



State of Idaho

**DEPARTMENT OF WATER RESOURCES**

322 East Front Street • P.O. Box 83720 • Boise, Idaho 83720-0098

Phone: (208) 287-4800 • Fax: (208) 287-6700 • Website: [www.idwr.idaho.gov](http://www.idwr.idaho.gov)

C.L. "BUTCH" OTTER  
Governor

GARY SPACKMAN  
Director

October 4, 2013

LAWRENCE J BLACKBURN  
PO BOX 2802  
KETCHUM ID 83340

RE: License No. 37-8537

**Issuance of License**

Dear Water Right Holder(s):

The Department of Water Resources has issued the enclosed Water Right License confirming that a water right has been established in accordance with your permit. Please be sure to thoroughly review the conditions of approval and remarks listed on your license.

The license is a PRELIMINARY ORDER issued by the Department pursuant to section 67-5243, Idaho Code. It can and will become a final order without further action by the Department unless a party petitions for reconsideration or files an exception and/or brief within fourteen (14) days of the service date as described in the enclosed information sheet.

Please note that water right owners are required to report any change of water right ownership and/or mailing address to the Department within 120 days of the change. Failure to report these changes could result in a \$100 late filing fee. Contact any office of the Department or visit the Department's homepage on the Internet to obtain the proper forms and instructions.

If you have any questions, please contact me at 208-287-4916.

Sincerely,

For Craig L. Saxton

Water Rights Supervisor

Enclosure(s)

cc: MARGARET AND CHARLES HEPWORTH  
JAMES AND SUZANNE MULENOS

## **CERTIFICATE OF SERVICE**

I hereby certify that on October 4, 2013, I mailed a true and correct copy, postage prepaid, of the foregoing PRELIMINARY ORDER (Approved License) to the person(s) listed below:

**RE: WATER RIGHT NO.**

**37-8537**

**LAWRENCE J BLACKBURN  
PO BOX 2802  
KETCHUM ID 83340**

**MARGARET HEPWORTH  
1121 E BRAEMERE RD  
BOISE ID 83702-1851**

**CHARLES HEPWORTH  
1121 E BRAEMERE RD  
BOISE ID 83702-1851**

**JAMES MIULENOS  
PO BOX 6192  
SUN VALLEY ID 83353**

**SUZANNE MULENOS  
PO BOX 6192  
SUN VALLEY ID 83353**



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**Darla Block  
Technical Records Specialist**

## **EXPLANATORY INFORMATION TO ACCOMPANY A PRELIMINARY ORDER**

(To be used in connection with actions when a hearing was **not** held)

(Required by Rule of Procedure 730.02)

The accompanying order or approved document is a "Preliminary Order" issued by the department pursuant to section 67-5243, Idaho Code. **It can and will become a final order without further action of the Department of Water Resources ("department") unless a party petitions for reconsideration, files an exception and brief, or requests a hearing as further described below:**

### **PETITION FOR RECONSIDERATION**

Any party may file a petition for reconsideration of a preliminary order with the department within fourteen (14) days of the service date of this order. **Note: the petition must be received by the department within this fourteen (14) day period.** The department will act on a petition for reconsideration within twenty-one (21) days of its receipt, or the petition will be considered denied by operation of law. See Section 67-5243(3) Idaho Code.

### **EXCEPTIONS AND BRIEFS**

Within fourteen (14) days after: (a) the service date of a preliminary order, (b) the service date of a denial of a petition for reconsideration from this preliminary order, or (c) the failure within twenty-one (21) days to grant or deny a petition for reconsideration from this preliminary order, any party may in writing support or take exceptions to any part of a preliminary order and may file briefs in support of the party's position on any issue in the proceeding with the Director. Otherwise, this preliminary order will become a final order of the agency.

### **REQUEST FOR HEARING**

Unless a right to a hearing before the Department or the Water Resource Board is otherwise provided by statute, any person aggrieved by any final decision, determination, order or action of the Director of the Department and who has not previously been afforded an opportunity for a hearing on the matter may request a hearing pursuant to section 42-1701A(3), Idaho Code. A written petition contesting the action of the Director and requesting a hearing shall be filed within fifteen (15) days after receipt of the denial or conditional approval.

### **ORAL ARGUMENT**

If the Director grants a petition to review the preliminary order, the Director shall allow all parties an opportunity to file briefs in support of or taking exceptions to the preliminary order and may schedule oral argument in the matter before issuing a final order. If oral arguments are to be heard, the Director will within a reasonable time period notify each party of the place, date and hour for the argument of the case. Unless the Director orders otherwise, all oral arguments will be heard in Boise, Idaho.

## CERTIFICATE OF SERVICE

All exceptions, briefs, requests for oral argument and any other matters filed with the Director in connection with the preliminary order shall be served on all other parties to the proceedings in accordance with IDAPA Rules 37.01.01302 and 37.01.01303 (Rules of Procedure 302 and 303).

## FINAL ORDER

The Director will issue a final order within fifty-six (56) days of receipt of the written briefs, oral argument or response to briefs, whichever is later, unless waived by the parties or for good cause shown. The Director may remand the matter for further evidentiary hearings if further factual development of the record is necessary before issuing a final order. The department will serve a copy of the final order on all parties of record.

Section 67-5246(5), Idaho Code, provides as follows:

Unless a different date is stated in a final order, the order is effective fourteen (14) days after its service date if a party has not filed a petition for reconsideration. If a party has filed a petition for reconsideration with the agency head, the final order becomes effective when:

- (a) The petition for reconsideration is disposed of; or
- (b) The petition is deemed denied because the agency head did not dispose of the petition within twenty-one (21) days.

## APPEAL OF FINAL ORDER TO DISTRICT COURT

Pursuant to sections 67-5270 and 67-5272, Idaho Code, if this preliminary order becomes final, any party aggrieved by the final order or orders previously issued in this case may appeal the final order and all previously issued orders in this case to district court by filing a petition in the district court of the county in which:

- i. A hearing was held,
- ii. The final agency action was taken,
- iii. The party seeking review of the order resides, or
- iv. The real property or personal property that was the subject of the agency action is located.

The appeal must be filed within twenty-eight (28) days of this preliminary order becoming final. See section 67-5273, Idaho Code. The filing of an appeal to district court does not itself stay the effectiveness or enforcement of the order under appeal.

Darla,

Could you please send a copy of the license and license map with a change of ownership form to the new owners.

There address are as follows:

Margaret and Charles Hepworth  
1121 E Braemere RD  
Boise, ID 83702-1851

James and Suzanne Mulenios  
PO Box 6192  
Sun Valley, ID 83353

Thank you

Dan Nelson

State of Idaho  
Department of Water Resources  
**Water Right License**

WATER RIGHT NO. 37-08537

Priority: July 25, 1989

Maximum Diversion Volume: 0.2 AF

It is hereby certified that LAWRENCE J BLACKBURN  
PO BOX 2802  
KETCHUM ID 83340 has complied with the terms and conditions of the  
permit, issued pursuant to Application for Permit dated July 25, 1989; and has submitted Proof of  
Beneficial Use on October 09, 1990. An examination confirms water is diverted from:

**SOURCE**

PARKER GULCH CREEK

Tributary: ELKHORN GULCH CREEK

and a water right has been established as follows:

| <u>BENEFICIAL USE</u> | <u>PERIOD OF USE</u> | <u>DIVERSION RATE</u> | <u>ANNUAL<br/>DIVERSION VOLUME</u> |
|-----------------------|----------------------|-----------------------|------------------------------------|
| AESTHETIC STORAGE     | 01/01 to 12/31       |                       | 0.2 AF                             |

**LOCATION OF POINT(S) OF DIVERSION:**

PARKER GULCH CREEK L3 (SW1/4SE1/4) Sec. 16, Twp 04N, Rge 18E, B.M. BLAINE County  
PARKER GULCH CREEK L3 (SW1/4SE1/4) Sec. 16, Twp 04N, Rge 18E, B.M. BLAINE County

**PLACE OF USE:** AESTHETIC STORAGE

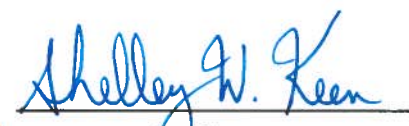
| Twp Rge Sec | NE                | NW                | SW                | SE                | Totals            |
|-------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| 04N 18E 16  | NE   NW   SW   SE | NE   NW   SW   SE | NE   NW   SW   SE | NE   NW   SW   SE | NE   NW   SW   SE |
|             |                   |                   |                   | X<br>L3           |                   |

**CONDITIONS OF APPROVAL**

1. Use of water under this water right will be regulated by the watermaster of State Water District No. 37.
2. After specific notification by the Department, the right holder shall install a suitable measuring device or shall enter into an agreement with the Department to use power records to determine the amount of water diverted and shall annually report the information to the Department.

This license is issued pursuant to the provisions of Section 42-219, Idaho Code. The water right confirmed by this license is subject to all prior water rights and shall be used in accordance with Idaho law and applicable rules of the Department of Water Resources.

Signed this 3<sup>rd</sup> day of October, 2013.

  
for GARY SPACKMAN  
Director

State of Idaho  
Department of Water Resources

# Attachment To Water Right License

37-8537

This map depicts the AESTHETIC STORAGE 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.



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

0 0.02 0.04 0.08 Miles



## MEMORANDUM

TO: File 37-8537

FROM: Daniel Nelson – Staff Hydrologist

DATE: October 3, 2013

SUBJECT: Licensing Review

I have been asked to review water right 37-8537 for licensing purposes. During my review of this water right I found a couple of issues that need to be addressed. I will discuss each issue separately below:

### Storage vs. Aesthetic Use:

The original permit states that there will be two ponds on a ditch diverted from the channel for aesthetic use. The aesthetic diversion rate was high enough that there would be no need for a storage component using the 24 hour rule. However, the maps supplied with the permit do suggest that the ponds were actually on an intermittent stream. The field examiner found that the pond was on-stream, so the ponds are actually on stream ponds. In order to properly describe this water use, we are going to change the use to Aesthetic Storage instead of Aesthetic. There should have never been a diversion rate involved with this permit, and it was partially the Department's responsibility at the time of permitting to ensure that the use was properly described. In speaking with my supervisor, no amendment would be needed, since they did exactly what they said they were going to do in the permit.

### One pond vs. two ponds:

The field examiner for this permit found and described one of the two ponds that were filed for in this permit. However, the field examiner didn't describe the second pond. The 1992 aerial photo clearly shows that there are 2 ponds (please see attachment). The 2 ponds were developed on two separate subdivision lots. The field examiner worked with the property manager and not the actual owner of the property, so it can be assumed that the property manager either wasn't aware of the other pond. Currently the two subdivision lots are owned by two separate owners, so you may assume that the pond not described in the field exam could have had a different owner. According to the 1992 aerial photos the two ponds are exactly the same size. Since both ponds are on-stream, there will be two points of diversion instead of the one point of diversion described in the permit (one diversion point for each pond). Once again, the permit reviewer would have mentioned the two points of diversion if there was a better understanding of whether these ponds were on stream or not.

#### Overlap:

The field examiner didn't mark any overlapping water rights for this permit. There are several water rights that do overlap the properties, but those water rights are owned by Sun Valley Water and Sewer District, which supplies the in-house and yard water for these properties. They should not affect the licensing of these water rights.

#### Volume:

Both of these ponds have a surface area of 0.22 acres. I only ran one pond spreadsheet for these ponds, but it is representative of both ponds. The spreadsheet shows a total volume of 0.106 acre feet per pond. Therefore, this permit should be licensed for 0.2 acre feet of water with no diversion rate, since they are on-stream ponds.

#### Measurement Device and Lockable Headgate Requirement:

On 9/5/1990, Gary Spackman wrote a memo to the file stating that the measurement device requirement was waived, but that the Department should maintain jurisdiction to require a measurement device in the future if needed. On February 11, 1991, an order was issued waiving the installation requirement for a lockable device and a measurement device. I spoke with Tim Luke of the Resource Protection Bureau, and he stated that these ponds probably wouldn't require a measurement device and lockable headgate, so go ahead and license them. We will maintain the condition that gives the Department and the watermaster the ability to require a measurement device in the future if needed. Therefore, condition 01H was replaced with 01M.

#### Conditions:

Condition 045 was placed on this permit, but that was at the time that the Department thought that the water would be diverted from the creek instead of being on-stream ponds. Since the water use is for on-stream ponds, the only losses from the ponds would be the seepage water and the evaporation water. The pond spreadsheet shows the evaporation and seepage as 0.042 af from each pond. When the two ponds are combined, the amount of losses to the creek is less than 0.1 acre feet per year. It would be too difficult to administer a water right for 0.1 acre feet, so it was determined that it would be in the best interest of all involved to remove this condition from the license.

Condition 005 was replaced with condition R04. The stream channel permit requirement was removed, since it is no longer necessary. Condition 016 was removed, because there were no remarks shown in the file or the database.



SENW

SWNE 2

SENE

NESW

NESE

NWSE 3

16

04N18E

NESE 4

SESW

SWSE

SESE

SENW

SWNE 2

SENE 1

SENE

NESE

NESW

16

NWSE 3

04N18E

Non-examined pond

Non-Examined Point of Diversion

Examined Pond

Examined Point of Diversion

SESW

SWSE

SESE



# TOTAL STORAGE

|             |            |
|-------------|------------|
| FILE NUMBER | 37-8537    |
| REVIEWER    | Dan Nelson |
| DATE        | 10/3/2013  |

This spreadsheet has been designed by Idaho Department of Water Resources to estimate the total seepage, evaporation and fill capacity required for a pond

|                                 |       |                                                                                                                                                                                                                                                                                            |
|---------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surface Area<br>(in Acres)      | 0.022 | "Surface Area" is automatically carried over from the "Seepage Loss Sheet"                                                                                                                                                                                                                 |
| Average Pond Depth<br>(in feet) | 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 suggest multiplying the maximum depth by 0.4 to get the average depth, or you can use any method that |
| Pond Capacity<br>(in acre feet) | 0.044 | 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                                                                                          |

|                                                                                                             |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Volume Needed<br>Above Initial Fill to<br>Fulfill From Storage<br>Needs- "Multiple Fills"<br>(in acre feet) | 0     | The "Volume Needed 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).<br><b>PLEASE NOTE:</b> You must have a <b>"From Storage"</b> component exceeding the initial fill on the permit to include a volume in this space. |
| Estimated Seepage<br>Loss (in acre feet)                                                                    | 0.024 | The "Estimated Seepage Loss" is automatically carried over from the Seepage Loss Sheet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Estimated<br>Evaporation Loss<br>(in acre feet)                                                             | 0.038 | The "Estimated Evaporation Loss" is automatically carried over from the Evaporation Loss Sheet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Total Volume<br>Required<br>(in acre feet)                                                                  | 0.106 | "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<br>(in cfs)                                              | 1.00 | The "Flow Rate" into the Pond depicts the actual flow either measured or estimated into the pond.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Highest Daily<br>Evaporation Rate<br>From Evaporation<br>Tab.<br>(in mm/day) | 3.96 | This number is automatically selected by picking the highest recorded number in the "Precipitation Deficit Table".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Maximum Required<br>Daily Maintenance<br>Volume (in<br>acre feet per day)    | 0.00 | "Maximum Required Daily Maintenance Volume" is the maximum volume of water needed on any given day during the year, and 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<br>Maintenance Flow<br>(in cfs)                                      | 0.00 | The "Minimum Maintenance Flow" is the minimum amount of flow required to maintain the level of the pond. This number is determine 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<br>the Pond                                            | 0    | The "Days Required to Fill the Pond" is calculated by dividing the "Pond Capacity" by the "Flow Rate" minus "Minimum Maintenance Flow" multiplied by 1.9835. This section will assist you in determining if the flow rate being diverted to the pond is adequate to fill the pond while maintaining the pond level. The length of time to fill the pond will help determine if the flow rate is adequate for the size of pond being proposed. This number should be between 1 and 365 days for a project to be successful.                                                                                                                                                                                                    |
| Days Required to Fill<br>the Pond at 13,000<br>gallons per day               | 1    | The "Days Required to Fill the Pond at 13,000 gallons per day" is calculated converting the "Pond Capacity" and the "Maximum Daily Maintenance Volume" to gallons. The "Pond Capacity" is then divided by 13,000 gallons minus the "Maximum Daily Maintenance Volume" in gallons to determine the number of days to fill pond. This number should be between 1 and 365 if this pond is to described as a domestic use.                                                                                                                                                                                                                                                                                                        |

|                      |
|----------------------|
| User Input           |
| Calculated value     |
| Formula Explanations |

## SEEPAGE CALCULATIONS

This spreadsheet has been designed by Idaho Department of Water Resources to estimate the total annual seepage losses from a pond.

|             |            |
|-------------|------------|
| FILE NUMBER | 37-8537    |
| REVIEWER    | Dan Nelson |
| DATE        | 10/3/2013  |

|                      |
|----------------------|
| User Input           |
| Calculated value     |
| Formula Explanations |

### INPUTS

|                            |
|----------------------------|
| SQ. FT. Calculator         |
| Pond Surface area in acres |
| 0.022                      |

|                             |     |
|-----------------------------|-----|
| POND SURFACE AREA (SQ. FT.) | 958 |
|-----------------------------|-----|

|                                 |        |
|---------------------------------|--------|
| SUGGESTED SEEPAGE RATE (FT/DAY) | 0.0030 |
|---------------------------------|--------|

Use the table below to find the "SUGGESTED SEEPAGE RATES".

|                                                             |
|-------------------------------------------------------------|
| FORMULA:                                                    |
| (Surface Area X Seepage Rate) / 7.48 = Gallons Per Day loss |

|                |    |     |
|----------------|----|-----|
| CONVERT TO GPD | 22 | GPD |
|----------------|----|-----|

|                          |       |     |
|--------------------------|-------|-----|
| TOTAL SEEPAGE LOSS (AFA) | 0.024 | AFA |
|--------------------------|-------|-----|

| SUGGESTED SEEPAGE RATES FOR DIFFERENT SOIL TYPES:                                                    |
|------------------------------------------------------------------------------------------------------|
| GW, GP, GM, GC, SW, SP and SM (silty sand, sand silt mixtures and gravel mixtures) = 0.20 ft per day |
| OL and ML (inorganic silts - very fine sands, silty, or clayey fine sands) = 0.016 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 with shallow 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 Statlon, 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 ponds intersect the water table.

# Evaporation Loss Calculation

|             |            |
|-------------|------------|
| FILE NUMBER | 37-8537    |
| REVIEWER    | Dan Nelson |
| DATE        | 10/3/2013  |

This spreadsheet has been designed by Idaho Department of Water Resources to estimate the annual evaporation losses from a pond.

|                                                                              |
|------------------------------------------------------------------------------|
| The acronyms used on the Kimberly Research Center website are defined below: |
| P = Precipitation                                                            |
| ET= Evapotranspiration                                                       |
| P <sub>d</sub> = Precipitation deficit                                       |
| P <sub>d</sub> =ET-P                                                         |

|                      |
|----------------------|
| User Input           |
| Calculated value     |
| Formula Explanations |

## USING THIS SPREADSHEET

To ascertain the evaporation from a pond, you will need to go to the Kimberley Research Center website. The link is found below . This web site provides the Precipitation Deficit for the area where the pond is located. The Precipitation Deficit is the total amount of free pan 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, and the entire state is pretty much covered. 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 .

Found at: <http://www.kimberly.uidaho.edu/ETIdaho/online.php>

## Precipitation Deficit

Station: Twin Falls 2 NNE (NWS -- 109294)

| Month     | mm/day <sup>1</sup> | Days per month | mm/Month |
|-----------|---------------------|----------------|----------|
| Jan       | 0.00                | 31             | 0.00     |
| Feb       | 0.00                | 28             | 0.00     |
| March     | 0.18                | 31             | 5.58     |
| April     | 1.42                | 30             | 42.60    |
| May       | 2.24                | 31             | 69.44    |
| June      | 2.83                | 30             | 84.90    |
| July      | 3.96                | 31             | 122.76   |
| August    | 3.33                | 31             | 103.23   |
| September | 2.18                | 30             | 65.40    |
| October   | 1.00                | 31             | 31.00    |
| November  | 0.00                | 30             | 0.00     |
| December  | 0.00                | 31             | 0.00     |

**PLEASE NOTE:** We cannot use the season average, because there are several areas in Northern Idaho with a negative Precipitation Deficit. Therefore, we must enter each monthly deficit, and enter in a zero (0) for each negative month. The reason for this is that precipitation can only offset evaporation to the extent of the evaporation.

Please enter the daily average Precipitation Deficit as shown in the example below.

Although it has sometimes been useful to consider wintertime evaporation to be zero, Allen and Robison (2007, p. 169) noted, "Evaporation during nongrowing (wintertime) periods varies widely . . ."

<sup>1</sup>Negative monthly mean values should be entered in the above table as "0".

Total mm/year = 524.91

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

$$( 524.91 \div 304.8 ) \times 0.02 = 0.038 \text{ AFA}$$

Surface Area of Pond is automatically Carried over from the Seepage Loss Sheet.

# ET<sub>Idaho</sub> 2012 -- Evapotranspiration and Consumptive Irrigation Water Requirements for Idaho

Please send suggestions for improving this site to [robison@kimberly.uidaho.edu](mailto:robison@kimberly.uidaho.edu) Copyright 2012, University of Idaho.

## Hailey Ranger Stn (NWS -- 103942)

Statistics based on thirty year normal spans 1932 to 1981 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 <small>(Click here for a graph)</small> |        |       |      |      |      |      |      |      |      |      |       |       |                             |                                 |        |
|                                                               | Jan    | Feb   | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov   | Dec   | Growing Season <sup>a</sup> | Non Growing Season <sup>b</sup> | Annual |
| Mean <sup>j</sup>                                             | mm/day |       |      |      |      |      |      |      |      |      |       |       | mm                          |                                 |        |
| Monthly <sup>c</sup>                                          | -1.35  | -0.84 | 0.18 | 1.42 | 2.24 | 2.83 | 3.96 | 3.33 | 2.18 | 1.00 | -0.56 | -1.78 | 385                         | 0                               | 385    |
| 15-Day Moving Average <sup>d</sup>                            | -1.44  | -0.83 | 0.12 | 1.56 | 2.28 | 2.95 | 4.06 | 3.32 | 2.21 | 1.02 | -0.77 | -1.76 |                             |                                 |        |
| 7-Day Moving Average <sup>e</sup>                             | -1.38  | -0.83 | 0.16 | 1.50 | 2.30 | 2.86 | 4.03 | 3.32 | 2.22 | 1.04 | -0.62 | -1.79 |                             |                                 |        |
| 3-Day Moving Average <sup>f</sup>                             | -1.37  | -0.84 | 0.18 | 1.44 | 2.26 | 2.84 | 3.97 | 3.33 | 2.20 | 1.01 | -0.57 | -1.78 |                             |                                 |        |
| Standard Deviation <sup>k</sup>                               | mm/day |       |      |      |      |      |      |      |      |      |       |       | mm                          |                                 |        |
| Monthly <sup>c</sup>                                          | 1.74   | 1.07  | 1.18 | 0.87 | 1.57 | 1.04 | 0.79 | 1.36 | 0.90 | 1.00 | 1.07  | 2.60  | 127                         | 0                               | 127    |
| 15-Day Moving Average <sup>d</sup>                            | 2.02   | 1.40  | 1.21 | 1.17 | 1.46 | 1.38 | 0.62 | 1.35 | 1.15 | 1.00 | 1.59  | 2.62  |                             |                                 |        |
| 7-Day Moving Average <sup>e</sup>                             | 2.82   | 2.01  | 1.57 | 1.65 | 1.78 | 1.94 | 0.89 | 1.60 | 1.42 | 1.38 | 2.04  | 3.56  |                             |                                 |        |
| 3-Day Moving Average <sup>f</sup>                             | 3.81   | 2.79  | 2.15 | 2.42 | 2.32 | 2.54 | 1.38 | 2.10 | 1.94 | 1.94 | 2.75  | 4.62  |                             |                                 |        |
| 20 % Exceedance <sup>l</sup>                                  | mm/day |       |      |      |      |      |      |      |      |      |       |       | mm                          |                                 |        |
| Monthly <sup>c</sup>                                          | -0.39  | 0.17  | 0.91 | 2.11 | 3.29 | 3.75 | 4.46 | 3.84 | 2.78 | 1.67 | 0.31  | -0.48 | 470                         | 0                               | 470    |
| 15-Day Moving Average <sup>d</sup>                            | 0.35   | 0.57  | 1.40 | 2.98 | 4.01 | 4.26 | 4.64 | 4.27 | 3.30 | 2.18 | 0.72  | 0.36  |                             |                                 |        |
| 7-Day Moving Average <sup>e</sup>                             | 0.62   | 0.95  | 1.63 | 3.31 | 4.24 | 4.67 | 4.77 | 4.46 | 3.52 | 2.52 | 1.13  | 0.54  |                             |                                 |        |
| 3-Day Moving Average <sup>f</sup>                             | 0.76   | 1.09  | 2.06 | 3.66 | 4.64 | 5.12 | 5.13 | 4.70 | 3.72 | 2.70 | 1.22  | 0.64  |                             |                                 |        |
|                                                               |        |       |      |      |      |      |      |      |      |      |       |       |                             |                                 |        |