

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 93-7242

Exam Date: 5/22/2013

1. Current Owner: JAMES P DEVER

And/Or

LYNN C DEVER
4170 FOUR CORNERS RD
TENSED ID 83870
(208)596-5306

2. Accompanied by:
- No one accompanied me – Permission given to visit the property from Lynn Dever Owner

Phone No:

Address:

Relationship to Permit Holder:

- 3.
- SOURCE**

UNNAMED STREAM

TRIBUTARY

SQUAW CREEK

B. OVERLAP REVIEW

1. Other water rights with the same place of use: 93-7191
2. Other water rights with the same point of diversion: 93-7191

C. DIVERSION AND DELIVERY SYSTEM

- 1.
- LOCATION OF POINT(S) OF DIVERSION:**

UNNAMED STREAM SW1/4SW1/4 Sec. 10, Twp 44N, Rge 04W, B.M. BENEWAH County

Method of Determination: GPS and Visual Inspection.

2.

PLACE OF USE: WILDLIFE STORAGE AND FIRE PROTECTION STORAGE

Twp	Rge	Sec	NE				NW				SW				SE				
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	Totals
44N	04W	10																	
													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
N/A					

*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: This permit is for in-stream stockwater and a pond on the stream. There was no diversion that could be measured.

E. FLOW CALCULATIONS

____ Additional Computation Sheets Attached

Measured Method:

This is an onstream storage water right, so there is no diversion rate calculation required.

F. VOLUME CALCULATIONS**1. Volume Calculations for Irrigation:**

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

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

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

2. Volume Calculations for Other Uses:

The pond capacity was calculated at 0.24 acre feet of volume with 0.05 acre feet for evaporation for a total of 0.3 acre feet of storage. There is no seepage, since this is an on-stream pond. The owner stated this pond was 5 to 6 feet average depth. See Attached sheet for additional calculations.

G. NARRATIVE/REMARKS/COMMENTS

This owner filed two water right applications for 2 ponds and in-stream stockwater use. This water right is for wildlife storage and fire protection storage for a pond. This pond is upstream of the pond associated with water right 93-7191. The stream in-between the ponds is the in-stream stockwater use described in 93-7191. There is a state owned pond on the other side of the property (west) that is not associated with this water right or 93-7191. The unnamed stream is a runoff stream, and only provides water during runoff events. There was no water in the stream at the time of the field exam.

Conditions X02, 082 and 004 were removed, since they are no longer needed on the license.

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>
WILDLIFE STORAGE	01/01 to 12/31		0.30 AF
FIRE PROTECTION STORAGE	01/01 to 12/31		0.30 AF
<u>Totals:</u>			0.30 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 11-5-2013

Reviewer _____ Date _____

State of Idaho
Department of Water Resources

Field Exam Map

93-7242

This map depicts the WILDLIFE STORAGE AND FIRE PROTECTION 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.

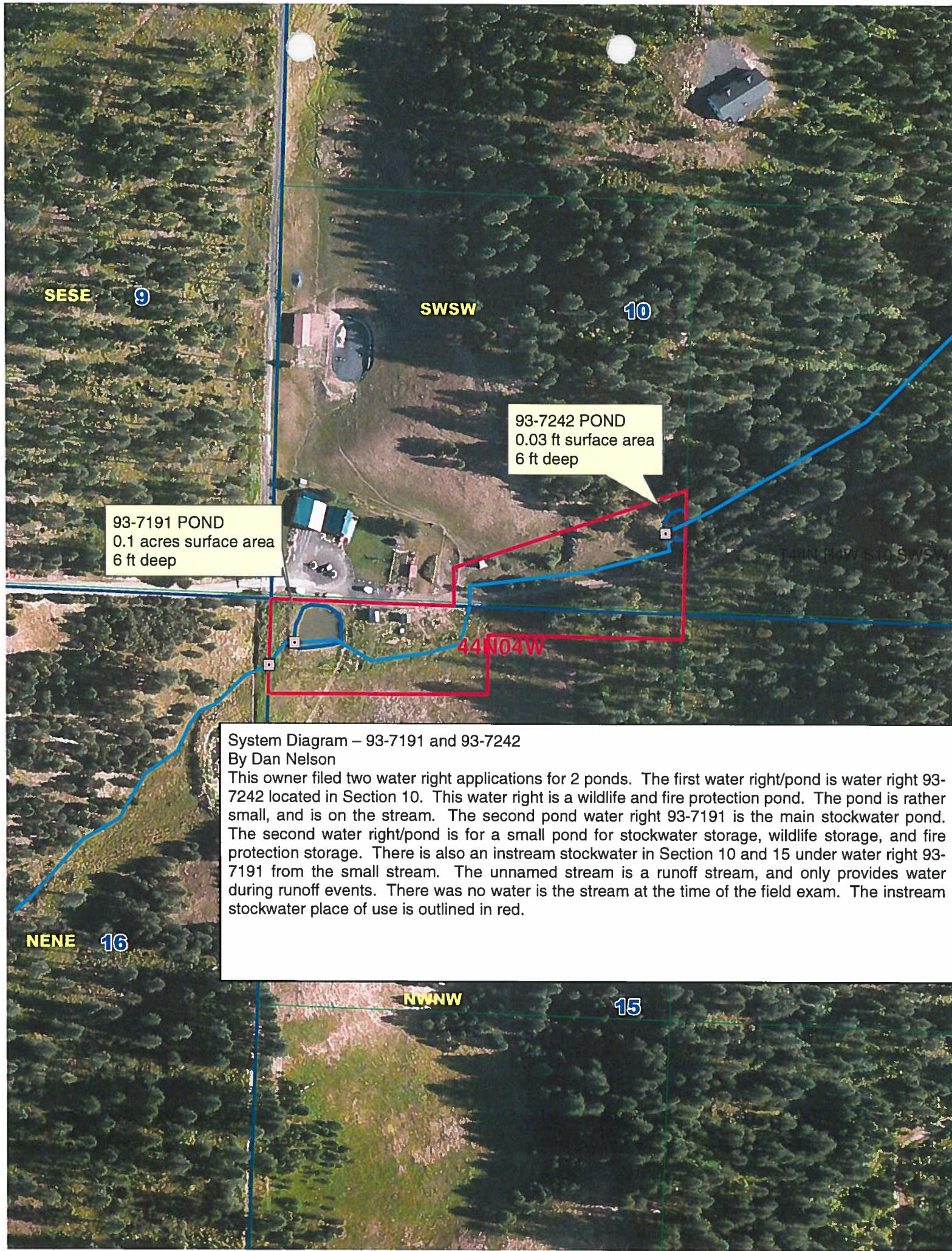
04W



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

0 0.0225 0.045 0.09 Miles





93-7191 POND
0.1 acres surface area
6 ft deep

93-7242 POND
0.03 ft surface area
6 ft deep

44 N04W

System Diagram – 93-7191 and 93-7242
By Dan Nelson

This owner filed two water right applications for 2 ponds. The first water right/pond is water right 93-7242 located in Section 10. This water right is a wildlife and fire protection pond. The pond is rather small, and is on the stream. The second pond water right 93-7191 is the main stockwater pond. The second water right/pond is for a small pond for stockwater storage, wildlife storage, and fire protection storage. There is also an instream stockwater in Section 10 and 15 under water right 93-7191 from the small stream. The unnamed stream is a runoff stream, and only provides water during runoff events. There was no water in the stream at the time of the field exam. The instream stockwater place of use is outlined in red.

TOTAL STORAGE

FILE NUMBER	93-7242
REVIEWER	Dan Nelson
DATE	5/22/2013

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)	0.04	"Surface Area" is automatically carried over from the "Seepage Loss Sheet"
Average Pond Depth (In feet)	6	"Average Pond Depth" depicts the actual depth of the pond either measured or estimated. Note: If you know the maximum depth and not the average depth, the field examiner's handbook suggests multiplying the maximum depth by 0.4 to get the average depth, or you can use any method that 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)	0.24	

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)	0.05	The "Estimated Evaporation Loss" is automatically carried over from the Evaporation Loss Sheet
Total Volume Required (In acre feet)	0.3	"The Total Volume Required" is calculated by adding the Pond Capacity, Multiple Fills, Seepage Loss, and Evaporation Loss amounts to determine the total amount of storage required.

Flow Rate Into Pond (In cfs)	0.00	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)	3.24	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)	0.00	"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 Maintenance Flow (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 the Pond	-564	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	6	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	93-7242
REVIEWER	Dan Nelson
DATE	5/22/2013

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	0.33	30	9.90
May	0.78	31	24.18
June	2.20	30	66.00
July	3.24	31	100.44
August	3.14	31	97.34
September	1.61	30	48.30
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 = 346.16

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

(346.16 ÷ 304.8) X 0.04 = 0.0 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	93-7242
REVIEWER	Dan Nelson
DATE	5/22/2013

User Input
Calculated value
Formula Explanations

INPUTS

SQ. FT. Calculator Pond Surface area in acres
0.04

POND SURFACE AREA (SQ. FT.)	1742
-----------------------------	------

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

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@kimberly.uidaho.edu Copyright 2012, University of Idaho.

Potlatch 3 NNE (NWS -- 107301)

Statistics based on thirty year normal spans 1969 to 2001 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	-2.20	-1.57	-0.74	0.33	0.78	2.20	3.24	3.14	1.61	0.09	-2.26	-2.17	73	0	73
15-Day Moving Average ^d	-2.31	-1.83	-0.81	0.32	0.86	2.20	3.19	3.05	1.44	0.01	-2.29	-2.07			
7-Day Moving Average ^e	-2.26	-1.64	-0.74	0.29	0.84	2.18	3.22	3.09	1.49	0.06	-2.30	-2.18			
3-Day Moving Average ^f	-2.22	-1.54	-0.74	0.29	0.79	2.17	3.24	3.14	1.57	0.08	-2.27	-2.19			
Standard Deviation ^k	mm/day												mm		
Monthly ^c	1.96	1.16	1.42	1.07	1.92	0.90	1.42	1.62	1.16	1.77	1.31	2.04	136	0	136
15-Day Moving Average ^d	1.98	1.56	1.52	1.45	2.06	1.30	1.45	1.68	1.60	1.62	1.65	1.90			
7-Day Moving Average ^e	2.50	2.24	2.02	2.10	2.77	1.95	1.92	2.29	2.05	2.24	2.35	2.63			
3-Day Moving Average ^f	3.35	3.08	2.75	2.95	3.84	2.81	2.68	3.04	2.69	3.06	3.30	3.48			
20% Exceedance ^l	mm/day												mm		
Monthly ^c	-1.26	-0.51	-0.06	1.39	1.45	2.69	3.97	4.08	2.92	1.05	-1.20	-0.98	158	0	158
15-Day Moving Average ^d	0.05	0.20	1.06	2.37	3.56	4.02	4.94	4.58	3.39	1.99	0.00	0.04			
7-Day Moving Average ^e	0.47	0.99	2.04	3.16	4.28	4.75	5.32	5.04	3.78	2.51	0.72	0.38			
3-Day Moving Average ^f	0.61	1.26	2.60	3.77	4.77	5.18	5.54	5.51	4.03	2.87	1.01	0.61			

PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 5/22/2013

FILE NUMBER 93-7242



The photo above shows the pond associated with this permit. At the time of the photo, it looks as though this pond had a problem with moss, and probably had filled with sediment. The owner stated this pond was 5 feet deep, but it didn't appear to be that deep at the dam. However, back by the cattails, the pond was much deeper.