

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 37-8835

Exam Date: May 9, 2012

1. Current Owner: SUN VALLEY WATER & SEWER DIST
PO BOX 2410
SUN VALLEY ID 83353-2410
(208) 622-7610
2. Accompanied by: Pat McMahon
Phone No: 622-9507
Address: pat@svwsd.com
Relationship to Permit Holder: Manager

3. **SOURCE**
GROUND WATER

B. OVERLAP REVIEW

1. Other water rights with the same place of use: Sun Valley Water & Sewer Dist. water right portfolio (see attached spreadsheet) no other rights divert to the heating/cooling system at the Elkhorn Lodge.
2. Other water rights with the same point of diversion: none

C. DIVERSION AND DELIVERY SYSTEM**1. LOCATION OF POINT(S) OF DIVERSION:**

GROUND WATER NE1/4NE1/4 Sec. 24, Twp 04N, Rge 17E, B.M. BLAINE County

Method of Determination: Site Visit

2. **Place of Use:** The place of use will consists of the Sun Valley Water & Sewer District's service boundary.

Method of Determination: I showed Pat the service boundary that the department has on file and he confirmed that it is correct.

3. ☒ Delivery System Diagram Attached (required). See the attached heat exchanger specs.
☒ 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.

<u>Well or Diversion ID No.*</u>	<u>Motor Make</u>	<u>Hp</u>	<u>Motor Serial No.</u>	<u>Pump Make</u>	<u>Pump Serial No. or Discharge Size</u>
No tag placed--		10 hp		Berkeley	6"

D. FLOW MEASUREMENTS

1.

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

NA-the original system has been modified. There used to be an in-line impeller as part of the system and a new measuring device was installed this summer.

2. Measurements:

- 1). Flow information based on the old impeller
- 2). Flow based on the heat exchanger design
- 3). Estimation of the well's output based on the horsepower equation (range)
- 4). Pipe flows for a 6" pipe

E. FLOW CALCULATIONS

___x___ Additional Computation Sheets Attached

Measured Method:

1). According to staff at the O&M office at Elkhorn lodge the maximum reading of the old measuring device reading was 178 gpm or **0.40 cfs**. Note that the old measuring device apparently wasn't working and has been replaced since the field examination was conducted. No new measurement information is available.

2). Mueller sent me the design flow diagram for the unit. At the low end the system was designed for 360 gpm and high end is 600 gpm or **0.80 to 1.33 cfs** (new system designed for 0.57 to 0.68 cfs).

3). Depth to water = 21' standard length of pipe + 2' for pump
 Pressure= the operator estimated 35 psi
 $H_p = 10$

$$8.8 \times 10 \times 0.7 / 23 + (2.31 \times 35) = 61.6/103.9 = \mathbf{0.59 \text{ cfs}}$$

$$8.8 \times 10 \times 0.7 / 23 + (2.31 \times 40) = 61.6/115.4 = \mathbf{0.53 \text{ cfs}}$$

$$8.8 \times 10 \times 0.7 / 23 + (2.31 \times 45) = 61.6/127 = \mathbf{0.49 \text{ cfs}}$$

4). Pipe capacity when designed at 5 fps = Equation $V(\text{ft/s}) = \text{Flow (gpm)} / 2.45 \text{ ID}^2 (\text{inches})$ where ID = the pipe's internal diameter

$$5 \text{ fps} = x/2.45 (6^2) = 441 \text{ gpm or } \mathbf{0.98 \text{ cfs}}$$

Conclusion: Unfortunately, there is no way to re-create the conditions that existed when the permit holder filed proof. The original system is still in place but is on standby only as a new heat exchanger was installed in 2003. Obstacles in obtaining a physical measurement on the existing system include: removing the insulation to acquire a length of pipe; the insulation is very thick and has a hard coat on the outer layer. And finally, the system has changed drastically since proof; a measurement would not reflect the original conditions.

I asked the permit holder to give me some measurement data using the new measuring device they installed this summer but, he told me they haven't used the system yet this season.

Because the diversion rate is all over the board, I will use the horsepower equation figure or 0.59 cfs since this most likely reflects the system under operating conditions and it fits within the system design points.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation: NA

2. Volume Calculations for Other Uses: NA—This right was permitted as municipal. The PD for this right serves the Elkhorn Lodge in Sun Valley ski area and is not connected into the municipal system of the municipal provider for the city of Sun Valley (Sun Valley Water & Sewer District). Even though the PD is not connected to the municipal system I will proceed to license this permit as a municipal right; no volume will be assigned to this right and the city's service boundary will be the POU for this right. These were my instructions during a meeting with section manager, Shelly Keen. *Please look at the attached memo from Shelly Keen on a similar situation. Memo includes the logic for the decision. Cp for file 29-7936*

G. NARRATIVE/REMARKS/COMMENTS

This system was installed by 1996. No one knows how the system operated during the development period as there are no records and there is no longer staff from that period. In 2003, a second heat exchanger was installed. This system is considered "on demand". The permit holder gave me some records for historic volume data but nothing confirms the diversion rate. Apparently, the well has always included a 10 hp pump per Walker System.

This right will be licensed for the diversion rate of 0.59 cfs without considering the amount of water required for beneficial purposes at the POU. Proof of beneficial use was filed in 1996 when the following policy was in place:

From App. Processing Admin. Memo #18Installed Capacity for Municipalities

An incorporated city or a municipal provider serving an incorporated city could perfect a water right based on the maximum instantaneous diversion rate for the pumping system that was installed and operational during the development period of the permit (limited by the permitted amount), even if the city did not beneficially use the entire capacity during the development period of the permit. Note that even though a municipal system may have included multiple wells and pumps, the Department typically licensed a water right based on the diversion capacity of an individual well and pump listed as a single point of diversion on the water right. The Department typically did not review the overall system capacity and evaluate the new well as an additional increment of diversion capacity or beneficial use under the entire system due to that point of diversion.

When licensing a municipal water right, the Department did not include an annual volume limit on the license. In addition, the place of use was described as the city limits and was allowed to change as the city limits expanded. A city's water use under a license could expand over time as demand for water increased by pumping the maximum rate over longer periods that may have included storage tanks to provide for higher peak demands.

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>
MUNICIPAL	1/01 to 12/31	0.59 CFS	NA
<u>Totals:</u>		0.59 CFS	NA

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

Field Examiner's Name Cherie Palmer Date 2/11/13

Reviewer _____ Date _____

Attachment to field exam
for 37-8835

MEMORANDUM

DATE: March 19, 2012

TO: Water Right File 29-7936

FROM: Shelley W. Keen SWK

RE: Beneficial Use

The evaluation of beneficial use in connection with Permit 29-7936 presents an unusual dilemma for IDWR.

On one hand, it is not certain that water from Chicken Soup Spring has been used to heat buildings within the city of Lava Hot Springs. A single motel appears to be the only hookup authorized by the city in the past, and the motel is not using the water for heating now. It is not clear whether the motel used the city system for heating in the past.

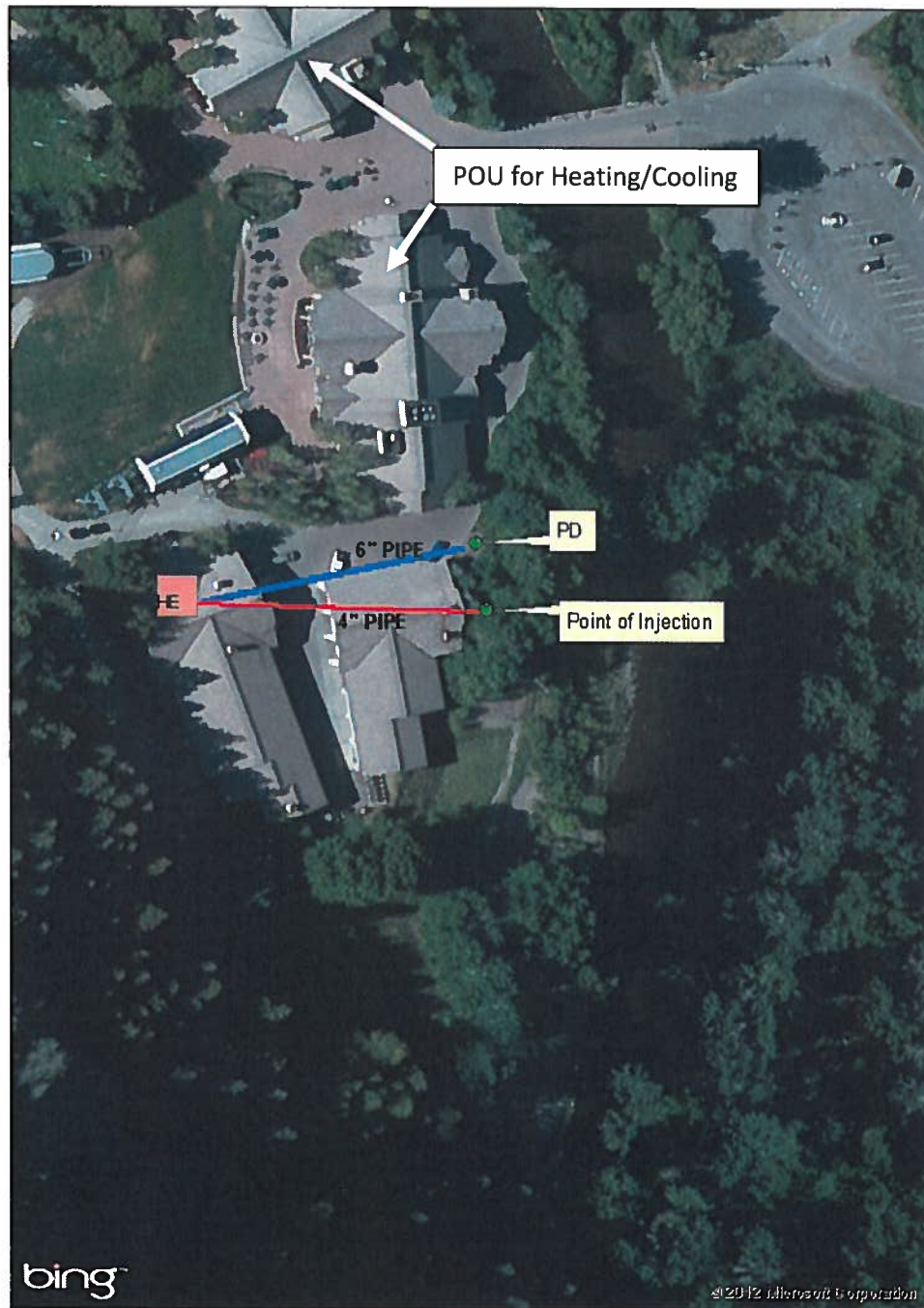
On the other hand, it is clear the city constructed a diversion and distribution system, diverted water, and made it available to its customers. The city argues that it is not its fault if few, if any, customers took advantage of the water for heating purposes.

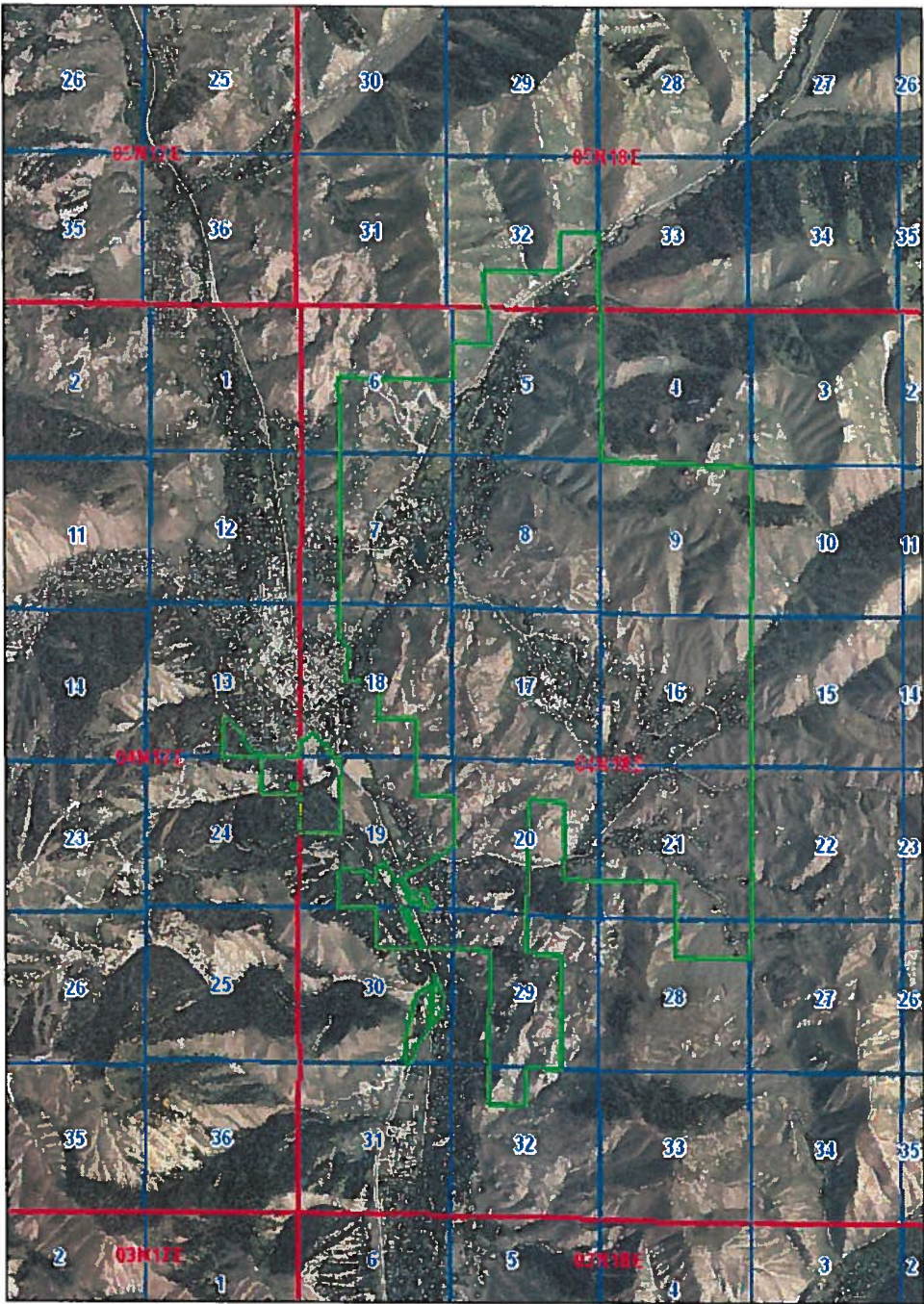
The permit has at least one unique characteristic. Although the use is heating, the place of use was describes as being within the city limits of Lava Hot Springs. At the time the permit was issued, only municipal water uses typically received such a generally described place of use. I can only conclude that IDWR thought of the proposed water use as at least akin to a municipal water use.

Also at the time the permit was issued, municipal water rights could be established by constructing diversion capacity. Full beneficial use of that capacity was not required. (See Application Processing Memo # 28.) If the city believed its water right was essentially a municipal water use, of which heating was one possible component¹, then it may have believed that installation of a diversion system would be the standard for beneficial use.

In this case, neither choice sits well. There is no clear evidence that the heating use stated on the permit was accomplished. However, denying that beneficial use occurred would deprive the people of Lava Hot Springs the benefits of their collective investment and would fail to acknowledge the special status municipal water uses held under Idaho water law during the development period for the permit. Recognizing the dilemma, in issuing a water right license I choose to give the permit holder the benefit of the doubt.

¹ The exclusion of heating from the definition of "municipal purposes" in Idaho Code §42-202B(6) was added later.





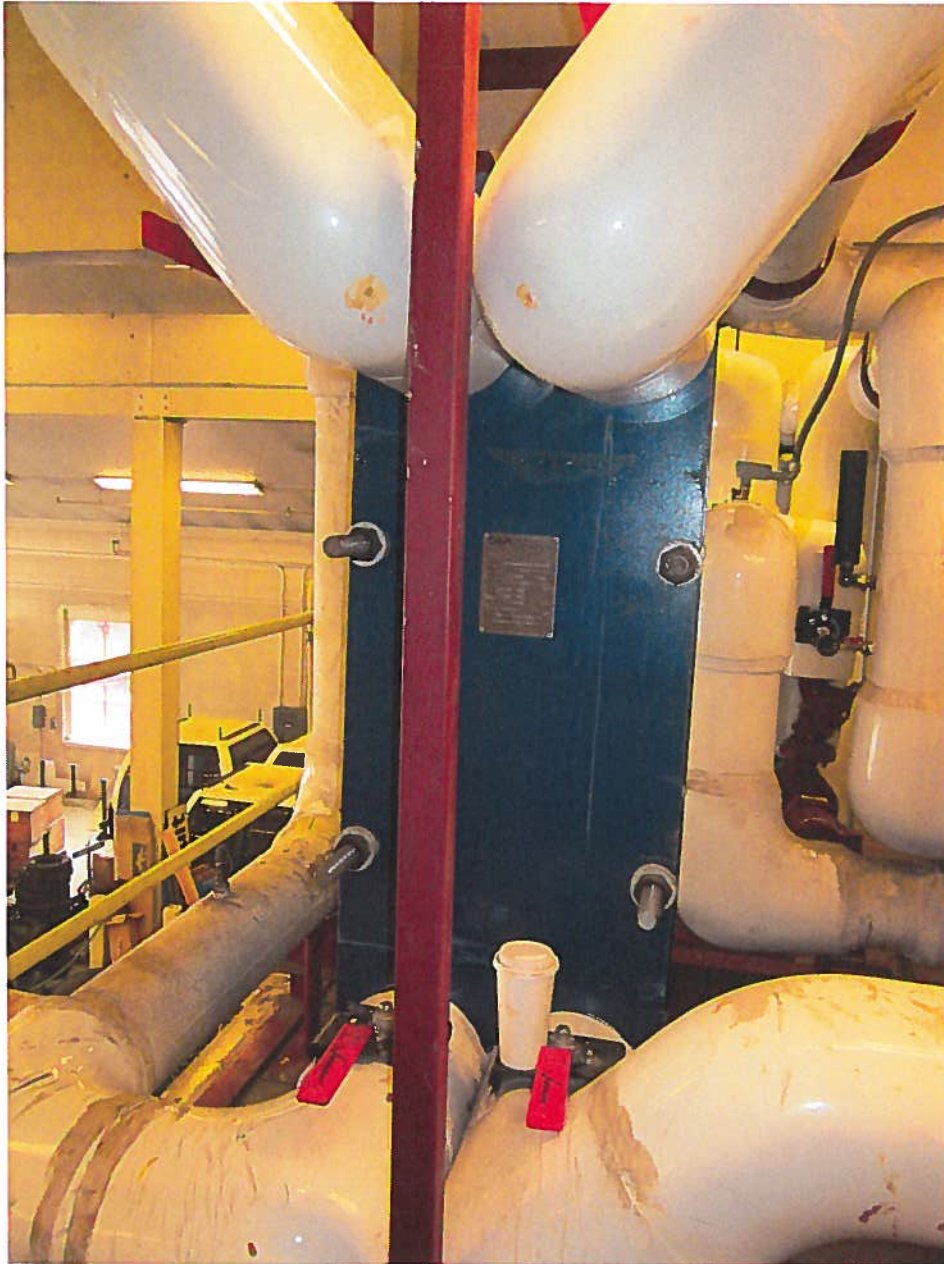
Sun Valley W+S District
Service Boundary



Point of diversion



Injection well



New exchanger



In line impeller
Measuring device
(replaced 2012
after my visit)



Part of
diverting
works



Original
Exchanger

new
EXchanger

**SUN VALLEY WATER & SEWER DIST
WATER RIGHT PORTFOLIO**

[illegible]

WELL LOGS

1. DRILLING PERMIT NO. 37 - 95 - S - 0074 - 000
Other IDWR No. 37-W-58-001

2. OWNER:
 Name SUN VALLEY COMPANY
 Address SUN VALLEY ROAD
 City SUN VALLEY State 10 Zip 83353

3. LOCATION OF WELL by legal description:

Sketch map location must agree with written location.



Twp. 4 North ☒ or South ☐
 Rge. 17 East ☒ or West ☐
 Sec. 24 $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$
 Gov't Lot _____ County CLATSOP $\frac{10 \text{ acres}}$ $\frac{40 \text{ acres}}$ $\frac{160 \text{ acres}}$

Address of Well Site _____

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

Lt. _____ Bk. _____ Sub. Name _____

4. PROPOSED USE:

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

5. TYPE OF WORK

☐ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD

☐ Mud Rotary ☐ Air Rotary ☐ Cable ☐ Other

7. SEALING PROCEDURES

SEAL/FILTER PACK			AMOUNT	METHOD
Material	From	To	Sacks or Pounds	
BENTONITE	0	19	150#	OVERBORE

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

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
10.75	11	30.5	.250	STEEL	☐	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS

☒ Perforations Method Torch
☐ Screens Screen Type

From	To	Slot Size	Number	Diameter	Material	Casing	Line
23	30	3/16x3	± 80			☒	☐
						☐	☐
						☐	☐

5'd." STATIC WATER LEVEL OR ARTESIAN PRESSURE:

5 ft. below ground Artesian pressure _____ lb.
Depth flow encountered _____ ft. Describe access port or
control devices: _____

11. WELL TESTS:

☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
200			

Water Temp. 48 Bottom hole temp.

Water Quality test or comments:

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

[illegible]

13. DRILLER'S CERTIFICATION

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

WALKER WATER SYSTEMS INC. 15
Firm Name _____ Firm No. _____
Firm Official *Paul Walker* Date 08/02/95
and _____
Supervisor or Operator _____ Date 08/02/95

(Sign once if Firm Official & Operator)

1. DRILLING PERMIT NO. 37 - 95 - S - 0073 - 000
Other IDWR No. 37-08835

2. OWNER:
Name SUN VALLEY WATER & SEWER
Address P.O. BOX 2410
City SUN VALLEY State ID Zip 83353

3. LOCATION OF WELL by legal description:

Sketch map location must agree with written location.


 Twp. 4 North ☒ or South ☐
 Rge. 17 East ☒ or West ☐
 Sec. 24 1/4 NE 1/4 NE 1/4
 Gov't Lot _____ County BLAINE

Address of Well Site _____
City _____

Lt. _____ Blk. _____ Sub. Name _____

4. PROPOSED USE:

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

5. TYPE OF WORK

☐ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD

☐ Mud Rotary ☐ Air Rotary ☐ Cable ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK			AMOUNT	METHOD
Material	From	To	Sacks or Pounds	
BENTONITE	0	19	1200#	OVERBORE

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

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threading
10.75	#1	34	250	STEEL	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS

☐ Perforations Method _____

☐ Screens Screen Type _____

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

510. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

_____ ft. below ground Artesian pressure _____ lb.
Depth flow encountered ^{AP} _____ ft. Describe access port or
control devices: _____

11. WELL TESTS:

☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time

Water Temp. 48° Bottom hole temp. _____
Water Quality test or comments: _____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
12	0	2	FILL		X
	2	4	BOULDERS & GRAVEL		X
	4	16	BOULDERS & GRAVEL	X	
	16	22	LARGE BOULDERS & CLAY	X	
	22	34	BOULDERS & GRAVEL	X	
RECEIVED OCT 23 1995 Department of Water Resources					
RECEIVED AUG 27 1995 Department of Water Resources Southern Region					
DEC 19 1995					
Completed Depth <u>34</u> (Measurable) Date Started <u>06/15/95</u> Completed <u>06/15/95</u>					

13. DRILLER'S CERTIFICATION

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

WALKER WATER SYSTEMS INC. 15
Firm Name _____ Firm No. _____
Firm Official Paul Walk Date 08/02/95
and _____
Supervisor or Operator _____ Date 08/02/95

(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

DOCUMENTS PROVIDED BY PERMIT HOLDER

Sun Valley Water & Sewer District
RIVER RUN THERMAL WELL METER READINGS (x00)

	1996		1997		1998		1999		2000		2001	
	meter	flow	meter	flow	meter	flow	meter	flow	meter	flow	meter	flow
JAN	INSTALL		26	100	22420	0	56068	0	87363	0	127057	0
FEB	0	0	31	500	22420	0	56068	0	87363	0	127057	0
MAR	17	1700	31	0	22420	0	56068	0	87363	0	127057	0
APR	17	0	51	2000	23383	96300	56398	33000	87601	23800	127057	0
MAY	17	0	936	88500	26469	308600	56398	0	91381	378000	127057	0
JUN	20	300	1186	25000	29259	279000	65057	865900	98981	760000	128015	95800
JUL	23	300	5800	461400	40277	1101800	73908	885100	109397	1041600	137174	915900
AUG	23	0	15527	972700	49749	947200	82610	870200	122013	1261600	145474	830000
SEP	23	0	22286	675900	55866	611700	86399	378900	126730	471700	148014	254000
OCT	23	0	22286	0	56067	20100	87361	96200	127036	30600	148018	400
NOV	23	0	22420	13400	56068	100	87361	0	127057	2100	149617	159900
DEC	25	200	22420	0	56068	0	87363	200	127057	0	154017	440000
TOTALS		2500		2239500		3364800		3129500		3969400		2696000

	2002		2003		2004		2005		2006		2007	
	meter	flow										
JAN	156978	296100	170215	178300	179236	117700	181586	53800	182017	48000	182121	3000
FEB	158378	140000	173144	2900	180071	83500	181586	0	182076	59000	182123	2000
MAR	160591	221300	174051	700	180305	23400	181586	0	182113	37000	182128	5000
APR	161105	51400	174064	1300	180405	10000	181586	0	182114	1000	182128	0
MAY	161105	0	174064	0	180405	0	181586	0	182114	0	182128	0
JUN	161115	1000	174064	0	180408	300	181586	0	182114	0	182128	0
JUL	161115	0	174067	300	180408	0	181586	0	182114	0	182128	0
AUG	161125	1000	174070	300	180408	0	181586	0	182114	0	182128	0
SEP	162137	101200	174070	0	180408	0	181586	0	182114	0	182128	0
OCT	163804	166700	174070	0	180475	6700	181586	0	182114	0	182128	0
NOV	165138	133400	176914	184400	180804	32900	181891	30500	182117	3000	182151	23000
DEC	168432	329400	178059	114500	181048	24400	181969	7800	182118	1000	182153	2000
TOTALS		1441500		482700		298900		92100		149000		35000

SUN VALLEY CHILLER WELL

- * THIS WELL IS USED TO COOL BOTH LODGES AT RIVER RUN AND THEN DISCHARGED BACK INTO A ANOTHER WELL
- * 5 HP SUBMERSIBLE PUMP
THE MAXIMUM FLOW MEASURED ON THE FLOW METER IS 178 GPM
THIS WELL IS USED PERIODICALLY FROM END OF MAY THRU MID OCTOBER

* well is used for heating purposes as well as cooling, historically

* Not correct — 10hp pump confirmed

— Cp

Palmer, Cherie

From: Pat McMahon [pat@svwsd.com]
Sent: Thursday, January 31, 2013 9:37 AM
To: Palmer, Cherie
Subject: Re: One more question

Hi Cherie,

I have not forgotten you, in spite of what you may be thinking. I spoke with Dennis #2 (the mechanic Dennis as opposed to the snowmaking Dennis). He assured me that a new meter had been installed. He also stated that it was not used in the winter, so there is no flow information available. He was going to send me make model and serial number, but he hasn't.

I will call and get that info and forward it to you. I will also find out when it will be in use so you can schedule another visit.

Thanks,

Pat

----- Original Message -----

From: Palmer, Cherie
To: Pat McMahon
Sent: Friday, December 21, 2012 1:44 PM
Subject: One more question

One more question, what type of measuring device is in place? Thanks again!

Cherie

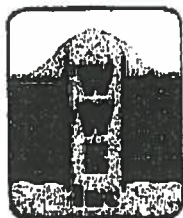
From: Palmer, Cherie
Sent: Friday, December 21, 2012 1:07 PM
To: 'Pat McMahon'
Subject: Water Right 37-8835 (Thermal Well)

Hello Pat,

Thank you for your time today. It was nice to talk to you again and I'm happy to moving towards a final recommendation on the district's water right license. For comparison purposes, I was hoping to get some of the new measurement device's data for the heating/cooling well. Any data from the time it was installed through now would be great. Thanks again Pat and happy holidays.

*Cherie Palmer, Sr. Water Resource Agent
Idaho Dept of Water Resources
Water Allocation Bureau
322 E. Front Street (Front St. & Broadway Ave)
Mail: PO BOX 83720*

*Boise, ID 83720-0098
email: cherie.palmer@idwr.idaho.gov*



SINCE 1947

WALKER WATER SYSTEMS, INC.

624 Pierce Street • Twin Falls, Idaho 83301

(208) 733-4744 • (208) 726-5145 • Fax 736-0795

RECEIVED

MAY 16 2012 622-2188

DEPARTMENT OF
WATER RESOURCES

DATE: 5/14/12

FAX MESSAGEFROM: MARK, Walker Water Systems, Twin Falls, IdahoTO: DennisNumber of Pages, Including Cover Page: 2Comments: Your pump is the 10 Hp Curve
Installed 7/2/09

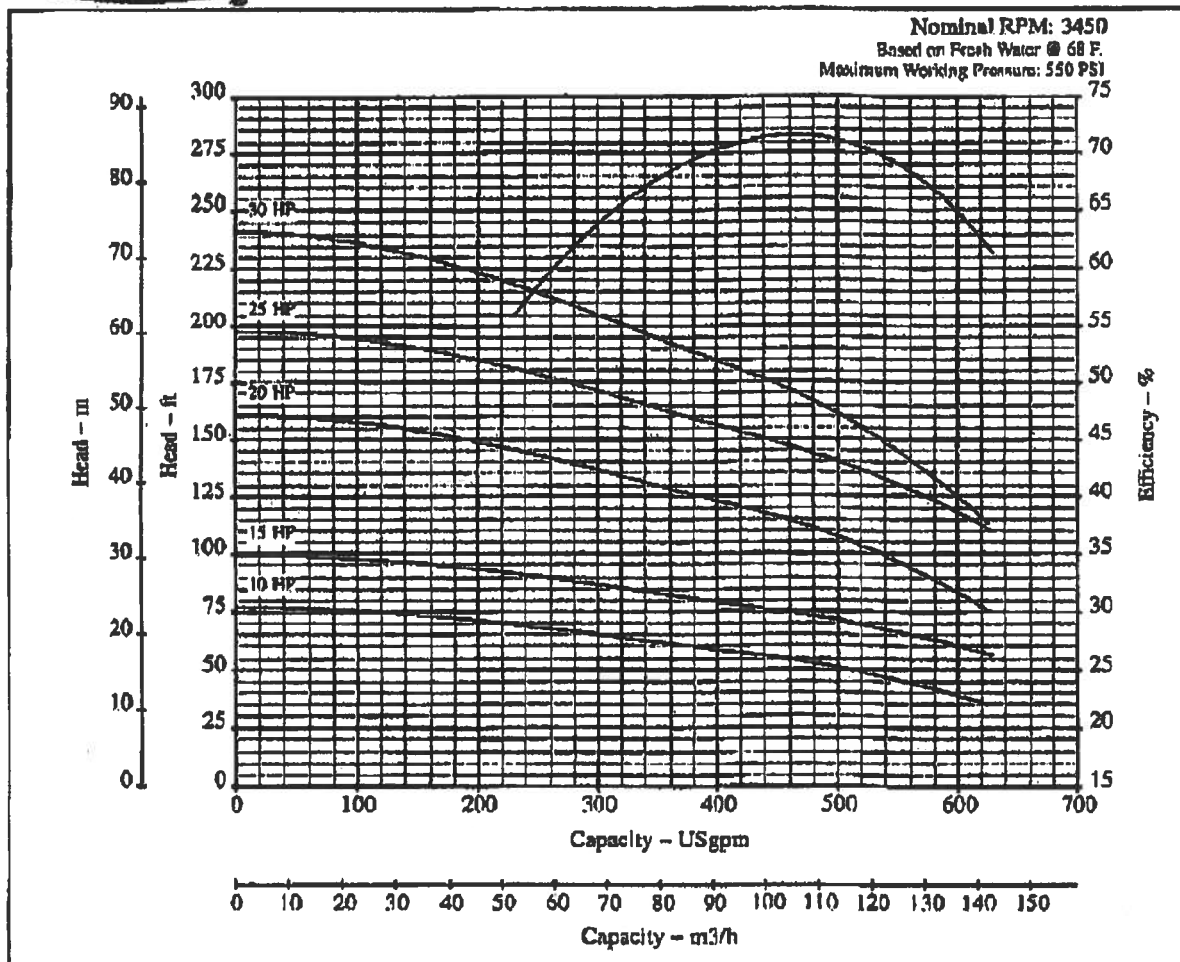
Thank You

Phone conversation
12/18 from Mark
at Walker Water
said that the
previous pump was
10hp Berkley pump
or the same pump
in his fax.
cd



SUBMERSIBLE TURBINE

7T-500



OUTLINE DIMENSIONS / WEIGHTS

HP	stages	Motor size	P length	M* length	MD* dia.	Mtr. wt.	Pump wt.
10	1	6"	19.94	29.80	5.51	127	60
15	1	6"	19.94	30.40	5.51	130	60
20	2	6"	26.44	35.50	5.51	160	86
25	2	6"	30.44	47.20	5.51	224	86
30	3	6"	32.94	49.50	5.51	236	112

Note: dimensions in inches; weight in U.S. lbs.

M* Maximum length (Penins Motor)
MD* Motor diameter (Penins Motor)

SPECIFICATIONS

Minimum Well I.D.	8.0 inches
Minimum Submergence @ BEP (above inlet)	10.0 Feet
Capacity Range	211 - 650 GPM
Discharge	5" F x 6" M NPT
See manufacturer's data for motor coating requirements	

SUPERSEDES

All Previous

Date 04/01/05

Section 7T

Page 5.01

Sum Valley Thermal
"NEW" EXCHANGER

MULTISTACK

Submittal Information

Sheet 1 of 2

Date 6/18/2003

River Run lodge

ENGINEER

ARCHITECT

CONTRACTOR

Order Number
P.O. Number
representative

840-D002

8215

Naji Khoury

Submitted by Naji Khoury / E.W.

Approved by

Approval Date

INFORMATION

MS50Z6A2W

Modules: 2.0
(In): 64 Width: 49 1/8 Length: 57 1/2

AND CONDENSER WATER DESIGN

Water: Entering Temperature 55.0 °F
Temp 45.0 °F Flow Rate 255 gpm
or Pressure Drop 12.5 ft

Water: Entering Temperature 85.0 °F
Temp 95.0 °F Flow Rate 306 gpm
or Pressure Drop 5.4 ft

PERFORMANCE (AT FULL LOAD)

Capacity 106.2 tons
Input 74.4 kw, EER 17.1

STANDARD FEATURES

- Stainless steel evaporator and condenser
- Lead compressor sequencing every 24 hours
- Automatic internal rescheduling if fault occurs
- Modules fit through single width doors and into passenger elevators
- Multiple, independent refrigeration systems
- Remote monitor/control port (Special chip reqd)
- Automatic logging of any fault conditions
- Electronic chilled water control
- Quick interconnect modular design
- Back flush valves for easy cleaning of heat exchangers
- Filters in condenser and evaporator supply headers

SPECIAL FEATURES

- 5 Year Compressor Warranty
- 1st Year Labor Warranty
- RS-232 for connection to BAS
- (2) Flow Switches (ship separately)

CRITICAL DATA

POWER SUPPLY Supply Power 208 /60/3

CHILLER BUSBAR SCHEMATIC

- LOCATION OF JUNCTION BOX(S) = J
- ROUTING OF BUSBARS =

CRITICAL CIRCUIT(S) CAPACITY

LEFT
CIRCUIT*

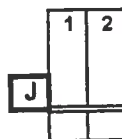
RIGHT
CIRCUIT*

num Circuit Ampacity (amps)
num Fuse Size (amps)
Recommended Dual Element Fuse

294

363

400



PLAN VIEW

Chillers require completion of at least one of these columns.
Chillers with two power connections must have both columns completed

IMPORTANT: To assure full equipment design performance, life and reliability, the MULTISTACK chiller must be piped in accordance with Installation Manual unless specifically authorized otherwise by MULTISTACK in writing.

ORIGINAL
HEAT EXCHANGER SPECS

Palmer, Cherie

From: Manash Buragohain [mburagohain@muel.com]
Sent: Tuesday, December 18, 2012 10:07 AM
To: Palmer, Cherie
Subject: Accu-Therm | 159756-01
Attachments: Serial_Number_159756-01.pdf

Cherie Palmer,

Attached is the information for the Accu-Therm PHE with sn#159756-01 you had requested.

Thanks,

Manash Buragohain

Applications Engineer | Heat Transfer Products
Paul Mueller Company | 1600 West Phelps Street | Springfield | MO | 65801 | US
T 417-831-3000 | F 417-575-9885
mburagohain@muel.com

From: Brooke Grantham [mailto:bgrantham@muel.com]
Sent: Thursday, December 13, 2012 11:21 AM
To: Manash Buragohain
Subject: FW: Heat Transfer Products - 12/13/2012

Brooke Grantham

Application Eng
Paul Mueller Co
417-575-9515
bgrantham@muel.com

From: contact@muel.com [mailto:contact@muel.com]
Sent: Thursday, December 13, 2012 11:03 AM
To: heattransfer@paulmueller.com
Subject: Heat Transfer Products - 12/13/2012

Date/Time: 12/13/12 10:02 AM
Name: **Cherie Palmer**
Company: **Idaho Dept of Water Resources**
Address: **322 E Front St, PO Box 83720**
City: **Boise**
State: **ID**
Country: **US**
Zip: **83720-0098**
Email Address: cherie.palmer@idwr.idaho.gov
Phone: **(208) 287-4944**
Fax: **(208) 287-6700**

Comments/Questions:

Greetings, I am searching for information on a heat transfer product made by Mueller. The unit was built in 1995 for the Sun Valley Water and Sewer District. The serial number is 159756, the model is AT80 B-20, and the part number is 9816400. I need information in regard to the water requirements or what the diversion rate that the exchanger is designed for, and any as-built plans for the unit. I realize the plans may not be around

since it has been so long but I thought it would be a long shot. Your help is very much appreciated. Thank you for your time. Cherie Palmer, Sr. Water Resource Agent

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CUSTOMER: SUN VALLEY DAY LODGE
LOCATION: SUN VALLEY, I.
TYPE: ACCU-THERM 80 HV / B-20

DATE: 03/16/1995
INQUIRY NUMBER: 65284-01.05
SERIAL NO.: 159756-01

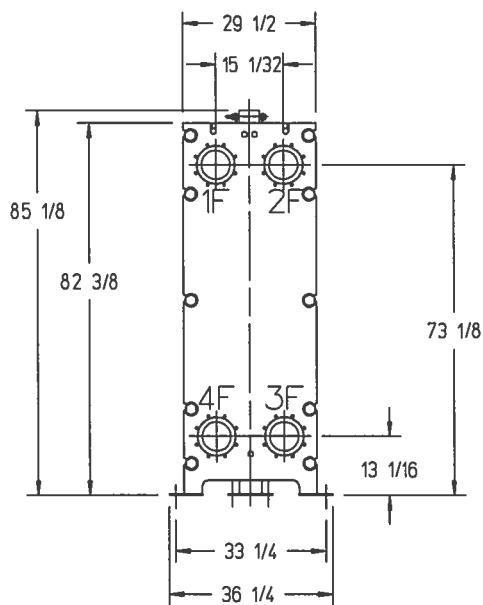
	HOT	COLD	
MEDIUM:	40% GLYCOL	WATER	
FLOW:	360.0	600.0	GPM
TEMPERATURE IN:	60.4	48.0	°F
TEMPERATURE OUT:	50.4	53.2	°F
PRESSURE DROP:	0.9	3.10	PSI
FLOW PATH:	1 X 43	1 X 42	
GUIDE LENGTH / CAPACITY:	48.0 Inch / 115 plates		
BOLT LENGTH / CAPACITY:	36.0 Inch / 136 plates		

DESIGN PRESS: 100 PSI G
TEST PRESS: 130 PSI G
DESIGN TEMP: 150°F
MDMT: 32°F
VOLUME: 74.11 Gallons
PLATE MATERIAL: 0.60 MM 304 S/S
GASKET MATERIAL: NBR

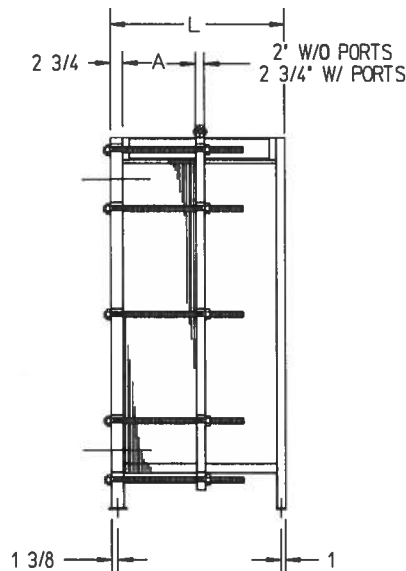
CONNECTIONS	TYPE	MATERIAL	SIZE	POSITION
HOT IN	STUDDED	NBR	6.00	1F
HOT OUT	STUDDED	NBR	6.00	4F
COLD IN	STUDDED	NBR	6.00	3F
COLD OUT	STUDDED	NBR	6.00	2F

PACK LENGTH MAX (A): 15.14 Inch
PACK LENGTH MIN: 14.63 Inch
OVERALL LENGTH (L): 52.63 Inch
EMPTY WEIGHT: 4,590 LB
OPERATING WEIGHT: 5,234 LB
SHROUD MATERIAL: ALUMINUM

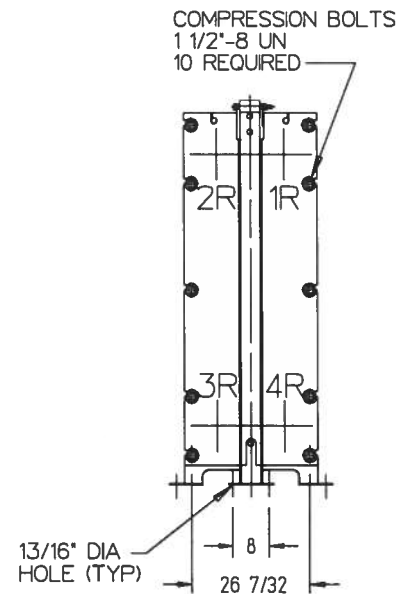
FRAME IS DESIGNED PER ASME SECTION VIII, DIV. 1



FRONT VIEW



SIDE VIEW



REAR VIEW

MATERIAL SPECIFICATIONS

END FRAMES	SA-516 GR 70
PLATE HANGER	304 S/S
COMPRESSION BOLTS	(ZINC PLATED) SA-193-B7
COMPRESSION NUTS	(ZINC PLATED) SA-194-2H
PAINT	POLYURETHANE

	3F	4F	2F	1F	FIXED END FRAME STYLE / OPENINGS
1-					80 V-RF / 1 2 3 4
2-					-80 H-L / 1 2 3 4
3-					80 V-R / 1 2 3 4
4-					-80 H-L / 1 2 3 4
5-					80 V-R / 1 2 3 4
6-					-80 H-L / 1 2 3 4
7-					80 V-R / 1 2 3 4
8-					-80 H-L / 1 2 3 4
9-					80 V-R / 1 2 3 4
10-					-80 H-L / 1 2 3 4
11-					80 V-R / 1 2 3 4
12-					-80 H-L / 1 2 3 4
13-					80 V-R / 1 2 3 4
14-					-80 H-L / 1 2 3 4
15-					80 V-R / 1 2 3 4
16-					-80 H-L / 1 2 3 4
17-					80 V-R / 1 2 3 4
18-					-80 H-L / 1 2 3 4
19-					80 V-R / 1 2 3 4
20-					-80 H-L / 1 2 3 4
21-					80 V-R / 1 2 3 4
22-					-80 H-L / 1 2 3 4
23-					80 V-R / 1 2 3 4
24-					-80 H-L / 1 2 3 4
25-					80 V-R / 1 2 3 4
26-					-80 H-L / 1 2 3 4
27-					80 V-R / 1 2 3 4
28-					-80 H-L / 1 2 3 4
29-					80 V-R / 1 2 3 4
30-					-80 H-L / 1 2 3 4
31-					80 V-R / 1 2 3 4
32-					-80 H-L / 1 2 3 4
33-					80 V-R / 1 2 3 4
34-					-80 H-L / 1 2 3 4
35-					80 V-R / 1 2 3 4
36-					-80 H-L / 1 2 3 4
37-					80 V-R / 1 2 3 4
38-					-80 H-L / 1 2 3 4
39-					80 V-R / 1 2 3 4
40-					-80 H-L / 1 2 3 4
41-					80 V-R / 1 2 3 4
42-					-80 H-L / 1 2 3 4
43-					80 V-R / 1 2 3 4
44-					-80 H-L / 1 2 3 4
45-					80 V-R / 1 2 3 4
46-					-80 H-L / 1 2 3 4
47-					80 V-R / 1 2 3 4
48-					-80 H-L / 1 2 3 4
49-					80 V-R / 1 2 3 4
50-					-80 H-L / 1 2 3 4
51-					80 V-R / 1 2 3 4
52-					-80 H-L / 1 2 3 4
53-					80 V-R / 1 2 3 4
54-					-80 H-L / 1 2 3 4
55-					80 V-R / 1 2 3 4
56-					-80 H-L / 1 2 3 4
57-					80 V-R / 1 2 3 4
58-					-80 H-L / 1 2 3 4
59-					80 V-R / 1 2 3 4
60-					-80 H-L / 1 2 3 4
61-					80 V-R / 1 2 3 4
62-					-80 H-L / 1 2 3 4
63-					80 V-R / 1 2 3 4
64-					-80 H-L / 1 2 3 4
65-					80 V-R / 1 2 3 4
66-					-80 H-L / 1 2 3 4
67-					80 V-R / 1 2 3 4
68-					-80 H-L / 1 2 3 4
69-					80 V-R / 1 2 3 4
70-					-80 H-L / 1 2 3 4
71-					80 V-R / 1 2 3 4
72-					-80 H-L / 1 2 3 4
73-					80 V-R / 1 2 3 4
74-					-80 H-L / 1 2 3 4
75-					80 V-R / 1 2 3 4
76-					-80 H-L / 1 2 3 4
77-					80 V-R / 1 2 3 4
78-					-80 H-L / 1 2 3 4
79-					80 V-R / 1 2 3 4
80-					-80 H-L / 1 2 3 4
81-					80 V-R / 1 2 3 4
82-					-80 H-L / 1 2 3 4
83-					80 V-R / 1 2 3 4
84-					-80 H-L / 1 2 3 4
85-					80 V-R / 1 2 3 4
86-					-80 H-L /
					MOVABLE END FRAME
	3R	4R	2R	1R	

CUSTOMER: SUN VALLEY DAY LODGE

LOCATION: SUN VALLEY,I,

TYPE: ACCU-THERM 80 HV / B-20

DATE:

03/16/1995

INQUIRY NUMBER:

65284-01.05

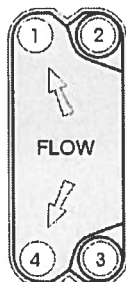
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159756-01

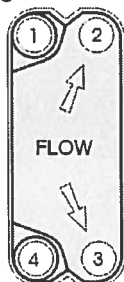
NUMBER HX-PLATES	PLATE MATERIAL	GASKET MATERIAL	STYLE / OPENINGS	PLATE NUMBER
1	304 S/S	FULL NBR	80 V-RF / 1 2 3 4	1
42	304 S/S	NBR	80 H-L / 1 2 3 4	
42	304 S/S	NBR	80 V-R / 1 2 3 4	
1	304 S/S	NBR	80 H-L /	86

PICTORIAL VIEW AND TERMINOLOGY FOR PLATES AND GASKETS

NORMAL GASKETS

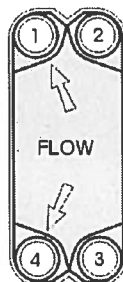


80 V-L

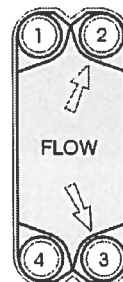


80 H-R

FULL GASKETS



80 V-LF



80 H-RF

L = LEFT HAND R = RIGHT HAND

PLATES AS VIEWED FROM FIXED END

GASKETED SIDE OF PLATE FACES FIXED END

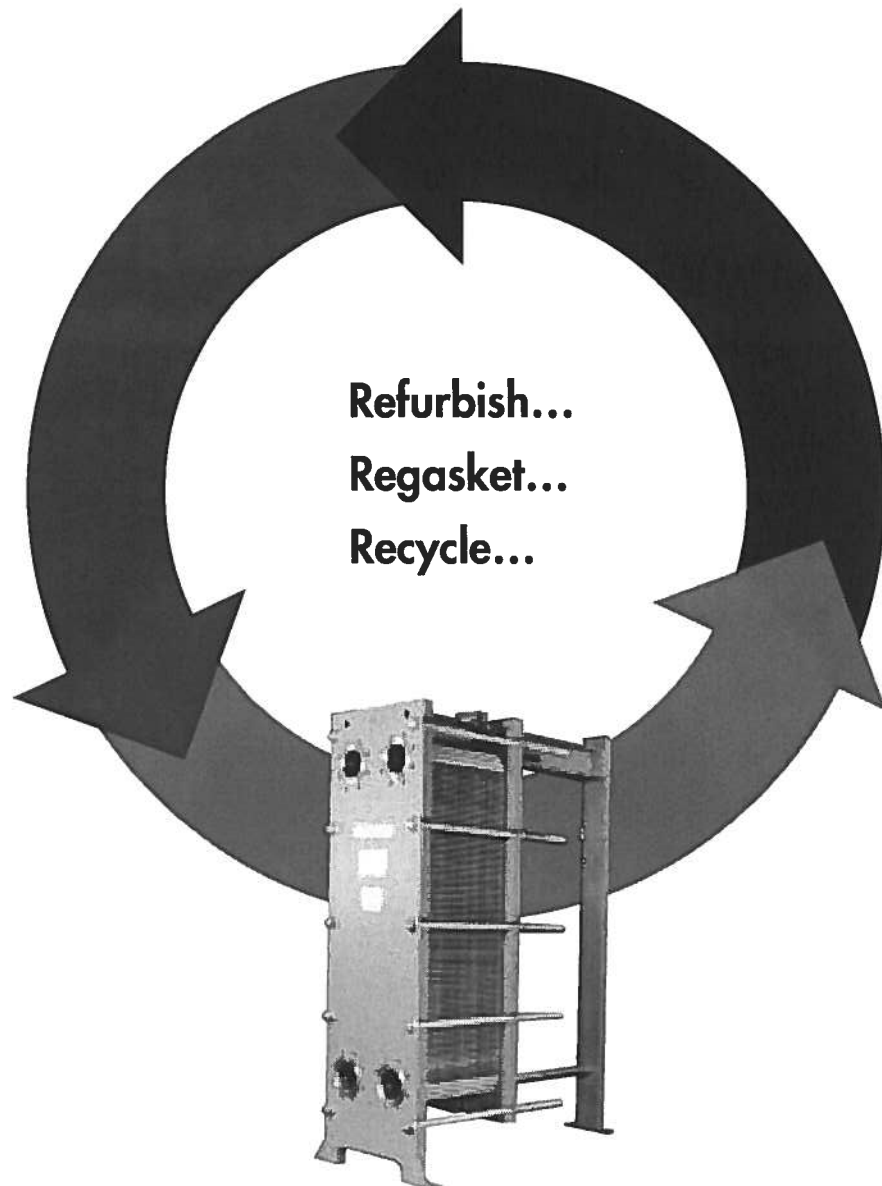
BILL OF MATERIAL

PART NUMBER	DESCRIPTION	QUANTITY
9816400	AT80 C/S MUELLER ACCU-THERM	1
100Y159756	PLATE PACK AT80 HV 304 S/S NBR	1
9805981	PLATE .6MM 80H 304 P *	42.
9805993	PLATE .6MM 80V 304 P *	43.
9805478	PLATE .6MM 80H 304 UNP *	1.
9808990	GASKET HX NBR 80 *	87.
9816395	STOCK UNIT AT80B-20 BOOT 6"	1
9817892	BOOT LINERS 6" NBR 2.75 QTY4	1
9814137	STUD PACK 5"-8" 150# QTY4	1
9807233	GUIDE PKG B FRAME 48"	1
9814142	CPRSN BOLT 1.5"X 36"L C/S 80	1
9814160	SHROUD AT80,AT184 1" TO 40"	1
9814256	DATA PLATE A.S.M.E. PHE	1

Accu-Therm® Instructions

Installation • Operation • Maintenance

Yr Built 1995
Serial # 159756
Model # AT80 B-20
Part # 9816400



Part No. 9804186

Effective January 1, 1999
Revised May 1, 2000

MUELLER®
HEAT TRANSFER PRODUCTS

Table 1 - Plate Specifications

Listed below are various Mueller Accu-Therm plate heat exchanger nominal specifications.

Model	Height (In)	Width (In)	Typical Length* (In)	Typical Conn. Size	Normal Surface Range (ft ²)	Typical Max. Flow GPM H ₂ O**
AT4	23	8	12-227/8	1	15-50	50
AT10	37	14	14 1/2-50 1/2	2	13-273	200
AT20	56	24	20-159 3/8	2 1/2/3	28-1,279	450
AT402	39 1/4	27	20 1/2-159 1/2	4/6	16-106	1,150
AT405	56	27	20 1/2-159 7/8	4/6	48-1,495	1,150
AT40	70 1/4	27	33 7/8-159 7/8	4/6	99-2,292	1,150
AT805	63	36	34 5/8-160 5/8	6/8	105-2,440	2,600
AT80	85	36	34 5/8-160 5/8	6/8	181-4,186	2,600
AT1306	84 3/4	43	50 3/4-176 3/4	10/12	262-6,209	6,600
AT1309	99 1/2	43	50 3/4-176 3/4	10/12	363-8,622	6,600
AT130	106 3/4	43	50 3/4-176 3/4	10/12	413-9,804	6,600
AT180	126	56	160-250	14	*	**
AT2508	120	57	65-245	16/20	860-15,308	17,300
AT250	134	57	65-245	16/20	972-17,309	17,300
AT161FF	70 3/4	29	33 5/8-159 5/8	3/4	57-1,579	650
AT184FF	91	36	34 5/8-160 5/8	8	165-2,734	3,000

*Actual length of a PHE depends on model, frame, and number of plates.

**Actual maximum flow depends on port nozzle construction and varies from 13 to 30 FPS with titanium.

2.3 Plate Materials

- ▲ 304 Stainless Steel
- ▲ 316 Stainless Steel
- ▲ Titanium
- ▲ Hastelloy® C-276

(Other materials may be available on a special-order basis.)

2.4 Mixed Plate Design

The Accu-Therm system combines two different plate embossings (see Figure 3), a vertical and a horizontal embossing, to provide a varying thermal optimization that can fall anywhere between the two. One plate has high heat transfer coefficients with higher pressure drops while the other has lower pressure drops with correspondingly lower heat transfer values. By combining the use of these plates, the thermal length of the plate pack can be varied to suit the customer's requirements and can provide a unit which is lower in cost.

SECTION 7.0 - SUPPLEMENTS

7.1 Gaskets for the Multipass Accu-Therm

Gore-Tex® joint sealant is now used on many industrial Accu-Therm plate heat exchangers in place of the conventional rubber port ring gasket. This composition of TFE fluorocarbon material meets or exceeds the stringent requirements of industrial plate-and-frame applications.

Specifications and characteristics:

Size: 1/4 inch (Mueller Part No. 9813259) or 1/2 inch (Mueller Part No. 9813260)

Temperature range: -450°F to 600°F

Pressure rating: 3,000 psi

Application: Compatible with corrosive chemicals, food, beverage, steam, pharmaceutical, and dairy products.

FDA-approved.

No age deterioration.

Easy installation: Soft, pliable texture which conforms to proper configuration with a self-adhesive strip. The ends are overlapped to complete the gasket. See drawing for details.

Gore-Tex joint sealant: Normally used on the last plate against the movable end plate. It may be used on divider plates within the plate pack. Gore-Tex joint sealant is a one-time gasket. It should be replaced if the plate pack is opened for any reason. Ports with rubber boots do not require Gore-Tex.

Figure 17 - Gore-Tex Installation

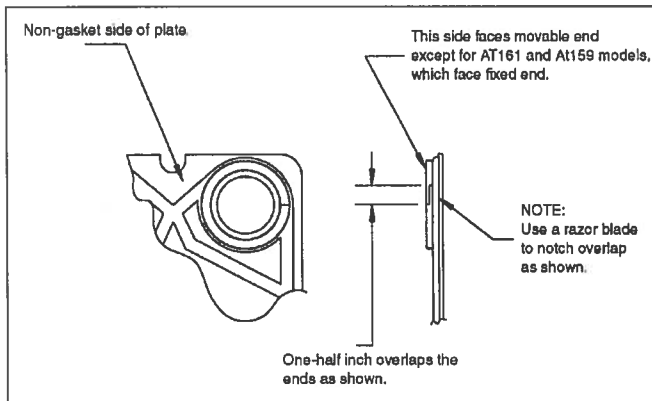


Table 3 - Gasket Material Required Per Port

PHE Model	Port Size (in)	Gore-Tex per Port (in)
AT4	1	7 1/4
AT10	2	9 1/4
AT20	2 1/2	13 1/4
AT402	4	18 1/4
AT405	4	18 1/4
AT40	4	18 1/4
AT805	6	26 1/2
AT80	6	26 1/2
AT1306	10	41 1/2
AT1309	10	41 1/2
AT130	10	41 1/2
AT180	14	54 1/2
AT161FF	3	13 1/4
AT184FF	6	23 1/2

NOTES:

1. Gore-Tex joint sealant should be used on all plates that seal against the movable (fixed for AT161FF and AT159FF) divider plate or terminals with its non-gasket side.
2. Clean both sealing surfaces of dirt and scale.
3. Remove the tape backing from the adhesive strip on Gore-Tex joint sealant with the adhesive side down on the center line of the sealing area as shown in detail.