

IN-OFFICE BENEFICIAL USE FIELD REPORT

Permit No. 65-22852 Date 05/31/16 Examiner: Danie Merriman

Name/Address X Taxlot / S.O.S. record: X
 Source X Does change clarify original intended source? If not, void permit.
 Nature of Use Stockwater storage: 200 cattle, 10 horses and Wildlife storage
 Season of Use 1-1 to 12-31
 Point of Diversion T07N R02E Sec9 SWSE
 Place of Use T07N R02E Sec9 SWSE

Overlap Review POD Right(s) _____
 Worksheet Attached ☒ POU Right(s) _____

Diversion Rate Permitted Rate 1 AF
 BU Fee Limit 20 AF Rate/Acre Limit N/A cfs
 Recommended Total Div Rate 1 AF

Annual Volume

for Irrigation: N/A _____ cfs x 1.9835 x _____ days = _____ af
 _____ acres x _____ af/ac (FHR) = _____ af
 Smaller of two volumes = _____ af

for other uses:

Stockwater Storage: 1 AF (see attached Pond Spreadsheet)Wildlife Storage: 1 AF (same pond as above mentioned.)

Recommended Amounts

Beneficial Use	Season of Use	Diversion Rate	Annual Volume
Stockwater Storage	1/1 to 12/31	N/A	1 AF
Wildlife Storage	1/1 to 12/31	N/A	1 AF
Totals		<u>N/A</u> cfs	<u>1</u> af

Amendments Required

☐ Change P.D. ☐ Add P.D. ☒ None
☐ Change P.U. ☐ Add P.U. ☐ Other: _____

Conditions:

Same as Permit

X02, R05, 01P, and project description

Remarks:

-Unable to conduct in-field exam due to inconvenience for permit holder.
 -Reservoir existed in 2005 per google maps imagery from 7-31-05 (attached)

Workflow

Exam Date Entered 6-24-16
 POU/POD shapes X
 Combined Rights Entry N/A
 Wild & Scenic Entry N/A
 Draft License and Map X
 Other: _____

Supporting Documents

Historical Imagery X Well Log N/A
 Photographs N/A Diagrams N/A
 LandSat N/A Theoretical N/A
 Other: Pond Spreadsheet

MEMORANDUM

TO: 65-22852 Jardine File

FROM: Danie Merriman (Western)

DATE: June 24, 2016

RE: In-office exam for licensing

On January 28, 2005, James M Jardine submitted proof of beneficial use for water permit 65-22852. It was determined that a field exam would be inconvenient for land owner, and that an in-office exam would be done instead. The following actions were taken per information found during the in-office exam. *=> IN-OFFICE EXAM METHOD DEEMED ACCEPTABLE/IN-LINE WITH INTENT IF NOT LETTER OF IDAPA 37.03.02.035-F.II. -AG 6/2/17*

Taxlot ownership: The ArcMap taxlot data from 3/31/2015 states that the land is owned by George and James Jardine. The Online Property Management System for Boise county lists the 2016 owner of the property as Valdean M Schroeder. There is no record of an ownership change filing in the Department's database. For this reason, the water right will be licensed in the name of James M Jardine and a change of ownership form will be included with the approval document and cover letter.

Place of use determination: The place of use had to be determined based on aerial photography. Aerial photos from 2004 and 2006 (the years closest to when beneficial use was submitted) showed the pond being in the same location as the pond in 2016. This location is different than the POU shape drawn for the permit. Although both shapes are in the same QQ, the permit outlines the pond as described on the DRG map. For the license, the POU will be drawn where the pond appears in the aerial photography.

Overlap analysis: While conducting the overlap analysis, there were two other water rights found in the same general QQ as the land described in this permit. The analysis found that water right 65-22542 had a different POD and was not for stock water storage. Water right 65-22547 was also on the same land but comes from a different source. Analysis can be viewed in attached spreadsheet.

Approval quantity: Based on aerial photography, the pond appears to have a surface area of approximately 0.2 acres. The original application indicated that the dam of the pond and the berm would be 5 feet high. Department standards suggest multiplying the maximum depth by 0.4 in order to get an average depth, in this case 2 feet. This means the total capacity of the pond would be 0.4 AF. The original application for permit indicated that the pond has a capacity of 0.5 AF, but the applicant applied for additional water to allow for potential refill each year. Based on the spreadsheet included with Administrative Memo 67, the pond would require 0.5 AF for seepage and 0.4 AF for evaporation each year. Totaled, the pond requires 1.3 AF. This is slightly higher than the 1.0 AF permitted. The water right will be licensed for 1.0 AF and the approval letter will include guidance that the water right holder should apply for additional water to cover additional losses.*

** POND VOLUME REQUIREMENTS ESTIMATED BY EXAMINER. 0.3 AF IS LIKELY WITHIN THE MARGIN OF ERROR IN CALCULATIONS/ASSUMPTIONS. PERMIT HOLDER AND/OR CURRENT RIGHT OWNER WILL NOT BE ASKED/REQUIRED TO FILE A NEW PERMIT AT THIS TIME. -AG 6/2/17
ALSO, MY EST. OF SEEPAGE ONLY 0.2 AF WITH 0.4 AF CAPACITY + 0.4 AF EVAP = 1.0 AF LICENSED.*

Water Permit 65-22852 Licensing Overlap Analysis

Basin	Sequence	Process	Priority Date	Diversion R	Source List	Water Use List	Current Owner	Explanation
65	22542	Water Right	1/1/1870	0.020	UNNAMED STREAM	STOCKWATER	HEDGE, BRUCE F; HEDGE, JANET L	Instream stockwater, Diff POD, no storage
65	22547	Water Right	1/1/1870	0.020	SPRINGS	STOCKWATER	HEDGE, BRUCE F; HEDGE, JANET L	Diff source, no storage
65	22852	Water Permit	12/10/2003		UNNAMED STREAM	STOCKWATER STORAGE, WILDLIFE STORAGE	JARDINE, JAMES M	

Water Permit 65-22852
Beneficial Use Licensing Exam (in-office)



Google Earth 7/31/2005



ArcMap Imagery 2006 (1Meter)

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	65-22852
REVIEWER	D. Merriman
DATE	5/31/2016

→ A. GRIMM REVIEW
6/2/17

User Input
Calculated value
Formula Explanations

INPUTS

Pond Surface Area (AC.)	0.2	AC.
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Pond Surface Area (SQ. FT.)	8712	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	SE → CL
Suggested Seepage Rate (FT./DAY)	~~0.0070~~ FT./DAY → 0.003

Formula: (Surface Area X Seepage Rate) X 7.48 = Gallons Per Day Loss
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Convert to GPD	456	GPD
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Total Seepage Loss (AFA)	~~0.5~~	AFA
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← 0.2 AFA

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.

FILE NUMBER	65-22852
REVIEWER	D. Merriman
DATE	5/31/2016

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: Emmett 2 E
(NWS - 102942)

Month	mm/day ¹	Days per month	mm/Month
Jan	-1.06	31	0.00
Feb	-0.25	28	0.00
March	0.64	31	19.84
April	1.84	30	55.20
May	2.60	31	80.60
June	3.23	30	96.90
July	4.08	31	126.48
August	3.52	31	109.12
September	2.11	30	63.30
October	1.01	31	31.31
November	-0.70	30	0.00
December	-1.42	31	0.00

Total mm/year = 582.75

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.

$$((582.75 \div (\text{convert to feet})) \times (\text{Surface area of pond, in acres})) = \text{Evaporation Loss in Acre Feet}$$

$$(582.75 \div 304.8) \times 0.20 = 0.4 \text{ AFA}$$

Total Storage Calculations

FILE NUMBER	65-22852
REVIEWER	D. Merriman
DATE	5/31/2016

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.)	0.2	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	2	"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. <i>Application for permit states that the dam and berm will be 5 feet high. Assume 5 feet is the max height multiplied by 0.4 to get an average depth of 2 feet.</i>
Pond Capacity (AF)	0.4	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 from storage component if the from storage 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)	0.5 D. 2	The "Estimated Seepage Loss" is automatically carried over from the "Seepage Loss" sheet.
Estimated Evaporation Loss (AF)	0.4	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	1.31.0	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)	1.00	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)	4.08	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)	0.00	"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	0	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	11	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.



State of Idaho

DEPARTMENT OF WATER RESOURCES

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C. L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Interim Director

July 19, 2012

James M. Jardine
P.O. Box 554
Horseshoe Bend, ID 83629-0554

RE: Scheduling Field Exam for Water Right Permit No. 65-22852

Dear Mr. Jardine:

We are planning to **conduct water right examinations** in the vicinity of the above-referenced permit **during the weeks of July 23 and July 30, 2012**. An examination is needed to verify your water use in order to issue a water right license.

Please be advised that you will need to operate your system under normal conditions during the examination. The permit authorizes diversion of unnamed stream water for wildlife and stockwater storage for up to 200 cattle and 10 horses.

In order to conduct your exam as efficiently as possible, we ask that you call this office to schedule a day and time convenient for you. **Please call me at 208-334-2190 by July 27, 2012.** If there is a problem with scheduling or conducting the examination at this time, please call and other arrangements can be made. I appreciate your attention in this matter and I look forward to hearing from you.

Sincerely,

A handwritten signature in black ink, appearing to read 'Angela M. Grimm', is written over a horizontal line.

Angela M. Grimm, P.G.
Water Resource Agent, Sr.