

STATE OF IDAHO  
DEPARTMENT OF WATER RESOURCES  
**BENEFICIAL USE FIELD REPORT**

**A. GENERAL INFORMATION**

**Permit No:** 63-33771  
**Exam Date:** 8/6/2019

1. Current Owner:  
JIM WELLS 5540 CUSTER RD NEW PLYMOUTH ID 83655
2. Accompanied by: Jim Wells  
Phone No: (208) 642-0346  
Address: 5540 Custer Rd, New Plymouth, ID  
Relationship to permit Holder: Same

3. **SOURCE:**  
GROUND WATER

**Method of Determination:** Permit application, IDWR records, and field examination

**B. OVERLAP REVIEW**

1. Other water rights with the same place of use: YES Overlap

Water Right No.	Source	Purpose of Use	Basis
Black Canyon Irrigation Dist.	Payette River	Irrigation	Decreed

Comments: Within Black Canyon Irrigation District, but no surface water delivered to property. 63-33771 developed as primary groundwater.

2. Other water rights with the same point-of-diversion: NO Overlap

Water Right No.	Source	Purpose of Use	Basis

Comments: NO POD Overlap

**C. DIVERSION AND DELIVERY SYSTEM**

1. **LOCATION OF POINT(S) OF DIVERSION:**

GROUND WATER SW¼ NE¼, Sec. 36, Twp 07N, Rge 05W, B.M. PAYETTE County

**Method of Determination:** Field examination and Garmin Handheld GPS point

**PLACE OF USE:** IRRIGATION

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
07N	05W	36	5.4	14	5.6	4.7													29.7

Total Acres: 29.7

**Method of Determination:** Aerial Imagery, ArcMap Tools, and observation during field exam.

3. X 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.
- X Aerial Photo Attached (required for irrigation of 10+ acres).
- X 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
D0066379	Franklin	30		Berkley 6T	325 gpm

**D. FLOW MEASUREMENTS**

1.

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

2. Measurements:

**E. FLOW CALCULATIONS**X Additional Computation Sheets Attached

Measured Method:

Theoretical pump calculation

30 hp submersible turbine pump from well into closed irrigation system with pump set at 231 feet.

Nozzle pressure measured at 55 psi.

$$Q = (8.8) \times (30 \text{ hp}) \times 0.70 / [(231) + (55 \times 2.31)] = 0.63 \text{ cfs or } 281.2 \text{ gpm}$$

Nozzle Discharge Calculation

Nozzle diameter (D) = 5/32", Nozzle Pressure (P) = 55 psi

$$Q_n = 28.9 \times D^2 \sqrt{P} = 28.9 \times (0.156)^2 \times (\sqrt{55}) = 5.39 \text{ gpm/nozzle}$$

A total of 50 nozzles were counted running during the field exam.

$$50 \times 5.39 \text{ gpm} = 269.5 \text{ gpm or } 0.60 \text{ cfs}$$

**F. VOLUME CALCULATIONS**

1. Volume Calculations for irrigation:

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = (29.7 \text{ acres}) \times (4.5 \text{ af}) = 133.7 \text{ af}$$

$$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = (0.6 \text{ cfs}) \times (260 \text{ days}) \times 1.9835 = 309.43 \text{ af}$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} = 134 \text{ af}$$

## 2. Volume Calculations for Other Uses:

### G. NARRATIVE/REMARKS/COMMENTS

The initial field exam was conducted on August 6, 2019 by water resource agents Cody Parker and Allen Bradbury. Permit holder and property owner, Jim Wells, accompanied the agents on the field exam. During this field exam the system was not running nor was the pipeline filled. Pump and well information were provided by the water right holder. A follow up visit by Allen was made on 9/3/2020 while the system was running however, the water right holder could not accompany the agent. Current Payette County tax parcel data confirms Jimmie D Wells and Lisa K Wells to be the current owners of the property pertinent to the place of use (POU) and point of diversion (POD), therefore no ownership change is required.

Groundwater is pumped from a well drilled by McLeran Well Drilling LLC. The well drillers report for well, tag # D0066379, describes an 8-inch by 382 foot deep irrigation well, completed August 25, 2014. Documents provided by the permit holder at the time of the exam described the installation of a 30 Hp Berkley 6T 325 submersible turbine pump set at 231 feet.

The place of use is divided into four fenced fields. The field in the NE is alfalfa hay which is irrigated by two wheelines running 16 and 17 heads respectively. The field in the SE is pasture which is irrigated by wheelines. The field in the SW is pasture which is irrigated by two wheelines running 8 and 9 heads respectively. The field in the NE is pasture which is irrigated by fixed sets of handlines. Both wheelines in the NE and both wheelines in the SW were in operation during the field exam. Nozzle diameter was measured with a drill bit at 5/32". Pressure was measured with a hand held gauge at 55 psi. Also, the pump panel display registered at 55 psi. A total of 50 nozzles on four wheelines were in operation during the field exam.

The permit was approved on 9/6/2013 and proof was submitted on 7/12/2018 and authorized the irrigation of 32 acres. The POU was determined using department aerial photography in ArcGIS, Google Earth imagery, and field exam observation to determine irrigation within the beneficial use period. Also, Climate Engine was utilized to help determine beneficial use. Climate Engine uses Google Cloud for computing and visualization of climate and remote sensing data. In this case, a Landsat 4/5/7/8 surface reflectance dataset was selected using the Normalized Difference Vegetation Index (NDVI) as an index of vegetation vigor. The results indicated increases in NDVI over the POU during between April 1 and September 30 of 2015-2018. The results were inconclusive for individual fields, though a slight difference can be discerned from the surrounding area. Review of 2013 through 2018 aerial imagery shows intermittent irrigation of the fields during the beneficial use period with progressively more development each year. The NW field seems bear the least progress however Google Earth imagery from 2018 clearly shows the layout of mainline and handlines with three lines clearly running. The amount of area irrigated differs from the permitted acres due to acreage in the SW of the property that is occupied by a farm yard and arena. Aerial photography and field observation documented that the well water could be delivered to approximately 29.5 acres. I am recommending a POU based on the apparent acres irrigated as calculated from GIS of 29.7 acres.

The proposed rate of diversion was 0.64 cfs on the original application, permit, and proof of beneficial use. Fifty heads with 5/32" nozzles were observed operating and measured at 55 psi. Using the nozzle discharge calculation a discharge rate of 5.39 gpm was estimated for each nozzle for a total discharge of  $50 \times 5.39 \text{ gpm} = 269.5 \text{ gpm}$  or 0.60 cfs. The theoretical discharge calculation for the 30 Hp pump, based on a lift of 231 feet, operating at 55 psi, yielded a theoretical flow of 0.63 cfs or 281.2 gpm. Since the nozzle discharge equation reflects the limits of the system, I am recommending the rate based on the nozzle discharge calculation of 0.60 cfs for licensing.

Conditions 046 removed as per department licensing standards. Condition 004, concerning right of way and easements was removed. Condition 121 was updated to 103 as per department licensing standards.

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

#### H. RECOMMENDATIONS

##### 1. Recommended Amounts

<u>Beneficial Use</u>	<u>Period of Use</u>	<u>Rate of Diversion</u>	<u>Volume</u>
IRRIGATION	03/01 to 11/15	0.60 CFS	134

Totals: 0.60 CFS 134 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 ☒ None

#### I. AUTHENTICATION Allen Bradbury - Water Resource Agent, Senior

Field Examiner's Name Allen Bradbury Date 10/26/20  
Reviewer Patrick Wilky Date 10-26-2020

# Beneficial Use Field Report

## System Design



### Legend

- Point of Diversion
- Place of Use
- Township/Range
- Sections

QQ

0 0.0175 0.035 0.07 Miles



### Pumping Capacity

30 HP Berkley 6T submersible turbine pump set @ 231 ft discharge into closed irrigation system.

$$Q = (8.8) \times (30 \text{ hp}) \times 0.70 / [(231) + (55 \times 2.31)]$$

$$Q = 0.63 \text{ cfs or } 281.2 \text{ gpm.}$$

$$\text{Nozzle Discharge} = 50 \times 5.39 \text{ gpm} = 269.5 \text{ gpm or } 0.60 \text{ cfs}$$

$$\text{BU Standard } (29.5 \text{ acres} \times 0.02 \text{ cfs/acre}) = 0.59 \text{ cfs}$$

**BENEFICIAL USE FIELD REPORT CALCULATIONS**

Permit #: 63-33771  
 Permit Name: Jim Wells

Proof Due: 9/1/2018  
 Priority Date: 7/17/2013

Permit Approve: 9/6/2013  
 Proof Subm: 7/12/2018  
 Exam Date: 9/3/2020  
 8/6/2019

Flow Rate 0.64  
 Fee Rate 0.21 to 1.00  
 Exam Fee \$100.00

0.00 to 0.20	\$50.00	2.01 to 3.00	\$150.00
0.21 to 1.00	\$100.00	3.01 to 4.00	\$175.00
1.01 to 2.00	\$125.00	4.01 to 5.00	\$200.00

Proposed Well Use: Irrigation Drill Date: 8/25/2014 Well Depth: 382 Pump Set: 231 ft  
 Permit Uses: Irrigation  
 Tag #: D0066379 Well ID: 438115

	cfs	gpm
Proposed Rate	0.64	287.25
Permit Rate	0.64	287.25
Proof Report	0.64	287.25
Irrig. Only		0.00
Stockwater		0.00
Domestic		0.00

Acres Proposed:	32.0
Acres Permitted:	32.0
Acres Developed:	29.5

**FLOW CALCULATIONS**

Meter Type: n/a  
 Meter Reading: 0.000 cfs

Nozzle Size	5/32
Input # heads:	50
Input gpm/head	5.39
gpm/line	269.5
cfs/line	0.60

**Theoretical Method**

Q = (8.8) X (HP) X E	Est. Pump Set	220 minus 10' =	210		
TDH	HP =	E =	H =	PSI =	Q =
	30.0	85.0%	231	55	0.63
					281.29
					cfs
					gpm

TDH = [ (LIFT) + (PSI X 2.31) ]

TDH =	Lift =	PSI =	2.31
347.1	220	55	2.31

HP = Total Brake Horsepower of pumping plant (including booster)

Eff. = Pumping plant efficiency (assume 70% or 0.70)

TDH = Total dynamic head = [ (LIFT) + (PSI X 2.31) ]

PSI = Pumping pressure measured in PSI near pump  
 (if open discharge assume [0])

Q = rate of flow in cubic feet per second,

Recommended Flow Rate: 0.60

Consumptive Use	4.5	Headgate Requirement	4.5	
Season of Use	3/1	11/15	=	260 days
Volume (VIR)	29.5	X	4.5	= 132.8 af
Volume (DR)	0.600	x	260	= 1.9835
BU Standard Rate	29.5	X	0.02	= 0.59 cfs
Rate/acre	0.600	/	29.5	= 0.020 cfs/acre

V I.R. = (Acres Irrigated) x (Irrigation Requirement)

V D.R. = [Diversion Rate (cfs)] x (Days in Irrigation season) x 1.9835

V = Smaller of V I.R. and V D.R

**Recommendation Standards for diversion rate (choose most restrictive)**

0.64 Permit Rate – the rate applied for

0.64 Fee Rate – the maximum rated paid for on the fee schedule.

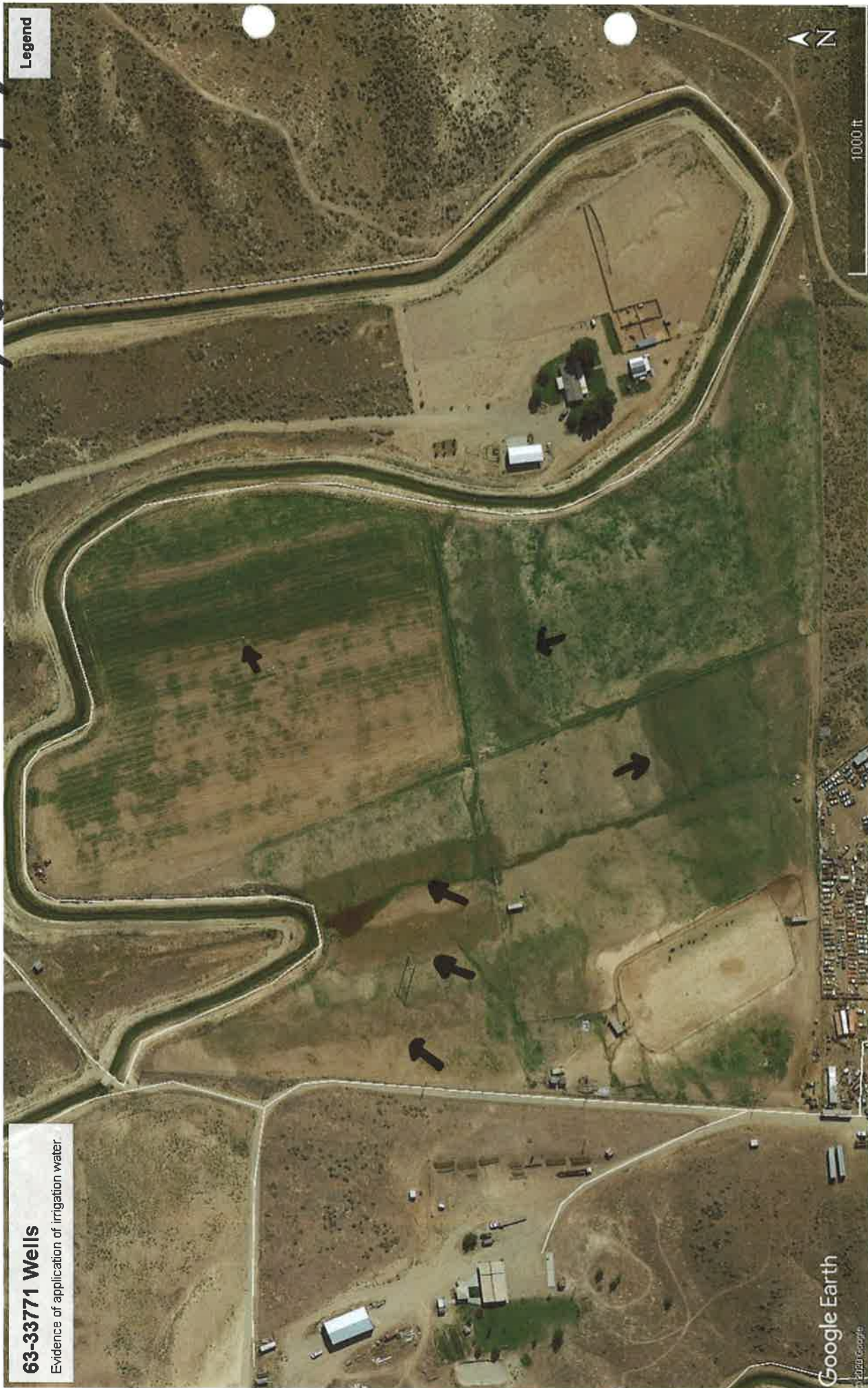
0.59 Beneficial Use (BU) standard = x.x ac \* 0.020 cfs/acre

0.60 Measured Value – the value measured in the field

0.63 Theoretical Rate - the rate calculated



7/2018 imagery



63-33771 Wells

Evidence of application of irrigation water

Legend

Google Earth

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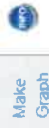
1000 ft

N

→ Evidence of sprinklers applying irrigation water



Make  
Map



MENU  
Map

Figure

Data



GET MAP LAYER

### Variable ?

Type: Remote Sensing

Dataset: Landsat 4/5/7/8 Surface Reflectance

Variable: NDVI (Vegetation Index)

Computation Resolution (Scale): 30 m

### Processing ?

Statistic (lower day range): Mean

Calculation: Values

### Time Period ?

Period of Record: 1984-01-01 to 2020-09-10

Season: Custom Date Range

Start Date: 2014-04-01

End Date: 2018-09-30

GET MAP LAYER

Colors= Map Layers Masking Download

Link Reset



## NDVI (Landsat 4/5/7/8 SR) 2014-04-01 to 2018-09-30 Mean





GET TIME SERIES

**Time Series Calculation:** ②  
Native Time Series  
One Variable Analysis

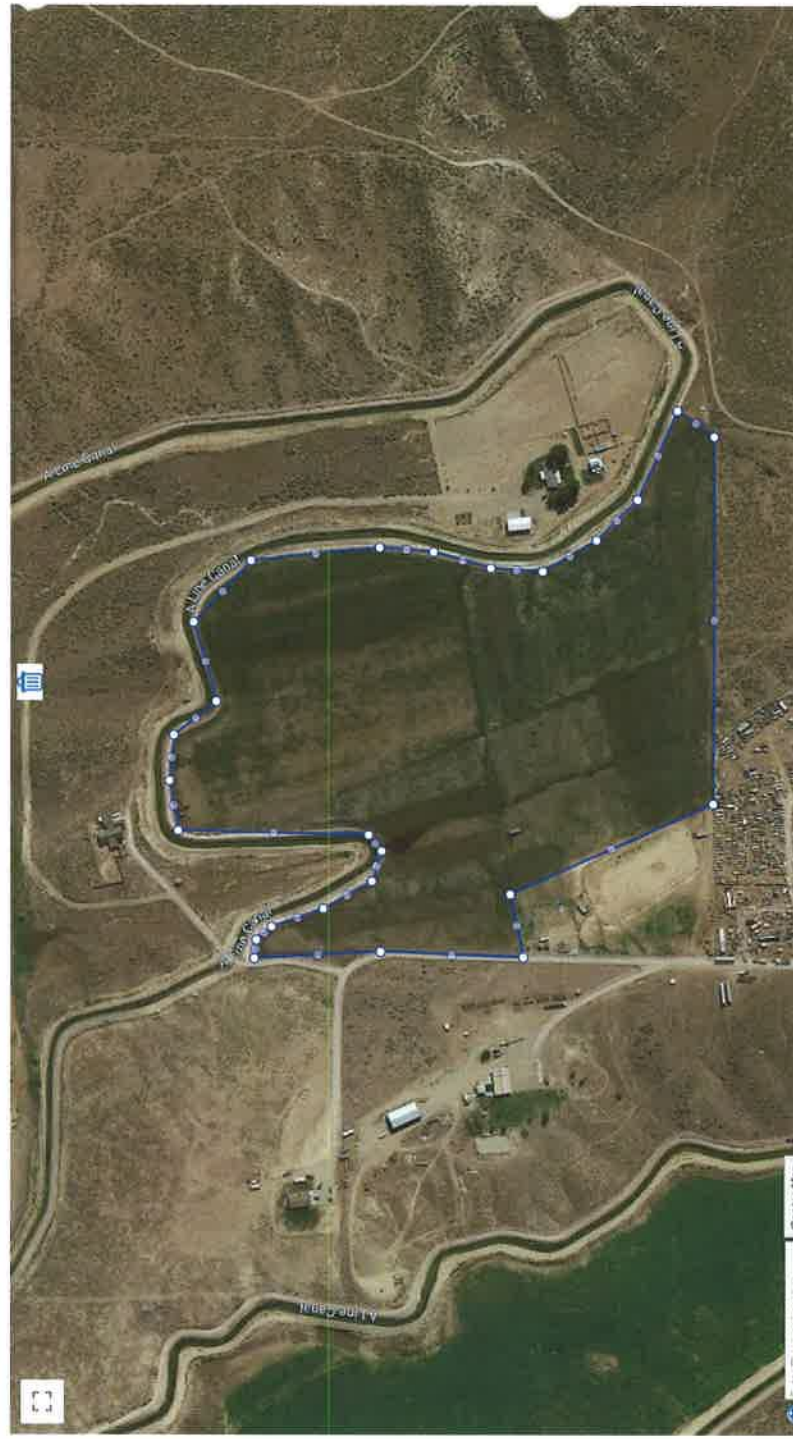
**Region:** ②  
 Polygon  
 Add another region

**Variable 1** ①  
**Type:** Remote Sensing  
**Dataset:** ② Landsat 4-5/7/8 Surface Reflectance  
**Variable:** ② NDVI (Vegetation Index)

**Computation Resolution (Scale):** ②  
30 m

**Time Period** ②  
**Period of Record:** 1984-01-01 to 2020-09-10  
**Season:** Custom Date Range

**Start Date:** 2014-04-01  
**End Date:** 2018-09-30



# NDVI (Landsat 4/5/7/8 SR)

Available Data from 2014-04-01 to 2018-09-30



Process	Basin		Draft	Owner	Source	POD	POU	Use	NENE	NWNE	SWNE	SENE	NENW	NWNW	SWNW	SENW	NESW	NWSW	SWSW	SESW	NESE	NWSE	SWSE	SESE	Total Acres
	Sequence	Draft																							
Water Permit	63-33771	N	WELLS, JIM		GROUND WATER	POU	IRRIGATION		4	14	9	5	7											32	
Water Permit	63-34798	N	DYER, BEAU; DYER, HEATHER		GROUND WATER	POU	IRRIGATION			8														15	
Water Right	63-11310	N	GRILLO, MARILYN; GRILLO, RICHARD		GROUND WATER	POU	IRRIGATION							4										4	
Water Right	63-33178	N	COX, WILLIAM H		GROUND WATER	POU	IRRIGATION																	24	
Water Right	63-11282	N	TMCO INC		GROUND WATER	POU	IRRIGATION										14	10		35	40		40	25	140
Water Permit	63-33716	N	TMCO INC		GROUND WATER	POU	IRRIGATION												35	40		40	25	140	
Water Right	63-7019	N	CHRISTENSEN, ARVES L; TMCO INC		GROUND WATER	POU	IRRIGATION												35	40		40	25	140	
Water Right	63-7956	N	CHRISTENSEN, LAURITZ; NICHOLS, EDWIN G; TMCO INC		GROUND WATER	POU	IRRIGATION												35	40		40	25	140	
Water Right	63-2878	N	BLACK CANYON IRRIGATION DIST		ELUAH DRAIN	POU	IRRIGATION		X	X	X	X	X	X	X	X	X	X	X	X					
Water Right	63-2322	N	UNITED STATES OF AMERICA ACTING THROUGH		ELUAH SLOUGH	POU	IRRIGATION		X	X	X	X	X	X	X	X	X	X	X	X					
Water Right	65-2433	N	UNITED STATES OF AMERICA ACTING THROUGH		PAYETTE RIVER	POU	IRRIGATION		X	X	X	X	X	X	X	X	X	X	X	X					
Water Right	65-2900	N	BLACK CANYON IRRIGATION DIST		TUNNEL NO 2 DRAIN	POU	IRRIGATION		X	X	X	X	X	X	X	X	X	X	X	X					
Water Right	63-2878	N	BLACK CANYON IRRIGATION DIST		WILSON DRAIN	POU	IRRIGATION		X	X	X	X	X	X	X	X	X	X	X	X					
Water Right	63-2322	N	UNITED STATES OF AMERICA ACTING THROUGH		WILSON SLOUGH	POU	IRRIGATION		X	X	X	X	X	X	X	X	X	X	X	X					

Groundwater

Surfacewater



Jim Wells  
P.O. Box 391  
Fruitland Id

11-19-14

Pump 30 HP Berkeley  
325 GPM with Franklin  
motor - 460 VOLT

Drive NEMA 3 YASKAWA Drive  
139 AMP

set 231 ft 42 steel pipe - 3 check valve  
2 flexcon 80 GAL TANKS

Single phase 480 in to Drive

460 VOLT 3 phase out of the Drive

Work Done  
Past junkyard  
on 9th ave  
PARMA Idaho

well 265 ft Deep  
8 in casing

Drilled me (kara)  
Drilled

Leons Pumps  
CCB # 117080  
885 S.W. 3rd St.  
Ontario, Oregon 97914  
541-889-6353  
541-881-6082 Cell  
541-212-0007 Cell

CUSTOMER'S ORDER # DATE: 11-

NAME:

Jim Wells

ADDRESS:

P.O. Box 391

CITY, STATE, ZIP

Fruitland Idaho 83601

SOLD BY:

WJ

CASH

C.O.D.

CHARGE

ON ACCT.

W.D.S.E.

QUANTITY	DESCRIPTION	PRICE
1	30 HP Berkeley 325	
2	Franklin motor	
24	10-3 sub well	
1	wire spool kit & tape	
1	YASKAWA IQ Drive	
1	concrete fill	
231	42 steel pipe	1320
2	42 check valves	480
1	4 in tank	
1	8 x 4 well cap	
	LABOR	
	inst. pump	
	70 hrs at well	

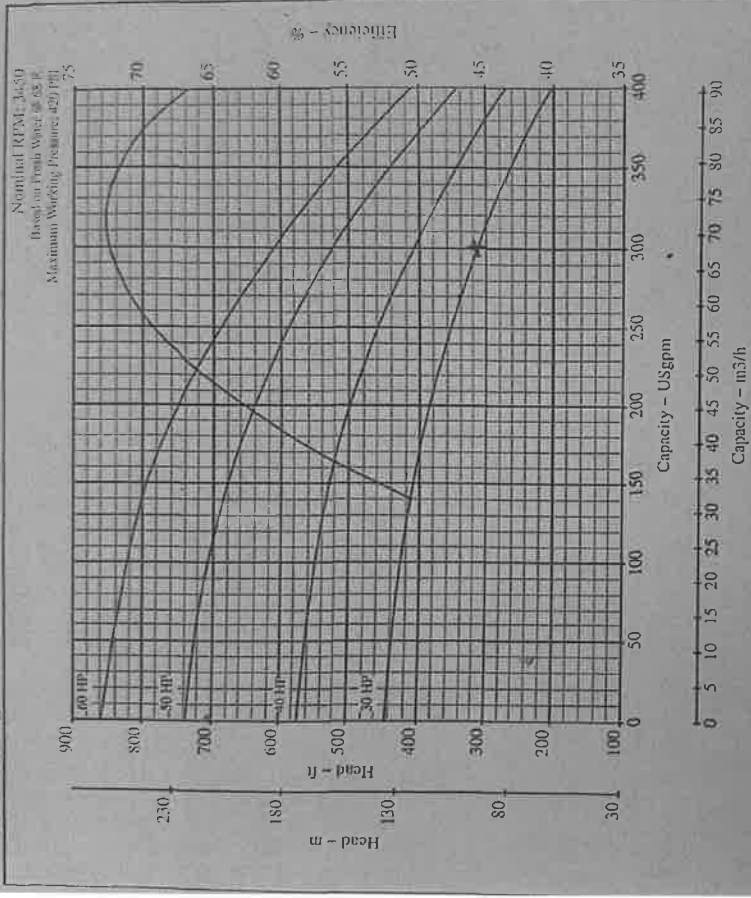
RECEIVED BY:



60 PSI @ 190 GPM

# SUBMERSIBLE TURBINE

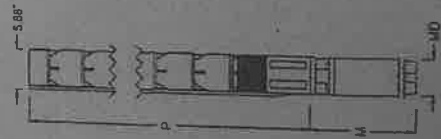
6T-325



## OUTLINE DIMENSIONS / WEIGHTS

HP	Stages	Motor size	P length	M* length	MD* dia.	Mix. wt.	Pump wt.
30	8	6"	52.98	49.50	5.51	236	138
40	10	6"	62.73	50.30	5.51	239	163
50	13	6"	77.36	52.20	5.51	251	200
60	15	6"	87.11	55.70	5.51	269	225

Note: Dimensions in inches; weight in lbs.  
 M\* Maximum length (Pencil Motor)  
 MD\* Motor diameter (Pencil Motor)



## SPECIFICATIONS

Minimum Well I.D.	4.0 inches
Minimum Submergence @ BEP (above fluid)	10.0 Feet
Capacity Range	140 - 400 GPM
Discharge	4" F NPT

See manufacturer's data for motor coupling requirements

SUPERSEDES All Previous

Date 04/01/05  
 Section 6T  
 Page 8.02



**Figure 1.** Well tag  
#D0066379.



**Figure 2.** Well  
head inside pump  
house.



**Figure 3.**  
Yaskawa iQPump  
1000 pump control  
panel.



**Figure 4.** Panel  
reading during  
operation.





**Figure 5.** Pipeline exiting pump house and expanded to 8-inch aluminum mainline.



**Figure 6.** Looking south from pump house toward unirrigated arena.





**Figure 7.** Looking northeast from pump house.



**Figure 8.** Looking southeast from pump house at irrigated pastures.



**Figure 9.** Looking northeast from middle of POU at wheelines irrigating alfalfa.

**Figure 10.**

WATER RESOURCES  
WESTERN REGION