

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 74-15964
Exam Date: 7/21/2016

1. Current Owner:

MARY STEPHENSON 30 N BAKER RD SALMON ID 83467-5170 (208)756-4109 And/Or

GORDON STEPHENSON 30 N BAKER RD SALMON ID 83467-5170 (208)756-4109

2. Accompanied by: Gordon Stephenson

Phone No: (208)756-4109

Address: 30 N Baker RD

Relationship to Permit Holder: Permit Holder

3. SOURCE:

GROUND WATER
WASTE WATER

TRIBUTARY:

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:

GROUND WATER SW¼SW¼ Sec. 34, Twp 21N, Rge 23E, B.M. LEMHI County

WASTE WATER L4 (NW¼NW¼) Sec. 3, Twp 20N, Rge 23E, B.M. LEMHI County

Method of Determination: GIS and onsite visit

2.

PLACE OF USE: AESTHETIC STORAGE, RECREATION STORAGE, FISH PROPAGATION

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
20N	23E	3						X											
21N	23E	34						L 4					X						

DIVERSION TO STORAGE same as FISH PROPAGATION

Method of Determination:

3.

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

X 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
NA					

*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
FlowTracker		SonTek				

2. Measurements:

E. FLOW CALCULATIONS X Additional Computation Sheets Attached

Measured Method: I used a FlowTracker to measure the waste water as it flowed onto the property

Measured 0.39 cfs

Permit allows 0.05 cfs

Recommended Rate: 0.05 cfs**F. VOLUME CALCULATIONS**

1. Volume Calculations for Irrigation: NA

 $V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$ $V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 =$ $V = \text{Smaller of } V_{IR} \text{ and } V_{DR} =$ X Additional Computation Sheets Attached

2. Volume Calculations for Other Uses: See attached Pond calculation spreadsheet

Volume limited by permit

Recommended Fish Propagation: 24.0Recommended Aesthetic Storage: 24.0Recommended Recreation Storage: 24.0**G. NARRATIVE/REMARKS/COMMENTS**

Two sources supply water for this right. The pond was excavated for gravel in 2000 and 2001 and is unlined. Water seeped into the pit and if there is no water from another source, there will still be some water in the pond. Wastewater provides the second source. The L13 is approximately 2,300 feet upstream from the pond. The wastewater comes from a lateral off the L13 ditch and flows through the neighbors property.

During the field exam, Mr. Stephenson said that the pond could be 2 to 3 feet deeper. They try to maintain the outflow equal to the inflow. If they fill the pond too deep they get water in the crawl space under their house. The house is approximately 65 feet from the pond. The depth ranges from 6 to 8 feet, with 10 feet being the deepest.

The screen on the pond outlet is relatively new. The old one rusted and the fish they kept in the pond escaped. According the Mr. Stephenson, the new screen was made to Fish and Game specifications. There is an old ditch between the pond and the river, near the outlet of the pond. This is the old channel for the L11 diversion. Water flows underground from the pond to the Lemhi River.

12" pipe ~600 feet

The permit includes condition 029 which states: *Prior to the diversion and use of water under this approval, the right holder shall install a functioning fish screen approved by the Idaho Department of Fish and Game on the pond outlet structure.* The permit holder complied (see attached photographs) and we can drop this condition at licensing.

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

H. RECOMMENDATIONS

1. Recommended Amounts

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
DIVERSION TO STORAGE	03/15 to 11/15	0.05 CFS	
FISH PROPAGATION	01/01 to 12/31		24.0 AF
AESTHETIC STORAGE	01/01 to 12/31		24.0 AF
RECREATION STORAGE	01/01 to 12/31		24.0 AF
	<u>Totals:</u>	0.050 CFS	24.00 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

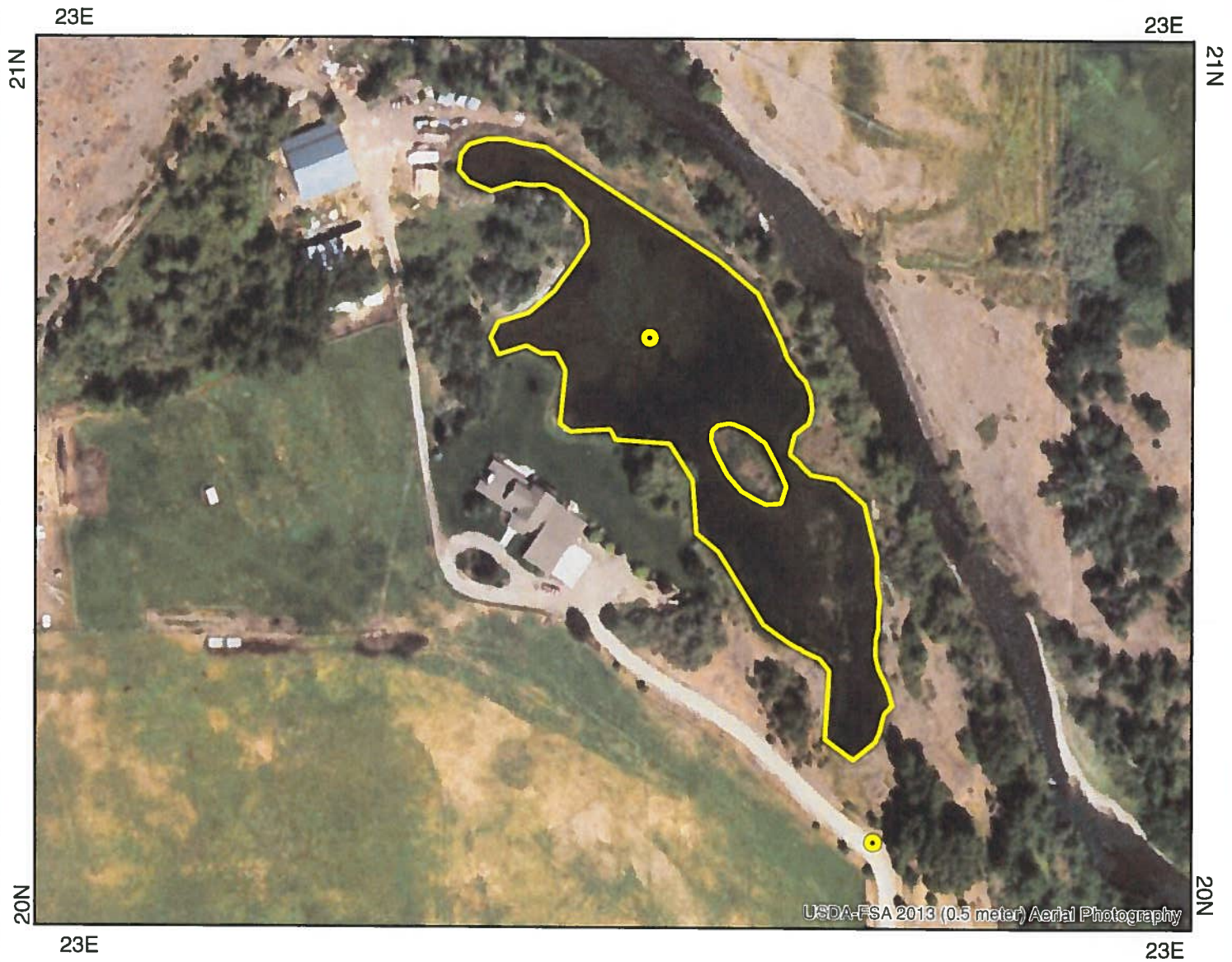
I. AUTHENTICATION

Field Examiner's Name Samuel T. Hill Date 10/18/2016

Reviewer _____ Date _____

State of Idaho
Department of Water Resources
Water Right License
74-15964

This map depicts the AESTHETIC STORAGE and RECREATION STORAGE place of use boundary and point of diversion for this water right at the time of this approval and is attached to the approval document solely for illustrative purposes.



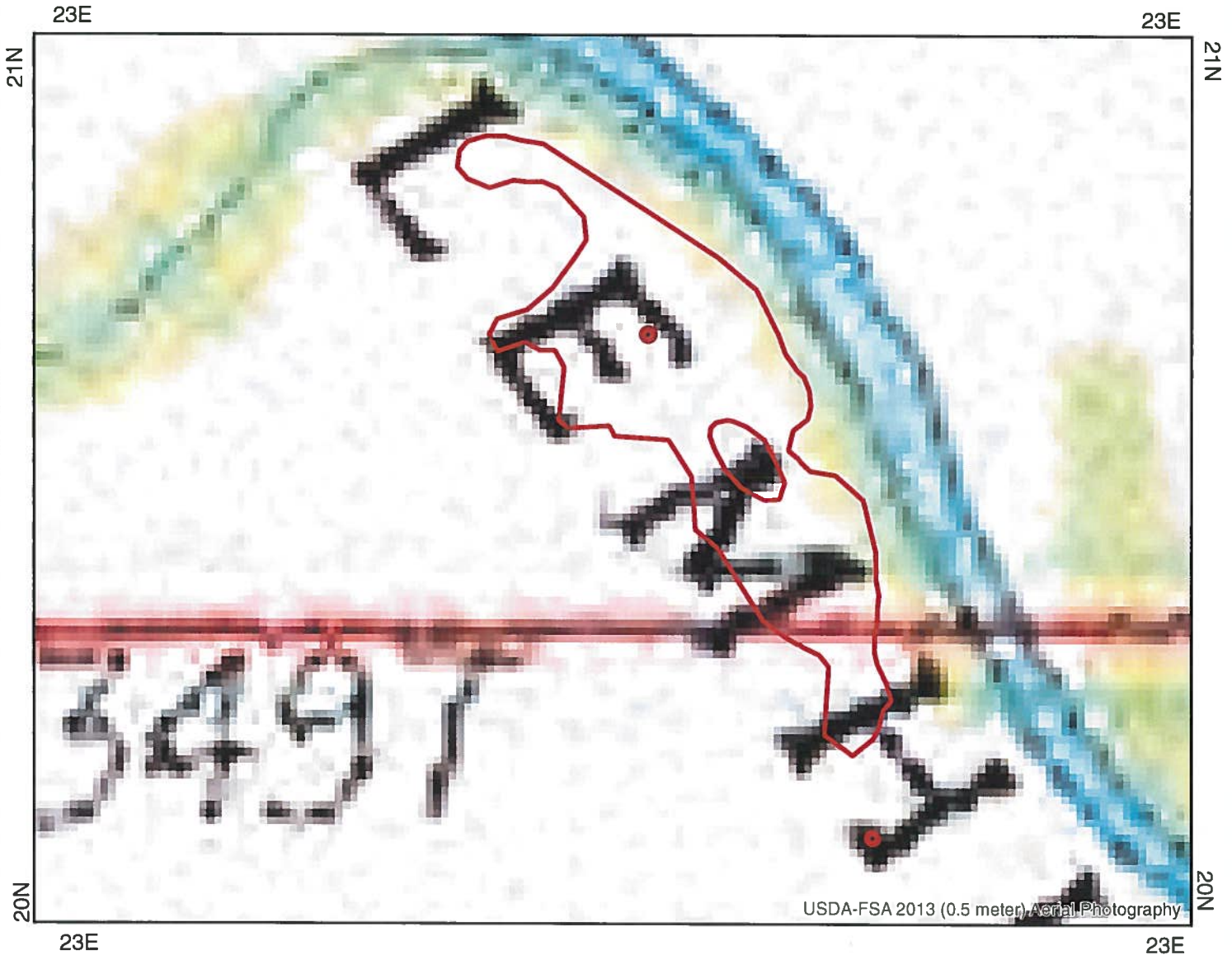
- Point of Diversion
- Place Of Use Boundary



0 500 Feet

State of Idaho
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74-15964

This map depicts the AESTHETIC STORAGE and RECREATION STORAGE place of use boundary and point of diversion for this water right at the time of this approval and is attached to the approval document solely for illustrative purposes.



- Point of Diversion
- Place Of Use Boundary



0 500 Feet

Discharge Measurement Summary

Date Generated: Tue Sep 20 2016

File Information

File Name NOTL13.WAD
Start Date and Time 2016/07/21 16:15:56

Site Details

Site Name
Operator(s) SBT

System Information

Sensor Type FlowTracker
Serial # P4554
CPU Firmware Version 3.9
Software Ver 2.30
Mounting Correction 0.0%

Units (English Units)

Distance ft
Velocity ft/s
Area ft²
Discharge cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.8%	1.6%
Velocity	1.9%	21.0%
Width	0.3%	0.3%
Method	3.8%	-
# Stations	7.8%	-
Overall	8.9%	21.1%

Summary

Averaging Int.	40	# Stations	7
Start Edge	LEW	Total Width	2.300
Mean SNR	37.5 dB	Total Area	0.640
Mean Temp	70.13 °F	Mean Depth	0.278
Disch. Equation	Mid-Section	Mean Velocity	0.6097
		Total Discharge	0.3901

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	16:15	1.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	16:15	1.60	0.6	0.300	0.6	0.120	0.5292	1.00	0.5292	0.135	0.0714	18.3
2	16:17	1.90	0.6	0.350	0.6	0.140	1.1129	1.00	1.1129	0.105	0.1169	30.0
3	16:18	2.20	0.6	0.400	0.6	0.160	0.8488	1.00	0.8488	0.120	0.1018	26.1
4	16:19	2.50	0.6	0.400	0.6	0.160	0.8333	1.00	0.8333	0.120	0.0999	25.6
5	16:20	2.80	0.6	0.400	0.6	0.160	0.0003	1.00	0.0003	0.160	0.0001	0.0
6	16:20	3.30	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

Discharge Measurement Summary

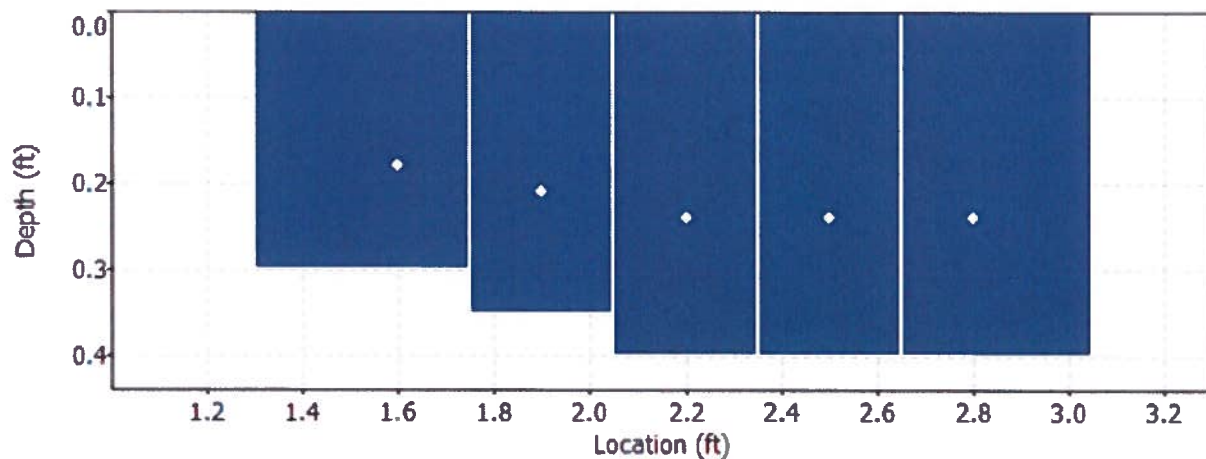
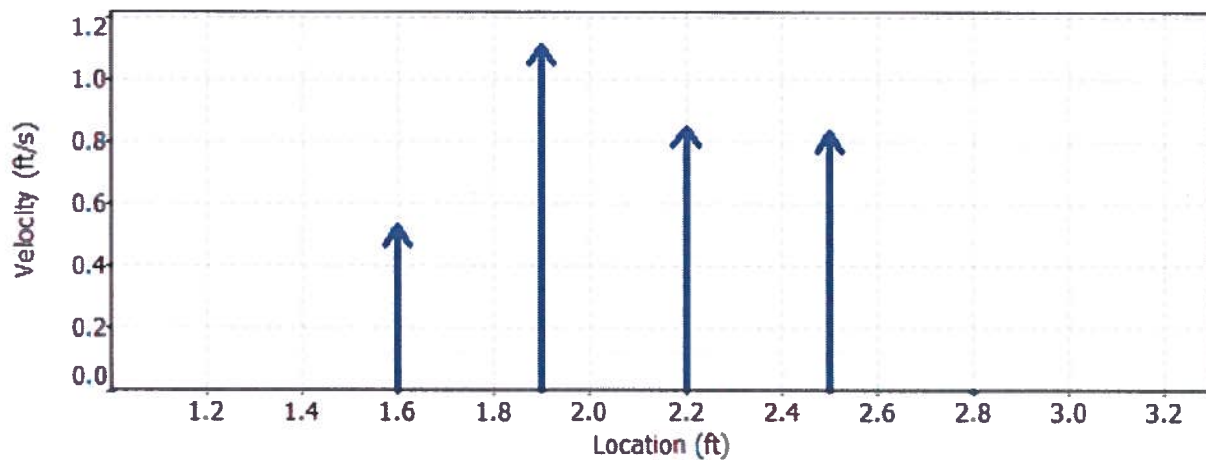
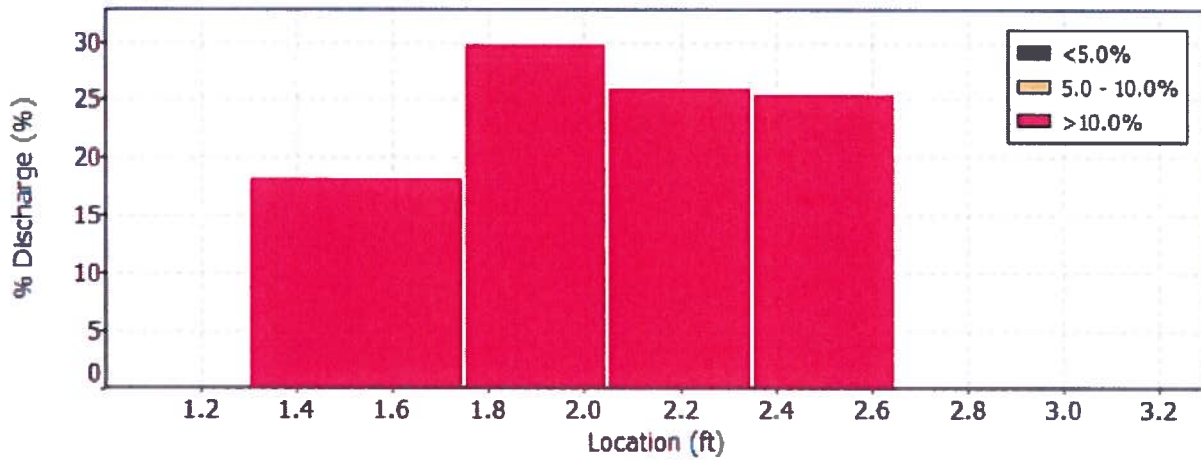
Date Generated: Tue Sep 20 2016

File Information

File Name NOTL13.WAD
Start Date and Time 2016/07/21 16:15:56

Site Details

Site Name
Operator(s) SBT



Discharge Measurement Summary

Date Generated: Tue Sep 20 2016

File Information

File Name NOTL13.WAD
Start Date and Time 2016/07/21 16:15:56

Site Details

Site Name
Operator(s) SBT

Quality Control

St	Loc	%Dep	Message
3	2.20	0.6	Boundary QC is Good; possible boundary interference
4	2.50	0.6	Boundary QC is Fair; possible boundary interference
5	2.80	0.6	SNR (59.5) is different from typical SNR (37.5)

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	74-15964
REVIEWER	Sandra Thiel
DATE	10/17/2016

User Input
Calculated value
Formula Explanations

INPUTS

Pond Surface Area (AC.)	2	AC.
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Pond Surface Area (SQ. FT.)	87120	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	GP	
Suggested Seepage Rate (FT./DAY)	0.0000	FT./DAY

Formula: (Surface Area X Seepage Rate) X 7.48 = Gallons Per Day Loss
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Convert to GPD	0	GPD
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Total Seepage Loss (AFA)	0.0	AFA
--------------------------	-----	-----

This is an excavated pond. When the previous owners dug the gravel pit the hole filled in with water. There is no seepage loss.

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.

FILE NUMBER	74-15964
REVIEWER	Sandra Thiel
DATE	10/17/2016

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: Twin Falls 2 NNE (NWS -- 109294)

Month	mm/day ¹	Days per month	mm/Month
Jan	-0.34	31	0.00
Feb	0.10	28	2.80
March	0.99	31	30.69
April	1.83	30	54.90
May	2.08	31	64.48
June	2.64	30	79.20
July	3.55	31	110.05
August	3.14	31	97.34
September	1.72	30	51.60
October	0.71	31	22.01
November	-0.21	30	0.00
December	-0.45	31	0.00

Total mm/year = 513.07

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.

$$[(513.07 \text{ mm/yr}) \div (\text{convert to feet})] \times (\text{Surface area of pond, in acres}) = \text{Evaporation Loss in Acre Feet}$$

$$(513.07 \div 304.8) \times 2.00 = 3.4 \text{ AFA}$$

Total Storage Calculations

FILE NUMBER	74-15964
REVIEWER	Sandra Thiel
DATE	10/17/2016

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.)	2	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	8	"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)	16	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)	5	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)	0.0	The "Estimated Seepage Loss" is automatically carried over from the "Seepage Loss" sheet.
Estimated Evaporation Loss (AF)	3.4	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	24.4	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)	0.05	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)	3.55	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)	0.02	"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)	0.01	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	211	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	964	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.

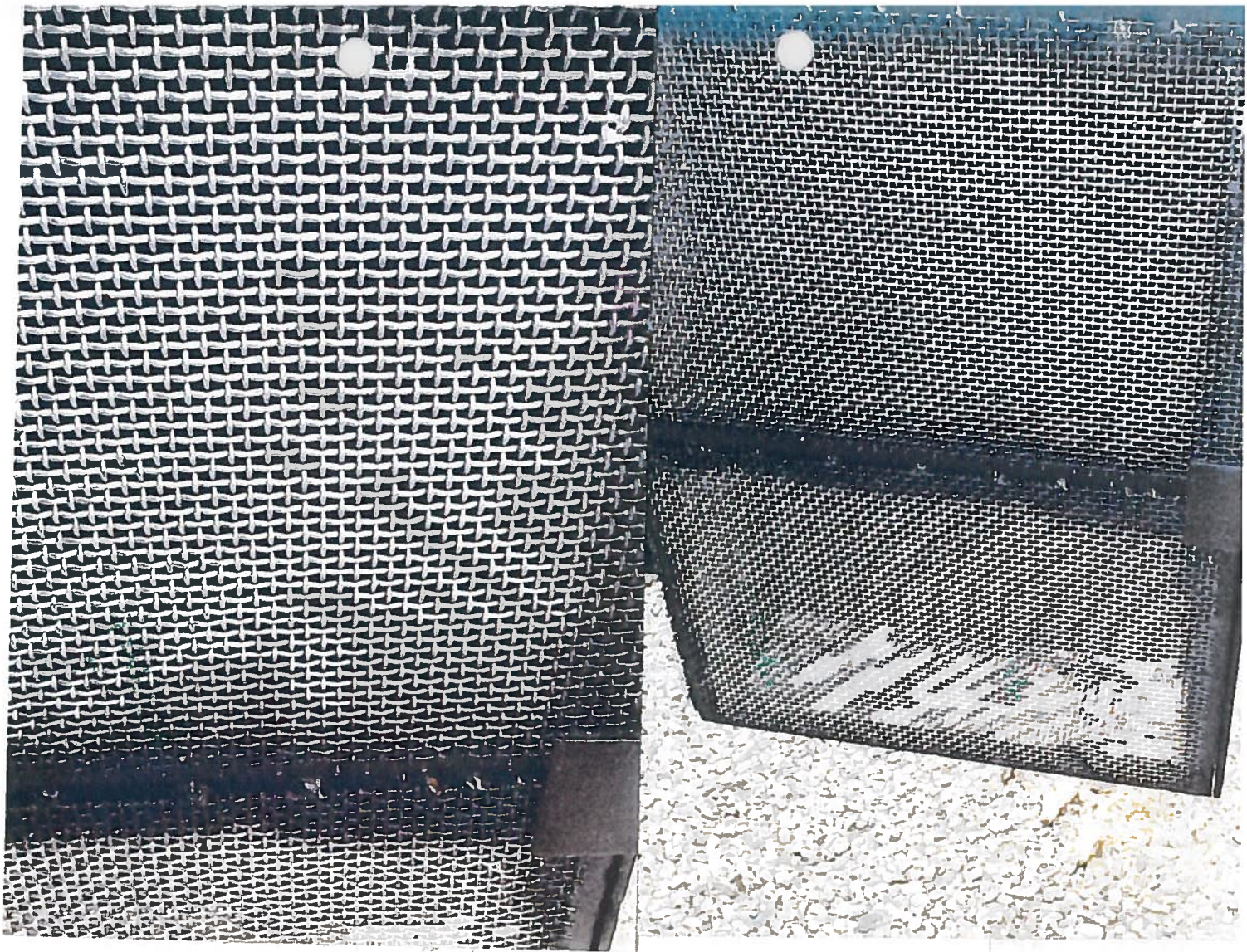
System for Water Right 74-15964



Two sources supply water for this right. The pond was excavated for gravel in 2000 and 2001 and is unlined. Water seeped into the pit and if there is no water from another source, there will still be some water in the pond. Wastewater provides the second source. The L13 is approximately 2,300 feet upstream from the pond. The wastewater comes from a lateral off the L13 ditch and flows through the neighbors property (blue line).

During the field exam, Mr. Stephenson said that the pond could be 2 to 3 feet deeper. They try to maintain the outflow equal to the inflow. If they fill the pond too deep they get water in the crawl space under their house. The house is approximately 65 feet from the pond. The depth ranges from 6 to 8 feet, with 10 feet being the deepest.

The screen on the pond outlet is relatively new. The old one rusted and the fish they kept in the pond escaped. According to Mr. Stephenson, the new screen was made to Fish and Game specifications. There is an old ditch between the pond and the river, near the outlet of the pond. This is the old channel for the L11 diversion. Water flows underground from the pond to the Lemhi River (dashed orange line).



Fish screen for
water height 74-15964

We have installed
this new fish screen
in the pond

If any questions
please call

Mary Stephenson
208-756-4109

Thank you.

CAVIED
7-1-2015



PHOTOGRAPHER AND DATE OF PHOTOS Sandy Thiel, July 20, 2016



Wastewater flows onto Gordon and Mary Stephenson's property from the south. I took a measurement near the property line, identified by the fence.



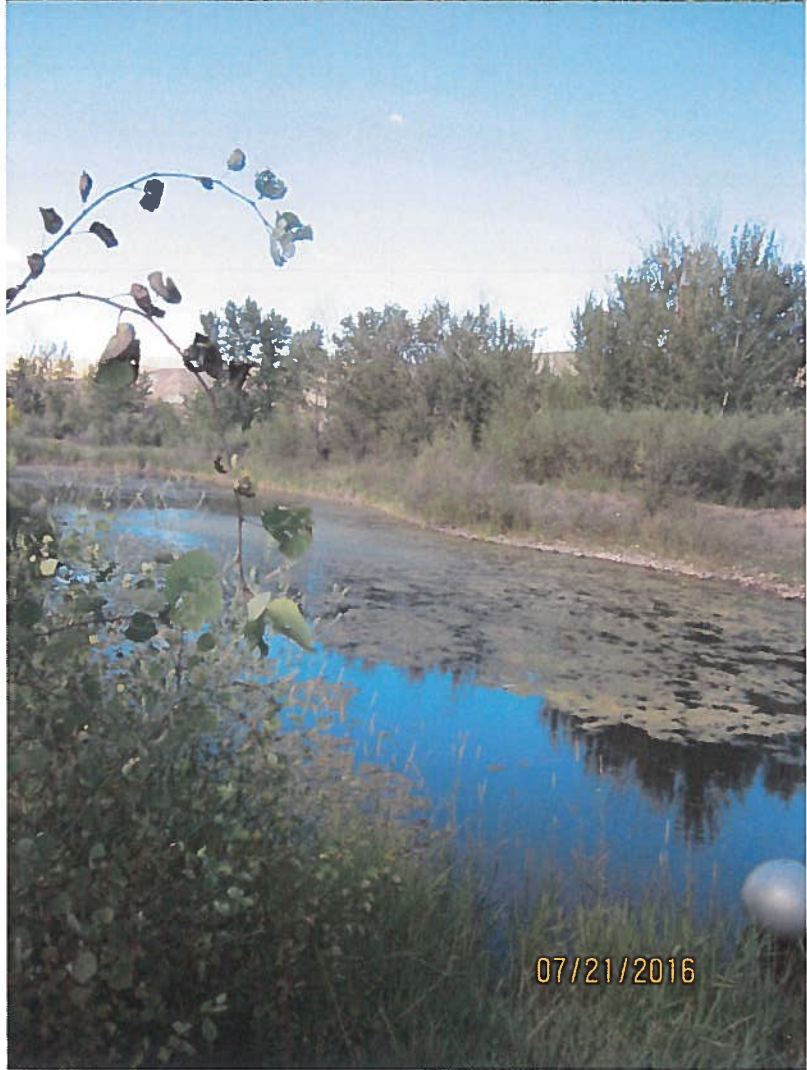
Location of the measurement

The white arrow shows the location of the channel flowing toward the pond



The white arrow shows the location of the channel flowing toward the pond

The black pipe next to the pond collects runoff from the property to the south and does not flow into the pond





This image was taken from the house looking west, northwest. Waste water flows into the pond from the east (to the right of the photography) and leaves the pond to the west, and flows into the Lemhi River. The trees in the distance (identified by the arrow) border the river.



The outlet is at the northwest corner of the pond. A pipe returns water to the Lemhi River at a point near the western edge of the Stephenson's property.



Close-up of pond outlet



Return to the Lemhi River



The water in the foreground is the Lemhi River. The arrow shows the location of the pond outflow.