



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

C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Director

September 25, 2013

PAUL T YEGGE
SHIRLEY YEGGE
320 MIDDLE FORK SANTA CREEK RD
SAINT MARIES ID 83861

RE: License No. 92-10138

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,

Craig L. Saxton
Water Rights Supervisor

Enclosure(s)

CERTIFICATE OF SERVICE

I hereby certify that on September 26, 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.

92-10138

**PAUL T YEGGE
320 MIDDLE FORK SANTA CREEK RD
SAINT MARIES ID 83861**

**SHIRLEY YEGGE
320 MIDDLE FORK SANTA CREEK RD
SAINT MARIES ID 83861**



**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.

State of Idaho
Department of Water Resources
Water Right License

WATER RIGHT NO. 92-10138

Priority: March 15, 2011

Maximum Diversion Rate: 0.01 CFS
Maximum Diversion Volume: 8.4 AF

It is hereby certified that PAUL T YEGGE

And/Or

SHIRLEY YEGGE
320 MIDDLE FORK SANTA CREEK RD
SAINT MARIES ID 83861

has complied with the terms and conditions of the permit, issued pursuant to Application for Permit dated March 15, 2011; and has submitted Proof of Beneficial Use on May 19, 2011. An examination confirms water is diverted from:

SOURCE

UNNAMED STREAM
SPRINGS

Tributary: SOUTH FORK SANTA CREEK
SOUTH FORK SANTA 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 DIVERSION VOLUME</u>
IRRIGATION FROM STORAGE	04/01 to 10/31		0.6 AF
IRRIGATION	04/01 to 10/31	0.01 CFS	0.6 AF
IRRIGATION STORAGE	01/01 to 12/31		0.6 AF
RECREATION STORAGE	01/01 to 12/31		7.8 AF

LOCATION OF POINT(S) OF DIVERSION:

UNNAMED STREAM SW1/4SE1/4 Sec. 35, Twp 44N, Rge 03W, B.M. BENEWAH County
SPRINGS SE1/4SW1/4SE1/4 Sec. 35, Twp 44N, Rge 03W, B.M. BENEWAH County

PLACE OF USE: IRRIGATION AND IRRIGATION FROM STORAGE

Twp Rge Sec	NE				NW				SW				SE				Totals
44N 03W 35	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	.2

Total Acres: 0.2

PLACE OF USE: IRRIGATION STORAGE AND RECREATION STORAGE

Twp Rge Sec	NE				NW				SW				SE				Totals
44N 03W 35	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	X

State of Idaho
Department of Water Resources
Water Right License

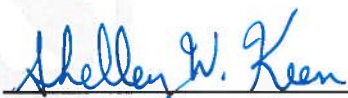
WATER RIGHT NO. 92-10138

CONDITIONS OF APPROVAL

1. Right 92-10138 authorize the diversion of an annual total of 7.8 acre-feet to be used for the initial filling of the pond or and for the replacement of losses caused by seepage, evaporation, and use.
2. Water shall not be diverted under this right when flows in the St. Maries River are below minimum flow amounts as defined by Right 92-7200.
3. A fish screen of 1/4 inch or smaller mesh shall be installed and maintained at the point of diversion on the stream.
4. This right when combined with all other rights shall provide no more than 0.01 cfs per acre nor more than 0.6 afa at the field headgate for irrigation of the place of use.
5. The pond established by the storage of water under this right shall not exceed a total capacity of 6.5 acre-feet or a total surface area of 1 acre.
6. This right does not grant any right-of-way or easement across the land of another.

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.

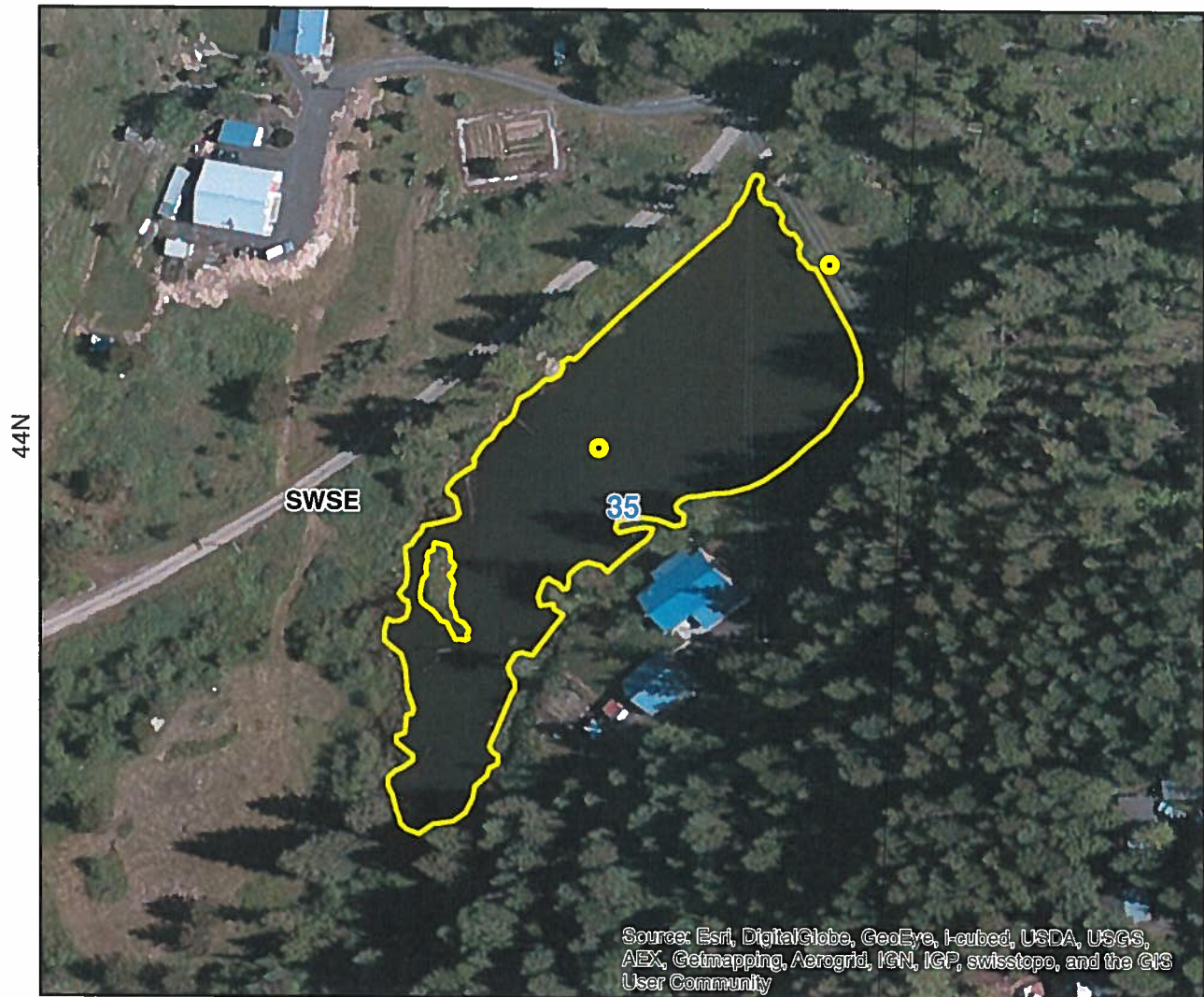
Signed this 25th day of September, 2013.


for GARY SPACKMAN
Director

State of Idaho
Department of Water Resources
Attachment To Water Right License
92-10138

This map depicts the RECREATION STORAGE AND IRRIGATION 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.

03W



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

0 0.0125 0.025 0.05 Miles



State of Idaho
Department of Water Resources
Attachment To Water Right License
92-10138

This map depicts the IRRIGATION AND IRRIGATION FROM 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.

03W



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

0 0.0075 0.015 0.03 Miles



STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 92-10138

Exam Date: 5/21/2013

1. Current Owner: PAUL T YEGGE

And/Or

SHIRLEY YEGGE
320 MIDDLE FORK SANTA CREEK RD
SAINT MARIES ID 83861
(208)245-3797

2. Accompanied by:
- Paul Yegge

Phone No: Same As AboveAddress: Same As AboveRelationship to Permit Holder: Owner

- 3.
- SOURCE**

SPRINGS
UNNAMED STREAM

TRIBUTARY

SOUTH FORK SANTA CREEK
SOUTH FORK SANTA CREEK

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:**

UNNAMED STREAM SW1/4SE1/4 Sec. 35, Twp 44N, Rge 03W, B.M. BENEWAH County
SPRINGS SE1/4SW1/4SE1/4 Sec. 35, Twp 44N, Rge 03W, B.M. BENEWAH County

Method of Determination: Visual Inspection, GPS, and GIS

2.

PLACE OF USE: IRRIGATION FROM STORAGE AND IRRIGATION

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
44N	03W	35																	.2

Total Acres: 0.2

PLACE OF USE: IRRIGATION STORAGE AND RECREATION 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	
44N	03W	35																X	

Method of Determination: Visual Inspection and GIS

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

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

YES 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
Irrigation Re-lift Pump	Pacific Hydrostar Gas Powered	6.5	95977	Pacific Hydrostar 2"	1.5 inch discharge – 2 inch intake

*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
NONE						

2. Measurements: The pump wasn't operational at the time of the exam, so a theoretical calculation was used.

E. FLOW CALCULATIONS

X Additional Computation Sheets Attached

Measured Method:

Measurement = 0.31 cfs (See Theoretical Calculation Sheet)

Acres = 0.01 cfs (0.03 cfs per acre X 0.2 acres = 0.01 cfs)

Permit allowed = 0.03 cfs (0.03 cfs was allowed for the irrigation of 1 acres which is the standard.)

License recommend for 0.01 cfs. (During the permit process, the permit was issued for one acre. The system only irrigates a small garden area and the surrounding trees. A single sprinkler is used, and is estimated at 5 gpm or 0.01 cfs. A 5/32 sprinkler at a pressure of 40 to 50 psi produces about 5 gpm. 0.01 cfs seems reasonable for this type of system.)

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 0.2 \text{ acres} \times 3 \text{ af} = 0.6 \text{ af.}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.01 \text{ cfs} \times 214 \times 1.9835 = 4.2 \text{ af}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = 0.6 \text{ af}$$

2. Volume Calculations for Other Uses:

6.5 af pond capacity + 1.3 af for pond evaporation = 7.8 af. (See Attached Spreadsheet.)

G. NARRATIVE/REMARKS/COMMENTS

The pond averages 6.5 feet deep and has a surface area of 1 acre. The pond was constructed on a drainage in a boggy area that collects runoff water (unnamed stream) and spring water (unnamed spring). The pond has a dam that is between 8 to 10 feet tall. The pond has a surface area of 1 acre, and averages approximately 6.5 feet in depth with the deepest part of the pond being 12 feet deep. A 6.5 Hp gas powered pump diverts water up the hill north of the pond to a small garden area. The sprinklers in the garden area are set on the post, and any runoff water from the garden flows down toward the pond irrigating a grassy area between the road and the garden. The grassy area irrigation is the result of over spray from the sprinklers. Sprinklers are set up on the corner posts of the garden. The total amount of irrigation is approximately 0.2 acres.

Water right 92-10466 appears to overlap the place of use, but it is for the property to the west of the pond, and is not connected to this system.

A ¼ inch wire mesh fence has been constructed on the outflow of the pond, preventing any fish from exiting or entering the pond. This stream is not a year round stream, so preventing fish from exiting the pond is more important than preventing fish from entering the pond. I left the easement condition on this license, since the pipeline to the garden does go under the county road. The condition requiring compliance with county ordinances was also removed. The rest of the conditions were altered to comply with existing conditions were necessary.

Have conditions of permit approval been met? X Yes No

H. RECOMMENDATIONS

1. Recommended Amounts

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
IRRIGATION FROM STORAGE	01/01 to 04/01		0.60 AF
IRRIGATION	04/01 to 10/31	0.010 CFS	0.60 AF
IRRIGATION STORAGE	01/01 to 12/31		0.60 AF
RECREATION STORAGE	01/01 to 12/31		7.80 AF
<u>Totals:</u>		0.010 CFS	8.40 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 ___ Other

I. AUTHENTICATION Daniel A. Nelson – Staff Hydrologist

Field Examiner's Name _____ Date _____

Reviewer _____ Date _____

State of Idaho
Department of Water Resources
Attachment To Field Exam
92-10138

This map depicts the RECREATION STORAGE AND IRRIGATION 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.

03W



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

0 0.0125 0.025 0.05 Miles



State of Idaho
Department of Water Resources
Attachment To Field Exam
92-10138

This map depicts the IRRIGATION AND IRRIGATION FROM 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.

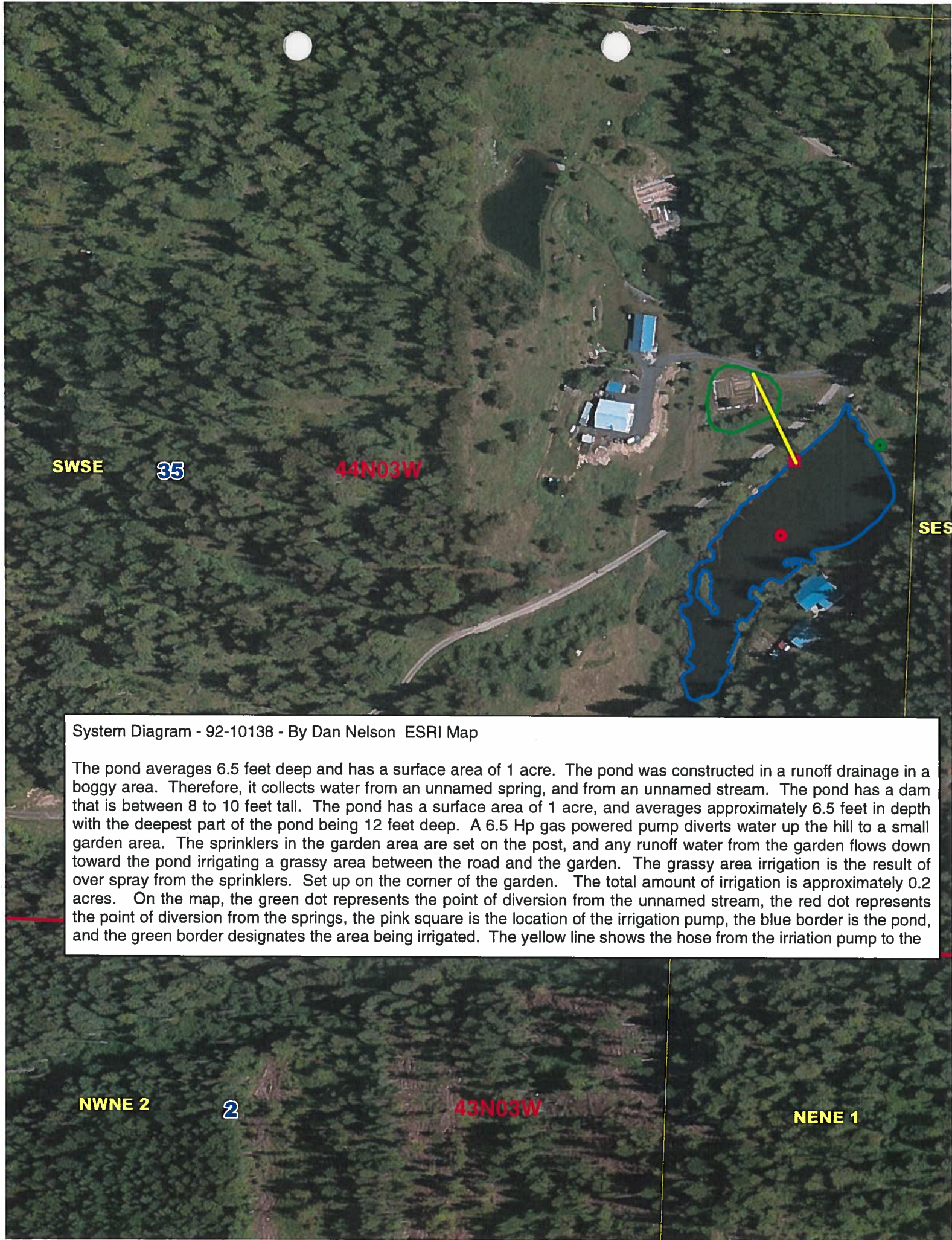
03W



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

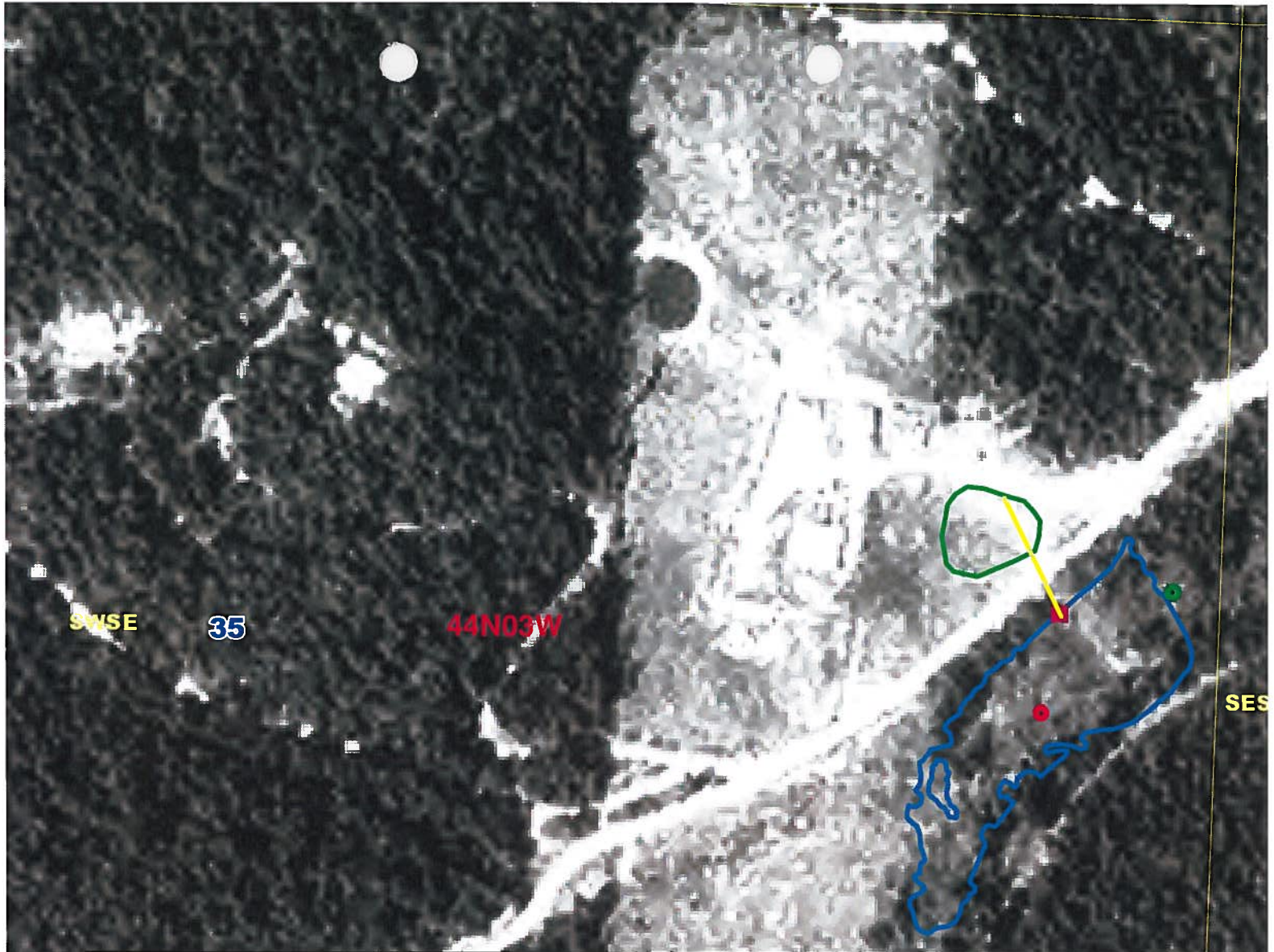
0 0.0075 0.015 0.03 Miles





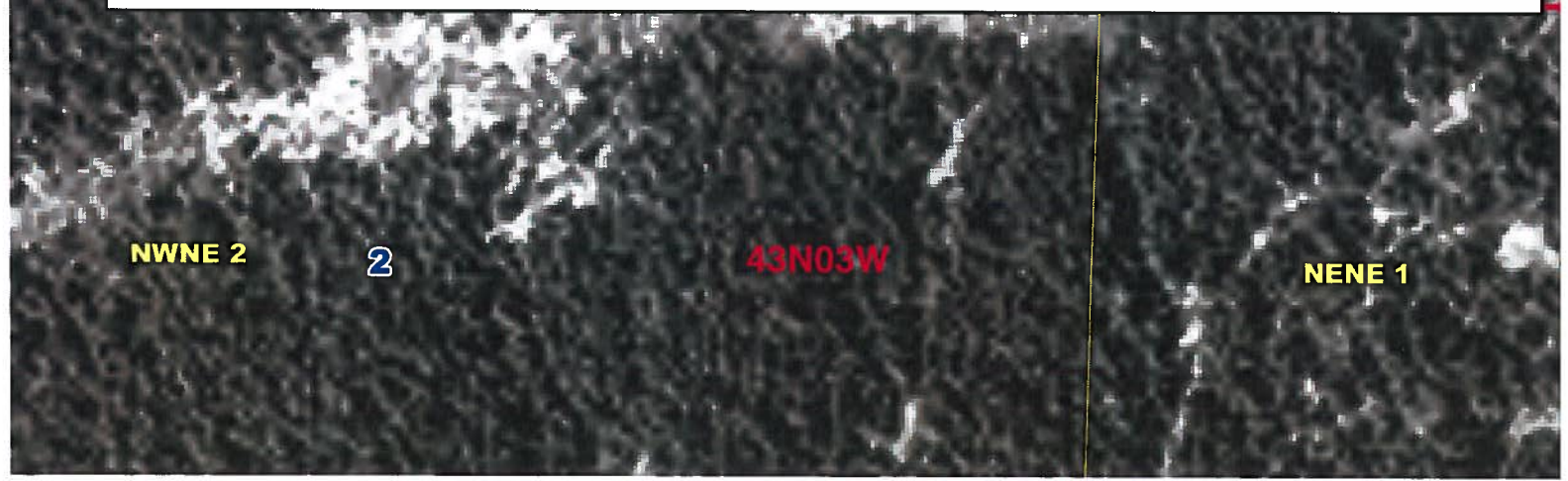
System Diagram - 92-10138 - By Dan Nelson ESRI Map

The pond averages 6.5 feet deep and has a surface area of 1 acre. The pond was constructed in a runoff drainage in a boggy area. Therefore, it collects water from an unnamed spring, and from an unnamed stream. The pond has a dam that is between 8 to 10 feet tall. The pond has a surface area of 1 acre, and averages approximately 6.5 feet in depth with the deepest part of the pond being 12 feet deep. A 6.5 Hp gas powered pump diverts water up the hill to a small garden area. The sprinklers in the garden area are set on the post, and any runoff water from the garden flows down toward the pond irrigating a grassy area between the road and the garden. The grassy area irrigation is the result of over spray from the sprinklers. Set up on the corner of the garden. The total amount of irrigation is approximately 0.2 acres. On the map, the green dot represents the point of diversion from the unnamed stream, the red dot represents the point of diversion from the springs, the pink square is the location of the irrigation pump, the blue border is the pond, and the green border designates the area being irrigated. The yellow line shows the hose from the irrigation pump to the



System Diagram - 92-10138 - By Dan Nelson -- 1992 Aerial Photo shows boggy area that was developed.

The pond averages 6.5 feet deep and has a surface area of 1 acre. The pond was constructed in a runoff drainage in a boggy area. Therefore, it collects water from an unnamed spring, and from an unnamed stream. The pond has a dam that is between 8 to 10 feet tall. The pond has a surface area of 1 acre, and averages approximately 6.5 feet in depth with the deepest part of the pond being 12 feet deep. A 6.5 Hp gas powered pump diverts water up the hill to a small garden area. The sprinklers in the garden area are set on the post, and any runoff water from the garden flows down toward the pond irrigating a grassy area between the road and the garden. The grassy area irrigation is the result of over spray from the sprinklers. Set up on the corner of the garden. The total amount of irrigation is approximately 0.2 acres. On the map, the green dot represents the point of diversion from the unnamed stream, the red dot represents the point of diversion from the springs, the pink square is the location of the irrigation pump, the blue border is the pond, and the green border designates the area being irrigated. The yellow line shows the hose from the irrigation pump to the



TOTAL STORAGE

FILE NUMBER	92-101138
REVIEWER	Dan Nelson
DATE	5/21/2013

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 (In Acres)	1	"Surface Area" is automatically carried over from the "Seepage Loss Sheet"
Average Pond Depth (in feet)	6.5	"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 you know the capacity, divide the capacity by surface area and enter the average pond depth in the space above.
Pond Capacity (in acre feet)	6.5	

Volume Needed Above Initial Fill to Fulfill From Storage Needs- "Multiple Fills" (in acre feet)	0	The "Volume Needed Above Initial Fill" is the acre-feet of water required to meet <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). PLEASE NOTE: You must have a " <u>From Storage</u> " component exceeding the initial fill on the permit to include a volume in this space.
Estimated Seepage Loss (in acre feet)	0.0	The "Estimated Seepage Loss" is automatically carried over from the Seepage Loss Sheet
Estimated Evaporation Loss (in acre feet)	1.3	The "Estimated Evaporation Loss" is automatically carried over from the Evaporation Loss Sheet
Total Volume Required (in acre feet)	7.8	"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 (in cfs)	1.00	The "Flow Rate" Into the Pond depicts the actual flow either measured or estimated into the pond.
Highest Daily Evaporation Rate From Evaporation Tab. (in mm/day)	3.51	This number is automatically selected by picking the highest recorded number in the "Precipitation Deficit Table".
Maximum Required Daily Maintenance Volume (in acre feet per day)	0.01	"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 Maintenance Flow (in cfs)	0.01	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 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. This number should be between 1 and 365 days for a project to be successful.
Days Required to Fill the Pond at 13,000 gallons per day	229	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

Evaporation Loss Calculation

FILE NUMBER	92-101138
REVIEWER	Dan Nelson
DATE	5/21/2013

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 _d = Precipitation deficit
P _d =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 ¹	Days per month	mm/Month
Jan	0.00	31	0.00
Feb	0.00	28	0.00
March	0.00	31	0.00
April	0.62	30	18.60
May	1.23	31	38.13
June	2.07	30	62.10
July	3.51	31	108.81
August	3.26	31	101.06
September	1.90	30	57.00
October	0.00	31	0.00
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"

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

Total mm/year = 385.70

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

(385.70 ÷ 304.8) X 1.00 = 1.3 AFA

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

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	92-101138
REVIEWER	Dan Nelson
DATE	5/21/2013

User Input
Calculated value
Formula Explanations

INPUTS

SQ. FT. Calculator Pond Surface area in acres
1

POND SURFACE AREA (SQ. FT.)	43560
-----------------------------	-------

SUGGESTED SEEPAGE RATE (FT/DAY)	0.0000
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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	0	GPD
----------------	---	-----

TOTAL SEEPAGE LOSS (AFA)	0.0	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 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 ponds intersect the water table.

ET_{Idaho} 2012 -- Evapotranspiration and Consumptive Irrigation Water Requirements for Idaho

Please send suggestions for improving this site to robison at kimberly dot uidaho dot edu Copyright 2012, University of Idaho.

Saint Maries (NWS -- 108062)

Statistics based on thirty year normal spans 1973 to 2010 years

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

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

Open water - shallow systems (ponds, streams)															
Precipitation Deficit (Click here for a graph)															
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Growing Season ^a	Non Growing Season ^b	Annual
Mean ^j	mm/day												mm		
Monthly ^c	-3.06	-1.82	-0.82	0.62	1.23	2.07	3.51	3.26	1.90	0.00	-3.22	-3.34	12	0	12
15-Day Moving Average ^d	-3.08	-2.08	-0.78	0.64	1.23	1.92	3.44	3.20	1.86	0.21	-3.15	-3.34			
7-Day Moving Average ^e	-3.05	-1.88	-0.79	0.64	1.23	2.01	3.49	3.20	1.89	0.10	-3.25	-3.38			
3-Day Moving Average ^f	-3.05	-1.80	-0.82	0.62	1.23	2.05	3.51	3.25	1.91	0.03	-3.26	-3.35			
Standard Deviation ^k	mm/day												mm		
Monthly ^c	2.27	1.49	1.42	1.08	1.46	1.05	1.75	1.68	1.17	1.92	1.70	2.44	176	0	176
15-Day Moving Average ^d	2.31	2.07	1.52	1.48	1.79	1.63	1.66	1.71	1.44	1.64	2.19	2.14			
7-Day Moving Average ^e	3.03	3.04	2.09	2.20	2.50	2.40	1.93	2.39	2.05	2.34	3.11	3.12			
3-Day Moving Average ^f	4.19	4.19	3.02	3.05	3.52	3.36	2.49	3.06	2.90	3.16	4.39	4.34			
20% Exceedance ^l	mm/day												mm		
Monthly ^c	-1.96	-0.84	0.08	1.51	2.13	2.91	4.23	4.25	2.93	1.17	-1.79	-2.02	124	0	124
15-Day Moving Average ^d	0.02	0.16	1.17	2.64	3.96	4.24	4.96	4.84	3.78	2.13	0.00	0.00			
7-Day Moving Average ^e	0.36	1.12	2.19	3.68	4.82	5.16	5.42	5.45	4.28	2.50	0.70	0.18			
3-Day Moving Average ^f	0.66	1.51	2.92	4.27	5.49	5.73	5.94	5.90	4.73	2.97	1.00	0.35			

THEORETICAL HORSEPOWER EQUATION WORKSHEET (cjh 1/92)

6

Water Right No.: 92-10138
 Examiner: Dan Nelson
 Date of Field Exam: 5/21/2013

	Option 1	OPTION 2	OPTION 3	
P/D No.:				
PUMP HORSEPOWER	6	6	6	
BOOSTER HORSEPOWER	0	0	0	
PUMPING LEVEL	5	5	5	
DISCHARGE PRESSURE	40	50	60	
FRICTION	0	0	0	
RATE OF FLOW (cfs)	0.38	0.31	0.26	AVE
(gpm)	170.3	137.7	115.5	0.31 141.2

The above calculates the formula =

$$Q = \frac{8.8 * (\text{Efficiency}) * \text{hp}}{\text{depth to water} + 2.31 * (\text{psi}) + \text{friction}}$$

Assumptions: %70 efficiency.

Examiners Notes:

Gas Power pump Hp ratings are based on maximum Hp output. This system supplies one 5/32 sprinkler at about 5 gpm or $5 / 448.8 = 0.01$ cfs. The owner is only irrigating a very small area, so I am only going with the 5 gpm rating.

PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 5/21/2013

FILE NUMBER 92-10138



The photo above shows the pond. The photo below shows the spillway for the pond. The spill way goes across the driveway through a cement channel.



¼ inch wire mesh fence for
fish screen

PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 5/21/2013

FILE NUMBER 92-10138



The photo above shows the garden area. The pictures below show the irrigation pump. The pump is a Pacific Hydrostar 6.5 Hp gas powered pump.

