

Edl, Michele

From: Neely, Ken
Sent: Wednesday, March 14, 2012 8:19 AM
To: Edl, Michele
Subject: RE: Chicken Soup Spring

Michele,

We don't have much on the springs, but it is in the database (see attached). The database references the St Marie and others report which is at this link: http://www.energy.idaho.gov/informationresources/d/exam_eval_200209.pdf

Ken

From: Edl, Michele
Sent: Tuesday, March 13, 2012 4:13 PM
To: Neely, Ken
Subject: Chicken Soup Spring

Ken,
I am wrapping up a license for the City of Lava Hot Springs. The source water is locally known as Chicken Soup Springs. I couldn't find anything in the geothermal database and I think I am querying correctly.

- 1) Do you know something about these springs I don't see in the database?
- 2) Do you want to be notified when I think I have found a data gap?

Michele

Find Site

Find Station: 09S 38E 22CCC1S

GeoForms Version 2.2, 10/09/2011 A.D

ID

Station 09S 38E 22CCC1S

PLSS: SWSWSW

Long -112.008000

Lat 42.619000

ConstDate

ne

Chicken Soup Springs

IDTM X 2663367.01

Y 1270653.93

Locate

WellID:

Log

NWIS

Loc Method: PLSS-QQ Centroid

Accuracy (M): 200

dXY:

M

Metal Tag

ef

Jim St. Marie

Water Uses

Thermal Uses:

Type s

Aguifer:

Depth

ft

Temp

C

SEE REMARKS

Unused

Map:

Not Update

Temp Date

County Bannock

Status: Checked - Needs Field Visit 1

Temp Source

Discharge

gpm

Site Location

Comments

Coordinates estimated from screen map.

Reference

Comments

There was once a well by the spring but a flood washed it away. According to St. Marie, the spring is about 1.5 cfs and it currently discharging 100% into the river.

Bottom Temp

C

Temp Date

Temp Source

REFERENCE

Change By kneely

Change Date 8/29/2007 1:55:36 PM

GeoWellID: 3332

Examination and Evaluation of Geothermal Sites in the State of Idaho with Emphasis Given to Potential for Electrical Generation or Direct Use

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ONLY THE MOST PERTINENT PAGES OF THE DOCUMENT ARE ATTACHED

different level in the well. Temperature profiles could be useful for predicting if the temperature of water from a well might be increased through the judicious use of well casing.

2. Lava Hot Springs (Bannock County)

Overview

The City of Lava Hot Springs (population ~500) is located in Bannock County approximately 30 miles southeast of Pocatello. One of Idaho's truly historic resort areas, Lava Hot Springs centers around the renowned geothermal soaking pools that were used for centuries by Native Americans and which were deeded to the state in 1902 as a health and recreation facility. The State of Idaho, through the Lava Hot Springs Foundation, currently owns and operates the springs (Figure 6). These soaking pools, along with the geothermally-heated Olympic swimming pool complex (also operated by the Lava Hot Springs Foundation), are the basis for the town's resort status. According to the IDWR water rights, the soaking pools utilize 3 cubic feet per second (cfs), which is equivalent to 1346 gpm. The water in the pools is approximately 41° C. Because the sand bottom of the soaking pools covers the spring vents, a direct temperature measurement is not practical. The well that feeds the heat exchanger for the Olympic-size swimming pool has a water right for 0.5 cfs (224 gpm). According to Mark Lowe, director of the Lava Hot Springs Foundation, this water is used only for heating the water in the swimming pool, and discharges into the Portneuf River after it is used.

A number of local businesses, primarily hotels and motels, divert geothermal water from local hot springs and from shallow (less than 100') wells for space heating and for soaking tubs and pools for their guests. In addition, many private residences have soaking tubs built over geothermal springs and wells. The majority of these sites seem to be within a couple hundred feet of the Portneuf River (Figure 6).

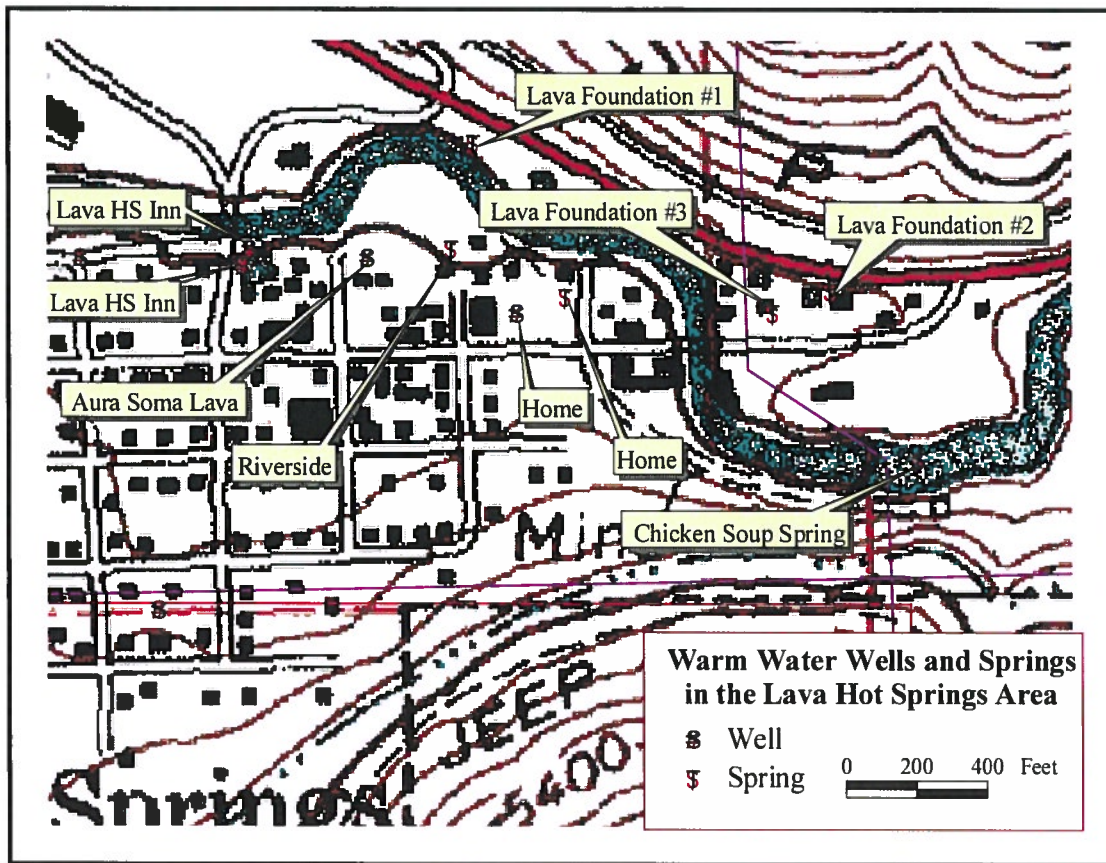


Figure 6. Warm water wells and springs in the Lava Hot Springs Area, Idaho.

At one time, the City of Lava Hot Springs piped geothermal water from the Chicken Soup Spring (the name used by local residents) just east of town. A well was drilled at the Chicken Soup spring to provide water for the city. This well was washed out when the Portneuf River flooded some years ago (none of the local residents spoken to during the reconnaissance trip were able to remember the exact year). The spring discharges from the riverbank with an estimated flow of 1.5 cfs (673 gpm). The temperature of the water was 47° C in August, 2002. The spring is at the end of a dirt road and a dilapidated chain-link fence partially surrounds the site. Schwarze (1960) describes a series of north-south trending normal faults in the area. These faults are likely candidates for the geothermal fluid conduits. However, the hydrogeology of the geothermal system in the Lava Hot Springs area has not been studied in detail and, therefore, is poorly understood.

Site Development

The city of Lava Hot Springs has potential for a space heating project and a district heating program. Mark Lowe indicated that the Community Center, located on the north side of the river, might be re-fitted for geothermal heat. The line from

State Pump House #1 runs north of the Community Center and into the Olympic swimming pool. It may be possible to tap into this line and deliver geothermal water to heat the Community Center.

The Chicken Soup spring, which was previously used for recreation and snow melt, could again be used as a source of geothermal fluids for the town for heating a small number of buildings in the city's downtown area, depending upon the water rights that could be obtained for the spring. The City of Lava Hot Springs has constructed a pipeline from the Chicken Soup Springs to the Lava Spa Motel, and has a lease with this facility to deliver 40 gpm to be used in hot tubs. However, the Lava Spa Motel has not purchased hot tubs so the water is currently returned to the river from the pipeline.

It is strongly recommended that any new development does not divert more water than is currently being discharged by the spring. Any additional development of the geothermal resource underlying the city must be prefaced with a thorough hydrogeological study of the resource. The reason for this is plain: The economic survival of the city is intimately tied to the geothermal resource. Any alteration, however minor, to the geothermal resource could result in an economic damage to the city and its residents, especially if the flow to the soaking pools of the Lava Hot Springs Foundation were reduced. A technical study would require the drilling of a number of test and monitoring wells and the performance of well-interference tests. If such a study shows that additional water can be withdrawn without damaging the flow to the resort, hotels, and local residents, then further exploitation of the resource may be feasible.

Recommendations

The city of Lava Hot Springs sits on a highly attractive geothermal resource. However, the intimate economic ties that the city has to that resource make it difficult to recommend further development because of the potential effects on the existing uses. This is not a simple case of conflicting water rights, but a potential irreversible damage to the city's livelihood. However, the water discharging into the Portneuf River from Chicken Soup Spring is presently unused, and utilization at its current discharge rate would not adversely affect the city's geothermal resource. The discharge should be enough to heat at least one building, if not several buildings, in the downtown area. Candidates for heating may include City buildings, the Lava Hot Springs Museum, or other public buildings. A hydrogeologic study of the geothermal resource in this area must be conducted as an initial phase of a district-heating project.

A study of the resource was performed by G. Bloomquist of Washington State University, but the results of that study have not yet been received by the IWRRI or the IDWR.

3. Bruneau Dunes State Park (Owyhee County)

Overview

The Idaho Department of Parks and Recreation (IDP&R) operates the Bruneau Dunes State Park in Owyhee County. A low temperature geothermal well in the park is currently being used for irrigation. The IDP&R would like to develop this resource for heating a new interpretive center. The well is 990 feet deep, and has a temperature of approximately 37° C. The discharge listed on the IDWR Well Driller's Report is 132 gpm.

Aaron Boston, IDP&R Engineer, indicated that this well is prone to severe drawdown during the summer months, with subsequent recharge to "normal" levels during the winter and spring; this seasonal fluctuation may affect the discharge rate. According to Mr. Boston, the temperature of the well does not seem to vary greatly through this cycle. There may be reasons for this pattern. First, the IDP&R may be pumping too much water from the well. Therefore, use of the water from this well for heating may require the drilling of another well for irrigation. Second, the aquifer may be unconfined, with significant surface recharge due to infiltration of rainwater and snowmelt in the wet months. This may indicate a source of geothermal heat that is independent of the source of the water. If so, a system of down-hole heat exchangers might be used to heat the park buildings.

Recommendations

According to IDP&R Engineer Aaron Boston, the Department of Parks and Recreation is not currently ready for this type of development. However, some preliminary work could be accomplished now in preparation for future development. The use of geothermal by a state agency in a scientific interpretive center would project a favorable image of geothermal heat in Idaho.

Summary for Direct Use

The Cascade, Lava Hot Springs, and Bruneau Sand Dunes sites are the leading candidates for direct-use development projects in Idaho. The potential for development at these sites is fair to excellent. However, each site has barriers to development that will have to be overcome before district heating or other direct use applications become a reality. In addition to these three sites, a number of other places in Idaho have been studied for district heating projects. Contact the Idaho Department of Water Resources (208-327-7900 or geothermalinfo@idwr.state.id.us)