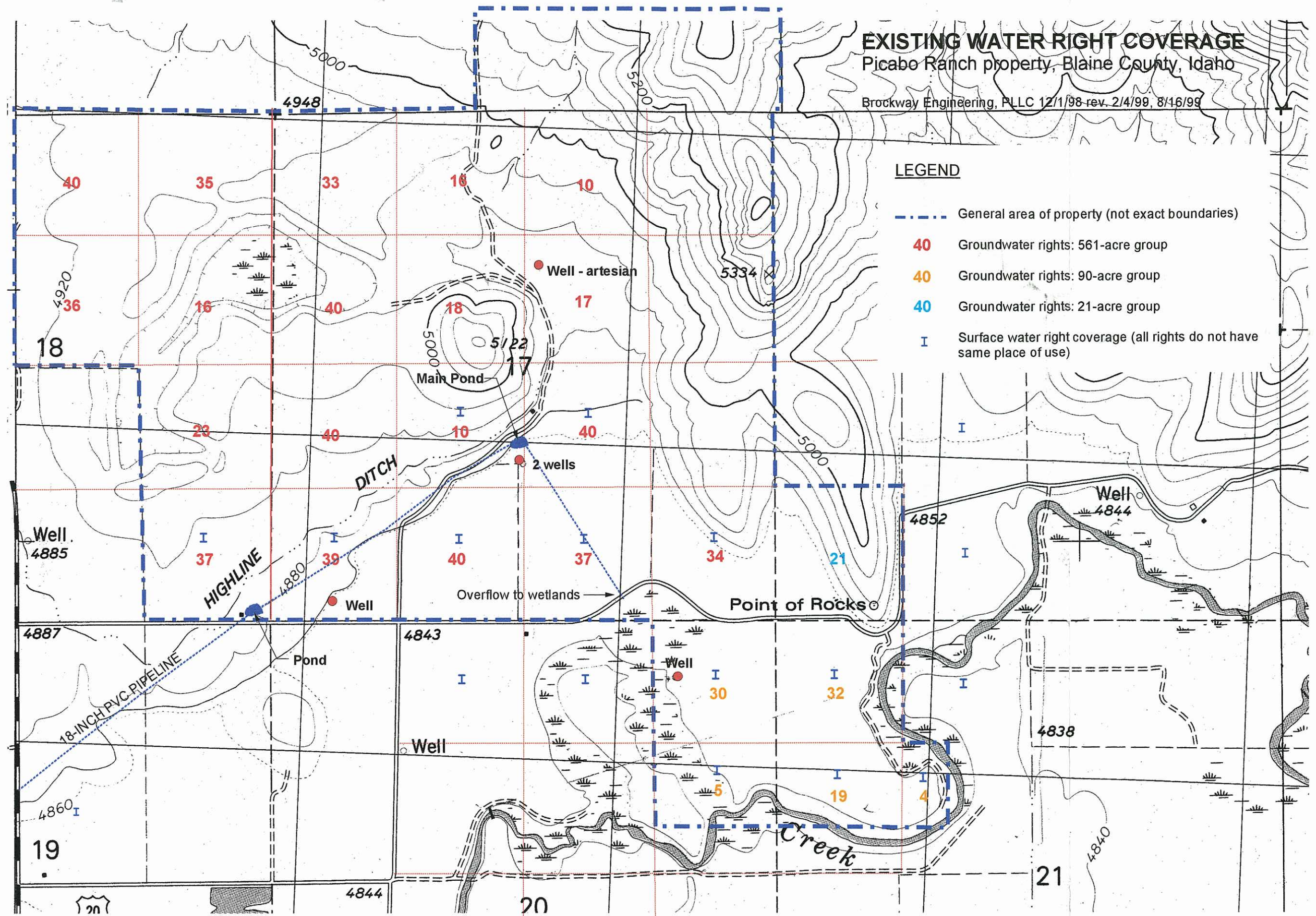
EXISTING WATER RIGHT COVERAGE

Picabo Ranch property, Blaine County, Idaho

Brockway Engineering, PLLC 12/1/98 rev. 2/4/99, 8/16/99

LEGEND

- General area of property (not exact boundaries)
- 40 Groundwater rights: 561-acre group
- 40 Groundwater rights: 90-acre group
- 40 Groundwater rights: 21-acre group
- I Surface water right coverage (all rights do not have same place of use)



WATER RIGHT STRUCTURE AFTER TRANSFER

Picabo Ranch property, Blaine County, Idaho

Brockway Engineering, PLLC 12/1/98 rev. 2/4/99, 8/16/99

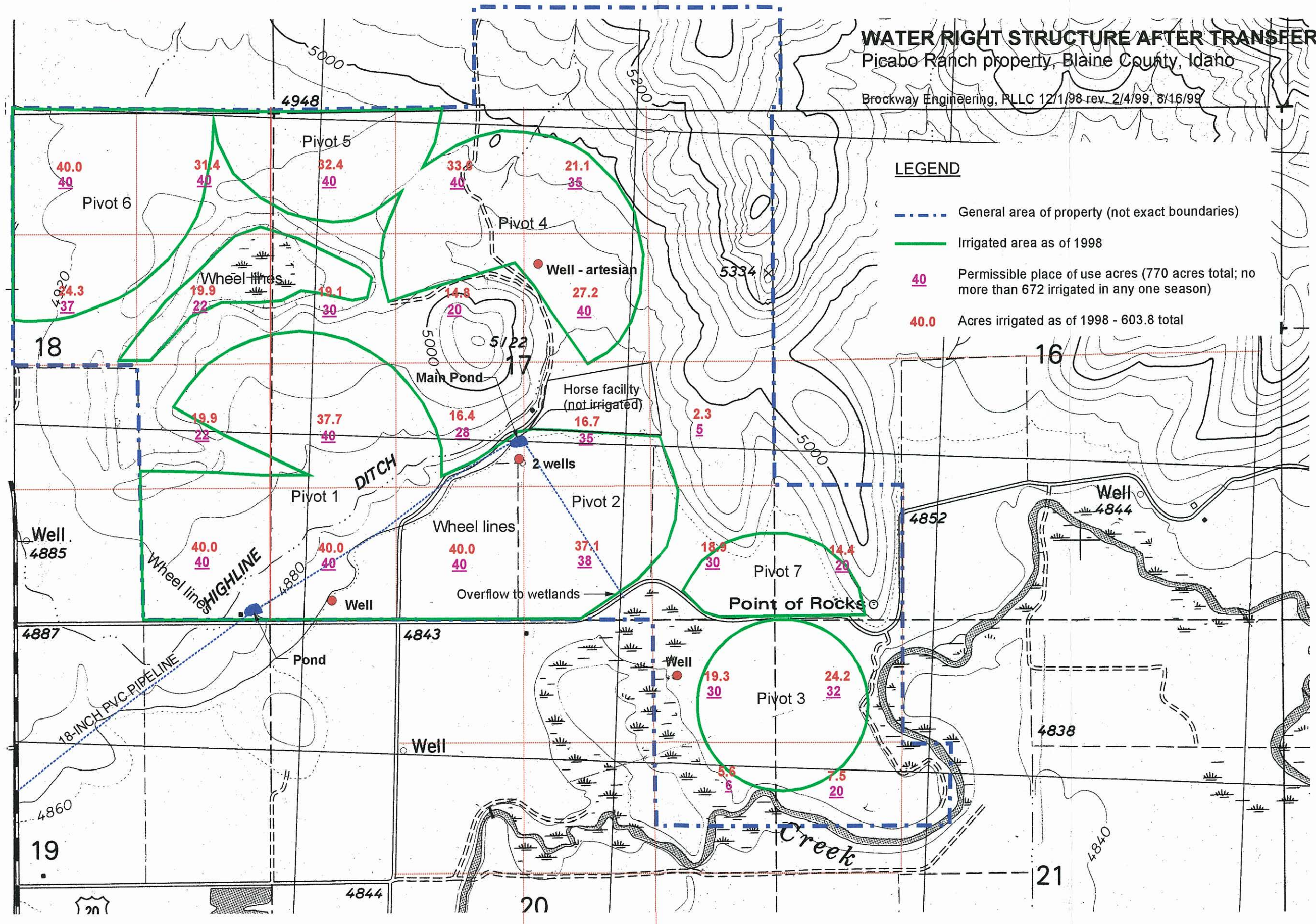
LEGEND

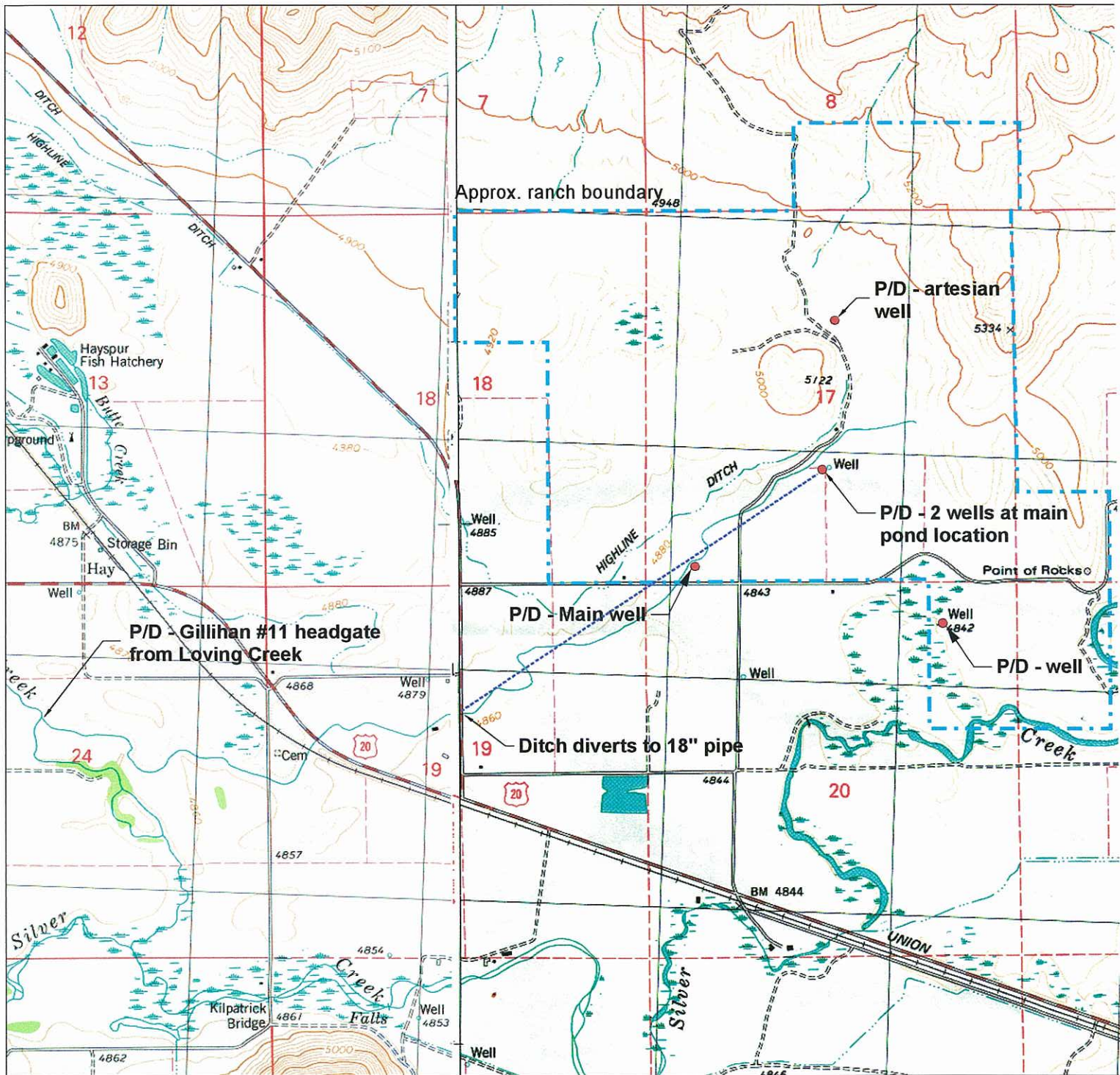
--- General area of property (not exact boundaries)

— Irrigated area as of 1998

40 Permissible place of use acres (770 acres total; no more than 672 irrigated in any one season)

40.0 Acres irrigated as of 1998 - 603.8 total





VICINITY MAP FOR PICABO RANCH WATER RIGHT TRANSFERS GERALD R. BASHAW

Brockway Engineering, PLLC 8/16/99

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PICABO RANCH SRBA CLAIM SUMMARY - G. BASHAW

Brockway Engineering 7/15/99

Amounts are claimed amounts. In most cases, only part of right was claimed, and IDWR water right database lists more than these amounts

Group 1 (60-acre tract)

Right	Priority	Q (cfs)	Per-acre (cfs/ac)	(in/ac)	Watermaster Q (cfs)
A37-00706E	3/15/1883	0.22	0.0037	0.18	0.23
A37-00426E	4/1/1887	0.20	0.0033	0.17	0.20
A37-00095G	5/29/1893	0.20	0.0033	0.17	0.21
A37-00632G	6/3/1897	0.24	0.0040	0.20	0.24
A37-00943G	7/01/1913	0.26	0.0043	0.22	8.25% of J drain up to 13.2"
A37-02615	5/28/1959	1.80	0.0300	1.50	n/a
Total surface water		1.12	0.019	0.93 in/ac	0.88
Total groundwater		1.80	0.030	1.50 in/ac	

Group 2 (617-acre tract)

Right	Priority	Q (cfs)	Per-acre (cfs/ac)	(in/ac)	Watermaster Q (cfs)
A37-01082D	7/8/1884	0.40	0.0006	0.03	0.38
A37-00448B & 00237	6/15/1887	1.65	0.0027	0.13	1.52
A37-00137B	6/1/1889	0.40	0.0006	0.03	0.38
A37-00207A & 01067	4/1/1890	1.80	0.0029	0.15	1.73
A37-00138B	5/15/1890	0.60	0.0010	0.05	0.57
A37-00950 & 00944	11/01/1917	1.72	0.0028	0.14	37-0950: 32.23% of K&L drns 37-0944: 6.60 inches
A37-00945B	6/01/1916	1.60	0.0026	0.13	46.6% of 1/8 of C drain
A37-00951B	6/01/1916	1.50	0.0024	0.12	46.6% of 1/2 of D drain
Total surface water		9.67	0.016	0.78	4.58
Total groundwater		0.00	0.000	0.00	

Group 3 (561-acre tract)

Right	Priority	Q (cfs)	Per-acre (cfs/ac)	(in/ac)
A37-02566B	2/26/55	2.97	0.0048	0.24
A37-02594B	2/26/55	2.41	0.0039	0.20
A37-02612B	5/1/59	3.18	0.0052	0.26
A37-07239B	6/5/73	1.61	0.0026	0.13
Total surface water		0.00	0	0
Total groundwater		10.17	0.016	0.82

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REVIEW OF BASHAW TRANSFER (SURFACE RIGHTS)

Right No.	CFS	Claims	CFS	Comments
37-00095D	0.64	A37-00095G	0.20	
37-00137	0.80	A37-00137C	0.014	 Claim 0.40 cfs total
		A37-00137D	0.386	
37-00138	1.20	A37-00138C	0.02	 Claim 0.60 cfs total
		A37-00138D	0.58	
37-00207A	1.00	A37-00207C	0.06	 Moved to preset p/u in 1926 1.80 cfs total incl 1067B
		A37-00207D	1.74	
37-00237B	0.89	A37-00448D/E	1.65	Combined claim
37-00426A	0.82	A37-00426E	0.20	✓
37-00448	2.70	A37-00448D	0.056	
		A37-00448E	1.59	1.65 cfs incl 0237B
37-00632D	0.75	A37-00632G	0.24	✓
37-00706B	0.92	A37-00706E	0.22	✓
37-00943D	0.809	A37-00943G	0.26	Abandoned drain right - disallow
37-00944D	0.40	A37-00950A/B		Abandoned drain right - disallow
37-00945	3.20	A37-00945C	0.05	Abandoned drain right - disallow
		A37-00945D	1.55	Abandoned drain right - disallow
37-00950	1.60	A37-00950A	0.058	Abandoned drain right - disallow
		A37-00950B	1.66	Abandoned drain right - disallow
37-00951	3.00	A37-00951C	0.51	Abandoned drain right - disallow
		A37-00951D	1.45	Abandoned drain right - disallow

37-01067B 0.80 A37-00207C/D 1.80 Combined Claim

37-01082D 0.40 A37-01082E 0.01

A37-01082F 0.39 Claimed 0.40 cfs total

Total 19.94 5.71* *CFS recommended for transfer
If watermaster concurs
(claimed amounts excluding
drain rights)

T# 5815

Agshaw P.O.

Township	Range	Sec	Qq	Lotnum	Acres
		7	SWNE	4	0.000
		7	SENE	5	0.021
		7	SENW	3	0.000
		8	SENW	3	11.647
		8	SWNE	2	9.386
		8	SWNW	4	0.045
		16	NWSW	0	0.000
		16	SWSW	0	14.134
		17	NWNW	0	34.752
		17	NESW	0	23.069
		17	NESE	0	5.873
		17	NWSE	0	29.103
		17	SENE	0	0.510
		17	SWNE	0	30.574
		17	SENW	0	14.548
		17	SWNW	0	27.015
		17	NWSW	0	40.031
		17	SESW	0	38.012
		17	NWNE	0	33.555
		17	SWSW	0	39.244
		17	NENW	0	40.264
		17	SWSE	0	35.450
		17	SESE	0	24.842
		18	NWSE	0	0.000
		18	NENE	0	34.030
		18	SWNE	0	35.385
		18	NENW	0	0.001
		18	SENE	0	26.320
		18	NWNE	0	40.995
		18	NESE	0	34.589
		18	SESE	0	40.006
		20	NENE	0	27.739
		20	SENE	0	5.798
		21	SWNW	0	18.665
		21	SENW	0	5.129
		21	NWNW	0	29.846

750.6 ac total

T#5815

TRANSFER

[illegible][illegible]