

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 96-9475
Exam Date: 05/25/2021

1. Current Owner:
JAMES R JOHNSON PO BOX 1773 SANDPOINT ID 83864-0902
2. Accompanied by: James Johnson
Phone No: 831-917-6823
Address: Same as above
Relationship to permit Holder: Permit holder

3. **SOURCE:**
GROUND WATER

Method of Determination: Arcmap and DRG.

B. OVERLAP REVIEW

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

Water Right No.	Source	Purpose of Use	Basis
96-2150	SPRING	STOCKWATER	LICENSE

Comments: licensed right 96-2150 uses spring water for stockwater purposes, with a 40 acre POU designator that overlaps this rights POU, but is not a concern for overlap.

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

C. DIVERSION AND DELIVERY SYSTEM

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

GROUND WATER SE¼ SE¼, Sec. 32, Twp 55N, Rge 02W, B.M. BONNER County
GROUND WATER SE¼ SE¼, Sec. 32, Twp 55N, Rge 02W, B.M. BONNER County

Method of Determination: GPS; POD is a well D0055505 located at -116°35.5922, 48°03.9008.
GPS; POD is a 13 ft hand dug well located at -116°35.614, 48°03.902.

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	
55N	02W	32																1.0	1.0

Total Acres: 1.0

Method of Determination: field exam and Arcmap aerial imagery.

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
D0055505	UNKOWN	1.5			
HAND DUG WELL	UNKOWN	1			

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
NONE						

2. Measurements: Unable to perform flow measurements due to inadequate pipe requirements. Main line(s) from each well and pump system routed direct to a small pressure tank prior to distribution for use. As a result, theoretic pumping equations were used to derive flow rates for each of the PODs. The hand dug well with 1 HP pump installed lifting 13 feet, and running at 60 PSI results in 20.9 gpm or 0.05 cfs considering department rounding standards. Well D0055505 with 1.5 HP pump installed lifting 185 feet, and running at 45 PSI results in 16.4 gpm, or 0.04 cfs considering department rounding standards.

E. FLOW CALCULATIONS

☒ Additional Computation Sheets Attached

Measured Method: 2ea theoretic pump equations were used to derive flow rates for each well:

- Hand dug well = 1 hp pump, 13 ft lift, 60 PSI operating pressure = 20.9 gpm, or 0.05 cfs considering department rounding standards.
- D0055505 = 1.5 hp pump, 185 ft lift, 45 PSI operating pressure = 16.4 gpm, or 0.04 cfs considering department rounding standards.
- Department standard diversion rate for 1.0 acres irrigation = **0.03 cfs**, recommended for licensing purposes.

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 1.0 \text{ acres} \times 3.0 \text{ afa} = 3.0 \text{ af}$$

$$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.04 \text{ cfs} \times 214 \text{ days} \times 1.9835 = 17.0 \text{ af}$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} = \mathbf{3.0 \text{ af}}$$

2. Volume Calculations for Other Uses:

Irrigation annual volume & maximum diversion volume = **3.0 af**

G. NARRATIVE/REMARKS/COMMENTS

Field exam performed on 5/25/2021 with the applicant, Mr. James Johnson, showed two groundwater source wells being used for irrigation purposes. At the POD(s), there is a 13 foot deep hand dug well developed in the 1970s, with a 1 HP pump installed in the floor of a small pump house. A second groundwater POD – well D0055505 is located approximately 25 ft from the pump house that has a 1.5 HP pump with buried service pipe to the pump house. Both wells diverting work service pipes feed into a common pressure tank prior to use. Mr. Johnson demonstrated his operational practices during the exam, cycling each well independent of the other using a circuit breaker panel. Mr. Johnson asserts he can only operate one well at a time without overloading the system, and that he manually operates the 13 ft hand dug well until the water level drops, then cycles over to well D0055505. As such, the diversion rates associated with the two wells are not being recommended to be considered additive for licensing purposes.

I was unable to perform flow measurements due to inadequate pipe requirements. Main line(s) from each well and pump system route direct to a small pressure tank where they co-mingle prior to distribution for irrigation and home use. As a result, theoretic pumping equations were used to derive flow rates for each of the PODs. The hand dug well with 1 HP pump installed lifting 13 feet, and running at 60 PSI results in 20.9 gpm or 0.05 cfs considering department rounding standards. Well D0055505 with 1.5 HP pump installed lifting 185 feet, and running at 45 PSI results in 16.4 gpm, or 0.04 cfs considering department rounding standards. The applicant irrigates 1.0 acres of garden area and small lawn space around his home. The department standard diversion rate for irrigation of 1.0 acres = **0.03 cfs**, which is recommended as the maximum diversion rate for licensing purposes. Each well is capable of diverting over 0.03 cfs, but the system(s) also provide groundwater to the home, which mitigates concerns of over diverting from each respective well source. Mr. Johnson stated he is waiting for the Adjudication of Basin 96 to commence, and will file a claim for the Domestic use from the two wells at that time.

During the exam, photographs of two separate fenced in garden space were taken, and the irrigation POU was sketched out on field exam maps. During licensing review, Arcmap aerial imagery was used to accurately trace the irrigation POU equal to 1.0 acres. The annual volume associated with 1.0 acres of irrigation = **3.0 af**, which is recommended as the maximum diversion volume for licensing purposes. From the pump house, an irrigation line routes up-slope to the irrigation POU occurring near the home. Drip irrigation system and rain bird tripod sprinklers are used by the applicant for this area.

Routing from the pump house to the eastern portion of the property, the applicant has a single main line with frost free hydrants placed at approximately 100 ft intervals with the mainline pipe crossing the creek to the fenced in garden area at the NE portion of the parcel. Aerial imagery clearly defines the fenced in garden space, which has a main service pipe that runs along the northern fence line, with irrigation riser pipes at intervals allowing soaker hoses and sprinkler lines to run north/south to irrigate. Mr. Johnson stated that between this property and another, he had not cultivated crops on the eastern garden this year, but credit is recommended based on Arcmap aerial imagery showing irrigation in the development period of the permit.

Condition 046 and 26A were removed from the permit during licensing review. Condition R62 was replaced with R66 to align irrigation verbiage to small acreage department standards of 0.03 cfs per acre up to 5 acres. All other conditions on permit shall be carried forward to the license. Overlap concerns: licensed right 96-2150 uses spring water for stockwater purposes, with a 40 acre POU designator that overlaps this rights POU, but is not a concern for overlap. There are no other overlap concerns for this right.

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>Rate of Diversion</u>	<u>Annual Volume</u>
IRRIGATION	04/01 to 10/31	0.03 CFS	3.0 AF
<u>Totals:</u>		0.03 CFS	3.0 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 X None

I. AUTHENTICATION Luke Bates - Water Resource Agent

Field Examiner's Name

LSB

Date

8/4/2021

Reviewer

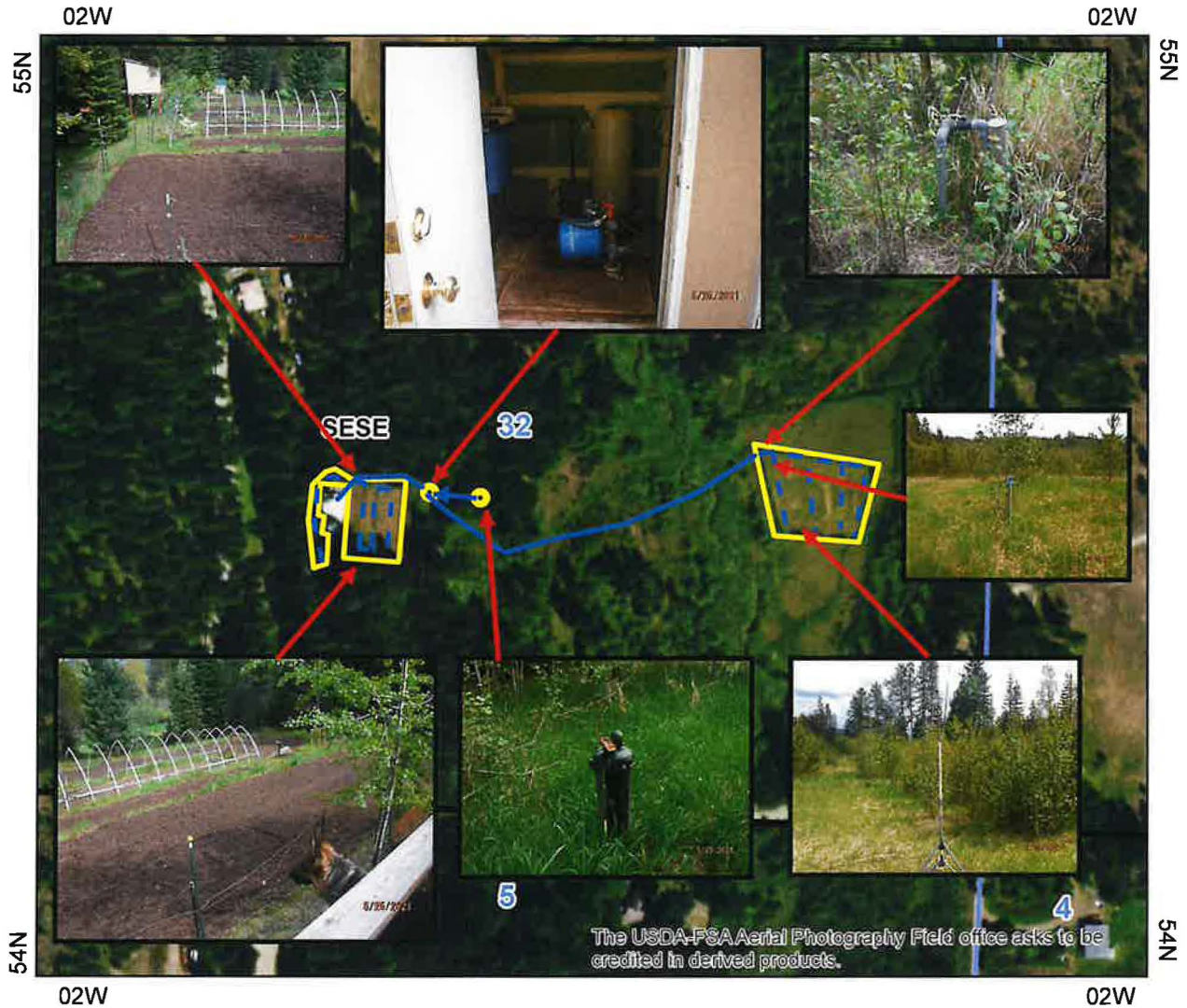
Adm Fink

Date

8/12/2021

State of Idaho
Department of Water Resources
Attachment to Field Exam
96-9475

IRRIGATION system diagram.



-  Point of Diversion
-  Place Of Use Boundary
-  Townships
-  PLS Sections
-  Quarter Quarters

0 0.035 0.07 0.14 Miles



THEORETICAL PUMPING EQUATION(S) FOR WR# 96-9475

Theoretical Pumping Equation is required because system did not allow for a proper measurement. Pump is estimated to be at 13 ft, and running at 60 psi.

PUMP EQUATIONS

WATER RIGHT No. 96-9475

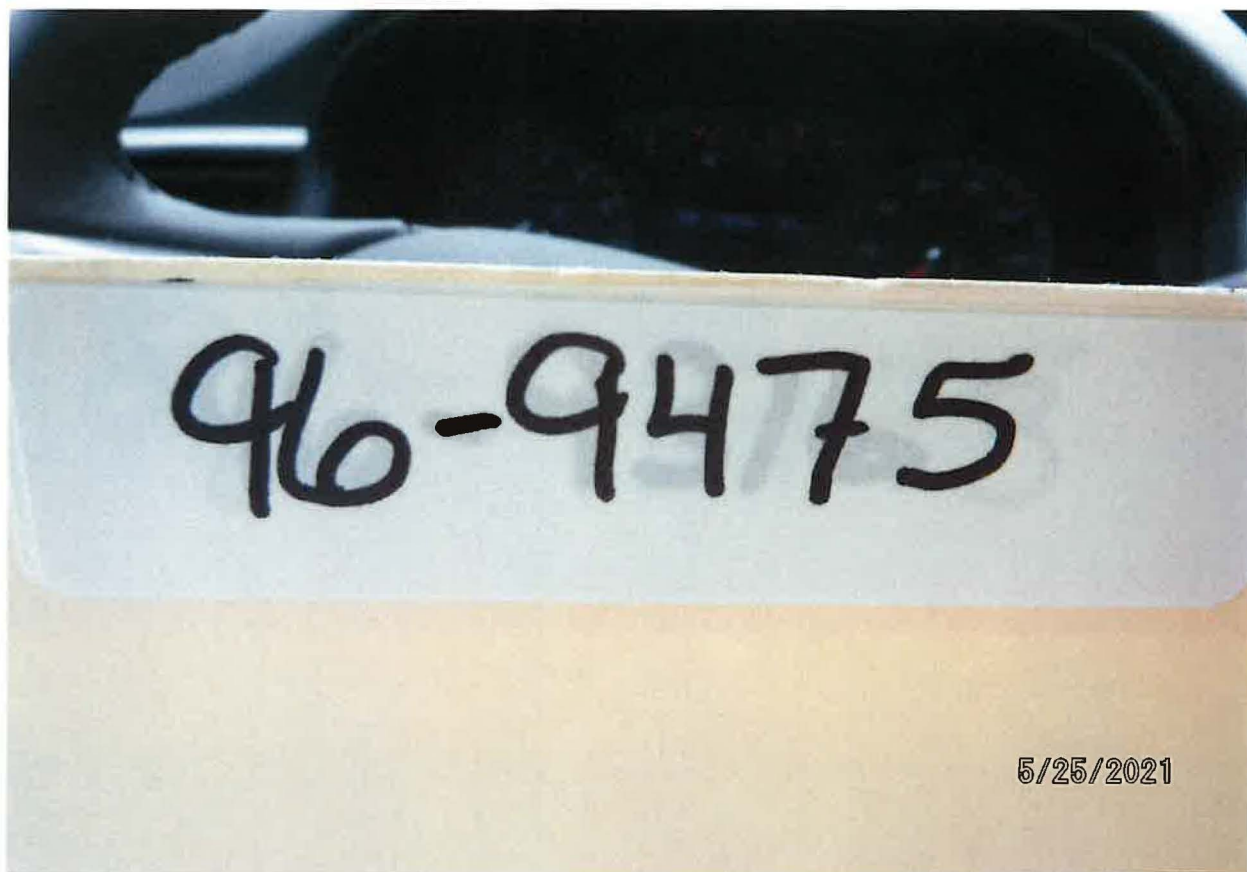
HAND DUG WELL		HP	H in feet	Efficiency as a decimal	Pumping lift in feet	System pressure in PSI
Q =	HP*8.8*Eff/H	1	151.7755	0.8	13	60
Q =		0.046 cfs 20.9 gpm				

Theoretical Pumping Equation is required because system did not allow for a proper measurement. Pump is estimated to be at 185 ft, & running at 45 psi.

PUMP EQUATIONS

WATER RIGHT No. 96-9475

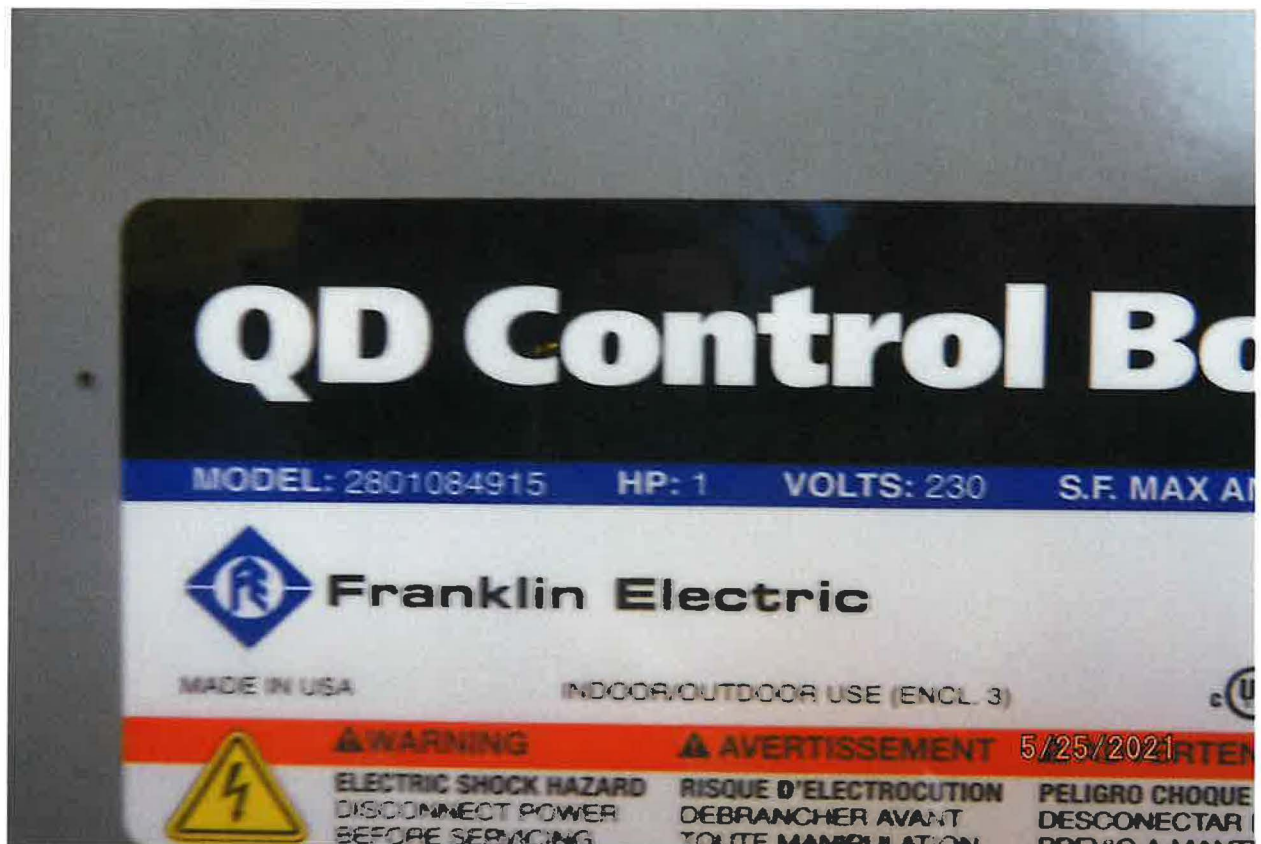
D0055505		HP	H in feet	Efficiency as a decimal	Pumping lift in feet	System pressure in PSI
Q =	HP*8.8*Eff/H	1.5	289.0816	0.8	185	45
Q = 0.037 cfs 16.4 gpm						



FIELD EXAM DATE 5/25/2021



POD - 13 FT DEEP HAND DUG WELL



1 HP PUMP INSTALLED IN HAND DUG WELL



CIRCUIT BREAKERS USED TO CYCLE SYSTEM BETWEEN TWO WELL PUMPS



POD – GROUNDWATER WELL D0055505



WELL D-TAG D0055505



WELL D0055505 PUMP CONTROLLER – 1.5 HP PUMP INSTALLED IN WELL





IRRIGATION POU – EAST SIDE OF CREEK



IRRIGATION RISERS OFF MAIN WATER DISTRIBUTION PIPE



IRRIGATION POU – EAST SIDE OF CREEK – MAIN WATER LINE

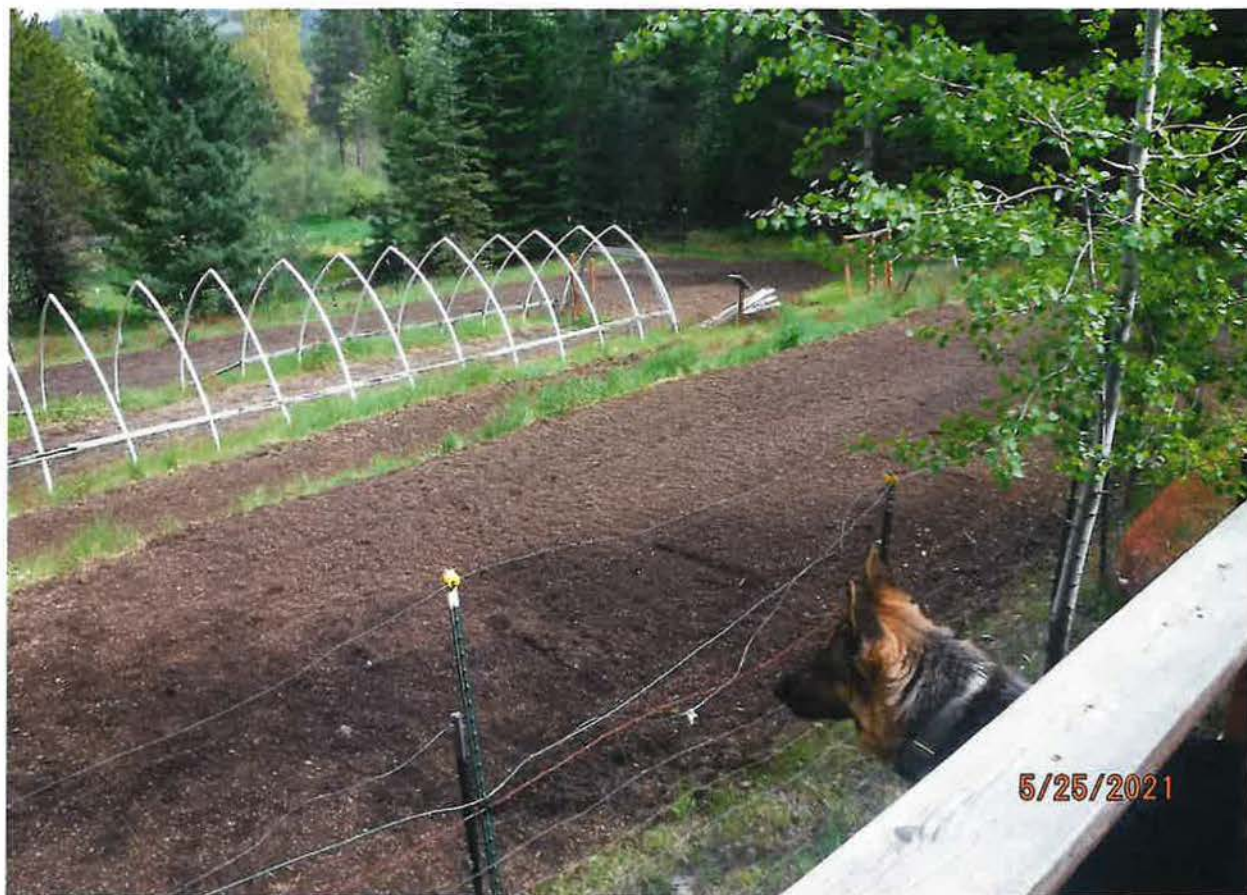


TRIPOD SPRINKLERS USED, AS WELL AS DRIP LINE FOR ROW CROPS



IRRIGATION POU – WEST SIDE OF CREEK





IRRIGATION POU – WEST SIDE OF CREEK

