

MEMO

TO: File 29-7869

FROM: CPalmer

DATE: 2/12/2013

RE: Licensing Review Memo + 3 well logs and excerpts from Final Order

Point of Diversion: During the development period there was one well developed, known as the "west" well. The west well was drilled in March of 1990. Another well was drilled in 1995 ("east" well), after the development period, that increased the capacity of the system. And finally, a third well was drilled in 2001 that was meant to replace an existing well; however, the field examination that was conducted in the fall of 2012 indicated that three wells are actively contributing to the delivery system. The well drilled in 1995 can be added to the license. Adding the well is not considered an enlargement for two reasons: 1) License 29-7869 will be limited to the capacity of the first well and 2) the ground water source that is diverted under the original well is the same ground water that the 1995 well intercepts and diverts. I was able to confirm that the ground water is from the same aquifer using the well driller's reports.

The well driller's report for the 2001 well shows that water is pulled from 150-270' which is much deeper than the other two wells. It's inconclusive if the ground water is from a different aquifer, there's no temperature information available, and there is no information confirming that it is from the same aquifer. The Department must ensure that no other water right holders are injured due to adding the addition well; therefore, the well drilled in 2001 will not be included on license 29-7869 but, will be authorized under permit 29-13672.

Overlap Analysis of PD: On paper, there are no other rights that divert from west and east wells. Only one other right that diverts from the 2001 well, permit 29-13672. There will not be any overlapping conditions on this license, rather the overlapping conditions will be on the right 29-13672 when licensed.

From the recent field examination the following gps points were taken:

West Well (well drilled in 1990—1st well drilled): 42 37.195N, -112 0.686W

East Well (well drilled in 1995—2nd well drilled): 42 37.191 N, -112 0.670W

New Well (well drilled in 2001): 42 37.200N, -112 0.667W

Place of Use: According to the field examiner, during the authorized development only one hot pool was completed. The pool is on the north side of the property, between the hotel and the river. The field examiner made no mention of commercial use within the hotel or of a bottling plant. This license will include the one hot pool. The pool measures 300ft² and is presumably 4' deep on average for a volume of 1200ft³.

Background Information: In 1995 an application for permit was filed by Lazy V Ranch, who is now owned by Craig and Vicki Lyon, which was protested by Katsilometes among others. The protest went to a hearing where Katsilometes testified of his own water uses. I will use the information collected in the field examiner's report and the permit holder's testimony to reach a volume and diversion rate for the licensure of this right. The final order was issued January 13, 2009 in connection with the protest. The final order can be found within 29-8162 but I have attached pertinent pages for the purposes of the licensing review for 29-7869.

Volume and Diversion Rate:

Diversion Rate Findings and Conclusions

- In 1995, the field examiner found that the "west" well (aka original well) was using a 3.5 hp pump.
- According to finding of fact #58 of the final order, "Between 1990 and 1995, Katsilometes installed a 7.5 horsepower pump in the first well, lowered the intake, and installed a pump in the second well. He increased his total pumping capacity from 80 gpm to between 200 and 230 gpm."
- According to finding of fact #54 of the final order, "Katsilometes testified that he needs 40 gpm to maintain the pool at an optimum bathing temperature of approximately 108°F."

I find that during the authorized development period the system was producing 80 gpm. The permit holder testified that in order to accomplish beneficial use of the water, i.e. keep the pool hot, he only needs 40 gpm. This license will be issued with the diversion rate of 80 gpm which will allow the permit holder to drain and fill his pool at the higher diversion rate.

Volume Finding and Conclusions

- According to finding of fact #55 of the final order, "Katsilometes testified that water was pumped from his well 24 hours a day for the entire year."
- Refresh Rate: size of pool- roughly 1200 cu ft
Refresh rate – 40 gpm according to Katsilometes' testimony
1200 cu ft converts to ~9000 gallons
900 gallons/40 gallons per minute = 225 minutes to completely refresh the pool or nearly 7 complete refreshes/day
- According to finding of fact #54 of the final order, "Katsilometes testified that he needs 40 gpm to maintain the pool at an optimum bathing temperature of approximately 108°F."

This license will be issued with a volumetric limit that reflects the continued diversion rate of 40 gpm over 24hrs/365 days per the above testimony or 64.5 af. To account for the scenario where the pool needs to be drained and refilled, an additional 0.5 af will be added to the volumetric limit. This will allow for 18 drains/refills over a year.

Amendment?: Yes. The place of use and points of diversion are within the SWSE not the SESE. In addition, the well drilled in 1995 will be added to this license.

Original Document Located
within File 29-13672 + 29-8162/64

to divert wastewater under application for permit no. 29-8162, and will be referred to as the swimming pool complex outlet.

47. The delivery system for capture of wastewater discharges from the swimming pool complex outlet is not constructed.

48. Application no. 29-8164 proposes the diversion of water now flowing into pump basin no. 1 that is unused by the Foundation. Although the application lists the source of water as a spring, Karen Vargason testified that the application proposes diversion of water flowing from the public hot pools into the main pump house (pump basin no. 1) and spilling into the Portneuf River.

49. Karen Vargason testified that if application no. 29-8164 is approved, she will seek a right of way from the Foundation to construct a pipeline that will capture water flowing (not pumped) from pump basin no. 1 before it discharges into the Portneuf River. She also testified that, as an alternative, she might seek an agreement with the Foundation to deliver low temperature geothermal water to the proposed place of use through the existing Foundation delivery system. No specific plans for diversion and delivery of water were submitted into evidence.

50. Improvements for beneficial use of water from the bleeder valve have been constructed and are presently owned by Lyons. Karen Vargason testified that she could pay for the additional planned improvements from funds available in her savings account. Because Lyons purchased the proposed place of use after the hearing, there is no evidence of Lyons' financial resources to fund expansions of the present system.

51. Karen Vargason testified that 20,000 pounds of tilapia would be reared annually, equivalent to between 40,000 and 100,000 juvenile fish annually.

52. George Katsilometes (Katsilometes) owns a hotel on the south side of the Portneuf River in Lava Hot Springs southwest of the Foundation's main pump house. Katsilometes owns permit to appropriate water no. 29-7869, which authorizes the diversion of 0.50 cfs from ground water for commercial purposes. Katsilometes constructed an 80-foot deep low temperature geothermal well in 1990. A well driller's report of the well is one of the documents marked as protestants' exhibit J.

53. Katsilometes constructed a bathing pool for guests at the hotel. He installed a five horsepower pump in the well at a depth of 72 feet. The pump produced a flow of 80 gpm.

54. Katsilometes testified that he needs 40 gpm to maintain the pool at an optimum bathing temperature of approximately 108° F. Protestants' exhibit J contains a summary of a pump test conducted by Katsilometes' well driller, Rodney Hendricks (Hendricks). Hendricks measured a temperature of 122° F after pumping the well for 17.5 hours.

55. Katsilometes testified that water was pumped from his well 24 hours a day for the entire year.

56. From 1991 through 1995, water levels in Katsilometes' well declined. Katsilometes testified that the water temperature in his well also declined from 122° F to 104° F.

57. In 1995, Katsilometes constructed additional bathing pools. Because of the additional water demand, and the reduction in the water level and temperature in the first well, Katsilometes drilled another well in 1995. The well driller's report for the second well is also a part of protestants' exhibit J.

58. Between 1990 and 1995, Katsilometes installed a 7.5 horsepower pump in the first well, lowered the intake, and installed a pump in the second well. He increased his total pumping capacity from 80 gpm to between 200 and 230 gpm.

59. Katsilometes submitted evidence of a test of the two wells conducted in 1995 by an employee of Hendricks. A summary of the test is included as part of protestants' exhibit J.

60. Katsilometes testified that when water is being pumped from the second well, the water temperature in the first well rises. He speculated that pumping by the Foundation moved the hot water east of his property. He hypothesized that pumping from the second well draws some of the hot water back from the east to the first well. He testified that the 1995 test by Hendricks' employee supports this theory.

61. Katsilometes also testified that he observed an increase in water levels and water temperatures in his wells and that the water diverted from his wells "clears up" when the Foundation ceases pumping.

62. Katsilometes' property is located west and south of the Foundation's main pump house. He testified that the ground surface elevation at his property is lower than the ground surface elevation of the Foundation's property. He testified that the hottest well (the second well drilled in 1995) is approximately 130 yards away from the Foundation's main pump house. He testified that the first well (the well drilled in 1990) is located approximately 60 feet west of the second well.

63. Mehlhaff testified that he owns a domestic well located almost directly across the river from the Foundation's main pump house. Mehlhaff testified that he noticed a decline in both water temperature and pressure after the Foundation reconstructed its system. He testified that, during the summer months, he is now unable to divert low temperature geothermal water. His domestic well is approximately 20 feet deep and is a four (4) inch diameter well.

USE ADDITIONAL SHEETS IF NECESSARY. ~~FOR~~ FORWARD THE WHITE COPY TO THE DEPARTMENT

49812

1. DRILLING PERMIT NO. 29-95-E-004-001
Other IPWR No. 29-7869

2. OWNER:
Name GEORGE WILLIAM KATSILOMETES
Address 5 PORTNEUF AVENUE
City LAKE HOLT SPRINGS State ID Zip 83246

3. LOCATION OF WELL by legal description:

Sketch map location must agree with written location.



Twp. 9 North ☐ or South ☒
 Rge. 38 East ☒ or West ☐
 Sec. 21 SW 1/4 SE 1/4 1/4
 Gov't Lot _____ County BAWOCK

Address of Well Site _____ City LAWA Hot Springs

Lt. _____ Blk. _____ Sub. Name _____

4. PROPOSED USE:

☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☒ Other Commercial Heat Pumps

5. TYPE OF WORK *Season*

• ☐ 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	

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 6"
Was drive shoe seal tested? Y ☐ N ☒ How? 8"

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
8"	+1	47	250	STEEL	☒	☐	☐	☐
6"	+1	66	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
						☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

23 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
120			

Water Temp. 90° 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
8"	44	60	GRAY BASALT		
8"	60	62	BROWN-GRAY BASALT	✓	
8"	62	67	HARD GRAY BASALT		
6"	67	76	HARD GRAY BASALT		
6"	76	80	SAND-GRAVEL - CLAY	✓	

RECEIVED

APR 20 1995

Department of Water Resources

RECEIVED

APR 14 1995

Department of Water Resources

RECEIVED

AUG 15 1995

Completed Depth **80'**

Date: Started **2-15-95**

(Measurable)

Completed **2-16-95**

13. DRILLER'S CERTIFICATION

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

Firm Name INDEPENDENT DRIVING Firm No. 343

Firm Official Brent Hendrick Date 3-6-95

and
Supervisor or Operator Phil Davis Date 3-6-95

(Sign once if Firm Official & Operator)

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* Despite this log reflecting a modification to an existing well, this was a NEW well. This is supported in testimony of water right holder and the fact that the field examiner found 2 wells at the field visit.

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

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

1. WELL TAG NO. D 0014893
DRILLING PERMIT NO. 7-6-8520
Other IDWR No. _____

2. OWNER:

Name George W. Katsilometes
Address 94 E. Portneuf Ave
City Lava Hot Springs State ID Zip 83246

3. LOCATION OF WELL by legal description:

Sketch map location must agree with written location.

N W E S	Twp. <u>7</u>	North ☐ or South ☒
	Rge. <u>38</u>	East ☒ or West ☐
	Sec. <u>21</u>	1/4 <u>SW</u> 1/4 <u>SE</u> 1/4
	Gov't Lot _____	County <u>Bannock</u>
Lat: _____		Long: _____
Address of Well Site <u>94 E Portneuf</u>		
City <u>Lava Hot Springs</u>		

(Give at least name of road + distance to road or landmark)

Lt. _____ Bk. _____ Sub. Name _____

4. USE:

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

5. TYPE OF WORK check all that apply (Replacement etc.)

☐ New Well ☐ Modify ☐ Abandonment ☒ Other Replace

6. DRILL METHOD

☒ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK		AMOUNT		METHOD
Material	From	To	Sacks or Pounds	
<u>Bentonite</u>	<u>0</u>	<u>100</u>	<u>50 Sacks</u>	<u>Overbore</u>

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 458'
Was drive shoe seal tested? ☒ Y ☐ N How? Pressure

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
<u>6"</u>	<u>1 1/2</u>	<u>458</u>	<u>250</u>	<u>Steel</u>	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS

Perforations Method Knife
Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
<u>150</u>	<u>270</u>	<u>1/2 x 1/4</u>	<u>4800</u>	<u>6"</u>	<u>Steel</u>	☒	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

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

11. WELL TESTS:

☐ Pump ☐ Bailor ☒ Air ☐ Flowing Artesian

Yield gal./min	Drawdown	Pumping Level	Time

Water Temp. _____ Bottom hole temp. _____

Water Quality test or comments: _____

Depth first Water Encounter _____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
10"	0	12	Drt		
4"	12	36	Conglomerate		
10"	36	70	Lava Rock		
6"	70	80	Broken Lava Rock		
6"	80	90	Sandstone		
	90	92	Quartzite		
	92	115	Conglomerate		
	115	125	Lava Rock		
	125	145	Sandstone		
	145	153	Pumice & Clay		
	153	165	Claystone		
	165	280	Sandstone		
	280	390	Heavy Sand		
	390	390	Claystone		
	390	390	Sandstone		
	390	440	Claystone		
	440	465	Sandstone		
	465	485	Claystone		
	485	550	Sandstone - Rock		
	550	695	Sandstone		
	695	700	Sand		

RECEIVED

RECEIVED

SEP 17 2001

MAY 09 2001

Department of Water Resources
Eastern Region

Completed Depth 700' (Measurable)
Date: Started 4-14-01 Completed 5/3/01

13. DRILLER'S CERTIFICATION

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

Company Name Vallmar Well Drilling Firm No. 383

Firm Official Robert Hall Date 05/07/01
and Joy Vallmar Date 5/8/01
Driller or Operator

(Sign once if Firm Official & Operator)

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