

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 63-34543
Exam Date: 10/1/2019

1. Current Owner:

JOEL HUDSPETH AND SHANTEL HUDSPETH
8050 W INNSBROOK CT
BOISE, ID 83704-4490
(208) 724-4947

2. Accompanied by: JOEL HUDSPETH**3. Source:** GROUNDWATER**Tributary:**

Method of Determination: Field Exam, Well Driller's Report, GIS Wells layer

B. OVERLAP REVIEW**1. Other water rights with the same place of use:** YES Overlap

Water Right No.	Source	Purpose of Use	Basis
63-32221	Groundwater	Municipal	Permit
63-34563	Boise River	Irrigation	Decreed
63-34564	Boise River	Irrigation	Decreed
63-5129	Boise River	Irrigation	Statutory Claim
63-5130	Waste Water	Irrigation	Statutory Claim

Comments: Right 63-5129 and 63-5130 belong to Parma Irrigation District. Right 63-32221 belongs to City of Parma. Rights 63-34563 and 63-34564 belong to the permit holder and are splits from 63-32801 and 63-32803. Two other water right POUs are in the same QQ, but are not on this property.

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

Water Right No.	Source	Purpose of Use	Basis

Comments: None

C. DIVERSION AND DELIVERY SYSTEM**1. Point(s) of Diversion:**

GROUND WATER SW ¼ SE¼, Sec. 8, Twp 05N, Rge 05W, B.M.

Canyon County

Method of Determination: Field Exam, Well Driller's Report

2. Place of Use:

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
05N	05W	8															X		

Total Acres:

Method of Determination: Field Exam, Google Earth imagery 7/19/2018

3. Supporting Documents:

- ☒ 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. Diversion Pumps

Well or Diversion ID No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
D0080219	Leeson	1	L17J200041		

D. FLOW MEASUREMENTS**1. Equipment**

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Bucket	Plastic				5 gal	

- 2. Measurement Description:** Timed the fill of a 5-gallon bucket from a 1-inch hose at the place of use. The bucket took 5:46 seconds to fill.

E. FLOW CALCULATIONS

_____ Additional Computation Sheets Attached

Measurements:

5:46 seconds (or 5.75 seconds) to fill 5 gallon bucket::

5 gallon bucket / 5.75 seconds = .869 gallons per second

.869 gallons per second x 60 seconds = 52.14 gallons per minute

52 gpm / 448.4 (conversion factor) = 0.1 cfs (Permit limits diversion rate to 0.1 cfs.)

I recommend a diversion rate of 0.1 cfs.

F. VOLUME CALCULATIONS

See attached Storage, Seepage and Evaporation Calculations.

Total Pond Capacity = 2.4 AF

Estimated Seepage Loss = 0.6 AF

Estimated Evaporation Loss = 0.7 AF

TOTAL: 3.7 AF

I recommend a total volume of 3.7 AF.

G. NARRATIVE/REMARKS/COMMENTS

The owner created a circular berm about 4 feet high to hold the water in the pond that encompasses approximately one acre. Approximately 1/4 of the circular area is at a higher elevation that stays dry and includes a hunting blind in the center. The pond is filled to a water height of 2 to 3 feet in the fall and then drained in the spring so that wild millet and other grains can be grown over the summer to feed waterfowl. There is no through-flow for the pond, so the Wildlife use on the permit was removed for licensing. The earth in the berm is moved to drain and to fill the pond. On the day of the field exam (October 1) the owner began filling the pond for the season.

The 1 hp well pump is inside a steel cargo container adjacent to the well. A pit-less adapter was used in the well and the line from the well was brought up into the container to the pump. From the pump, the line goes out of the container, down about 3 feet and out to the pond about 250 feet away.

Since the development of this permit the owner has created other berms on his property that are not ponds. The remaining property is flood irrigated using his overlapping irrigation rights.

Have conditions of permit approval been met? X Yes No

H. RECOMMENDATIONS**1. Recommended Amounts**

Beneficial Use	Period of Use	Rate of Diversion	Volume
WILDLIFE STORAGE			3.7 AF
DIVERSION TO STORAGE		0.1 CFS	

Totals: 0.1 CFS 3.7 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

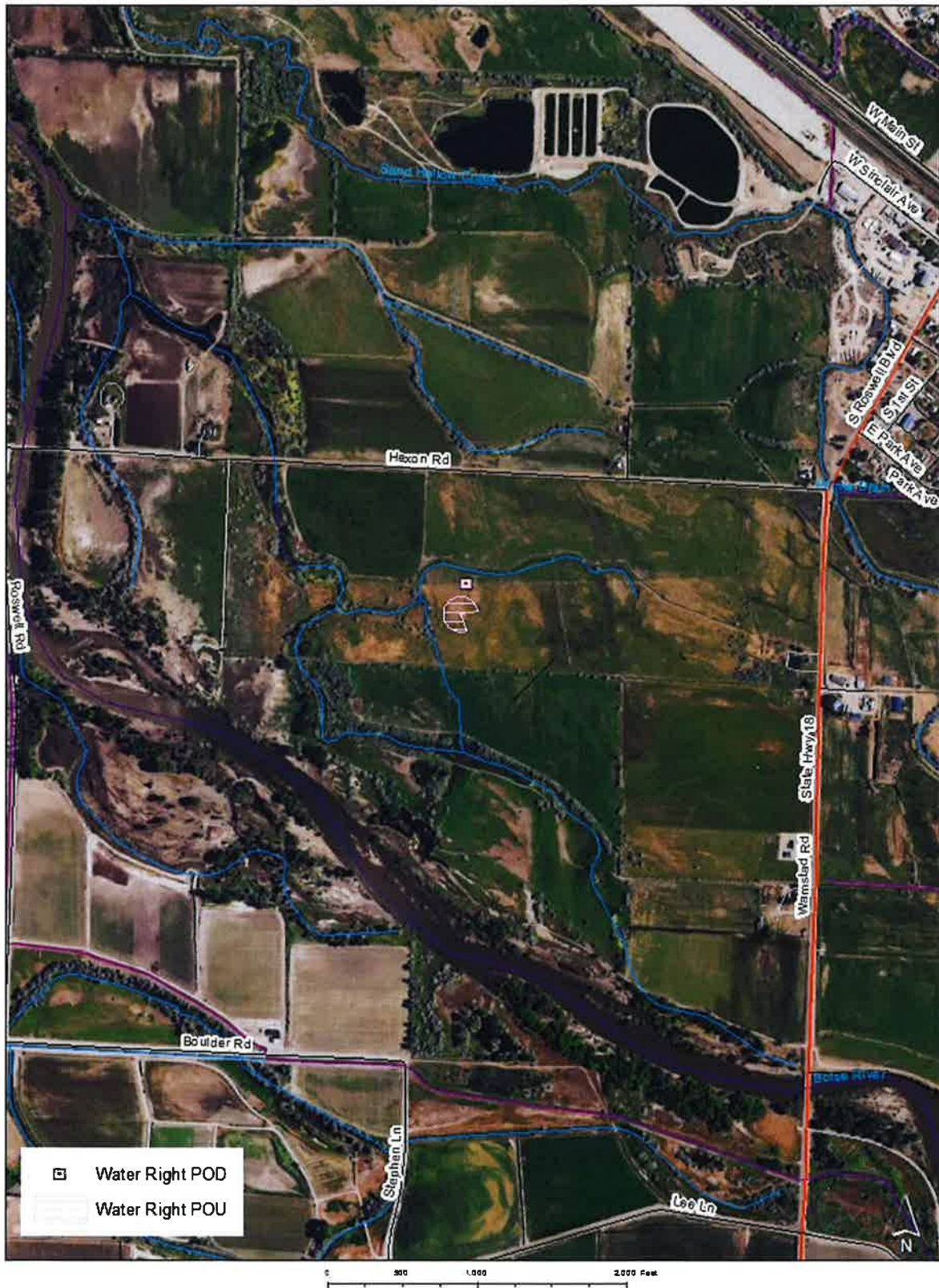
Field Examiner's Name Paula J. Dillon Date 10/31/2019

Paula Dillon, GIS Analyst II

Reviewer Dan Nelson Date 10-31-19

Dan Nelson, Water Allocations Analyst III

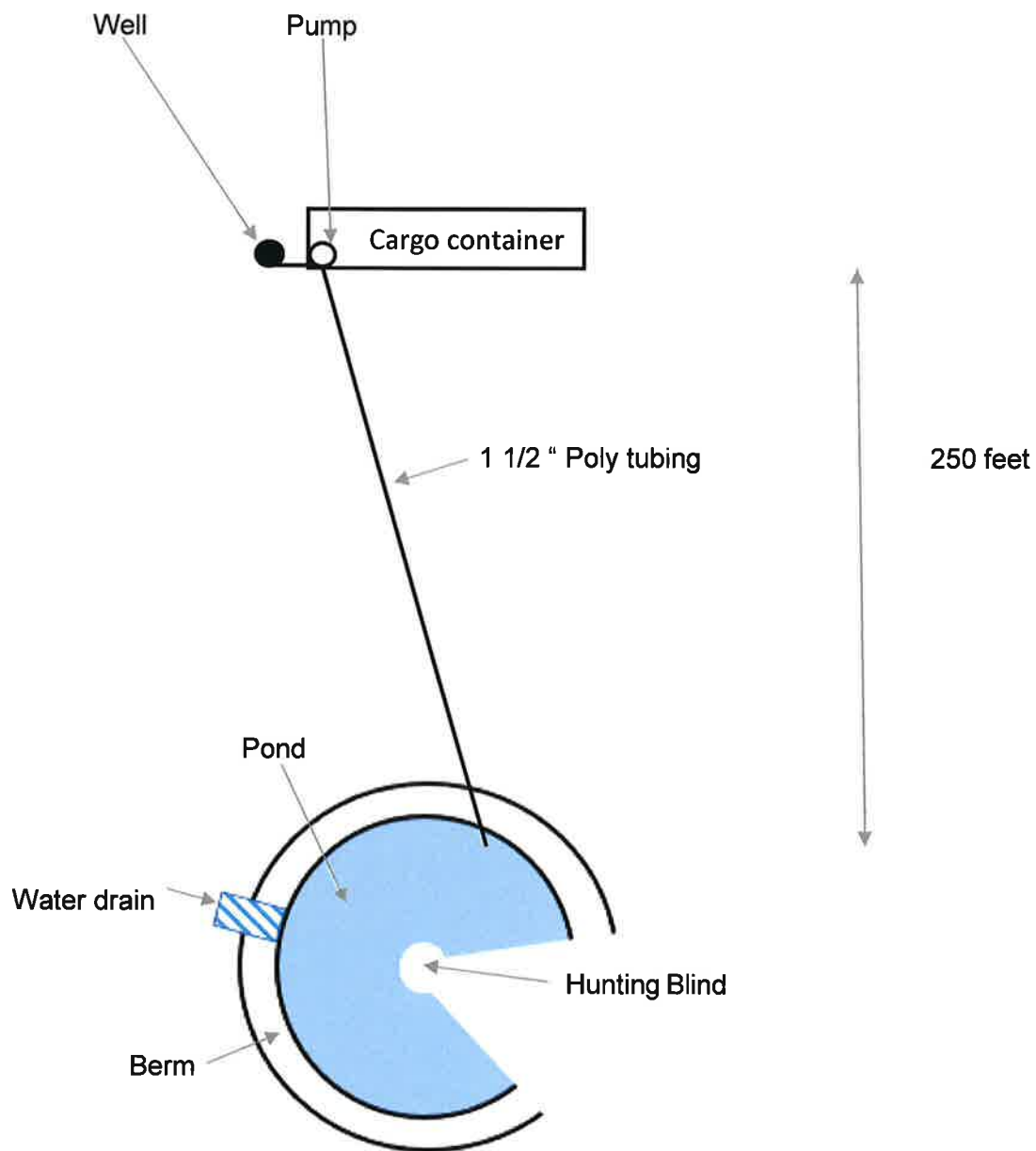
Maps



Google Earth imagery showing the berm and pond area with acres; cargo container to the north.



System Diagram



Total Storage Calculations

FILE NUMBER	63-34543
REVIEWER	Paula Dillon and Da
DATE	8/17/2018

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.)	0.8	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	3	"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)	2.4	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)	0	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 " <u>From Storage</u> " component exceeding the initial fill on the permit to include a volume in this space.
Estimated Seepage Loss (AF)	0.6	The "Estimated Seepage Loss" is automatically carried over from the "Seepage Loss" sheet.
Estimated Evaporation Loss (AF)	0.7	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	3.7	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.

Total Storage Calculations (Continued)

Flow Rate into Pond (CFS)	0.10	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)	3.14	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)	0.01	"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)	0.00	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	13	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. 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.
Days Required to Fill the Pond at 13,000 Gallons per Day	80	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. 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. 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.

Seepage Loss Calculations

This spreadsheet has been designed by Idaho Department of Water Resources to estimate the total annual seepage losses from a pond.

FILE NUMBER	63-34543
REVIEWER	Paula Dillon and Dan Nelson
DATE	8/17/2018

User Input
Calculated value
Formula Explanations

INPUTS

Pond Surface Area (AC.)	0.8	AC.
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Pond Surface Area (SQ. FT.)	34848	SQ. FT.
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I used the following method to obtain my Soil Classification information:	NRCS Web Soil Survey	
My Soil Classification is	CL	
Suggested Seepage Rate (FT./DAY)	0.0030	FT./DAY

Formula: (Surface Area X Seepage Rate) X 7.48 = Gallons Per Day Loss
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Convert to GPD	782	GPD
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Total Seepage Loss (AFA)	0.6	AFA
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Though sand and gravel seepage rates may actually be higher, the maximum allowable rate is 0.2 ft/day, pursuant to Administrative Memo "Seepage Loss Standards for Ponds and Reservoirs."

Suggested Seepage Rates for Different Soil Types:

GW, GP, GM, GC, SW, SP and SM (silty sand, sand silt mixtures and gravel mixtures) = 0.2 ft per day

OL and ML (inorganic silts - very fine sands, silty, or clayey fine sands) = 0.02 ft per day

SC (clayey sands, sand clay mixtures) = 0.007 ft per day

CL (Low to medium plasticity clays) = 0.003 ft per day

MH, OH, PT and CH (high plasticity clays) = 0.0003 ft per day

LINED PONDS (liners can be chemical, fabric, or bentonite) = 0 ft per day

Ponds Intercepting Groundwater (excavated ponds filled by ground water) = 0 ft per day

PLEASE NOTE: The initial basis for the Suggested Seepage Rates in the table above is found on Page 16 of Seepage from Fish Ponds, Bulletin 599, August 1989 Alabama Agricultural experiment Station, Auburn University, Auburn University Alabama. If you don't know the soil type, please refer to the map provided at the NRCS Web Soil Survey (Tab #1), an ArcMap Soil Classification Map (Tab #1.1), or published NRCS Soil Survey (Tab #1.2). Use "0" if the pond fill relies on the water table.

Evaporation Loss Calculations

This spreadsheet has been designed by Idaho Department of Water Resources to estimate the annual evaporation losses from a pond.

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User Input
Calculated value
Formula Explanations

The acronyms used on the Kimberly Research Center website are defined below:

P = Precipitation
ET = Evapotranspiration
P _d = Precipitation deficit
P _d = ET - P

USING THIS SPREADSHEET

Use the link below to access the Kimberly Research Center website. This website provides the Precipitation Deficit for a station most representative of the pond under examination. The Precipitation Deficit is the total amount of free water surface evaporation minus the precipitation for a given area, which gives the total amount of evaporative losses incurred by the pond. There are several weather sites that are used throughout the state. IDWR staff can find the nearest site using Arc Map. The shape file containing the sites can be found at X:/Spatial/Climate/ETIdahostations.shp.

Instructions:

1. Use the link below to navigate to ET Idaho 2012.
2. Select the station which is most representative to your pond location.
3. Click Submit Query.
4. Under "Land Covers with Evapotranspiration Estimates," select "Open Water - Shallow Systems (ponds, streams)" or "Open Water - small stock ponds" depending on the pond size.
5. Click the link to "Precipitation Deficit."
6. Reference and copy (ctrl + C) the first subheading "Mean" values.
7. Click the "Paste Values from ET Idaho" button. The table will automatically enter a zero (0) for any negative precipitation deficit values.

Found at: <http://data.kimberly.uidaho.edu/ETIdaho/>

Precipitation Deficit

Station: *PARMA EXP. STA. (NWS -- USC0010484)*
Twin Falls 2 NINE (NWS -- 109294)

Month	mm/day ¹	Days per month	mm/Month
Jan	-0.59	31	0.00
Feb	0.22	28	6.16
March	1.22	31	37.82
April	2.54	30	76.20
May	3.14	31	97.34
June	0.00	30	0.00
July	0.00	31	0.00
August	0.00	31	0.00
September	0.00	30	0.00
October	1.49	31	46.19
November	-0.02	30	0.00
December	-0.61	31	0.00

PLEASE NOTE: The seasonal average for precipitation deficit should not be used for calculations because precipitation often exceeds evaporation during wetter months of the year. If the pond is kept full, excess precipitation during wetter months does not serve to refill the pond during drier months.

For example, see Sandpoint KSPT (NWS -- 108137), the annual precipitation deficit is -106 mm. However, April through September have positive precipitation deficit values. To properly estimate the annual volume of water necessary to refill a pond due to evaporation losses, the table will automatically enter a zero (0) for each month that the precipitation value is reported as a negative value.

As described above, precipitation offsets evaporation in winter months, so the net effect is that wintertime precipitation deficit is usually zero.

Total mm/year = **263.71**

$$((\text{mm/yr}) \div (\text{convert to feet})) \times (\text{Surface area of pond, in acres}) = \text{Evaporation Loss in Acre Feet}$$

(**263.71**) ÷ **304.8**) X **0.80** = **0.7 AFA**

Photos

Pump inside container. Input from well on right, output on left.



Pump info.



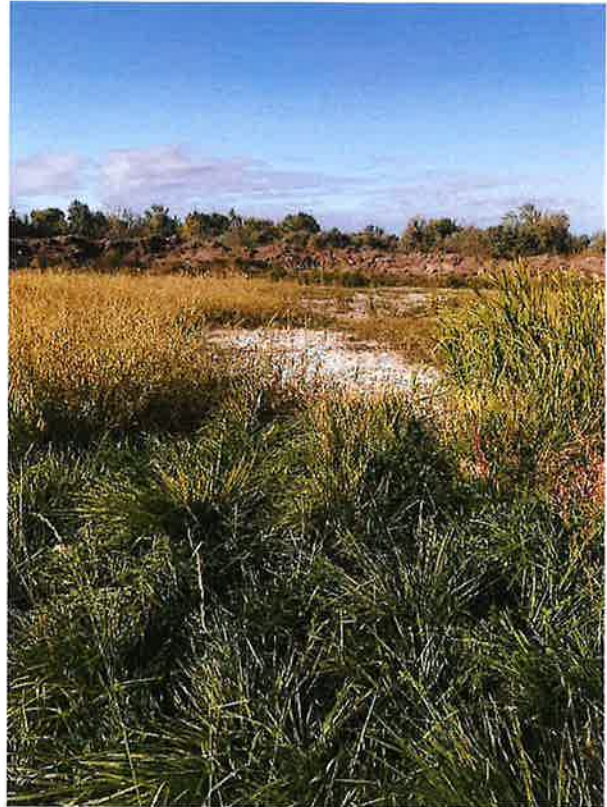
Dtag on well.



At the pond looking north toward the container and well.



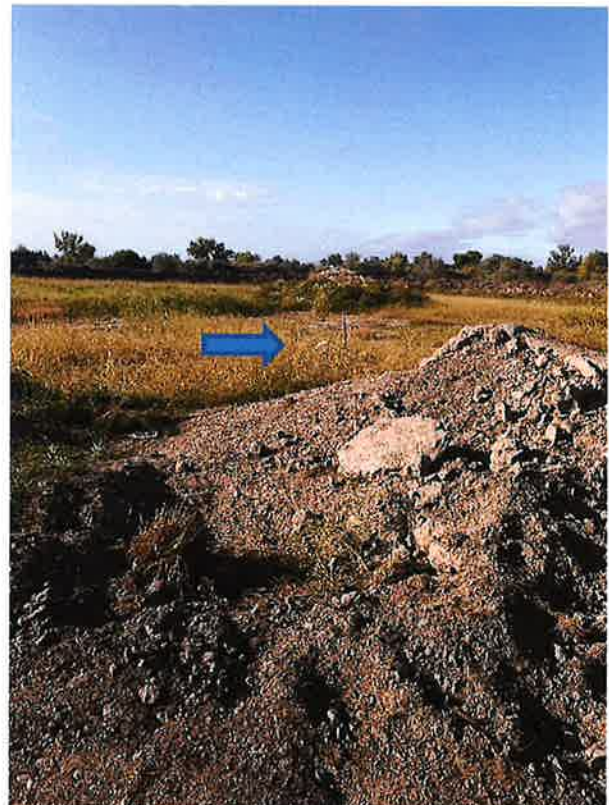
Water from well filling the pond.



Inside the empty pond.



Inside the empty pond.



Approaching pond from the north. The mound in the center is the hunting blind. The water hose is directly in front of the blind. The berm is in the foreground to the right.