

STATE OF IDAHO  
DEPARTMENT OF WATER RESOURCES  
BENEFICIAL USE FIELD REPORT

**A. GENERAL INFORMATION**

Permit No: 37-22898

Exam Date: 6/28/2016

## 1. Current Owner:

KEITH O NEIL HELMICK 16 E INDIAN CREEK RD MAYFIELD ID 83716 (208)386-9679 And/Or

SANDRA R HELMICK 16 E INDIAN CREEK RD MAYFIELD ID 83716 (208)386-9679

## 2. Accompanied by: Neil Helmick

Phone No: 208-867-3616

Address: same as above

Relationship to Permit Holder: Permit Holder

## 3. SOURCE:

SPRING

## TRIBUTARY:

MALAD 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 SYSTEM**1. LOCATION OF POINT(S) OF DIVERSION:SPRING L2 (NE $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ ) Sec. 30, Twp 01S, Rge 11E, B.M. ELMORE County

Method of Determination: ArcMap aerial imagery, field visit, Google Earth imagery

2. PLACE OF USE: STOCKWATER STORAGE

| Twp | Rge | Sec | NE |    |    |    | NW |          |          |    | SW |    |    |    | SE |    |    |    | Totals |
|-----|-----|-----|----|----|----|----|----|----------|----------|----|----|----|----|----|----|----|----|----|--------|
|     |     |     | NE | NW | SW | SE | NE | NW       | SW       | SE | NE | NW | SW | SE | NE | NW | SW | SE |        |
| 01S | 11E | 30  |    |    |    |    |    | X<br>L 1 | X<br>L 2 |    |    |    |    |    |    |    |    |    |        |

Method of Determination: ArcMap aerial imagery, field visit, Google Earth imagery

## 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.XX

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                        |            |    |                  |           |                                   |
|                           |            |    |                  |           |                                   |
|                           |            |    |                  |           |                                   |
|                           |            |    |                  |           |                                   |

\*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: No measurement required per Beneficial Use Exam Rules.

**E. FLOW CALCULATIONS**

Measured Method: NA

\_\_\_\_\_ Additional Computation Sheets Attached

**F. VOLUME CALCULATIONS**

1. Volume Calculations for Irrigation:

$$V_{I.R} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = \text{NA}$$

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

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

2. Volume Calculations for Other Uses: Pond size is approximately 50' x 60' x 2' deep. Surface area rounds to 0.1 acre and depth averages about 2', for a volume of 0.2 AF.

**G. NARRATIVE/REMARKS/COMMENTS**

The field exam for permit 37-22898 was conducted on June 28, 2016, with permit holder Keith Helmick present. The pond is situated on a small spring and was excavated to an average depth of about 2 feet. Overall dimensions are approximately 50' by 60'. The surface area of the pond is 0.07 acre, which rounds up to 0.1 acre, and with an average depth of 2 feet, the pond volume is 0.2 AF. Using the IDWR Pond Loss Calculation tool, evaporation was calculated to be 0.3 AF per year, so the permitted volume of 0.5 AF/year is recommended. The Place of Use for the pond was permitted in the SWNW, Government Lot 2, T01S, R11E, Section 30. The field exam revealed that the pond is partially in the NWNW, Government Lot 1 of Section 30, so an amendment of the permit will be sought before 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> |
|-----------------------|----------------------|-----------------------|----------------------|
| STOCKWATER STORAGE    | 01/01 to 12/31       |                       | 0.5 AF               |
| <u>Totals:</u>        |                      |                       | 0.50 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 Jim Bateman Date 07/28/2016

Reviewer \_\_\_\_\_ Date \_\_\_\_\_

## 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 | 37-22898       |
| REVIEWER    | Jim Bitzenburg |
| DATE        | 7/28/2016      |

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

### INPUTS

|                         |     |     |
|-------------------------|-----|-----|
| Pond Surface Area (AC.) | 0.1 | AC. |
|-------------------------|-----|-----|

|                             |      |         |
|-----------------------------|------|---------|
| Pond Surface Area (SQ. FT.) | 4356 | SQ. FT. |
|-----------------------------|------|---------|

|                                                                           |                      |         |
|---------------------------------------------------------------------------|----------------------|---------|
| I used the following method to obtain my Soil Classification information: | NRCS Web Soil Survey |         |
| My Soil Classification is                                                 | GrndWtr              |         |
| Suggested Seepage Rate (FT./DAY)                                          | 0.0000               | FT./DAY |

|                                                                      |
|----------------------------------------------------------------------|
| Formula: (Surface Area X Seepage Rate) X 7.48 = Gallons Per Day Loss |
|----------------------------------------------------------------------|

|                |   |     |
|----------------|---|-----|
| Convert to GPD | 0 | GPD |
|----------------|---|-----|

|                          |     |     |
|--------------------------|-----|-----|
| Total Seepage Loss (AFA) | 0.0 | AFA |
|--------------------------|-----|-----|

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.

|             |                |
|-------------|----------------|
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|                      |
|----------------------|
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| Formula Explanations |

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                |

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

| Month     | mm/day <sup>1</sup> | Days per month | mm/Month |
|-----------|---------------------|----------------|----------|
| Jan       |                     | 31             | 0.00     |
| Feb       | -1.12               | 28             | 0.00     |
| March     | -0.26               | 31             | 0.00     |
| April     | 0.54                | 30             | 16.20    |
| May       | 2.17                | 31             | 67.27    |
| June      | 3.08                | 30             | 92.40    |
| July      | 4.34                | 31             | 134.54   |
| August    | 5.29                | 31             | 163.99   |
| September | 4.80                | 30             | 144.00   |
| October   | 3.29                | 31             | 101.99   |
| November  | 1.97                | 30             | 59.10    |
| December  | -0.39               | 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 = 779.49

$$[(779.49 \text{ mm/yr}) \div (\text{convert to feet})] \times (\text{Surface area of pond, in acres}) = \text{Evaporation Loss in Acre Feet}$$

$$(779.49 \div 304.8) \times 0.10 = 0.3 \text{ AFA}$$

## Total Storage Calculations

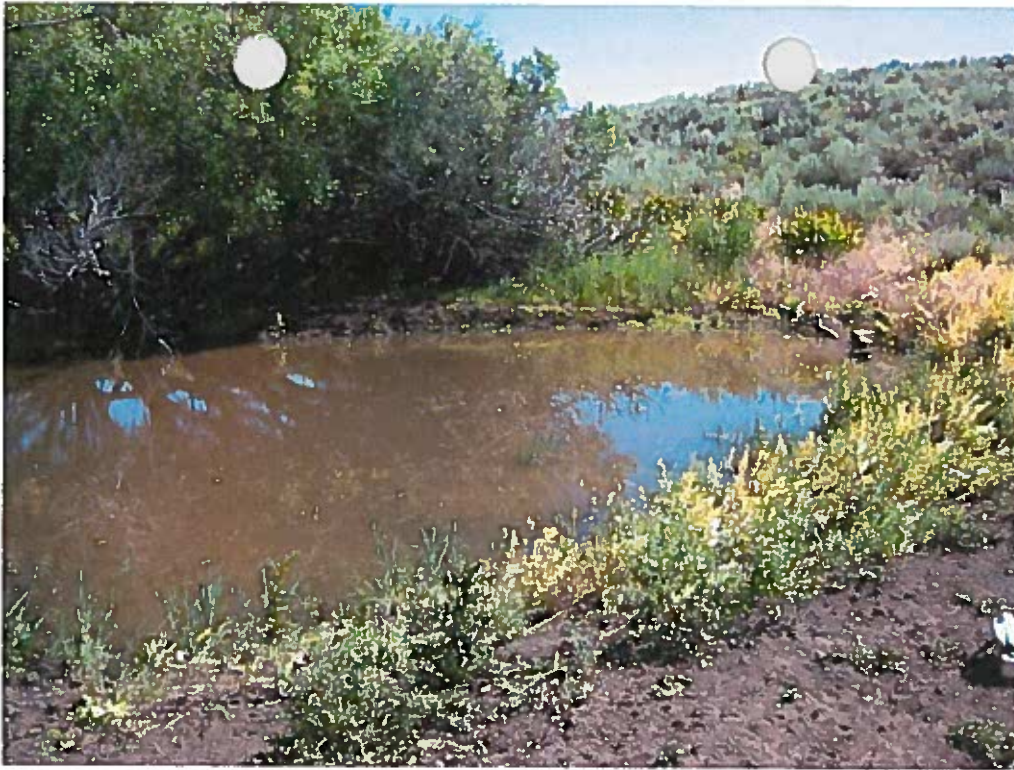
|             |                |
|-------------|----------------|
| FILE NUMBER | 37-22898       |
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| DATE        | 7/28/2016      |

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.)                                                                           | 0.1 | "Surface Area" is automatically carried over from the "Seepage Loss" sheet.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Average Pond Depth (FT.)                                                                     | 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)                                                                           | 0.2 | 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.<br>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).<br>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)                                                              | 0.3 | The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Total Volume Required (AF)                                                                   | 0.5 | 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)                                     | 0.04 | 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) | 5.29 | 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)                    | 0.00 | "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)                                | 0.00 | 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                                | 3    | 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. <b>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.</b>                                                                                                                                                             |
| Days Required to Fill the Pond at 13,000 Gallons per Day      | 5    | 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. <b>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.</b><br>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. |



**Views of Pond**



**Field Exam  
37-22898**

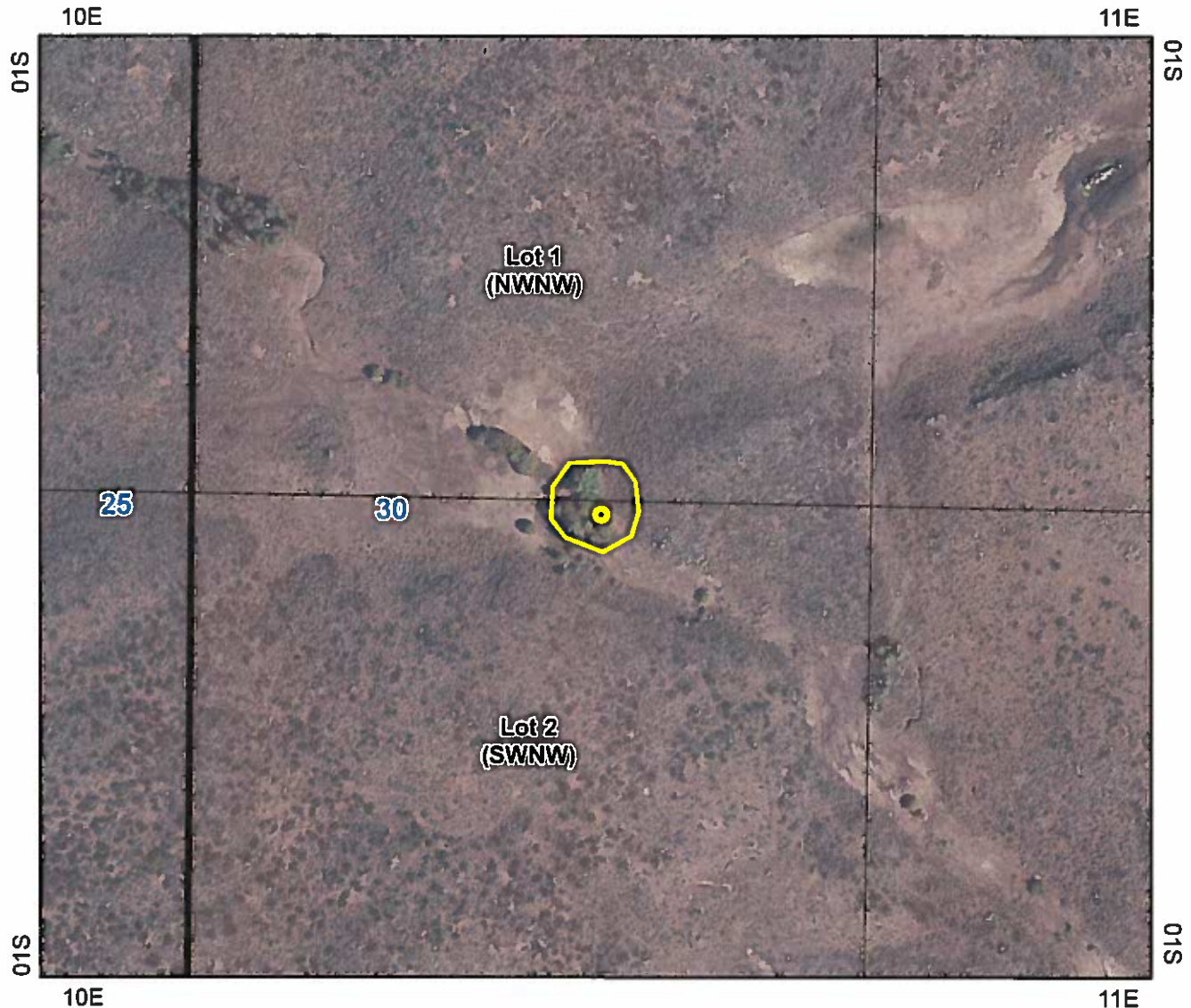


**Helmick stockwater pond**

State of Idaho  
Department of Water Resources

# Attachment to Water Right License 37-22898

This map depicts the STOCKWATER 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.



0 0.035 0.07 0.14 Miles

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



Field Exam 37-22898