State Department of Geology and Mineral Industries

1069 State Office Building
Portland 1, Oregon

BREITENBUSH HOT SPRINGS CINNABAR PROSPECT MARION COUNTY

Location

Sec. 20, T. 9 S., R. 7 E., 11 miles by road north from Detroit, Oregon, on the Breitenbush River.

The area is a hot spring health and recreation resort comprising 160 acres of private land. Forest Service land used for summer homes and camping is located about half a mile from the prospect.

Numerous hot springs crop out along the hillside south of the river, and one spring is located on the north side of the river. The springs parallel a hard dike (?) of basalt having a lineation of approximately N. 75° E.

Considerable alteration of the rock by the hot springs occurs in the spring area. However only in the immediate area of the springs has the subsurface material been exposed by excavation to improve the spring flow.

Mineralization is quite consistent over the exposed area, but in the basalt dike some cavities have been filled with metacinnabar.

The stratigraphy in the immediate spring area has been obscured by surface soils, vegetation, and alteration. In the river and along prominent roadcuts are good exposures of tuff with large glass shards. It is probable that most of the area is underlain by this Breitenbush tuff formation.

The results of the sampling indicate that extensive augering or drilling is needed to reveal the extent of the mineralization.

Qualitative examination of samples taken at Breitenbush Hot Springs in the vicinity of the openings of the upper springs area:

Sample #1. Zone surrounding spring shows intense alteration of volcanic rocks. Possibly volcanic breccia or tuff breccia; so completely altered identification not certain. Overlying rock cream to bright red color. Showed moderate smoke on willemite screen. Black deposits near orifice of spring showed much smoke.

Sample #2. Taken at north end of trench excavated along face of hill. Springs coming out in this vicinity have deposited much black sooty material, opaline coatings, and pods and seams of metacinnabar. Black sooty material showed slight smoke. Greenish weathered tuff showed good smoke.

Sample #3. White crusty material, some black coating. Little smoke, much organic odor.

Sample #4. Black sandy soil dug from mouth of spring. Much smoke.

Sample #5. Fractured basalt dike running parallel to springs. Fractures coated with opal, black sooty material, and red crusty substance. Moderate to much smoke.

Sample #6. Black sooty material from dump. Some opal. Gives much smoke.

Sample #7. Greenish weathered and altered pebbly rock, possibly a tuff. Very much smoke.

Sample #8. Yellow stain on gray spheroidally weathered and altered volcanic cobble of basalt. Light smoke.

Sample #9. Vein of metacinnabar and pyrite in abundant concentration. Extremely high smoke.

Sample #10. White altered tuff adjacent to power house. Light smoke.

Sample #11. (1) Soil from hillside off forest road. Slight trace.

Sample #12. (2) Soil from bottom of hill. Slight trace.

Sample #13. (Location ?) Red andesite - altered. Slight trace.

Samples from Breitenbush assayed by the Department are as follows:

Sample No.	Lb. Hg/ton	Description
P-29126	165.6	Metacinnabar.
P-29237	Nil	Basalt with zeolites.
P-29238	.30	Brown weathered andesite and clay.
P-29265	6.40	Black mud from spring.
P-29303	3.2	Green tuffs from Million Dollar Spring.

Report by: Herbert G. Schlicker
June 24, 1964

DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

ADMINISTRATIVE OFFICE

1069 STATE OFFICE BLDG. • PORTLAND, OREGON • 97201 • Ph. (503) 226-2161 Ext. 488

TOM McCALL
GOVERNOR

BREITENBUSH HOT SPRINGS — Marion County

Location: Located along the Breitenbush River on a gravel road about 2 miles from the end of the pavement and 11 miles from Detroit in the N½ sec. 20, T. 9 S., R. 7 E., Marion County. The springs are on both sides of the river.

Ownership: There are two developed spas in the area. A smaller development on the west edge of the thermal field consisting of a bath house and several small cabins is on a Forest Service lease. The rest is on private land.

A full section of land is owned by Mr. Buckman (?) who has given options to buy the Hot Springs to several parties over the years. Presently The Breitenbush Hot Springs Corporation, a stock company, has an option to purchase the land and is trying to promote it as a resort.

Geology: Most of the springs are on the south side of the river and around the toe of a large landslide. Informants report there are around 60 springs with temperatures ranging from cold to 198 F. Numerous gas vents are discharging around the upper part of the landslide. There is a slight H_2S odor at places. At the base of the slide, about 10 feet above river level, is a calcareous sinter deposit 6-8 feet thick and a quarter of a mile long; several hot springs are discharging along this terrace.

The sinter deposit from Castle Springs shows 0.5 ppm Hg. Several of the springs are precipitating mercury in large concentrations, and during 1965-66 extensive prospecting and bulldozing were done in the area in an attempt to find a commercial deposit of mercury. This was unsuccessful.

Reference: Waring (1965) in Prof. Paper 492 says discharge is 900 gpm from about 40 springs.

Visited by: R. G. Bowen
May 4, 1970

STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

2033 First Street
Baker, Oregon 97814

1069 State Office Building
Portland, Oregon 97201

521 N. E. "E" Street
Grants Pass, Oregon 97526

Date 14 May 1970

DOGAMI - Bowen

Field Lab. No. P- 34842

General Lab. No. Calcareous sinter

Spec. Lab. No. from "Castle Spring"

QUALITATIVE SPECTROGRAPHIC ANALYSIS
(Quantities estimated to nearest power of ten)

1. Elements present in concentrations over 10%

Calcium, Silicon (low),

2. Elements present in concentrations 10% to 1%

---

3. Elements present in concentrations 1% to 0.1%

Iron, Manganese (high), Arsenic,

4. Elements present in concentrations 0.1% to .01%

Magnesium, Sodium, Potasssium,
Barium, Strontium,

5. Elements present in concentrations .01% to .001%

Copper, Boron,

6. Elements present in concentrations below .001%

Beryllium,

Mercury _____

Radioactivity _____

Charge _____

Thomas C. Matthews, Spectroscopist

STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

2033 First Street
Baker, Oregon 97814

1069 State Office Building
Portland, Oregon 97201

521 N. E. "E" Street
Grants Pass, Oregon 97526

Date 14 May 1970

DOGAMI - Dick Bowen

Field Lab. No. Pipe deposit Breitenbush HS

General Lab. No. P-34841

Spec. Lab. No.

QUALITATIVE SPECTROGRAPHIC ANALYSIS
(Quantities estimated to nearest power of ten)

Siliceous sinter deposit on overflow pipe at "Million dollar" spring near top of slide

1. Elements present in concentrations over 10%

   Silicon, Calcium,

2. Elements present in concentrations 10% to 1%

   Aluminum, Iron (low), Sodium, Arsenic,

3. Elements present in concentrations 1% to 0.1%

   Magnesium, Manganese,

4. Elements present in concentrations 0.1% to .01%

   Potassium, Titanium, Lead, Boron,

5. Elements present in concentrations .01% to .001%

   Copper, Barium, Strontium,

6. Elements present in concentrations below .001%

   Beryllium, Nickel,

Mercury

Radioactivity

Charge

Thomas C. Matthews, Spectroscopist

OREGON STATE BOARD OF HEALTH

Mineral Content of Water

CARD NO. 1 2 1

Name of Water Supply: Breitenbush Hot Springs — SYSTEM No. ___ X ___ 2-6

County: Marion — SAMPLE I.D. No. ___ 7-9

Source: Springs — 1 RAW, 2 TREATED, 3 BLEND, 4 ABANDONED ___ 10

Sampling Point: Castle Springs — Bottle No. ___

Collected By: R. Bowen — Date 5 X 4 X 70 11-16

Analysis By: AWH — Date 5 X 29 X 70 (MONTH, Day, YEAR)

Laboratory Number: 1684

NOTE: Double vertical line below shows location of decimal point.

*PHS Recommended max. **PHS Max. Allowable

Card No. 1, Card Columns 17-75

	mg/l, or as shown	
Color, units (15)*	0	17-18
Turbidity, JTU (5)*	0	19-22
Solids, Total (500)*	2333	23-26
Solids, Volatile	171	27-30
Carbon Dioxide		31-33
pH	79	34-36
Alkalinity, Total as $CaCO_3$	108	37-39
Hardness as $CaCO_3$	234	40-43
Calcium	92	44-47
Magnesium	10	48-51
Total Iron (0.3)*	015	52-54
Manganese (0.05)*	018	55-57
Arsenic (0.01)* (0.05)**	055	58-61
		62-68
		69-75

Card No. 2, Card Columns 17-75

	mg/l, or as shown	
Conductance (mc mho/cm)	3580	17-20
Chlorides (250)*	1180	21-24
Sodium	805	25-28
Potassium	38	29-31
Fluoride	382	32-34
Phosphates (Soluble Ortho)	< 001	35-37
Sulfates (250)*	129	38-41
Silicon	183	42-44
Aluminum	< 001	45-47
Nitrogen, Ammonia	053	48-50
Nitrogen, Nitrite	< 001	51-53
Nitrogen, Nitrate (45)*	≤ 005	54-57
Boron	055	58-61
Lithium	25	64-69
		70-75

REMARKS

State Department of Geology and Mineral Industries

UNIT 702 Woodlark Building
Portland, Oregon

GEOLOGICAL RECONNAISSANCE OF THE BREITENBUSH AREA MARION CO

General Area: Breitenbush Hot Springs

Owner: Joseph M. Healy, 801 S.W. Stark St., Portland, Oregon

Area: North Santiam

Location: NE¼, T. 9 S., R. 7 E.W.M. in Marion County, Oregon. One hundred and sixty acres including the Breitenbush Hot Spring resorts. Reached via State Highway 222 from Salem, Oregon.

Mineral Production: There is no recorded mineral production in the Breitenbush area. Small mines have operated intermittently from 1896 - 1930 in the areas known as the Lester Mining District and the Mineral Harbor District which are ~~south~~ north west 12 to 15 miles. Minerals mined in these adjacent districts were gold, silver, lead and zinc.

Geography: The Breitenbush area occupies a broad irregular intra-montane valley formed by the Breitenbush River and its tributaries, the main one being Devils Creek. The elevation of valley varies from 2000 feet to 2500 feet, with the peaks at the valley sides rising to 5000 feet. The only road into the area is a graveled forest road with moderate grades. The Breitenbush river which runs through the area is about 20 feet wide and 2 feet deep. Its flow is constant and part of it is diverted to operate small hydroelectric plants at the resorts. There are no deep snows in the winter and the summer climate is cool but equitable. An open forest of large coniferous trees covers the entire area. The only business activity at present is the operation of hot spring health resorts.

Geology: The area was mapped geologically previous to 1939 by Thomas P. Thayer,* and his report with accompanying maps published in 1939 by the State Department of Geology and Mineral Industries. Previous to this report the area was examined specifically for minerals of commercial interest. The area is cover

702 Woodlark Building
Portland, Oregon

except in the channel of the Breitenbush river with Quaternary gravels and boulder beds. Lavas of basaltic to andesitic composition occur as one or two flows outcropping in the channel of the Breitenbush river. These flows are part of the formation described by Thayer as the Breitenbush Tuff, a formation described as being made up of intercalated lava flows and volcanic tuff, mainly volcanic tuff. Hot springs emerge from the top of the flows and in one case the hot waters were found to be emerging from fissures in the flows.

Mineral Deposits: Several sheared zones in the lavas were found but examination showed little secondary enrichment and no minerals of commercial value. Dark sands in the Breitenbush river, Devils Creek and Mansfield creek were panned for gold and cinnabar content. None was found.

It appears that in the area examined and described above, the hot springs are the only mineral resources of economic importance. The area is generally not amenable to prospecting because of the deep gravels overlying the bedrock.

Report by: Wessley W. Paulsen, June 22-23, 1942

* Thayer, Thomas P., "Geology of the Salem Hills and the North Santiam River Basin, Oregon", Bulletin No. 15, State Dept. of Geology & Mineral Industries, 1939.