

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 63-12421

Exam Date: 5/14/2012

1. Current Owner: JOHN W BAICY
2715 SHADY LN
WEBSTER TX 77598
(832)247-9588
2. Accompanied by: Sam Johnston
Phone No: (208)869-2022
Address: 392 N. Blackcat Rd Kuna, ID 83634
Relationship to Permit Holder: Farmer of property – system operator
3. SOURCE TRIBUTARY
GROUND WATER N/A

B. OVERLAP REVIEW

1. Other water rights with the same place of use: None. 63-7431 used at same location, but different acres.
2. Other water rights with the same point of diversion: 63-7431

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

GROUND WATER NW1/4NE1/4 Sec. 19, Twp 01N, Rge 01E, B.M.
ADA County

Method of Determination: GPS location w/ aerial photography. PD in center of NE quarter. GPS location ± 15 ft compared to aerial photography. PLSS lines in ArcMap potentially ± 15 ft. Recommend PD location recorded for overlapping right 63-7431, which uses same well.

2. <u>PLACE OF USE:</u>		IRRIGATION																	
Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
01N	01E	19	6.0		6.0	6.0													18.0

Total Acres: 18

Method of Determination: Bing (2011) Aerial photography w/ field verification.

Not recommending permitted domestic and stockwater uses for licensing. Not enough physical evidence of these beneficial uses found @ exam.

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. <u>Well or Diversion</u>	<u>Pump Serial No. or Discharge Size</u>					
<u>ID No.*</u>	<u>Motor Make</u>	<u>Hp</u>	<u>Motor Serial No.</u>	<u>Pump Make</u>	<u>Size</u>	
No Metal Tag –						
WC Well ID #401752	General Electric	200	Model 5K6328X031A	Johnston	10" Discharge Pipe	

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

D. FLOW MEASUREMENTS1. **Measurement Equipment**

<u>Type</u>	<u>Make</u>	<u>Model No.</u>	<u>Serial No.</u>	<u>Size</u>	<u>Calib. Date</u>
No physical measurement @ exam	N/A	N/A	N/A	N/A	N/A

See Flow Calculations Section below for Theoretical HP Equation(s) & Well Capacity/Well Log Pump Test Estimations.

2. Measurements:

No measurements taken – system not operating – irrigation of corners (POU) not occurring – during exam. Well discharge piping not suitable (insufficient pipe length) for polysonic measurement.

E. FLOW CALCULATIONS

_____ Additional Computation Sheets Attached

Measured Method: Theoretical HP Equation(s):

$$HP = 200$$

$$PSI = 38 \text{ (pressure at pivot per Mr. Johnston)}$$

$$Z = 380 \text{ ft (Johnston says pump set at } \sim 400 \text{ ft, est. pumping level 20 ft above pump set depth)}$$

$$Q = (8.8 \times 0.7 \times HP) / [Z + (2.31 \times PSI)] = (8.8 \times 0.7 \times 200) / [380 + (2.31 \times 38)] = \mathbf{2.63 \text{ cfs}}$$
 est. capacity of pumping system in well @ higher pressure.

Assuming pressure reduced in overall system when gated pipe used to irrigate. Pressure possibly as low as 20 psi.

$$PSI = 20 \text{ (all other parameters same)}$$

$$Q = (8.8 \times 0.7 \times HP) / [Z + (2.31 \times PSI)] = (8.8 \times 0.7 \times 200) / [380 + (2.31 \times 20)] = \mathbf{2.89 \text{ cfs}}$$
 est. capacity of pumping system in well @ lower pressure.

Measured Method: Well Capacity/Well Log Pump Test:

$$\text{Well Log Pump Test : Discharge} = 2700 \text{ gpm} = \mathbf{6.02 \text{ cfs}}$$
 w/ 0 ft drawdown pumped for 14 hours.

Theoretical HP Equation(s) est. capacity of pumping system = 2.63 to 2.89 cfs [well also used for 63-7431 (2.64 cfs)]

Well Capacity/Well Log Pump Test = 6.02 cfs [well also used for 63-7431 (2.64 cfs)]

Permitted Rate = 0.40 cfs

Beneficial Use Limit = 18 ac x 0.02 cfs/ac = 0.36 cfs

Proof of Beneficial Use fee paid = \$100.00 = up to 1.00 cfs

Recommend Beneficial Use Limit Rate = 0.36 cfs

Overlapping PD right 63-7431 authorizes 2.64 cfs from well. 2.64 cfs + 0.36 cfs = 3.00 cfs. Lowest HP Equation estimation 2.63 cfs $\geq$ 75% (88%) of allowable rate 3.00 cfs.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 18 \text{ ac} \times 4.5 \text{ afa/ac} = 81.0 \text{ afa}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.36 \text{ cfs} \times 260 \text{ days} \times 1.9835 = 185.7 \text{ afa}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = 81.0 \text{ afa} < 185.7 \text{ afa} = \mathbf{\text{Recommend } 81.0 \text{ afa}}$$

2. Volume Calculations for Other Uses: No other uses recommended for licensing.

G. NARRATIVE/REMARKS/COMMENTS**SYSTEM DESCRIPTION:**

System consists of a 16" dia irrigation well (ID Power meter # 36-320-655 – irrigation well only use of power on this meter) with a 10" discharge piped to 6" mainline with a "T" taking the water north where 6" dia gated pipe used to irrigate the NENE corner and south to the pivot and beyond where 6" gated pipe used to irrigate the SWNE and SENE corners.

G. NARRATIVE/REMARKS/COMMENTS CONTINUED**IRRIGATION PRACTICES:**

The POU consists of three of the four corners within the NE quarter of Section 9 not irrigated by the pivot. Johnston runs the pivot with the mainline open so water can reach the far north and/or south edges to where the gated pipe irrigates the corners. Natural topography allows for gravity irrigation from south edge of property to north. Berm alongside the road on north edge of property provides elevation to allow for gravity irrigation of NENE corner. Johnston run the pivot and irrigates one corner at a time. Each corner irrigated 2-3 days. The pivot is set to apply 1 inch (0.02 cfs) per acre. It takes approximately 4 days for the pivot to make a full rotation. Typically, Johnston will begin irrigating first of May and end late September. Not yet irrigating for season at time of exam. Mostly hay grown, but every 4-7 years rotate plant corn.

Land within the corners is still quite rocky and is difficult to irrigate, but Johnston does irrigate corners and continues to work on improving land by removing rocks. Keeping in mind that aerial photography represents only one instance during the year, land within corners does appear slightly greener than surrounding uncultivated land despite the corners not being as green as the ground under the pivot. Corners were not being irrigated during exam, but evident corners cultivated and irrigated in previous year during development period.

OTHER USES:

Permit approval authorized development of stockwater and domestic uses. Irrigation well is the only well Johnston knows about on the property. He is not sure how/if the irrigation well is piped to the homestead, but there is an old pipe at the homestead Johnston presumes used to supply water. Stock have grazed on property, most likely watered from the irrigation well in the past, but no stock system (tanks/troughs, etc.) found nor any cattle present during exam. Domestic and stockwater uses permitted are minimal; these uses of ground water do not require a water right. Due to lack of evidence, domestic and stockwater uses could not be confirmed during the exam and are not being recommended for licensing under this right.

OVERLAP:

Irrigation well serves as POD for this permit and right 63-7431. Right 63-7431 authorizes diversion of 2.64 cfs for irrigation of 132 acres, which is roughly the number of acres being irrigated by the pivot. 63-12421 is being recommended for irrigation of the corners. If one corner is irrigated at the same time as the pivot, a maximum of roughly 2.76 cfs $[0.12 \text{ cfs } (0.02 \text{ cfs/ac} \times 6 \text{ ac}) + 2.64 \text{ cfs (pivot irrigation)}]$ is being diverted. This value is within the range of Theoretical HP Equation estimations.

HP Equation calculation for 63-7431 estimated a system capacity of 2.74 cfs based on 160 hp pump and a total dynamic head greater than 310 ft per Shelley Keen's memo dated 3/3/05. Currently, system uses 200 hp pump under the conditions illustrated in the FLOW CALCULATIONS section above. Reasonable to assume larger pump capable of producing water for additional use. System is not rate limited; capable of producing enough volume for use recommended under this right and existing right 63-7431 $[3.00 \text{ cfs (total diversion rate from well)} \times 260 \text{ days} \times 1.9835 = 1547.1 \text{ af VS sum of 2 rights } 594.0 \text{ af (63-7431)} + 81.0 \text{ af (63-12421)} = 675.0 \text{ af}]$.

No overlapping POU rights.

COMPLIANCE WITH PERMIT CONDITIONS:

No request issued by the Department requiring the owner install a measuring device, so no device has been installed. Irrigation of no more than 150 acres under right 63-7431 with 63-12421 is occurring. To the best of my knowledge, all conditions of permit approval have been met.

Have conditions of permit approval been met? X Yes No

H. RECOMMENDATIONS**1. Recommended Amounts**

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
IRRIGATION	03/01 to 11/15	0.36 CFS	81.0 AF
<u>Totals:</u>		0.36 CFS	81.0 AF

2. Recommended Amendments

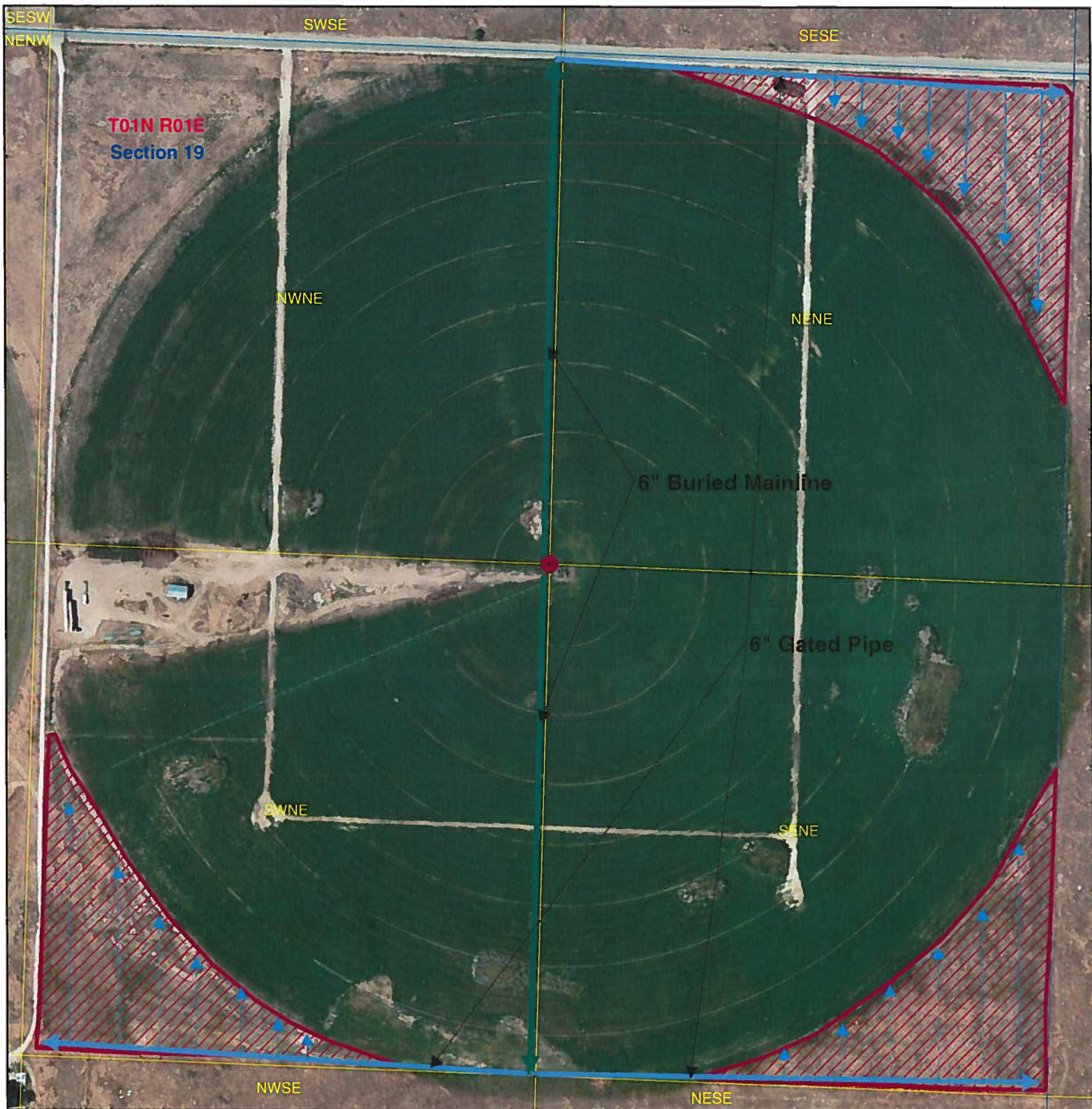
 Change P.D. as reflected above Add P.D. as reflected above X None
 Change P.U. as reflected above Add P.U. as reflected above Other

I. AUTHENTICATION

Field Examiner's Name Angela M. Quinn Date 6/18/2012

Reviewer _____ Date _____

63-12421 Beneficial Use Field Report Delivery System Diagram and Map



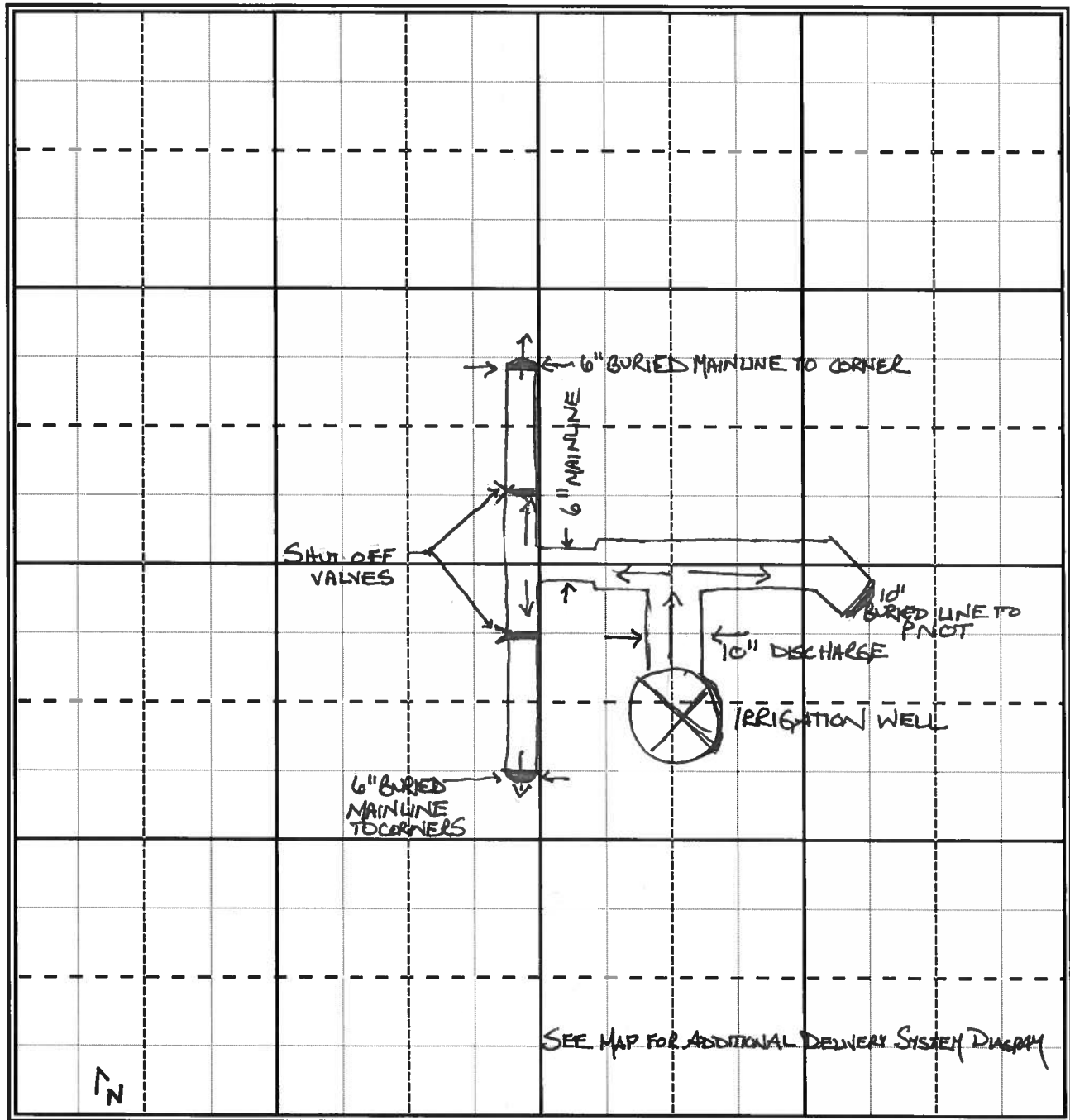
Bing (2011) Aerial Photo
Miles

0 0.05 0.1 0.2 0.3 0.4 0.5

Legend

- POD
- ▨ POU
- ▭ Township/Range
- ▭ Sections
- ▭ QQ

63-12421 Beneficial Use Field Report Diversion System Diagram



Not to Scale

4/2011

IDAHO DEPARTMENT OF WATER RESOURCES
FIELD EXAMINERS
WELL INSPECTION FORM

1. IDENTIFICATION # NO METAL TAG WELL ID# 401752 (Tag #, etc.)

OTHER APPLICABLE # 63-7431 + 63-32421 (Water right #, etc.)

2. OWNER JOHN BAICY Phone (832) 247-9588

Address 2715 SHADY LANE City WEBSTER

State TX Zip 77598 Email _____

3. WELL LOCATION (GPS required in Degrees Decimal Minutes – use PLS if GPS not available)

Lat. N 43° 41.90° Long. W 116° 37.911°

Twp 1N Rge 1E Sec 19 $\frac{1}{4}$ SW $\frac{1}{4}$ NE (PER GPS,
BUT WELL VERY CLOSE TO CENTER OF NE. WR PERMIT 63-12421 + WR 63-7431 RECORD
POD IN NW NE SEC 19 T1N R1E).

4. WELL CONSTRUCTION ☒ Well log attached ☐ Well log not found

Any obvious construction problems that may be a source for contamination or waste? ☐ Yes ☒ No

If yes, describe below &/or see attached (list any that apply): ☐ Photos ☐ Diagram ☐ Other

5. HYDROLOGIC INFORMATION

Static water if measured _____ ft. Water temperature if measured _____ °F

Flowing artesian ☐ Yes ☐ No Pressure if measured _____ psi

NOTES SOME DISCREPANCY ON EXACT 40 AC TRACT LOCATION SINCE
WELL ALMOST DEAD CENTER OF NE QUARTER. NOT LIKELY EVERY TO
RESOLVE EXACT 40 AC. TRACT. WRS ASSOCIATED WITH THIS WELL LIST
POD IN NW NE OF SECTION 19.

INSPECTED BY Angeli M. Quinn DATE 6/14/2012

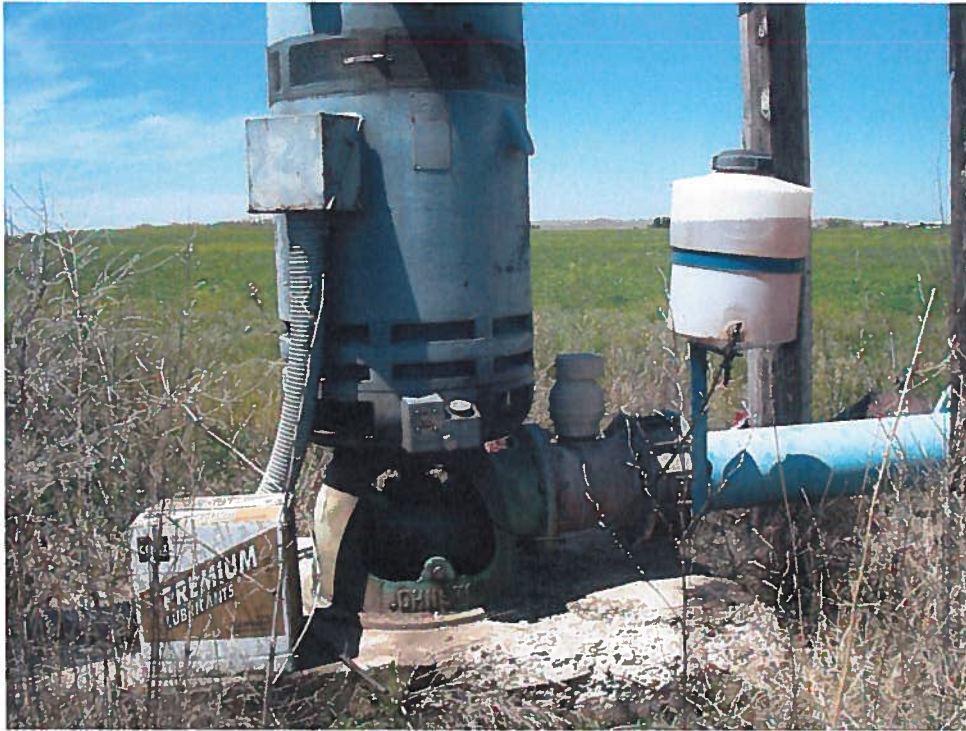
WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Administration within 30

Department of Water Administration

[illegible]

63-12421 Beneficial Use Field Report Photos



63-12421 Exam 5/14/2012: POD irrigation well facing west with 10" discharge piped north to first "T" west to mainline and east to pivot.



63-12421 Exam 5/14/2012: 6" mainline with shut off valves facing north. Blue 10" line from well to first "T" visible in upper right corner of photo. Well just outside right edge of photo.



63-12421 Exam 5/14/2012: POU SENE corner facing east.



63-12421 Exam 5/14/2012: POU SWNE corner (foreground) facing north/northeast. Note evidence land cultivated (rows). Pivot associated with WR # 63-7431 POU in center of photo.