

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 96-09525

Exam Date: 8/2/2016

1. Current Owner:

ROBERT GARRISON 627 ELIZABETH RD SAN ANTONIO TX 78209 (361) 816-7223

And/Or

LORETTA M GARRISON 627 ELIZABETH RD SAN ANTONIO TX 78209 (361) 816-7223

2. Accompanied by: Steve Klatt

Phone No: 208-263-8399

Relationship to Permit Holder: Representative

3. **SOURCE:**MIRROR CREEK
GROUND WATER**TRIBUTARY:**

TALACHE CREEK

B. OVERLAP REVIEW

1. Other water rights with the same place of use: None
2. Other water rights with the same point-of-diversion: None

C. DIVERSION AND DELIVERY SYSTEM1. **LOCATION OF POINT(S) OF DIVERSION:**

MIRROR CREEK NW¼NE¼ Sec. 6, Twp 55N, Rge 01W, B.M. BONNER County

GROUND WATER NW¼NE¼ Sec. 6, Twp 55N, Rge 01W, B.M. BONNER County

Method of Determination: Maps and GPS. POD locations at

Hand dug well: 116° 29.275, 48° 08.950

Mirror Creek: 116° 29.250, 48° 08.938

2.

PLACE OF USE: FIRE PROTECTION STORAGE

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
55N	01W	6	X	X															

PLACE OF USE: RECREATION STORAGE

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
55N	01W	6	X	X															

PLACE OF USE: WILDLIFE STORAGE

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
55N	01W	6	X	X															

PLACE OF USE: IRRIGATION FROM STORAGE

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	

55N	01W	6	0.3	0.8														1.1
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Total Acres: 1.1

PLACE OF USE: IRRIGATION STORAGE

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
55N	01W	6	X	X															

DIVERSION TO STORAGE same as IRRIGATION STORAGE

Method of Determination: Google Earth and Arc map.

3.

Delivery System Diagram Attached (required). Indicate all major components and distances between components.

X Indicate weir size/pipe as applicable.X 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
HAND DUG WELL	GOULDS	1/2		10GS05	
MIRROR CREEK	GOULDS	1/2		10GS05	

*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

2. Measurements: UNABLE TO PERFORM FLOW MEASUREMENT BECAUSE APPLICANT WAS NOT ACTIVELY PUMPING BECAUSE OF LEAK IN POND.

E. FLOW CALCULATIONS

Measured Method: MR. KLATT VERIFIED THE PUMP MODEL NUMBER AND VERIFIED THEY HAD THEM INSTALLED AT 10GPM.

X Additional Computation Sheets Attached

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 1.1 \text{ AC} \times 3 \text{ AF} = 3.3 \text{ AF}$$

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

2. Volume Calculations for Other Uses: SEE ATTACHED POND ANALYSIS SHEET

G. NARRATIVE/REMARKS/COMMENTS

Field exam with Steve Klatt, the applicant's representative, showed a large pond with two points of diversion. The first point of diversion was a 10 foot deep hand dug well with large cement culvert. The second point of the diversion was a similar concrete culvert placed on the side of Mirror Creek. That culvert had lots of holes in side that allowed water into culvert where pump was located at. This method allows applicant to pump water without debris or other objects possibly destroying pump. Pump house had pipes from each source along with backflow preventers so water from creek would not mix with groundwater. Each source had a 1/2hp pump rated at 10gpm. Beyond the backflow preventers the two pipes joined into one and diverted water across the creek and into the pond.

At time of the exam the pond was almost empty. Mr. Klatt explained that the pond was engineered and constructed using a method where bentonite granules were mixed into soil to lower or prevent seepage. After construction of the pond it was found that the small pumps, which were put in to make up water lost in evaporation and seepage could not keep up. They later determined the granular process had not worked as intended and the pond was seeping more than what it was engineered for. The fish were killed off in the pond and it was drained. They were scheduled to retry the bentonite granular process a couple weeks after exam.

At the south end of the dam was 6 inch pvc pipe going through dam with a check valve on outer edge of dam. From there, a pump was connected and flexible pipe went back across creek to swampy area. Mr. Klatt said they would irrigate that area during the summer to keep it green for the moose. The area measured out during license review was equal to 1.1 acres. License will be issued for 0.04 cfs for diversion to storage. Applicant did not do any direct irrigation or flow through of pond so those two components that were permitted as a cfs will be removed. Irrigation storage and irrigation from storage will be licensed for 3.3 acre feet. Recreation storage, fire protection storage, and wildlife storage will be issued for 20.9 acre feet. 9.1 acre for a full pond and 11.8 acre feet for seepage and evaporation.

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 STORAGE	01/01 to 12/31		3.3 AF
DIVERSION TO STORAGE	01/01 to 12/31	0.04 CFS	
RECREATION STORAGE	01/01 to 12/31		20.9 AF
FIRE PROTECTION STORAGE	01/01 to 12/31		20.9 AF
WILDLIFE STORAGE	01/01 to 12/31		20.9 AF
IRRIGATION FROM STORAGE	04/01 to 10/31		3.3 AF
<u>Totals:</u>			24.20 AF

2. Recommended Amendments

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

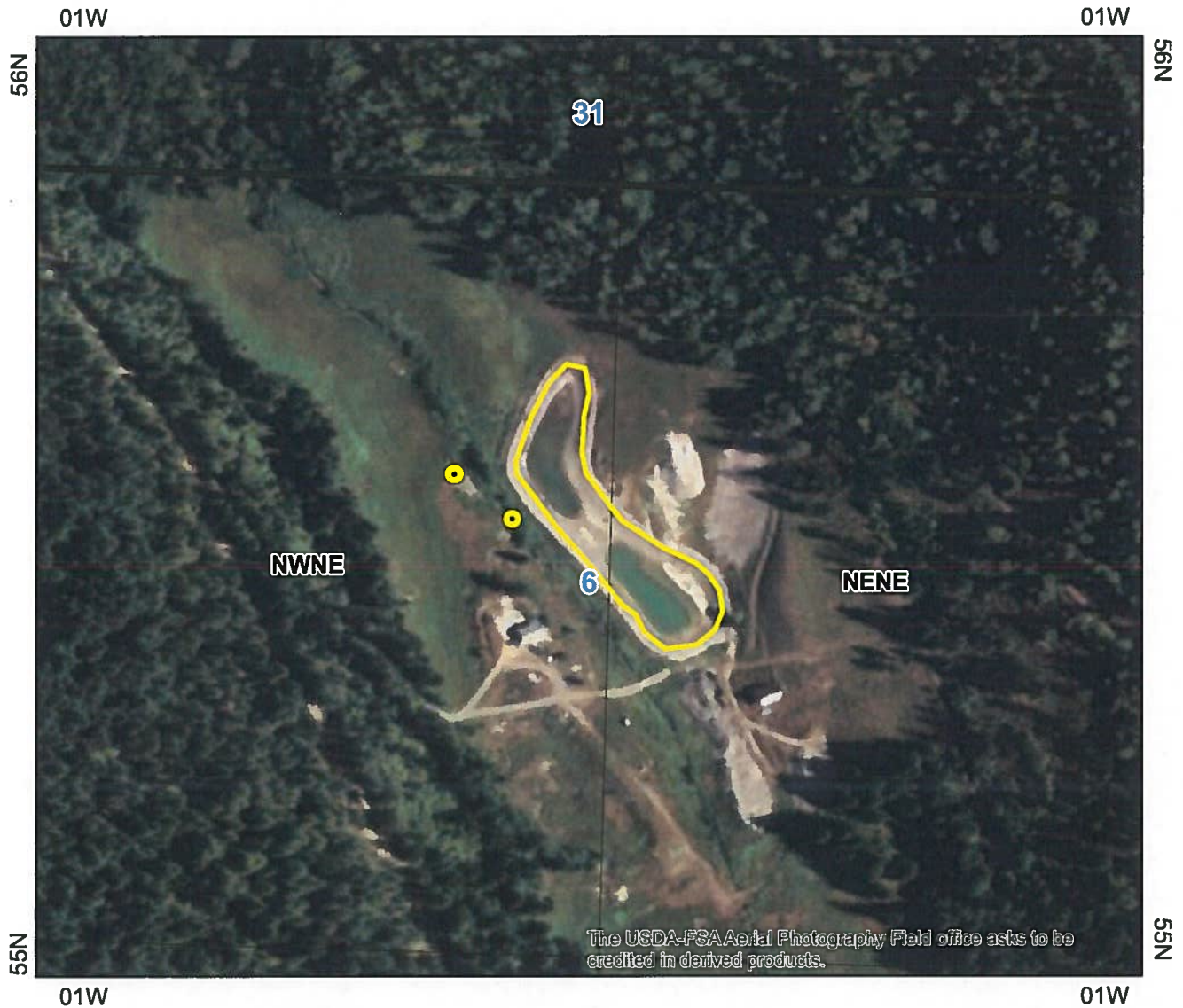
 Change P.U. as reflected above Add P.U. as reflected above X None

I. AUTHENTICATION

Field Examiner's Name Adam Fink Date 4-14-2017
 Reviewer Morgan Case Date 6-1/2017

State of Idaho
Department of Water Resources
Attachment to Water Field Exam
96-9525

FIRE PROTECTION STORAGE, RECREATION STORAGE, WILDLIFE STORAGE, and IRRIGATION STORAGE



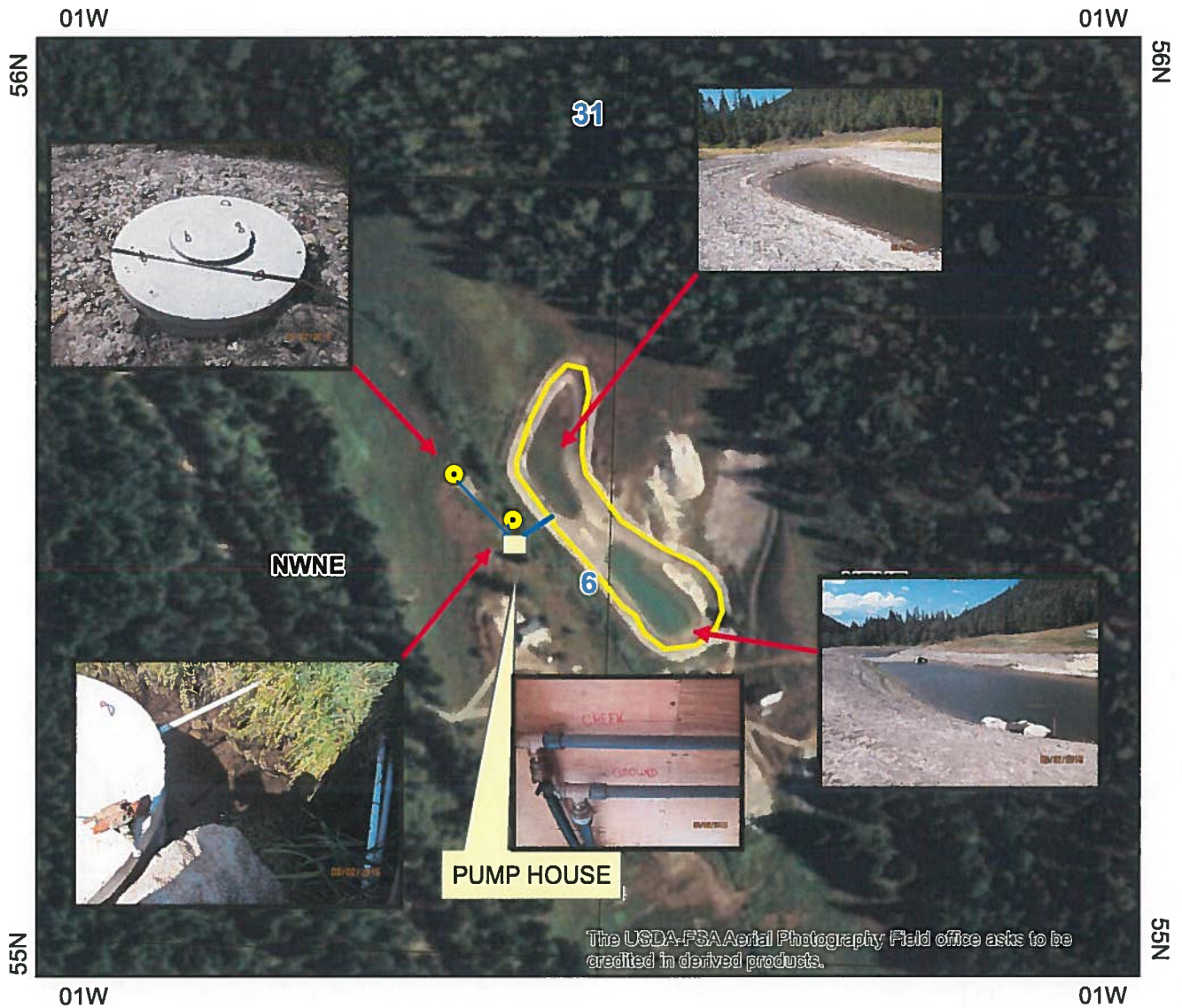
-  Point of Diversion
-  Place Of Use Boundary
-  Townships
-  PLS Sections

0 0.035 0.07 0.14 Miles



State of Idaho
Department of Water Resources
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SYSTEM DIAGRAM



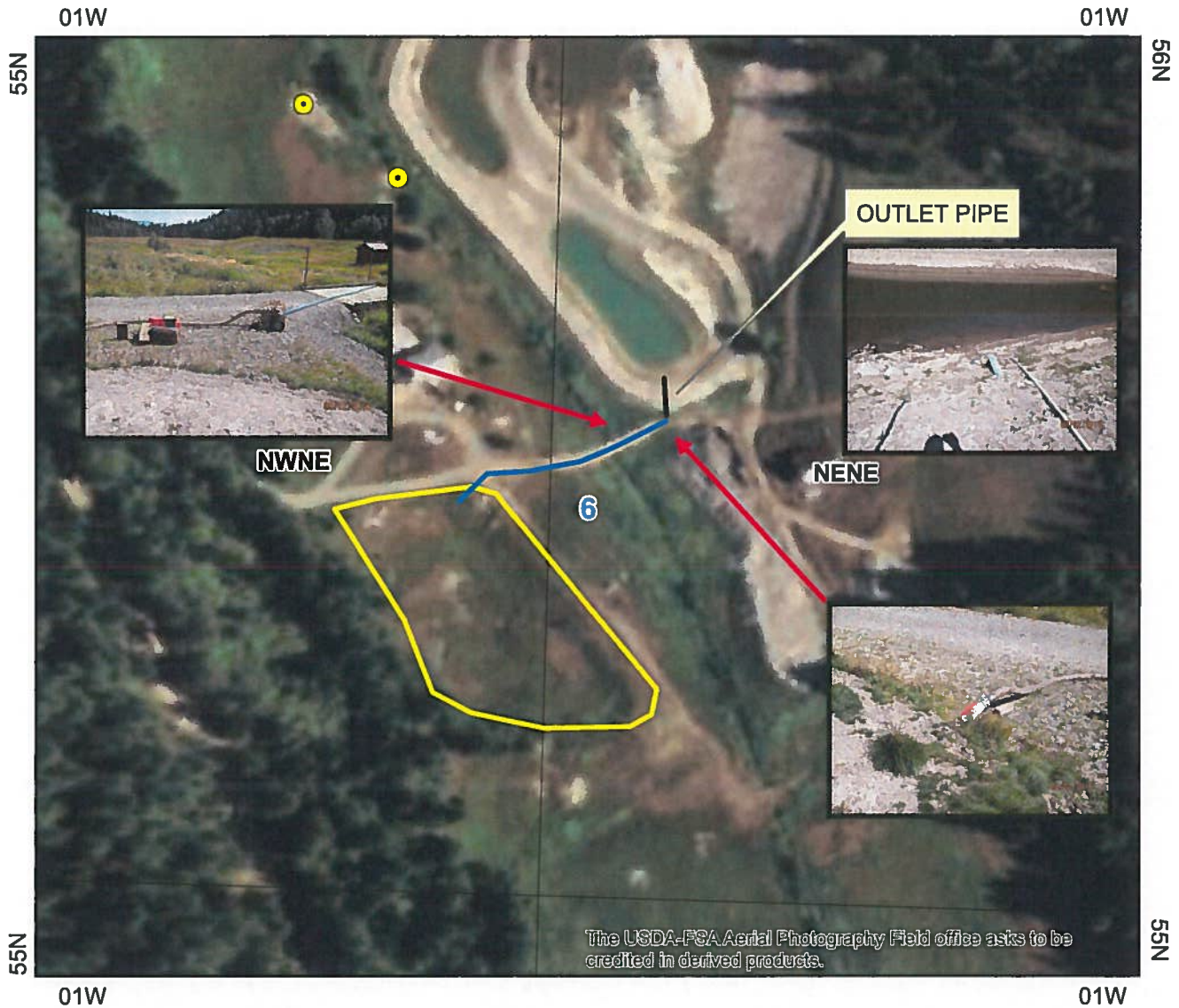
-  Point of Diversion
-  Place Of Use Boundary
-  Townships
-  PLS Sections

0 0.035 0.07 0.14 Miles



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IRRIGATION FROM STORAGE / SYSTEM DIAGRAM



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

0 0.0225 0.045 0.09 Miles



Total Storage Calculations

FILE NUMBER	96-9525
REVIEWER	Adam Frederick
DATE	4/12/2017

This spreadsheet has been designed by Idaho Department of Water Resources to estimate the total seepage, evaporation and fill capacity required for a pond.

User Input
Calculated value
Formula Explanations

Surface Area (AC.)	1.4	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	6.5	"Average Pond Depth" depicts the actual depth of the pond either measured or estimated. Note: If you know the maximum depth and not the average depth, the Field Examiner's Handbook suggests multiplying the maximum depth by 0.4 to get the average depth, or you can use any method that seems reasonable to attain average depth.
Pond Capacity (AF)	9.1	Pond Capacity is calculated by multiplying the Pond Surface Area by the Average Pond Depth. If you know the capacity, divide the capacity by surface area and enter the average pond depth in the space above. Note: If pond capacity is determined using a method shown on the "Pond Capacity" sheet, the user may need to modify the value of "Pond Capacity" (cell B9) manually. Note that if the value is modified manually, the formula will be altered for future use.
Multiple Fill Volume Above Initial Fill to Fulfill From Storage Needs- "Multiple Fills" (AF)	3.3	The "Multiple Fill Volume Above Initial Fill" is the acre-feet of water required to meet a <i>from storage</i> component if the <i>from storage</i> component exceeds a one time fill. This section should not include the amount of water needed to fill the pond initially or the amount of water needed to maintain the pond level due to evaporation or seepage. For example: if a pond has a capacity of 5 acre feet and 2.5 acre feet of seepage and evaporation, but the pond is used for irrigation that requires 10 acre feet of from storage for the irrigation use, then you would insert 5 acre feet into this location (10 acre feet needed - 5 acre feet from the initial fill = 5 acre feet of additional storage needed). Note: You must have a "From Storage" component exceeding the initial fill on the permit to include a volume in this space.
Estimated Seepage Loss (AF)	10.2	The "Estimated Seepage Loss" is automatically carried over from the "Seepage Loss" sheet.
Estimated Evaporation Loss (AF)	1.6	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	24.2	The "Total Volume Required" is calculated by adding the Pond Capacity, Multiple Fills, Seepage Loss, and Evaporation Loss amounts to determine the total amount of storage required.

Flow Rate Into Pond (CFS)	0.04	The "Flow Rate into Pond" depicts the actual flow, either measured or estimated, into the pond. For offstream facilities, this will be equivalent to "diversion to storage" rate.
Highest Daily Evaporation Rate From Evaporation Tab. (mm/Day)	3.34	This number is carried over from the "Evaporation Loss" sheet. It is the highest recorded number in the "Precipitation Deficit Table".
Required Daily Maintenance Volume (AF/Day)	0.04	"Required Daily Maintenance Volume" is the maximum volume of water needed on any given day during the year to maintain pond volume. It is calculated by adding the highest daily evaporation loss to the average daily seepage loss in acre feet. The average daily seepage loss is calculated by dividing the "Estimated Seepage Loss" by 365 days. This is acceptable, since the seepage rate shouldn't vary throughout the season unless the pond completely freezes over during the winter months. The highest daily evaporation loss is calculated by dividing the Highest Daily Evaporation Rate by the 304.8 conversion factor and multiplying this number by the pond surface area to attain a combined daily acre feet requirement.
Minimum Maintenance Flow (CFS)	0.02	The "Minimum Maintenance Flow" is the minimum amount of flow required to maintain the level of the pond. This number is determined by dividing the "Maximum Required Daily Maintenance Volume" by 1.9835. This flow can be used to determine if the flow rate into the pond is adequate to maintain the pond level.
Days Required to Fill the Pond	253	The "Days Required to Fill the Pond" is calculated by dividing the "Pond Capacity" by the "Flow Rate" minus "Minimum Maintenance Flow" multiplied by 1.9835. This section will assist you in determining if the flow rate being diverted to the pond is adequate to fill the pond while maintaining the pond level. The length of time to fill the pond will help determine if the flow rate is adequate for the size of pond being proposed. <i>If this number is approximately 6 months (180 days) or more, the reviewer should have a discussion with the applicant to make sure he/she understands that it will take a significant length of time to fill the pond.</i>
Days Required to Fill the Pond at 13,000 Gallons per Day	-2642	Some water users may want to fill a pond under the 13,000 gallons per day domestic exemption. The "Days Required to Fill the Pond at 13,000 Gallons per Day" is calculated by converting the "Pond Capacity" and the "Required Daily Maintenance Volume" to gallons. The "Pond Capacity" is then divided by 13,000 gallons minus the "Required Daily Maintenance Volume" in gallons to determine the number of days to fill pond. <i>If this number is approximately 6 months (180 days) or more, the reviewer should have a discussion with the applicant to make sure he/she understands that it will take a significant length of time to fill the pond.</i> Negative values indicate that the supply of 13,000 gallons per day is not enough volume to overcome the required daily maintenance volume; the pond will never fill.

QUICK DISCONNECT CONTROL BOX FEATURES

- Voltage Relays for installer convenience
- 208 volt relay available for low voltage applications
- NEMA 3R enclosure for indoor or outdoor mounting
- Quick disconnect cover design will retrofit with F.E. Q-D control boxes
- 115 and 230 volt models
- Start Capacitors
- Multiple knockouts
- Two ground lugs

AGENCY LISTINGS: 



CENTRIPRO ORDER NUMBERS

Control Box Order Number	HP	KW	Volts	Enclosure Dimensions W x D x H (in)	Shipping Weight (lbs)
CB05411	.5	.37	115	4.8 x 2.9 x 8.4	4
CB05412	.5	.37	230		
CB07412	.75	.55	230		
CB10412	1	.75	230		

Note: 208 Volt starting relay is available as a repair part for 200-208 volt power supplies, 9K461.

CSCR (CAPACITOR START-CAPACITOR RUN) CONTROL BOX FEATURES

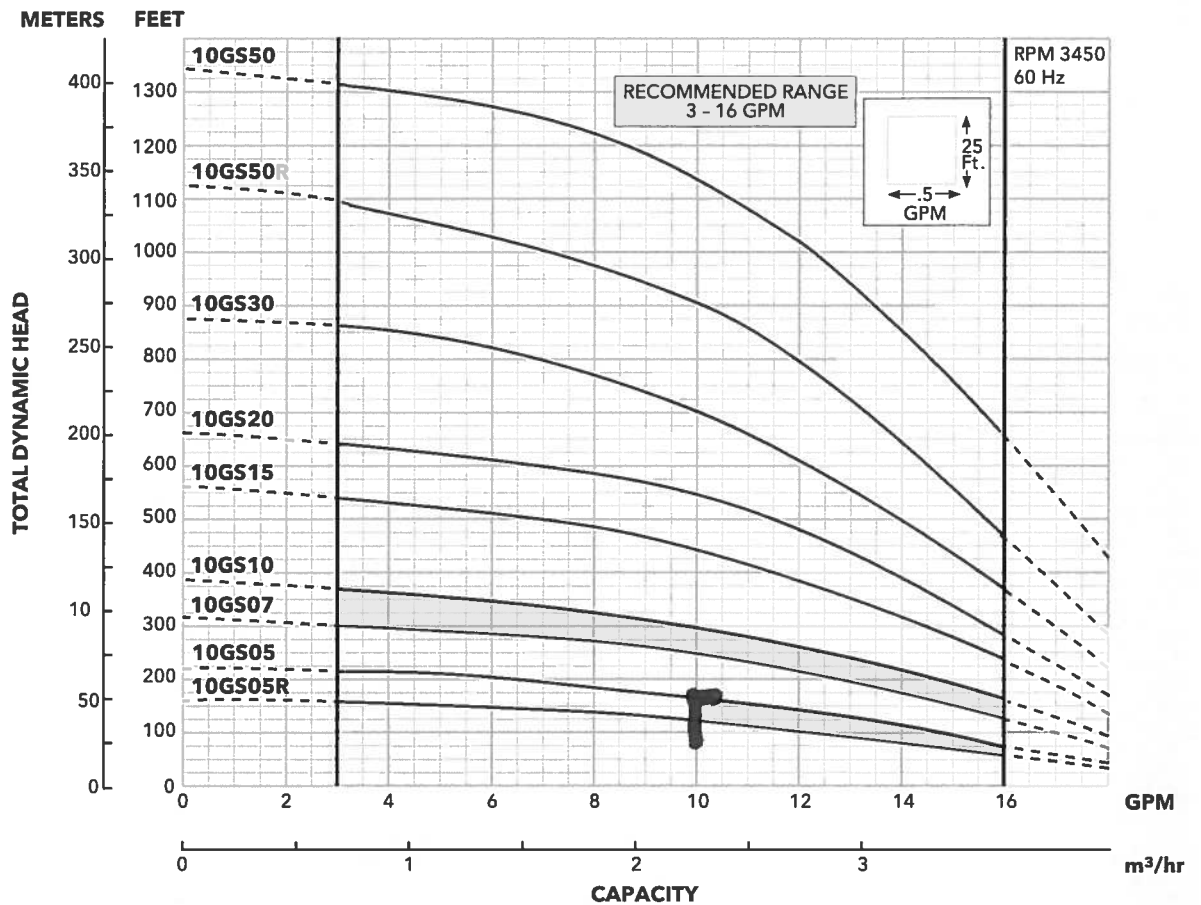
- Voltage Relay for installer convenience
- 230 volt standard models - 208 volt relay, order no. 9K479 is available for low voltage applications
- Start Capacitors for starting torque
- Run Capacitors for efficiency and quiet operation
- Type 3R enclosure for indoor or outdoor mounting
- Accepts up to #2 AWG wire
- Multiple knockouts and two ground terminals
- Higher HP models require heavy duty pressure switches - See Magnetic Contactor version to use standard pressure switches
- Manual reset overloads on 1 1/2 - 5 HP models



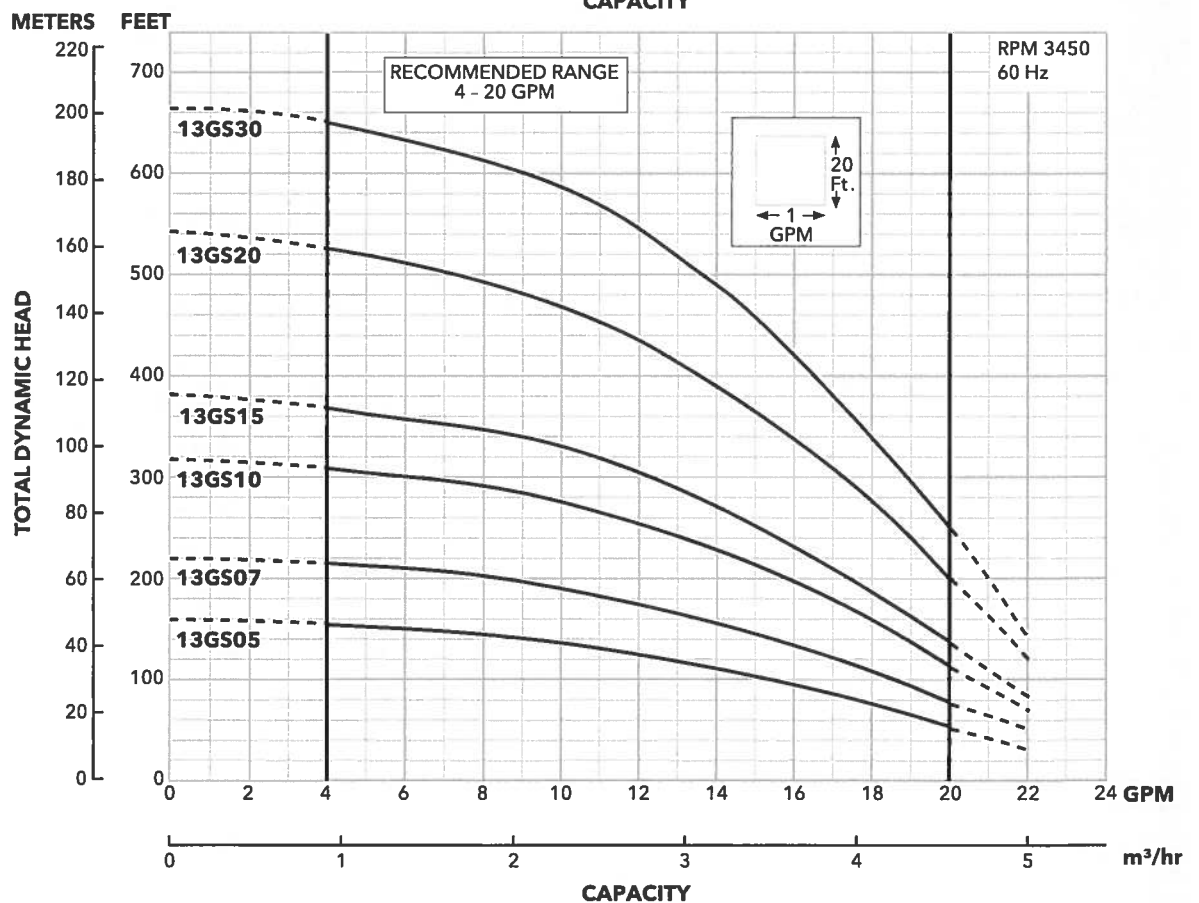
AGENCY LISTINGS:  TESTED TO UL AND CSA STANDARDS BY UL.

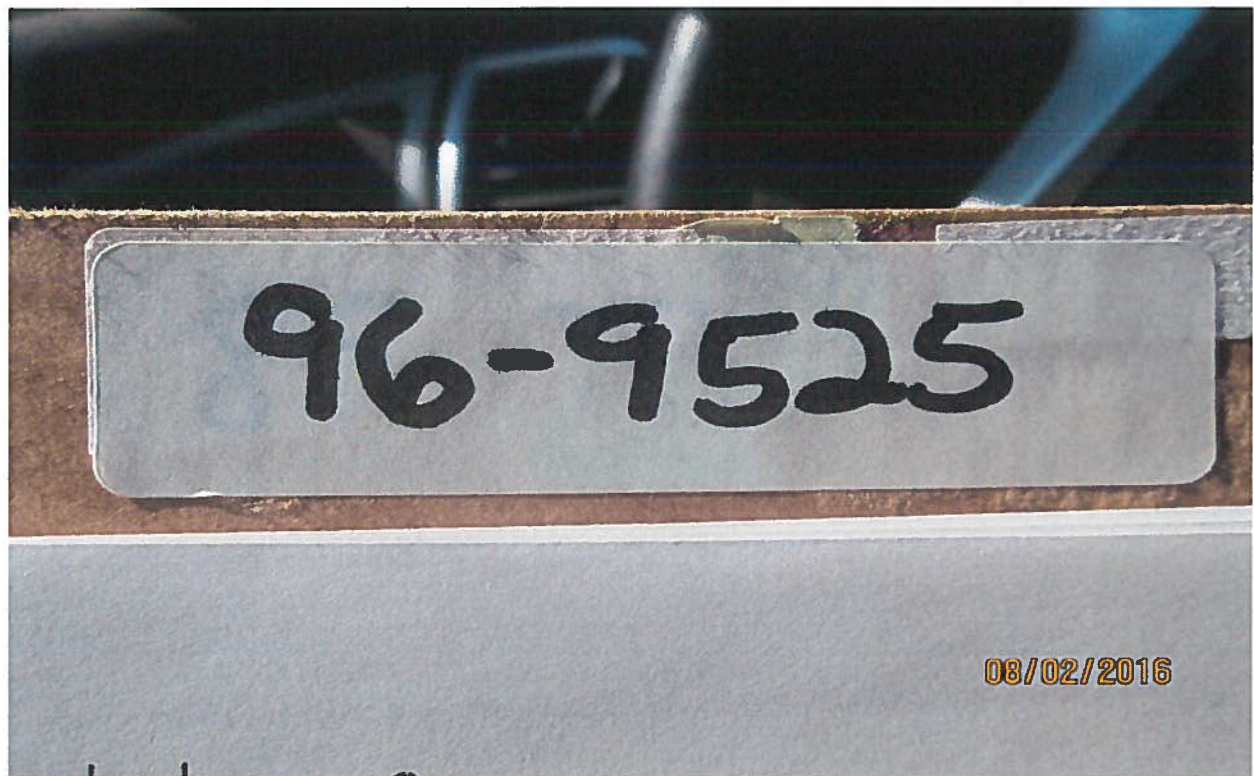
Control Box Order Number	HP	KW	Volts	Enclosure Dimensions W x D x H (in)	Shipping Weight (lbs)
CB05412CR	0.5	.37	230	8.1 x 5.9 x 9.3	7
CB07412CR	.75	.55	230		
CB10412CR	1	.75	230		
CB15412CR	1.5	1.1	230		
CB20412CR	2	1.5	230		
CB30412CR	3	2.2	230		
CB50412CR	5	3.7	230	8.1 x 5.9 x 9.3	8

Model 10GS



Model 13GS





Mirror Creek point of diversion. 1/2hp pump in culvert.



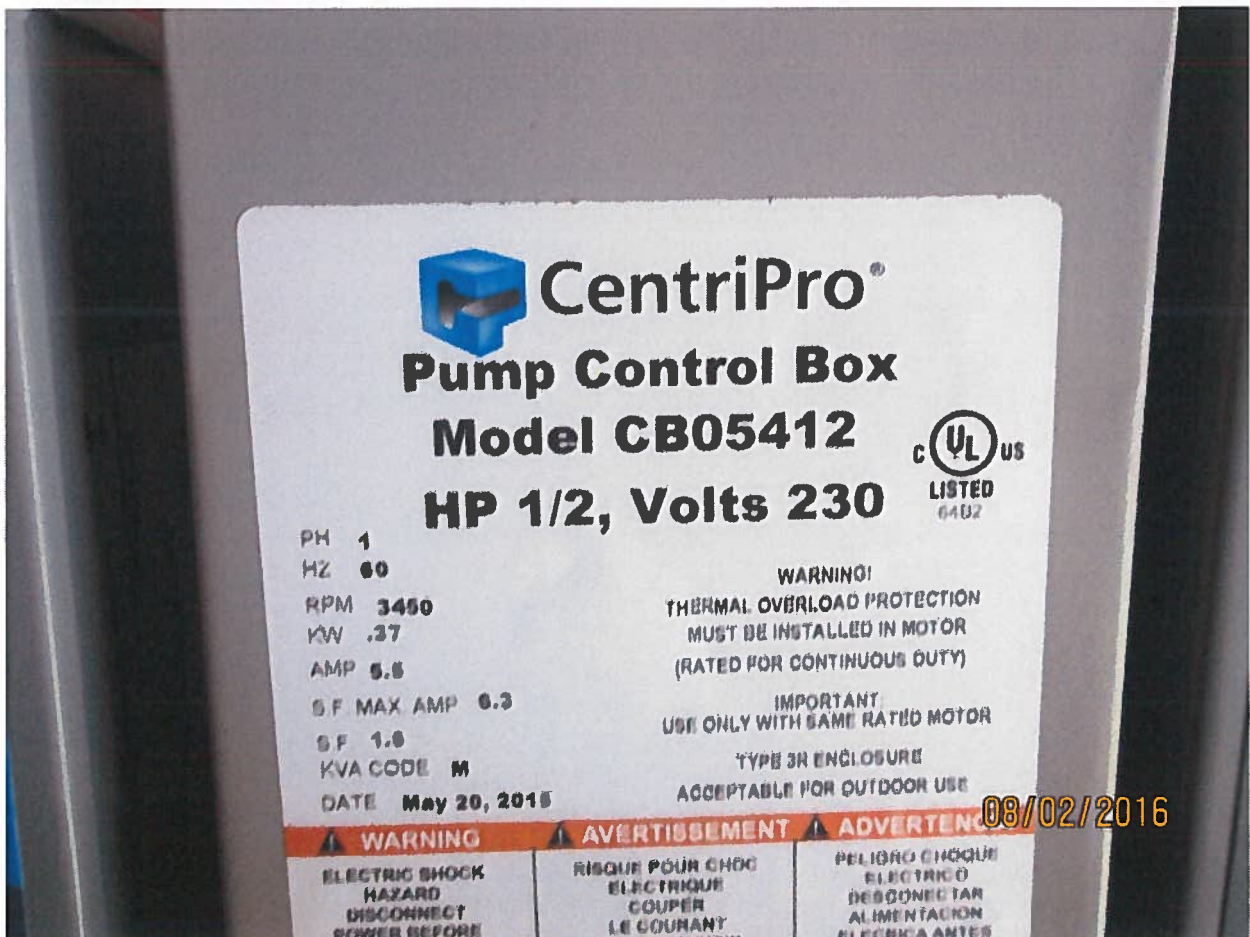
Hand dug cistern well. 1/2hp pump in well.



Water pipes from each source inside pump house.



Backflow preventers on each source prior to pipes combining into one.



1 of 2 pump boxes. Each were identical.





Outlet pipe for irrigation.



Outlet pipe on outside of dam with check valve.



Pump that was used for flood irrigation of swampy wetland area.

