

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 37-8371

Exam Date: 8/20/2012

1. Current Owner: VERL C BELL
ANCIE P BELL
853 E 2830 S
HAGERMAN ID 83332
(208)837-4405

2. Accompanied by: Verl Bell

3. SOURCE
SPRING

TRIBUTARY
SINKS

B. OVERLAP REVIEW

1. Other water rights with the same place of use: 37-7185
2. Other water rights with the same point of diversion: 37-8362, 37-4010, 37-4011, 37-10072, 37-10797, 37-8345

C. DIVERSION AND DELIVERY SYSTEM**1. LOCATION OF POINT(S) OF DIVERSION:**

SPRING NW1/4NW1/4NW1/4 Sec. 27, Twp 06S,

Rge 13E, B.M. GOODING County

Method of Determination: Field Visit (GPS'd at the road directly to the west of the PD 42.879535, -114.90815)

2.

PLACE OF USE: FISH PROPAGATION

Twp	Rge	Sec	NE	NW	SW	SE	Totals
06S	13E	28	x				1

Method of Determination: Field Visit

3. ☒ Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.
- ☒ Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.
- ☒ Aerial Photo Attached (required for irrigation of 10+ acres).
- ☒ Photo of Diversion and System Attached

4.

Well or Diversion**ID No.*****Motor Make****Hp****Motor Serial No.****Pump Make****Pump Serial No. or Discharge Size**

GRAVITY FLOW—THE PD WAS NOT ACCESSIBLE DUE TO ENCROACHING VEGETATION SO NO TAG PLACED AT THE PD

D. FLOW MEASUREMENTS

1.

Measurement Equipment**Type****Make****Model No.****Serial No.****Size****Calib. Date**

12" Cipolletti Weir located prior to comingling with other spring water

2. Measurements:

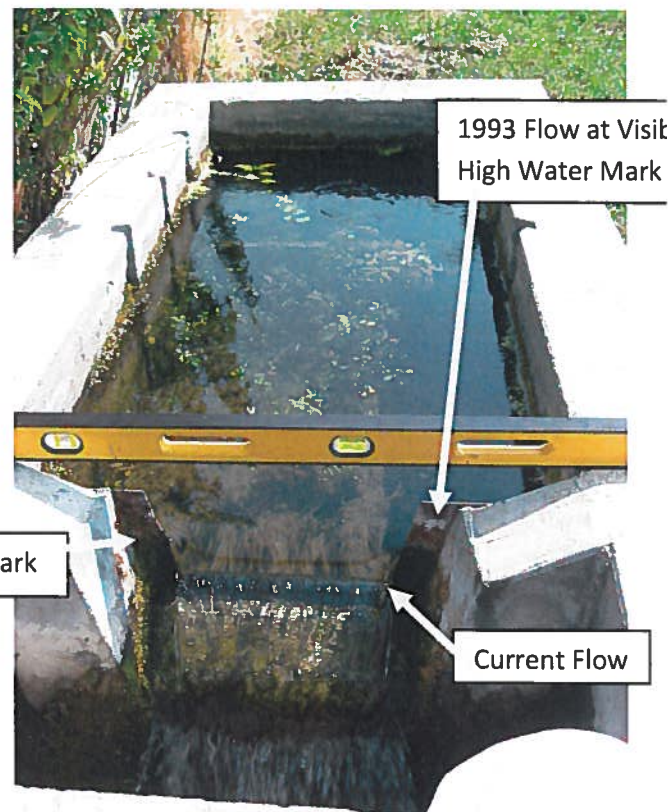
During my visit, it was obvious that the spring was not running at its potential. I could see a distinguishable "high water" mark on the weir.

Observations:

Current flow measured at 2.5" or 0.21' at weir

Obvious high water mark measured at 3.1" or 0.26' at weir

However, in 1993, a measurement was taken during a field examination for 37-8345 at the weir that was flowing much higher than witnessed at my field visit. The examiner recorded a flow of 4.8" or 0.4' at the same weir that I found at my field visit. Upon further inspection of my photos, I notice that there is certainly a high water mark that surpasses the mark that I originally suspected as being the high water mark. I feel that the measurement that was taken in 1993 is a good measurement and can be used in the licensure of this right.



E. FLOW CALCULATIONS

☐ x Additional Computation
Sheets Attached

Measured Method:

12" Cipolletti weir discharge standards

Actual flow at visit	0.21 ft	=	0.324 cfs
Observed High Water Mark at visit	0.26 ft	=	0.446 cfs
1993 Measurement	0.40 ft	=	0.866 cfs

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation: NA—the irrigation use is covered by 37-10797

2. Volume Calculations for Other Uses: Fish Propagation Analysis

I asked Verl about his fish operation and how many fish he raises at the most. He told me that he raises trout and the amount varies but at the most he does 35,000 lbs/year up to 3 lbs per fish. Using this information I can calculate the amount of water that is required using the density and flow indexes. Analyzing the amount of water that is required for a specific fish operation is important when considering what accomplishes the beneficial use of water.

Density Index ($W = D \times L \times V$)

Flow Index ($F = W / (L \times Q)$)

W=weight in lbs 35,000

F=1.5 unitless

D=range 0.4-1 unitless

W=weight in lbs

V= cubic ft—16,400 size of ponds

L=13.5"—length of fish

L=13.5"—length of fish

Q= 0.8 cfs and 3.96 cfs (2 scenarios evaluated)

V= 6481.5 ft³ is space required to raise 35000 lbs

W= 7270.6 lbs or 35,989 lbs

Can permit diversion rate accommodate 35,000lbs of fish in a 6,481.5ft³ raceway?-----> NO, it can only support 7,270.6 lbs of fish. However, overlapping right 37-7185 includes additional spring water totaling 3.96 cfs that can provide for 35,989 lbs. Diversion rate of 3.96 cfs total between this permit and overlapping right 37-7185 is justified. The rights will be limited in rate.

The limiting factor is the amount of fish raised.

Despite the size of the raceways being 16,400ft³, the space that is necessary to raise 35,000 lbs of fish is 6,481.5ft³. To further calculate how much water is beneficially used in the fish raceways, I calculated how much water is required to keep up the water quality. A water change of 2.5 times per hour is required to maintain adequate oxygen for trout. Using that rule of thumb, I reach the following conclusion:

2.5 turnovers per hour is 60 changes in a day.

$$60 \times 6,481.5 = (388,890 \text{ ft}^3/\text{day} \times 365)/43,560 = 3,258.6 \text{ afa}$$

$$60 \times 16,400 = (984,000 \text{ ft}^3/\text{day} \times 365)/43,560 = 8,245.2 \text{ afa}$$

The amount of water beneficial used for the subject fish propagation operation does not exceed 8,245.2 afa.

Secondary Check: Annual Volume for Fish Propagation

1. Calculate changes per hour:

Total flow into facility x 3600/facility volume
(cf) = changes

2. Calculate annual volume:

Facility volume (AF) x changes x 8760 = AFA

3. Calculate volume given by permitted flow:

$$\text{Flow rate (cfs)} \times 1.9835 \times 365 \text{ days} = \text{AFA}$$

$$1. \quad 3.96 \text{ cfs} \times 3600/16,400 \text{ cf} = 0.9 \text{ changes per hour}$$

$$2. \quad 0.38 \text{ AF} \times 0.9 \times 8760 = 2,996 \text{ AFA}$$

$$3. \quad 3.96 \text{ cfs} \times 1.9835 \times 365 \text{ days} = \mathbf{2,867 \text{ AFA}}$$

4. Choose the lowest figure

Volume range to successfully raise 35,000 lbs of trout = 2,867 afa through 3,258.6 afa

Volume to provide a refresh rate of 2.5 x per hour at the permit holders facilities = 8245.2 afa

The volume range for this specific site, to raise 35,000 lbs of trout is 2,867 afa to 8,245.2 afa. At the most, the diversion rate of 0.80 cfs can only provide 579 af/year. Therefore, this permit will be licensed with a volume of 579 afa. Overlapping right 37-7185 provides 2847.6 afa

G. NARRATIVE/REMARKS/COMMENTS

Point of diversion overlap analysis

There are two points of diversion that feed into the fish propagation ponds. The first point of diversion is a spring located on the permit holder's property (aka Bells Spring). The water rises up, ponds up and enters a channel leading into the raceways. The second point of diversion is the point for this permit. It is located across the highway and is piped to a collection box where the overflow is then fed into a weir box, and then discharges into the same pond that the Bells Spring water discharges into. The springs' water is then comingled before entering the channel leading into the raceways. There are many water rights that are associated with the points of diversion between both of them and I evaluated old exams to confirm which rights belong to which point of diversion, here are my findings:

PD	Water Right and Priority Date	Water Uses (cfs)				Total Diversion Rate	Combined Limits
		Irr.	Stock	Dom.	Fish		
Bells Spring	37-4009; 1925	0.44	0.02			0.44	37-10797 and 37-8371 are limited to 0.87 cfs and 37-7185 and 37-8371 are limited to 3.96 cfs and the volume of 2,867 AFA.
	37-7587; 1977		0.001			0.001	
	37-7185; 1972				3.96	3.96	
37-8371 Permit PD	37-8362; 1988	0.05		0.04		0.05	
	37-8345; 1988			0.02		0.02	
	37-10797; 1925	0.12	0.10			0.22	
	37-10072; 1969			0.04		0.04	
	37-4011; 1925	0.17	0.02			0.17	
	37-4010; 1942			0.02		0.02	
	37-8371*; 1988				0.80	0.80	

*3 acres covered by 37-10797, license 37-8371 will be fish prop. only

The rights shaded in gray are diverted out of the same collection box (upstream from the weir box—see diagram). Water that overflows the collection box is carried into the weir box for rights 37-10797 and 37-8371.

License 37-8345 includes a condition that limits the diversion rate to 0.87 cfs between rights 37-8345, 37-8362, 37-8371, and 37-4010. That limit is based on the measurement taken at the weir box. However, it doesn't seem right to implement a combined limit when the water going into the collection box cannot be measured. There are system constraints that may have resulted in a smaller diversion rate, ie.; a 12" pipe delivers water to the collection box whereas an 8" pipe carries the overflow water to the weir box. The limit on 37-8345 will not carry over to this license.

The irrigation and stockwater uses under 37-4009, 37-7587, and 37-10797 are either diverted out of the fish raceways or are diverted before the water reaches the raceways so any water discharged out of the raceways is fish propagation water only. The 3.96 cfs that was measured on September 12, 1990 in connection with 37-7185 is within the irrigation season so I assume that the measurement was taken while the other rights were being diverted but I cannot be sure. However, since 37-7185 was licensed for 3.96 cfs I will assume that no combined limits exist in regard to rights 37-4009 or 37-7587. Because the examiner acknowledged that water was being

added to the raceways from the spring under 37-8371 during the measurement, this right will include a combined limit of 3.96 cfs with 37-7185. *Note that two measurements at two different times were done in order to get to 3.96 cfs—I believe this is the most water available under the springs.

Right 37-8371 will be further limited when combined with 37-10797 since the total diversion rate found at the 1993 field exam for 37-8345 was 0.87 cfs. In addition, the total volume available given the rate of 3.96 cfs is 2,867 AF so the rights will be further limited in volume with 37-7185. During my field visit I measured the outflow in addition to the inflow. That day, the outflow of the fish propagation system back into the natural channel was 1.23 cfs total. $1.23 \text{ cfs} - 0.32 \text{ (inflow measured from weir box)} = 0.91 \text{ cfs}$ represents water available under Bells Spring. This measurement is strictly for "FYI" purposes only. These measurements do not represent final licensed figures.

Have conditions of permit approval been met? ☒ Yes ☐ No

- Measuring device in the form of a Cipolletti weir at inlet and 36' rectangular weir at discharge

H. RECOMMENDATIONS

1. Recommended Amounts

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
FISH PROPAGATION	1/01 to 12/31	0.800 CFS	579.0 AF
<u>Totals:</u>		0.800 CFS	579.0 AF

2. Recommended Amendments

☒ Change P.D. as reflected above ☐ Add P.D. as reflected above ☐ None

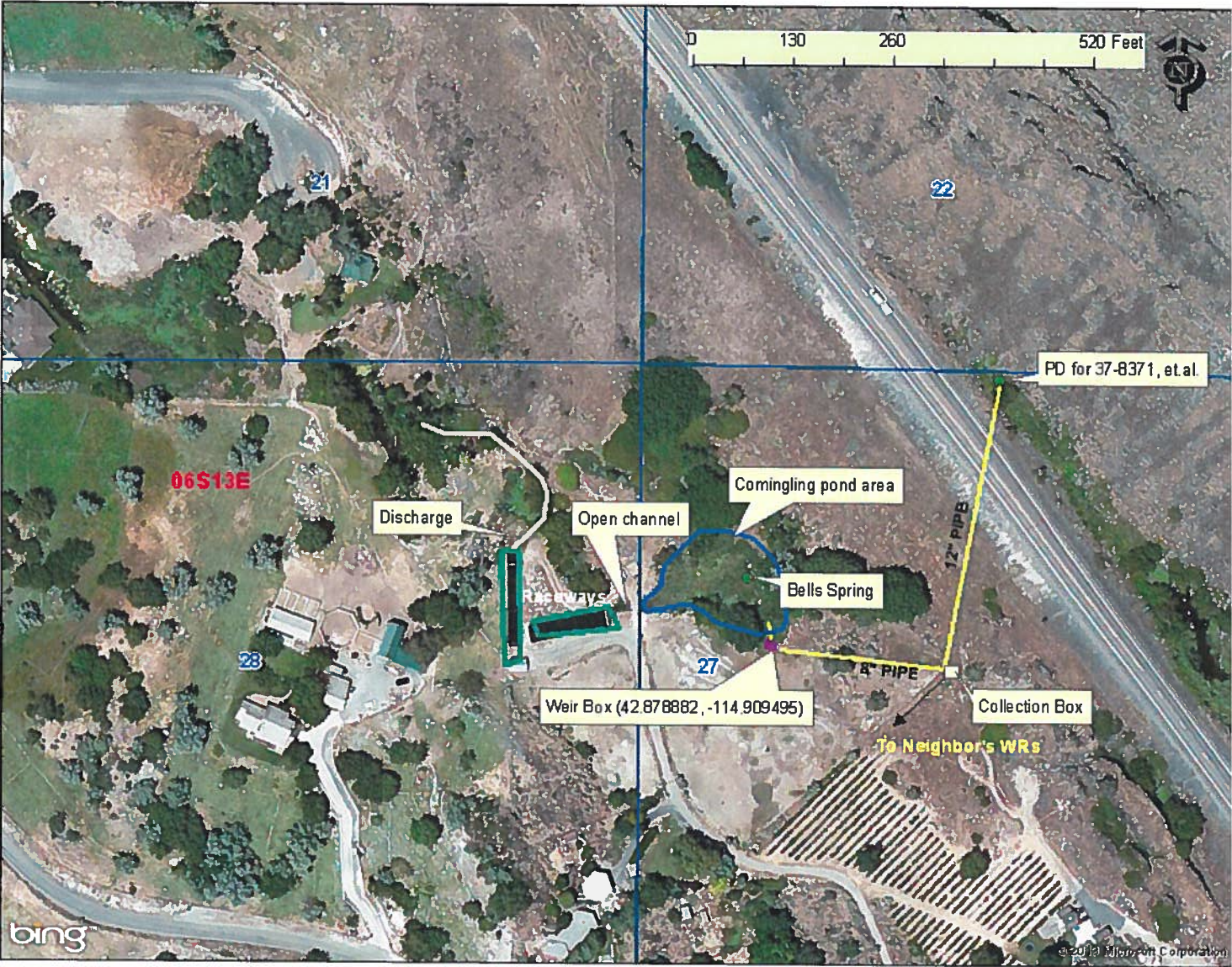
☒ Change P.U. as reflected above ☐ Add P.U. as reflected above ☐ Other

I. AUTHENTICATION

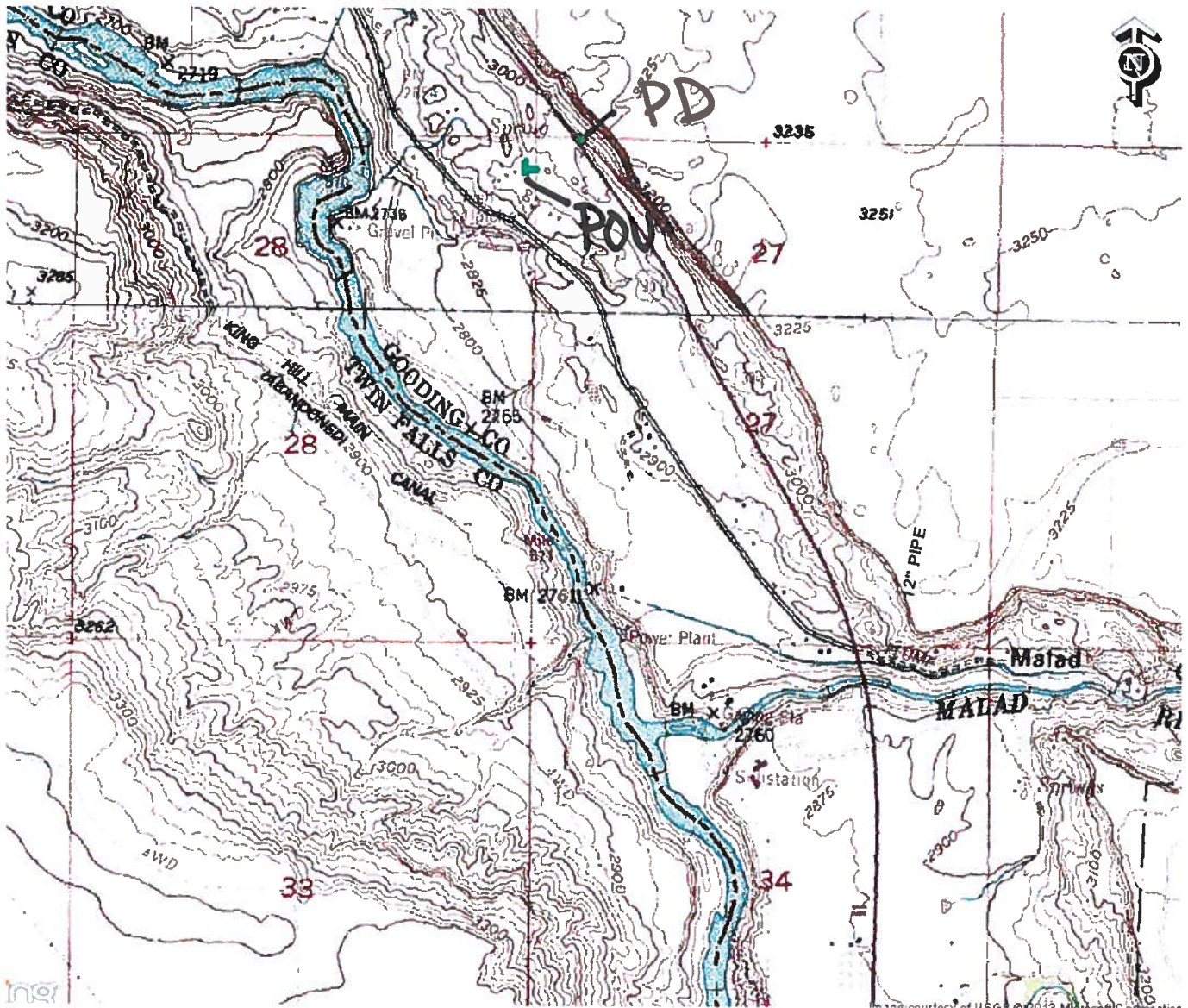
Field Examiner's Name David Palmer Date 2-25-13

Reviewer _____ Date _____

System Diagram



Map





Looking NE
w/ Hwy 30
to my back



PD



Collection
Box



Looking East
at Collection
box



Looking East
towards Hwy
30

Collection box

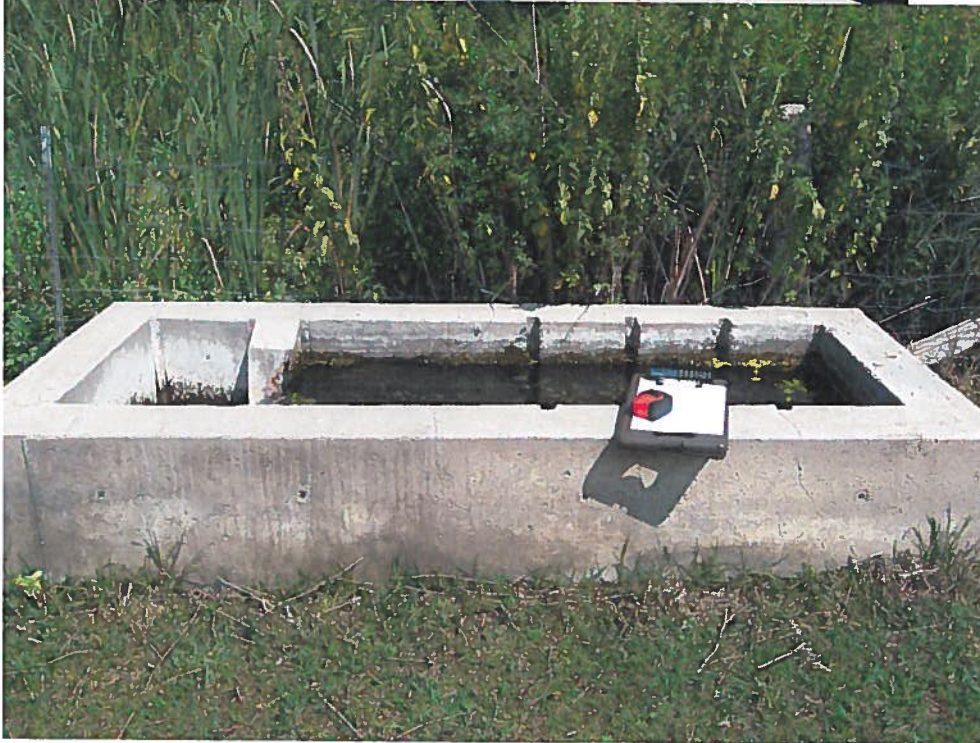


Looking West

WEIR BOX



1" Cipolletti
Weir





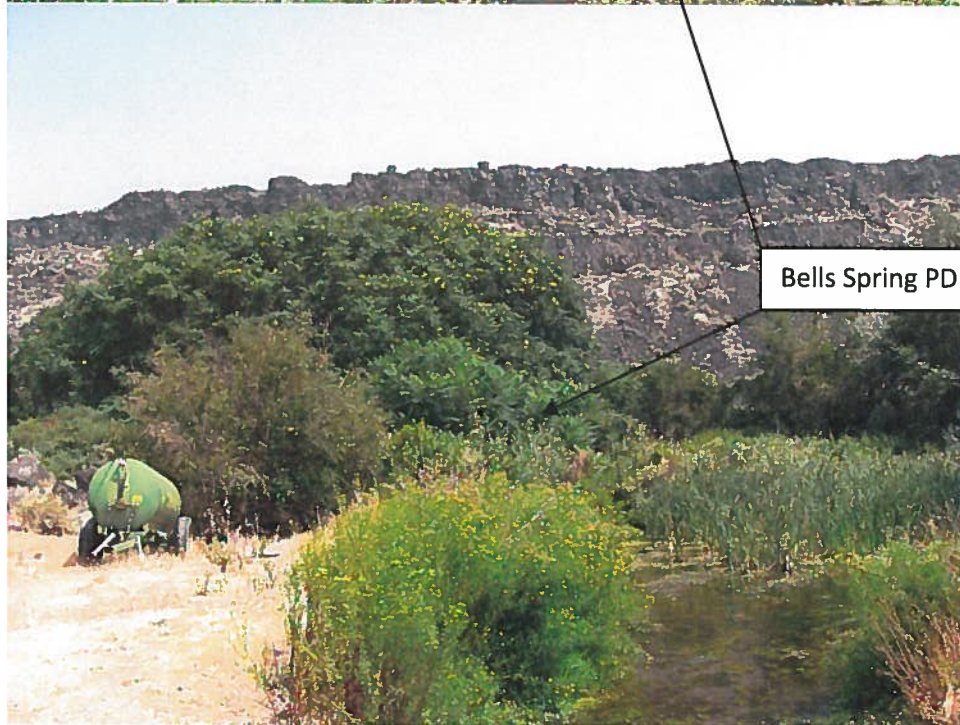
Looking at
Pipe going
from weir
Box to
COMINGLING
POND



Looking NE
COMINGLING
POND



Looking NE



Bells Spring PD

September 26, 2012

Field Report 37-8371



OPEN Channel
from pond
to raceways

Looking South
w/ pond to
my back

September 26, 2012

Field Report 37-8371



Discharge point

September 26, 2012

Field Report 37-8371

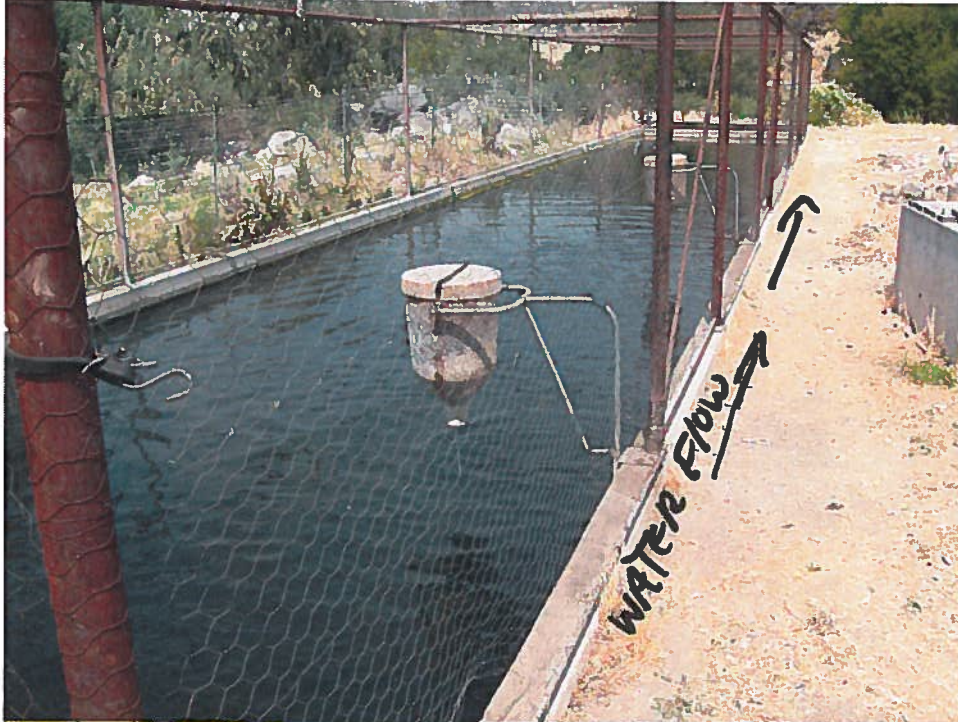


POV under
37-10797

Looking North
w/ Weir box
behind me



Look NE



irrigation
pump out
of raceway

Attachment #1 (5 pages)

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No. 37-7185 Re-Exam
Phone No. 837-4405
1. Owner: Verl C. Bell
Current Address: Rt. 1 Box 42, Hagerman, ID 83332
2. Accompanied by: Mrs. Bell EXAM. DATE: 9-12-90
Address: _____ Phone No. _____
Relationship to Permit Holder: _____
3. Source: Springs tributary to Snake R.

B. OVERLAP REVIEW

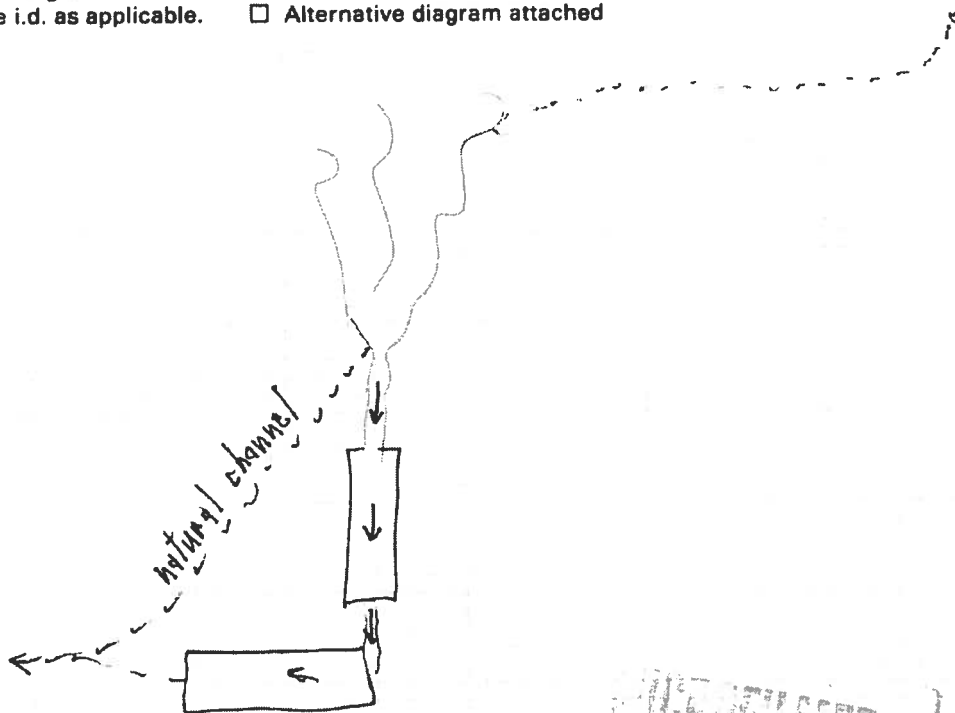
1. Other water rights with same place of use: 37-8371 (Permit)

☐ Copies Attached
2. Other water rights with same point of diversion: _____

☐ Copies Attached ☐ Copies of Field Exam's Attached

C. SYSTEM DESCRIPTION

1. Diversion System Diagram: Indicate all major components and distances between components. Indicate weir size/ditch size/pipe i.d. as applicable. ☐ Alternative diagram attached



Scale: 1" = _____

2. ☐ Copy of U.S.G.S. Quadrangle Attached
Showing location(s) of point(s) of diversion and
place(s) of use (required).
☒ Photo of Diversion and System Attached
(required for all but single household domestic groundwater, and stockwater).
☐ Aerial Photo Attached
(required for irrigation of 10 acres or more).

RECEIVED
MAY 31 1991

37-7185

Do not use this space

D. FLOW MEASUREMENTS☐ Additional Data Sheets Attached

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
3' Cippolletti Weir						

2. Measurements:

Measured 0.54' head on weir with almost no leakage through boards.

E. FLOW CALCULATIONS☐ Additional Computation Sheets Attached

1. Measured Method:

Flow = 3.96 cfs.

2. Alternate Method for Checking Purposes:

F. PUMP EFFICIENCY DATA (Optional)

Discharge Pressure: _____ psi x 2.31 = _____ ft (1); Dynamic pumping level: _____ ft (2)

Total Head: (1) + (2) = _____ (3)

; Flow rate: _____ cfs (4)

Water HP: (3) x (4) ÷ 8.8 = _____ (5)

Meter Input KW: 3.6 x _____ KH x _____ CTR or _____ MULT x _____ PTR x _____ N/ _____ T = _____ (6)

Meter Input HP: (6) x 1.34 = _____ (7)

Panel Input KW: _____ Ave PF x _____ Ave Volts x _____ Ave Amps x .001732 = _____ (6)

Panel Input HP: (6) x 1.34 = _____ (7) Efficiency: (5)/(7) x 100 = _____ %

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

 $V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$ _____ $V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation Season}) \times 1.9835 =$ _____ $V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} =$ _____

2. Volume Calculations for Other Uses:

MICROFILMED

MAY 31 1991

System Description (continued)

3. Narrative: Description (As operating at time of measurement. Indicate pressure, number of sprinklers, etc.)

Springs flow into one concrete raceway, & from that raceway into a second raceway. System includes a spring rising east of Hwy. 30 & transported via pipeline into natural pond that other springs flow into. This spring was claimed in SRRA. System is exactly the same as it was during previous exams.

☐ See Remarks on page 4 for continuation

4.

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size

*Code to correspond with No. on map and aerial photo

5. Point(s) of Diversion:

Ident. No.	Gov't. Lot	1/4	1/4	1/4	Sec.	Twp.	Rge.	County	Method of Determination/Remarks
		NW	NW	NW	27	65	13E	Gooding	

6. Place(s) of Use:

Indicate Method of Determination _____

Twp.	Rge.	Sec.	NE 1/4				NW 1/4				SW 1/4				SE 1/4				Totals
			NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	
65	13E	27					H												
		28	H																

Do not use this space

H. REMARKS AND OVERLAP REVIEW ANALYSIS

Mrs. Bell appeared to be satisfied with this measurement. Since the spring east of Hwy. 30 is covered by Permit 37-8371, I am not recommending that 37-7185 be amended to add that point of diversion. That spring has always been used in these 2 ponds, according to Mrs. Bell. Irrigation use of the east spring may still be under development.

I. RECOMMENDATIONS

1. Recommended Amounts

Beneficial Use	Period of Use		Rate of Diversion Q (cfs)	Pond Annual Volume V (afe)
	From	To		
Fish Propagation	1-1	12-31	3.96	24,000 cu. ft.
Totals:			3.96	24,000 cu. ft.

2. Recommended Amendments

- ☐ Change P.D. as reflected above ☐ Add P.D. as reflected above ☐ None
☐ Change P.U. as reflected above ☒ Add P.U. as reflected above ☐ Other

J. AUTHENTICATION

Field Examiner's Name J. E. Stanton

Signature J. E. Stanton

Certification Date _____

Field Report Preparation Date 9-13-90

CONSULTANT SEAL

- K. Licensing recommendation shall be prepared by an Idaho Department of Water Resources employee on a computer printout attached hereto.

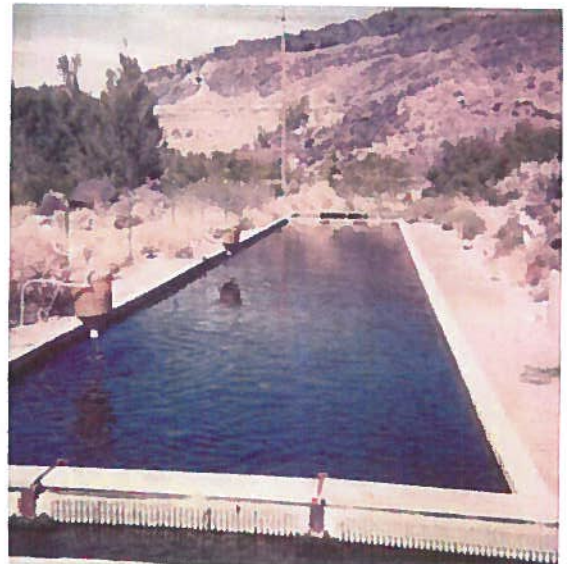
37-7185

Re-Exam

Diversion
Works



Upper Pond



Lower Pond

31 1991

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

RECEIVED

SEP 21 1994

Department of Water Resources

Attachment #2 (4 pages)

A. GENERAL INFORMATION

Permit No. 37-8345

1. Owner: NED BOWLER Phone No. 837-4590

Current Address: HC 60, Box 1155, Bliss, ID 83314

2. Accompanied by: NED BOWLER EXAM DATE: 6-29-93

Address: Phone No.

Relationship to Permit Holder:

3. Source: SPRING tributary to Sinks

B. OVERLAP REVIEW

1. Other water rights with the same place of use: - NONE -

2. Other water rights with the same point of diversion: 37-08362, 04010, A37-10072, 08371

C. DIVERSION AND DELIVERY SYSTEM

1. Point(s) of Diversion:

Ident No.	Gov't Lot	1/4	1/4	1/4	Sec.	Twp.	Rge.	County	Method of Determination/Remarks
		NW	NW	NW	27	6S	13E	Gooding	Photo Quad

2. Place(s) of Use:

Indicate Method of Determination Photo Quad

TWP	RGE	SEC	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
6s	13E	28	D															30	
6s	13E	27					*												

SEP 21 1994

37-8345

E. NARRATIVE/REMARKS/COMMENTS

WATER IS COLLECTED FROM A SPRING WITH A 12" PIPE (BURIED) WHICH RUNS PAST HW 30 TO A COLLECTION BOX. THIS BOX DIVERTS WATER TO ^{THREE} ~~THAT~~ DIFFERENT USERS INCLUDING NED BOWLER. BOWLER'S 1 1/4" PIPE RUNS BURIED TO A 1000 GAL (6'x6'x4') CONCRETE TANK ON HIS PROPERTY. ON THE TANK SITS A 1/2 HP PUMP USED FOR IRRIGATION OF 1/2 ACRE OF LAWN + GARDEN VIA GARDEN HOSE. INSIDE THE TANK IS A SUBMERSIBLE 1/2 HP PUMP FOR DOMESTIC USE WHICH DIVERTS WATER TO A 50 GALLON PRESSURE TANK (40-60). NED BOWLER HAS MEASURED THE TANK RUNOFF WHEN IT WAS FULL WITH A ONE GAL. JUG AND STOPWATCH AT APPROXIMATELY 0.02 CFS AND SO APPLIED FOR THAT AMOUNT.

DOMESTIC USE HAS EXTERNAL COMPONENT = 1.2 AFA

Overflow water from the collection box that serves this permit and 37-08362 2A37-10072 flows West about 200' to a weir box. From the weir box the overflow goes through a small fish pond operation. The weir was measured at .4" on the 12" Cipolletti assuming at the most a minimal amount was being used by the other two users. Therefore we should have been measuring the majority of the spring output at .87 cfs which indicates the spring is capable of filling all three rights served by the collection box.

Have conditions of permit approval been met? ☒ yes ☐ no

DEC 06 1994

37-08345

weirs.

Table 4. Flow over Cipolletti weirs in cubic feet per second.*

For each additional foot of crest in excess of 4 ft. (approx.)		Head in ft. "H"	Head in inches, approx.	Crest length (L)					For each additional foot of crest in excess of 4 ft. (approx.)
0 feet	4 feet			1.0 foot	1.5 feet	2.0 feet	3.0 feet	4.0 feet	
				Flow in cubic feet per second					
4.64	3.74	0.10	1-3/16	0.107	0.160	0.214	0.321	0.429	0.108
4.83	3.79	0.11	1-5/16	0.123	0.185	0.246	0.370	0.494	0.124
5.03	3.84	0.12	1-7/16	0.140	0.210	0.280	0.421	0.562	0.141
5.22	3.88	0.13	1-9/16	0.158	0.237	0.316	0.474	0.632	0.159
5.42	3.94	0.14	1-11/16	0.177	0.264	0.352	0.528	0.706	0.177
5.62	3.98	0.15	1-13/16	0.195	0.293	0.390	0.586	0.782	0.196
5.82	4.03	0.16	1-15/16	0.216	0.322	0.430	0.644	0.860	0.216
6.02	4.08	0.17	2-1/16	0.237	0.353	0.470	0.705	0.941	0.236
6.23	4.14	0.18	2-3/16	0.258	0.384	0.512	0.768	1.024	0.257
6.43	4.19	0.19	2-1/4	0.280	0.417	0.555	0.832	1.110	0.278
6.63	4.24	0.20	2-3/8	0.302	0.450	0.599	0.898	1.20	0.302
6.83	4.29	0.21	2-1/2	0.324	0.484	0.644	0.966	1.29	0.324
7.03	4.34	0.22	2-5/8	0.349	0.519	0.691	1.04	1.38	0.35
7.25	4.40	0.23	2-3/4	0.374	0.555	0.739	1.11	1.47	0.37
7.45	4.46	0.24	2-7/8	0.397	0.591	0.786	1.18	1.57	0.39
7.65	4.51	0.25	3	0.423	0.628	0.836	1.25	1.67	0.42
7.87	4.57	0.26	3-1/8	0.449	0.667	0.886	1.33	1.77	0.44
8.07	4.62	0.27	3-1/4	0.475	0.705	0.937	1.40	1.87	0.47
8.28	4.67	0.28	3-3/8	0.502	0.745	0.990	1.48	1.97	0.49
8.50	4.73	0.29	3-1/2	0.529	0.785	1.04	1.56	2.08	0.52
8.71	4.78	0.30	3-5/8	0.557	0.827	1.10	1.64	2.19	0.55
8.92	4.82	0.31	3-3/4	0.586	0.869	1.15	1.73	2.30	0.57
9.12	4.88	0.32	3-13/16	0.615	0.911	1.21	1.81	2.41	0.60
9.34	4.94	0.33	3-15/16	0.644	0.954	1.27	1.89	2.52	0.62
9.55	4.99	0.34	4-1/16	0.675	1.00	1.32	1.98	2.64	0.66
9.77	5.05	0.35	4-3/16	0.705	1.04	1.38	2.07	2.75	0.69
9.98	5.10	0.36	4-5/16	0.735	1.09	1.44	2.16	2.87	0.71
1.20	5.16	0.37	4-7/16	0.767	1.13	1.50	2.25	2.99	0.74
1.42	5.22	0.38	4-9/16	0.799	1.18	1.57	2.34	3.11	0.78
1.64	5.28	0.39	4-11/16	0.832	1.23	1.63	2.43	3.24	0.81
1.86	5.33	0.40	4-13/16	0.866	1.28	1.69	2.53	3.36	0.84
2.08	5.39	0.41	4-15/16	0.899	1.32	1.76	2.62	3.49	0.87
2.29	5.44	0.42	5-1/16	0.932	1.37	1.82	2.72	3.61	0.89
2.52	5.50	0.43	5-3/16	0.967	1.42	1.89	2.81	3.74	0.93
2.74	5.55	0.44	5-1/4	1.00	1.47	1.95	2.91	3.87	0.97
2.96	5.62	0.45	5-3/8	1.04	1.53	2.02	3.01	4.01	1.00
3.18	5.67	0.46	5-1/2	1.07	1.58	2.09	3.11	4.14	1.02
3.41	5.73	0.47	5-5/8	1.11	1.63	2.16	3.21	4.28	1.06
3.64	5.79	0.48	5-3/4	1.15	1.68	2.23	3.32	4.41	1.10
3.85	5.84	0.49	5-7/8	1.18	1.74	2.30	3.42	4.55	1.13
4.08	5.91	0.50	6	1.22	1.79	2.37	3.53	4.69	1.16
		0.51	6-1/8	1.26	1.85	2.44	3.64	4.83	1.20
		0.52	6-1/4	1.30	1.90	2.51	3.74	4.97	1.24
		0.53	6-3/8	1.34	1.96	2.59	3.85	5.12	1.28
		0.54	6-1/2	1.38	2.02	2.66	3.96	5.26	1.30
		0.55	6-5/8	1.42	2.07	2.74	4.07	5.41	1.33
		0.56	6-3/4	1.46	2.13	2.81	4.18	5.56	1.38
		0.57	6-13/16	1.50	2.19	2.89	4.30	5.71	1.41
		0.58	6-15/16	1.54	2.25	2.97	4.41	5.86	1.44
		0.59	7-1/16	1.58	2.31	3.05	4.53	6.01	1.49

*Computed from Cote's formula: $Q = 3.247 LH^{1.48} \sqrt{H}$ $H^{1.48} + 0.609 H^{2.48}$

DEC 06 1994

37-08345



Weir to measure
overflow from
concrete collection
box that disperses
water to 3 users.
From this weir
box water flows
NW to Bell's
fish ponds.

DEC 20 1993

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