

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

RECEIVED

JUL 29 2011

DEPARTMENT OF WATER RESOURCES

A Beneficial Use Field Report is prepared by a water right examiner as the result of an examination to clearly confirm and establish the extent of the beneficial use of water established in connection with a permit during the development period authorized by the permit and any extensions of time previously approved.

A. GENERAL INFORMATIONPermit No. 63-32169 63-316891. Owner Aries Development LLCPhone No. 208-939-2552Current address P.O. Box 6887 Boise, ID 837072. Examiner's name Charles E. BrockwayEXAM DATE July 19, 20113. Accompanied by Mike HormacheaEmail michael@rmhcompany.comAddress P.O. Box 6887 Boise, ID 83707Relationship to permit holder Principal, Aries Dev.Phone No. 208-939-25524. Source Ground Water

tributary to _____

B. OVERLAP REVIEW

1. Other water rights with the same place of use _____

2. Other water rights with the same source and point of diversion 63-31726**C. DIVERSION AND DELIVERY SYSTEM**

1. Point(s) of Diversion:

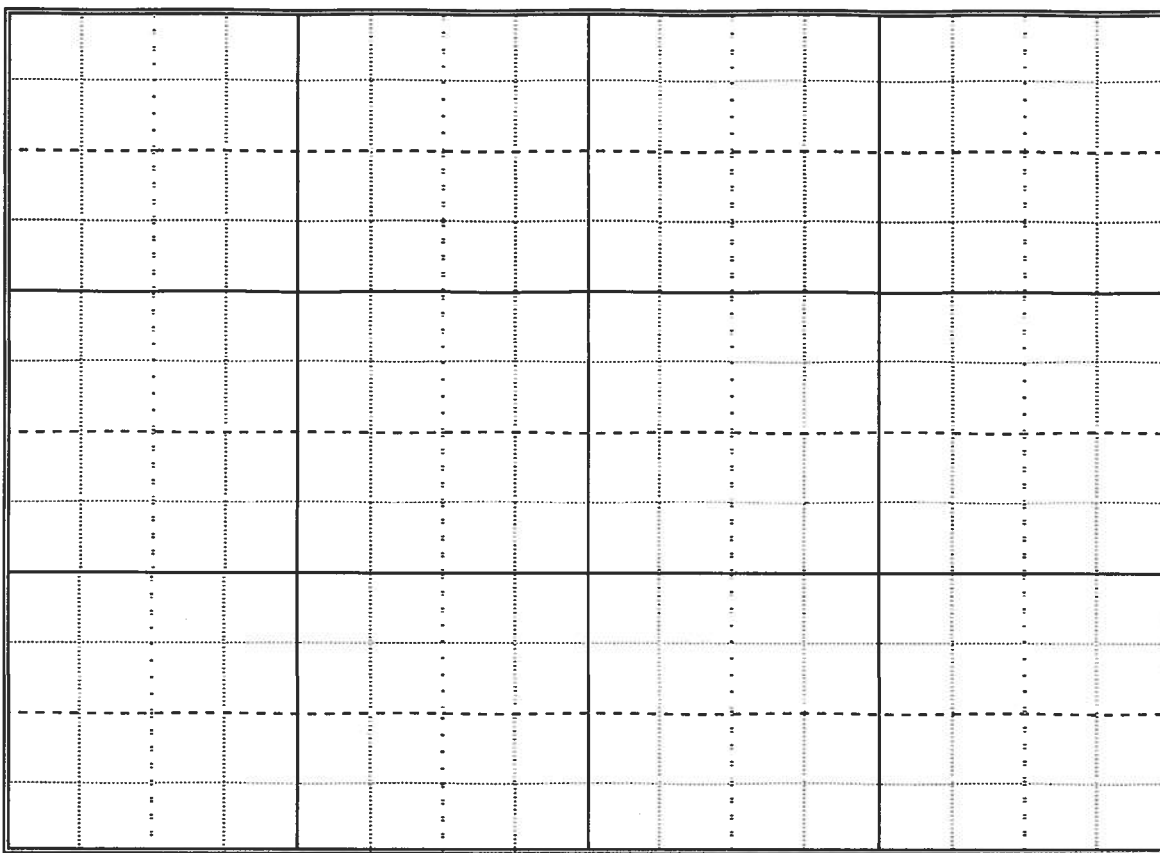
Ident. No.	Gov't Lot	¼	¼	¼	Sec	Twp	Rge	County	Method of Determination/Remarks
			NE	SE	4	04N	01E	Ada	NAIP Photo 2009

2. Place(s) of Use:

Method of determination _____

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
4N	1E	4									AS		AS	AS	AS	AS	AS	AS	Aesth
																			Storag

3. **Delivery System Diagram:** Indicate all major components and distances between components. Indicate weir size/ditch size/pipe diameter (inside), as applicable. Use the space provided or ☒ see attached.



Scale: 1" = _____

- ☐ Copy of USGS Quadrangle attached showing location(s) of point(s) of diversion and place(s) of use (required)
☒ Aerial photo attached (required for irrigation of 10+ acres)
☒ Photo of diversion and system attached

4.

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
D0047552	Franklin	3.0		Franklin	2343265202 Motor
(IDWR Well Tag)	Submersible		F.A. Myers		1206130182 Serial No.

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

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
In line flow meter		SENSUS	SR	67319809	2"	NA

2. **Measurements:** _____

see entry below in E: Narrative/Remarks/Comments

E. NARRATIVE/REMARKS/COMMENTS

Meter Totalizer:	Begin	End	Delta	Begin	End	Delta	Begin	End	Delta
Time:			5:00 min	9:42:07	10:15:30	33:23	10:20:47	10:46:03	25:16
Totalizer:	4566500	4566900	400 gal	4567000	4564500	2500	4569900	4571800	1900
			80 gpm			74.9 gpm			75.2 gpm
			0.178 cfs			0.17 cfs			0.17 cfs

E: Narrative : See Attached

Has the permit holder met all conditions of permit approval, including any mitigation requirements and/or measuring device installation requirements? ☒ Yes ☐ No If no, what must be done to meet the permit requirements?

F. FLOW CALCULATIONS☐ Additional computation sheets attached

Measured Method:

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I,R} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = \text{NA}$$

$$V_{D,R} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation Season}) \times 1.9835 =$$

$$V = \text{Smaller of } V_{I,R} \text{ and } V_{D,R} =$$

2. Volume Calculations for Other Uses:

Flown Meter reading: 4/17/2008 = 4566500 gal

- 6/15/2011 = 9833700 gal

Difference = 5267200 gal

- 3.16 yrs Volume = 1,666,835 gal/yr

- = 5.12 af/yr

H. RECOMMENDATIONS

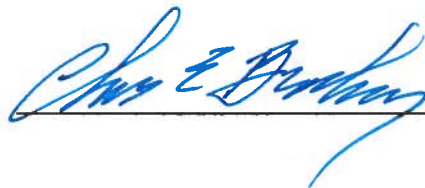
1. Recommended Amounts

Beneficial Use	Period of Use		Rate of Diversion Q (cfs)	Annual Volume V (afa)
	From	To		
63-31689 Diversion to Storage	01/01	12/31	0.17 cfs	
Aesthetic Storage	01/01	12/31		40 afa
63-32169				
Aesthetic Storage	01/01	12/31		60.7 afa
Totals:			0.17 cfs	

2. Recommended Amendments

☐ Change P.D. as reflected on page 1☐ Add P.D. as reflected on page 1☐ None☐ Change P.U. as reflected on page 1☐ Add P.U. as reflected on page 1☐ Other**I. AUTHENTICATION**

Field Examiner's Signature

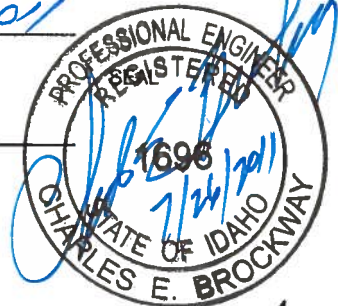


Date

7/26/2011

Reviewer

Date



Narrative to Accompany Beneficial Use Field Report for Water Rights 63-31689 and 63-32169, Aries Development L.L.C.
by C.E. Brockway, Brockway Engineering P.L.L.C.

July 19, 2011

Brookwood Subdivision is a 382 unit subdivision located in Section 4, T 4N R 1E Boise Meridian north of Eagle, Idaho. The subdivision is located adjacent to Dry Creek and receives irrigation water from Farmers Union Canal (Figure 1). Current and historical irrigation diversion from the canal serves the irrigation requirements for a pressure irrigation system serving all lots and common areas. Domestic water is provided by the municipal system of the City of Eagle.

The subdivision includes six (6) multi-purpose ponds providing irrigation storage and aesthetic benefits, Figure 1. The ponds are maintained by diversions from the canal system and used for irrigation during the irrigation season and by ground water provided from an exchange well under water rights 63-31689, 63-32169 and 63-31726 during the non-irrigation season. Decreed water right 63-31726 provides 14.0 af /year to be used for the replacement of losses caused by evaporation from the 5.2 acre total surface area of the six (6) ponds established under water right 63-32169.

The purpose of the field exam as outlined in the narrative was to evaluate the diversion capacity and beneficial use under water right permits 63-31689 and 63-32169 which provide for storage and diversion to storage from ground water for the six (6) ponds. Pond #1 is utilized for irrigation storage and an irrigation system pumping plant diverts from Pond #1. The other ponds are utilized for both summer time and winter time recreation and aesthetic purposes. Permit 63-31689 includes diversion from a well to provide water for non-irrigation season maintenance of the pond and ditch system. Water from the canal system, using shares owned by Brookwood Subdivision in the Farmer's Union Canal is the irrigation source for the subdivision. .

Figure 1 shows the plat of the subdivision, canal diversion, distribution system and the six (6) ponds. Ponds 1,2,3, 4, and 5 are lined with bentonite and compacted earth and Pond 6 is lined with a membrane liner. Pond 5 receives inflow from leakage from Dry Creek during high runoff periods. Pond 5 was lined in 2004. During the non-irrigation season, the pond levels are maintained with ground water pumped as necessary under water right 63-31689.

Brookwood owns 11 shares in the Farmer's Union Canal. Each share represents 11 miner's inches of discharge so the canal discharge available to the project is 121 miner's inches or 2.42 cfs. Historically, prior to subdivision, 186.0 acres have been irrigated on the Brookwood property from the canal.

The project plan includes 382 single family lots with approximately 50 acres of common area. Irrigation of landscaping and turf on each lot and the common area will be from a pressure distribution system with two booster pumps from the pipe/pond system. The upper booster is located near the canal diversion, and the lower booster diverts from Pond 1 near the west end of the subdivision. Based on the average lot size of 0.22 acres, a

residence footprint and paved area of 4200 square feet, the irrigated area on each lot is estimated to be 0.12 acres. Based on an average irrigated area per each of the 382 lots plus about 50 acres of common area, the irrigated area is $50 + 45.8$ or 95.8 acres.

Ponds 1,2, and 3 are utilized as irrigation storage and are tied together hydraulically. The pumping plant for the irrigation system is located at the southwest corner of Pond 1. Ponds 4,5, and 6 are off-line ponds and are primarily for recreation and aesthetics. Pond 4 does provide storage for waste water which would normally flow off the property. The combined area of ponds 4,5, and 6 is approximately 3.69 acres. The six ponds are designed with an average surface area of 5.17 acres including ditches and a volume of 60.7 acre feet.

Water requirements for the irrigation and pond system were determined in connection with the applications for water rights utilizing as-built information. Evapotranspiration for the subdivision was determined using procedures outlined in Allen and Brockway, 1983, using the Boise WSO AP station meteorological and Et data. Free water surface evaporation was determined using procedures outlined in 'Monthly Shallow Pond Evaporation in Idaho by Molnau, Kpordze, and Craine, 1992. ASAE paper PNW 92-111.

The lined ponds and ditches were estimated to have operating loss rates of 0.005 ft/day (1/16 in).

The total seepage through all ponds was estimated to be 0.011 cfs and evaporation from the pond system during the irrigation season was estimated at 16.2 acre feet.

The total consumptive use of the project including turf and landscape irrigation, pond evaporation, and residential in-house consumptive use (not provided by the irrigation system) was 258 af/year whereas the pre-project consumptive use from crop irrigation on 185.96 acres was estimated at 489 acre feet per year.

Ground water requirement from the well to maintain pond seepage and evaporation during the wintertime is estimated to be up to 40 acre feet.. The exchange well authorized by water right permit 63-31689 was drilled near the canal diversion so that discharge could be integrated into the entire distribution system.

The maximum discharge required from the well was estimated at 80 gpm.

A water balance and pond model prepared by Brockway Engineering PLLC indicated that pumping from an exchange well on the project of not-more-than 40 acre feet during the non-irrigation season at a rate of 0.178 cfs (80 gpm) would maintain pond levels. Evaporation from the ponds is mitigated by 0.04 cfs and 14 acre feet of ground water under water right 63-31726. The 14 af/a is the calculated evaporation from open water surfaces associated with the non-irrigation ponds during the irrigation season and all ponds during the non-irrigation season.

The pond water levels are maintained during the non-irrigation season in all ponds and the seepage from all ponds returns to the aquifer.

The ground water diversion consists of a 6 inch diameter drilled well with an effective depth of 100 feet (IDWR Tag D0047552 Figure 2). The well is fully cased and ground

water is extracted from the perforated casing between 90 and 100 feet depth. The driller's log submitted by Riverside Inc. is enclosed.

An in-line SENSUS positive displacement flow meter is located in the 2 inch diameter pipeline about nine (9) feet downstream of the well. The meter includes an instantaneous discharge indicator and a totalizer reading in 100 gallon increments. The well discharges into a sump where water from the Farmer's Union canal enters. Water is pumped from the sump into the distribution which serves irrigation and the pond system (Figure 3). Figure 4 is a photograph of the pump house located near the well and canal diversion.

Water flows by pipeline to Pond No 1 where an irrigation pump provides booster pressure into the irrigation system. Figure 1 shows the locations of pipelines and ditches and the six (6) ponds.

The well pump is a 3.0hp Franklin submersible.

Average annual volume pumped from the well was determined from flow meter totalizer readings taken in April 2008 and June 2011. The total indicated volume pumped during the 1154 days between totalizer readings was 1,665,969 gallons per year or 5.11 af/year. Volume data is not available for individual years, so the average over the three year period, which includes years with cool and wet springs and below average summer temperatures, does not represent the normal seasonal pond evaporation.

The discharge from the well was measured utilizing the installed flow meter totalizer. An average of three measurements was 0.17 cfs. or 76 gpm.

Recommendations:

Water right 63-31689 Diversion to Storage Period 01/01-12/31 Discharge 0.17 cfs
Aesthetic Storage-Volume 40 afa

Water right 32169 Aesthetic Storage Period 01/01 to 12/31 Volume 60.7 afa

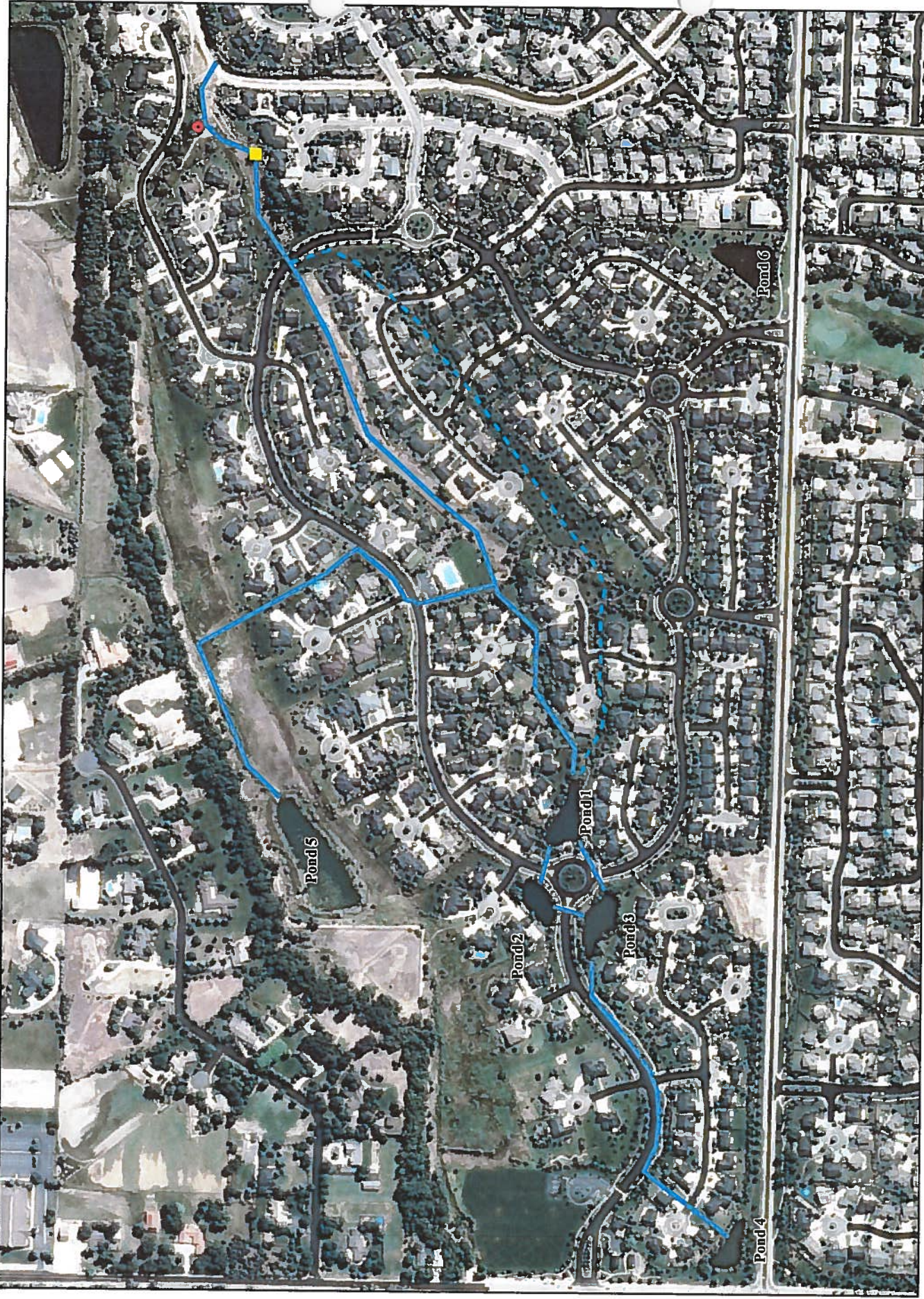


**FIGURE 1: ARIES - BROOKWOOD SUBDIVISION
SYSTEM LAYOUT
NAIP 2009 AERIAL**

- Legend**
- Booster Pump
 - Well
 - Ditch
 - Pipes





FIGURE 2 - BROOKWOOD SUBDIVISION WELL TAG 63-31689

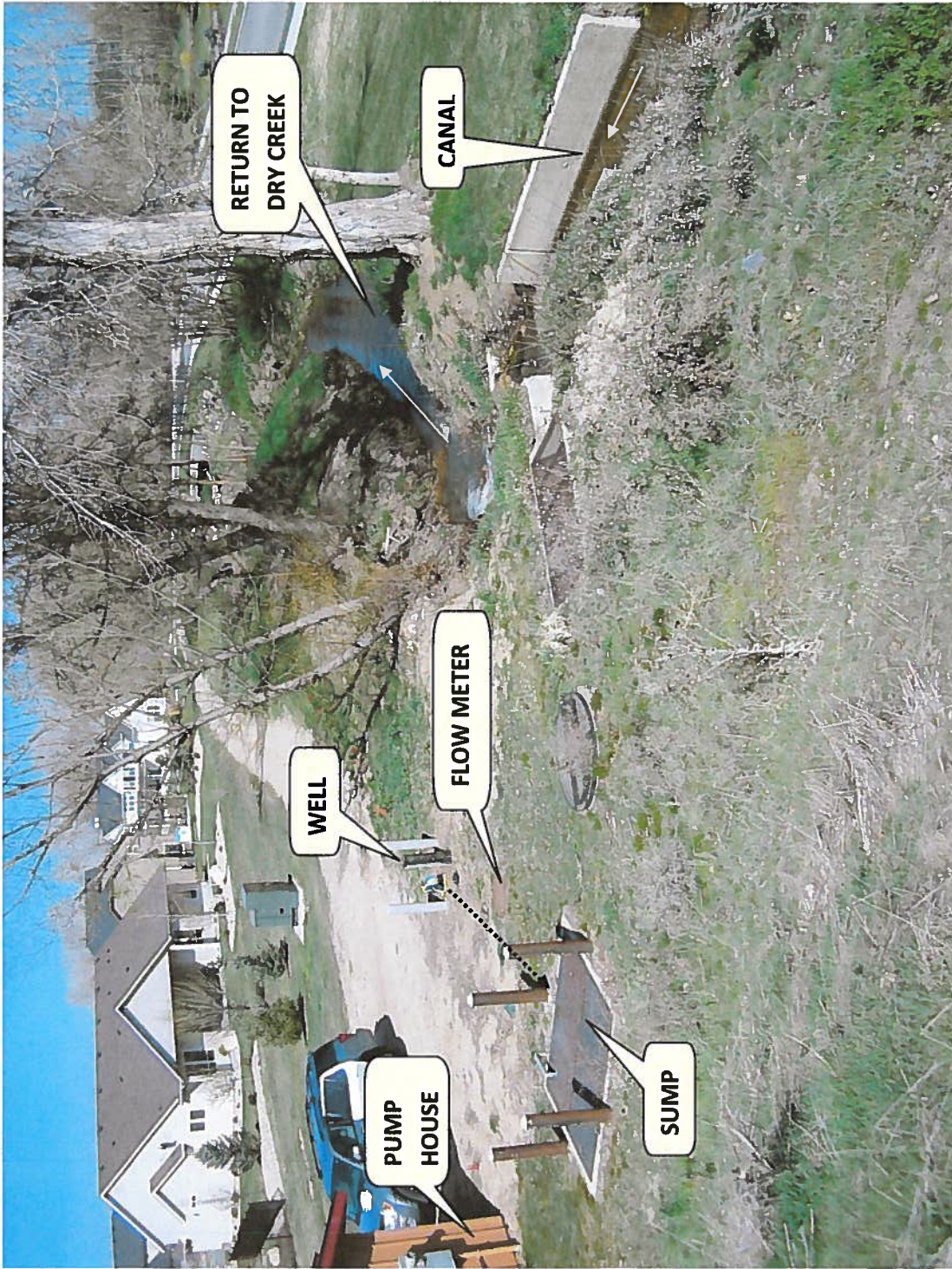


FIGURE 3 - BROOKWOOD SUBDIVISION WELL & DIVERSION STRUCTURE

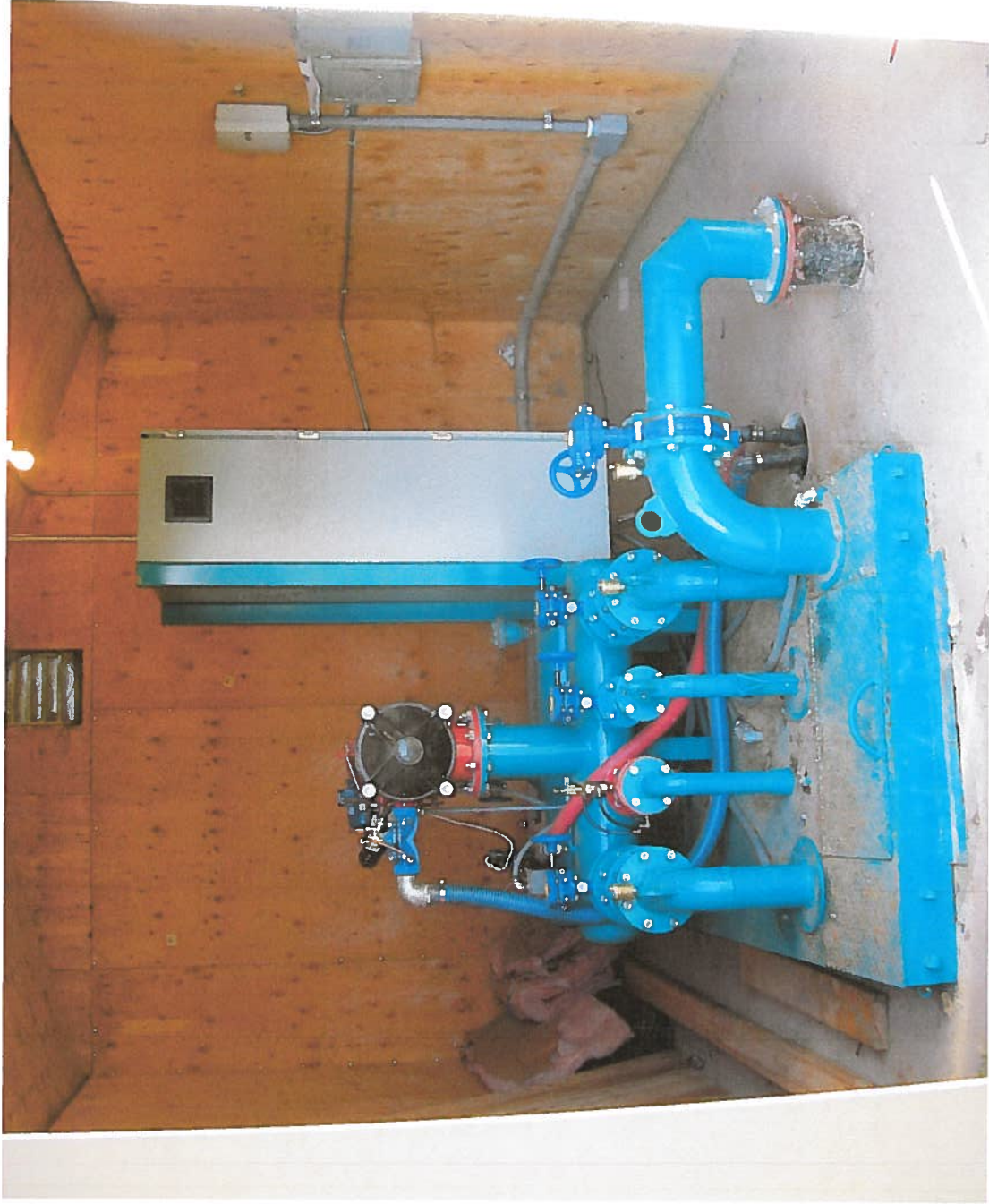


FIGURE 4 - BROOKWOOD SUBDIVISION MAIN PUMPING PLANT 63-31689

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only			
Well ID No.			
Inspected by			
Twp	Rge	Sec	
1/4	1/4	1/4	
Lat	:	Long	:

1. WELL TAG NO. D 0047552
DRILLING PERMIT NO. 893178-838500
Water Right or Injection Well No. 63-31689

2. OWNER:

Name ARIES DEVELOPMENT LLC
Address P.O. BOX 6887
City FOISE State ID Zip 83709

3. LOCATION OF WELL by legal description:

You must provide address or Lot, Blk, Sub. or Directions to well.

Twp. 4 North ☒ or South ☐
Rge. 1 East ☒ or West ☐
Sec. 4 1/4 NE 1/4 SE 1/4
Gov't Lot 10 County ADA

Lat: 43 Long: 112
Address of Well Site 1/2 MILE NORTH OF FORTY
FEATHER ROAD City EAGLE

Lt. 1 Blk. 1 Sub. Name BROOKWOOD SUB

4. USE:

☐ Domestic ☐ Municipal ☐ Monitor ☒ Irrigation
☐ Thermal ☐ Injection ☐ Other

5. TYPE OF WORK check all that apply

(Replacement etc.)

☒ New Well ☐ Modify ☐ Abandonment ☐ Other

6. DRILL METHOD:

☒ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other

7. SEALING PROCEDURES

Seal Material	From	To	Weight	Volume	Seal	ment Method
BENTONITE	0	18	800		DPY POUR	
BENTONITE	100	110	800			

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 165

Was drive shoe seal tested? ☐ Y ☒ N How?

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	+3	165	.250	STEEL	☒	☐	☒	☐
5	80	90	.250	STEEL	☒	☐	☒	☐

Length of Headpipe 10' Length of Tailpipe

Packer ☒ Y ☐ N Type JOHNSON K HATER

9. PERFORATIONS/SCREENS PACKER TYPE

Perforation Method

Screen Type & Method of Installation JOHNSON WIRE MESH

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
90	100	1/2"		5	S.S.	☒	☐

10. FILTER PACK

Filter Material	From	To	Weight	Volume	Placement
N/A					

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

10 ft. below ground Artesian pressure lb.
Depth flow encountered ft. Describe access port or control devices

12. WELL TESTS:

☐ Pump ☐ Bail ☒ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
60-70 gpm		80	1 hr

Water Temp.

Bottom hole temp.

Water Quality test or comments:

Depth first Water Encounter

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

ater

Bore	From	To	Remarks	Lithology, Water Quality & Temperature	Y	N
TO	0	3	TOP SOIL			
10	3	18	BAY FLAY			
6	18	46	IND. GRAVEL			
14	46	49	FINE SAND			
49	49	56	SAND GRAVEL			
56	184		MED - COARSE SAND			
184	185		GRY CLAY			

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APR 22 2008

NOTE* CUT CASING OFF @

100'. FILLED WITH

GRAVEL FROM 185' TO

110'. POUR 300# BENTONITE

CAP. FROM 110' TO 100'.

SET 5" SCREENS. FILLED

CASING BACK 10' TO

EXPOSE SCREEN

Completed depth 100' (feet)at Started 11-15-06 Completed 11-30-06

14. DRILLER'S CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name RIVERIDE, INC Firm No. 333Principal Driller [Signature] Date 12-19-06and Driller or Operator [Signature] Date 12-19-06Operator [Signature] Date 12-19-06Principal Driller and Rig Operator Required.
Operator must have signature of Driller/Operator.

John Westra, Regional Manager, Western Region
Idaho Department of Water Resources

Boise, Idaho

Subject: Beneficial Use Field Exam Report Permit Nos 63-31689 and 63-32169
Aries Development LLC

Dear John

Enclosed is completed Statement of Completion for Submitting Proof of Beneficial Use and a completed Beneficial Use Field Exam Report for water rights 63-31689 and 63-32169 in the name of Aries Development LLC. I have combined the exam for these two water rights since they deal with the same system and are for the same nature of use.

The well provides mitigation water for the ponds on the project. The annual volume pumped from the well varies depending on the season and no records of volume pumped have been maintained by the Brookwood Subdivision HOA. A comparison of totalizer readings on the meter for a three year period from 2008 to 2011 indicates a low annual volume use. I have therefore recommended that the right be licensed for the full permitted annual volume for diversion to storage of 40 acre feet.

Sincerely,

C.E. Brockway P.E. PhD
Certified Water Rights Examiner