

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 67-14611

Exam Date: 5/8/2017

1. Current Owner:

ROBIN DE FREITAS 3050 FRUITVALE-GLENDALE RD FRUITVALE ID 83612 (208) 253-6263 And/Or
JOSEPH MICHAEL DE FREITAS 3050 FRUITVALE-GLENDALE RD FRUITVALE ID 83612 (208) 253-6263

2. Accompanied by: JOSEPH MICHAEL DE FREITAS

Phone No: (208) 253-6263

Address: 3050 FRUITVALE-GLENDALE RD FRUITVALE ID 83612

Relationship to Permit Holder: OWNER

3. SOURCE:

WEISER RIVER

TRIBUTARY:

SNAKE RIVER

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:

WEISER RIVER SW¼SE¼ Sec. 2, Twp 17N, Rge 01W, B.M. ADAMS County

Method of Determination: Aerial imagery and field exam.

2.

PLACE OF USE: AESTHETIC, RECREATION, and WILDLIFE

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
17N	01W	2												X			X		

Method of Determination: Aerial imagery and field exam.

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

X 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	NA	NA	NA	NA	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	Handheld ADV	SonTec	NA	NA	NA	NA

2. Measurements:

E. FLOW CALCULATIONS

X Additional Computation Sheets Attached

Measured Method: Flow measurements were obtained using a FlowTracker. A measurement was taken where the feeder ditch dumps into the pond. A stream profile was difficult to develop with the FlowTracker, so an average velocity was measured. The stream area was calculated manually using the area of a trapezoid formula. Below are the numbers:

Average Flow = 2.22 ft/sec

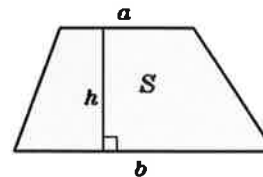
Stream Profile:

Base_A = 1.9'Base_B = 2.3"

Height = 0.4'

$$\text{Area of a trapezoid} = \frac{A+B}{2} H = \frac{1.9+2.3}{2} 0.4 = 0.84 \text{ ft}^2$$

$$Q = 2.22 \text{ ft/sec} \times 0.84 \text{ ft}^2 = \underline{1.86 \text{ cfs}}$$



A manipulated form of the Bernoulli equation was used to estimate the system capacity relative to the 12" corrugated pipe used to divert water from the Weiser River. The analysis is attached, which estimates the capacity at 4.11 cfs. This is a rough baseline estimate as the velocity of the flow entering the pipe varies. It is assumed the velocity at the intake is zero since the pipe is submerged. This exercise was done to understand the system capacity relative to the measured flow.

F. VOLUME CALCULATIONS

1. Volume Calculations for Other Uses:

AESTHETIC, RECREATION, and WILDLIFE:

V_R = As a flow through beneficial use, there is no specific volume requirement associated to the use. The volume is dependent on the rate of flow, which is dependent on the water available from the river.

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 1.0 \text{ cfs} \times 365 \text{ days} \times 1.9835 = 724.0 \text{ AF}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = \underline{724.0 \text{ AF}}$$

Pond Analysis:

Conveyance Ditch –

Surface area = 0.04 acres

Maximum depth = 2' X 0.40 = 0.8' average depth

Capacity = 0.03 AF (0.04 acres X 0.8')

Pond Depth 1 –

Surface area = 0.8 acres

Maximum depth = 10' X 0.40 = 4' average depth

Capacity = 3.2 AF (0.8 acres X 4')

Pond Depth 2 –

Surface area = 0.17 acres

Maximum depth = 8' X 0.40 = 3.2' average depth

Capacity = 0.54 AF (0.17 acres X 3.2')

Pond Depth 3 –

Surface area = 0.06 acres

Maximum depth = 4' X 0.40 = 1.6' average depth

Capacity = 0.10 AF (0.06 acres X 1.6')

Total Surface Area of Pond = **1.07 acres** (0.04 + 0.8 + 0.17 + 0.06)Total Capacity of Pond = **3.9 AF** (0.03 + 3.2 + 0.54 + 0.10)

*** Pond depths were estimated from a map Mr. De Freitas provided at the field exam. ***

Is storage occurring at 1.0 cfs? YES

1.0 cfs = 450 gpm

450 gpm X 60 minutes X 24 hours = 648,000 gallons per day or 2.0 AF/day

G. NARRATIVE/REMARKS/COMMENTS

Permit No. 67-14611 authorizes a diversion rate of 1.0 cfs and assumes a volume limit of 724.0 AF (1.0 cfs X 365 days X 1.9835) for Aesthetic, Recreation, and Wildlife purposes. A field exam was conducted by WRA Aaron Skinner on May 8, 2017, who was accompanied by Joseph De Freitas, the permit holder.

BACKGROUND:

The purpose of this right was to divert water from the Weiser River through their property and back into the river. The application stated that storage isn't included because they projected the developed pond would fill within 24 hours. A pond analysis was completed and established a pond capacity of 2.9 AF. As such, it was determined in Section F of this report that storage was occurring. The owners will need to apply for a new water right to cover consumptive use and the

storage components for the pond. An amendment is also necessary to change the POD legal description from SESW to SWSE.

System Description:

Water is diverted from the Weiser River via a 12" corrugated pipe that angles out into the river. The pipe is roughly 60' from end to end and discharges into a small conveyance ditch. The ditch has an estimated maximum depth of 2' and surface area of 0.04 acres. Another 12" corrugated pipe then diverts water from the ditch to the pond. The pond has three different maximum depth sections as water runs east to west through the system. Mr. De Freitas provided a map outlining the varying depths. These sections are noted above and establish a total pond capacity of 3.9 AF and a surface area of 1.07 acres. Water is returned to the Weiser River via a small creek like ditch located on the southwest corner of the pond.

Diversion Rate and Volume:

The permitted rate and assumed volume for this right is 1.0 cfs and 724.0 AF respectively. A flow rate was calculated during the exam at the inlet pipe going into the pond using the FlowTracker as explained in Section E of this report. A stream profile was difficult to obtain so an average velocity was calculated and multiplied by the established area measured manually. The average velocity totaled 2.22 ft/sec and the area of the stream totaled 0.84 ft². This equals 1.86 cfs. **The permitted rate was 1.0 cfs and will be recommended to licensing.**

The volume was calculated in Section F of this report and totals 724.0 AF. This is based off the season of use of 365 days. The actual use is a moving target and varies year to year and storm to storm. As such, the general 365 days is used to calculate the recommendation. The suggested volume to be licensed is 724.0 AF.

Ownership:

Current Adams County taxlot data was used to verify land ownership and identified Joseph M and Robin De Freitas as the parcel owners. This is the same as the permit.

Overlap:

An overlap analysis was completed for the POD and POU and identified no overlap relative to this right.

Conditions:

Condition 26A was removed and not forwarded to licensing. Condition 01J was waived and modified to 01R and 01P and forwarded to licensing. Condition 121 was updated to 103 and forwarded to licensing. Condition R05 was updated to "may" instead of "will" and forwarded to licensing. Condition X38 was forwarded to 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>
AESTHETIC	01/01 to 12/31	1.00 CFS	724.0 AF
RECREATION	01/01 to 12/31	1.00 CFS	724.0 AF
WILDLIFE	01/01 to 12/31	1.00 CFS	724.0 AF
	<u>Totals:</u>	1.000 CFS	724.00 AF

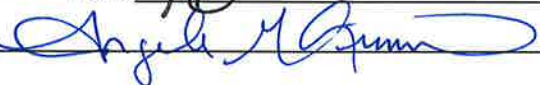
2. Recommended Amendments

☒ 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  Date 7/11/2018

Reviewer  Date 7/11/18

State of Idaho
Department of Water Resources
System Diagram, POD, and POU
Permit No. 67-14611

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



The USDA-FSA Aerial Photography Field office asks to be credited in derived products.

0 0.0125 0.025 0.05 Miles

-  67-14611 POD
-  12" corrugated pipe
-  Conveyance Ditch
-  Pond



State of Idaho
Department of Water Resources

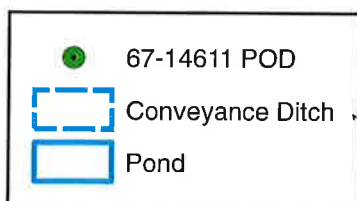
Point of Diversion and Place of Use

Permit No. 67-14611

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



0 0.0125 0.025 0.05 Miles



Estimating Pipeline Flow Rates for WR Permit No. 67-14611 (System Capacity)

Pipe Diameter (in.)	POD	End of 12" Pipe
Elevation (ft.)	3,271	12
(z ₁ - z ₂) (ft.)		1
Length (ft.)		60
Velocity (ft/sec)		5.23
Area of Pipe (ft ²)		0.79
Q (cfs)		4.11

Maximum velocity through a 12" PVC pipe for 60'	
Velocity; v=	5.23
Pipe Length; L=	60
Pipe Diameter; D=	1
f(x)=	1

Manipulated Bernoulli Equation

$$(z_1 - z_2) = (0.0232919) * (v^2) + (0.0002816) \left(\frac{L}{D^{1.167}} \right) (v^{1.852})$$

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	67-14611
REVIEWER	Aaron Skinner
DATE	10/18/2017

User Input
Calculated value
Formula Explanations

INPUTS

Pond Surface Area (AC.)	1.07	AC.
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Pond Surface Area (SQ. FT.)	46609	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	GC	
Suggested Seepage Rate (FT./DAY)	0.2000	FT./DAY

Formula: (Surface Area X Seepage Rate) X 7.48 = Gallons Per Day Loss		
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Convert to GPD	69727	GPD
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Total Seepage Loss (AFA)	78.1	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.

FILE NUMBER	67-14611
REVIEWER	Aaron Skinner
DATE	4/21/2017

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

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

Precipitation Deficit

Station:	Council (NWS -- 102187)		
Month	mm/day ¹	Days per month	mm/Month
Jan	-2.61	31	0.00
Feb	-2.02	28	0.00
March	-0.42	31	0.00
April	1.13	30	33.90
May	1.94	31	60.14
June	2.47	30	74.10
July	4.02	31	124.62
August	3.21	31	99.51
September	1.71	30	51.30
October	-0.10	31	0.00
November	-2.46	30	0.00
December	-2.98	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 = 443.57

[(mm/yr) ÷ (convert to feet)] X (Surface area of pond, in acres) = Evaporation Loss in Acre Feet

$$(443.57 \div 304.8) \times 1.07 = 1.6 \text{ AFA}$$

Total Storage Calculations

FILE NUMBER	67-14611
REVIEWER	Aaron Skinner
DATE	10/18/2017

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.)	1.07	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	3.6	"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)	3.852	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 "From Storage" component exceeding the initial fill on the permit to include a volume in this space.
Estimated Seepage Loss (AF)	78.1	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)	83.5	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)	4.02	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)	0.23	"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)	0.11	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	2	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	-20	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.

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Options

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Soil Map

Report - Engineering Properties

Absence of an entry indicates that the data were not estimated. The asterisk "*" denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 3 issued May 2007 (<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.xls>). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Adams-Washington Area, Parts of Adams and Washington Counties, Idaho

Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification	AASHTO	Pct Fragments	Percentage passing sieve number—	Liquid limit	Plasticity index
					Unified		>10 inches	4 10 200		
					L-R-H		L-R-H	L-R-H L-R-H L-R-H	L-R-H	L-R-H
110—Langrell loam, 0 to 2 percent slopes			In							
Langrell	95	B	0-10	Loam	CL, CL-ML, ML	A-4, A-6	0-0-0	85-93-100	75-88-100	65-80-95
			10-24	Gravelly loam, cobbly loam	CL-ML, GC-GM, CL, GC	A-4, A-6, A-2	0-3-5	5-18-30	60-73-85	55-68-80
			24-30	Very cobbly loam, extremely cobbly loam, very gravelly loam	GC, GC-GM	A-1, A-2	0-8-15	25-40-55	30-45-60	20-38-55
	38"		0-60	Very stony sandy loam, extremely cobbly sandy loam, extremely gravelly sandy loam	GC, GW-GC, GP-GC	A-1, A-2	0-13-25	40-48-55	25-40-55	15-30-45

Description - Engineering Properties

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining hydrologic soil group is found in the National Engineering Handbook, Chapter 3 issued May 2007 (<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.xls>). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continuously being defined and redefined, and the list of soil series names changes as frequently as the list of soil series names changes. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

Group A: Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B: Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C: Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D: Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 37 to 60 percent clay, 28 to 50 percent silt, and less than 12 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "sandy loam."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH, and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection. If laboratory data are available, the A-1, A-2, and A-3 groups are further classified as A-1-a, A-1-b, A-2-1, A-2-2, A-2-3, A-2-4, A-2-5, A-2-6, A-2-7, A-2-8, A-2-9, A-2-10, A-2-11, A-2-12, A-2-13, A-2-14, A-2-15, A-2-16, A-2-17, A-2-18, A-2-19, A-2-20, A-2-21, A-2-22, A-2-23, A-2-24, A-2-25, A-2-26, A-2-27, A-2-28, A-2-29, A-2-30, A-2-31, A-2-32, A-2-33, A-2-34, A-2-35, A-2-36, A-2-37, A-2-38, A-2-39, A-2-40, A-2-41, A-2-42, A-2-43, A-2-44, A-2-45, A-2-46, A-2-47, A-2-48, A-2-49, A-2-50, A-2-51, A-2-52, A-2-53, A-2-54, A-2-55, A-2-56, A-2-57, A-2-58, A-2-59, A-2-60, A-2-61, A-2-62, A-2-63, A-2-64, A-2-65, A-2-66, A-2-67, A-2-68, A-2-69, A-2-70, A-2-71, A-2-72, A-2-73, A-2-74, A-2-75, A-2-76, A-2-77, A-2-78, A-2-79, A-2-80, A-2-81, A-2-82, A-2-83, A-2-84, A-2-85, A-2-86, A-2-87, A-2-88, A-2-89, A-2-90, A-2-91, A-2-92, A-2-93, A-2-94, A-2-95, A-2-96, A-2-97, A-2-98, A-2-99, A-2-100. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage of rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.75, 2.50, 0.425, and 0.075 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D1487-00.

ETIdaho 2012 -- Evapotranspiration and Consumptive Irrigation Water Requirements for IdahoPlease send suggestions for improving this site to robinson at kimberly dot uidaho dot edu Copyright 2012, University of Idaho.**Council (NWS -- 102187)**

Statistics based on thirty year normal spans 1944 to 2010 years

For a different land cover or crop click on the above link.

You can highlight this table and copy via the clipboard to a Microsoft Excel or OpenOffice spreadsheet to plot or otherwise work with this data.

Open water - shallow systems (ponds, streams)														Precipitation Deficit (Click here for a graph)		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Growing Season ^a	Non Growing Season ^b	Annual	
Mean^c	mm/day													mm		
Monthly ^c	-2.61	-2.02	-0.42	1.13	1.94	2.47	4.03	3.21	1.71	-0.10	-2.46	-2.98	121	0	121	
15-Day Moving Average ^d	-2.74	-2.30	-0.51	1.16	2.09	2.39	4.10	3.16	1.46	-0.06	-2.62	-3.04				
7-Day Moving Average ^e	-2.65	-2.21	-0.49	1.15	1.99	2.43	4.08	3.20	1.57	-0.18	-2.62	-3.01				
3-Day Moving Average ^f	-2.62	-2.07	-0.44	1.16	1.96	2.45	4.03	3.22	1.65	-0.13	-2.50	-3.00				
Standard Deviation^g	mm/day													mm		
Monthly ^g	3.17	1.45	1.45	1.60	1.51	1.33	0.58	1.02	1.13	2.37	1.83	2.51	169	0	169	
15-Day Moving Average ^d	3.20	2.27	1.68	1.87	1.66	1.81	0.51	1.21	1.69	2.18	2.43	2.57				
7-Day Moving Average ^e	3.83	3.32	2.20	2.33	2.15	2.52	0.77	1.58	2.19	3.12	3.30	3.53				
3-Day Moving Average ^f	4.80	4.41	3.05	3.14	3.01	3.50	1.27	2.01	2.79	4.04	4.46	4.91				
20% Exceedance^h	mm/day													mm		
Monthly ^h	-0.87	-0.34	0.52	2.24	2.61	3.51	4.34	3.63	2.45	1.27	-1.13	-1.38	256	0	256	
15-Day Moving Average ^d	0.21	0.55	1.48	3.20	4.08	4.63	4.65	4.18	3.18	2.05	0.18	0.12				
7-Day Moving Average ^e	0.47	1.00	2.35	3.85	4.84	5.05	4.93	4.43	3.66	2.63	1.02	0.36				
3-Day Moving Average ^f	0.55	1.15	2.78	4.42	5.31	5.48	5.25	4.59	3.85	2.87	1.36	0.51				
80% Exceedanceⁱ	mm/day													mm		
Monthly ⁱ	-3.83	-3.18	-1.50	-0.44	0.57	1.23	3.53	2.73	0.68	-1.62	-3.99	-4.62	-68	0	-68	
15-Day Moving Average ^d	-6.04	-6.21	-2.74	-1.28	-0.15	-0.48	2.90	1.61	-1.08	-3.66	-6.38	-8.04				
7-Day Moving Average ^e	-9.44	-10.63	-5.47	-4.19	-3.20	-4.52	1.60	-0.55	-4.50	-7.51	-9.13	-10.93				
3-Day Moving Average ^f	-17.43	-17.75	-11.39	-10.04	-8.45	-10.19	-0.92	-5.75	-8.51	-14.62	-16.64	-18.54				
Ave Highest Pair^j	mm/day													--		
15-Day Moving Average ^h	0.08	0.24	0.95	2.36	3.14	3.82	4.44	3.83	2.58	1.51	0.14	0.06				
7-Day Moving Average ^h	0.28	0.70	1.77	3.35	4.18	4.74	4.73	4.23	3.33	2.22	0.65	0.25				
3-Day Moving Average ⁱ	0.45	1.06	2.35	3.96	4.90	5.19	5.02	4.45	3.67	2.59	1.06	0.40				
Ave Lowest Pair^j	mm/day													--		
15-Day Moving Average ^h	-4.55	-3.75	-1.72	0.15	0.69	0.98	3.67	2.42	0.53	-1.61	-4.28	-5.08				
7-Day Moving Average ^h	-7.20	-6.80	-3.66	-1.68	-1.45	-1.21	2.83	1.02	-1.18	-4.48	-6.91	-8.06				
3-Day Moving Average ⁱ	-12.35	-12.04	-7.66	-5.13	-5.22	-5.25	1.16	-1.19	-4.11	-8.85	-12.16	-13.68				
Special normal distribution parameters for monthly, seasonal, and annual intervals																
Skew ^m	-0.58	0.25	-0.15	-0.97	-0.24	-0.51	-0.17	-0.54	-0.97	-0.24	-1.00	-0.30	-0.19	0.00	-0.19	
Kurtosis ⁿ	1.60	2.02	0.70	3.52	0.67	2.37	0.51	1.46	3.54	0.70	4.17	0.68	3.03	0.00	3.03	

^a Growing Season: This is usually the time from green up or planting in the spring to a killing frost or harvest in the fall. It is not applicable for entries without a growing season and will be blank.^b Nongrowing Season: This is usually the time from a killing frost or harvest in the fall to the green up in the spring. It is not applicable for entries without a growing season.^c Mean of the average daily value for month^d Mean of the fourteen 15-day period averages contained in the month^e Mean of the twenty three 7-day period averages contained in the month^f Mean of the twenty seven 3-day period averages contained in the month^g Mean of the highest/lowest 15-day period average in month^h Mean of the highest/lowest 7-day period average in monthⁱ Mean of the highest/lowest 3-day period average in month^j This value represents the mean value for the parameter for the month over the 'normal' period of record. Generally, the 'normal' period is the last thirty years with data.^k This value represents the standard deviation for the parameter for the month over the 'normal' period.^l This value represents the value for the parameter that has a 20% chance of being exceeded that month during any particular year. Conversely, there is an 80% chance that the parameter value will be less than the value shown.^m This value represents the value for the parameter that has a 80% chance of being exceeded that month during any particular year. Conversely, there is an 20% chance that the parameter value will be less than the value shown.ⁿ This value represents the skewness (asymmetry) of the distribution of the parameter values for the month (year) over the 'normal' period. A value near zero indicates that the distribution approximates a normal (Gaussian) and symmetrical distribution. A negative skew indicates that the parameter distribution has relatively few low values compared to high values. A positive skew indicates that the distribution has relatively few high values compared to the number of low values. A skew value near 1 indicates that the underlying distribution approximates a lognormal distribution.^o This value represents the kurtosis of the parameter value distribution for the month (year) over the 'normal' period. Kurtosis is a measurement of the height to width ratio of the probability distribution, or the peakedness (slenderness). A normal (Gaussian) distribution has a kurtosis of 3. A high kurtosis distribution has a sharper peak and longer tails, while a low kurtosis distribution has a more rounded peak and shorter tails.

This work and report were prepared by the University of Idaho Research and Extension Center at Kimberly, Idaho under contract with the Idaho Department of Water Resources. Work was supported by funding from IDWR and the Idaho Agricultural Experiment Station and Idaho Engineering Experiment Station. The authors gratefully acknowledge the long-term evapotranspiration data collection and long-standing advice provided by Dr. James L. Wright, USDA-ARS Kimberly (ret.), the more than two decades of high quality agricultural weather data collection by the U.S. Bureau of Reclamation AgriMet system, and the very long-standing, routine data collection by the hundreds of cooperative weather station volunteers across the state who, for more than one-hundred years, have faithfully observed daily air temperature and precipitation.

The citation for the evapotranspiration data used from this site should be: Allen, Richard G. and Clarence W. Robison, 2012. *Evapotranspiration and Consumptive Irrigation Water Requirements for Idaho: Supplement updating the Time Series through December 2008*, Research Technical Completion Report, Kimberly Research and Extension Center, University of Idaho, Moscow, ID.

Questions regarding the data should be addressed to [Clarence W. Robison](mailto:Clarence.W.Robison@uidaho.edu) or [Richard G. Allen](mailto:Richard.G.Allen@uidaho.edu), University of Idaho, Kimberly Research and Extension Center, 3793 North 3600 East, Kimberly, ID 83341. Telephone (208)-423-6610

[illegible][illegible]

no overlap; both east of
POU area.

4.5 } no overlap; both
4.2
14 north of pol.
= 1

no overlap: north and west of β_{00} .



Point of Diversion from the Weiser River. A 12" corrugated pipe conveys water into a "feeder" ditch that eventually fills the pond. The high flows have bent the pipe and eroded the bank about 10'.



Discharge from the 12" corrugated pipe into the "feeder" ditch. Water slowly flows north toward the middle of the parcel.



Feeder ditch that conveys water to the pond.



Point where water is diverted to the ponds. A screen is in place to control fish from going into the pond and debris.



Water entering the pond area from the conveyance ditch.



Wildlife use shown as bird nesting stands and geese running around the place of use.



Capture of the whole pond.



Place where the water runs back into the Weiser River to constitute a “flow through” use.



Tail end of the ditch that returns water back to the Weiser River



Although hard to distinguish, this is the contact point back into the Weiser River.

**REQUEST TO WAIVE/MODIFY
CONDITION OF APPROVAL**

RECEIVED
JUL 05 2018
WATER RESOURCES
WESTERN REGION

Permit # 67-14611 (Mike DeFreitas)

I request the condition(s) of approval requiring (select 1 or more):

- ☒ measuring device
☒ lockable controlling works
☐ annual measuring/reporting, or power records alternative
☐ other – identify in space below

be waived or modified because:

Upon inspecting the pod for this permit it was found that the inlet pipe at
the river was installed at a high elevation. The result being that when it would
be necessary to curtail this water, the water would already be too low to
divert. If this layout is changed, controlling works and measurement would
then become necessary.

Brandi S. Horton-Bonner
signature

July 2, 2018
date

Brandi S. Horton-Bonner
print name

Skinner, Aaron

From: Brandi Horton-Bonner <watermaster67@hotmail.com>
Sent: Monday, July 02, 2018 10:30 AM
To: Skinner, Aaron
Subject: FW: Mike DeFreitas Measuring Device Question

Good Morning Aaron,

It occurred to me this morning that I never did hear back from you on the Mike DeFreitas measuring device situation, and that's when I discovered that the email I sent to you about it never made it to you. Below is the original email. I'm so sorry...and I'm worried that this may have caused some trouble for Mr. DeFreitas in his permit process. As I understood he was told he had 30 days before he'd lose his permit and I'm afraid the 30 days maybe up. That's my fault for not realizing that you never received my email...what can we do about this?

Thanks,

Brandi

Sent from Mail for Windows 10

From: Brandi Horton-Bonner
Sent: Wednesday, June 13, 2018 8:29 AM
To: Aaron.Skinner@idwr.idaho.gov
Subject: Mike DeFreitas Measuring Device Question

Good Morning Aaron,

I met with Mike DeFreitas on Monday to discuss whether or not he needs to install a measuring device. He called and said he'd received notice from IDWR that he had 30 days until they would revoke his permit, or something like that. I feel terrible about not having addressed this much sooner, but I've been waiting on Nick to get his butt in gear and write the letters in response to requests for variance in this whole measurement/headgate order. Mr. DeFreitas was included in that, but after more than four months without a peep out of Nick I've decided to just take care of this particular situation myself, given the time constraint.

In meeting with Mr. DeFreitas and viewing the location, he showed me that he recently had some streambank stabilization done at his diversion point. When the inlet pipe for his diversion was placed, it was installed very high. This means that in a few days (as the water levels drop), he won't be able to divert any water because the pipe will be suspended above the water. He did mention possibly modifying the pipe to run upstream in the river in order to be able to draft water into his pond. I told him if he did, we would need to have him install a measuring device and controlling works. We discussed a good location for installing a weir plate. I told him I would email this info to you and he could decide whether or not he wants to make further modifications to his POD.

Let me know what you and he decide, please. If he's not going to modify his diversion to make it possible to divert water at lower water levels, I'll gladly waive the measuring device requirement.

Have a great day,

Brandi Horton-Bonner
Watermaster-Dist.67
2297 Snapp Lane
Midvale, ID 83645



State of Idaho

DEPARTMENT OF WATER RESOURCES

Western Region • 2735 Airport Way • Boise, Idaho 83705-5082

Phone: (208) 334-2190 • Fax: (208) 334-2348 • Website: www.idwr.idaho.gov

C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Director

May 22, 2018

MICHAEL AND/OR ROBIN DE FREITAS
3050 FRUITVALE-GLENDALE RD
FRUITVALE, ID 83612

COPY

RE: Water Permit 67-14611

Dear Mr. and Mrs. DeFreitas:

In an effort to finalize recommendations for WR Permit No. 67-14611, I will need you to follow-up with the watermaster for Water District 67 regarding the potential waiver of Condition 01J, outlined below, or show compliance to the condition by June 22, 2018.

"Prior to diversion of water under this right, the right holder shall install and maintain a measuring device and lockable controlling works of a type acceptable to the Department as part of the diverting works."

We have communicated a few times over the phone to resolve this, but ultimately I need you to follow-up and get an answer from the watermaster. Our Department is not aware of any extension of time or deferred compliance issued for your right. The watermaster for Water District 67 is Brandi Bonner who can be reached at (208) 550-0313 or via email at watermaster67@hotmail.com.

The permit will be voided for not complying with the permitted conditions without a timely response within the next thirty (30) days or June 22, 2018. Please contact me at (208) 334-2190 if you have any questions. Thank you for your attention to this matter.

Respectfully,

Aaron Skinner
Water Resource Agent, SR.
Idaho Department of Water Resources
Phone: (208) 334-2190
Email: aaron.skinner@idwr.idaho.gov

Enclosure: Condition Waiver Form



State of Idaho

DEPARTMENT OF WATER RESOURCES

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Phone: (208) 334-2190 • Fax: (208) 334-2348 • Website: www.idwr.idaho.gov

C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Director

April 10, 2017

COPY

ROBIN DE FEITAS AND/OR
JOSEPH DE FREITAS
3050 FRUITVALE-GLENDALE ROAD
FRUITVALE, IDAHO 83612

RE: Scheduling Field Exam for Water Right Permit No. 67-14611

Dear Permit Holder:

We are planning to conduct water right examinations in the vicinity of the above-referenced permit **during the weeks of May 8th – May 26, 2017**. An examination is needed to verify the water use in order to issue a water right license.

The above-referenced permit authorizes **a diversion rate of 1.0 cfs for wildlife, recreation, and aesthetic use from the Weiser River, a tributary to the Snake River**. **If you have developed a beneficial use and still own the place of use property, please contact me at your earliest convenience to schedule an examination.**

If you did not develop a beneficial use of water under the permit or if you did develop that use, but subsequently abandoned it, a license cannot be issued. Please relinquish the permit by submitting the enclosed Relinquishment of Permit form (no fee required). The permit will be voided if beneficial use under the permit was not developed or was developed, but is now abandoned and you do not relinquish the permit.

If you did develop a beneficial use of water under the permit, but you no longer own the place of use property identified in the permit, please submit the enclosed Assignment of Permit form with the applicable \$25 processing fee.

Please contact me within the next thirty (30) days to either schedule an examination, submit a relinquishment, or submit an assignment. If you no longer own the place of use property and/or do not respond to this letter, the department will work with the current property owner to issue a license or void the permit.

Please call me at (208) 334-2190 if you have any questions. I appreciate your attention in this matter and I look forward to hearing from you.

Sincerely,

Aaron Skinner
Water Resource Agent

Enclosures: Relinquishment of Permit form
Assignment of Permit form
Water Permit Report and Map