

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

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. 47-17441

1. Owner St. Lukes Regional Medical Center Phone No. 208-386-2255
 Current address 190 E. Bannock, Boise, ID 83712
2. Examiner's name Scott King, P.E. (Examiner No. 133) EXAM DATE 8/16/2012
3. Accompanied by Scott McDonald Email mcdonalds@slhs.org
 Address St. Lukes, Twin Falls
 Relationship to permit holder Mechanic 3 Phone No. 208-814-0842
4. Source Ground Water tributary to _____

B. OVERLAP REVIEW

1. Other water rights with the same place of use City of Twin Falls (Municipal Water Supply, multiple water rights)
2. 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
1	4		NW	NW	5	10S	17E	Twin Falls	Aerial photo, exam, GPS
									42.59135 N, 114.497767 W (WGS84)

2. Place(s) of Use: Method of determination Aerial photo, exam

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
10S	17E	5					C	C											
							L3	L4											

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
1	Hitachi	15	Submersible	Berkeley	6T15-115 (Pump Curve No.)

*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
Installed Flow Meter	Magnetic	McCromet	Ultra Mag	unknown	3"	unknown

2. **Measurements:** _____

Scott McDonald supplied a chart of discharge measurements dating from May 2, 2012 to August 16, 2012

demonstrating the pumping system capacity of 150 gpm (see attachments).

E. NARRATIVE/REMARKS/COMMENTS

The primary source of supply for Magic Valley Medical Center is the City of Twin Falls' municipal water system. The well developed under this permit is required for hospital accreditation, and is only used for testing purposes and to meet potable demands under emergency circumstances, i.e., if the City of Twin Falls municipal water supply were interrupted. The well was drilled 280 feet deep, constructed to public water system standards, and consists of 10-inch casing to 100 feet with a 15-hp submersible pump. The pump has the capacity to produce 150 gpm at a discharge pressure of 75 psi. The pump electrical controls, valves, sample tap, flow meter, treatment equipment and other required appurtenances are installed in the medical center controls building. The well is located outside the controls building and connected to the building via a pitless adapter and discharge piping.

Per accreditation requirements, a flush line has been provided to enable the well and pumping system to be tested on a monthly basis to ensure operability, to purge stagnant water from the casing during a daily five-minute flush operation, and for required water quality sampling. Flush water is discharged to a stormwater basin. As required by permit conditions, total quantity of ground water annually diverted from the well is recorded and is provided as Attachment D. This use has included testing and purging as no emergency situation to date has required use of the back-up well to provide water to the facility (see water use report).

Attachment A is a copy of the permit and the original proof of beneficial use signed by Jeff Hull, Director of Architecture and Construction.

Attachment B is the well driller's report, pump performance curve, and plumbing mechanical plan record drawing.

Attachment C is a topographical map, aerial photo and plat map.

Attachment D is annual pumping records and chart of pumping activity from May 2 to August 16, 2012.

Attachment E is photos of the place of use, point of diversion, and pump system controlling works inside the controls building.

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?

Cond #1: Proof of beneficial use is included with this report. Cond #3: The use is commercial back-up water supply for St. Luke's Magic Valley Medical Center. Cond #4: Right holder complied with drilling permit requirements, etc. (see Driller's Report). Cond #5: Water temperature is less than 85 degrees Fahrenheit (see Driller's Report). Cond #6: The system is an emergency back-up and water is only used in the facility when municipal water is not available. Water diverted during required short daily flushes (to prevent stagnation) and testing is discharged to a stormwater basin. Cond #7: Right holder has complied with DEQ water permitting requirements. Cond #8: Project construction is complete. Cond #10: A totalizing measuring device is installed. Cond #11: A written report of water use is included (see Attachment D).

F. FLOW CALCULATIONS☐ Additional computation sheets attached

Measured Method:

Discharge is measured with a permanently-installed McCrometer UltraMag flowmeter. Discharges recorded by the facility's operating system software document a pumping capacity of 150 gallons per minute (0.33 cubic feet per second). The measured discharge corresponds with the pump performance curve design flow.

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = \underline{\hspace{2cm}}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation Season}) \times 1.9835 = \underline{\hspace{2cm}}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = \underline{\hspace{2cm}}$$

2. Volume Calculations for Other Uses:

Potential: $0.33 \text{ cfs} \times 365 \text{ days} \times 1.9835 = 238.9 \text{ afa}$

H. RECOMMENDATIONS

1. Recommended Amounts

Beneficial Use	Period of Use		Rate of Diversion	Annual Volume
	From	To	Q (cfs)	V (afa)
Commercial	1/1	12/31	0.33 cfs	238.9 afa
Totals:			0.33 cfs	238.9 afa

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

Scott N. King

Date

8/21/2012

Reviewer

Date



ATTACHMENT A

PERMIT RECORD AND PROOF OF BENEFICIAL USE

State of Idaho
Department of Water Resources
Permit to Appropriate Water

NO. 47-17441

Priority: January 17, 2007

Maximum Diversion Rate: 0.89 CFS

This is to certify, that ST LUKES REGIONAL MEDICAL CENTER
190 E BANNOCK
BOISE ID 83712

has applied for a permit to appropriate water from:

Source: GROUND WATER

and a permit is APPROVED for development of water as follows:

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>RATE OF DIVERSION</u>
COMMERCIAL	01/01 to 12/31	0.89 CFS

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER L3 (NE $\frac{1}{4}$ NW $\frac{1}{4}$) Sec. 5, Twp 10S, Rge 17E, B.M. TWIN FALLS County
GROUND WATER L4 (NW $\frac{1}{4}$ NW $\frac{1}{4}$) Sec. 5, Twp 10S, Rge 17E, B.M. TWIN FALLS County

PLACE OF USE: COMMERCIAL

Twp Rge Sec	NE				NW				SW				SE				Totals
	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
10S 17E 5					X	X											
					L3	L4											

CONDITIONS OF APPROVAL

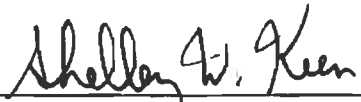
1. Proof of application of water to beneficial use shall be submitted on or before **September 01, 2012**.
2. Subject to all prior water rights.
3. Commercial use is for back-up water supply for a hospital.
4. Right holder shall comply with the drilling permit requirements of Section 42-235, Idaho Code and applicable Well Construction Rules of the Department.
5. Diversion and use of water with a temperature greater than 85 degrees Fahrenheit is not authorized under this right.
6. The right holder shall make full beneficial use of all municipal water rights available to this facility. The right holder shall limit the diversion of ground water under this right to those times when the municipal water supply is not available for the use authorized under this right.
7. Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality or the Department of Agriculture.

State of Idaho
Department of Water Resources
Permit to Appropriate Water

NO. 47-17441

8. Project construction shall commence within one year from the date of permit issuance and shall proceed diligently to completion unless it can be shown to the satisfaction of the Director of the Department of Water Resources that delays were due to circumstances over which the permit holder had no control.
9. Any license issued by IDWR pursuant to the right or portion thereof for the use of trust water is subject to a term review of 20 years after the date of this approval to determine availability of water for the use and to re-evaluate the public interest at the end of the term.
10. The right holder shall maintain a totalizing measuring device of a type approved by the Department as a part of the diverting works.
11. For each year until proof of beneficial use is submitted in connection with this right, the right holder shall record when water is diverted from the well under this right and the total quantity of water diverted annually. A written report of this data shall be submitted to the Department when proof of beneficial use is submitted.
12. If use of the municipal water rights available to this place of use are discontinued voluntarily by the right holder, this right shall not be used as a primary source of water.

This permit is issued pursuant to the provisions of Section 42-204, Idaho Code. Witness the signature of the Director, affixed at Boise, this 6th day of September, 2007.


for DAVID R. TUTHILL, JR., Director

COPY

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
STATEMENT OF COMPLETION
FOR SUBMITTING PROOF OF BENEFICIAL USE

FOR OFFICE USE ONLY

Amt. of Fee \$: _____
Receipt No. _____
Receipt By: _____
Date Received: _____

The Idaho Department of Water Resources considers this form a statement by the permit holder(s) that development of a water right has been **completed** and that water has been applied to beneficial use to the extent described below. **This form must be accompanied by an examination fee, when necessary, or by a completed Beneficial Use Field Report prepared by a certified water right examiner.** Please refer to the instructions and fee schedule for this form. If ownership of the permit has changed, please contact any Department office or visit the Department's website at: www.idwr.idaho.gov for an *Assignment of Permit* form. If you wish to relinquish your permit because you have not established the authorized use of the water and are not applying for an extension, please notify the Department in writing.

1. Permit No.: 47-17441 Telephone No.: 208-386-2255
2. Name of Permit Holder(s): St. Lukes Regional Medical Center
3. Mailing Address: 190 E. Bannock City: Boise
State: ID Zip: 83712 Email: _____
4. Source of Water: Ground Water If **GROUND WATER** (well), Date Drilled: mo. May / yr. 2009
Well Driller: Walker Water Systems Drilling Permit Number: 855230
5. Extent of use(s) completed (as authorized by the water right permit):
Domestic (No. of households): _____ Stockwater (No. and type of stock): _____
Irrigation (No. of acres): _____ Other: Commercial (back-up) source for hospital
6. Total rate of diversion or storage volume for which proof is submitted: 0.89 cfs OR _____ acre-feet.
7. Compliance with a measuring device requirement, lockable controlling device requirement, and/or other conditions of permit: **Refer to the approval conditions on your permit and respond accordingly. The Department will not issue a license if permit conditions are not met.**

Measuring Device: Is a measuring device required?

Yes ☒ No ☐

If yes, has the measuring device been installed?

Yes ☒ No ☐

Lockable Controlling Device: Is a lockable device required to control the diversion?

Yes ☐ No ☒

If yes, has the lockable device been installed?

Yes ☐ No ☐

Other Conditions of Permit: Do the approval conditions on your permit require you to submit additional information in connection with your proof of beneficial use? If yes, list the conditions below and attach documents with the required information.

Written report of total quantity diverted annually Completed? Yes ☒ No ☐

8. Fee Enclosed: \$ 100 See fee schedule on back of the instructions for filing proof of beneficial use.
Proofs filed without an appropriate fee, will be considered incomplete.
9. Person to contact to accompany the Department representative during field examination of the water system.

Name: _____ Telephone Number: _____

Mailing Address: _____ City: _____

State: _____ Zip: _____ Email: _____

The information given on this form is my true statement of the extent to which the above numbered permit has been developed and water has been diverted and applied to a beneficial use. I understand that any undeveloped portion of the permit is relinquished to the State of Idaho.

Signature of permit holder: _____

[Signature] Director of Arch. & Const. Date: 8/15/12
(Include your title, if on behalf of company or organization)

Mail to: Idaho Department of Water Resources, PO Box 83720, Boise, ID 83720-0098

ATTACHMENT B

WELL DRILLERS' REPORT, PUMP CURVE, and RECORD DRAWING

ID DEPARTMENT OF WATER RESOURCE
WELL DRILLER'S REPORT

 Official Use Only
 Inspected by _____
 Twp _____ Rge _____ Sec _____
 _____ 1/4 _____ 1/4 _____ 1/4
 Lat: : : Long: : :

1. WELL TAG NO. D - 0050681

DRILLING PERMIT NO. 855230 apl. 907559

Other IDWR No. 47-17441

2. OWNER

Name St. Luke's Regional Medical Center

Address 190 E Bannock

City Boise State ID Zip 83712

3. LOCATION OF WELL by legal description:

Sketch map location must agree with written location

N									
W									E
									S

 Twp. 10 ☐ North or ☒ South
 Rge. 17 ☒ East or ☐ West
 Sec. 5 1/4 NW 1/4 NW 1/4
 Gov't Lot _____ County T.F.
 Lat: : : Long: : :

Address of Well Site 801 Pole Line Road West

City T.F.

(Give at least name of road + Distance to Road or Landmark)

Lt. _____ Blk. _____ Sub. Name _____

4. USE:

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

5. TYPE OF WORK check all that apply (replacement ect.)

☒ New Well ☐ Modify ☐ Abandonment ☐ Other

6. DRILL METHOD

☒ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other

7. SEALING PROCEDURES

Seal/Filter Pack			Amount	Method
Material	From	To	Sacks or Pounds	
Cement	-41	100	2500 lbs.	Pumped
Bent	0	41	1900 lbs.	Dry Pour

Was drive shoe used? ☐ Y ☒ N Shoe depth(s) _____Was drive shoe seal tested? ☐ Y ☒ N How? _____

8. CASING/LINER

Dia.	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
10	+2	100	322	steel	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS

 Perforations _____ Methods _____
 Screens _____ Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

48 ft below ground Artesian pressure _____

depth flow encountered _____ ft. Describe access port _____

or control devices Plate _____

11. WELL TESTS:

☐ Pump ☐ Bailor ☒ Air ☐ Flowing Artesian

Yield gpm	Drawdown	Pumping Level	Time
± unknown			

Water Temp. 56 Bottom hole temp. _____

Water Quality test or comments: _____

Depth first water encounter _____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water
8	0	12	TOP SOIL	
14	12	13	BROWN CLAY GRAY BASALT	
			TALC WEATHERED	
	13	20	GRAY BASALT FIRM	
	20	38	GRAY BASALT FIRM	
	38	39	VERY SOFT CINDER BED	X
	39	55	GRAY BASALT TALC & WHITE CLAY SPECKS	
	55	60	GRAY BASALT TALC BROWN CLAY CINDERS & WHITE CLAY SPECKS	X
	60	65	LARGE GRAY BASALT W/LARGE TAN TALC & CINDERS FRACTURED	
	65	78	GRAY BASALT FIRM	
	78	83	FIRM GRAY BLACK BASALT W/FRACTURES	X
	83	90	SOLID BROWN BASALT	
	90	96	SOLID BROWN TALC & CLAY COMING FROM ABOVE	
	96	100	SOLID BROWN TALC & CLAY COMING FROM ABOVE	
	100	104	SOLID BROWN TALC & CLAY COMING FROM ABOVE	
10	104	108	GRAY BASALT & CEMENT	
	108	115	GRAY BASALT TALC & GRAY CEMENT	T
	115	120	RED & BLACK BASALT LITTLE TALC	X
	120	123	BROWN BASALT FIRM	
	123	126	BROWN BASALT LITTLE SOFTER	

(see second page)

Completed depth 280 ft. (measurable)

Date: Started April 30, 2009 Completed May 26, 2009

13. DRILLERS CERTIFICATION

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

Company Name **WALKER WATER SYSTEMS** Firm No. 15
624 PIERCE ST. TWIN FALLS, ID 83301

Firm Official _____ Date 6/1/09

and _____

Driller or Operator _____ Date 6/1/09

(Sign once if Firm Official & Operator)

RECEIVED

JUN 12 2009

DEPT. OF WATER RESOURCES
SOUTHERN REGION

Water

C

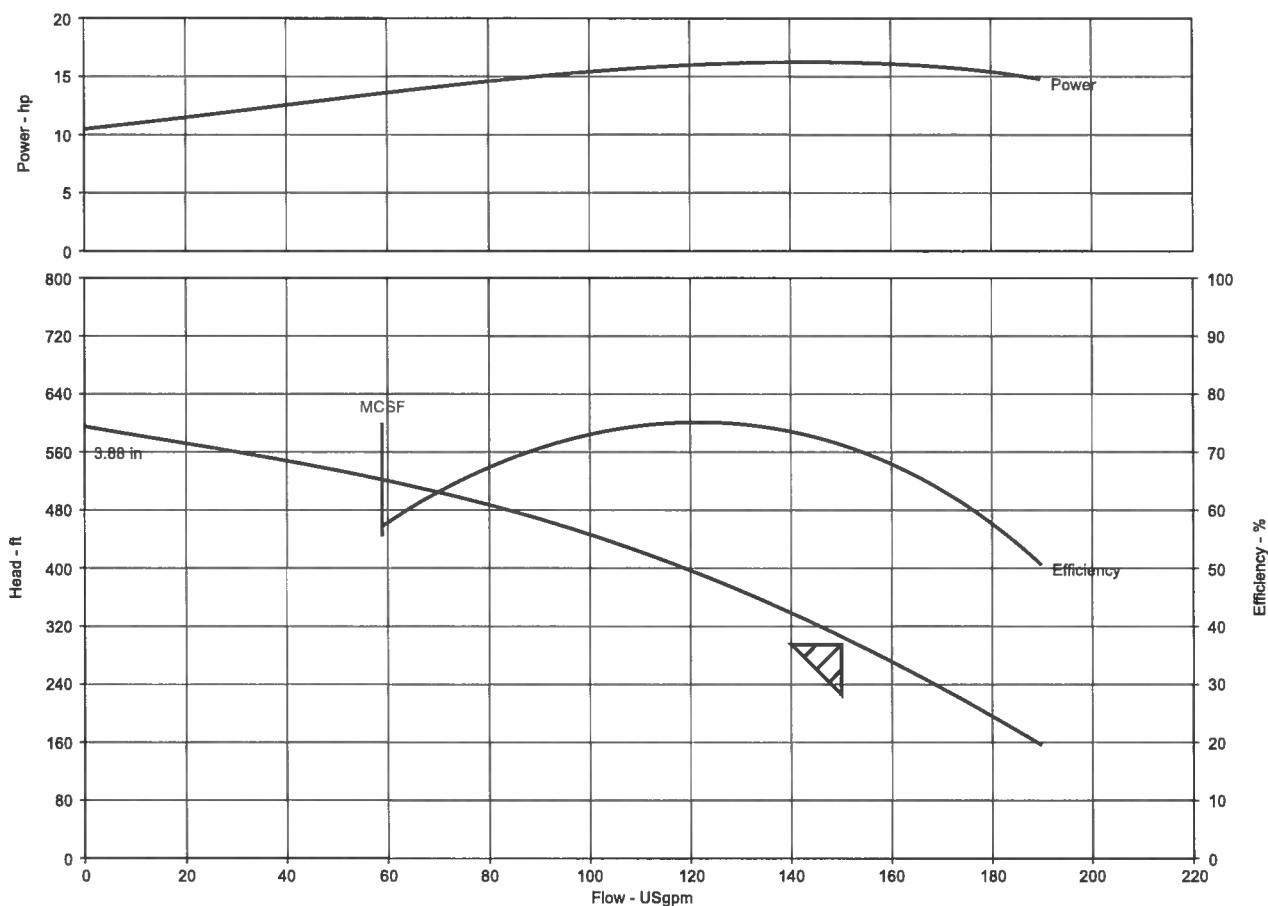
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JUN 12 2009
DEPT. OF WATER RESOURCES
SOUTHERN REGION

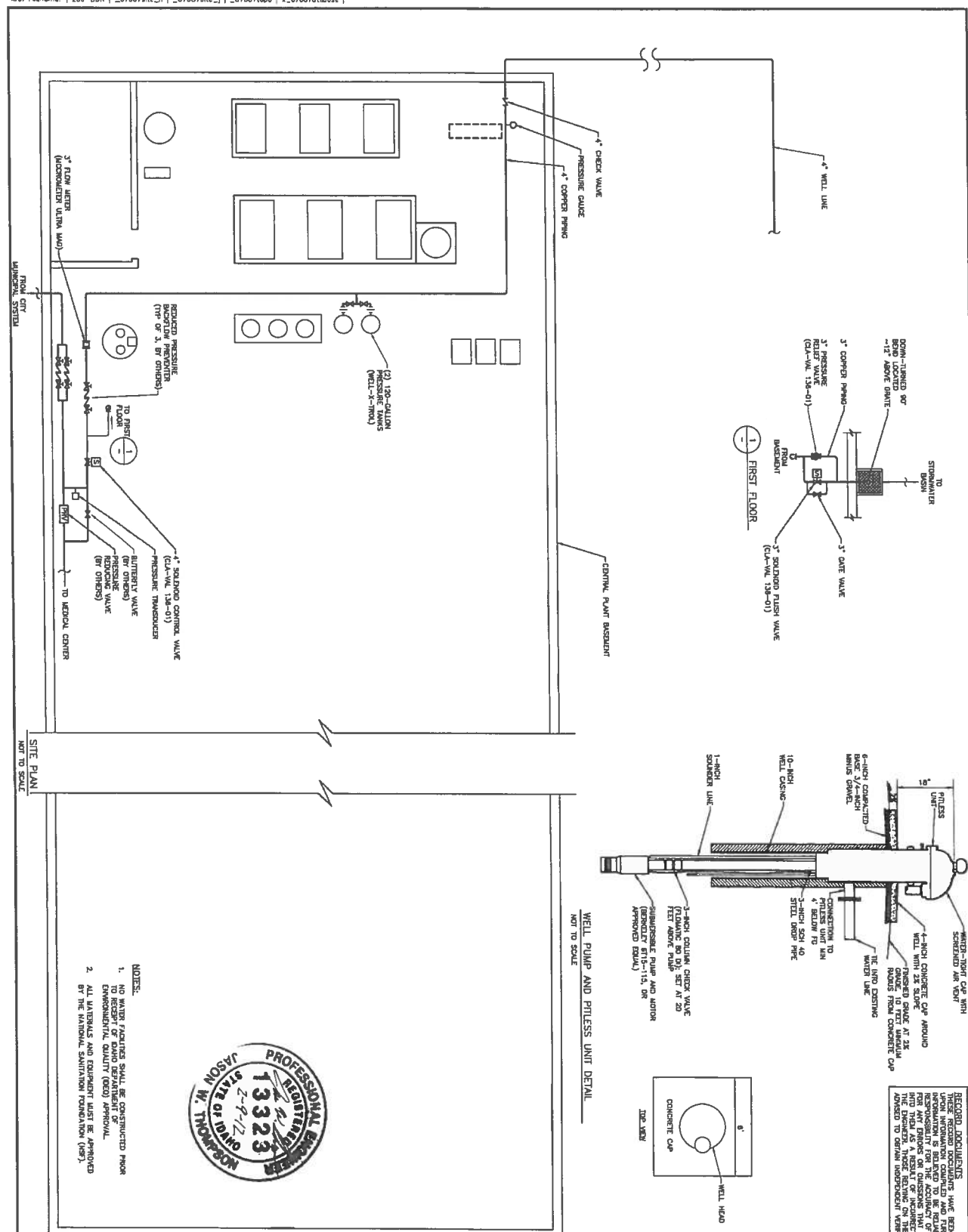
Pump Performance Datasheet

Customer	:	Quote number	:
Customer reference	:	Pump size	: 6T15-115
Item number	:	Stages	: 10
Service	:	Based on curve number	: 6T15-115(10@4.04x3.71)
Quantity of pumps	: 1	Date last saved	: 25 Nov 2009 2:47 PM

Operating Conditions		Liquid	
Flow, rated	: 150.0 USgpm	Liquid type	: --Water
Head, rated (requested)	: 295.0 ft	Additional liquid description	:
Head, rated (actual)	: 305.9 ft	Solids diameter, max	: 0.00 in
Suction pressure, rated / max	: 0.00 / 0.00 psi.g	Temperature, max	: 68.00 deg F
NPSH available, rated	: Ample	Fluid density, rated / max	: 0.998 / 0.998 SG
Frequency	: 60 Hz	Viscosity, rated	: 1.00 cP

Performance		Material	
Pump speed, rated	: 3,450 rpm	Material requested	: Auto
Impeller diameter, rated	: 3.88 in	Material selected	: Not specified
Impeller diameter, maximum	: 3.88 in	Pressure Data	
Impeller diameter, minimum	: 3.88 in	Maximum working pressure	: 257.6 psi.g
Efficiency	: 71.29 %	Maximum allowable working pressure	: 606.0 psi.g
NPSH required / margin required	: N/A / 0.00	Maximum allowable suction pressure	: N/A
Ns (imp. eye flow) / Nss (imp. eye flow)	: N/A US Units	Hydrostatic test pressure	: N/A
MCSF	: 59.00 USgpm	Driver & Power Data	
Head, maximum, rated diameter	: 595.3 ft	Driver sizing specification	: Rated power
Head rise to shutoff	: N/A %	Margin over specification	: 0.00 %
Flow, best eff. point (BEP)	: 121.8 USgpm	Service factor	: 1.15 (used)
Flow ratio (rated / BEP)	: 123.20 %	Power, hydraulic	: 11.57 hp
Diameter ratio (rated / max)	: 100.00 %	Power, rated	: 16.22 hp
Head ratio (rated dia / max dia)	: 96.44 %	Power, maximum, rated diameter	: 16.25 hp
Cq/Ch/Ce [ANSI/HI 9.6.7-2004]	: 1.00 / 1.00 / 1.00	Minimum recommended motor rating	: 15.00 hp / 11.19 kW (Fixed)
Selection status	: Acceptable		





RECORD DOCUMENTS
These record documents have been prepared, in part, based upon information compiled and furnished by owners. While the information is believed to be reliable, the engineer assumes no responsibility for the accuracy of these record documents or for any errors or omissions that may have been incorporated into them as a result of inaccurate information provided to the engineer. Those relying on these record documents are advised to obtain independent verification of their accuracy.

W-1

DRAWING DIRECTORY		
1: SPW WATER PROJECTS\		
REVISIONS		
ITEM	DESCRIPTION	DATE
A	FOR PLANS	11/20/20
B	REVISED FOR MGD REVIEW	11/20/20
C	REVISED FOR MGD COMMENT	11/20/20
MD	REVISED DRAWINGS	11/21/20

DRAWN BY:	S.BENNETT
CHECKED BY:	
SCALE:	AS NOTED
PLOT SCALE:	1 = 1

EMERGENCY BACKUP WELL WATER SUPPLY
MAGIC VALLEY MEDICAL CENTER
MECHANICAL PLAN

ENGINEER
JASON THOMPSON
300 EAST MALLARD DRIVE, STE. 350
BOISE, IDAHO 83708
PHONE: 208-383-4140

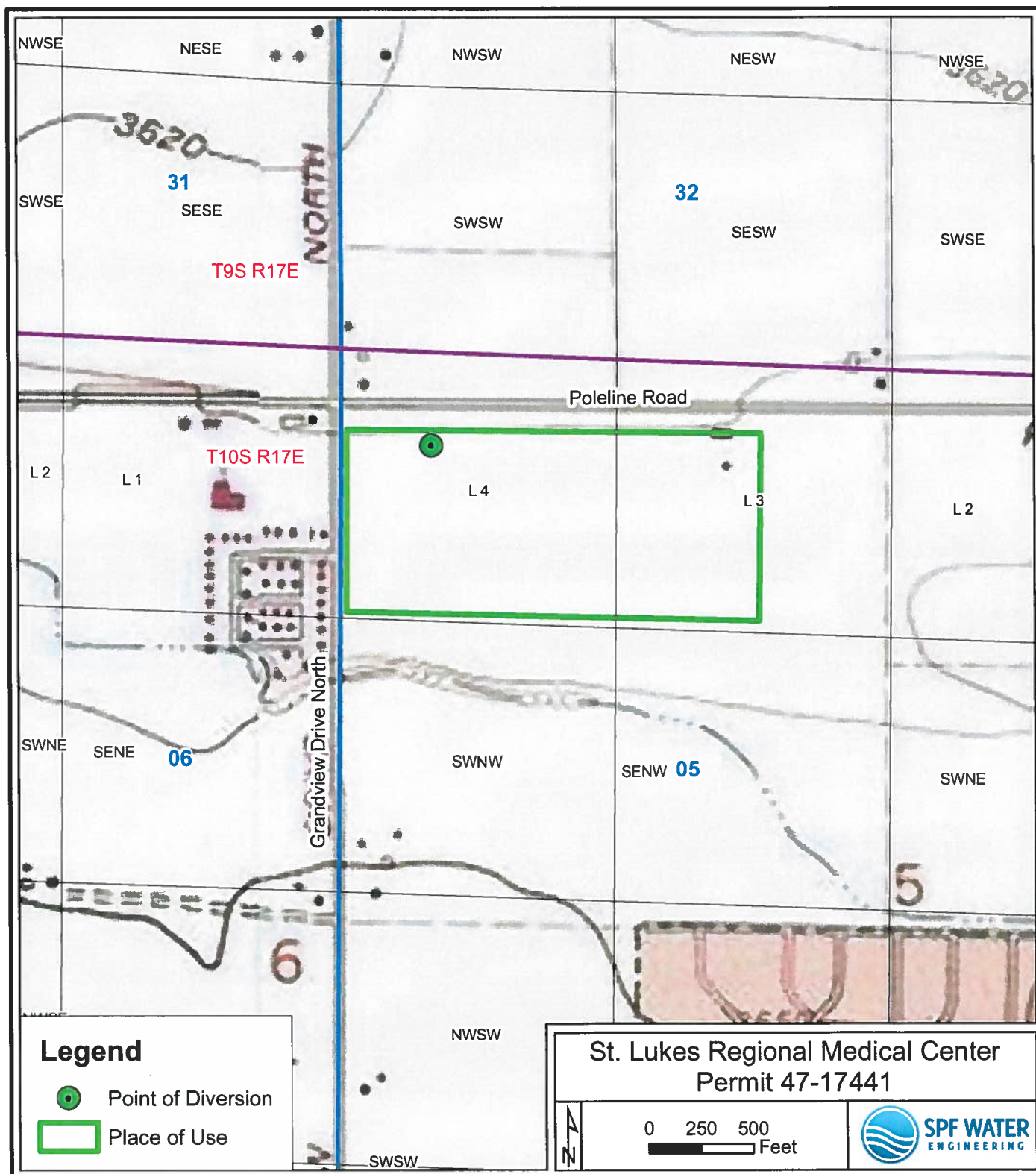
OWNER/DEVELOPER
ST. LUKE'S REGIONAL MEDICAL CENTER
100 EAST BANNOCK STREET
BOISE, IDAHO 83712

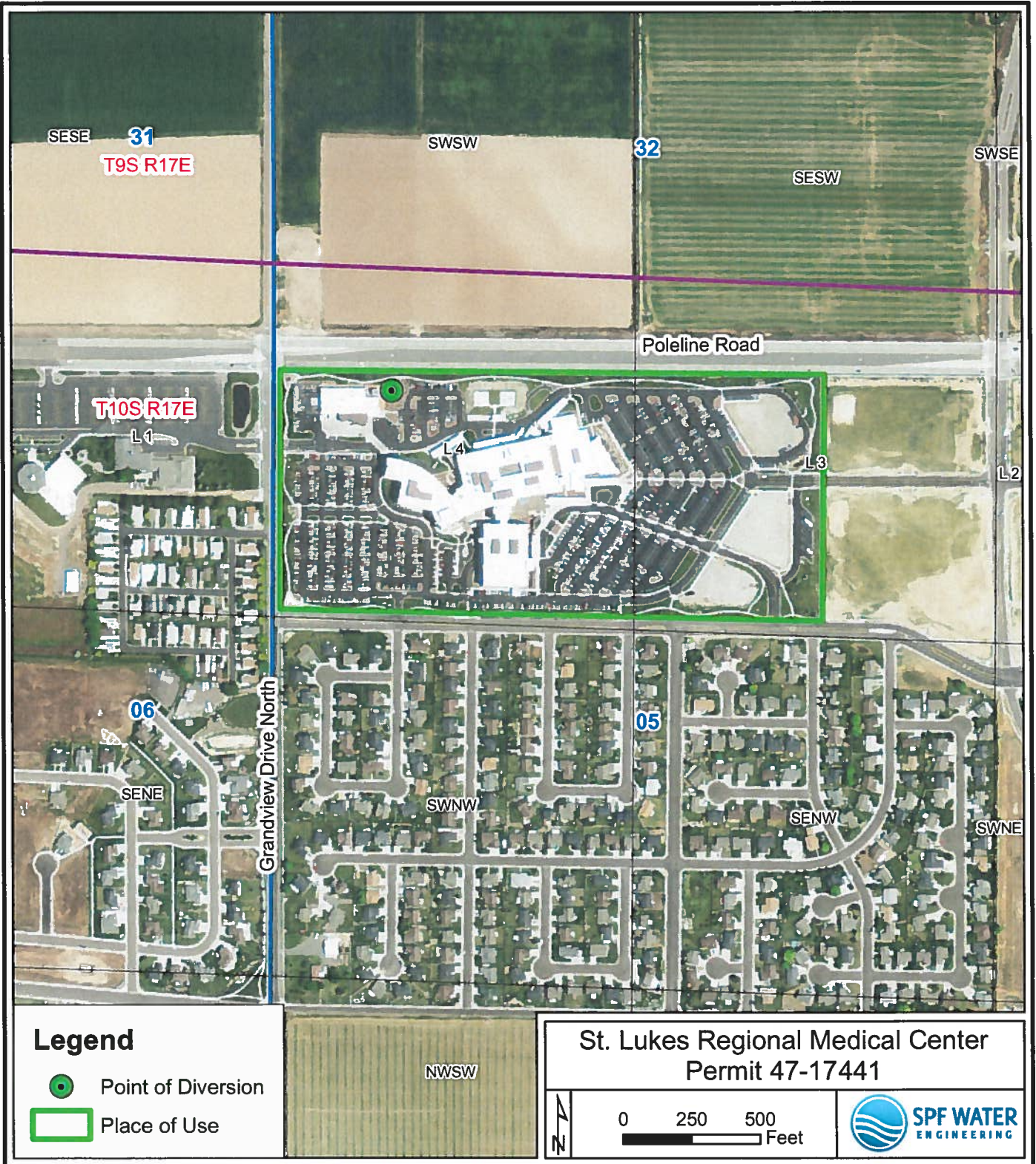


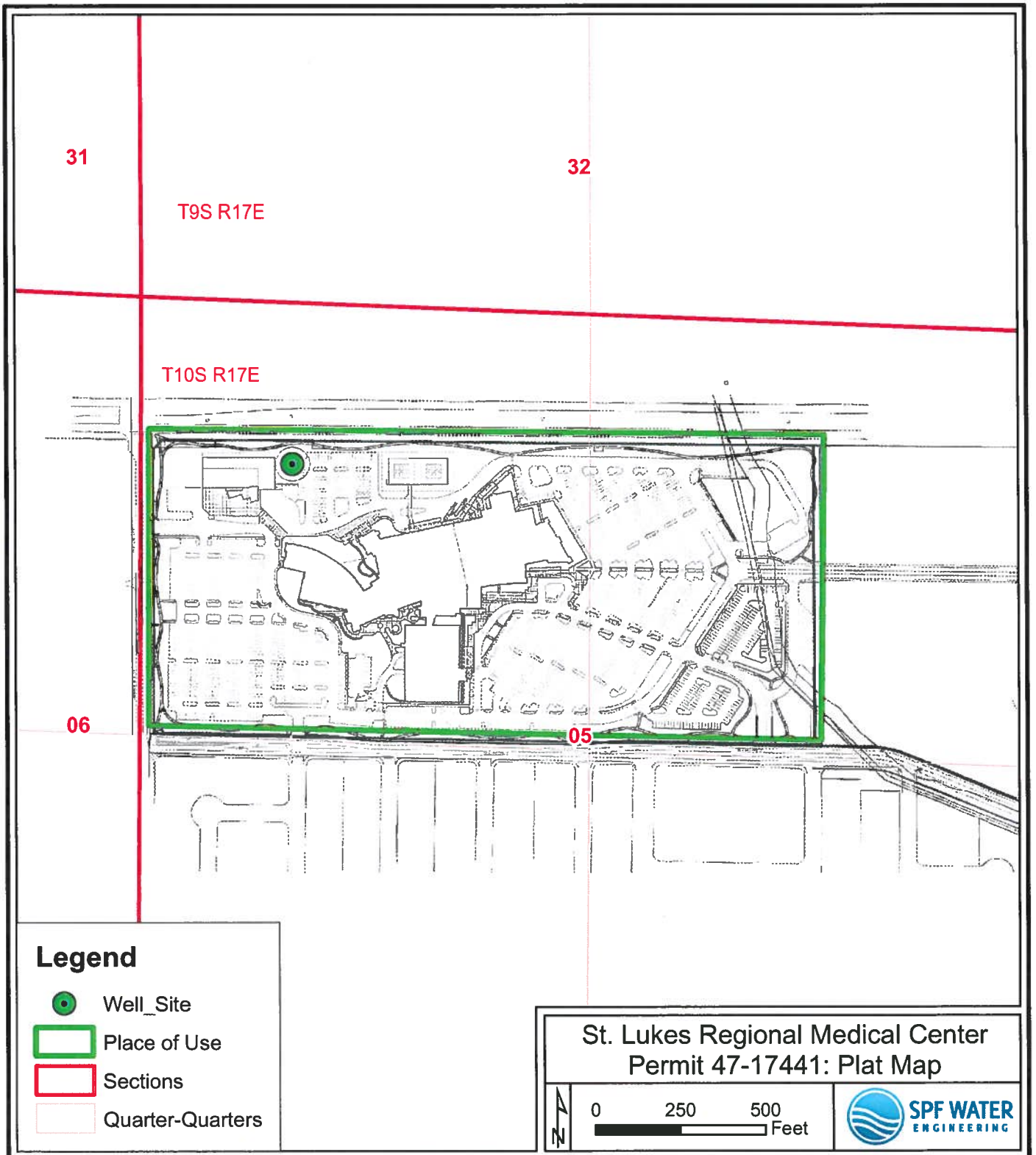
300 East Mallard Drive, Suite 350
Boise, Idaho 83708
Tel (208) 383-4140 Fax (208) 383-4156

ATTACHMENT C

TOPO MAP, 2011 AERIAL PHOTO, PLAT MAP







ATTACHMENT D
PUMPING RECORDS



August 15, 2012

Mr. Jason Densmer, P.E.
The Land Group, Inc.
462 E. Shore Drive
Suite 100
Eagle, Idaho 83616

Subject: Beneficial Use for St. Luke's Magic Valley emergency water supply well

Dear Mr. Densmer:

Per your request please find below the water usage numbers for our well for the years 2009 through August 16, 2012. Our current water demand is based on an automated daily purge. We have not had any emergency situations to date that have required the use of the back-up well to provide water to the facility. If that event were to occur the usage number would obviously be impacted. We have provided year to date information for the current year and could extrapolate this for a full year to provide an annual estimate if it would be helpful.

Total water usage of our emergency well for calendar year 2009 was 0 gallons.

Total water usage of our emergency well for calendar year 2010 was unmeasured.

Total water usage of our emergency well for calendar year 2011 was 167,250 gallons (223 days)

Total water usage of our emergency well for 2012 to date August 16th is 171,750 gallons (229 days)

If you have any further questions or need additional information please feel free to contact me at (208) 814-0216.

Sincerely,

A handwritten signature in cursive script, appearing to read "Lisa Knecht".

Lisa Knecht
Team Leader Plant Engineering

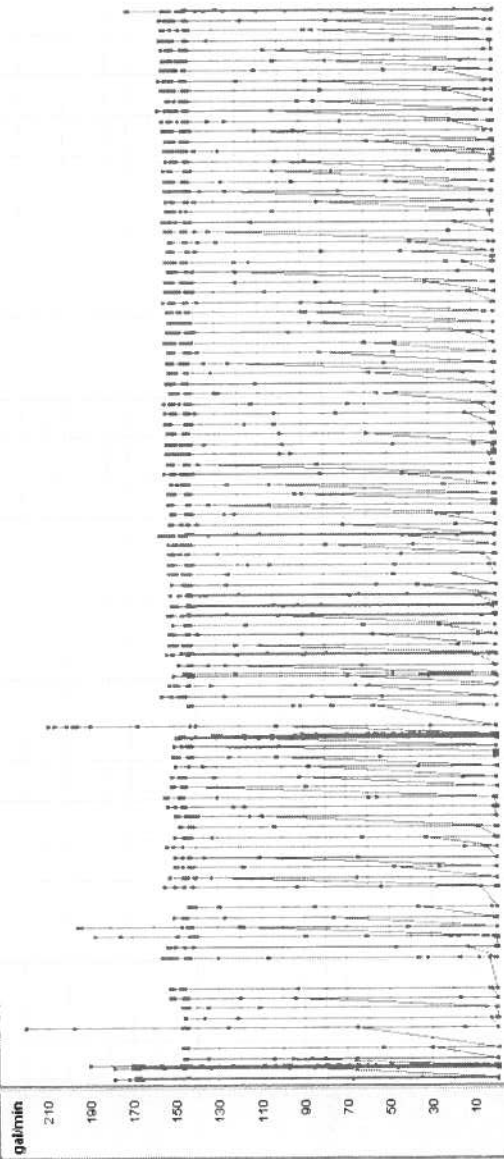
Cc: Todd Rothfuss

St. Luke's Magic Valley Medical Center
Jim Angle, CEO
801 Pole Line Road West
PO Box 409
Twin Falls, Idaho 83301
P (208) 814-1000

stlukesonline.org

Flow (gal/min)

Untitled Thu Aug 16 13:55:56 MDT 2012



2-May-2012 to 16-Aug-2012

Y N D H N S

min

max

avg

std

min

max

avg

std

ATTACHMENT E
PHOTOS



Figure 1: Point of diversion with operations building.



Figure 2: Point of diversion with hospital facility (place of use) on right.



Figure 3: St Luke's Magic Valley Hospital (place of use, photo from hospital web site).

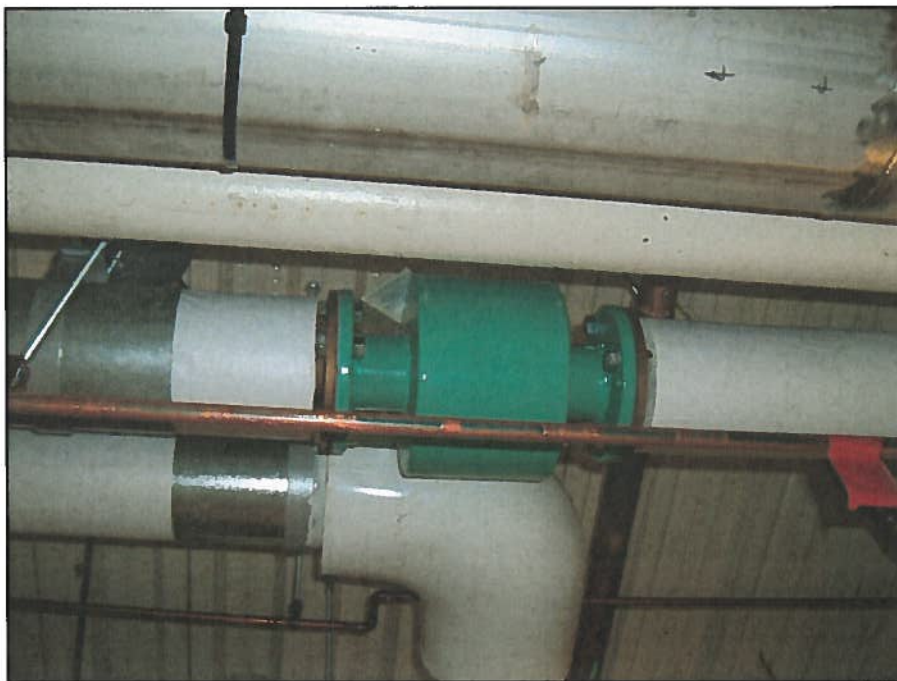


Figure 4: In-line McCrometer Ultra Mag flowmeter.

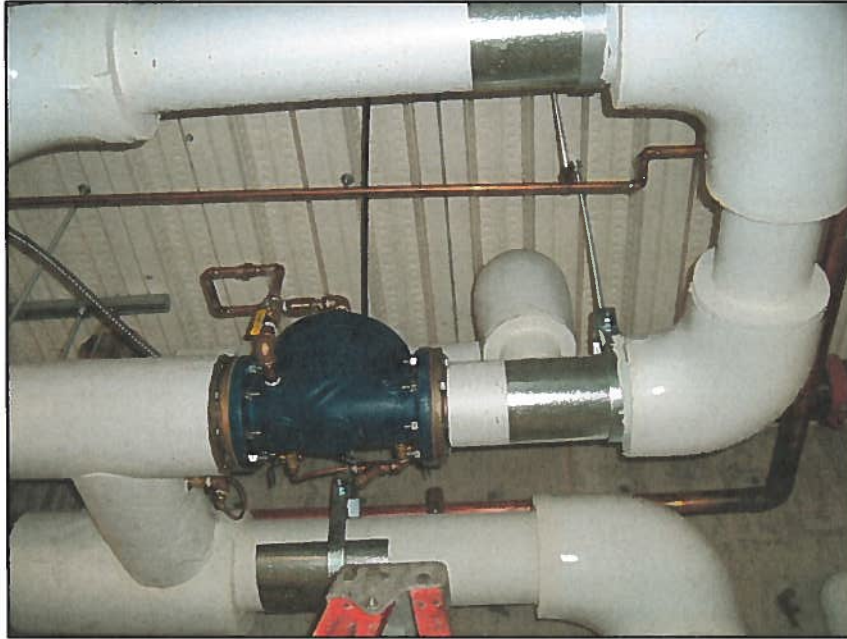


Figure 5: Automatic control valve opens to provide emergency water supply from this well system when municipal supply is not available.

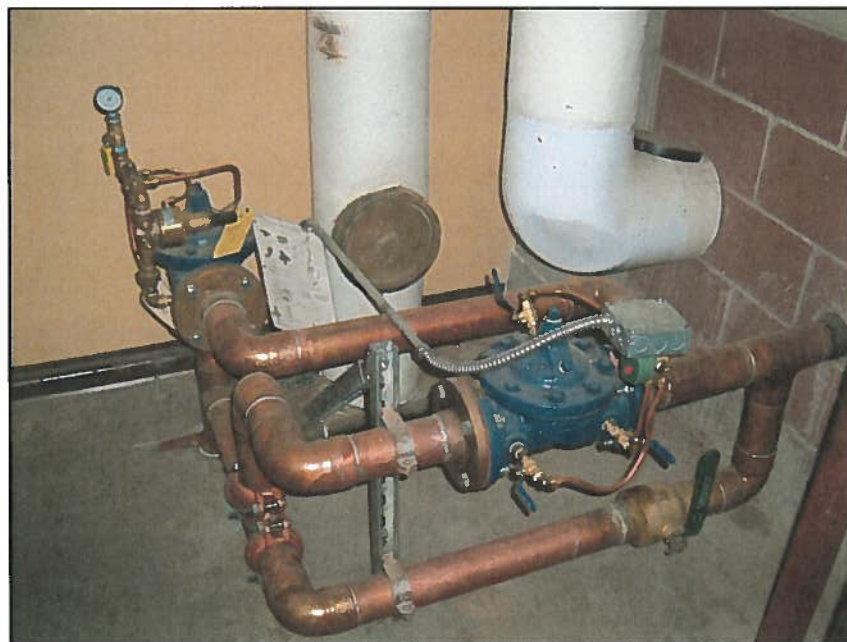


Figure 6: High-pressure and flush mechanical plumbing.



Figure 7: Flush flows are discharged outside of operations building into a collection box, and then to a stormwater basin.



Figure 8: Well pump controller and switch gear.



Figure 9: Well pump variable frequency drive.



Figure 10: Emergency water supply operating system interface.