

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 84-12232
Exam Date: 6/8/2017

1. Current Owner:
STATE OF IDAHO DEPT OF FISH & GAME
PO BOX 25 BOISE ID 83707 (208) 334-3700

2. Accompanied by: In office exam

3. **SOURCE:**
SCHMIDT CREEK

TRIBUTARY:
LOLO 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:**

SCHMIDT CREEK L1 (NW¼NW¼) Sec. 19, Twp 35N, Rge 04E, B.M. CLEARWATER County

Method of Determination: Maps and GPS. POD located at 116° 0.865, 46° 22.039

2.

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	
35N	04E	19	X	X	X	X	X	X L 1		X									

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

*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: N/A

E. FLOW CALCULATIONS

Measured Method: N/A

____ Additional Computation Sheets Attached

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$$

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

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

2. Volume Calculations for Other Uses: See attached pond analysis sheet

G. NARRATIVE/REMARKS/COMMENTS

In office exam performed using aerial photography to determine surface and dam safety information for depth on reservoir. Joe Carlson, dam safety engineer, helped by using dam safety database to determine the maximum depth and surface area and providing photos and GPS location of dam.

Pond analysis tool was used to determine total storage for reservoir. With average surface area of 55 acres and average depth of 12 feet the total storage was 660 acre-feet. Evaporation and seepage was calculated at 60.2 acre-feet and 81.8 acre-feet. Total storage for water right license will be 802 acre-feet.

An amendment was sent out because applicant did not apply for storage in enough QQ as what the reservoir ended up covering. No issues with overlap and it was agreed that the minimum stream flow condition should be put on license for the Clearwater River (85-7583). A more detailed condition was added that included a stream gage station to monitor flows in the Clearwater.

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>
RECREATION STORAGE	01/01 to 12/31		802.0 AF
<u>Totals:</u>			802.00 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 Adam Fendrick Date 9-26-2017

Reviewer _____ Date _____

Total Storage Calculations

FILE NUMBER	84-12232
REVIEWER	Adam Frederick
DATE	6/7/2017

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.)	55	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	12	"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)	660	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. <i>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.</i>
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). <i>Note: You must have a "From Storage" component exceeding the initial fill on the permit to include a volume in this space.</i>
Estimated Seepage Loss (AF)	60.2	The "Estimated Seepage Loss" is automatically carried over from the "Seepage Loss" sheet.
Estimated Evaporation Loss (AF)	81.8	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	802.0	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.

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	84-12232
REVIEWER	Adam Frederick
DATE	6/7/2017

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: Orofino (NWS -- 106681)

Month	mm/day ¹	Days per month	mm/Month
Jan	-2.24	31	0.00
Feb	-1.31	28	0.00
March	-0.31	31	0.00
April	0.65	30	19.50
May	1.74	31	53.94
June	2.29	30	68.70
July	4.38	31	135.78
August	3.75	31	116.25
September	1.97	30	59.10
October	-0.16	31	0.00
November	-2.01	30	0.00
December	-2.67	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 = 453.27

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

(453.27 ÷ 304.8) X 55.00 = 81.8 AFA

Frederick, Adam

From: Carlson, Joseph
Sent: Tuesday, June 06, 2017 4:04 PM
To: Frederick, Adam
Subject: Deyo

Idaho Department of Water Resources

Dam Safety Data Sheet

06/06/2

Dam Name: DEYO
Other Dam Name:
State ID: 84-12232

Region: N
National ID Number: ID00725
Last Modified: 06/20/2014

General Information

Status: REGULATED
Purpose: MULTIPLE USE

Hazard: SIGNIFICANT
Size Category: 2

Location

County: CLEARWATER
River or Stream: SCHMIDT CREEK - LOLO CREEK
Township: 35N
Range: 04E
Section: 19
Quad Name: WOODLAND

Latitude: 46.3667007694384
Longitude: -116.013209710236
IDTM X: 2345147
IDTM Y: 1686985
Location Method: NAIP
Quad Number: L60

Dam Owner

Name: IDAHO FISH & GAME
Address: C/O MIKE MAFFEY
PO BOX 25
City: BOISE
State: ID

Phone: (208) 334-3730

Email:

Embankment Physical Characteristics

Dam Type: EARTH
Dam Height: 35
Dam Length: 345

Hydraulic Height: 30
Year Completed: 2011
Condition: SATISFACTORY

Regulatory Data

Inspection Date: 05/08/2014
Storage Authorization: 06/20/2014
Certificate Expired: 12/31/2018
Survey Date:
Condition Assessment: SATISFACTORY

Emergency Action: Not Required
Next Dam Inspection: 2018
Inspection Frequency: 4
Joint Inspection: IDFG

Reservoir

Drainage Area: 2.3
Surface Area: 55

Normal Storage: 550
Maximum Storage:

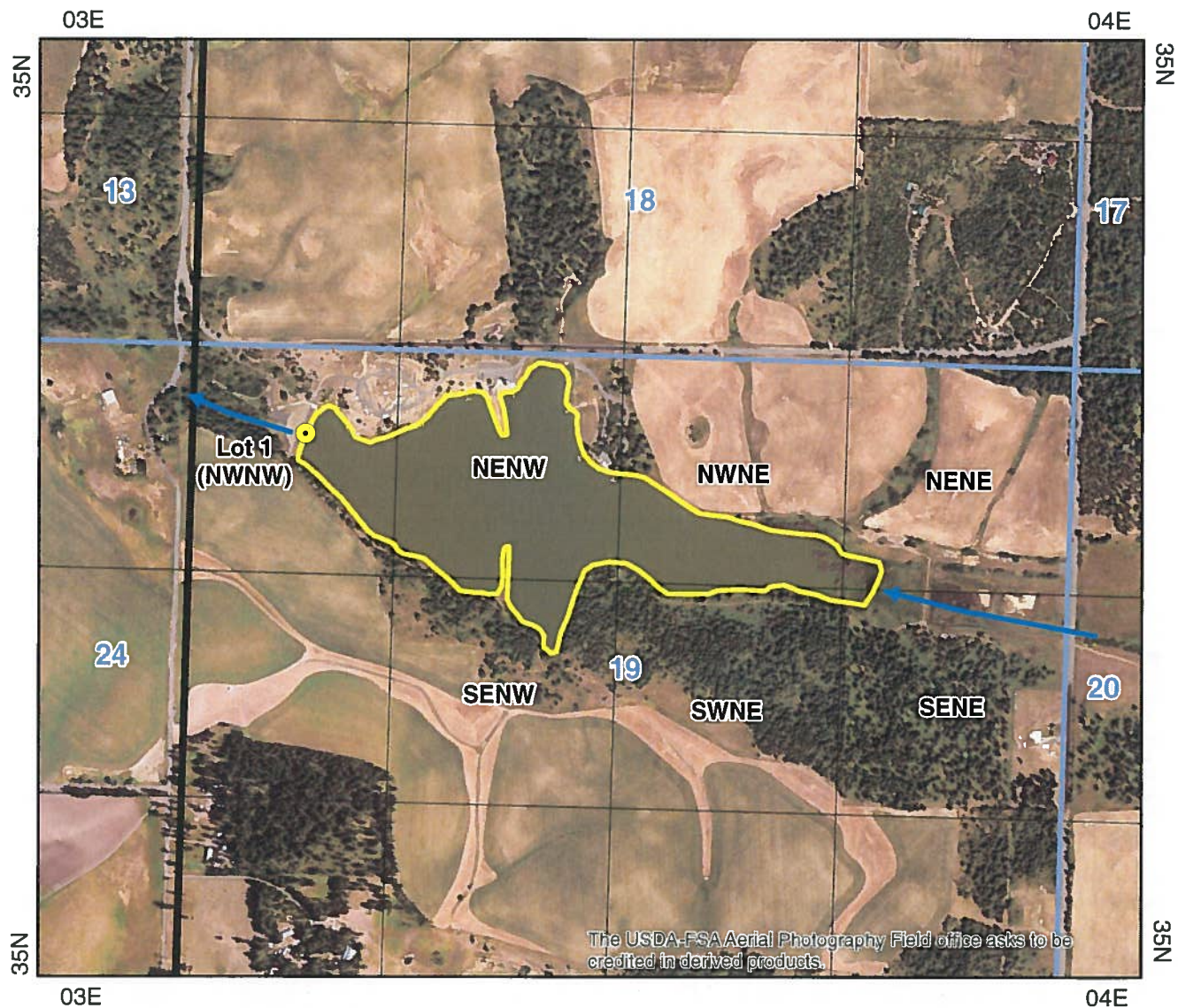
Spillway

Spillway Depth: 5

Spillway Type: UNCONTROLLED

State of Idaho
Department of Water Resources
Attachment to Field Exam
84-12232

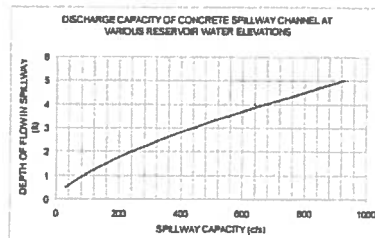
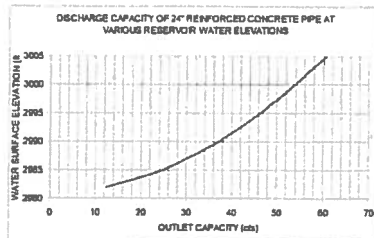
RECREATION STORAGE / SYSTEM DIAGRAM



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

0 0.125 0.25 0.5 Miles

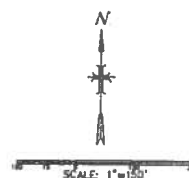




BASIC PROJECT DATA:

- SURFACE AREA = 66 ACRES (AT POOL ELEVATION 3,000 FEET)
- NORMAL POOL ELEVATION = 3,000 FEET
- CREST ELEVATION = 3,050 FEET
- EMBANKMENT HEIGHT = 30 FEET
- RESERVOIR CAPACITY AT NORMAL POOL ELEVATION = 650 ACRE-FEET
- IDAHO DEPARTMENT OF WATER RESOURCES CLASS = "SIGNIFICANT"

OVERALL SITE PLAN



LEGEND

STRATA	JUB
Engineers • Surveyors • Planners	Engineers • Surveyors • Planners
STRATA, Inc. 1429 S. Main Street Suite 201 Moscow, Idaho 83843 Phone: 208.882.1000 Fax: 208.882.4750	J-U-B ENGINEERS, Inc. 250 S. Beechwood Avenue Suite 201 Boise, Idaho 83709-0844 Phone: 208.378.2200 Fax: 208.323.5208 www.jub.com

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DATE: 10/25/06
BY: JUB

DEYO EMBANKMENT DAM
IDAHO DEPARTMENT OF FISH AND GAME

OVERALL SITE PLAN

FILE NUMBER: 010
DESIGNED BY: JUB
CHECKED BY: JUB
SCALE OF SHEET: AS SHOWN
SCALE OF PLAN: AS SHOWN
SCALE OF ELEVATION: AS SHOWN
SCALE OF DISTANCE: AS SHOWN
SCALE OF AREA: AS SHOWN
SCALE OF VOLUME: AS SHOWN
SCALE OF WEIGHT: AS SHOWN
SCALE OF MASS: AS SHOWN
SCALE OF FORCE: AS SHOWN
SCALE OF ENERGY: AS SHOWN
SCALE OF POWER: AS SHOWN
SCALE OF FLUX: AS SHOWN
SCALE OF RATE: AS SHOWN
SCALE OF TIME: AS SHOWN
SCALE OF TEMPERATURE: AS SHOWN
SCALE OF PRESSURE: AS SHOWN
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SCALE OF MEAN: AS SHOWN
SCALE OF STANDARD DEVIATION: AS SHOWN
SCALE OF COEFFICIENT OF VARIATION: AS SHOWN
SCALE OF CORRELATION COEFFICIENT: AS SHOWN
SCALE OF P-VALUE: AS SHOWN
SCALE OF SIGNIFICANCE LEVEL: AS SHOWN
SCALE OF CONFIDENCE INTERVAL: AS SHOWN
SCALE OF MARGIN OF ERROR: AS SHOWN
SCALE OF BIAS: AS SHOWN
SCALE OF ACCURACY: AS SHOWN
SCALE OF PRECISION: AS SHOWN
SCALE OF RELIABILITY: AS SHOWN
SCALE OF VALIDITY: AS SHOWN
SCALE OF CREDIBILITY: AS SHOWN
SCALE OF AUTHORITY: AS SHOWN
SCALE OF LEGITIMACY: AS SHOWN
SCALE OF CREDIBILITY: AS SHOWN
SCALE OF AUTHORITY: AS SHOWN
SCALE OF LEGITIMACY: AS SHOWN

SHEET
2
OF 7

AGENCY REVIEW 10/25/06 FOR CONSTRUCTION

Field Exam photos for Water Right 84-12232

Photos were taken from Dam Safety site visits because in-office exam is being performed on permit.



Photo of Deyo Dam.



Downstream area from dam.



Place of use.





Place of use.