UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

HAWAII

basic data for thermal springs and wells as recorded in GEOTHERM

By

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INTRODUCTION

GEOTHERM, a computerized information system now offline, was used to maintain data on the geology, geochemistry and hydrology of geothermal sites primarily within the United States. The system was proposed at the First Geothermal Implementation Conference in New Zealand in 1974 (Swanson, 1977) and was active until 1983. The primary mission was to provide a broad informational framework for the Geothermal Research Program (Duffield and Guffanti, 1981). GEOTHERM was used to support national geothermal assessments--in 1978 (Muffler, 1979) and 1982 (Reed, 1983). It was however a public system and provided data to both public and private sectors. A detailed discussion on databases in GEOTHERM and a general scheme of how the information system operated can be found in Bliss and Rapport, 1983.

This report on Hawaii is one of a series intended to preserve the data collected for GEOTHERM and make the data available to the public. States with significant geochemical data for geothermal fluids will be covered in individual reports such as this. A report will also be issued to cover miscellaneous data collected for sites in the central and eastern United States. The data found in this series is also available as a data file on the internationally-available General Electric Mark III service, a timeshare network. Those interested in accessing that system should contact the Energy Resource Center, University of Oklahoma, Norman, Oklahoma 73070. It is anticipated that a portion of the data will also be available on magnetic tape from the National Technical Information Service, U. S. Department of Commerce, Springfield, VA 22161. It will not be available until after the completion of the open-file series.

GEOTHERM INDEX

A computer-generated index is found in appendices A of this report. The index give one line summaries of each GEOTHERM record describing the chemistry of geothermal springs and wells in the sample file for Hawaii. The index is found in appendix A (p. is sorted by county and by the name of the source. Also given are well number (when appropriate), site type (spring, well, fumarole), latitude, longitude (both use decimal minutes), GEOTHERM record identifier, and temperature (^{o}C). In conducting a search of Appendix A, site names are quite useful for locating springs or wells for which a specific name is commonly used, but sites which do not have specific names are more difficult to locate.

GEOTHERM SAMPLE FILE

GEOTHERM sample file contains 34 records for Hawaii (Table 1). The high average ambient air temperature found on the Hawaiian Islands required fluid samples to have a temperature of at least 30^{o} C to be included in this report. Records may be present which are duplicates for the same analyses. A record may contain

collection condition, flow rates, and the chemical and physical properties of the fluid. Stable and radioactive isotopic data are occasionally available. Some records may contain only location and temperature. When sufficient chemical data was available, the charge balance (percentage of difference in anion- and cation-milliequivalents) was computed and added to the record. Many of the numeric fields in the sample file can be directly qualified. The qualifier code precedes the number when appropriate. The codes and their meaning are given in Table 1.

Each thermal spring or well usually is represented by several records. This may document temporal changes in the geothermal fluids. Judgement on what constituted acceptable data was extremely complicated and the primary attempt was to insure that each GEOTHERM record faithfully reproduced the published data. On occasion, glaring inconsistencies or data clearly of poor quality were excluded. Regrettably, no database can be constructed or supported without the introduction of errors. The user, therefore, is advised to check with the published literature whenever possible. Users should carefully and critically evaluate the records they use.

This compilation should contain all of the chemical data for geothermal fluids in Hawaii published as of December, 1981. However, no claim is made for completeness, and published sources have probably been missed. One record in this list contains information which was unpublished at the time of data entry. A critically evaluated and corrected list of over 2000 records for the United States was extracted from the sample file and issued as a reference document for the national low-temperature geothermal resource assessment (Reed and others, 1983). This, along with a list of geothermal springs by Berry, and others (1980) may be helpful to some users.

GEOTHERM BIBLIOGRAPHY

A bibliography is given in Appendix B (p. 19). The abbreviated form of the reference (called code) is identifed as the record source in the full record list and is used to sort the entries in this appendix. Codes with a leading "*" identify records based on information which was unpublished at the time the record was prepared. Codes with a trailing "*" in the full GEOTHERM record are also described in greater detail in Appendix B and are listed ahead of published sources.

ACKNOWLEDGMENTS

Contributions and support to GEOTHERM have been made by many in both federal and state agencies. This includes the U.S. Department of Energy (and associated contractors), and U.S. National Oceanic and Atmospheric Administration. Data-entry forms for most sites in Hawaii were prepared by the staff of the U.S. Geological Survey. A magnetic tape containing some records given here was supplied by the Hawaii Institute of Geophysics.

REFERENCES CITED

Berry, G. W., Grim, P. J., and Ikelman, J. A., 1980, Thermal springs list for the United States: National Oceanic and Amospheric Administration, Key to Geophysical Records Document No. 12, 59 p.

Bliss, J. D., and Rapport, Amy, 1983, GEOTHERM: the U.S. Geological Survey geothermal information system: Computers & Geosciences, v. 9, no. 1, p. 35-39.

Duffield, W. A., and Guffanti, Marianne, 1981, The geothermal research program of the U.S. Geological Survey: U.S. Geological Survey Open-File Report 81-564, 108 p.

Muffler, L. J. P., ed., 1979, Assessment of geothermal resources of the United States--1978: U.S. Geological Survey Circular 790, 163 p.

Reed, M. J., ed., 1983, Assessment of low-temperature geothermal resources of the United States--1982: U.S. Geological Survey Circular 892.

Reed, M. J., Mariner, R. H., Brook, C. A., and Sorey, M. L., 1983, Selected data for low-temperature (less than 90°C) geothermal systems in the United States; reference data for U.S. Geological Survey Circular 892: U.S. Geological Survey Open-File Report 83-250, 129 p.

Swanson, J. R., 1977, GEOTHERM data file: Geothermal Resources Council Transactions, v. 1, p. 285.

TABLE 1

State of Hawaii: computer-generated listing of records describing geothermal-fluid samples. [A few records may be for cold springs or wells--this was to provide ground-water references for some studies.]

ORGANIZATION: Records are sorted by county and then by the name of the spring or well. Order is the same in Appendix A.

UTM: The UTM Easting label was omitted. The UTM Easting figure will be given directly below the the Northing label.

QUALIFICATION CODES: All numeric attributes may be qualified. The codes and their meaning:

L = less than

G = greater than

E = estimated

T = trace (no numeric value reported)

N = not detected (not followed by number)

Q = qualified (other data in qualification field)

R = midpoint of range (actual range in qualification field)

REFERENCE: An expanded citation of the reference is found in Appendix D. The abbreviated form used in this table is called "CODE" in the appendix. Unpublished sources are preceded with "*". Those which begin and end with a "*" are also found in Appendix D.

RECORD 00001

GEOTHERM SAMPLE FILE — GEOTHERM FILE ID: 0000300

NAME OF SAMPLE SOURCE... AIRSTRIP WELL
WELL/SPRING NUMBER..... 3081-01

LOCATION — TOWNSHIP-RANGE — COORDINATES
COUNTRY..... UNITED STATES — LAT/LONG... 19-30.4 N 154-51.9 W
STATE..... HAWAII
COUNTY..... HAWAII
MAP REFERENCE..... KAPOHO 1:24000

SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1975/01/06
TEMPERATURE (C)..... 36.8
WELL DEPTH (M)..... 86.9

WATER ANALYSIS
PH..... 7.42
ANALYSIS IN MG/L — ISOTOPES (O/OOO)

AL....		CR.....		MG...	28.		
B.....		F.....		NA...	238.	SIO2.	71.3
BE....		FE(TOT).		NB...		SO4..	204.
CA....	23.0	HCO3....	48.				
CL....	303.5						
CO....		K.....	13.6				

REFERENCE AND IDENTIFICATION
COMPILED BY..... LIEB, RANDY
COMPILER AFFILIATION... USGS
REFERENCE..... KROPNICK AND OTHERS, 1978

RECORD 00002

GEOTHERM SAMPLE FILE — GEOTHERM FILE ID: 0000301

NAME OF SAMPLE SOURCE... ALLISON WELL
WELL/SPRING NUMBER..... 2881-01

LOCATION — TOWNSHIP-RANGE — COORDINATES
COUNTRY..... UNITED STATES — LAT/LONG... 19-28.3 N 154-51.1 W
STATE..... HAWAII
COUNTY..... HAWAII
MAP REFERENCE..... KAPOHO 1:24000

SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1975/01/07
TEMPERATURE (C)..... 37.8
WELL DEPTH (M)..... 43.9

WATER ANALYSIS
PH..... 7.35
ANALYSIS IN MG/L — ISOTOPES (O/OOO)

AL....		CR.....		MG...	15.				
B.....		F.....		NA...	216.	SIO2.	24.1		
BE....		FE(TOT).		NB...		SO4..	69.2	TRITIUM (T.U.).....	12.9
CA....	13.4	HCO3....	132.						
CL....	281.								
CO....		K.....	10.8						

REFERENCE AND IDENTIFICATION
COMPILED BY..... LIEB, RANDY
COMPILER AFFILIATION... USGS
REFERENCE..... KROPNICK AND OTHERS, 1978

RECORD 00003

GEOTHERM_SAMPLE_FILE — GEOTHERM FILE ID: 0016692

NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL HGP-A
KGRA..... PUNA GEOTHERMAL FIELD

LOCATION — TOWNSHIP-RANGE — COORDINATES

COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1976/10/30
SAMPLE NUMBER..... HAWAII GEOTHERMAL HGP-A 1
POINT OF COLLECTION.. 692. M BELOW WELLHEAD

WATER ANALYSIS

PH..... 2.30
SPECIFIC CONDUCTANCE..... 3650.

ANALYSIS IN MG/L — ISOTOPES (0/00)

AG....	CO3.....	LI...	S....	210.	
B.....	F.....	NA...	SIO2.	630.	
CA+MG.	HG.....	0.0009			
CL....	685.				

REFERENCE AND IDENTIFICATION

COMPILED BY..... TESHIN, VICTOR N
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1977

RECORD 00004

GEOTHERM_SAMPLE_FILE — GEOTHERM FILE ID: 0016662

NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL HGP-A
KGRA..... PUNA GEOTHERMAL FIELD

LOCATION — TOWNSHIP-RANGE — COORDINATES

COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1976/10/30
SAMPLE NUMBER..... HAWAII GEOTHERMAL HGP-A R
POINT OF COLLECTION.. 1920. M BELOW WELLHEAD

WATER ANALYSIS

PH..... 3.50
SPECIFIC CONDUCTANCE..... 1650.

ANALYSIS IN MG/L — ISOTOPES (0/00)

AG....	CO3.....	LI...	S....	370.	
B.....	F.....	NA...	SIO2.	630.	
CA+MG.	HG.....	0.0097			
CL....	440.				

REFERENCE AND IDENTIFICATION

COMPILED BY..... SILVA, CHRISTOPHER L.
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1977

RECORD 00005

GEOTHERM_SAMPLE_FILE — GEOTHERM FILE ID: 0016661

NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL HGP-A
KGRA..... PUNA GEOTHERMAL FIELD
LOCATION TOWNSHIP-RANGE COORDINATES
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII
SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1976/08/19
SAMPLE NUMBER..... HAWAII GEOTHERMAL HGP-A Q
POINT OF COLLECTION.. 1920. M BELOW WELLHEAD
WATER ANALYSIS
PH..... 3.00
SPECIFIC CONDUCTANCE..... 2800.
ANALYSIS IN MG/L ISOTOPES (0/00)
B..... F..... NA... SIO2. 190.
CA+MG. HG..... 0.0016
CL... 660.
REFERENCE AND IDENTIFICATION
COMPILED BY..... SILVA, CHRISTOPHER L.
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1977

RECORD 00006

GEOTHERM SAMPLE FILE GEOTHERM FILE ID: 0016660
NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL HGP-A
KGRA..... PUNA GEOTHERMAL FIELD
LOCATION TOWNSHIP-RANGE COORDINATES
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII
SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1976/10/29
SAMPLE NUMBER..... HAWAII GEOTHERMAL HGP-A P
POINT OF COLLECTION.. 1770. M BELOW WELLHEAD
WATER ANALYSIS
PH..... 3.40
SPECIFIC CONDUCTANCE..... 2600.
ANALYSIS ISOTOPES (0/00)
AG.... CO3..... LI... S.... 210.
B..... F..... NA... SIO2. 630.
CA+MG. HG..... 0.0005
CL... 850.
REFERENCE AND IDENTIFICATION
COMPILED BY..... SILVA, CHRISTOPHER L.
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1977

RECORD 00007

GEOTHERM SAMPLE FILE GEOTHERM FILE ID: 0016659
NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL HGP-A
KGRA..... PUNA GEOTHERMAL FIELD
LOCATION TOWNSHIP-RANGE COORDINATES
COUNTRY..... UNITED STATES
STATE..... HAWAII

COUNTY..... HAWAII
SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1976/08/19
SAMPLE NUMBER..... HAWAII GEOTHERMAL HGP-A O
POINT OF COLLECTION.. 1770. M BELOW WELLHEAD
WATER ANALYSIS
PH..... 3.50
SPECIFIC CONDUCTANCE..... 2550.
ANALYSIS IN MG/L ISOTOPES (O/OO)
B..... F..... NA... SIO2. 430.
CL.... 780.
REFERENCE AND IDENTIFICATION
COMPILED BY..... SILVA, CHRISTOPHER L.
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1977

RECORD 00008

GEOTHERM SAMPLE FILE GEOTHERM FILE ID: 0016658
NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL HGP-A
KGRA..... PUNA GEOTHERMAL FIELD
LOCATION TOWNSHIP-RANGE COORDINATES
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII
SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1976/08/19
SAMPLE NUMBER..... HAWAII GEOTHERMAL HGP-A N
POINT OF COLLECTION.. 1770. M BELOW WELLHEAD
WATER ANALYSIS
PH..... 2.50
SPECIFIC CONDUCTANCE..... 4400.
ANALYSIS IN MG/L ISOTOPES (O/OO)
B..... F..... NA... SIO2. 340.
CA+MG. HG..... 0.0032
CL.... 800.
REFERENCE AND IDENTIFICATION
COMPILED BY..... SILVA, CHRISTOPHER L.
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1977

RECORD 00009

GEOTHERM SAMPLE FILE GEOTHERM FILE ID: 0016657
NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL HGP-A
KGRA..... PUNA GEOTHERMAL FIELD
LOCATION TOWNSHIP-RANGE COORDINATES
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII
SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1976/10/12
SAMPLE NUMBER..... HAWAII GEOTHERMAL HGP-A M
POINT OF COLLECTION.. 1675. M BELOW WELLHEAD
OTHER SAMPLE INFORMATION.. LEAK SUSPECTED IN SAMPLING DEVICE
WATER ANALYSIS

PH..... 1.90
SPECIFIC CONDUCTANCE..... 3050.
ANALYSIS IN MG/L ISOTOPES (0/00)
B..... F..... NA... SIO2. 650.
CA+MG. MG..... 0.0075
CL.... 735.
REFERENCE AND IDENTIFICATION
COMPILED BY..... SILVA, CHRISTOPHER L.
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1977

RECORD 00010

GEOTHERM SAMPLE FILE GEOTHERM FILE ID: 0016656
NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL HGP-A
KGRA..... PUNA GEOTHERMAL FIELD
LOCATION TOWNSHIP-RANGE COORDINATES
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII
SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1976/10/29
SAMPLE NUMBER..... HAWAII GEOTHERMAL HGP-A L
POINT OF COLLECTION.. 1310. M BELOW WELLHEAD
WATER ANALYSIS
PH..... 2.70
SPECIFIC CONDUCTANCE..... 2700.
ANALYSIS IN MG/L ISOTOPES (0/00)
AG.... CO3..... LI... S.... 210.
B..... F..... NA... SIO2. 630.
CA+MG. MG..... 0.0008
CL.... 685.
REFERENCE AND IDENTIFICATION
COMPILED BY..... SILVA, CHRISTOPHER L.
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1977

RECORD 00011

GEOTHERM SAMPLE FILE GEOTHERM FILE ID: 0016647
NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL HGP-A
KGRA..... PUNA GEOTHERMAL FIELD
LOCATION TOWNSHIP-RANGE COORDINATES
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII
SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1976/08/04
SAMPLE NUMBER..... HAWAII GEOTHERMAL HGP-A B
POINT OF COLLECTION.. WELLHEAD
WATER ANALYSIS
PH..... 5.10
SPECIFIC CONDUCTANCE..... 3050.
ANALYSIS IN MG/L ISOTOPES (0/00)
B..... F..... NA... SIO2. 200.
CL.... 880.

REFERENCE AND IDENTIFICATION
  COMPILED BY..... SILVA, CHRISTOPHER L.
  COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
  REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1977

RECORD 00012

GEOTHERM SAMPLE FILE — GEOTHERM FILE ID: 0016646
  NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL HGP-A
  KGRA..... PUNA GEOTHERMAL FIELD
LOCATION — TOWNSHIP-RANGE — COORDINATES
  COUNTRY..... UNITED STATES
  STATE..... HAWAII
  COUNTY..... HAWAII
SAMPLE DESCRIPTION AND CONDITIONS
  DATE/COLLECTOR..... 1976/07/03
  SAMPLE NUMBER..... HAWAII GEOTHERMAL HGP-A A(II-1)
  POINT OF COLLECTION.. WELLHEAD
  TEMPERATURE (C)..... 240. AT (M).. 1420.
  WELL DEPTH (M)..... 1964.
WATER ANALYSIS
  ANALYSIS — ISOTOPES (0/00)
  CA+MG. MG..... PB... 0.3
CONDENSATE ANALYSIS
  PH..... 6.50
  ANALYSIS IN MG/L — ISOTOPES (0/00)
  CL... 610. NA... 350.
  HCO3. 27. SIO2. 151.
  HG... L 0.0001 SO4.. 160.
REFERENCE AND IDENTIFICATION
  COMPILED BY..... SILVA, CHRISTOPHER L.
  COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
  REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1977

RECORD 00013

GEOTHERM SAMPLE FILE — GEOTHERM FILE ID: 0016655
  NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL HGP-A
  KGRA..... PUNA GEOTHERMAL FIELD
LOCATION — TOWNSHIP-RANGE — COORDINATES
  COUNTRY..... UNITED STATES
  STATE..... HAWAII
  COUNTY..... HAWAII
SAMPLE DESCRIPTION AND CONDITIONS
  DATE/COLLECTOR..... 1976/08/19
  SAMPLE NUMBER..... HAWAII GEOTHERMAL HGP-A A
  POINT OF COLLECTION.. 1310. M BELOW WELLHEAD
  OTHER SAMPLE INFORMATION.. LEAK SUSPECTED IN SAMPLING DEVICE
WATER ANALYSIS
  PH..... 5.30
  SPECIFIC CONDUCTANCE..... 2950.
  ANALYSIS IN MG/L — ISOTOPES (0/00)
  AG.... CO3..... LI... S.... 300.
  H..... F..... NA... SIO2. 270.
  CA+MG. MG..... 0.0035
  CL.... 900.

REFERENCE AND IDENTIFICATION
COMPILED BY..... SILVA, CHRISTOPHER L.
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1977

RECORD 00014

GEOTHERM SAMPLE FILE — GEOTHERM FILE ID: 0016654
NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL HGP-A
AREA..... PUNA GEOTHERMAL FIELD
LOCATION — TOWNSHIP-RANGE — COORDINATES
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII
SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1976/08/18
SAMPLE NUMBER..... HAWAII GEOTHERMAL HGP-A J
POINT OF COLLECTION.. 915. M BELOW WELLHEAD
WATER ANALYSIS
PH..... 2.30
SPECIFIC CONDUCTANCE..... 4450.
ANALYSIS IN MG/L — ISOTOPES (O/OOO)
B..... F..... NA... SIO2. 530.
CL.... 710.
REFERENCE AND IDENTIFICATION
COMPILED BY..... SILVA, CHRISTOPHER L.
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1977

RECORD 00015

GEOTHERM SAMPLE FILE — GEOTHERM FILE ID: 0016653
NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL HGP-A
AREA..... PUNA GEOTHERMAL FIELD
LOCATION — TOWNSHIP-RANGE — COORDINATES
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII
SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1976/10/12
SAMPLE NUMBER..... HAWAII GEOTHERMAL HGP-A H
POINT OF COLLECTION.. 692. M BELOW WELLHEAD
WATER ANALYSIS
PH..... 1.40
SPECIFIC CONDUCTANCE..... 3450.
ANALYSIS IN MG/L — ISOTOPES (O/OOO)
B..... F..... NA... SIO2. 620.
CA+MG. MG..... 0.0036
CL.... 730.
REFERENCE AND IDENTIFICATION
COMPILED BY..... SILVA, CHRISTOPHER L.
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1977

RECORD 00016

GEOTHERM_SAMPLE_FILE — GEOTHERM FILE ID: 0016652
NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL HGP-A
KGRA..... PUNA GEOTHERMAL FIELD
LOCATION — TOWNSHIP-RANGE — COORDINATES
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII
SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1976/08/17
SAMPLE NUMBER..... HAWAII GEOTHERMAL HGP-A G
POINT OF COLLECTION.. 692. M BELOW WELLHEAD
OTHER SAMPLE INFORMATION.. LEAK SUSPECTED IN SAMPLING DEVICE
WATER ANALYSIS
PH..... 5.30
SPECIFIC CONDUCTANCE..... 3200.
ANALYSIS IN MG/L — ISOTOPES (O/OO)
B..... F..... NA... SIO2. 300.
CA+MG. HG..... 0.0024
CL.... 950.
REFERENCE AND IDENTIFICATION
COMPILED BY..... SILVA, CHRISTOPHER L.
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1977

RECORD 00017

GEOTHERM_SAMPLE_FILE — GEOTHERM FILE ID: 0016651
NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL HGP-A
KGRA..... PUNA GEOTHERMAL FIELD
LOCATION — TOWNSHIP-RANGE — COORDINATES
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII
SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1976/10/12
SAMPLE NUMBER..... HAWAII GEOTHERMAL HGP-A F
POINT OF COLLECTION.. 300 M BELOW WELLHEAD
WATER ANALYSIS
PH..... 4.90
SPECIFIC CONDUCTANCE..... 1980.
ANALYSIS IN MG/L — ISOTOPES (O/OO)
AG.... CO3..... LI... S.... 250.
B..... F..... NA... SIO2. 220.
CA+MG. HG..... 0.0263
CL.... 725.
REFERENCE AND IDENTIFICATION
COMPILED BY..... SILVA, CHRISTOPHER L.
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1977

RECORD 00018

GEOTHERM_SAMPLE_FILE — GEOTHERM FILE ID: 0016650

NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL HGP-A
AREA..... PUNA GEOTHERMAL FIELD
LOCATION — TOWNSHIP-RANGE — COORDINATES
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII
SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTED..... 1976/08/19
SAMPLE NUMBER..... HAWAII GEOTHERMAL HGP-A E
POINT OF COLLECTION.. 300 M BELOW WELLHEAD
WATER ANALYSIS
PH..... 5.60
SPECIFIC CONDUCTANCE..... 2700.
ANALYSIS IN MG/L — ISOTOPES (O/OO)
AG.... CO3..... LI... S.... 190.
B..... F..... NA... SIO2. 210.
CA+MG. HG..... 0.0444
CL.... 830.
REFERENCE AND IDENTIFICATION
COMPILED BY..... SILVA, CHRISTOPHER L.
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1977

RECORD 00019

GEOTHERM SAMPLE FILE — GEOTHERM FILE ID: 0016649
NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL HGP-A
AREA..... PUNA GEOTHERMAL FIELD
LOCATION — TOWNSHIP-RANGE — COORDINATES
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII
SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTED..... 1976/08/19
SAMPLE NUMBER..... HAWAII GEOTHERMAL HGP-A D
POINT OF COLLECTION.. WELLHEAD
WATER ANALYSIS
PH..... 5.20
SPECIFIC CONDUCTANCE..... 3250.
ANALYSIS IN MG/L — ISOTOPES (O/OO)
B..... F..... NA... SIO2. 370.
CL.... 1000.
REFERENCE AND IDENTIFICATION
COMPILED BY..... SILVA, CHRISTOPHER L.
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1977

RECORD 00020

GEOTHERM SAMPLE FILE — GEOTHERM FILE ID: 0016648
NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL HGP-A
AREA..... PUNA GEOTHERMAL FIELD
LOCATION — TOWNSHIP-RANGE — COORDINATES
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII

SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1976/08/12
SAMPLE NUMBER..... HAWAII GEOTHERMAL HGP-A C
POINT OF COLLECTION.. WELLHEAD
WATER ANALYSIS
PH..... 5.50
SPECIFIC CONDUCTANCE..... 2900.
ANALYSIS IN MG/L — ISOTOPES (0/00)

B.....	F.....	NA...	SIO2.	240.	
CL.... 930.					

REFERENCE AND IDENTIFICATION
COMPILED BY..... SILVA, CHRISTOPHER L.
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1977

RECORD 00021

GEOTHERM SAMPLE FILE — GEOTHERM FILE ID: 0016664
NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL 3
KGRA..... PUNA GEOTHERMAL FIELD
LOCATION — TOWNSHIP-RANGE — COORDINATES
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII
SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1975/07/21
SAMPLE NUMBER..... HAWAII GEOTHERMAL 3B
WATER ANALYSIS
ANALYSIS IN MG/L — ISOTOPES (0/00)

AL....	CR.....	MG... 59.			
B.....	F.....	NA... 2000.			
BE....	FE(TOT).	NB...	SO4..	335.	
BI....	GA.....	NH4..	SR...	1.4	
CA.... 81.					
CL.... 3410.					
CO....	K..... 195.				

OTHER ANALYTICAL DATA... WATER: N=0.32; P=0.076
REFERENCE AND IDENTIFICATION
COMPILED BY..... SILVA, CHRISTOPHER L.
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1976

RECORD 00022

GEOTHERM SAMPLE FILE — GEOTHERM FILE ID: 0016665
NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL 3
KGRA..... PUNA GEOTHERMAL FIELD
LOCATION — TOWNSHIP-RANGE — COORDINATES
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII
SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1975/07/21
SAMPLE NUMBER..... HAWAII GOETHERMAL 3C
POINT OF COLLECTION.. 15-20 M BELOW WATER SURFACE
TEMPERATURE (C)..... 74. AT (M).. ?

WATER ANALYSIS
PH..... 1.40
CHARGE IMBALANCE (% DIFF)... 2.8
ANALYSIS IN MG/L

AL....		CR.....		MG...	63.		
B.....		F.....		NA...	1740.		
BE.....		FE(TOT).		NB...		S04..	317.
BI.....		GA.....		NH4..		SR...	1.2
CA....	71.	HCO3....	20.				
CL....	2980.						
CO....		K.....	158.				

ISOTOPES (D/OO)
OTHER ANALYTICAL DATA... WATER: P=0.053
REFERENCE AND IDENTIFICATION
COMPILED BY..... SILVA, CHRISTOPHER L.
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1976

RECORD 00023

GEOTHERM SAMPLE FILE — GEOTHERM FILE ID: 0016663
NAME OF SAMPLE SOURCE... HAWAII GEOTHERMAL 3
KSRA..... PUNA GEOTHERMAL FIELD
LOCATION — TOWNSHIP-RANGE — COORDINATES
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII
SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1975/01/07
SAMPLE NUMBER..... HAWAII GEOTHERMAL 3A
TEMPERATURE (C)..... 93.0 AT (M).. 1964.
WATER ANALYSIS
PH..... 6.85
CHARGE IMBALANCE (% DIFF)... 2.7
ANALYSIS IN MG/L

AL....		CR.....		MG...	52.		
B.....		F.....		NA...	2050.	SI02.	97.
BE.....		FE(TOT).		NB...		S04..	314.
CA....	77.	HCO3....	30.				
CL....	3274.						
CO....		K.....	190.				

ISOTOPES (D/OO)
OTHER ANALYTICAL DATA... WATER: N=0.003; P=0.006
REFERENCE AND IDENTIFICATION
COMPILED BY..... SILVA, CHRISTOPHER L.
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... COSNER AND APPS, 1978; SHUPE, 1976; KAMINS AND TINNING, 1977

RECORD 00024

GEOTHERM SAMPLE FILE — GEOTHERM FILE ID: 0000302
NAME OF SAMPLE SOURCE... ISAAC HALE PARK SPRING
WELL/SPRING NUMBER..... 2780-05
LOCATION — TOWNSHIP-RANGE — COORDINATES
COUNTRY..... UNITED STATES
LAT/LONG... 19-27.6 N 154-50.8 W
STATE..... HAWAII
COUNTY..... HAWAII
MAP REFERENCE..... KAPOHO 1:24000

SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1975/01/07
TEMPERATURE (C)..... 35.0
WATER ANALYSIS
PH..... 7.75
ANALYSIS IN MG/L

AL....		CR.....		MG...	200.				
B.....		F.....		NA...	2020.	SIO2.	81.5		
BE....		FE(TOT).		NB...		SO4..	507.	TRITIUM (T.U.).....	8.5
CA....	32.4	HCO3....	56.						
CL....	3534.								
CO....		K.....	86.0						

ISOTOPES (O/OO)

REFERENCE AND IDENTIFICATION
COMPILED BY..... LIEB, RANDY
COMPILER AFFILIATION... USGS
REFERENCE..... KROOPNICK AND OTHERS, 1978

RECORD 00025

GEOTHERM SAMPLE FILE GEOTHERM FILE ID: 0019869
NAME OF SAMPLE SOURCE... KAWAIHAE-3
LOCATION — TOWNSHIP-RANGE — COORDINATES
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII
GEOLOGIC PROVINCE..
LAT/LONG... 20-01.53 N 155-47.18 W
UTM ZONE... +05
NORTHING... 2216600.
208489.
SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1964/00/00
SAMPLE NUMBER..... LOCAL USGS NUMBER 8-6147-01
TEMPERATURE (C)..... 36.
WELL DEPTH (M)..... 1046.
OTHER SAMPLE INFORMATION.. PRELIMINARY DATA, VERIFICATION IN SUBSEQUENT REPORTS, 1978 & 1979. RECORD NUMBER MAY CHANGE IN SUBSEQUENT REPORTS
WATER ANALYSIS
PH..... 8.0
SPECIFIC CONDUCTANCE..... 70.
TOTAL DISSOLVED SOLIDS... 60.
CHARGE IMBALANCE (% DIFF)... 2.2
ANALYSIS IN PPM

AL....		CR.....		MG...	64.				
AS....	0.010								
B.....		F.....	0.2	NA...	460.	SIO2.	38.		
BE....		FE(TOT).	1.4	NB...		SO4..	100.		
CA....	44.	HCO3....	101.	NO3..	2.3				
CA+MG.		HG.....		PB...	0.010				
CL....	850.								
CO....		K.....	34.			ZN...	0.1		

ISOTOPES (O/OO)

REFERENCE AND IDENTIFICATION
REFERENCE..... *THOMAS, D. M., HAWAII INSTITUTE OF GEOPHYSICS, 1979

RECORD 00026

GEOTHERM SAMPLE FILE GEOTHERM FILE ID: 0000303
NAME OF SAMPLE SOURCE... MALAMA KI WELL
WELL/SPRING NUMBER..... 2783-01
LOCATION — TOWNSHIP-RANGE — COORDINATES

COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII
MAP REFERENCE..... PAHOA SOUTH 1:24000
LAT/LONG... 19-27.5 N 154-53.0 W

SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1975/01/07
TEMPERATURE (C)..... 52.2
WELL DEPTH (M)..... 84.1

WATER ANALYSIS
PH..... 7.02
ANALYSIS IN MG/L

AL....		CR.....		MG...	210.			ISOTOPES (D/OO)	
B.....		F.....		NA...	2105.	SIO2.	100.7		
BE....		FE(TOT).		NB...		SO4..	471.	TRITIUM (T.U.).....	15.6
CA....	66.8	HCO3....	144.						
CL....	3811.								
CO....		K.....	109.						

REFERENCE AND IDENTIFICATION
COMPILED BY..... LIEB, RANDY
COMPILER AFFILIATION... USGS
REFERENCE..... KROOPNICK AND OTHERS, 1978

RECORD 00027

GEOTHERM SAMPLE FILE — GEOTHERM FILE ID: 0019817
NAME OF SAMPLE SOURCE... MALAMA KI WELL 9-9
WELL/SPRING NUMBER..... 08-2783-01

LOCATION — TOWNSHIP-RANGE
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII
GEOLOGIC PROVINCE..

COORDINATES
LAT/LONG... 19-27.47 N 154-53.02 W
UTM ZONE... +05
NORTHING... 2152442.
302262.

SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1974/00/00
TEMPERATURE (C)..... 53.
WELL DEPTH (M)..... 319.
OTHER SAMPLE INFORMATION.. PRELIMINARY DATA, VERIFICATION IN SUBSEQUENT REPORTS, 1978 & 1979. RECORD NUMBER MAY CHANGE IN SUBSEQUENT REPORTS

WATER ANALYSIS
PH..... 6.92
SPECIFIC CONDUCTANCE..... 13000.
ALKALINITY..... 215. AS ?
TOTAL DISSOLVED SOLIDS... 11700.
ANALYSIS IN PPM

AL....		CR.....		MG...	324.			ISOTOPES (D/OO)	
AS....	0.010	CS.....		MN...	0.05				
AU....		CU.....	0.2	MO...		SE...	0.08		
B.....		F.....	1.5	NA...	3090.	SIO2.	59.		
BA....		FE+3....	3.2						
BE....		FE(TOT).		NB...		SO4..	681.		
CA....	182.	HCO3....	262.	NO3..	0.5				
CA+MG.		HG.....		PB...	0.010				
CL....	5850.								
CO....		K.....				ZN...	0.2		

OTHER ANALYTICAL DATA... NO2 = 0.01 PPM
REFERENCE AND IDENTIFICATION

REFERENCE..... THOMAS AND OTHERS, 1979

RECORD 00028

GEOTHERM SAMPLE FILE — GEOTHERM FILE ID: 0000304

NAME OF SAMPLE SOURCE... OPHIKAO SPRING
WELL/SPRING NUMBER..... 2583-05

LOCATION — TOWNSHIP-RANGE — COORDINATES

COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII
MAP REFERENCE..... PAHOA SOUTH 1:24000
LAT/LONG... 19-25.8 N 154-53.0 W

SAMPLE DESCRIPTION AND CONDITIONS

TEMPERATURE (C)..... 31.

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY
COMPILER AFFILIATION... USGS
REFERENCE..... CASADEVALL, 1981

RECORD 00029

GEOTHERM SAMPLE FILE — GEOTHERM FILE ID: 0019843

NAME OF SAMPLE SOURCE... WAIAKEA-4
WELL/SPRING NUMBER..... 08-4203-04

LOCATION — TOWNSHIP-RANGE — COORDINATES

COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... HAWAII
GEOLOGIC PROVINCE..
LAT/LONG... 19-42.37 N 155-03.85 W
UTM ZONE... +05
NORTHING... 2180151.
283640.

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1974/00/00
TEMPERATURE (C)..... 31.0
WELL DEPTH (M)..... 201.
OTHER SAMPLE INFORMATION.. PRELIMINARY DATA, VERIFICATION IN SUBSEQUENT REPORTS, 1978 & 1979. RECORD NUMBER MAY CHANGE IN SUBSEQUENT REPORTS

WATER ANALYSIS

PH..... 7.2
SPECIFIC CONDUCTANCE..... 94.
ALKALINITY..... 38. AS ?
TOTAL DISSOLVED SOLIDS... 107.
CHARGE IMBALANCE (% DIFF)... 0.9

ANALYSIS IN PPM — ISOTOPES (0/00)

AL....	0.01	CR.....		MG...	2.9		
AS....	0.010	CS.....		MN...	0.05		
AU....		CU.....	0.1	MO...		SE...	0.01
B.....		F.....	0.1	NA...	6.9	SIO2.	55.
BA....		FE+3....	0.2				
BE....		FE(TOT).		NB...		SO4..	2.6
CA....	8.4	HCO3....	47.	NO3..	0.220		
CA+MG.		HG.....		PB...	0.010		
CL....	6.5						
CO....		K.....	1.8			ZN...	0.010

REFERENCE AND IDENTIFICATION

REFERENCE..... THOMAS AND OTHERS, 1980

RECORD 00030

GEOTHERM_SAMPLE_FILE — GEOTHERM FILE ID: 0019406

NAME OF SAMPLE SOURCE... UKUMEHAME
WELL/SPRING NUMBER..... 06-4835-01

LOCATION — TOWNSHIP-RANGE — COORDINATES

COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... MAUI
GEOLOGIC PROVINCE..

LAT/LONG... 20-48.78 N 156-35.97 W
UTM ZONE... +04
NORTHING... 2303176.
749849.

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1970/00/00
TEMPERATURE (C)..... 33.
WELL DEPTH (M)..... 143.
OTHER SAMPLE INFORMATION.. PRELIMINARY DATA. VERIFICATION IN SUBSEQUENT REPORTS, 1978 & 1979. RECORD NUMBER MAY CHANGE IN SUBSEQUENT REPORTS

WATER ANALYSIS

PH..... 7.5
ALKALINITY..... 108. AS ?
TOTAL DISSOLVED SOLIDS... 921.
CHARGE IMBALANCE (% DIFF)... 2.2

ANALYSIS IN PPM — ISOTOPES (O/OO)

AL....		CR.....		MG...	29.			
B.....	2.0	F.....	1.2	NA...	180.	SIO2.	60.	
BE....		FE(TOT).		NB...		SO4..	50.	
CA....	85.	HCO3....	130.	NO3..	11.			
CO....		H2S.....		PO4..	0.050			
CL....	400.							
CO....		K.....	15.					

REFERENCE AND IDENTIFICATION

REFERENCE..... THOMAS AND OTHERS, 1979

RECORD 00031

GEOTHERM_SAMPLE_FILE — GEOTHERM FILE ID: 0019208

NAME OF SAMPLE SOURCE... KALIHI
WELL/SPRING NUMBER..... 03-2053-05

LOCATION — TOWNSHIP-RANGE — COORDINATES

COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... OAHU
GEOLOGIC PROVINCE..

LAT/LONG... 21-20.37 N 157-53.28 W
UTM ZONE... +04
NORTHING... 2359990.
615313.

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1970/00/00
TEMPERATURE (C)..... 30.
WELL DEPTH (M)..... 471.
OTHER SAMPLE INFORMATION.. PRELIMINARY DATA. VERIFICATION IN SUBSEQUENT REPORTS, 1978 & 1979. RECORD NUMBER MAY CHANGE IN SUBSEQUENT REPORTS

WATER ANALYSIS

PH..... 6.6
ALKALINITY..... 66. AS ?
TOTAL DISSOLVED SOLIDS... 660.
CHARGE IMBALANCE (% DIFF)... 41.4

ANALYSIS IN PPM — ISOTOPES (O/OO)

AL....	0.02	CR.....		MG...	11.

AS....	0.004	CS.....		MN...	0.05		
AU....		CU.....	0.11	MO...		SE...	0.01
B.....		F.....	0.150	NA...	6.0	SIO2.	42.
BA....		FE+3....	0.02				
BE....		FE(TOT).		NB...		S04..	9.0
CA....	14.	HCO3....	54.	NO3..	0.350		
CA+MG.		HG.....		PB...	0.010		
CL....	60.						
CO....		K.....	3.4			ZN...	0.130

REFERENCE AND IDENTIFICATION
REFERENCE..... THOMAS AND OTHERS, 1979

RECORD 00032

GEOTHERM SAMPLE FILE — GEOTHERM FILE ID: 0019209
NAME OF SAMPLE SOURCE... PUULOA RD
WELL/SPRING NUMBER..... 03-2054-03

LOCATION — TOWNSHIP-RANGE — COORDINATES
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... OAHU
GEOLOGIC PROVINCE..
LAT/LONG... 21-20.22 N 157-54.22 W
UTM ZONE... +04
NORTHING... 2359702.
613690.

SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1965/00/00
TEMPERATURE (C)..... 32.
WELL DEPTH (M)..... 668.
OTHER SAMPLE INFORMATION.. PRELIMINARY DATA, VERIFICATION IN SUBSEQUENT REPORTS, 1978 & 1979. RECORD NUMBER MAY CHANGE IN SUBSEQUENT REPORTS

WATER ANALYSIS
PH..... 7.7
SPECIFIC CONDUCTANCE..... 1900.
ALKALINITY..... 32. AS ?
CHARGE IMBALANCE (% DIFF)... 140.8

ANALYSIS IN PPM — ISOTOPES (0/00)

AL....	9.1	CR.....		MG...	1.5		
AS....	0.010	CS.....		MN...	0.05		
AU....		CU.....	0.1	MO...		SE...	0.01
B.....		F.....	0.1	NA...	58.	SIO2.	28.
BA....		FE+3....	0.2				
BE....		FE(TOT).		NB...		S04..	26.
CA....	3.4	HCO3....		NO3..	1.8		
CA+MG.		HG.....		PB...	0.010		
CL....	620.						
CO....		K.....	16.			ZN...	0.1

REFERENCE AND IDENTIFICATION
REFERENCE..... THOMAS AND OTHERS, 1979

RECORD 00033

GEOTHERM SAMPLE FILE — GEOTHERM FILE ID: 0019205
NAME OF SAMPLE SOURCE... WAIMANALO
WELL/SPRING NUMBER..... 03-2043-01

LOCATION — TOWNSHIP-RANGE — COORDINATES
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... OAHU
LAT/LONG... 21-20.98 N 157-43.55 W
UTM ZONE... +04
NORTHING... 2361243.

GEOLOGIC PROVINCE.. 632122.

SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1970/00/00
TEMPERATURE (C)..... 30.
WELL DEPTH (M)..... 730.
OTHER SAMPLE INFORMATION.. PRELIMINARY DATA, VERIFICATION IN SUBSEQUENT REPORTS, 1978 & 1979. RECORD NUMBER MAY CHANGE IN SUBSEQUENT REPORTS

WATER ANALYSIS
PH..... 7.3
SPECIFIC CONDUCTANCE..... 218.
ALKALINITY..... 69. AS ?
TOTAL DISSOLVED SOLIDS... 138.
CHARGE IMBALANCE (% DIFF)... 0.2
ANALYSIS IN PPM

								ISOTOPES (D/OO1
AL....		CR.....		MG...	2.8			
B.....		F.....	0.1	NA...	28.	SIO2.	22.	
BE....		FE(TOT).		NB...		SO4..	5.4	
CA....	14.	HCO3....	84.	NO3..	0.1			
CL....	24.							
CO....		K.....	1.1					

REFERENCE AND IDENTIFICATION
REFERENCE..... THOMAS AND OTHERS, 1979

RECORD 00034

GEOTHERM SAMPLE FILE GEOTHERM FILE ID: 0019221
NAME OF SAMPLE SOURCE... WAIPAHU P6A
WELL/SPRING NUMBER..... 03-2300-07

LOCATION TOWNSHIP-RANGE
COUNTRY..... UNITED STATES
STATE..... HAWAII
COUNTY..... OAHU
GEOLOGIC PROVINCE..

COORDINATES
LAT/LONG... 21-23.37 N 158-00.63 W
UTM ZONE... +04
NORTHING... 2365439.
602574.

SAMPLE DESCRIPTION AND CONDITIONS
DATE/COLLECTOR..... 1969/00/00
TEMPERATURE (C)..... 30.
OTHER SAMPLE INFORMATION.. PRELIMINARY DATA, VERIFICATION IN SUBSEQUENT REPORTS, 1978 & 1979. RECORD NUMBER MAY CHANGE IN SUBSEQUENT REPORTS

WATER ANALYSIS
PH..... 7.0
ALKALINITY..... 70. AS ?
TOTAL DISSOLVED SOLIDS... 504.
CHARGE IMBALANCE (% DIFF)... 82.1
ANALYSIS IN PPM

								ISOTOPES (D/OO1
AL....	0.02	CR.....		MG...	6.4			
AS....	0.001	CS.....		MN...	0.01			
AU....		CU.....	0.05	MO...		SE...	0.01	
B.....		F.....	0.060	NA...	145.	SIO2.	45.	
BA....		FE+3....	0.06					
BE....		FE(TOT).		NB...		SO4..	5.6	
CA....	44.	HCO3....	51.	NO3..	0.150			
CA+MG.		HG.....		PB...	0.050			
CL....	89.							
CO....		K.....	0.2			ZN...	0.080	

REFERENCE AND IDENTIFICATION
REFERENCE..... THOMAS AND OTHERS, 1979

APPENDIX A

Index to GEOTHERM'S sample file for the state of Hawaii. This computer generated appendix contains some trucated fields. The index is sorted by county and name of the source. Type Geothermal source type, I.D. - GEOTHERM record identifier, Temp. - temperature ^{o}C (see Table 1 for explanation of alphaetic qualifiers preceeding temperature.)

County	Name of Source	Well No.	Type	Latitude	Longitude	I.D.	Temp.
HAWAII	AIRSTRIP WELL	3081-01	WELL	19-30.4	N 154-51.9 W	0000300	36.8
HAWAII	ALLISON WELL	2881-01	WELL	19-28.3	N 154-51.1 W	0000301	37.8
HAWAII	HAWAII GEOTHERMAL HGP-A		WELL			0016647	
HAWAII	HAWAII GEOTHERMAL HGP-A		WELL			0016646	280.
HAWAII	HAWAII GEOTHERMAL HGP-A		WELL			0016655	
HAWAII	HAWAII GEOTHERMAL HGP-A		WELL			0016654	
HAWAII	HAWAII GEOTHERMAL HGP-A		WELL			0016653	
HAWAII	HAWAII GEOTHERMAL HGP-A		WELL			0016652	
HAWAII	HAWAII GEOTHERMAL HGP-A		WELL			0016651	
HAWAII	HAWAII GEOTHERMAL HGP-A		WELL			0016650	
HAWAII	HAWAII GEOTHERMAL HGP-A		WELL			0016649	
HAWAII	HAWAII GEOTHERMAL HGP-A		WELL			0016648	
HAWAII	HAWAII GEOTHERMAL HGP-A		WELL			0016692	
HAWAII	HAWAII GEOTHERMAL HGP-A		WELL			0016662	
HAWAII	HAWAII GEOTHERMAL HGP-A		WELL			0016661	
HAWAII	HAWAII GEOTHERMAL HGP-A		WELL			0016660	
HAWAII	HAWAII GEOTHERMAL HGP-A		WELL			0016659	
HAWAII	HAWAII GEOTHERMAL HGP-A		WELL			0016658	
HAWAII	HAWAII GEOTHERMAL HGP-A		WELL			0016657	
HAWAII	HAWAII GEOTHERMAL HGP-A		WELL			0016656	
HAWAII	HAWAII GEOTHERMAL 3		WELL			0016664	
HAWAII	HAWAII GEOTHERMAL 3		WELL			0016665	74.
HAWAII	HAWAII GEOTHERMAL 3		WELL			0016663	93.0
HAWAII	ISAAC HALE PARK SPRING	2780-05	SPRING	19-27.6	N 154-50.8 W	0000302	36.0
HAWAII	KAWAIHAE-3		WELL	20-01.53	N 155-47.18 W	0019869	36.
HAWAII	MALAMA KI WELL	2783-01	WELL	19-27.5	N 154-53.0 W	0000303	52.2
HAWAII	MALAMA KI WELL 9-9	08-2783-01	WELL	19-27.47	N 154-53.02 W	0019817	53.
HAWAII	OPHIKAO SPRING	2583-05	SPRING	19-25.8	N 154-53.0 W	0000304	33.
HAWAII	WAIAKEA-4	08-4203-04	WELL	19-42.37	N 155-03.85 W	0019843	31.0
MAUI	UKUMEHAME	06-4835-01	TUNNEL	20-48.78	N 156-35.97 W	0019406	33.
OAHU	KALIHI	03-2053-05	WELL	21-20.37	N 157-53.28 W	0019208	30.
OAHU	PUULOA RD	03-2054-03	WELL	21-20.22	N 157-54.22 W	0019209	32.
OAHU	WAIMANALO	03-2043-01	WELL	21-20.98	N 157-43.55 W	0019205	30.
OAHU	WAIPAHU P6A	03-2300-07	WELL	21-23.37	N 158-00.63 W	0019221	30.

APPENDIX B

Source for the record in the GEOTHERM sample file for Hawaii. Each reference is proceeded by its abbreviated form (called CODE) used in the sample file (Table 1). Entries in this computer-generated appendix are sorted by CODE.

CODE = CASADEVALL, 1981

CASADEVALL, T., 1981, THERMAL AREAS ON THE ACTIVE VOLCANOES OF HAWAII: U. S. GEOLOGICAL SURVEY OPEN-FILE REPT. 81-233.

CODE = COSNER AND APPS, 1978

COSNER, S. R., AND APPS, J. A., 1976, COMPILATION OF DATA ON FLUIDS FROM THE UNITED STATES: CALIFORNIA UNIVERSITY, LAWRENCE BERKELEY LABORATORY REPORT 5936, 108 P.

CODE = KAMINS AND TINNING, 1977

KAMINS, R. M., AND TINNING, K. J., 1977, THE HAWAII GEOTHERMAL PROJECT --AN ASSESSMENT OF GEOTHERMAL DEVELOPMENT IN PUNA, HAWAII: HONOLULU, UNIVERSITY OF HAWAII, 103 P.

CODE = KROOPNICK AND OTHERS, 1978

KROOPNICK, P. M., BUDDEMEIER, R. W., THOMAS, D. M., LAU, L. S., AND BILLS, D., 1978, HYROLOGY AND GEOCHEMISTRY OF A HAWAIIAN GEOTHERMAL SYSTEM: HGP-A: HAWAII INSTITUTE OF GEOPHYSICS, GEOTHERMAL RESOURCES EXPLORATION IN HAWAII, NO. 4.

CODE = SHUPE, 1977

SHUPE, J. W., Helsley, C. E., and Yuen, P. C., 1977, THE HAWAII GEOTHERMAL PROJECT--PHASE III - WELL TESTING AND ANALYSIS: HONOLULU, UNIVERSITY OF HAWAII, PROGRESS REPORT FOR THE FIRST QUARTER OF FEDERAL FY 1977, 67 P.

CODE = THOMAS AND OTHERS, 1980

THOMAS, D. M., COX, M. E., KAUAHIKAUA, J. P., AND MATTICE, M. D., 1980, HAWAII GEOTHERMAL RESOURCE ASSESSMENT PROGRAM, DIRECT HEAT RESOURCE ASSESSMENT, PHASE II, YEAR I, FINAL REPORT, 2-1-79 TO 1-31-80: HAWAII INSTITUTE OF GEOPHYSICS, CONTRACT DE-AS03-ET7927-023, 57 P.