

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. 63-335791. Owner City of Boise, Department of Parks and Recreation Phone 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 Woodward Email mwoodward@cityofboise.orgAddress 1104 Royal Boulevard, Boise, ID 83706Relationship to permit holder Horticulture Manager, BPRD Phone No. 608-71894. Source Ground Water tributary to _____**B. OVERLAP REVIEW**1. Other water rights with the same place of use 63-33676, New York Irrigation District2. Other water rights with the same source and point of diversion 63-33676**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
			SE	SW	15	3N	2E	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	
3N	2E	15												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	Franklin Electric	5	Submersible	FPS 4400	2 inch
				90FA5S4-PE	

*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 gal trash can & 5 gal bucket						
2-inch hose						

2. **Measurements:** _____

32 gallon trash can: 21 to 22 seconds fill times, 32 gallons x 60 seconds/minute / 21.5 seconds = 89 gpm = 0.20 cfs

5 gallon bucket: 3.0 to 3.5 seconds fill times, 5 gallons x 60 seconds/minute / 3.25 seconds = 92 gpm = 0.21 cfs

E. NARRATIVE/REMARKS/COMMENTS

A 6" well equipped with a 5 hp submersible pump provides ground water to a soil-lined pond at Terry Day Park for diversion to storage, municipal storage, and municipal from storage uses that include supplemental irrigation, wildlife, and recreation. Surface water from New York Irrigation District (NYID) is also diverted to the pond for irrigation purposes. The purpose of the well is to supplement NYID 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 +2 feet to 216 feet and 226 to 286 feet, and 6-inch diameter screen from 216 to 226 feet and 286 to 296 feet. Timed fill measurements at the time of the exam supported a well pump capacity of 90 gpm.

Development found at the time of the exam includes 5 acres of landscape area and 0.66 acre pond surface area with a maximum depth of 14 feet. Storage volume is approximately 5 acre feet. ET Idaho information included in Attachment C indicates the pond will have 1.5 ac-ft loss to evaporation per year. Seepage loss, based on the design maximum rate of 1/2 inch per day, is 10.0 acre feet over the 0.66 acre pond area. The permit allows 50 afa for storage (including evap) with multiple fills.

This permit is limited to 18 gpm or 0.04 cfs. Due to the amount of time a diversion rate of 0.04 cfs would take to fill the pond, the City filed permit 63-33676 for additional flow rate. This right, when combined with 63-33676 should be limited to 0.20 cfs and 38.6 ac-ft. See accompanying licensing exam for permit 63-33676.

Exam Attachments

Attachment A: Field Exam Map

Attachment B: System Components and Diagrams

Attachment C: Flow Rate and Volume 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 attachedMeasured Method:
Timed Fill

32 gallon trash can: 32 gallons x 60 seconds/minute / 21.5 seconds = 89 gpm = 0.20 cfs

5 gallon bucket: 5 gallons x 60 seconds/minute / 3.25 seconds = 92 gpm = 0.21 cfs

limit to 0.04 cfs permit amount.

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 5 \times 4.5 = 22.5$$

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

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = 22.5$$

2. Volume Calculations for Other Uses:

Irrigation (above) = 22.5 acre feet per year

Pond volume = 4.6 acre feet (0.66 acres x 7 feet average depth)

Evaporation loss = 1.5 acre feet per year

Seepage loss = 10.0 acre feet per year

Total Municipal Storage Use = 22.5+4.6+1.5+10 = 38.6 acre feet ; limit to 38.6 acre feet in combination w/ 63-33676

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		38.6
Municipal From Storage	3/1	11/15		22.5
Diversion to Storage	1/1	12/31	0.04	
Totals:			0.04	38.6

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

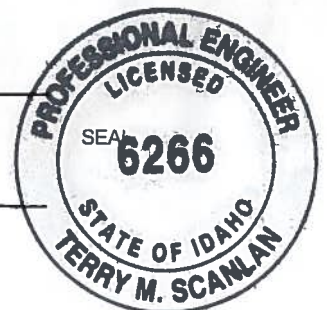


Date

5/27/17

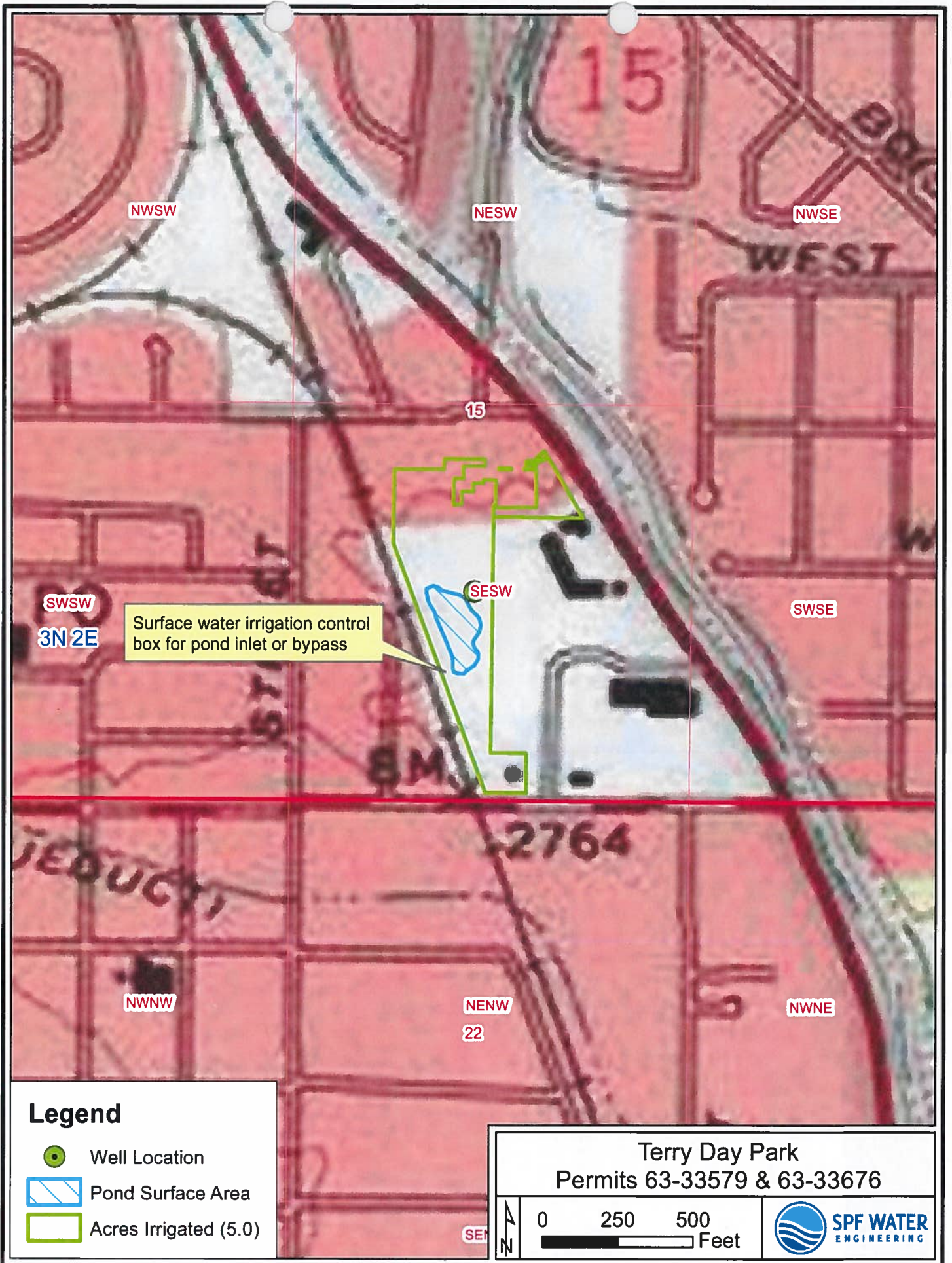
Reviewer

Date



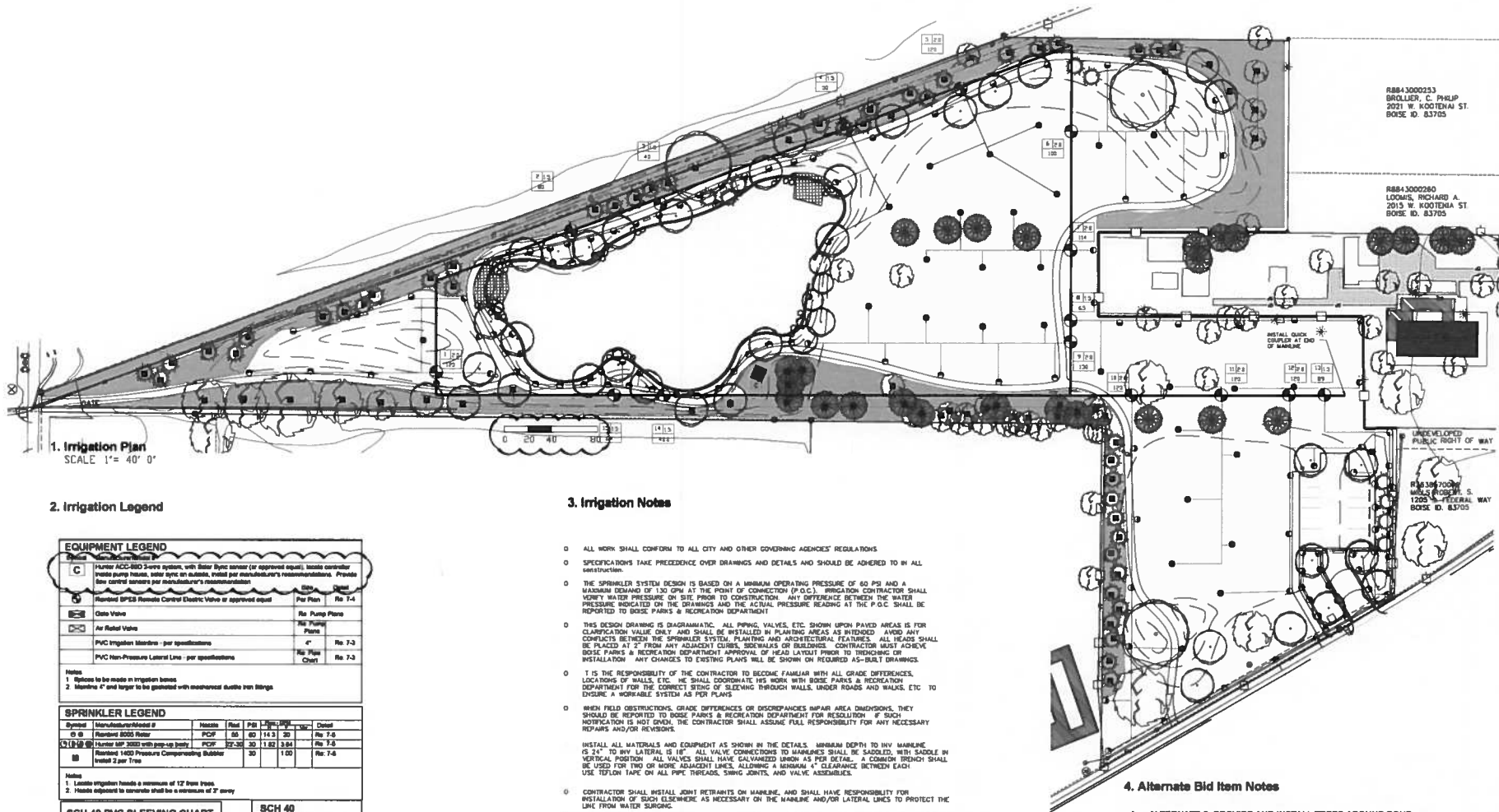
ATTACHMENT A
FIELD EXAM MAP





ATTACHMENT B

SYSTEM COMPONENTS AND DIAGRAMS



2. Irrigation Legend

EQUIPMENT LEGEND			
C	Hunter ACC-500 Series system, with Solar Sync sensor (or approved equal), inside controller (valve pump house, solar sync on outside, install per manufacturer's recommendations. Provide flow control sensors per manufacturer's recommendations.	See Plan	Ref. 7-4
CV	Standard 1/2" BSP Flange Control Valve or approved equal	See Plan	Ref. 7-4
AV	Gate Valve	See Pump House	
AV	Air Relief Valve	See Pump House	
PI	PVC Irrigation Mainline - per specifications	4"	Ref. 7-3
PI	PVC Non-Pressure Lateral Line - per specifications	See Plan Chart	Ref. 7-3

SPRINKLER LEGEND			
S	Standard 1/2" BSP Flange Control Valve or approved equal	See Plan	Ref. 7-4
S	Standard 1/2" BSP Flange Control Valve or approved equal	See Plan	Ref. 7-4
S	Standard 1/2" BSP Flange Control Valve or approved equal	See Plan	Ref. 7-4

SCH 40 PVC SLEEVING CHART			
1" Sleeve	1-4" Wires	2" Pipe	
1 1/2" Sleeve	5-10 Wires	2 1/2" Pipe	
2" Sleeve	11-20 Wires	3" Pipe	
2 1/2" Sleeve	21-30 Wires	3 1/2" Pipe	
3" Sleeve	31-40 Wires	4" Pipe	
4" Sleeve	41-60 Wires	5" Pipe	
5" Sleeve	61-80 Wires	6" Pipe	
6" Sleeve	81-100 Wires	8" Pipe	

Note: All wires and pipe below landscape must be covered per this chart. Slope is 2" in 8' on average with all the above.

3. Irrigation Notes

- ALL WORK SHALL CONFORM TO ALL CITY AND OTHER GOVERNING AGENCIES' REGULATIONS.
- SPECIFICATIONS TAKE PRECEDENCE OVER DRAWINGS AND DETAILS AND SHOULD BE ADHERED TO IN ALL CONSTRUCTION.
- THE SPRINKLER SYSTEM DESIGN IS BASED ON A MINIMUM OPERATING PRESSURE OF 60 PSI AND A MAXIMUM DEMAND OF 130 GPM AT THE POINT OF CONNECTION (P.O.C.). IRRIGATION CONTRACTOR SHALL VERIFY WATER PRESSURE ON SITE PRIOR TO CONSTRUCTION. ANY DIFFERENCE BETWEEN THE WATER PRESSURE INDICATED ON THE DRAWINGS AND THE ACTUAL PRESSURE READINGS AT THE P.O.C. SHALL BE REPORTED TO BOISE PARKS & RECREATION DEPARTMENT.
- THIS DESIGN DRAWING IS DIAGNOSTIC. ALL PIPING, VALVES, ETC. SHOWN UPON PAVED AREAS IS FOR CLARIFICATION VALUE ONLY AND SHALL BE INSTALLED IN PLANTING AREAS AS INTENDED. AND ANY CONFLICTS BETWEEN THE SPRINKLER SYSTEM, PLANTING AND ARCHITECTURAL FEATURES, ALL HEADS SHALL BE PLACED AT 2" FROM ANY ADJACENT CURBS, SIDEWALKS OR BUILDINGS. CONTRACTOR MUST ACHIEVE BOISE PARKS & RECREATION DEPARTMENT APPROVAL OF HEAD LAYOUT PRIOR TO TRENCHING OR INSTALLATION. ANY CHANGES TO EXISTING PLANS WILL BE SHOWN ON REQUIRED AS-BUILT DRAWINGS.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BECOME FAMILIAR WITH ALL GRADE DIFFERENCES, LOCATIONS OF WALLS, ETC. HE SHALL COORDINATE HIS WORK WITH BOISE PARKS & RECREATION DEPARTMENT FOR THE CORRECT SIZING OF SLEEVING THROUGH WALLS, UNDER ROADS AND WALKS, ETC. TO ENSURE A WORKABLE SYSTEM AS PER PLANS.
- WHEN FIELD OBSTRUCTIONS, GRADE DIFFERENCES OR DISCREPANCIES IMPAIR AREA DIMENSIONS, THEY SHOULD BE REPORTED TO BOISE PARKS & RECREATION DEPARTMENT FOR RESOLUTION. IF SUCH INFORMATION IS NOT GIVEN, THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY NECESSARY REPAIRS AND/OR REVISIONS.
- INSTALL ALL MATERIALS AND EQUIPMENT AS SHOWN IN THE DETAILS. MINIMUM DEPTH TO ANY MAINLINE IS 24". TO ANY LATERAL IS 18". ALL VALVE CONNECTIONS TO MAINLINES SHALL BE SADDLED, WITH SADDLE IN VERTICAL POSITION. ALL VALVES SHALL HAVE GALVANIZED UNION AS PER DETAIL. A COMMON TRENCH SHALL BE USED FOR TWO OR MORE ADJACENT LINES, ALLOWING A MINIMUM 4" CLEARANCE BETWEEN EACH USE TRENCH LINE ON ALL PIPING THROUGH SINK JOINTS, AND VALVE ASSEMBLIES.
- CONTRACTOR SHALL INSTALL JOINT RESTRAINTS ON MAINLINE, AND SHALL HAVE RESPONSIBILITY FOR INSTALLATION OF SUCH ELEMENTS AS NECESSARY ON THE MAINLINE AND/OR LATERAL LINES TO PROTECT THE LINE FROM WATER SURGE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL HOOK-UP OF ELECTRICAL OUTLET TO AUTOMATIC CONTROLLER AND UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL FLUSH AND ADJUST ALL SPRINKLER HEADS FOR OPTIMUM PERFORMANCE AND TO PREVENT OVER SPRAY ONTO WALKS, ROADWAYS AND/OR BUILDINGS AS MUCH AS POSSIBLE. THIS SHALL INCLUDE THE SELECTION OF OPTIMUM FLOW CONTROL SYSTEM AT EACH VALVE TO OBTAIN OPTIMUM OPERATING PRESSURE FOR EACH SYSTEM, IN ACCORDANCE TO MANUFACTURER'S RECOMMENDATIONS.
- CONTRACTOR SHALL TAKE RESPONSIBILITY FOR THE PROTECTION OF ALL PLANT MATERIALS DESIGNATED TO REMAIN ON SITE. HE SHALL TAKE NECESSARY PRECAUTIONS TO ENSURE PROTECTION FROM EQUIPMENT AND WORKER DAMAGE.
- CONTRACTOR SHALL BACKFILL, WATER SETTLE AS PER SPECIFICATIONS, AND REGRADE SITE TO FINISHED GRADE CONDITION. SHOWN AND REGRADE FOR SETTING, SLOPING, OR PLANTING.
- NO 4-WAY FITTINGS.
- AS-BUILTS SHALL BE PROVIDED PRIOR TO SUBSTANTIAL COMPLETION.

4. Alternate Bid Item Notes

- ALTERNATE 2 - PROVIDE AND INSTALL TREES AROUND POND, INCLUDING SPRAY HEAD IRRIGATION.
- ALTERNATE 5 - PROVIDE AND INSTALL HYDROSEEDING 'RTF' TURF AND IRRIGATION FOR AREA SOUTH OF POND.
- ALTERNATE 9 - PROVIDE AND INSTALL PERIMETER TREES (40) INCLUDING 2 BUBBLERS PER TREE REF. 7-8

Date	Review
2.7.12	addendum 2

R8843000253
BROUWER, C. PHILIP
2021 W. KOOTENAI ST.
BOISE ID. 83705

R8843000280
LOOMIS, RICHARD A.
2015 W. KOOTENAI ST.
BOISE ID. 83705

R8843000280
WALLS, ROBERT S.
1200 S. FEDERAL WAY
BOISE ID. 83705

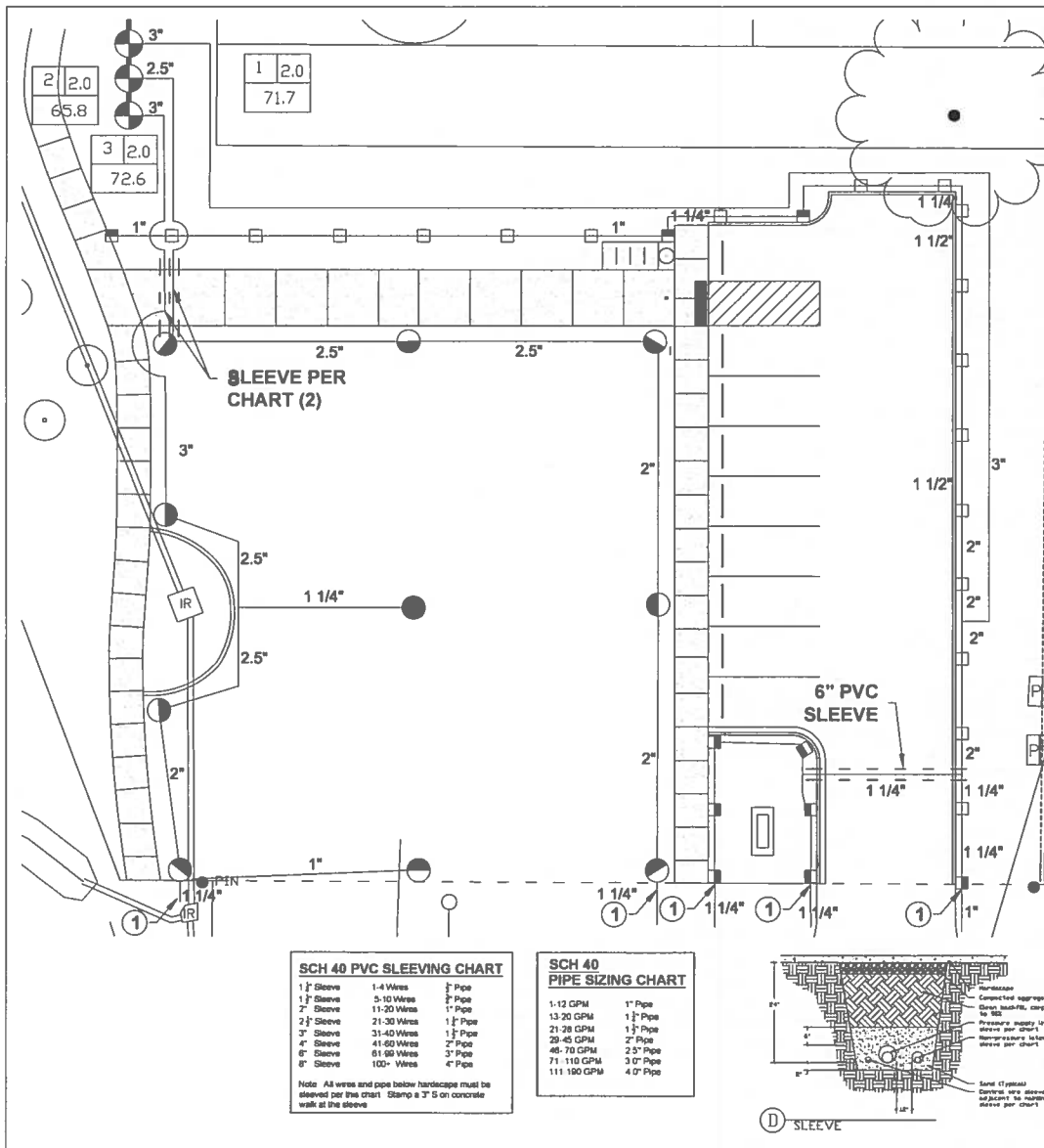
DAY PARK
CONSTRUCTION DOCUMENTS
IRRIGATION PLAN

IRRIGATION
PLAN

Drawn By: SP	Checked By: SP
Date: 2012	Date: 2012

Scale: 1"=40'-0"
24" X 36" SHEET

NORTH
6



SCH 40 PVC SLEEVING CHART

1" Sleeve	1-4 Wires	1/2" Pipe
1 1/2" Sleeve	5-10 Wires	3/4" Pipe
2" Sleeve	11-20 Wires	1" Pipe
2 1/2" Sleeve	21-30 Wires	1 1/2" Pipe
3" Sleeve	31-40 Wires	2" Pipe
4" Sleeve	41-60 Wires	3" Pipe
6" Sleeve	61-80 Wires	4" Pipe
8" Sleeve	100+ Wires	6" Pipe

Note: All wires and pipe below hardcape must be sleeved per this chart. Stamp a "3" S on concrete walk at the sleeve.

SCH 40 PIPE SIZING CHART

1-12 GPM	1" Pipe
13-20 GPM	1 1/2" Pipe
21-28 GPM	2" Pipe
29-45 GPM	2 1/2" Pipe
46-70 GPM	3" Pipe
71-110 GPM	4" Pipe
111-190 GPM	6" Pipe

EQUIPMENT LEGEND

Symbol	Manufacturer/Model #	Size	Detail	Notes
	Rainbird PEBB - PRS-D Remote Control Electric Valve	2"	-	4
	Existing PVC Irrigation Mainline	-	-	3
	PVC Non-Pressure Lateral Line - per specifications	Plan Size	-	2, 5, 6
	UF Rated Control Wire, 14 Ga. Common, 14 Ga. Pilot	-	-	1
	Install (2) additional 14 Ga. Pilot wires to each valve location	-	-	

- Notes:**
- Splices to be made in irrigation boxes.
 - 2 1/2", 3", 4", and 6" sized pipe to be Class 200. Smaller pipe to be Sch 40.
 - Mainline 4" and larger to be gasketed with mechanical ductile iron fittings.
 - Provide and install Two-Wire Decoder to communicate with Hunter Controller.
 - Sleeve laterals under all concrete per sleeving chart and details.
 - No poly-pipe permitted.

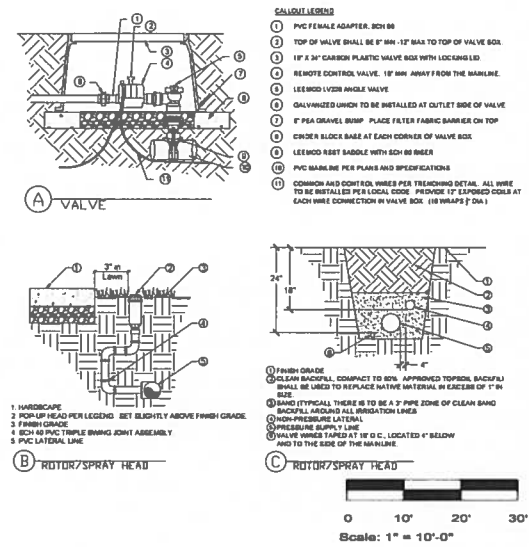
SPRINKLER LEGEND

Symbol	Manufacturer/Model #	Nozzle	Rad.	PSI	Flow, GPM	Detail	Notes
	Rainbird 1800PRS	MPR	15'	30	92	1.85	1
	Rainbird 8504-SS	8/14	50'	80	-	9.4	16.2

Notes:

- Install Netefim Drip Irrigation in all of the Bark Beds per Manufacturer's Recommendations and plant water requirements.
- Locate rotors a minimum of 12' from trees.

- CALLOUT LEGEND**
- ① Extend and cap lateral lines for future use.
- GENERAL NOTES:**
Provide a complete and functioning irrigation system.
Adjust existing heads to provide complete turf coverage and not over-spray onto concrete, parking lot or ACHD ROW.



Date _____ Review _____

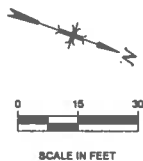
Parks & Recreation

**TERRY DAY PARK
PARKING LOT**

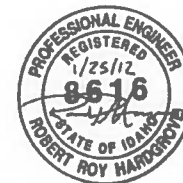
2000 W OVERLAND RD

IRRIGATION SHEET

Sheet No. 5 of 7



- NOTES:
1. DESIGN IS BASED ON TOPOGRAPHICAL SURVEY PROVIDED BY BOISE PARKS AND RECREATION.
 2. POND EMBANKMENTS TO BE CONSTRUCTED WITH NATIVE MATERIAL PER I.S.P.W.C. SECTION 202.3.8.
 3. ALL EXCESS EXCAVATION FROM THE POND SHALL BE PLACED IN BERMS AND SHAPED WITH 5:1 SLOPES PER THE DIRECTION OF THE BOISE PARKS AND RECREATION DEPARTMENT.



ATTACHMENT C

FLOW RATE AND VOLUME CALCULATIONS

Submersible Pumps

4" High Capacity Pumps

Ordering Information (See pgs. 2-3 for model number explanation)

1 - 10 HP 4" Pump Ends						
GPM	HP	Stages	Ordering Info.		Dimensions	Wt.
			Model No.	Order No.	Pump End Only	
35	1	6	35FA1S4-PE	93613506	15.00	9
	1.5	8	35FA15S4-PE	93613508	17.50	10
	2	10	35FA2S4-PE	93613510	20.00	11
	3	14	35FA3S4-PE	93613514	25.00	13
	5	22	35FA5S4-PE	93613522	35.00	17
	7.5	34	35FA7S4-PE	93613534	52.17	25
	10	42	35FA10S4-PE	93613542	62.23	31
45	1.5	6	45FA15S4-PE	93614506	21.00	15
	2	8	45FA2S4-PE	93614508	25.50	16
	3	11	45FA3S4-PE	93614511	32.25	19
	5	18	45FA5S4-PE	93614518	47.75	25
	7.5	26	45FA7S4-PE	93614526	65.25	33
	10	31	45FA10S4-PE	93614531	78.30	38
60	2	6	60FA2S4-PE	93616006	21.00	15
	3	8	60FA3S4-PE	93616008	25.50	17
	5	13	60FA5S4-PE	93616013	36.75	21
	7.5	17	60FA7S4-PE	93616017	45.25	25
	10	24	60FA10S4-PE	93616024	61.00	31
90	2	5	90FA2S4-PE	93619005	22.56	15
	3	7	90FA3S4-PE	93619007	28.56	17
	5	12	90FA5S4-PE	93619012	43.56	21
	7.5	19	90FA7S4-PE	93619019	64.50	27

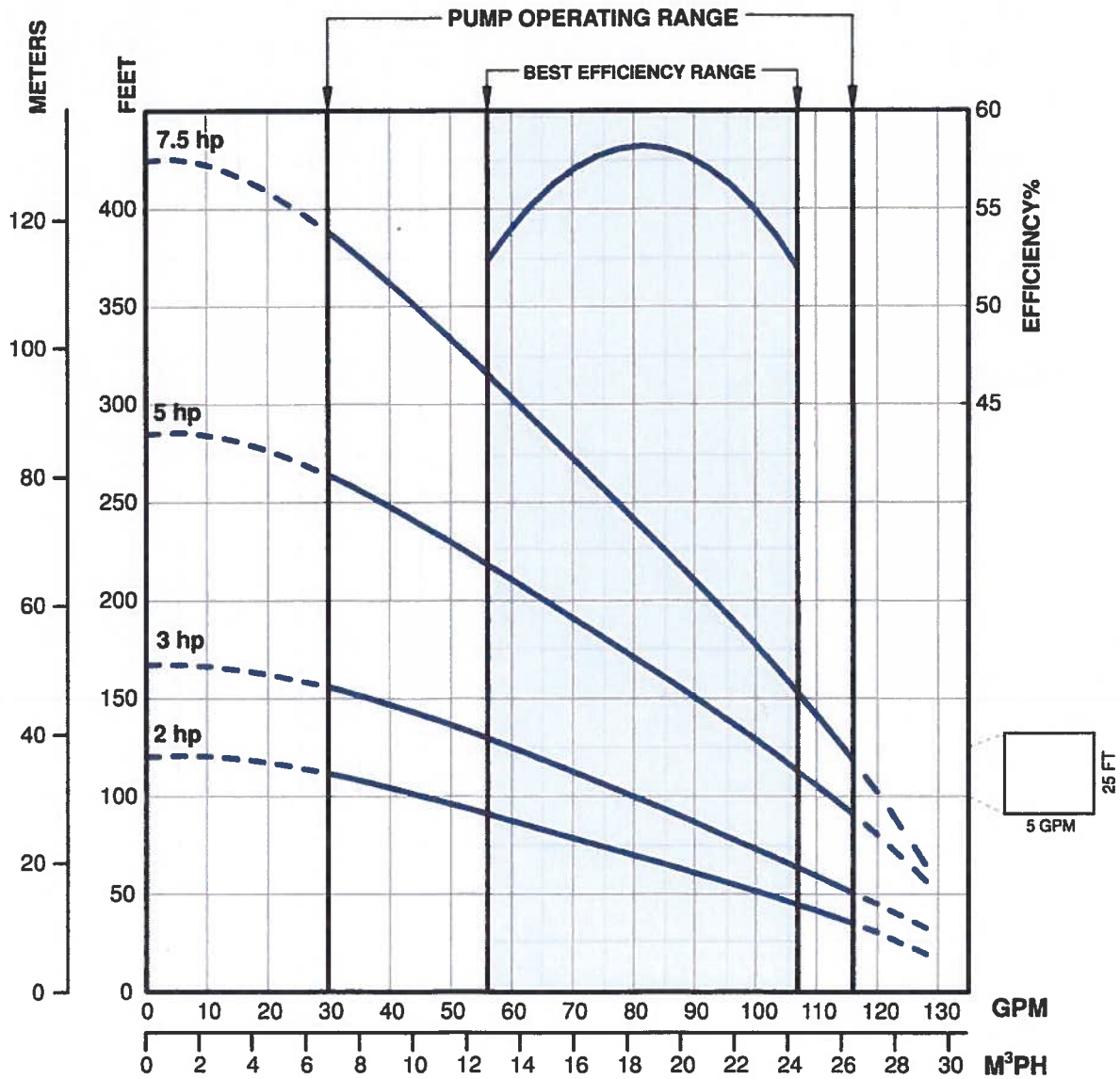
Notes: All dimensions are in inches. Discharge is 2" NPT. Maximum diameter across cable guard is 3.90" on all models. Weight in pounds.

1 - 1.5 HP Single-Phase Units									
GPM	HP	Stages	Volts	2-Wire			3-Wire		
				Model No.	Order No.	Wt.	Model No.	Order No.	Wt.
35	1	6	230	35FA1S4-2W230	93613606	33	35FA1S4-3W230	93613706	33
	1.5	8	230	35FA15S4-2W230	93613608	41	35FA15S4-3W230	93613708	39
45	1.5	6	230	45FA15S4-2W230	93614606	46	45FA15S4-3W230	93614706	44

Notes: All listed above have 2" NPT discharge. Order check valve separately.
Pump and motor will be individually cartoned and require assembly.
Weight in pounds.

Submersible Pumps

4" High Capacity Pumps 90 GPM Performance Curves



4" Submersible Pump

4400 High Capacity 90 GPM Performance Charts

Capacities in U.S. Gallons per Minute

HP	PSI	DEPTH TO PUMPING WATER LEVEL, OR LIFT, IN FEET																	
		20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	
2	0	130	120	110	100	90	80	70	60	45	30	10							Shut-off 120 ft.
	10	105	100	90	80	70	55	40	20										
	20	85	75	65	50	35	15												
	30	60	45	30	10														
	40	25	5																
Shut-off PSI		43	39	35	30	26	22	17	13	9	4								
3	0	140	130	120	115	105	100	95	90	80	75	65	55	45	30	15			Shut-off 167 ft.
	10	120	110	105	100	95	85	80	70	65	55	40	25	10					
	20	105	95	90	85	80	70	60	50	35	20	54							
	30	90	80	75	65	55	45	35	15										
	40	75	65	55	40	30	10												
	50	50	40	25	5														
	60	20																	
Shut-off PSI		64	59	55	51	46	42	38	33	29	25	20	16	12	7	3			
5	0	145	135	125	120	110	105	95	85	80	70	55	45	30	10				Shut-off 285 ft.
	10	135	125	115	110	100	95	85	75	65	55	40	25	10					
	20	125	115	110	100	95	85	75	65	55	40	25	5						
	30	115	105	100	90	85	75	65	50	40	20	5							
	40	105	100	90	80	70	60	50	35	20									
	50	95	90	80	70	60	45	35	15										
	60	90	80	70	60	45	30	15											
	70	80	70	55	45	30	10												
	80	65	55	40	25	5													
	90	50	40	25	5														
	100	35	20																
Shut-off PSI		115	106	97	89	80	71	63	54	45	37	28	19	11	2				
7-1/2	0	140	135	125	115	110	100	95	85	75	65	55	45	30	15				Shut-off 425 ft.
	20	130	120	110	105	95	90	80	70	60	50	35	20	5					
	30	120	115	105	100	90	85	75	65	55	40	25	10						
	40	115	110	100	95	85	75	65	55	45	30	10							
	50	110	105	95	85	80	70	60	45	30	15								
	60	105	95	90	80	70	60	50	35	20	5								
	80	95	85	75	65	55	40	25	10										
	100	80	70	60	50	35	20												
	120	65	55	40	25	10													
	140	45	35	20															
	160	25	10																
Shut-off PSI		175	162	149	136	123	110	97	84	71	58	45	32	19	6				

Design Pump Performance

5-hp 90 gpm FPS4400 pump set at 192 feet below ground surface (189' pipe, 3' pitless) on 2.5-inch pipe.

Estimated pumping water level = 135'

Headloss through pitless, check valve, and 2" discharge pipe = 7'

Head loss in drop pipe = 13 ft headloss at C=115.

$TDH = 135 + 7 + 13 = 155'$

Pump should produce approximately 88 gpm.

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

Boise WSFO Airport (NWS--101022)

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

24-May-17

	mm/day												growing season	annual	Total
Monthly ^b	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			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

0.66 acre pond area

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

1.5 afy, annual pond evaporation (0.66 x 2.28)

ATTACHMENT D
PHOTOS



Place of use



Place of use



Place of use



Pond



Well



Well casing in foreground. Pump house in background.



Vault with well discharge to pond fill pipe. Flow measurements taken by connecting to lower ball valve with yellow handle



Temporary 2-inch hose, 5-gallon bucket, and 32-gallon trash can for volumetric flow measurement



Irrigation pump control panel



Pressure irrigation pump system pump skid. Submersible pumps in wet well below pump skid.



Pressure irrigation pumping system motor controls



Inlet from irrigation lateral to pond.

ATTACHMENT E
PROOF OF BENEFICIAL USE