

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 95-09262

Exam Date: 8/19/2016

1. Current Owner:

DON INGERSOLL And / Or 211 STRIFE LN PLUMMER ID 83851 (208) 686-0979
And/Or

MARY INGERSOLL 211 STRIFE LN PLUMMER ID 83851 (208) 686-0979

2. Accompanied by: Don Ingersoll, Mary Ingersoll

Phone No: (775) 771-1523

Address: 211 STRIFE LN, Plummer, ID 83851

Relationship to Permit Holder: Permit Holders / Applicants

3. **SOURCE:**

LITTLE PLUMMER CREEK

TRIBUTARY:

PLUMMER 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

Intek Briggs & Stratton 5.5 Horsepower portable pump with screened inlet used to draw water from Little Plummer Creek. Water from pump is distributed via flexible hose to sprinklers mounted on portable tripods and attached to fence posts.

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

LITTLE PLUMMER CREEK NW¼, SE¼ Sec. 33, Twp 46N, Rge 04W, B.M. BENEWAH County

Method of Determination: Map-'Chatcolet' U.S. Geological Survey 7.5' Quadrangle (Topographic) 1981, ArcMap™
Geographic Information System (GIS) software, Garmin GPS Receiver

Point of Diversion (Pond) GPS Coordinates -116 Degrees 50' 29.9 West Longitude, 47 Degrees 16' 59.8 North Latitude
2.

PLACE OF USE: IRRIGATION FROM 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	
46N	04W	33														5.0			5.0

Total Acres: 5

PLACE OF USE: IRRIGATION 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	
46N	04W	33														X			

PLACE OF USE: 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	
46N	04W	33														5.0			5.0

Total Acres: 5

Method of Determination:

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.

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

✓

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
Not Applicable	Briggs & Stratton	5.5	94080920	Briggs & Stratton	2 inch outlet pipe

*Code to correspond with No. on map and aerial photo

D. FLOW MEASUREMENTS (None: See Theoretical Measurement below)

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date

2. Measurements: Theoretical

PUMP EQUATIONS WATER RIGHT 95-9262						
	HP	H in feet	Efficiency as a decimal	Pumping lift in feet	System pressure in PSI	
Q = $\frac{HP \times 8.8 \times \text{Eff}}{H}$	5.5	67.82312925	0.7	~~20~~ 10	~~35~~ 25	
Q =	~~0.500~~ cfs	0.336	150.9	224.6	gpm	

E. FLOW CALCULATIONS

Measured Method:

(See above Pump Equations Water Right 95-9262)

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = (5.0 \text{ Acres}) \times (3.0 \text{ AF per Acre}) = 15.0 \text{ AF}$$

Additional Computation Sheets Attached

$$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = (5.0 \text{ acres} @ 0.2 \text{ cfs}) = (0.10) \times (214) \times (1.9835) = 42.4 \text{ AF}$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} = 15.0 \text{ AF}$$

2. Volume Calculations for Other Uses:

DIVERSION TO STORAGE (NO DIVERSION - IN STREAM POND) AF
 IRRIGATION STORAGE (LIMITED TO 2.0 AF BY PERMIT) 0.0
 IRRIGATION FROM STORAGE (LIMITED TO 2.0 AF BY PERMIT) 2.0
 (5.0 Acres) x (3.0 AF/acre) = 15.0 AF 2.0

G. NARRATIVE/REMARKS/COMMENTS

Exam conducted 8/19/16 with Permit Owners (Don Ingersoll and Mary Ingersoll). The Irrigation System was not operating at the 95-9262 Place of Use on 8/19/16, however, the System was seen operating on a different part of the Permit 95-09262 owner's property in 2015. Exam photos showing sprinklers operating are from 2015, using some of the same sprinklers, at a different spot on the Owner's property.

A portable pump (portable Briggs & Stratton Intek pump (5.5 Horsepower) (HP) with a two inch outlet, sprinkler tripods, hose, etc. were present at the owner's storage barn on the property on 8/19/16 and showed evidence of being used (rust, dried dirt on hose & pump, wear, etc.). No pump performance data plate, or rating curve, was present. Internet data for similar Briggs & Stratton pumps (see attached) shows 5.5 HP pumps can deliver up to 142.7 Gallons Per Minute (.31 CFS) at 20 feet of head. The owners have spare portable pumps that can be used to substitute for the Intek pump at the Point of Diversion (POD).

Water is drawn by the 5.5 Intek pump from an unlined, in-stream, excavated pond at the POD on Little Plummer Creek. The irregular pond shape was determined by the owner's requirement to have the banks graded so that livestock could reach the water without breaking down a steep bank. The water surface level of the pond was below the level of the streambed below the pond. No pond control structures were seen to regulate the water level or restrict water from passing downstream. The absence of control structures, and excavation below the stream-bed that is currently present above and below the pond, indicates that multiple un-measurable pond refills occur. Mr. Ingersoll indicated that the pond surface level stays at about the same level throughout the year. Diversion to Storage is not recommended for inclusion in the License since there is no diversion to an off-stream pond.

Measurements. Vertical lift for the System is 20 feet from the pond bottom to the highest point reached at the maximum length of the hose from the pond. This site is at the East end of the irrigated Place Of Use (POU). Average pond depth (4.5 feet) was supplied by the Permit owners. Pond Surface Area (.1 acres) was measured using ArcMap™ with the most recent dated air photo image available (2015).

The Estimated Seepage Loss calculation (.0.0 AF) shown on the attached Total Storage Calculations worksheet is derived from use of Soil Classification ML and the pond depth. The pond is unlined and when seen on 8/19/2016 was observed to lie below the streambed above and below the pond. The pond appears to receive water from both surface flows when flow rates are high enough and from groundwater that runs below the streambed. The overall seepage is estimated to be 0.0 AF because seepage is offset by groundwater.

Evaporation data from a Plummer weather station was not available when Total Storage Calculations were started in August 2016, checked in October 2016, and completed in January, 2017, following the on-site portion of the Field Exam. Evaporation data from the Saint Maries weather station was used instead.

Water from the pond is used for irrigation on five acres currently planted in dryland pasture mix (Broome, Orchard Grass, Fescue) on the valley floor adjacent to the pond. Clover was also photographed during the Exam within the Irrigation POU. Parts of the irrigated POU receive runoff from higher ground located to the North and East of the valley floor. The permit holders have filled in ruts and furrows caused by runoff from the adjacent hillsides within the POU.

Irrigation can take place using water pumped from the pond or pumped from spots above or below the pond when Little Plummer Creek is high enough. No permanent obstacles exist that would prevent the pump from operating above or below the pond when the Creek is high enough. All operating spots for the pump are within the Permit designated Quarter-Quarter on the Permit Owner's property and there are no indications that more than one pump is operated at any time. No pond control structures were seen on 8/19/16 to regulate the water level or restrict water from passing downstream.

The permit does not currently call for Stockwater use, however, cattle were seen on the property during a different Permit Field Exam in 2015. The property is fenced for livestock and the pasture vegetation showed evidence of grazing pressure.

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>
IRRIGATION STORAGE	01/01 to 12/31		2.0 AF
IRRIGATION FROM STORAGE	04/01 to 10/31		2.0 AF
IRRIGATION	04/01 to 10/31	0.10 CFS	15.0 AF
<u>Totals:</u>		0.10 CFS	15.0 AF

2. Recommended Amendments

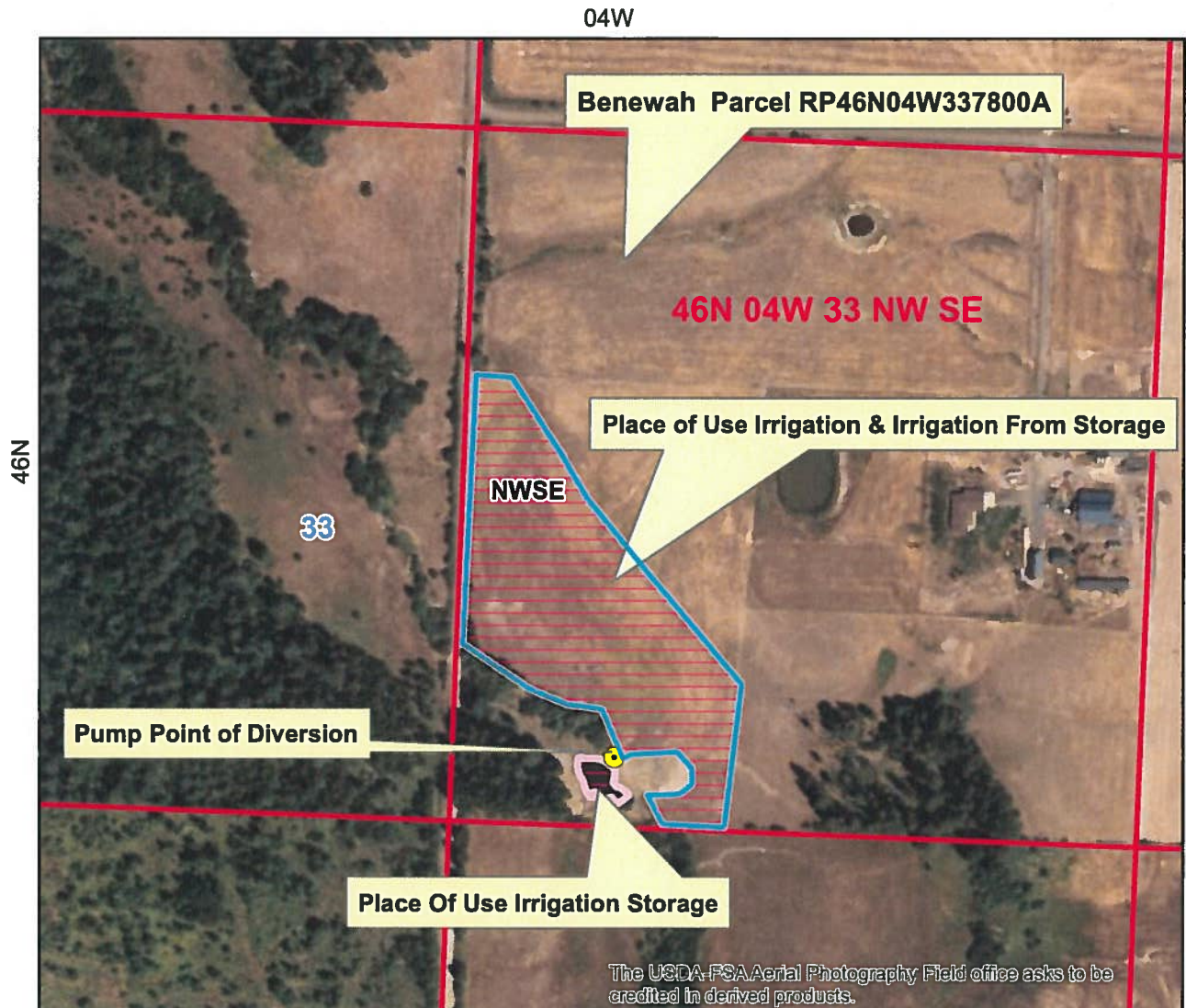
☐ Change P.D. as reflected above ☐ Add P.D. as reflected above ☒ None

☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☒ None

I. AUTHENTICATION

Field Examiner's Name Shawn M. Mape Date 1/19/2016
 Reviewer _____ Date 1/17/2016

State of Idaho
Department of Water Resources
Attachment to Water Right Field Exam
95-9262

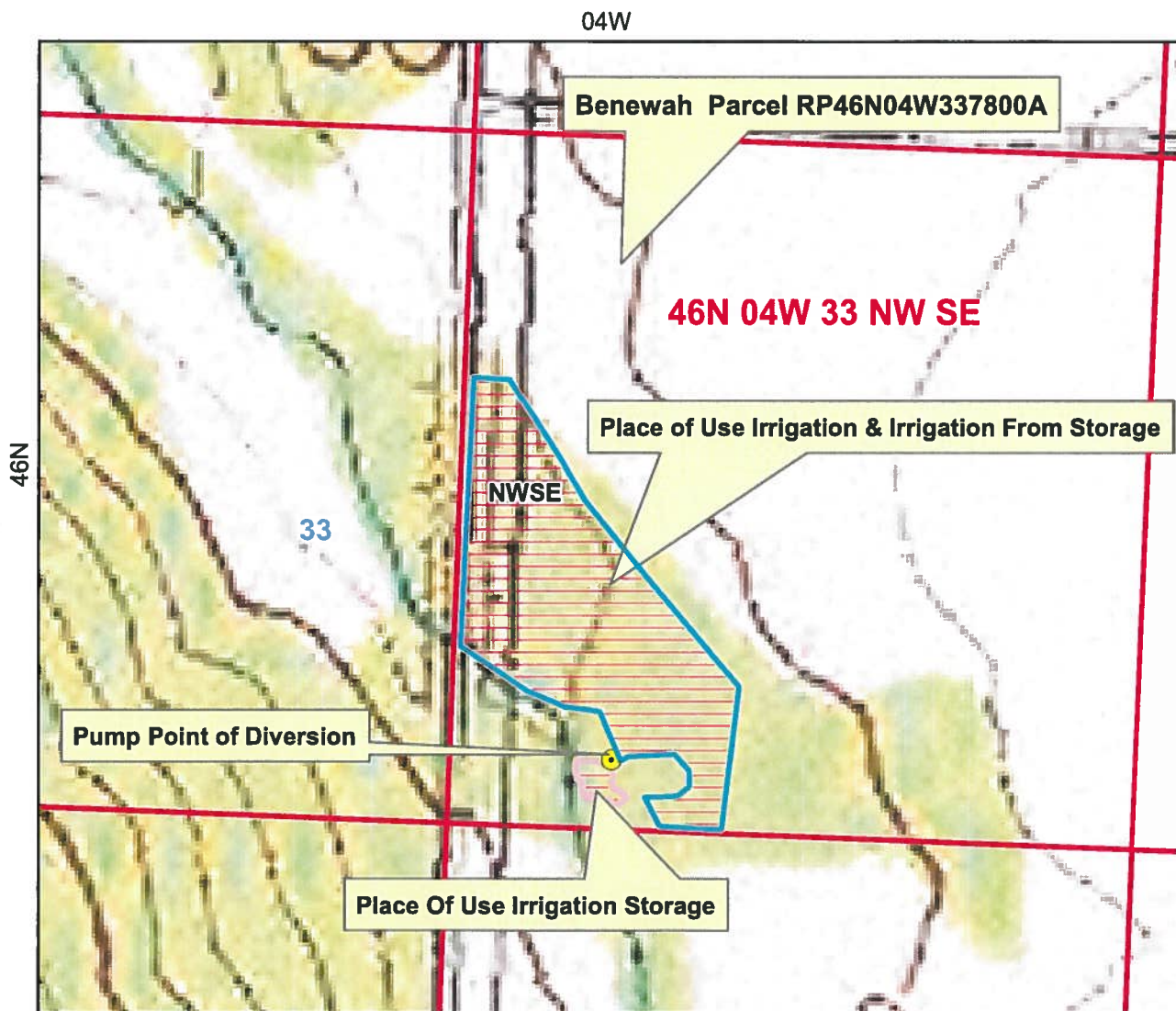


0 0.0425 0.085 0.17 Miles

- Point of Diversion
- PLS Sections



State of Idaho
Department of Water Resources
Attachment to Water Right Field Exam
95-9262



0 0.0425 0.085 0.17 Miles

- Point of Diversion
- PLS Sections



Chatcolet 7.5'
Quadrangle
U.S.G.S. 1981

95-9262
Point of Diversion
Place of Use

M I N A L O O S A

Borrow Pit

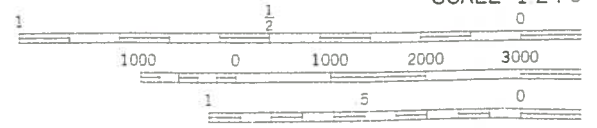
SCALE 1:24 0

Mapped, edited, and published by the Geological Survey

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial photographs
taken 1975. Field checked 1976. Map edited 1981

Projection and 10,000-foot grid ticks: Idaho coordinate
system, west zone (transverse Mercator)
1000 meter Universal Transverse Mercator grid, zone 11



CONTOUR INTERVAL
SUPPLEMENTARY CONTOUR 10

95-09262

Delivery System Diagram (Not to Scale)

Legend

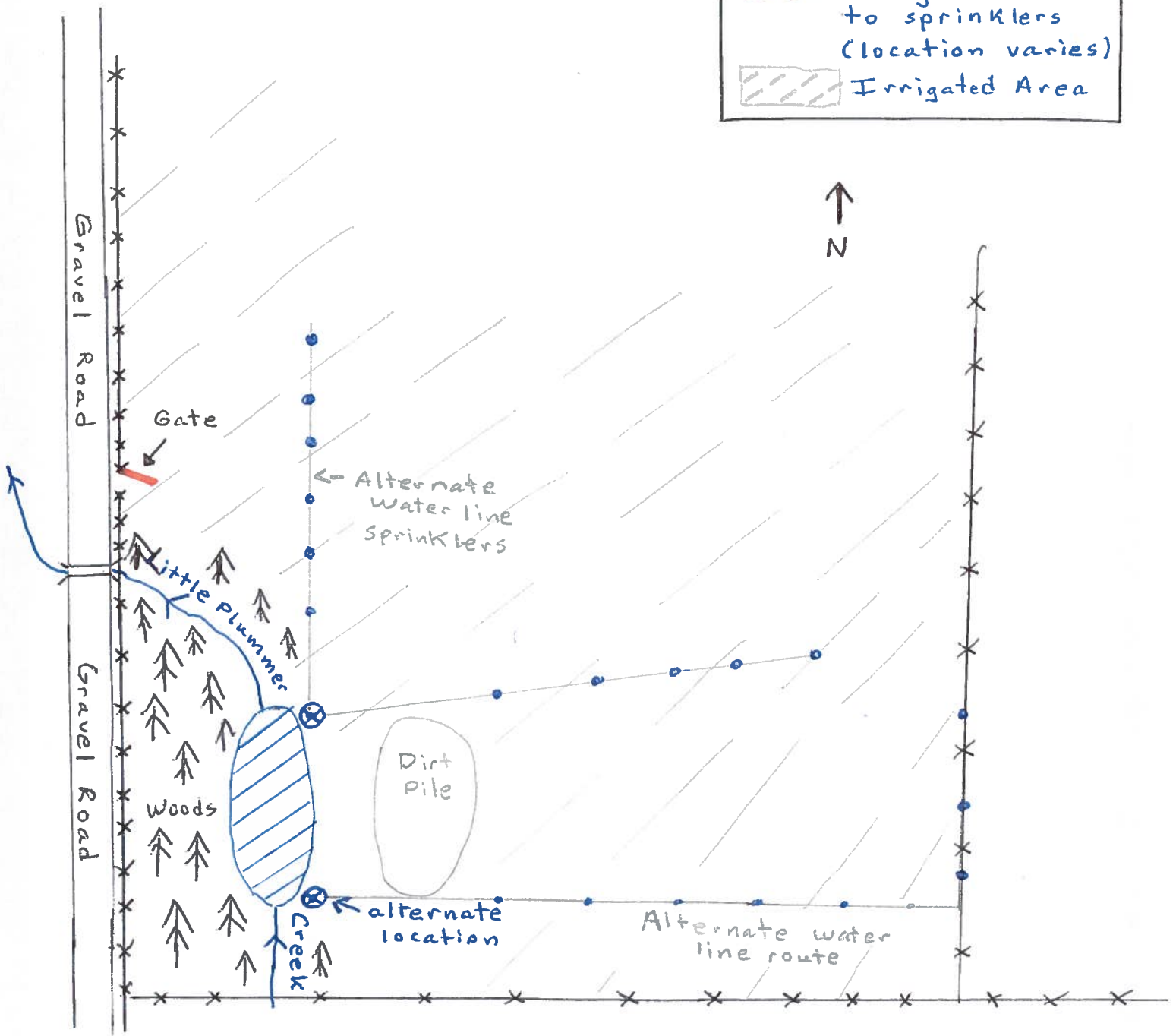
⊗ Portable Pump
(location varies)

⊖ Pond

xx Fence

●—● Irrigation line
to sprinklers
(location varies)

▨ Irrigated Area



Total Storage Calculations

FILE NUMBER	95-9262
REVIEWER	Shaun Maxey
DATE	1/19/2017

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.)	4.5	"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 seems reasonable to attain average depth.
Pond Capacity (AF)	0.45	Pond Capacity is calculated by multiplying the Pond Surface Area by the Average Pond Depth. If you know the capacity, divide the capacity by surface area and enter the average pond depth in the space above. Note: If pond capacity is determined using a method shown on the "Pond Capacity" sheet, the user may need to modify the value of "Pond Capacity" (cell B9) manually. Note that if the value is modified manually, the formula will be altered for future use.
Multiple Fill Volume Above Initial Fill to Fulfill From Storage Needs- "Multiple Fills" (AF)	1.45	The "Multiple Fill Volume Above Initial Fill" is the acre-feet of water required to meet a <i>from storage</i> component if the <i>from storage</i> component exceeds a one time fill. This section should not include the amount of water needed to fill the pond initially or the amount of water needed to maintain the pond level due to evaporation or seepage. For example: if a pond has a capacity of 5 acre feet and 2.5 acre feet of seepage and evaporation, but the pond is used for irrigation that requires 10 acre feet of from storage for the irrigation use, then you would insert 5 acre feet into this location (10 acre feet needed - 5 acre feet from the initial fill = 5 acre feet of additional storage needed). Note: You must have a "From Storage" component exceeding the initial fill on the permit to include a volume in this space.
Estimated Seepage Loss (AF)	0.0	The "Estimated Seepage Loss" is automatically carried over from the "Seepage Loss" sheet.
Estimated Evaporation Loss (AF)	0.1	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	2.0	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)	1.00	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)	3.51	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	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. 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.
Days Required to Fill the Pond at 13,000 Gallons per Day	12	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. 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. 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.

Price: \$450.95



G+1

Tweet (<https://twitter.com/share>) ([http://www.pinterest.com/pin/create/button/?url=http://www.lawnmowerpros.com/detail.asp?id=BS73001&media=http://www.lawnmowerpros.com/prodimages/nim.gif&description=BRIGGS AND STRATTON BS73001 5.5 HP, 155 GPM, Engine Driven Water Pump](http://www.pinterest.com/pin/create/button/?url=http://www.lawnmowerpros.com/detail.asp?id=BS73001&media=http://www.lawnmowerpros.com/prodimages/nim.gif&description=BRIGGS%20AND%20STRATTON%20BS73001%205.5%20HP,%20155%20GPM,%20Engine%20Driven%20Water%20Pump))

url=<http://www.lawnmowerpros.com/detail.asp?id=BS73001&media=http://www.lawnmowerpros.com/prodimages/nim.gif&description=BRIGGS AND STRATTON BS73001 5.5 HP, 155 GPM, Engine Driven Water Pump>) (<https://www.lawnmowerpros.com/emailthispage.asp>)

**Briggs and Stratton
Authorized Dealer**

Briggs & Stratton 5.5 HP, 155 GPM, Engine Driven Centrifugal Water Pump

Product Description

Briggs and Stratton 73001 - 5.5 HP, 155 GPM, Engine Driven Centrifugal Water Pump

Features:

- GPM @ Total Ft. of Head + 10 Ft. = 580.2 L. (153.3 G.)
- GPM @ Total Ft. of Head + 20 Ft. = 540.1 L. (142.7 G.)
- GPM @ Total Ft. of Head + 60 Ft. = 394.4 L. (104.2 G.)
- GPM @ Total Ft. of Head + 70 Ft. = 267.6 L. (70.7 G.)
- GPM @ Total Ft. of Head + 90 Ft. = 157.8 L. (41.7 G.)
- Shut Off = 95 Ft.

Specifications:

- Model: 73001
- Pump Type: Self Priming
- Engine Brand: Briggs and Stratton Elite Series I/C
- Horsepower: 5.5 HP
- Motor RPM: 3600
- Suction Head: 26 ft.

- Head Lift: 108 ft.
- NPT Port: 2"
- Tank Capacity: 4 Qt.
- Discharge Capacity: 155 GPM
- Dimensions: 18" x 16.5" x 19"
- Dry Weight: 52 lbs (23.6 Kg)

THIS PART ALSO REPLACES:

- Murray BS73001
- Snapper BS73001
- and others

WEIGHT: 52 lbs

MANUFACTURERS NAME: BRIGGS AND STRATTON

MANUFACTURER PART NO: BS73001

UPC:

Briggs and Stratton 155 GPM (2") Water Pump



X Product Discontinued



Model: 073001



What's This?

[Write a Review](#)

Features

Specs

Q&A

Reviews

Articles

Engine

Engine Brand	Briggs & Stratton I/C
Starting System	Recoil Start
Engine Cycles	4-Cycle
Fuel Tank Size	1 Gallon
Consumer Engine Warranty	2 Years

Pump

Gallons Per Minute	155 Gallons
Inlet Diameter	3/8"
Outlet Diameter	2"
Self Priming	Yes
Solids Handling Size	.5 inch
Suction Head	25 Feet
Total Head Lift	106 Feet

Accessories

Strainer	Yes
Hose Couplings	Yes

Overview

Weight	127 Pounds
Product Length	19 Inches
Product Width	18 Inches
Product Height	16.5 Inches
Consumer Warranty	2 Years
UPC	011675730017
Model	073001



95-9262 5.5 Horsepower Pump used at P00



95-9262 Sprinkler operating (2015)



95-9262 Sprinkler mounted on post (2015)



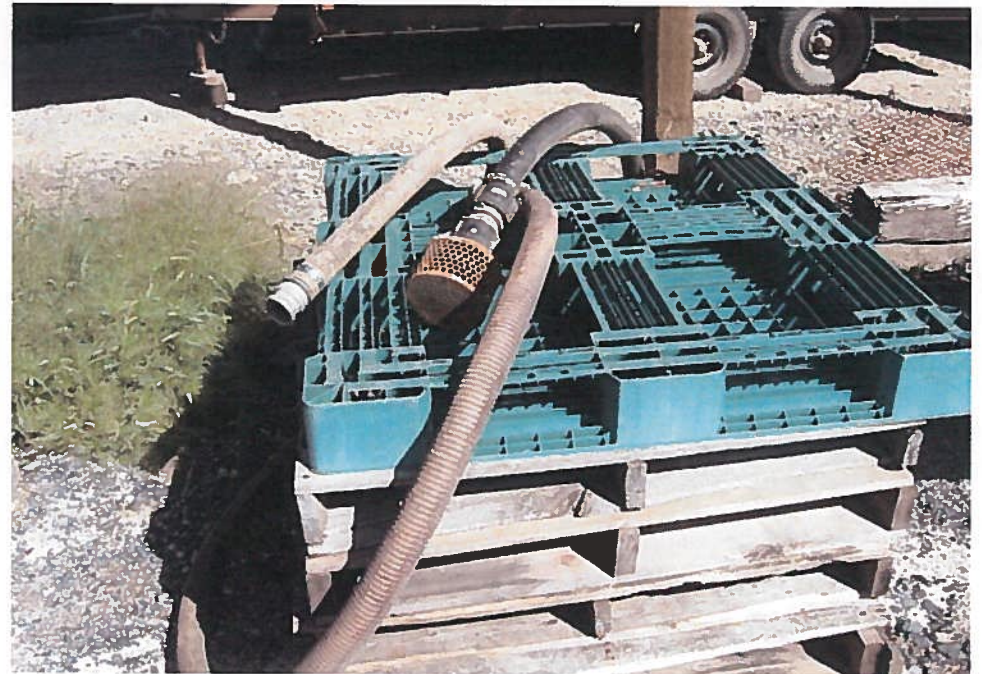
95-9262 Clover in place of use

95-9262

95-9262



95-9262 Irrigation storage Pond



95-9262 Inlet hose/screen for pump



95-9262 Place of Use Irrigation



95-9262 Inlet hose/screen