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OCT 01 2015

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

WATER RESOURCES
WESTERN REGION

A Beneficial Use Field Report is prepared by a water right examiner as the result of an examination to clearly confirm and establish the extent of the beneficial use of water established in connection with a permit during the development period authorized by the permit and any extensions of time previously approved.

A. GENERAL INFORMATIONPermit No. 63-315151. Owner Rivers End Neighborhood Assn Inc.Phone No. (208) 939-6000Current address 9601 W State, #203, Boise, ID 837142. Examiner's name David ShawEXAM DATE 9-22-20153. Accompanied by Jerry Blair, Bill ColeEmail georgia@dev-services.comAddress Rivers End Neighborhood Assn, Inc, 9601 W State St, #203, Boise, ID 83714Relationship to permit holder HOA Board MembersPhone No. (208) 939-60004. Source Ground Water

tributary to _____

B. OVERLAP REVIEW1. Other water rights with the same place of use 63-32614 for mitigation and 63-334002. Other water rights with the same source and point of diversion 63-33400**C. DIVERSION AND DELIVERY SYSTEM****1. Point(s) of Diversion:**

Ident. No.	Gov't Lot	¼	¼	¼	Sec	Twp	Rge	County	Method of Determination/Remarks
1	7		NW	SE	16	4N	1E	Ada	GIS and NAIP Photography
2	7		NW	SE	16	4N	1E	Ada	"
4	7		SW	SE	16	4N	1E	Ada	"
5	7		SW	SE	16	4N	1E	Ada	"

2. Place(s) of Use:Method of determination GIS and NAIP Photography

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
4N	1E	16														X/L7	X/L7	X/L8	
		21	X/L1	X/L2															

Ident. No. 63-31515

Attachment to: ☐ Application for Permit to Appropriate Water ☐ Application for Transfer** ☐ Adjudication Claim
☐ Application for Amendment of Permit ☒ Beneficial Use Field Report ☐ Statutory Claim

[illegible]

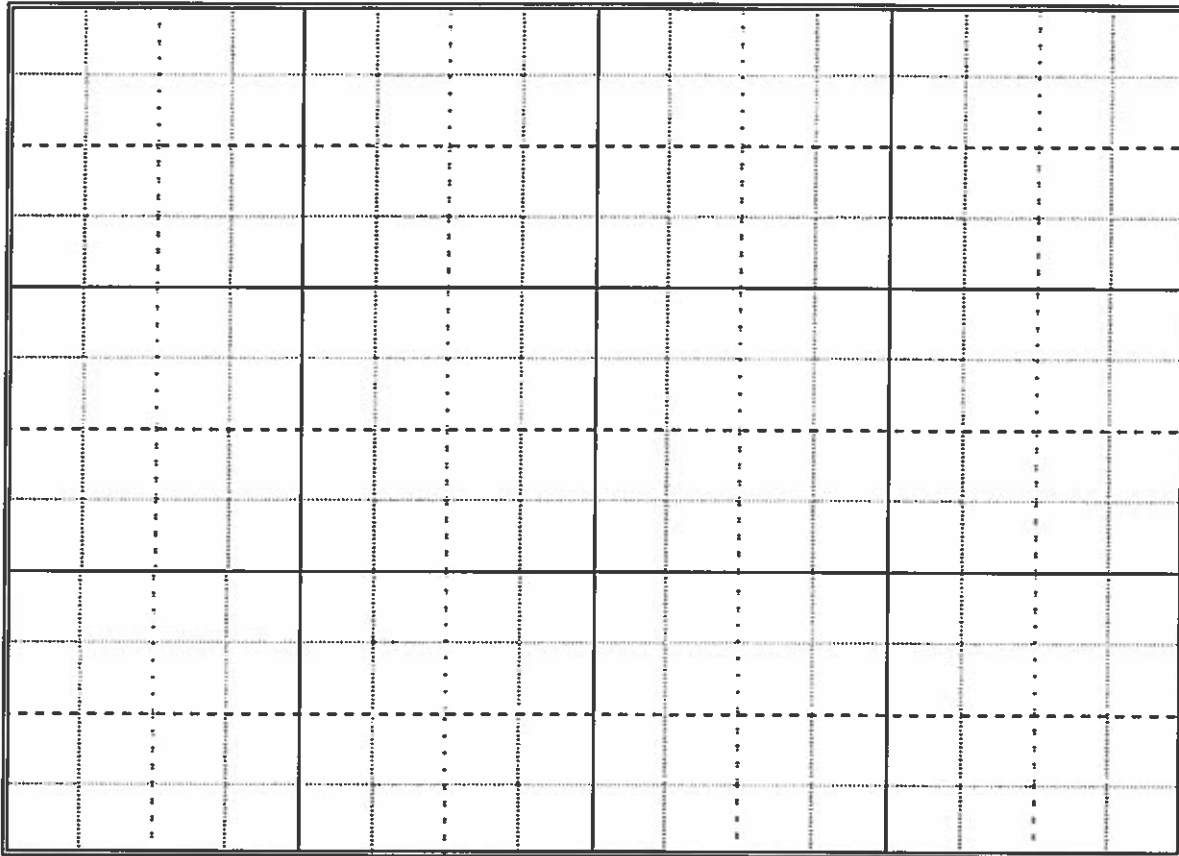
a. If water is for irrigation, indicate acreage in each subdivision in the tabulation below.

b. If water is used for other purposes, place a symbol of the use (example: D for Domestic) in the corresponding place of use below.

[illegible]

Ident. No. 63-31515

3. **Delivery System Diagram:** Indicate all major components and distances between components. Indicate weir size/ditch size/pipe diameter (inside), as applicable. Use the space provided or ☒ see attached.



Scale: 1" = _____

- ☐ Copy of USGS Quadrangle attached showing location(s) of point(s) of diversion and place(s) of use (required)
☐ Aerial photo attached (required for irrigation of 10+ acres)
☒ Photo of diversion and system attached

4.

Well or Diversion Identification 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: _____

See description under volume determination.

E. NARRATIVE/REMARKS/COMMENTS

The original engineering firm for the subdivision estimated the pond volume to be 49.5 ac-ft when application for permit 63-31515 was filed in 2002. Since the ponds were used as a material source their ultimate depth is greater than first estimated. If IDWR accepts the method of determining the total pond volume described below an application will be filed for the additional 113.7 ac-ft of storage. If IDWR determines a different total pond volume is appropriate the difference will be addressed in a new application for ground water storage.

Some of the ponds supply water for water features which return the water to the ponds. The only consumptive use from the ponds is evaporation and irrigation, both of which are covered by permit no. 63-33400.

Has the permit holder met all conditions of permit approval, including any mitigation requirements and/or measuring device installation requirements? ☒ Yes ☐ No If no, what must be done to meet the permit requirements?

F. FLOW CALCULATIONS☐ Additional computation sheets attached

Measured Method:

G. VOLUME CALCULATIONS**1. Volume Calculations for Irrigation:** $V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$ _____ $V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation Season}) \times 1.9835 =$ _____ $V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} =$ _____**2. Volume Calculations for Other Uses:**

The surface areas of the ponds were measured using a GIS shape file based on 2013 NAIP photography. The depth of ponds 1-6, 8 & 9 were sounded on a grid pattern to estimate average depths. The depths were then weighted by pond area and an average pond depth of 13.6 feet was estimated by this procedure. The total pond volume is estimated to be 163.2 ac-ft based on an average pond depth of 13.6 feet and 12 acres of pond surface area. See attached spreadsheet for pond volume calculations.

H. RECOMMENDATIONS**1. Recommended Amounts**

Beneficial Use	Period of Use		Rate of Diversion Q (cfs)	Annual Volume V (afa)
	From	To		
Aesthetic Storage	1/1	12/31		49.5
Totals:				49.5

2. Recommended Amendments☐ Change P.D. as reflected on page 1☐ Add P.D. as reflected on page 1☒ None☐ Change P.U. as reflected on page 1☐ Add P.U. as reflected on page 1☐ Other**I. AUTHENTICATION**

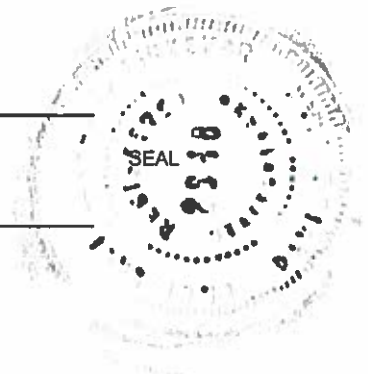
Field Examiner's Signature



Date 9-30-2015

Reviewer _____

Date _____



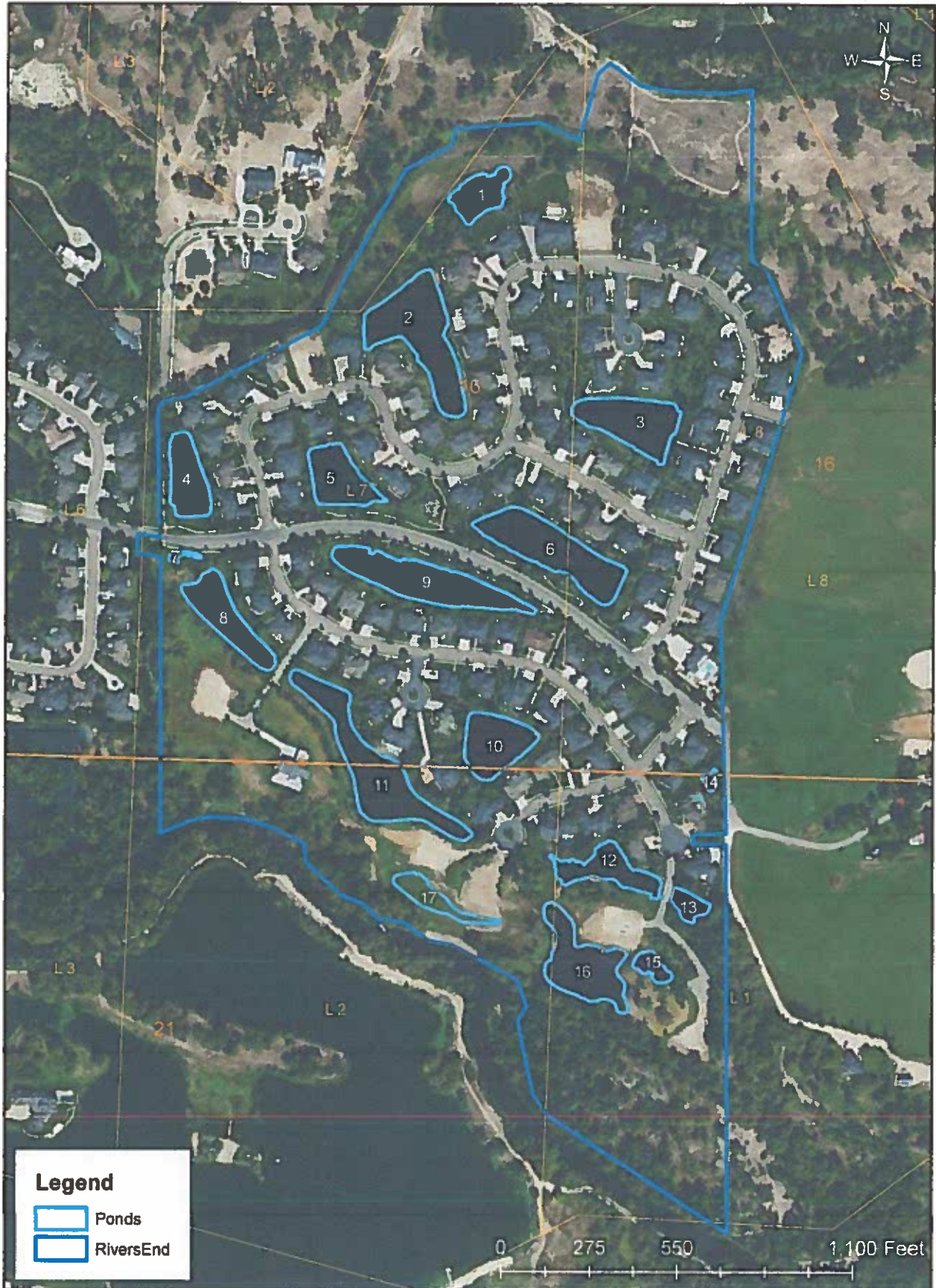
Rivers End Subdivision Pond Calculations

Pond #	Measured Depths - ft										Average Depth - ft	Area Acres	Weighted Depth - ft
1	15	15.25	16.41667	13	9.33	11.5	13.25				13.4	0.43	5.8
2	10	8	10.66667	23.58333	24.33	30	7.25	8	9.538462		14.6	1.46	21.3
3	8.583333	11.25	24.41667	21	12.16667	6.583333					14.0	0.95	13.3
4	11	22	12.41667	11.25	22.5	12.91667					15.3	0.58	8.9
5	12.25	26.75	9	22.83333	7.583333						15.7	0.66	10.4
6	9.5	8.833333	8.916667	23.33	24.75	23	5	4.666667	8.25		12.9	1.30	16.8
8	6.33	6	6	12	11.41667	18	16.58333	11.33	10	5.25	10.3	0.72	7.4
9	12	6	10	1.916667	21	21	18	9.666667	10.75	21	13.1	1.25	16.4
Total													
Average Depth											13.6		
Total Volume											163.7		

7.35 100.2

Rivers End Subdivision

In Twp 4N Rge 1E, B.M.



Based on 2013 NAIP Photography

Prepared for Rivers End Neighborhood Assn Inc by ERO 9-2015

Photos for Permit No. 63-31515 Field Exam



Pond 7 and Associated Water Feature Supplied from Pond 8



Pond 7 Discharge Into Pond 8



Water Feature at East End of Pond 9



Water Feature Supplied by Pond 6



Pond 6 Water Feature Return Channel to Pond 6

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
STATEMENT OF COMPLETION
FOR SUBMITTING PROOF OF BENEFICIAL USE

FOR OFFICE USE ONLY

Amt. of Fee \$: _____
Receipt No. _____
Receipt By: _____
Date Received: _____

The Idaho Department of Water Resources considers this form a statement by the permit holder(s) that development of a water right has been completed and that water has been applied to beneficial use to the extent described below. This form must be accompanied by an examination fee, when necessary, or by a completed Beneficial Use Field Report prepared by a certified water right examiner. Please refer to the instructions and fee schedule for this form. If ownership of the permit has changed, please contact any Department office or visit the Department's website at: www.idwr.idaho.gov for an Assignment of Permit form. If you wish to relinquish your permit because you have not established the authorized use of the water and are not applying for an extension, please notify the Department in writing.

1. Permit No.: 63-31515 Telephone No.: (208) 939-6000

2. Name of Permit Holder(s): Rivers End Neighborhood Assn Inc

3. Mailing Address: 9601 W State St, #203 City: Boise

State: ID Zip: 83714 Email: Georgia Mackley <georgia@dev-services.com>

4. Source of Water: Ground Water If **GROUND WATER** (well), Date Drilled: mo. _____ / yr. _____

Well Driller: Sources are open aesthetic ponds Drilling Permit Number: No driller was involved

5. Extent of use(s) completed (as authorized by the water right permit):

Domestic (No. of households): _____ Stockwater (No. and type of stock): _____

Irrigation (No. of acres): _____ Other: Storage in 12 aesthetic ponds

6. Total rate of diversion or storage volume for which proof is submitted: _____ cfs OR 49.5 acre-feet.

7. Compliance with a measuring device requirement, lockable controlling device requirement, and/or other conditions of permit: **Refer to the approval conditions on your permit and respond accordingly. The Department will not issue a license if permit conditions are not met.**

Measuring Device: Is a measuring device required?

If yes, has the measuring device been installed?

Yes ☐	No ☒
Yes ☐	No ☒

Lockable Controlling Device: Is a lockable device required to control the diversion?

If yes, has the lockable device been installed?

Yes ☐	No ☒
Yes ☐	No ☒

Other Conditions of Permit: Do the approval conditions on your permit require you to submit additional information in connection with your proof of beneficial use? If yes, list the conditions below and attach documents with the required information.

None Completed?

Yes ☐	No ☐
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8. Fee Enclosed: \$ None See fee schedule on back of the instructions for filing proof of beneficial use. Proofs filed without an appropriate fee, will be considered incomplete.

9. Person to contact to accompany the Department representative during field examination of the water system.

Name: Field exam accompanies this Proof Notice Telephone Number: _____

Mailing Address: _____ City: _____

State: _____ Zip: _____ Email: _____

The information given on this form is my true statement of the extent to which the above numbered permit has been developed and water has been diverted and applied to a beneficial use. I understand that any undeveloped portion of the permit is relinquished to the State of Idaho.

Signature of permit holder: Gene D. Blair President Date: 9/20/2015
(Include your title, if on behalf of company or organization)

Mail to: Idaho Department of Water Resources, PO Box 83720, Boise, ID 83720-0098

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	63-31515
REVIEWER	Patrick Kelly
DATE	10/15/2015

User Input
Calculated value
Formula Explanations

INPUTS

Pond Surface Area (AC.)	12	AC.
-------------------------	----	-----

Pond Surface Area (SQ. FT.)	522720	SQ. FT.
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My Soil Classification is	Water Table	
Suggested Seepage Rate (FT./DAY)	0.0000	FT./DAY

Formula: (Surface Area X Seepage Rate) X 7.48 = Gallons Per Day Loss
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Convert to GPD	0	GPD
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Total Seepage Loss (AFA)	0.0	AFA
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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 X:\Spatial\Soils\USCS\PondSoils.lyr. 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	63-31515
REVIEWER	Patrick Kelly
DATE	10/15/2015

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: Boise 7 N (NWS -- 101017)

Month	mm/day ¹	Days per month	mm/Month
Jan	-1.28	31	0.00
Feb	-0.58	28	0.00
March	-0.01	31	0.00
April	1.55	30	46.50
May	2.38	31	73.78
June	4.06	30	121.80
July	5.21	31	161.51
August	4.49	31	139.19
September	2.79	30	83.70
October	1.21	31	37.51
November	-1.15	30	0.00
December	-1.70	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 = 663.99

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

(663.99 ÷ 304.8) X 12.00 = 26.1 AFA

Total Storage Calculations

FILE NUMBER	63-31515
REVIEWER	Patrick Kelly
DATE	10/15/2015

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.)	12	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	13.6	"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)	163.2	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)	0.0	The "Estimated Seepage Loss" is automatically carried over from the "Seepage Loss" sheet.
Estimated Evaporation Loss (AF)	26.1	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	189.3	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.



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OCT 01 2015

WATER RESOURCES
WESTERN REGION

October 1, 2015

Nick Miller, Manager
Department of Water Resources Western Region
2735 Airport Way
Boise, ID 83705-5082

RE: Field Examinations for Permits 63-31515 and 63-33400

Dear Nick:

Attached are completed Beneficial Use Field Reports for the above permits in the name of Rivers End Neighborhood Assn Inc. The permits are for aesthetic pond storage and irrigation and pond evaporation respectively.

The application for pond storage was completed by the original engineer for the subdivision and the pond volume was underestimated. We have attempted to estimate the pond volume recognizing the volume is larger than provided by the original permit. Once IDWR has the opportunity to review the volume calculations another application will be prepared for the additional pond volume similar to permit 63-34002 for Banbury Meadows LLC. We did not complete the application preferring to come to agreement on the amount of water needed to be applied for before filing the application.

The permit for irrigation and pond evaporation includes 67 acres of irrigation within a 91.7 acre PPU and 12 acres of ponds. The PPU has not changed but once the hardened areas were removed the actual irrigated area is 41.2 acres and 12 acres of ponds. Slightly more than 0.02 cfs per acre is recommended to account for night-time irrigation. If that recommendation cannot be licensed please let me know how you recommend we accommodate the actual water use that is occurring.

Thank you in advance please let me know if you have questions or recommendations.

Yours truly,

Attachments

cc: Rivers End Neighborhood Assn Inc.

Denver
1842 Clarkson St.
Denver, CO 80218
303.830.1188

Durango
1015 1/2 Main Avenue
Durango, CO 81301
970.422.2136

Hotchkiss
P.O. Box 932
161 South 2nd St.
Hotchkiss, CO 81419
970.872.3020

Idaho
4001 East Main Street
Emmett, ID 83617
208.365.7684

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