

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 65-24217
Exam Date: 01/03/2025

1. Current Owner:
KELLY L CARPENTIER 1650 BANKS LOWMAN RD GARDEN VALLEY ID 83622-1014
2. Accompanied by: Permit Holder
Phone No: (208) 462-3796
Address: same as mailing address
Relationship to permit Holder: Self

3. **SOURCE:**
CARPENTER CREEK

Tributary
PAYETTE RIVER

Method of Determination: GARMIN GPS MAP76, GIS, and Boise County tax parcel data

B. OVERLAP REVIEW

1. Other water rights with the same place of use: NO Overlap

Water Right No.	Source	Purpose of Use	Basis
65-5661	SPRING	DOMESTIC	DECREEED 1998
65-5660	CARPENTER CREEK	IRRIGATION	DECREEED 2000

Comments: The two rights partially overlapping the permitted place of use (POU) are held by the permit holder. Additionally, the only irrigation right is for 13.2 Acres with 4 acres within the SWNW of Gov Lot 4, which can be satisfied without overlapping the permitted irrigation from storage POU.

2. Other water rights with the same point-of-diversion: YES Overlap

Water Right No.	Source	Purpose of Use	Basis
65-5660	CARPENTER CREEK	IRRIGATION	DECREEED 2000

Comments: The permit point of diversion (POD) is shared with right 65-5660 for irrigation, which is held by the permit holder.

C. DIVERSION AND DELIVERY SYSTEM

1. **LOCATION OF POINT(S) OF DIVERSION:** GARMIN GPS COORDS: W115°.87814, N44°.05054

CARPENTER CREEK NW¼ NW¼, Sec. 9, Twp 08N, Rge 05E, B.M. BOISE County
Method of Determination: GARMIN GPS MAP 76, GIS, and Boise County tax parcel data

PLACE OF USE: RECREATION, IRRIGATION, AND AESTHETIC STORAGE

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
08N	05E	9							X L4										

PLACE OF USE: IRRIGATION FROM STORAGE

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
08N	05E	8				0.3 L1													0.3
08N	05E	9							0.9 L4										0.9

Total Acres: 1.2

Method of Determination: Photos, GIS imagery, and Boise County tax parcel data

2

3.

☒ Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.

☒ Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.

☐ Aerial Photo Attached (required for irrigation of 10+ acres).

☒ Photo of Diversion and System Attached

4.

Well or Diversion ID No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
Headgate into 6" Pipe	Red Lion	2			

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Graduated Bucket & iPhone timer	Time Trials	NA	NA	NA	5 Gallon	NA

2. Measurements: Bucket test as described below.

E. FLOW CALCULATIONS

Measured Method: 10 time trials were recorded at the pond outlet using a graduated 5 gallon bucket and iPhone timer.

Trial # Time (Sec)

1. 13.23
2. 13.13
3. 13.00
4. 12.50
5. 13.36
6. 13.38
7. 13.70
8. 12.88
9. 13.36
10. 13.26

AVG 13.18 sec

(5-Gallons / 13.18 sec) x 60 = 22.8 GPM (0.05cfs)

Comment: The diversion from Carpenter has a wooden throat channeling water into a 6" PVC pipe, which is used as a headgate at a dogleg in the creek. Water is delivered to the pond through a series of 6" PVC pipes emptying into pools. The flow at each pool seems to increase as they approach the pond. The pools upstream of the pond and the discharge into the pond do not have a nappe that allows for a bucket test. However, the 6" overflow after the pond has a nappe dropping about 2ft into a pool where measurements can be taken. Given an observed uptick in flow progressing downstream a measurement of the pond output is a conservative representation of the diversion. I recommend that the license is issued with a maximum diversion to storage rate of 0.05cfs.

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 1.2 \text{ acres} \times 5.0 = 6.3 \text{ AF annually}$

$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.05\text{cfs} \times 231 \text{ days} \times 1.9835 = 22.9 \text{ AF annually}$

$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = 6.3 \text{ AF annually}$

2. Volume Calculations for Other Uses:

Recreation & Aesthetic Storage

21.9 AF (seepage loss) + 0.5 AF (evaporative loss) + 1.0 AF (capacity) = 23.4 AF annually

Irrigation Storage

1.2 Acres x 5.0 AF/acre = 6.0 AF annually

Total Volume= 29.4 AF annually

Year-round Flow Through Volume

$0.05 \text{ cfs} \times 448.8326 \text{ (gal/cfs)} \times 60 \text{ (min/hr)} \times 24 \text{ (hr/day)} \times 365 \text{ (day/yr)} = 11,795,320.728 \text{ Gal} / 325,850 \text{ (gal/AF)} = 36.2 \text{ AF}$

Total Annual Volume Needed = 36.2 AF

Volume Deficit Under Beneficial Uses= 6.8 AF

Comment: As the developed use is flow through year-round an amendment is necessary adding 6.8 AF for aesthetic use.

G. NARRATIVE/REMARKS/COMMENTS

On September 5, 2024, the Department received the Statement of Completion for permit 65-24217, stating in section 3 that the use was developed for 1 home, 1.2 acres of irrigation, and storage for irrigation, aesthetic and wildlife uses. The permit issued does not include domestic or wildlife uses. On January 3, 2025, a field examination was conducted with the permit holder (Ron Watson) as an escort. The permit describes the pond as 1.0 acre with a capacity of 3.5 AF, however, the pond developed is approximately 0.3-acre with a 1.0 AF capacity. Mr. Watson described the system as diverting from a headgate at Carpenter Creek through a 6" PVC pipeline with a cap on the end which is cut to restrict ½ of the flow and prevent sand being entrained. When necessary, the pipe can be closed using a full cap. The pipeline gravity feeds the flow into a series of pools enroute to the pond where it discharges down a stone waterfall into the pond. Water is pumped from the pond through 2 ¾" PVC intake to a 2 Hp Red Lion centrifugal pump where it is distributed by two ¾" PVC pipes for irrigation throughout the GIS measured 1.2-acre POU. The irrigation system has 9 zones with 8 sprinklers in each. Eight of the zones use Rain Bird Maxi Paw rotary sprinklers (up to 8.4 GPM @ 60PSI) while one zone is fan sprinklers on risers for watering closer to the home and in the area between the landscaped beds and shrubs on the east side of the home. Diversion from the creek has been developed year-round for pond maintenance and irrigation from storage. Outside of the irrigation flow is maintained through the pond for koi and other fish living in the pond.

Permit 65-24217 was established for diversion to storage for irrigation, recreation, and aesthetic storage. However, there was no component for flow through year-round use as has been developed. The use developed for the approximately 0.3-acre pond combined with flow through rate and volume components does not exceed the rate and volume of the permit issued. An amendment was drafted adding the aesthetic beneficial use descriptive of the flow through system. The permit holder signed and returned the amendment with the associated fee payment.

I recommend the license is issued for a 0.3-acre pond with 1.0 AF capacity with the associated volumes described in this report for Irrigation, Recreation, and Aesthetic Storage and a maximum diversion to storage and aesthetic rate of 0.05 cfs. Conditions 259, 270, R67, R70, WB9, R05, 185, 103, & 004 should be included on the license. Condition 121 should be replaced with condition 103 and condition 029 and 01J should be removed, per current guidance.

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

H. RECOMMENDATIONS

1. Recommended Amounts

<u>Beneficial Use</u>	<u>Period of Use</u>	<u>Rate of Diversion</u>	<u>Annual Volume</u>
RECREATION STORAGE	01/01 to 12/31		23.4 AF
AESTHETIC STORAGE	01/01 to 12/31		23.4 AF
IRRIGATION STORAGE	1 /1 to 12/31		6.0 AF
IRRIGATION FROM STORAGE	3 /15 to 10/31		6.0 AF
AESTHETIC (ADDED THROUGH AMENDMENT)	01/01 to 12/31	0.05 CFS	6.8 AF
DIVERSION TO STORAGE	1 /1 to 12/31	0.05 CFS	

Totals:

0.05 CFS

36.2 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

☐ Change B.U. as reflected above ☒ Add B.U. as reflected above ☐ None

I. AUTHENTICATION

Bob Howe - Water Resource Agent, Sr.

Field Examiner's Name _____ Date _____

Reviewer Scott King Date September 7, 2026



Figure 1- System Diagram- The irrigated area is outlined in yellow. The pond is outlined in blue. The diversion to irrigation is pumped through out the POU via 3/4\" PVC lines distributing water to 9 zones with 8 sprinklers each.



Photo 1- (above) The dogleg in Carpenter Creek (blue line) diverts water to a wooden enclosure.



Photo 2- At the back of the wooden enclosure a 6" PVC pipe with a cap that covers $\frac{1}{2}$ of the end of the pipe which can be rotated to allow for control of the volume entering the pipe and to keep sand from being entrained.



Photo 3- North of the pond facing south. The discharge of the 6" PVC pipe into the pond just past "Voodoo Falls" sign.

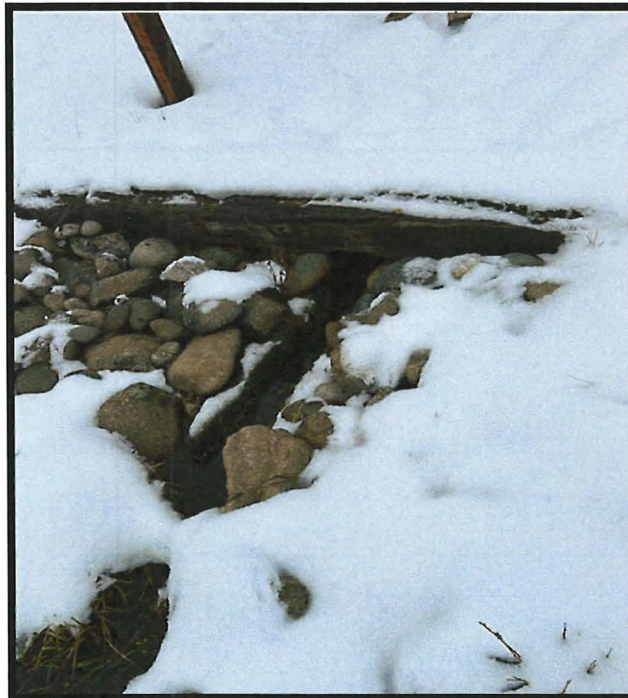


Photo 4- The discharge from the pipe into the north end of the pond (facing north).



Photo 5- At the south end of the pond. The 6" PVC outlet with fish screen and 1 ¼" PVC intake for the irrigation pump are under the dock.



Photo 6- A ¼" screen like the one pictured here is normally wrapped around the outlet . They are removed and to be cleaned periodically.



Photo 7- Step pool on the outlet from the pond. About 2' drop into the pool made bucket full measurements possible using the graduated bucket hanging on the post next to the 6" PVC pipeline. The green plastic pump house is visible in the left center of the image.



Photo 8a-(left) Green Plastic pump house with the intake disconnected for the winter and two 3/4" PVC discharge pipes deliver water to the 2 control valve boxes. **Photo 8b-(right)** Tag on the 2Hp pump motor used for irrigation within the POU.

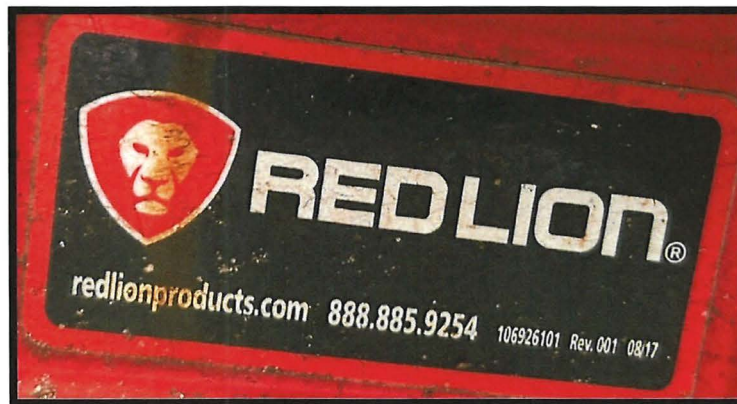


Photo 9- Pump end label (Cat #106926101).



Photo 10a-(left) Rain bird Maxi-Paw sprinkler heads found in 8 zones of the POU. **Photo 10b-(right)** Fan sprinklers found in landscape beds and near shrubs around the house.



Photo 11a &b- Rain Bird rotary sprinklers within the POU.



Photo 12a & b- Fan sprinklers found in bedding and at shrubs around the house.

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	65-24217
REVIEWER	Bob Howe
DATE	1/6/2024

User Input
Calculated value
Formula Explanations

INPUTS

Pond Surface Area (AC.)	0.3	AC.
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Pond Surface Area (SQ. FT.)	13068	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	SM	
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	19550	GPD
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Total Seepage Loss (AFA)	21.9	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	65-24217
REVIEWER	Bob Howe
DATE	1/6/2024

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: Garden Valley RS(NWS -USC00103448)

Month	mm/day ¹	Days per month	mm/Month
Jan	-2.83	31	0.00
Feb	-1.42	28	0.00
March	-0.69	31	0.00
April	0.81	30	24.30
May	1.73	31	53.63
June	2.91	30	87.30
July	4.38	31	135.78
August	3.83	31	118.73
September	2.29	30	68.70
October	0.39	31	12.09
November	-2.31	30	0.00
December	-3.47	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 = 500.53

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

$$(500.53 \div 304.8) \times 0.30 = 0.5 \text{ AFA}$$

Total Storage Calculations

FILE NUMBER	65-24217
REVIEWER	Bob Howe
DATE	1/6/2024

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.)	0.3	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	3.2	"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.
Pond Capacity (AF)	0.96	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)	21.9	The "Estimated Seepage Loss" is automatically carried over from the "Seepage Loss" sheet.
Estimated Evaporation Loss (AF)	0.5	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	23.4	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)	4.38	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)	0.06	"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)	0.03	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	28	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	-39	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.