State of Idaho
DEPARTMENT OF WATER RESOURCES

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C. L. "BUTCH" OTTER
Governor

DAVID R. TUTHILL, JR.
Director

December 2, 2008

Travis Thompson
P.O. Box 485
Twin Falls, ID 83303-0485

James Speck
P.O. Box 987
Ketchum, ID 83340

Re: Warfield Hot Springs Investigation

Dear Gentlemen,

Enclosed please find a copy of a Department memorandum summarizing the results of the Warfield Hot Springs pump test that was conducted on October 21 – 22, 2008 involving the SDRTR LLC (Robbins) and Pace Community diversion systems. I have forwarded a copy of this letter and memo via e-mail on December 2, 2008 to each of the individuals or entities listed on prior e-mail correspondence that I have received from each of you. Additional hard copies can be forwarded upon request.

Thank you for your patience in allowing us time to complete the summary while staff had other obligations to complete over the past month. You may contact me directly if you have any questions concerning the memo or results.

Regards,

Tim Luke
Manager, Water Distribution Section

Enclosure: IDWR Memorandum – Evaluation of the Warfield Hot Springs Pump Test

Cc: Allen Merritt, IDWR Southern Region Manager
Mike McVay, Mat Weaver, Corbin Knowles, IDWR State Office
Kevin Lakey, Water District 37 Watermaster

CC via E-mail: Chuck Brockway Sr., Brockway Engineering
Terry Scanlan, SPF Engineering

MEMO

State of Idaho
Department of Water Resources
322 E Front Street, P.O. Box 83720, Boise, Idaho 83720-0098
Phone: (208) 287-4800 Fax: (208) 287-6700

Date: December 1, 2008

To: Tim Luke

From: Mike McVay, Mat Weaver, Corbin Knowles

cc: Sean Vincent

Subject: Evaluation of the Warfield Hot Springs pump test

INTRODUCTION

This memo summarizes the results from a pumping test conducted on the Robbins Diversion geothermal collection system (Robbins). The test was performed to assess the impacts (if any) of Robbins system withdrawals to the nearby Pace Community Diversion geothermal collection system (Pace).

Site Location

Warfield Hot Springs (WHS) is located at the boundary between 04N16E36 and 04N17E31 in the Warm Springs Creek canyon, approximately 6.7 miles southwest (upstream) of Ketchum, ID. The site is adjacent to Warm Springs Creek within a narrow mountain canyon that is approximately 300-500 feet across at the site. The pump test site is at a location on Warm Springs Creek where the stream makes a 90-degree bend from east to south at the WHS, and flows almost due south for approximately sixth-tenths of a mile before making another 90-degree bend back to an east-west alignment (Figure 1).

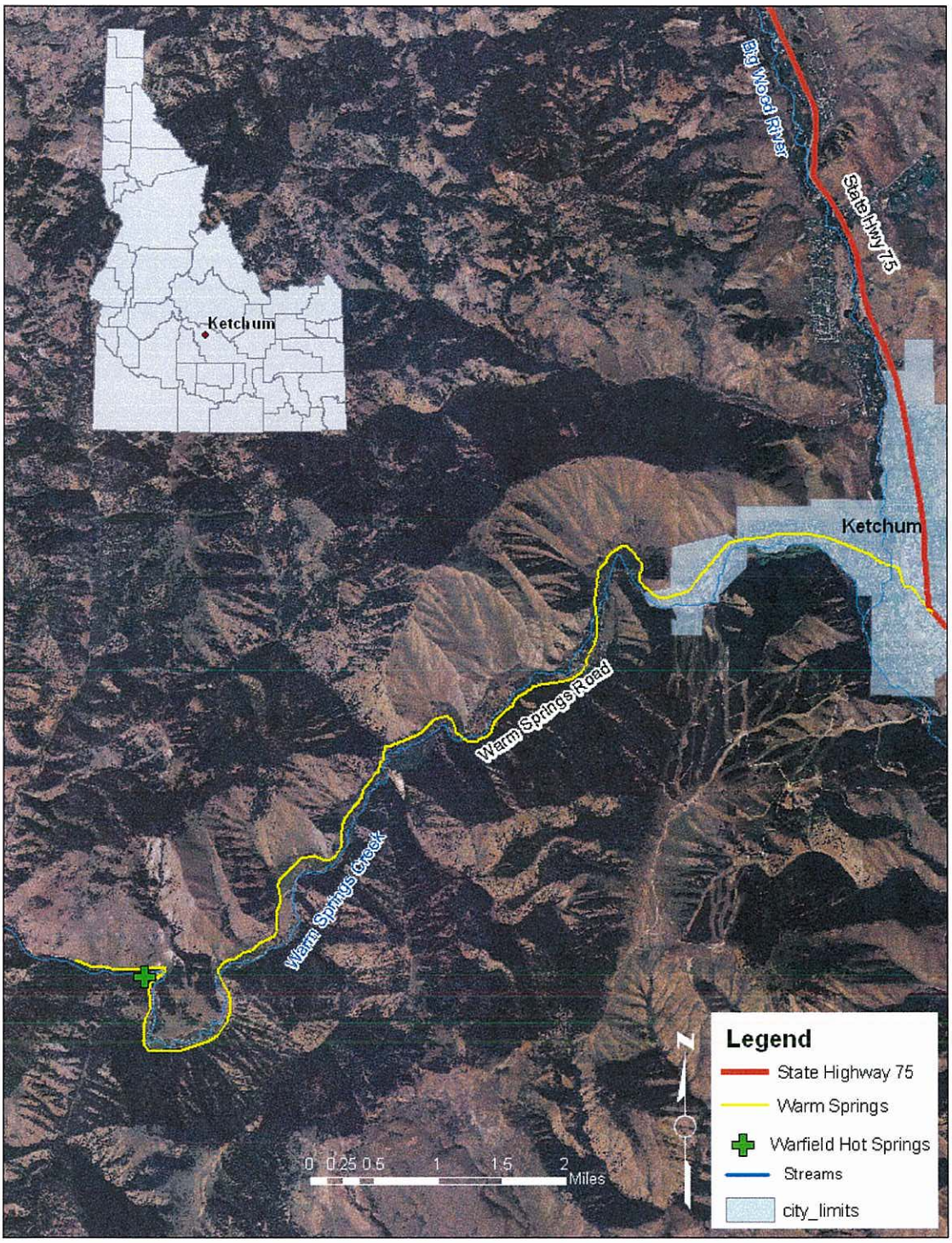


Figure 1. Location of the Warfield Hot Springs site.

Site Geology

The main rocks exposed in the Warfield Hot Springs area consist of moderately weathered and jointed Cretaceous granite of the Idaho Batholith and highly-jointed, Permian/Pennsylvanian, carbonaceous, sedimentary rocks of the Wood River Formation (Figure 2). A veneer of alluvium covers the narrow valley floor (Anderson and Bideganeta, 1985).

The granite-sedimentary contact strikes north-south through the area, dips about 35 degrees to the east, and in places is clearly defined. Faulting along the contact is not apparent in the area, and the contact does not appear to be serving as a conduit for geothermal water.

The sedimentary rocks at this location are primarily composed of dense, relatively fine-grained, highly silicified and jointed dolomite. Some fractures along bedding planes appear to have been filled in with thin silica veinlets. The alteration of the sedimentary rock is visible for approximately one hundred meters beyond the contact, with the most intense alteration occurring at the contact. The color of the sedimentary rock at the contact is a light tannish-brown, which transitions to a pale gray-blue several meters beyond the contact. The dip of the bedding is generally consistent with the dip of the contact in the immediate area of the springs. Intrusive-related dikes of varied composition cut the dolomite near the contact, but quickly decrease in abundance away from the contact (Anderson and Bideganeta, 1985).

The intrusive, as described by Umpleby and others (1930), is generally soda (plagioclase rich) granite. The granite, moderately weathered to a medium brown color, is locally highly jointed. A border facies of hornblend-biotite diorite exists in a relatively narrow zone along the contact.

Hydrogeology

Groundwater resources in the Warfield Hot Springs area typically occur as shallow depth, cold water within alluvial deposits. These water-table aquifers are recharged via precipitation and surface water infiltration from streams (Frenzel, 1989). Most of the wells in the area are shallow (less than 100 feet) and are completed in alluvium; however, some wells are completed in the underlying granite or sedimentary bedrock. Wells completed in bedrock typically access confined aquifers that yield small volumes of water. Well locations in the vicinity of WHS are illustrated in Figure 3, and the driller's reports are included in Appendix I.

Occurrence of Geothermal Water

The Warfield Hot Springs (Robbins and Pace sources) appear to be discharging from the sedimentary rocks approximately 700 feet southeast of the granite-sedimentary contact (Figure 2). The hot springs in the immediate area (including WHS) occur very near a major lineament that has been interpreted to strike east-west following the drainage of

Warm Springs Creek (Figure 2). A field examination of the rock in the suspected area of the linear feature indicated a high degree of fracturing and jointing (Anderson and Bideganeta, 1985).

The thermal discharges in this area appear to be associated with major jointing found near the surface in the granite and sedimentary rocks, and are consistent with northwest and northeast trending joint sets which create enough permeability to allow migration of thermal waters. It appears that the WHS are structurally controlled and confined to avenues of fracture permeability (Anderson and Bideganeta, 1985).

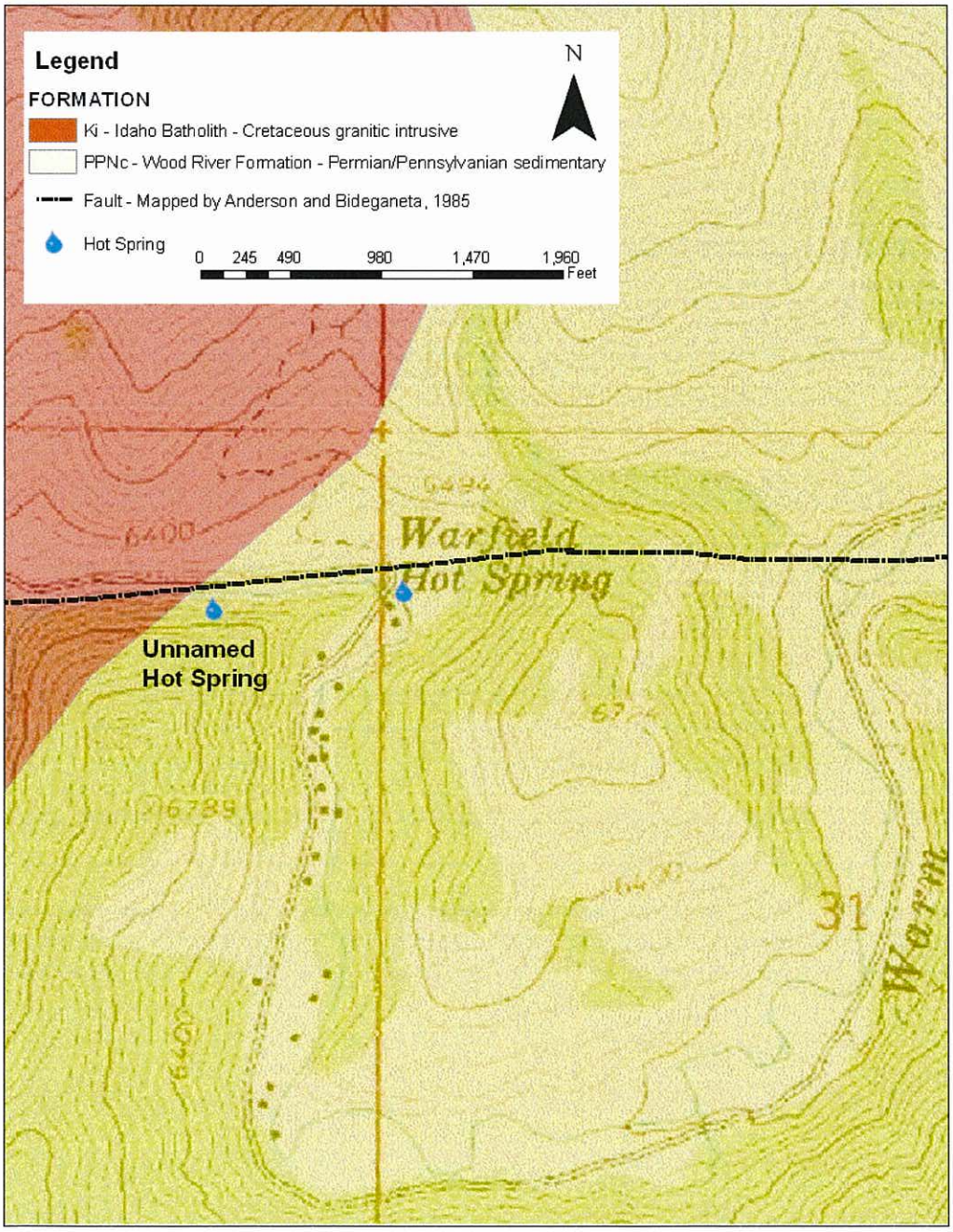


Figure 2. Warfield Hot Springs local geology.

Water Rights on Warfield Hot Springs

There are approximately 22 residential lots in this stretch of the canyon. Associated with these lots are approximately 26 water rights, permits, and unique recommendations in place for various uses. The sources of water supporting these water rights include hot and cold springs, surface water, shallow groundwater, and deeper confined aquifers. The following table summarizes the existing water rights, permits, and recommendations utilizing geothermal water from the Warfield Hot Springs.

Table 1. Warfield Hot Springs System Water Rights

WR No.	Priority Date	Max. Diversion (CFS)	Owner	Source
37-11296[1]	7/30/1970	0.04	PACE, JAY C	WARFIELD HOT SPRING*
37-13054[1]	6/30/1970	0.02	HANKINSON, MARK; VIERLING, LISA	WARFIELD HOT SPRING*
37-20894[1]	7/30/1970	0.02	VIERLING, LISA	WARFIELD HOT SPRING*
37-13394[1]	1/1/1979	0.04	MILLER, MARK	ARTESIAN SPRING*
37-8388[2]	8/25/1988	2.00	SDRTR LLC (ROBBINS FAMILY)	WARFIELD HOT SPRING**
37-8692[2]	8/9/1990	0.04	SHELTON, JOSEPH	WARFIELD HOT SPRING*
1 - Snake River Basin Adjudication Recommendation				
2 - Permit				
* Pace Community Diversion System				
** Robbins' Diversion System				
WR 37-8692 is a wastewater right only and does not allow for additional diversion of water at the Pace Community POD.				

The Pace Community system serves the Jay Pace, Joseph Shelton, Mark Miller, Mark Hankinson and Lisa Vierling properties (Figure 3). The Robbins system serves the Robbins Family property. The combined flow rate recommended by IDWR in the Snake River Basin Adjudication Director's report for the beneficial use claims associated with the Pace Community system is 0.12 CFS or 53.86 gpm. Although a flow rate of 2.00 cfs was established with permit 37-8388[1] in association with the Robbins diversion, Proof of Beneficial Use and a license field examination was submitted for only 0.45 cfs or 200 gpm.

1. *Permit 37-8388 was originally issued to Bruce Gilbert on 2/3/1989. On 5/25/2000 the permit was assigned to Steven D. Reuther. On 3/10/2006 the Department sent a "lapse notice" to Steven D. Reuther for lack of submittal of an acceptable proof statement or request for extension of time. On 5/16/2008 the permit was assigned to SDRTR, LLC. On 5/16/2008 James P. Speck (legal council for SDRTR, LLC) filed a Petition to Reinstate Lapsed Water Right Permit No. 37-8388 on behalf of the permit holder. On 7/7/2008 a proof statement and Beneficial Use Field Report were submitted to the Department by James P. Speck. On 7/14/2008 the permit was reinstated with no advance in priority date. On July 24, 2008, Travis Thompson, on behalf of Lisa Vierling, filed a Petition Requesting a Hearing In the Matter of Lapsed Permit No. 37-8388.*

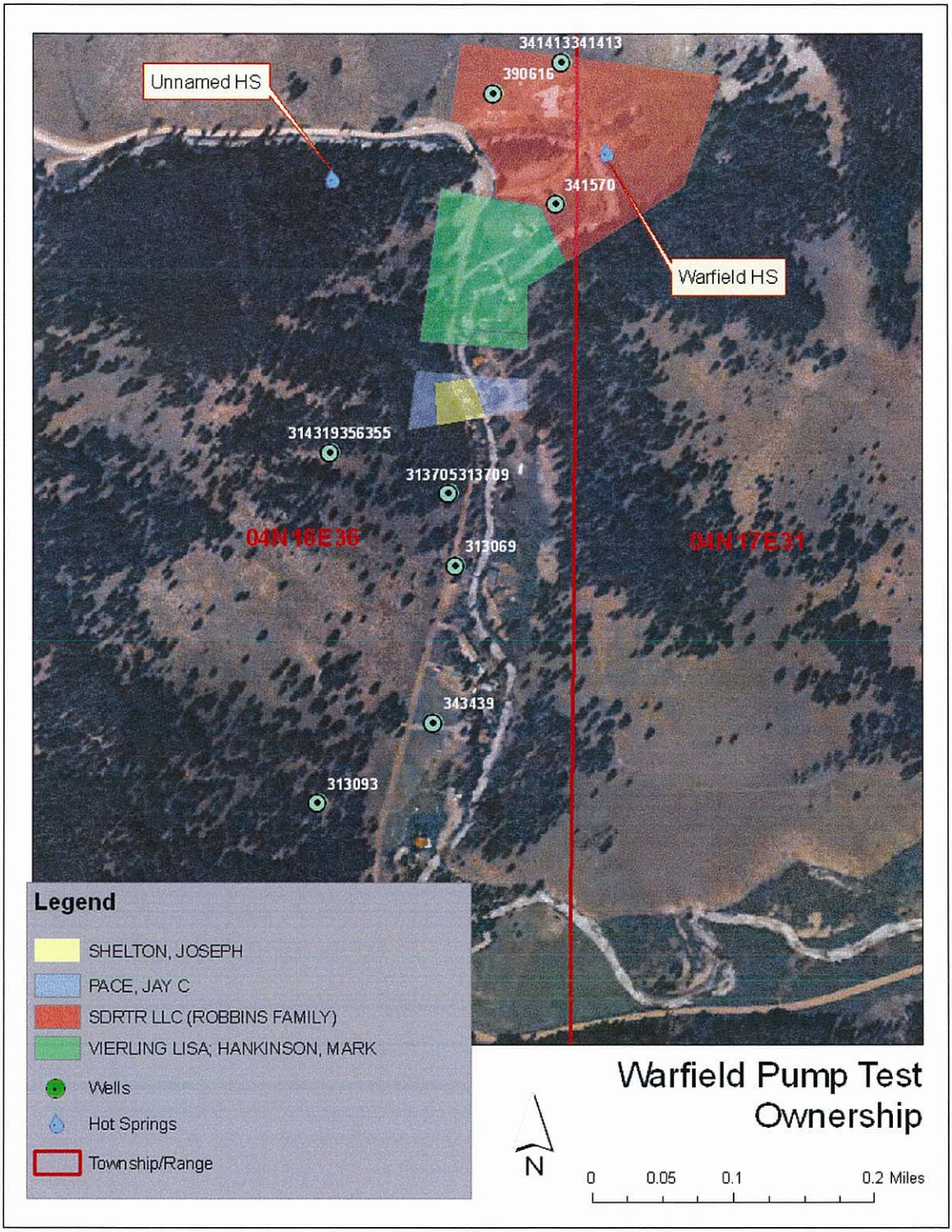


Figure 3. Warfield Hot Springs property ownership map.

Site Layout

Two spring discharges have been developed on-site. The first, known as the Pace Community Diversion, was initially developed prior to 1970. The second developed spring, known as the Robbins Diversion, has been operational since 2004. Both of these springs have been developed in the flood-plain alluvium that is adjacent to Warm Springs Creek (Figure 4).

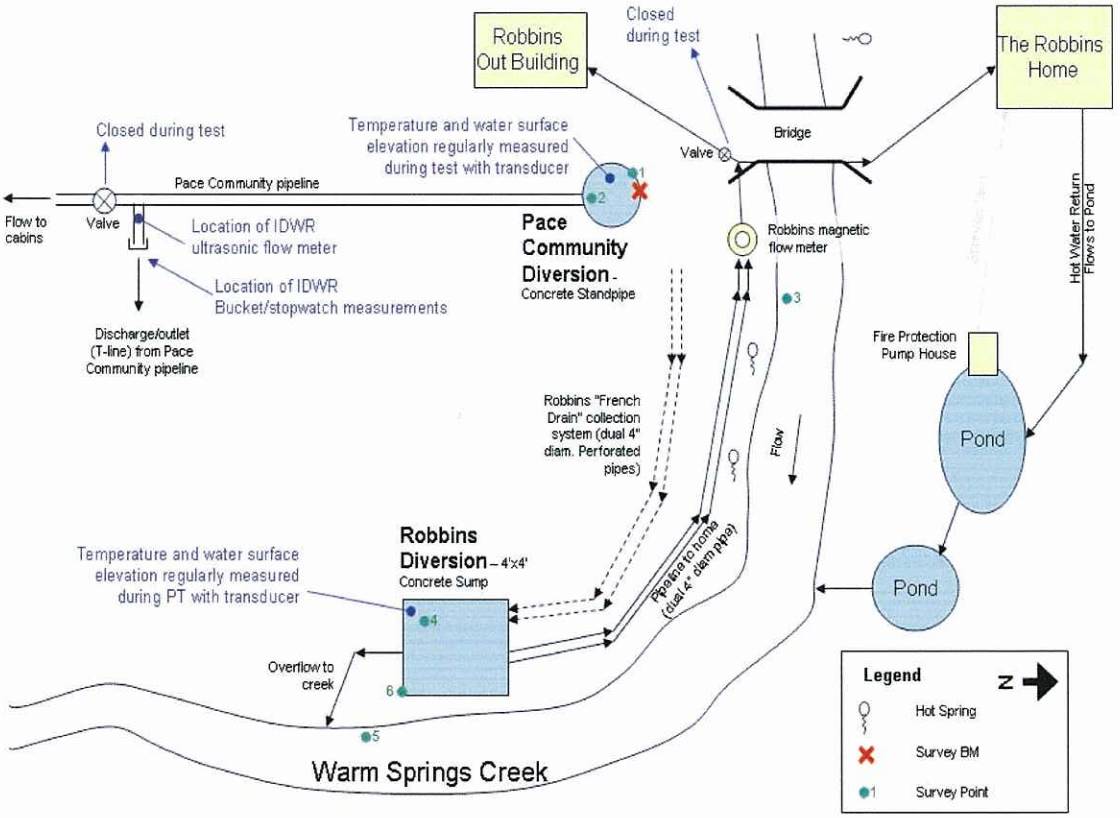


Figure 4 - Warfield Hot Springs Diversions Schematic

Figure not to scale

The Pace spring has been developed with a 4-foot diameter vertical concrete pipe that serves as a collector, and a 6-inch PVC pipe which serves as water system intake and conveyance (Photos 1 & 2). Water issues from the Pace spring source and collects in the concrete standpipe. The collected water decants into the PVC pipe, and is delivered to the pace water users via gravity. At the time of the investigation no water measurement devices were in place on the Pace Community system; and according to water users of the system, there are no historical records of flow.

The Robbins system has been developed utilizing perforated buried pipelines to collect hot water which then flows via gravity into a 4-foot x 4-foot concrete sump (Photo 3).

The upper end of the Robbins collection system appears to be located approximately 50 feet northeast of the Pace standpipe (Brockway, 2003). Two submersible pumps in the sump deliver the collected water to the Robbins property.

The top of the Pace intake pipe was surveyed to an elevation of 98.3 feet (above an arbitrary datum) by IDWR staff. The top of Robbins perforated pipe runs from 97.2 feet at the upper end to 93.2 feet at the sump, as referenced to the same arbitrary datum (Table 2; Brockway, 2003). It is important to note that both the Pace and Robbins systems employ passive water collectors, and the Robbins collector is at a lower elevation.

Table 2. Survey Data of Warfield Hot Springs Diversions

Bench Mark Elevation* =	100	feet		
Distance From Pace Inlet to "Tee" =	225	feet		
	9-Oct-08		22-Oct-08	
Description**	**Rod Elev. (ft)**	**Actual Elev. (ft)**	**Rod Elev. (ft)**	**Actual Elev. (ft)**
[1] Benchmark (Rim of Pace Div. (N Quad))	6.35	100.00	6.50	100.00
[2] Pace Diversion WSE	8.14	98.21	8.48	98.02
[3] Warm Cr. WSE @ Pace Diversion	7.60	98.75	8.04	98.46
[4] Robbins Diversion WSE	9.44	96.91	--	--
[5] Warm Cr. WSE @ Robbins Diversion	11.22	95.13	11.65	94.85
[6] Rim of Robbins Diversion (SE Corner)	8.05	98.30	--	--
Crown of 6" Robbins Perforated pipe at Robbins Sump***				93.20

*Arbitrary Datum Elevation.

**Refer to Figure 4 for Orientation of Survey Points

*** Robbins perforated pipe elevation at sump was measured from survey point with steel tape (5.1 ft below rim). Robbins perforated pipe elevation at upper end was calculated from survey data presented in Brockway, 2003.

Pump Test Narrative

The test was scheduled to begin on 10/20/2008 with the shut-down of both systems. The Robbins system was turned off at 11:20 AM and the valve serving the cabins on the Pace system was closed at 4:00 PM (Figure 4). Prior to taking the Pace system off-line (after turning off the Robbins pumps), IDWR staff took flow measurements to assess flow to the cabins. After the measurement was taken, the Pace intake was capped at the standpipe to allow the installation of a discharge T-line on which continuous flow measurements would be taken during the test. Transducers to measure water level and temperature were installed in both the Robbins sump and Pace standpipe and began recording at 11:00 PM. A transducer to measure barometric pressure changes was also deployed at the Pace Standpipe.

Capping the conveyance pipe caused water to back-up in the standpipe and spill-out, leading to the saturation of the surrounding alluvium and the eventual ponding of water on the surface. The cap on the Pace intake was removed at 10:40 AM on 10/21/2008 allowing water to flow out of the discharge T-line. The "spilled" water which had ponded on the surface flowed back into the stand pipe, and the surrounding alluvium was quickly de-watered. A bucket/stopwatch measurement of flow from the discharge outlet was conducted at 11:35 AM to assess the Pace system pre-test discharge rate. At 2:10 PM, a Panametric Ultra Sonic closed conduit flow meter (USFM) was installed on the discharge T-line to collect continuous flow measurements on the Pace system.

Shutting-down the Robbins pumps caused water to fill the sump and spill through an overflow pipe that discharged toward Warms Springs Creek. Because no water was removed by pumping, the spring discharge saturated the surrounding alluvium, and several seeps were observed discharging from the alluvium into Warm Springs Creek. The Robbins pumps were turned on at 4:35 PM on 10/21/2008 and began pumping at approximately 200 gpm. Once the water level in the sump dropped below the overflow, the previously observed seeps quickly dried-up as all spring discharge was delivered to the system and the alluvium was de-watered.

IDWR staff took manual measurements of the water levels in the Robbins sump and Pace standpipe using a steel tape measure, as well as visual readings of the Robbins flow meter and the IDWR flow meter on a minimum one-hour interval for the duration of the test.

The water level in the Robbins sump continuously declined until reaching the pump intakes at 8:00 PM on 10/21/2008, and the pumping rate was adjusted until equilibrium was attained at approximately 160 gpm. This approximate pumping rate was maintained for the remainder of test (Robbins' discharge rates were measured using the system's magnetic flow meter).

During the early afternoon of 10/22/2008, IDWR attempted to deploy a second USFM on the Robbins pressurized conveyance line to corroborate the readings of the Robbins permanent magnetic flow meter. Due to the physical constraints of the Robbins system, no location could be found that met all of the requirements necessary, as outlined in the manufacturer's operation manuals, to obtain accurate measurements with the USFM.

During the course of the test, it became apparent that the USFM readings on the Pace system were erroneous, and that data logging had ceased after the first 12 hours of the pump test. Due to the inconsistencies of the USFM, at 1:00 PM on 10/22/2008 a second bucket/stopwatch measurement of flow was taken to assess the end-of-test discharge rate on the Pace system. At 2:24 PM on 10/22/2008 the USFM was reconfigured and redeployed to collected continuous flow measurements on the Pace system until the completion of the test.

The Robbins pumps were shut down and the test was concluded at 4:00 PM on 10/22/2008.

Pump Test Results

In an effort to evaluate the test, water level and temperature data were collected in both the Robbins and Pace diversions, and flow rate data were collected on both system discharges.

Water Levels

Water level and temperature data were collected to ascertain if pumping the Robbins system affected the conditions in the Pace standpipe. Water levels in the Pace standpipe did not fluctuate in response to Robbins system pumping. In fact, the water level in the standpipe remained level throughout the duration of the test (Figure 5).

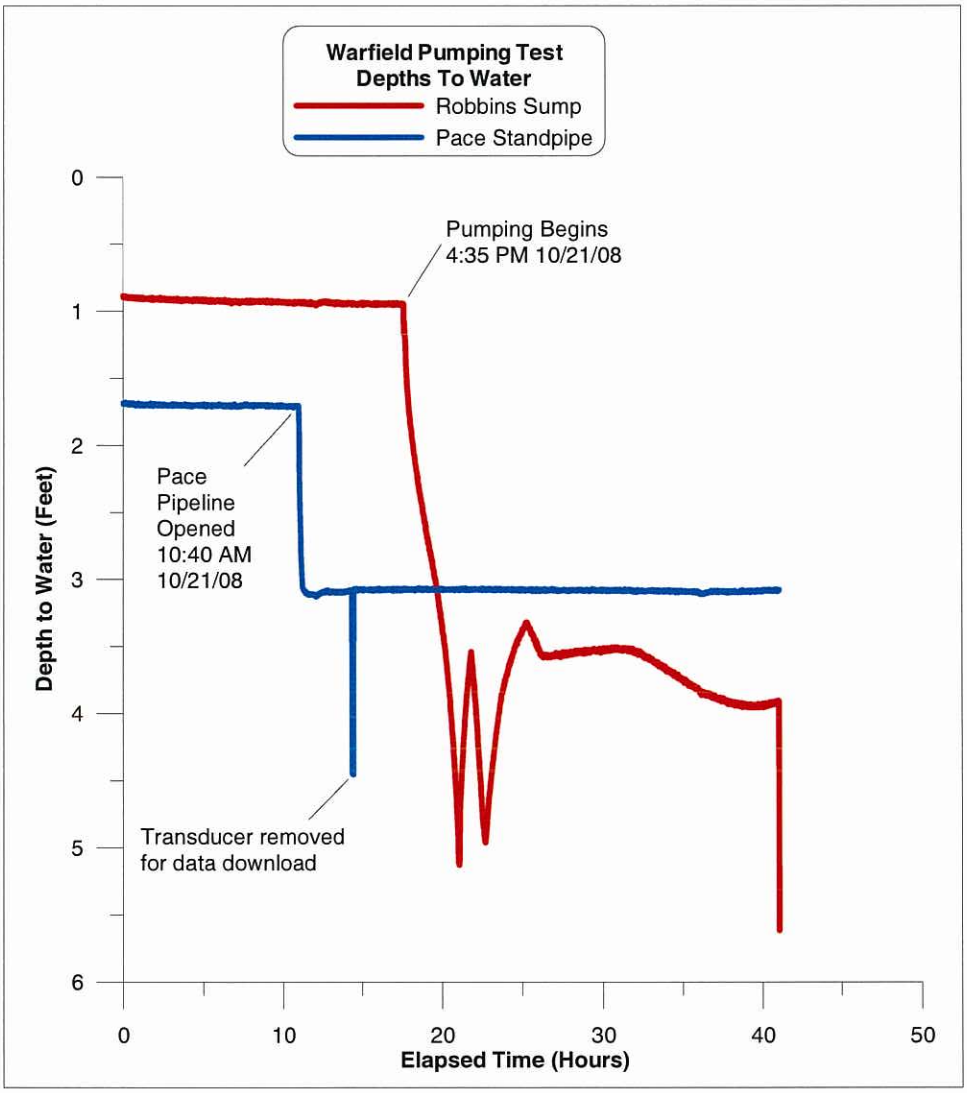


Figure 5. Water levels in the Pace standpipe (blue) remained stable for the duration of pumping. Water levels in the Robbins sump (red) responded directly to the rate of pumping. Fluctuations in the Robbins water levels are the result of changes in pumping rate, and the final "drop" corresponds to transducer removal. Water levels have been adjusted for barometric pressure.

Water levels in the Robbins sump responded directly to pumping. The test was scheduled to pump at 200 gpm. However, pumping at this rate emptied the sump in approximately 3.5 hrs, and the production rate had to be lowered to protect the pumps. It is important to note that the Robbins system collects spring discharge in a perforated-pipe collection system that delivers water to the sump via gravity. As currently configured, this system can only deliver water at or below the discharge rate of the spring source.

Temperature

Temperature data was also collected in both the Robbins sump and the Pace standpipe. Changes in temperature would indicate if pumping the Robbins system induced colder water to flow to either collection system.

Based on temperature data collected in the Pace standpipe, it does not appear that pumping the Robbins system induced cold water into the Pace system (Figure 6)

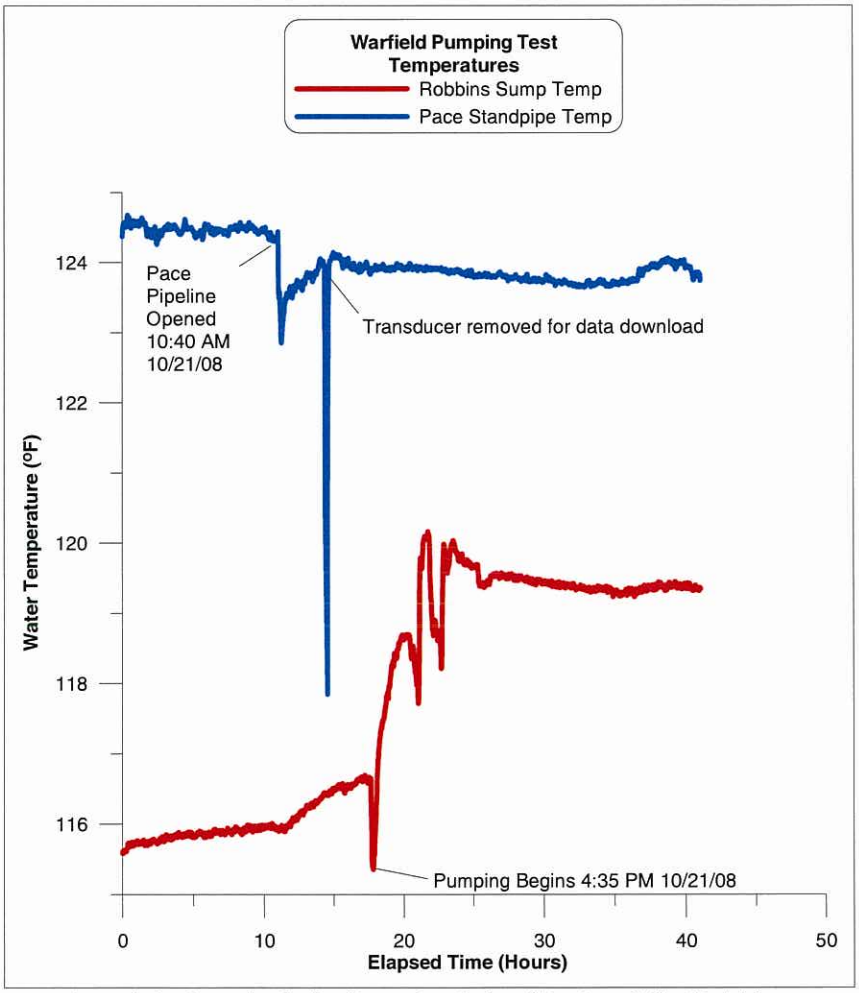


Figure 6. Temperature data from both the Pace standpipe (blue) and the Robbins sump (red). Temperatures responded to changes in water levels, but do not indicate cold water intrusion. Removal for download caused a low spike as it cooled out of the water.

The primary temperature changes in the Pace standpipe corresponded to a water level drop that occurred when the pipeline was opened. As mentioned earlier, capping the pipeline caused hot water to back-up in the standpipe and overflow into the surrounding alluvium. When the cap was removed, the water level dropped and the water saturating the alluvium and ponded on the surface flowed back into the standpipe and caused a temperature drop. The temperature rose again as the standpipe collected less back-flow and more direct spring discharge. Temperature during the pumping period varied approximately 0.5 °F due to diurnal air temperature fluctuations.

Temperatures in the Robbins system also do not appear to represent induced cold water intrusion. The temperature rose when the Pace pipeline was opened as the cooler water saturating the alluvium migrated back to the Pace standpipe and was no longer collected in the Robbins system. The temperature rose again as pumping began and the system collected less alluvium back-flow and more direct spring discharge. Temperature fluctuated as the water level responded to pumping changes. Each time the water level declined significantly, the temperature dropped as the logger showed the increased influence of the colder ambient air temperature. Once pumping was stabilized (approximately 26 hours elapsed time), the temperature stabilized and changed only slightly with diurnal air temperature fluctuations.

Discharge Rate

IDWR monitored discharge from the Robbins system with the previously installed magnetic flow meter, and monitored the Pace flow rate at the T-line discharge outlet that was installed for the test. A Panametric Ultra Sonic closed conduit flow meter (USFM) was installed on the Pace outlet to collect continuous flow data; however, the meter did not function correctly for much of the test, the only reliable data from the USFM was gathered over the last two hours of the pump test. As such, bucket/stopwatch flow measurements were utilized as supplemental data for this parameter.

Two flow measurements were taken on the Pace system prior to pumping. The first measurement (36 gpm) taken with a USFM was obtained with the Robbins system shut down and the Pace system at normal operation. The second measurement (47 gpm), obtained by the bucket/stopwatch method, was taken with the Robbins system shut down and the Pace system valve closed, which allowed the water to free-flow through the discharge outlet. A third measurement (46 gpm), also obtained by the bucket/stopwatch method, was taken on the Pace system while the Robbins system was pumping, and occurred near the end of the pumping duration. Finally, the fourth measurement (43 gpm) represents the average flow rate recorded by the USFM for approximately the last 90 minutes of the pump test (Figure 7).

Results from the flow measurements do not clearly show an impact from Robbins system pumping on the flow rates of the Pace system. Although the end-of-test flow rates on the Pace system are less than the pre-test flow rate, the magnitude of difference appears to be well within an error of 10%, which is a reasonable expectation of error given the measurement methods and the operating conditions of the systems. Furthermore, the

lowest flow rate was measured at a time when the Robbins system was turned off and the Pace system was in operation.

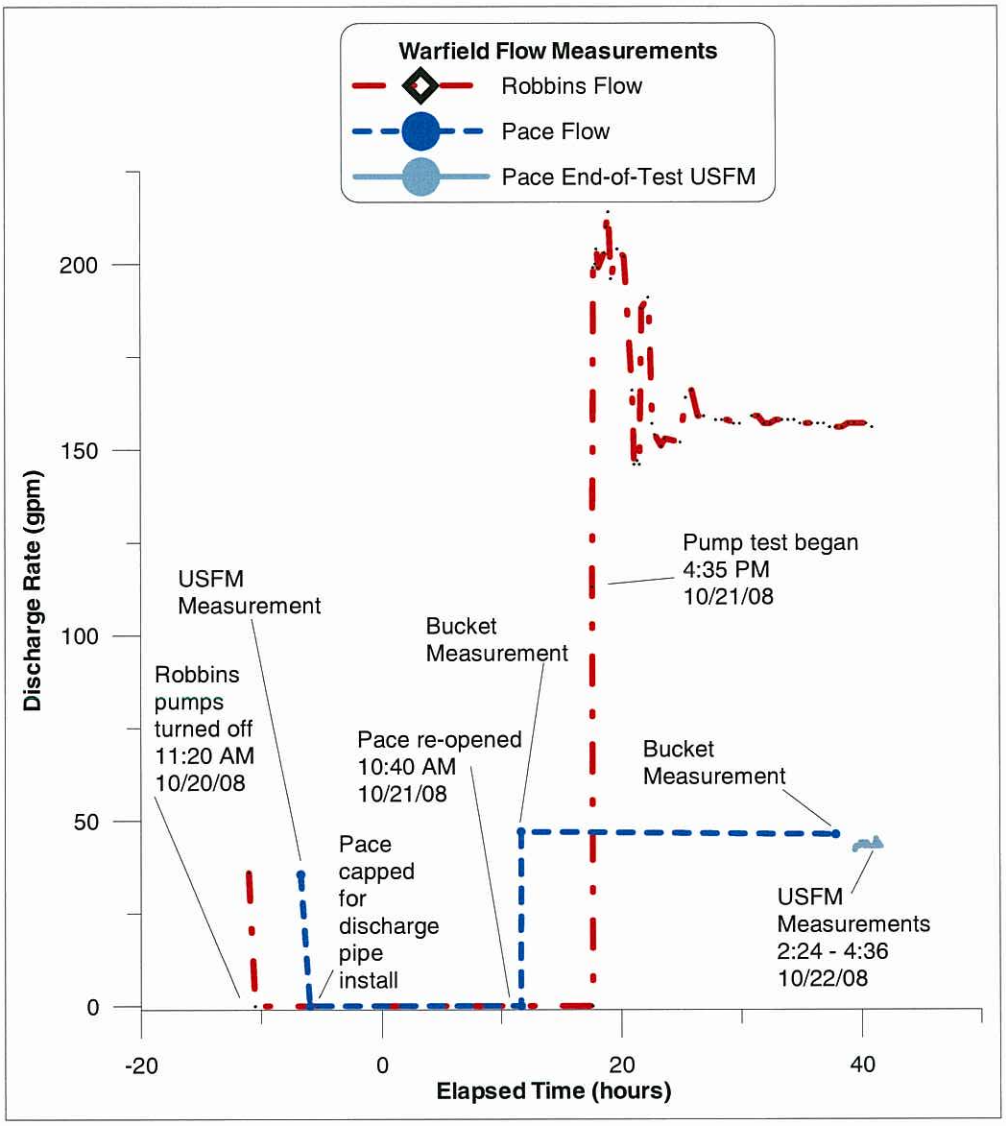


Figure 7. Measured flow rates at the Warfield Hot Springs. Robbins flow (red) was varied to discharge at the maximum possible rate without damaging the pumps. Pace flow (blue) did not appear to respond to Robbins pumping.

Conclusions

The data collected during the testing at Warfield Hot Springs indicate that pumping the Robbins system at or above system capacity for 24 hours does not negatively impact the Pace system.

The water level in the Pace standpipe did not change during the course of the pump test. Once the valve serving the Pace system cabins was closed and the water was allowed to

flow freely from the discharge pipe, the standpipe water level was steady regardless of the pumping conditions in the Robbins system.

Temperature logging did not indicate that either system was accessing cold water as a result of pumping. Temperatures initially fell as saturated alluvium was de-watered, and rebounded once the systems were capturing direct spring discharge. Temperatures primarily responded to changes in water level in the respective collection structures.

Discharge measurements in the Pace system did not show a causal relationship between pumping the Robbins system and change to flow rate in the Pace system. A pre-test measurement of 47 gpm was taken with the Robbins system off, and late-test measurements of 46 and 43 gpm were taken after the Robbins system had been pumping at or above capacity for 23.5 hours. A difference of 1-4 gpm appears well within an anticipated range of error of 10% given the measurement methods and the natural variation in flow associated with a gravity driven delivery system.

The controlling factor in the discharge rate of the Pace system appears to be the water level in the standpipe. The standpipe has been observed to operate at either a high or low water level condition (Photos 1 & 2). The first measurement of 36 gpm was taken when the water level in the standpipe was approximately 3 inches below the rim (high). The pre-test and late-test measurements were taken when the water level was approximately 21 inches below the rim (low). It has been observed that, when the standpipe water level is high, water issues out of the collector and saturates the surrounding alluvium. This water is eventually lost to Warm Springs Creek and appears to decrease the amount of water that is conveyed downstream for beneficial use on the Pace system. When the standpipe is at the low water operating condition, a higher percentage of water entering the standpipe flows into the Pace distribution system and is available for beneficial use.

Because both systems are passive collectors, and the Robbins collector sits at a lower elevation, the current system configurations may prevent Robbins' pumping from impacting the Pace system. The Pace system collects water in the standpipe as it discharges from the spring source, and gravity feeds the distribution system to the cabins. Spring discharge is merely re-directed and no stress is placed on the geothermal system. The Robbins system collects water in perforated pipes as it discharges from the spring source, and gravity directs the water to the sump where it is removed by pumps. No more water can be removed from the sump than issues into it. Again, the natural spring discharge is re-directed and the geothermal system has not been stressed by pumping.

Recommendations

Based on the results of the pumping test of the Warfield Hot Springs in association with the Robbins and Pace Community geothermal water diversion systems, the Department recommends the following items pertaining to the on-going operation of these two systems:

- The installation of a permanent water measurement device on the Pace Community System, upstream of all beneficial use diversions, for the measurement of the combined diversion of the system.
- Historical record keeping of flow rates and water temperatures associated with both systems.
- Water measurement and historical record keeping of flow rates by individual water users on the Pace Community System, in addition to overall system record keeping.
- The installation of a protective screen on the in-take of the Pace Community conveyance pipe line.
- The formation of a "Lateral Ditch Water Users' Association" on the Pace Community System, consistent with Idaho Statutes §42-1301 through 1310, to implement the equitable distribution and use of water by all users as well as provide an organizational basis for assessments to make any necessary repairs or improvements of the shared delivery system.

References

Anderson, J., Bideganeta, K., 1985. A preliminary geologic reconnaissance of the geothermal occurrences of the Wood River drainage area. Idaho Department of Water Resources, Boise, ID, pgs 28 – 32.

Brockway, C., 2003. Report on Reuther property geothermal collector system analysis and design. Brockway Engineering, Twin Falls, ID.

Frenzel, S. A., 1989. Water resources of the Upper Big Wood River basin, Idaho. U. S. Geological Survey Water Resources Investigations Report 89-4018, pgs 11 – 13.

Umpebly, J. B., Westgate, L. C., and Ross, C. P., 1930. Geology and ore deposits of the Wood River region, Idaho, U. S. Geological Survey Bulletin 814, 250 p.

Site Photographs

Photo 1. Pace collection system (standpipe) at "low" water level operational condition. The PVC pipe conveys the captured water to the Pace Community water users.

Photo 2. Pace collection system (standpipe) at "high" water level operational condition.

Photo 3. The Robbins sump collects water captured in perforated pipes, and submersible pumps located near the bottom deliver the water to the residence.

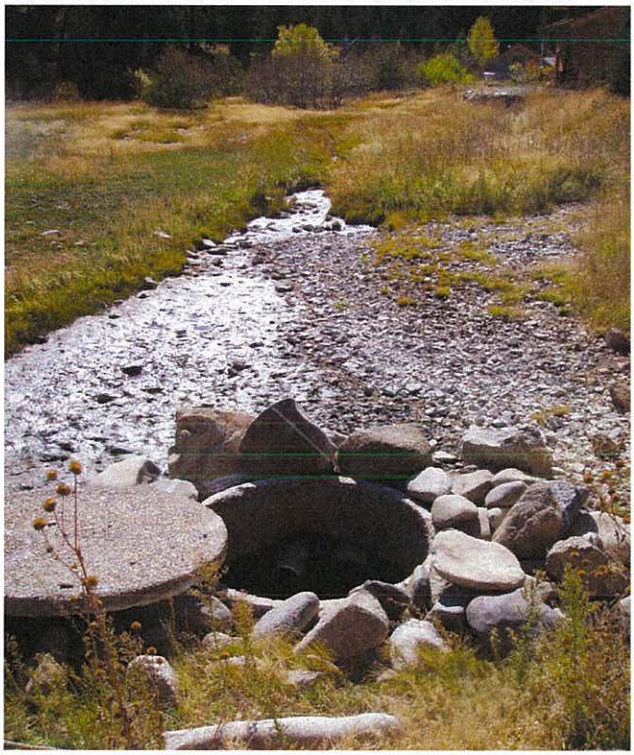


Photo 5. The Pace standpipe is visible in the foreground with surrounding alluvium visible. The muddy area surrounding the standpipe is covered with water when the standpipe operates at "high" water level condition

Photo 6. Discharge pipe installed to measure flow from the Pace system. The sonic flow meter is visible on the pipe in the foreground.

Photo 7. Pace system water issuing from discharge pipe. The elbow was installed to ensure full pipe flow so the sonic meter could be used.

Photo 8. Robbins system magnetic flow meter. IDWR staff took hourly readings from this meter to track Robbins pumping rates.

Appendix I

Driller's reports for wells near Warfield Hot Springs.

Basin 37 ID 341413
Application
Per 76943

Form 238-7
11/97

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

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

1. WELL TAG NO. 00016401
DRILLING PERMIT NO. ____-____-____-_____-____
Other IDWR No. _____

2. OWNER:
Name REUTHER, STEVE
Address 4000 WARNER BLVD STE B166
City BURBANK State CA Zip 91522

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 4 North ☒ or South ☐
Rge. 17 East ☒ or West ☐
Sec. 31, ____ 1/4 NW 1/4 NW 1/4
Gov't Lot ____ County BLAINE
Lat: : : Long: : :
Address of Well Site 1039 WARM SPRINGS ROAD
City KETCHUM
(Give at least name of road + Distance to Road or Landmark)

Lt. 1 Blk. _____ Sub. Name WARFIELD HOT SPRINGS

4. USE:
☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD
☒ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
BENTONITE	0	12	450 LBS	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
5.625	+1	35	250	STEEL	☒	☐	☒	☐
5.625	37	100	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
60	99	.125	45	5.625	STEEL	☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
____ ft. below ground Artesian pressure _____ lb.
Depth flow encountered _____ ft. Describe access port or control devices: CAP

11. WELL TESTS:
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
+-15			

Water Temp. 59 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	Water Y	Water N
6	0	12	DECOMPOSED SAND GRANITE		X
	12	23	DECOMPOSED GRANITE		X
	23	29	DECOMPOSED GRANITE FIRM		X
	29	39	HARD GREY GRANITE		X
	39	47	GREY GRANITE QUARTZ		X
	47	55	GREY BLACK GRANITE		X
	55	60	HARD GREY GRANITE		X
	60	62	SOFT WHITE GRANITE	X	
	62	78	SOFT GREY BLACK	X	
	78	81	HARD BLACK		X
	81	91	SOFT BLACK GRANITE	X	
	91	100	HARD GREY GRANITE		X

RECEIVED
JUL 17 2001
Department of Water Resources
Southern Region

RECEIVED
JUL 23 2001
Department of Water Resources

Completed Depth 100 (Measurable)
Date: Started 06/04/01 Completed 06/19/01

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 WALKER WATER SYSTEMS INC. Firm No. _____
Firm Official Robert B. Walker Date 07/16/01
and
Driller or Operator _____ Date 07/16/01
(Signature of Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Well #341413

Form 238-7
11/97

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

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

1. WELL TAG NO. D0034154
DRILLING PERMIT NO. ___-___-___ 819949
Other IDWR No. ID 390616

2. OWNER:
Name Reuther Steve
Address P.O. Box 4897
City Ketchum State ID Zip 83340

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S — X

Twp. 04 North ☒ or South ☐
Rge. 16 East ☒ or West ☐
Sec. 36 1/4 NE 1/4 NE 1/4 (10 acres / 40 acres / 160 acres)
Gov't Lot ____ County Blaine
Lat: : : Long: : :
Address of Well Site 1039 Warm Springs (Name of road + Distance to Road or Landmark)
City Ketchum
Lt. 1A Blk. ____ Sub. Name Warfield Hot Springs

4. USE:
☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other ____

5. TYPE OF WORK check all that apply (Replacement etc.)
☐ New Well ☐ Modify ☐ Abandonment ☒ Other Replacement

6. DRILL METHOD
☒ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other ____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	19	17Sks	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
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

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:
35 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
6			1 hour

Water Temp. 70 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	Water Y	Water N
10	0	4	Top Soil		X
10	4	19	Granite		X
6	19	110	Granite		X
6	110	116	Black Slate		X
6	116	161	Granite		X
6	161	170	Black Slate		X
6	170	175	Granite		X
6	175	185	Brown Shale	X	
6	185	190	Granite		X

RECEIVED
JUL 22 2004
Department of Water Resources
Southern Region

Completed Depth 190' (Measurable)
Date: Started 07-14-04 Completed 07-15-04

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 Wood River Drilling & Pump, Inc. Firm No. 265
Firm Official Kelson Smith Date 07-20-04
and
Driller or Operator ____ Date ____
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Well #390616

Basin 37 ID 341570 SO 24014
App 86684? Per 76954C

Form 238-7
11/97

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

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

1. WELL TAG NO. ID 0016402
DRILLING PERMIT NO. ____-____-____-____
Other IDWR No. _____

2. OWNER:
Name HEUSNER, STEVE
Address 400 WARNER BLVD STE B166
City BURBANK State CA Zip 91522

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 4 North ☒ or South ☐
Rge. 17 East ☒ or West ☐
Sec. 31, 1/4 NW 1/4 NW 1/4 (10 acres / 40 acres / 160 acres)
Gov't Lot ____ County BLAINE
Lat: : : Long: : :
Address of Well Site 1039 WARM SPRINGS ROAD
City KETCHUM
(Give at least name of road + Distance to Road or Landmark)

Lt. 1 Blk. _____ Sub. Name WARFIELD HOT SPRINGS

4. USE:
☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD
☒ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
BENTONITE	0	18	200 LBS	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
6.625	+1	27.5	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
20	25	.25	+-50	6.625	STEEL	☒	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
11 ft. below ground Artesian pressure _____ lb.
Depth flow encountered _____ ft. Describe access port or control devices: CAP

11. WELL TESTS:
☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
+-8			

Water Temp. 50 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	Water Y	Water N
8	0	5	FILL		X
	5	10	SOIL		X
	10	15	SAND CLAY GRAVEL	X	
	15	16	GRAVEL SHALE	X	
6	18	20	GRAVEL SHALE	X	
	20	23	SHALE CLAY	X	
	24	26	DECOMPOSED SHALE	X	
	26	27.5	SOLID ROCK	X	

RECEIVED
JUL 27 2001
Department of Water Resources

RECEIVED
JUL 25 2001
Department of Water Resources
Southern Region

Completed Depth 27.5 (Measurable)
Date: Started 06/22/01 Completed 06/22/01

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 WALKER WATER SYSTEMS INC. Firm No. _____
Firm Official _____ Date 07/16/01
and
Driller or Operator _____ Date 07/16/01
(Signature of Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Well #341570

Form 238-7
6/89

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name Bill Babcock- John Daley

Address Rt. 3 Box 6610 Twin Falls, Id. 83303

Owner's Permit No. 37-89-S-102

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Well diameter increase
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☒ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	6 inches +	1 feet	28 feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

Was casing drive shoe used? ☒ Yes ☐ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☐ Yes ☒ No
How perforated? ☐ Factory ☐ Knife ☐ Torch ☐ Gun
Size of perforation _____ inches by _____ inches

Number	From	To
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ____ Slot size ____ Set from _____ feet to _____ feet
Diameter ____ Slot size ____ Set from _____ feet to _____ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth 20 Material used in seal: ☐ Cement grout
☒ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing
☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld
☐ Cemented between strata
Describe access port _____

6. LOCATION OF WELL

Sketch map location must agree with written location.

N / W / E

Subdivision Name _____
Lot No. _____ Block No. _____

County BLAINE
SE ¼ NE ¼ Sec. 36, T. 4 N ☒ S ☐, R. 16 E ☒ W ☐

7. WATER LEVEL

Static water level 10 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature _____ °F. Quality good
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☒ Bailer ☐ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
12	20	1

9. LITHOLOGIC LOG

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
8	0	5	Top soil		x
6	5	28	Gravel and boulders	x	

RECEIVED
NOV 2 1989
Department of Water Resources
Southern Region Office

RECEIVED
NOV 8 1989
Department of Water Resources

10. Work started 10-16-89 finished 10-19-89

11. DRILLERS CERTIFICATION DL

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

Firm Name Wood River Drilling & Pump Firm No 265
Address Box 1165 Hailey, ID 83333 Date 10-31-89
Signed by (Firm Official) Ken Smith
and
(Operator) Ken Smith

RECEIVED
DEC 12 1991

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

Well #314319

Form 238-7
9/82

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name Marvin Burrow

Address Warm Springs Ketchum Ida.

Owner's Permit No. _____

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☒ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	6 inches +	1 feet	27 feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

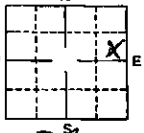
Was casing drive shoe used? ☐ Yes ☒ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☒ Yes ☐ No
How perforated? ☐ Factory ☒ Knife ☐ Torch
Size of perforation 1/4 inches by 1/2 inches

Number	From	To
20 perforations	22 feet	27 feet
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ____ Slot size ____ Set from _____ feet to _____ feet
Diameter ____ Slot size ____ Set from _____ feet to _____ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth 20 Material used in seal: ☐ Cement grout
☒ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☒ Temp. surface casing
☐ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld
☐ Cemented between strata
Describe access port _____

6. LOCATION OF WELL

Sketch map location must agree with written location



Subdivision Name _____
Lot No. _____ Block No. _____
County Blaine
SE ¼ NE ¼ Sec. 36, T. 4 ☐ N ☒ S, R. 16 ☐ E ☒ W.

7. WATER LEVEL

Static water level 4 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature ____ °F. Quality Good
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☒ Bailer ☐ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
15	14	1

9. LITHOLOGIC LOG

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
8	0	2	Top Soil		x
8	2	25	Boulders		x
6	25	27	Gravel	x	

JUN 10 1987
Department of Water Resources

RECEIVED
MAY 26 1987
Department of Water Resources
Southern Region Office

10.

Work started Sept. 15 86 finished Sept. 18 86

11. DRILLERS CERTIFICATION

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

WOOD RIVER DRILLING AND PUMP Firm No. 265
Firm BOX 1165 788-3163
Address HAILEY, IDAHO 83333 Date 9-10-86
Signed by (Firm Official) Ken Smith
and
(Operator) Gary Jones

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

MAR 09 1988

Well #356355

Form 238-7
4/92

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER
Name LARRY LEONI - JOE SHELTON
Address 1802 KIMBERLY RD TWIN FALLS ID 83301
Drilling Permit No. 37-93-S-0113-000
Water Right Permit No. _____

2. NATURE OF WORK
☑ New well ☐ Deepened ☐ Replacement
☐ Well diameter increase ☐ Modification
☐ Abandoned (describe abandonment or modification procedures such as liners, screen, materials, plug depths, etc. in lithologic log, section 9.)

3. PROPOSED USE
☑ Domestic ☐ Irrigation ☐ Monitor
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED
☑ Rotary ☐ Air ☐ Auger ☐ Reverse rotary
☐ Cable ☐ Mud ☐ Other _____ (backhoe, hydraulic, etc.)

5. WELL CONSTRUCTION
Casing schedule: ☑ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	6" inches	+ 1½ feet	27 feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

Was casing drive shoe used? ☑ Yes ☐ No
Was a packer or seal used? ☐ Yes ☑ No
Perforated? ☑ Yes ☐ No
How perforated? ☐ Factory ☑ Knife ☐ Torch ☐ Gun
Size of perforation? ¼ inches by 3 inches

Number		From	To	
70	perforations	21 feet	76	feet
_____	perforations	_____ feet	_____	feet
_____	perforations	_____ feet	_____	feet

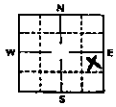
Well screen installed? ☐ Yes ☑ No
Manufacturer _____ Type _____
Top Packer or Headpipe _____
Bottom of Tailpipe _____

Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Gravel packed? ☐ Yes ☑ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet

Surface seal depth 20 Material used in seal: ☐ Cement grout
☑ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit
☑ Temp. surface casing ☑ Overbore to seal depth
Method of joining casing: ☐ Threaded ☑ Welded
☐ Solvent Weld ☐ Cemented between strata

Describe access port _____

6. LOCATION OF WELL
Sketch map location must agree with written location.



Subdivision Name _____
Lot No. _____ Block No. _____
County BLAINE
Address of Well Site 1001 WARM SPRINGS RD
(give at least name of road)
NE ¼ SE ¼ Sec. 36 T. 04 N ☑ or S ☐ R. 16 E ☑ or W ☐

7. WATER LEVEL
Static water level 6 feet below land surface.
Flowing? ☐ Yes ☑ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug NONE
Temperature 62 °F. Quality good
Describe artesian or temperature zones below.

8. WELL TEST DATA
☐ Pump ☐ Bailer ☑ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
1	190	1

9. LITHOLOGIC LOG 10/2010

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
8-6	0	1	TOPSOIL		✓
8-6	1	17	SAND & GRAVEL	✓	
8-6	17	24	BROKEN LIMESTONE		✓
6	24	150	LIMESTONE 50'	✓	
6	150	180	GRANITE		✓

RECEIVED
AUG 31 1993
Department of Water Resources
Southern Region Office

RECEIVED
AUG 12 1993
Department of Water Resources
Southern Region Office

FEB 09 1994

10. Work started 7-28-93 finished 7-29-93

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

Firm Name _____ Firm No. 265
Address WOOD RIVER DRILLING & PUMP Date 8-11-93
BOX 837
Signed by Drilling Supervisor BELLEVUE, ID 83313 Ron Smith
and
(Operator) Bill McHargue
(If different than the Drilling Supervisor)

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

Well #313705

Form 238-7 4/92

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

RECEIVED AUG 16 1993

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER
Name MARK HAWKINSON
Address PO BOX 5146 Ketchum, ID 83340
Drilling Permit No. 37-93-S-0117-000
Water Right Permit No. _____

2. NATURE OF WORK
☒ New well ☐ Deepened ☐ Replacement
☐ Well diameter increase ☐ Modification
☐ Abandoned (describe abandonment or modification procedures such as liners, screen, materials, plug depths, etc. in lithologic log, section 9.)

3. PROPOSED USE
☒ Domestic ☐ Irrigation ☐ Monitor
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED
☒ Rotary ☐ Air ☐ Auger ☐ Reverse rotary
☐ Cable ☐ Mud ☐ Other _____ (backhoe, hydraulic, etc.)

5. WELL CONSTRUCTION
Casing schedule: ☒ Steel ☐ Concrete ☐ Other PVC

Thickness	Diameter	From	To
.250 inches	6 inches	+ 1.5 feet	20 feet
.250 inches	3.00 inches PVC	1.0 feet	60 feet
_____ inches	_____ inches	_____ feet	_____ feet

Was casing drive shoe used? ☐ Yes ☒ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☒ Yes ☐ No SAW
How perforated? ☐ Factory ☐ Knife ☐ Torch ☐ Gun
Size of perforation? 1/8 inches by 3 inches

Number		From	To
100	perforations	10 feet	60 feet
_____	perforations	_____ feet	_____ feet
_____	perforations	_____ feet	_____ feet

Well screen installed? ☐ Yes ☒ No
Manufacturer _____ Type _____
Top Packer or Headpipe _____
Bottom of Tailpipe _____

Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet

Surface seal depth 20 Material used in seal: ☐ Cement grout
☒ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit
☒ Temp. surface casing ☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded
☐ Solvent Weld ☐ Cemented between strata

Describe access port _____

6. LOCATION OF WELL
Sketch map location must agree with written location.

N K W E S

Subdivision Name _____
Lot No. _____ Block No. _____
County BLAINE
Address of Well Site Warm Springs Rd.
(give at least name of road)
NE ¼ NE ¼ Sec. 36, T. 4 N ☒ or S ☐, R. 16 E ☒ or W ☐

7. WATER LEVEL
Static water level 12 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug NONE
Temperature _____ °F. Quality _____
Describe artesian or temperature zones below.

8. WELL TEST DATA
☐ Pump ☐ Bailer ☒ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
12	50 ft	1

9. LITHOLOGIC LOG 107009

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
24-6	0	3	TOPSOIL		✓
9-6	3	12	GRAVEL	✓	
9-6	12	15	BROKEN LIMESTONE	✓	
8-6	15	18	GRAVEL	✓	
60	18	60	LIMESTONE & QUARTZ	✓	

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Southern Region

FEB 09 1994

10. Work started 7-26-93 finished 7-27-93

11. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.
Firm Name WOOD RIVER DRILLING & PUMP Firm No. 265
Address BOX 837 Date 7-28-93
BELLEVUE, ID 83313
Signed by Drilling Supervisor _____
and
(Operator) _____
(If different than the Driller Supervisor)

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

Well #313709

065305

Form 238-7
11/92

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

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

1. WELL TAG NO. D _____
DRILLING PERMIT NO. 37-98-S-0055-000
Other IDWR No. 00002538

2. OWNER:
Name COINER, ANN
Address GENERAL DELIVERY
City KETCHUM State ID Zip 83340

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 4 North ☒ or South ☐
Rge. 16 East ☒ or West ☐
Sec. 36, ____ (10 acres) 1/4 SE (40 acres) 1/4 NE (160 acres) 1/4
Gov't Lot ____ County BLAINE
Lat: : : Long: : :
Address of Well Site 987 WARM SPRINGS
City KETCHUM
(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 etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD
☒ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
BENTONITE	0	19	450	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
6.625	18	33.5	.250	STEEL	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS
☒ Perforations Method Air Knife
Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
19.5	30	.125	65	6.625	STEEL	☒	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
4 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
10			

Water Temp. 46 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	Water Y	Water N
6	0	5	SOIL & GRAVEL	Y	
	5	11	SMALL GRAVEL	Y	
	11	30	GRAVEL & BOULDERS	Y	
	30	33.5	GRAVEL & BOULDERS		Y
	33.5		BLACK LIMESTONE CALCITE		Y

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Southern Region

MICROFILMED
SEP 23 1998

Completed Depth 33.5 (Measurable)
Date: Started 06/26/98 Completed 06/26/98

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 WALKER WATER SYSTEMS INC. Firm No. 15
Firm Official _____ Date 06/29/98
and
Driller or Operator _____ Date 06/29/98
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Well#313069

Form 238-7
1/94

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Use Typewriter or Ball Point Pen

1. DRILLING PERMIT NO. 37-94-S 0094 - 000
Other IDWR No.

2. OWNER:
Name ERNEST RALLS
Address HC RO-1 BOX 902
City PINE State AZ Zip 85544

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

Twp. 4 North ☑ or South ☐
Rge. 16 East ☑ or West ☐
Sec. 36, NE 1/4 SE 1/4 1/4
Gov't Lot ____ County BLAINE

Address of Well Site 946 WARM SPRINGS RD City
(Give at least name of road + Distance to Road or Landmark)

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 Material	From	To	AMOUNT Sacks or Pounds	METHOD
BENTONITE	0	20	12.5 LBS	OVER BORE

Was drive shoe used? Y ☑ N ☐
Was drive shoe seal tested? Y ☐ N ☑ How?

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	+1½	37	280	STEEL	☑	☐	☑	☐
5	20	60		PVC	☐	☑	☐	☐
					☐	☐	☐	☐

Length of Headpipe ____ Length of Tailpipe ____

9. PERFORATIONS/SCREENS
☑ Perforations Method SAW
☐ Screens Screen Type

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
20	60	14	20	5"	PVC		☑
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
18 ft. below ground Artesian pressure ____ lb.
Depth flow encountered ____ ft. Describe access port or control devices:

11. WELL TESTS: 56028
☐ Pump ☐ Bailer ☑ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
20		50	1

Water Temp. ____ Bottom hole temp. ____
Water Quality test or comments: ____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
8-6	0	8	TOP SOIL		☑
8-6	8	23	GRAVEL & CLAY	☑	
6	23	28	BOULDERS	☑	
6	28	36	GRAVEL & CLAY	☑	
6	36	60	LIMESTONE, QUARTZ	☑	

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Department of Water Resources
Southern Region Office

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AUG 15
Department of Water Resources

MAY 08 1995

Completed Depth 60 (Measurable)
Date: Started 4-15-94 Completed 4-15-94

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 WOOD RIVER DRILLING & PUMP Firm No. 265
BOX 837
Firm Official Ken Smith BELLEVUE, ID. 83313 Date 7-28-94
and
Supervisor or Operator Ken Smith Date 7-28-94
(Sign once if Firm Official is Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Well #313093