

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

RECEIVED

MAY 31 2017

DEPARTMENT OF
WATER RESOURCES

A Beneficial Use Field Report is prepared by a water right examiner as the result of an examination to clearly confirm and establish the extent of the beneficial use of water established in connection with a permit during the development period authorized by the permit and any extensions of time previously approved.

A. GENERAL INFORMATIONPermit No. 63-340251. Owner City of Boise, Department of Parks and RecreationPhone No. 208-608-7600Current address 1104 Royal Boulevard, Boise, ID 837062. Examiner's name Terry Scanlan, P.E., P.G.EXAM DATE 5/24/20173. Accompanied by Mike WoodwardEmail mwoodward@cityofboise.orgAddress 1104 Royal Boulevard, Boise, ID 83706Relationship to permit holder Horticulture Manager, BPRDPhone No. 608-71894. Source Ground Water tributary to _____**B. OVERLAP REVIEW**1. Other water rights with the same place of use Boise Valley Irrigation Ditch Company2. Other water rights with the same source and point of diversion None**C. DIVERSION AND DELIVERY SYSTEM**

1. Point(s) of Diversion:

Ident. No.	Gov't Lot	¼	¼	¼	Sec	Twp	Rge	County	Method of Determination/Remarks
			NW	SW	13	4N	1E	Ada	Exam, aerial photo

2. Place(s) of Use: Method of determination Exam, aerial photo

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
4N	1E	13									X								

3. **Delivery System Diagram:** Indicate all major components and distances between components. Indicate weir size/ditch size/pipe diameter (inside), as applicable. Use the space provided or ☒ see attached.

Scale: 1" = _____

- ☒ Copy of USGS Quadrangle attached showing location(s) of point(s) of diversion and place(s) of use (**required**)
☒ Aerial photo attached (required for irrigation of 10+ acres)
☒ 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
Well Pump	submersible	2	Submersible	submersible	2-inch

*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
32 gallon trash can and stop watch						

2. **Measurements:** _____

A 2-inch hose was connected to the discharge piping and used to fill a 32-gallon container to determine flow rate.

Fill Times: 18 seconds, 18 seconds, and 19 seconds = 18.3 second average

32 gallons / 18.3 seconds x 60 seconds/minute = 105 gpm = 0.23 cfs

E. NARRATIVE/REMARKS/COMMENTS

A 6-inch well equipped with a 2-hp submersible pump provides ground water to a soil-lined pond at Magnolia Park for diversion to storage, municipal storage, and municipal from storage uses that include supplemental irrigation, wildlife, and recreation. Surface water from Boise Valley Irrigation Ditch Company (BVID) is also diverted to the pond when available in the rotation schedule for irrigation purposes. The purpose of the well is to supplement BVID water when necessary and to keep the pond full during the non-irrigation season for aesthetic and wildlife purposes. There is not a direct diversion from the well to the pressurized irrigation system. Ground water is discharged into the pond, and a wet well equipped with submersible pumps is used to divert water from the pond into a pressurized irrigation system.

The well was completed with 6-inch diameter casing from +18 inches to 19.5 feet, and 6-inch diameter screen from 19.5 feet to 29.6 feet. The 2 hp well pump design capacity is 105 gpm (0.23 cfs) based on timed fill measurements at the time of the exam. The 0.23 cfs capacity is less than the permit allowance of 0.3 cfs.

Development found at the time of the exam includes 6.2 acres of landscape area and 0.75 acre of pond surface area with a maximum depth of 14 feet, average depth of 8 feet, and volume of 6 acre feet. ET Idaho information included in Attachment C indicates the pond will have 1.7 ac-ft loss to evaporation per year. Seepage loss, based on the design maximum rate of 1/2 inch per day, is approximately 11.4 acre feet over the 0.75 acre pond area. The permit allows 42 afa for storage (including evaporation and seepage) with multiple fills.

Depletions to shallow groundwater tributary to the Boise River caused by consumption of groundwater are mitigated by non-use of 7 acres of water right 63-280 (South Boise Mutual Irrigation Company).

Exam Attachments

Attachment A: Field Exam Map

Attachment B: System Components and Diagrams

Attachment C: Pump Curve and Theoretical Flow Rate Calculations

Attachment D: Exam Photos

Attachment E: Proof of Beneficial Use

Has the permit holder met all conditions of permit approval, including any mitigation requirements and/or measuring device installation requirements? ☒ Yes ☐ No If no, what must be done to meet the permit requirements?

F. FLOW CALCULATIONS☒ Additional computation sheets attached

Measured Method:

Volumetric. 32 gallons / 18.3 seconds x 60 seconds/minute = 105 gpm = 0.23 cfs

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 6.2 \times 4.5 = 27.9 \text{ afa}$$

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

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = 27.9$$

2. Volume Calculations for Other Uses:

Irrigation (above) = 27.9 acre feet per year

Pond volume = 6.0 acre feet based on design drawing.

Evaporation loss = 1.7 acre feet per year

Seepage loss = 11.4 acre feet per year

Total Municipal Use = 27.9 + 6.0 + 1.7 + 11.4 = 47 acre feet; limit to 42 acre feet permit amount

H. RECOMMENDATIONS

1. Recommended Amounts

Beneficial Use	Period of Use		Rate of Diversion Q (cfs)	Annual Volume V (afa)
	From	To		
Municipal Storage	1/1	12/31		42
Municipal From Storage	3/1	11/15		27.9
Diversion to Storage	1/1	12/31	0.23	
Totals:			0.23	42

2. Recommended Amendments

☐ Change P.D. as reflected on page 1☐ Add P.D. as reflected on page 1☒ None☐ Change P.U. as reflected on page 1☐ Add P.U. as reflected on page 1☐ Other**I. AUTHENTICATION**

Field Examiner's Signature

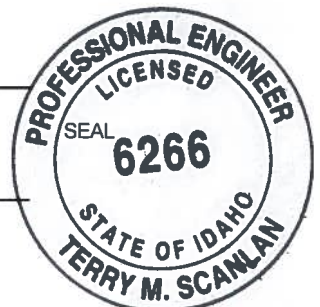
Terry M. Scanlan

Date

5/27/17

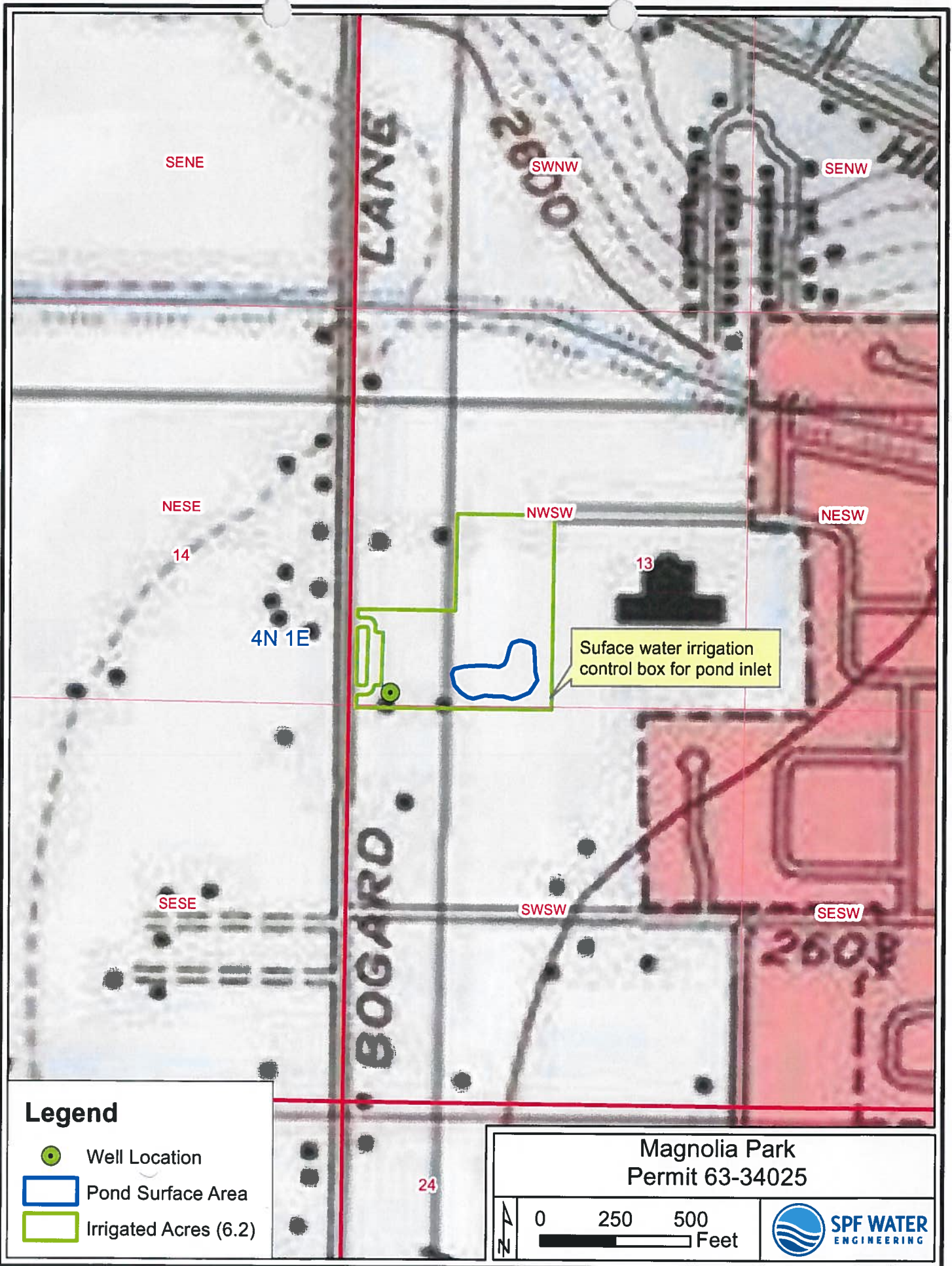
Reviewer

Date



ATTACHMENT A
FIELD EXAM MAP





Legend

-  Well Location
-  Pond Surface Area
-  Irrigated Acres (6.2)

Magnolia Park
Permit 63-34025



0

250

500

Feet



SPF WATER
ENGINEERING

ATTACHMENT B

SYSTEM COMPONENTS AND DIAGRAMS

IDAHO DEPARTMENT OF WATER RESOURCES WELL DRILLER'S REPORT

1. WELL TAG NO. **D 0073179**

Drilling Permit No. _____

Water right or injection well # _____

2. OWNER:

Name **City of Boise Parks & Recreation**

Address **1104 Royal Blvd.**

City **Boise** State **Id.** Zip **83706**

3. WELL LOCATION:

Twp **4** North ☒ or South ☐ Rge. **1** East ☒ or West ☐

Sec. **13** S.W. **1/4** N.W. **1/4** S.W. **1/4**

Gov't Lot _____ County **Ada**

Lat **43** ° **40.870** (Deg. and Decimal minutes)

Long **116** ° **17.610** (Deg. and Decimal minutes)

Address of Well Site **Bogart**

City **Boise**

Lot _____ Blk. _____ Sub. Name **Magnolia Park**

4. USE:

☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation ☐ Thermal ☐ Injection
☐ Other _____

5. TYPE OF WORK:

☒ New well ☐ Replacement well ☐ Modify existing well

☐ Abandonment ☒ Other _____

6. DRILL METHOD:

☐ Air Rotary ☐ Mud Rotary ☒ Cable ☐ Other _____

7. SEALING PROCEDURES:

Seal material	From (ft)	To (ft)	Quantity (lbs or ft)	Placement method/procedure
Bentonite chips	0'	18'	250 lbs.	Poured

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/Schedule	Material	Casing Liner	Threaded	Welded
6"	+18"	19'6"	.280	Steel	☒	☐	☒

Was drive shoe used? ☐ Y ☒ N Shoe Depth(s) _____

9. PERFORATIONS/SCREENS:

Perforations ☐ Y ☒ N Method _____

Manufactured screen ☒ Y ☐ N Type **Johnson Vee wire**

Method of installation **Over drilled. Pulled back 10" casing.**

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
19'6"	29'6"	.025	10'	6"	Stainless	

Length of Headpipe **0'** Length of Tailpipe **0'**

Packer ☐ Y ☒ N Type _____

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft)	Placement method
6-9 sand	18'	20'	200 lbs.	Poured

11. FLOWING ARTESIAN:

Flowing Artesian? ☐ Y ☒ N Artesian Pressure (PSIG) _____

Describe control device _____

12. STATIC WATER LEVEL and WELL TESTS:

Depth first water encountered (ft) **4.5'** Static water level (ft) **4.5'**

Water temp. (°F) _____ Bottom hole temp. (°F) _____

Describe access port _____

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)
12'	100	360

Test method:

Pump	Bailer	Air	Flowing artesian
☒	☐	☐	☐

Water quality test or comments: _____

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water	
				Y	N
10"	0'	4'	Topsoil		X
	4'	24'	Cemented sand & gravel	X	
	24'	29'6"	Sand & gravel	X	
	29'6"	31'	Tan yellow clay		X
	31'	38'	Sandy clay		X
	38'	56'	Brown clay with gray clay streaks		X
	56'	68'	Muddy gray fine sand		X
Back filled to 29'6" with gravel					

Completed Depth (Measurable) **29'6"**

Date Started **Sep 30, 2016**

Date Completed **Oct 6, 2016**

14. DRILLER'S CERTIFICATION:

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name **Stevens & Sons**

Co. No. **153**

*Principal Driller **[Signature]**

Date **Oct 8, 2016**

*Driller **[Signature]**

Date **Oct 8, 2016**

*Operator II _____

Date _____

Operator J _____

Date _____

*Signature of Principal Driller and rig operator are required

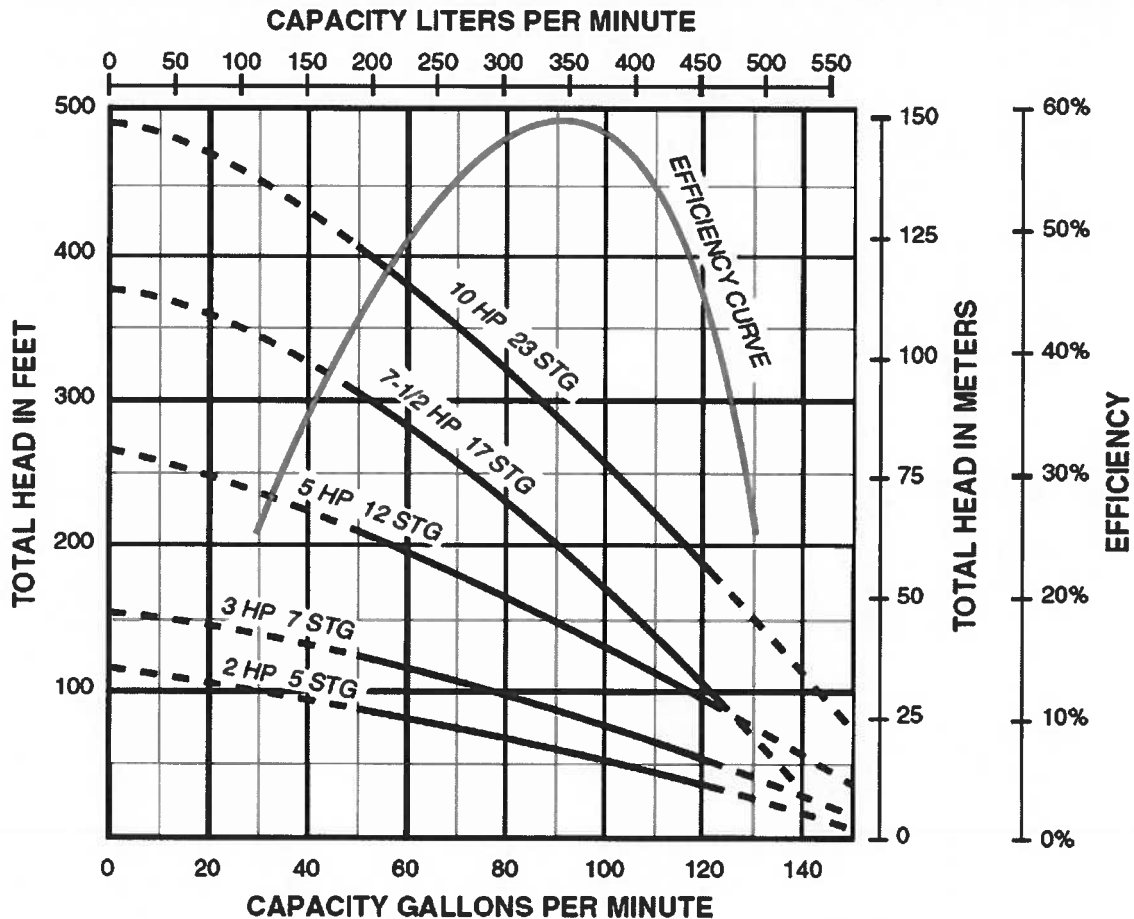


ICE AS LARGE AS

1. NETAFIM DRIP LINE OR APPROVED EQUAL. INSTALL PER
MANUFACTURE'S RECOMMENDATION FOR INDIVIDUAL TREES.
RE: 10-4,5,8
2. GROUP CONTROL VALVES FOR TRANSMITTER FOR 2-WIRE
SYSTEM
3. INSTALL VALVES IN 'JUMBO' VALVE BOXES ALL LIDS TO BE
'NON-POTABLE' PURPLE. RE: 10-2
4. NEW SLEEVES SIZE TWICE AS LARGE AS IRRIGATION LINE.

ATTACHMENT C
PUMP CURVE AND THEORETICAL FLOW RATE
CALCULATIONS

PUMP PERFORMANCE – 90 GPM



2-hp 90 gpm series Big-Flo 4" pump (or Franklin 90 gpm FPS4400 pump) set at 24 feet below ground surface (21' pipe, 3' pitless) on 2-inch pipe (2 ft headloss at C=100). 4" motor shroud on pump

Well ground surface elevation = 2599 +/-

Estimated drawdown = 12', static = 5', pumping water level = 17'

Pond high water = 2599

Headloss through 4" piping and 2" discharge = 5'

Head loss in drop pipe, check, and pitless = 13'

Head loss past pump shroud = 5'

TDH = 17 + 5 + 13 + 5 = 40'

Pump should produce between 100 and 120 gpm.

ETIdaho data - Open water - shallow systems (ponds, streams)

Boise WSFO Airport (NWS--101022)

<http://data.kimberly.uidaho.edu/ETIdaho/stcvsstats.py?station=101022&cover=55&stats=Deficit>

24-May-17

	mm/day												growing season	annual	Total
Monthly ^a	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
days/mo	31	28	31	30	31	30	31	31	30	31	30	31	634	634	365 days/yr
monthly ET (mm)		2.24	22.94	60.3	82.15	121.5	148.49	125.55	83.7	47.74					694.61 mm/yr
monthly ET(ft)	0	0.007	0.075	0.198	0.270	0.399	0.487	0.412	0.275	0.157	0.000	0.000			2.28 af/yr

Expected annual pond evap

0.75 acre pond area

2.28 ft/yr pond evaporation during months with positive precipitation deficit

1.7 afy, annual pond evaporation (0.75 x 2.28)

ATTACHMENT D
PHOTOS



Irrigated area looking east from southwest corner of park.



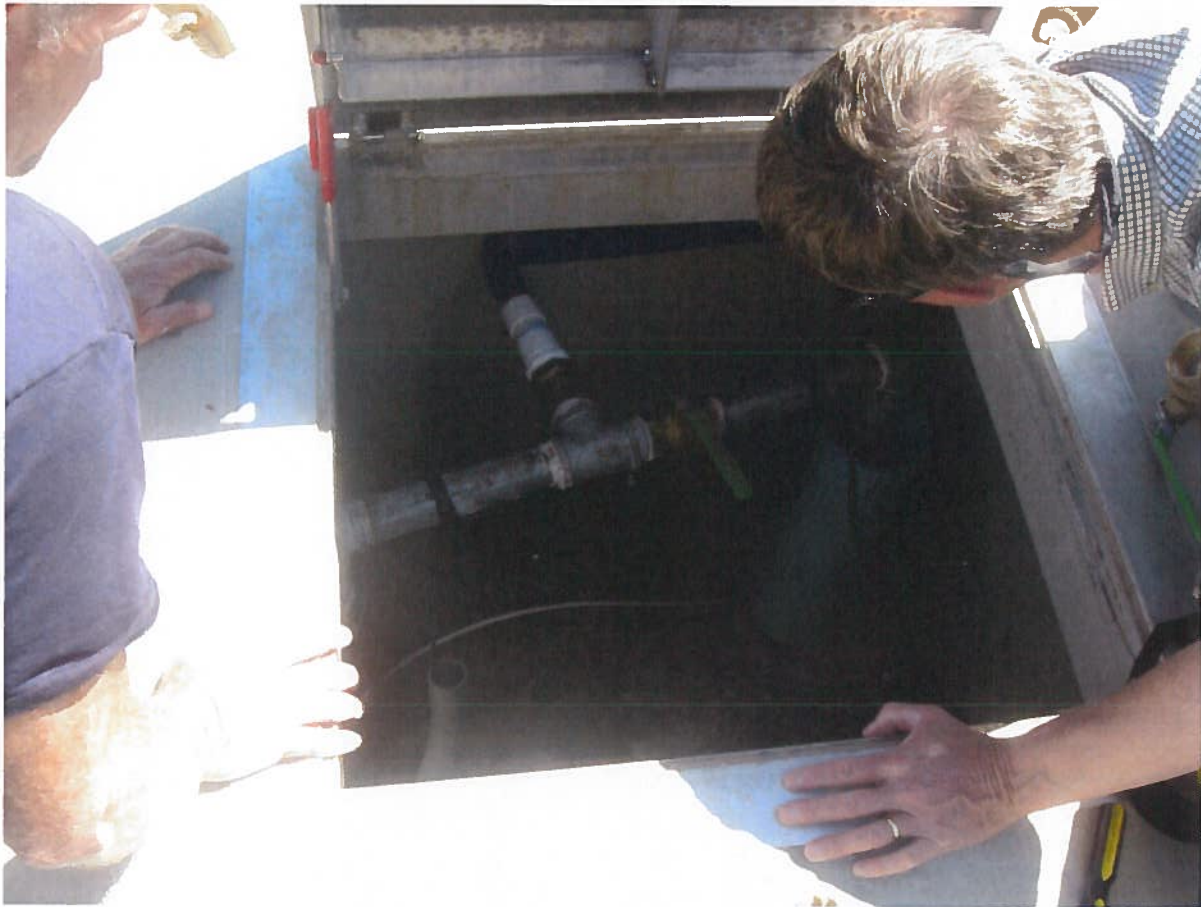
Pond looking west from near southeast corner of park. Inlet structure from irrigation lateral in foreground.



Pond looking northeast from near irrigation pump house.



Well



Vault with discharge piping from well for pond fill. Blue hose is temporary connection for flow measurement.



32-gallon trash can used for flow measurement.



Electrical panels in irrigation pump station. Well pump panel on far left. Well pump starts and stops based on pond level using level sensors.

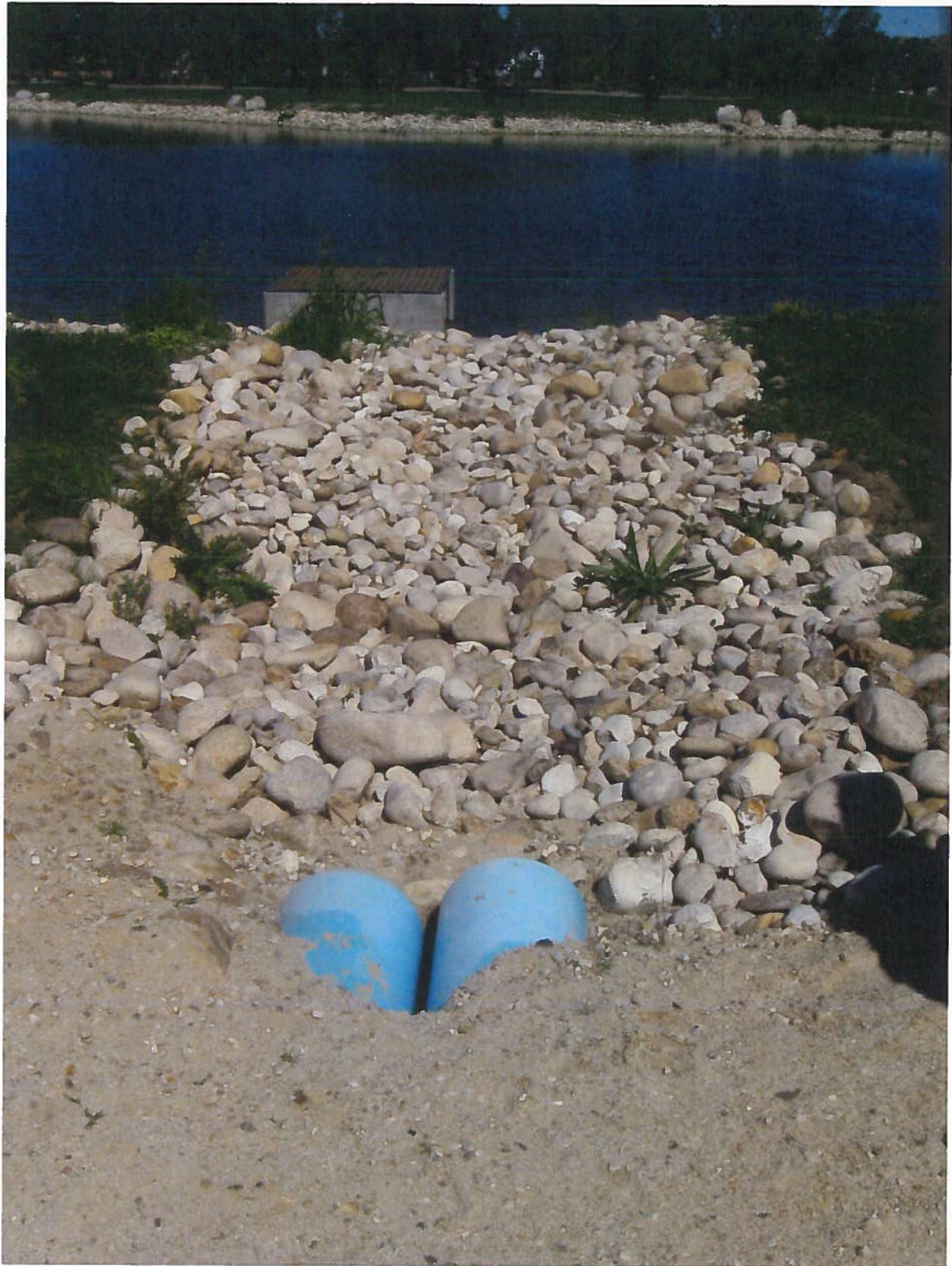
E



Control panel on irrigation pump skid. Submersible pumps for pressure irrigation system are in wet well below the pump skid.



Discharge valves and mechanical equipment on pump skid.



Inlet piping from irrigation lateral to pond.

ATTACHMENT E
PROOF OF BENEFICIAL USE