



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
P. O. BOX 621  
HONOLULU, HAWAII 96809

WILLIAM W. PATY, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES

LIBERT K. LANDGRAF  
DEPUTY

AQUACULTURE DEVELOPMENT  
PROGRAM  
AQUATIC RESOURCES  
CONSERVATION AND  
ENVIRONMENTAL AFFAIRS  
CONSERVATION AND  
RESOURCES ENFORCEMENT  
CONVEYANCES  
FORESTRY AND WILDLIFE  
LAND MANAGEMENT  
STATE PARKS  
WATER AND LAND DEVELOPMENT

RECEIVED  
SEP 11 1989

GEOHERMAL/CABLE  
PERMIT CENTER

True Geothermal Energy Company  
8th Floor, C.R. Kendall Bldg.  
888 Mililani Street  
Honolulu, Hawaii 96813

Attention: Mr. Allan G. Kawada, Hawaii Representative

Gentlemen:

Approval of Amendments to Plan of Operation for  
True/Mid-Pacific Geothermal Wellsite A-1 and  
Related Access Road, Puna, Hawaii

As a followup to the Board's lifting of the Department's cease and desist order, we acknowledge receipt of your letter dated August 25, 1989, providing required supplemental information (after the fact) on your Plan of Operations for True/Mid-Pacific Geothermal Wellsite A-1 and related access road in the Puna District.

In your letter, you have provided for our approval of the following revised metes and bounds description maps to be identified as Attachment "A" to your previously submitted and approved Plan of Operations:

1. Revision of Wellsite A-1 from three acres to 5.74 acres (500 ft. x 500 ft.).
2. Revision of Water Catchment Pond Area from 200 ft. x 300 ft. x 10 ft. deep to 300 ft. x 300 ft. x 12 ft. deep.
3. Increase in number of access road turnouts from a three to seven.
4. Increase in the access road width from 40 to 45 ft.

Your original Plan of Operations, which was approved by the Board, states that off-site material would be required to develop the access road. Your description (identified as Attachment B) of the source and use of road construction material from

P  
9/30

True Geothermal Energy Company

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Ilewa Crater, a cinder pit quarry, for development of the access road is hereby approved as an amendment to your Plan of Operations.

Very truly yours,

WILLIAM W. PATY

# TRUE GEOTHERMAL ENERGY COMPANY

HAWAII OFFICE  
8th Floor, C.R. Kendall Building  
888 Mililani Street  
Honolulu, Hawaii 96813  
Telephone: 528-3496

895 WEST RIVER CROSS ROAD

Phone (307) 237-9301  
P.O. Box 2360  
Casper, Wyoming  
82602

August 25, 1989

Mr. William W. Paty, Director  
Department of Land and Natural Resources (DLNR)  
State of Hawaii  
P. O. Box 621  
Honolulu, Hawaii 96809  
Attention: Manabu Tagomori, Deputy Director

Re: Request For Supplements To Plan of Operations.

Dear Mr. Paty:

Construction under the Plan of Operations submitted to the DLNR on February 1, 1989, has raised additional considerations requiring the undersigned to seek the following revisions to said plans on behalf of True Geothermal Energy Company, Operator for True/Mid-Pacific Geothermal Venture.

## DRILL SITE

The respective narratives to the Plan of Operations and the Application for Permit to Drill both recognized the possible need to expand the original drill site T/MPG A1 up to or approximately five (5) acres." See e.g., Plan of Operations, Section 2, p. 4; Application for Permit to Drill, Section A, p. 1. However, due to an error in communication, the attached metes and bounds description of drill site T/MPG A1 reflected an area of only three (3) acres. In order to bring the narrative description and metes and bounds description of the drill site into conformity, it is respectfully requested that the existing Plan of Operations be revised to authorize expansion of the drill site from three (3) acres to a dimension of 500' x 500' (approximately 5.74 acres). A set of revised metes and bounds description of T/MPG A1 reflecting the expanded dimensions of drill site is attached for review and approval as Attachment A.

## WATER CATCHMENT

The Operator has recently reconsidered its water requirements for drilling purposes. Under the new strategy, the Operator desires to enlarge the current water catchment pond capacity from 200' x 300' x 10' to 300' x 300' x 12' in order to accommodate approximately 60 days of drilling (the estimated time to complete a well). This represents a total increase in surface area from 1.4 acres to 2.1 acres.

Mr. William Paty  
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The requested change will serve two purposes. First, the larger capacity will supply water for drilling at sites in the general vicinity of T/MPG A1. Second, the expansion of the water catchment pond will represent a consolidation of the pond at T/MPG A1 and the pond at the planned second drill site. It is reasoned that the consolidation and elimination of the second pond will in the long run, minimize clearing of the forest and result in reducing both costs to the Operator and environmental impacts to the surrounding forest. This action is believed to be consistent with the intent of the Plan of Operations to control forest clearing.

The Operator, therefore, respectfully requests that the DLNR authorize the construction of a catchment pond having a surface dimension of 300' x 300'. This request is made with the understanding that no catchment pond will be built at the second drill site. A set of revised metes and bounds description reflecting the expanded dimensions of the water catchment pond is attached for review and approval as Attachment A.

#### ACCESS ROAD

The access road passes through highly irregular terrain along nearly its entire length. In conformity with safe engineering practices, the access road requires cutting and footings which will extend beyond the access road easement and into the Conservation District.

In order to satisfy safety requirements, the Operator respectfully requests that the 40' wide road corridor permitted under the Plan of Operations for the initial access road width be expanded to 45' to allow space for the supporting footing slopes. A set of revised metes and bounds description reflecting the expanded dimensions of the access roadway is attached for review and approval as Attachment A.

#### FILL MATERIAL

Construction presently underway has determined that the materials and soils available on-site are unsuitable as fill material for road and drill site construction. The soil is clay-like in nature and will not meet the requisite degree of compaction without other materials. In the original Plan of Operations submitted in February 1989 and approved by the Board of

Mr. William Paty  
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August 25, 1989

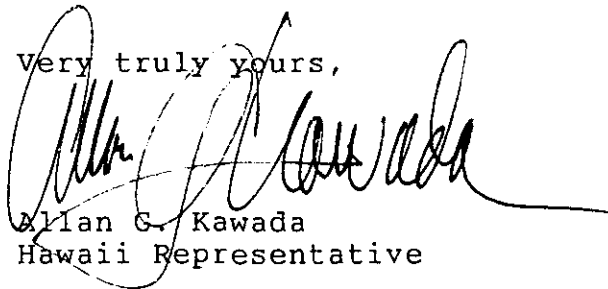
Land and Natural Resources in May 1989, a request was made to use cinder material from outside the project site. A request is made to affirm that approval. Consequently, the Operator respectfully requests authorization to use fill material not gathered from the project site. A description of the location of the source of cinder and lava fill materials is attached as Attachment A.

TURNOUTS

The Plan of Operations indicated the need for three (3) turnouts along the road corridor within the Conservation District. After the road was cleared, it was determined that the irregular terrain limits the line of sight to short distances thereby requiring four additional turnouts. Therefore, a metes and bounds description of the location and size of the respective turnouts are attached for review as Attachment A.

Please do not hesitate to contact me if you have any questions or require additional information in support of the requested revisions.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Allan G. Kawada". The signature is written in black ink and is positioned above the typed name and title.

Allan G. Kawada  
Hawaii Representative

AGK/ea

Enclosure

## ATTACHMENT B

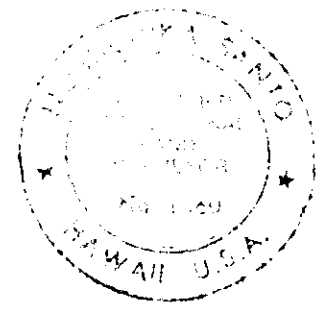
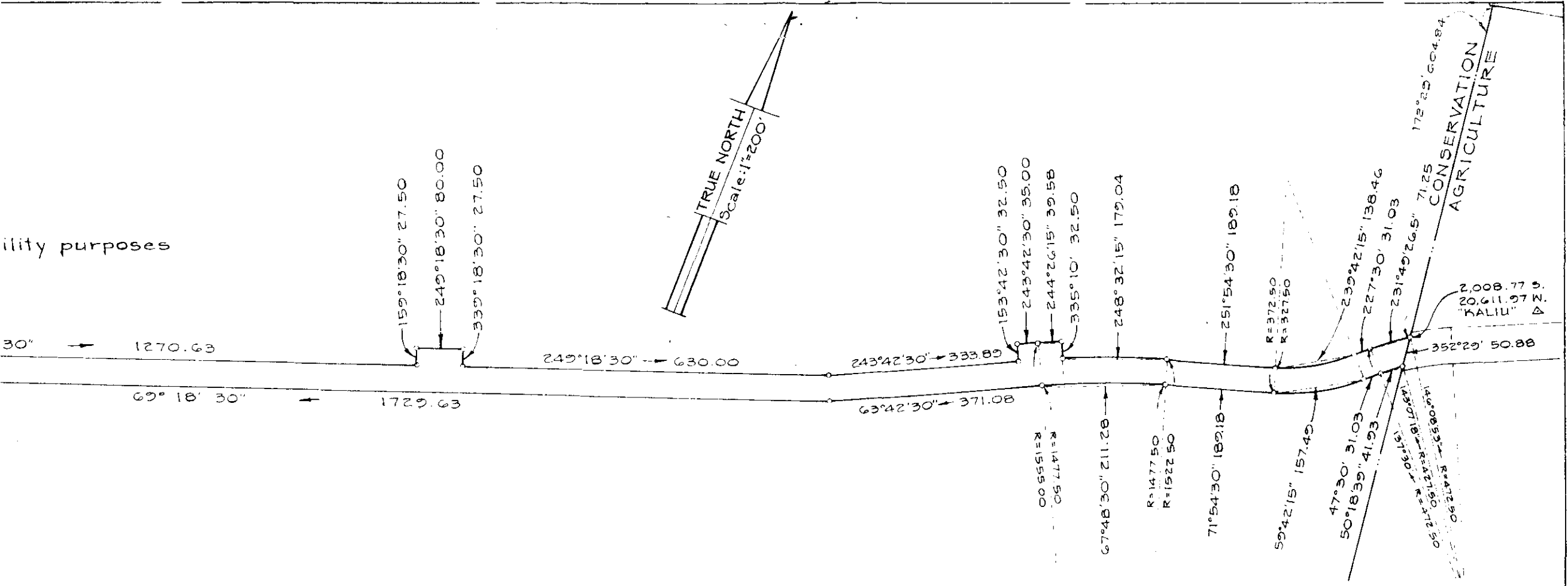
The cinder and lava rock fill material to be used for road construction purposes is to be taken from a cinder pit located adjacent to Iilewa Crater. The cinder pit is approximately one (1) mile south of the beginning of the access road to the first drill site in Kaohe Homestead.

The pit is in the middle of the Kilauea middle rift zone. Lava flows and eruptions have occurred as recently as 1955 in the area and the cinder mound was formed as part of the 1955 eruption.

The area surrounding the pit is designed in the agricultural district. Agricultural lots are adjacent to Iilewa Crater but there are only a few scattered homes in the immediate area.

Access to the pit is from the Pahoa-Kalapana Road. The major vegetation in the area is young ohia due to the recent eruptive events.

ility purposes



Survey and Plan by:  
 Island Survey, Inc.  
 P.O. Box 337, Hilo, Hawaii  
 August 21, 1989

*Robert Sants*

Attachment "A"

Well Site  
See below

249° 29' 75.00  
339° 29' 24.00  
159° 29' 69.00

249° 29' → 1485.35

159° 29' 27.50  
249° 29' 160.00  
339° 29' 27.50  
2900.60  
2600.60

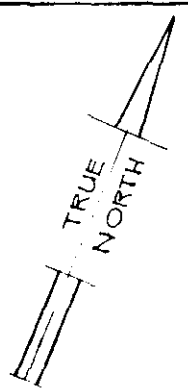
249° 29' → 1394.2

Reservoir Site  
See below

300.00

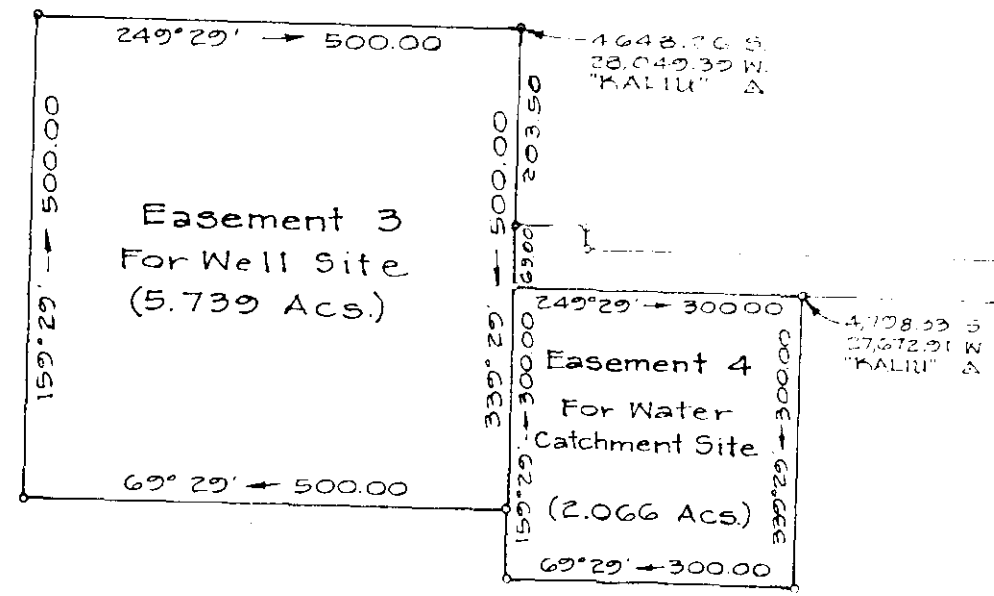
69° 29' ←

Parcel  
Grant  
the  
James  
15,666  
Will  
Campbell,



INSET

Scale: 1" = 200'



Portion  
Under  
of

OWNER:  
Estate of James Campbell





STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
P. O. BOX 621  
HONOLULU, HAWAII 96809

WILLIAM W. PATY, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES

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WATER AND LAND DEVELOPMENT

MAR 23 1989

MEMORANDUM

TO: Honorable Warren Price, III  
Attorney General

ATTN: Mr. Johnson Wong, Deputy Attorney General  
Land/Transportation Division

FROM: William W. Paty

SUBJECT: True/Mid-Pacific Venture's Request for Modification  
to the Conditions Set Forth in the Board of Land and  
Natural Resources' Decision and Order dated  
June 18, 1986 (CDUA No. HA-12/20/85-1830)

The Board of Land and Natural Resources (BLNR) in its Decision and Order (D/O) dated April 18, 1986, authorized the exploration and development of geothermal resources on Campbell Estate land (TMK: 1-2-10:3), located in the Puna District, Island of Hawaii.

True/Mid-Pacific Venture (applicant) has submitted a request to modify three specific conditions prescribed in the D/O relating to abated venting, air quality monitoring and noise monitoring. The applicant's requested modifications, the related D/O conditions, and our staff's position are outlined below:

**ABATED VENTING**

(1) Applicant's Request and Comments

Applicant proposes abated continuous-flow testing (essentially abated venting) of each geothermal well for a period of 30 to 45 days. Applicant states that continuous-flow testing is standard industry practice for well testing and reservoir analysis and will reduce the possibility of thermal shock and damage to the well casing and cemented annulus which may result due to periodic (on-off) shutting down of the well. Also, the need for continuous flow testing is

critical in order to avoid the interruption and change in flow rates during flow test measurements.

Applicant further states that "there is no reasonable alternative known to be feasible in the geothermal industry that would allow reservoir analysis to the degree of accuracy that is necessary to justify the commitment and expenditure of millions of dollars for a power plant to utilize the resource".

D/O Condition

Abated venting of geothermal wells may take place only between 9:00 am to 6:00 pm, Monday through Friday, exclusive of holidays and not longer than a continuous 8-hour period. With reference to abated venting, the D/O states that "for good cause shown and when no reasonable alternatives exist, the Department may modify these restrictions".

Staff's Position:

Staff concurs that continuous (30-45 days) flow testing is necessary to determine reservoir characteristics and production capability, and that no alternative testing method exists.

(2) Applicant's Request and Comments

Applicant requests approval to conduct open (unabated) venting of each well, for a maximum period of 8 hours with only one well to be open-vented at any given time.

D/O Condition

Unabated open venting of geothermal emissions is prohibited except by prior written permission of DLNR or in emergency situations.

Staff's Position:

Staff recommends (prior to drilling) approval of a one-time only 8-hour open-venting period necessary for initial development of each newly drilled well. Any subsequent open-venting request is to be approved in writing on a case-by-case basis after a well is drilled.

### AIR QUALITY MONITORING

(3) Applicant's Request and Comments

Applicant proposes the following program in lieu of the D/O prescribed conditions:

- a. Operation of a meteorological monitoring station located at the drill site.
- b. Use of a mobile monitoring van downwind of the drill site. The mobile monitoring van will be located as close as possible to the maximum estimated impact area for each drill site.
- c. Passive H<sub>2</sub>S monitors will be operated at a radius of approximately 3,000 feet in the primary downwind direction from each drill site.
- d. The mobile monitoring station will monitor air quality and meteorological conditions for a minimum of one week before emissions commence from the well being drilled and continued during drilling, venting and testing.
- e. That the monitoring program described above is consistent with EPA protocol and guidelines and the nature of the incremental geothermal exploration and development activities authorized in the project area.

Applicant states the following:

- a. The air quality monitoring conditions set forth by the BLNR's D/O addresses monitoring requirements for both exploration and production phases of the project.
- b. The proposed monitoring plans as submitted, are directed at the exploration phase of the project and as such, should not be required to meet all the D/O condition, some of which are more specifically related to production activities.
- c. The air quality monitoring proposed for the initial increment of exploration will measure the air quality in the area of maximum estimated impacts due to emissions from drilling, venting, and flow testing of exploratory wells.
- d. That geothermal wells do not meet EPA criteria of major permanent sources of emissions. Thus, the emissions from well drilling, venting and testing during operations as part of any operating power plant, are not large enough to constitute a major source and, therefore, are not subject to EPA PSD review requirements.

- e. Selecting the correct locations for a monitoring station for an area with multiple permanent emission points will be more applicable for the project during the production stage. However, for the proposed initial exploration phase, there will be only one temporary source (except for volcanic emissions) emitting at any one time during drilling and testing of wells.
- f. There will only be one well open (unabated) venting at any given time and then only for a maximum of eight hours. After venting, each well will be flow tested (abated) for 30-45 days continuously, using appropriate pollution and noise abatement systems.
- g. While the D/O requires the applicant to submit the proposed air quality monitoring plan to DLNR for ministerial approval prior to drilling, it is the Department of Health (DOH) who has the responsibility to implement and enforce the regulations for the EPA air quality programs in Hawaii, including the monitoring requirements.

(The Applicant has submitted the proposed monitoring plans and programs to DOH for approval and has indicated that DOH has no major objections to the plans as proposed.)

#### D/O Condition

- a. The D/O requires that monitoring stations be placed at a minimum of five locations, one station each within Hawaiian Acres Subdivision, Waikahekahe Iki, Kaohe Homesteads, Upper Kaimu Communities, and along the southern border of the Kilauea Middle East Rift Geothermal Resource Subzone (KMERGRS), and other locations as required by DLNR.
- b. The monitoring program shall provide for the installation, calibration, maintenance and operation of recording instruments to monitor hydrogen sulfide (H<sub>2</sub>S), sulfur dioxide, mercury, radon and other elements and emissions as may be determined by DLNR.
- c. Applicant shall submit to DLNR for ministerial approval, an Air Quality Monitoring program to be implemented when the well drilling period begins and shall continue through the term of the project.

#### Staff's Position

Staff concurs and recommends approval of the applicant's proposed modification to the air quality monitoring plan for the phase of work related to

the drilling and flow-testing of exploratory wells, based upon the logic of monitoring air quality down-wind of each exploratory well for only a temporary period of testing, subject to approval by the Department of Health. We interpret that the D/O requirement for five permanent monitoring stations around the perimeter of the property was intended to be required when geothermal production is to occur. Approval of the proposed monitoring plan is limited to the drilling and flow-testing of exploratory wells.

### NOISE MONITORING PLAN

#### (4) Applicant's Request and Comments

Applicant proposes the following:

- a. Applicant proposes the use of sound-propagation models (instead of simulating sound levels at each well site) to predict noise levels at downwind locations (receptors) nearest the project site.
- b. Applicant proposes (based on plans to begin exploratory drilling at drill site A1) to conduct sound monitoring at two, instead of five, areas, Kaohe Homesteads and Upper Kaimu Homesteads, which are the two residential areas nearest the project boundary.

Applicant states the following:

- a. Short-term measurements of a simulated-sound source under the existing meteorological conditions when they are not likely to represent the actual operating noises of the project equipment. Also, it is improbable that short-term noise simulation testing would not be representative of all, including adverse, meteorological conditions that may occur at the project site.
- b. Noise monitoring must occur when all project systems are operating simultaneously in their normal mode with noise abatement equipment installed and over a period of time when adverse meteorological conditions would occur.
- c. As long as exploratory drilling occurs in the Northeastern portion of the subzone, applicant believes that the two sound-receptor locations at nearby Kaohe Homesteads and Upper Kaimu Community will adequately and accurately provide an indication of the maximum audible project noise sound levels that could be propagated into any surrounding community.

MAR 23 1989

- d. As authorized by the D/O, a mobile sound monitoring unit will be used. This will enable the operator to monitor noise levels at any of the nearby residences when requested or when a noise complaint is received. Alternate monitoring sites will be selected as may be necessary when new project sites are occupied or if noise complaints are received from any resident near the project.

#### D/O Conditions

- a. Noise monitoring program must be implemented prior to exploratory well drilling and testing period and subject to ministerial approval by DLNR.
- b. Program must include an evaluation of predicted noise levels for selected sites in the residential areas near the proposed drilling and testing operations.

The program must simulate actual sounds levels at each proposed well site and measure noise levels at selected sites. The noise evaluations shall be submitted to DLNR for ministerial approval prior to approval of permission to drill at each site.

- c. The number and location of on-site and off-site monitoring stations shall be subject to the determination of DLNR. Mobile stations may be used.
- d. The noise level monitoring and standards shall be applied to receptors located at a minimum of five stations, similar to those as specified by the air quality monitoring requirements of the D/O, and shall be in operation during the term of the project.
- e. Lastly, the D/O provides that the above guidelines may be administratively adjusted by DLNR based on information derived in the initial phase or phases of the project in order to address activities subsequent to such phases.

#### Staff's Position

Applicant's request to use sound propagation models prepared by Darby & Associates, Inc., acoustical consultants, Kailua, Hawaii, in lieu of onsite simulated noise testing is acceptable and satisfactory to staff, based upon its experience in regulating similar geothermal well drilling. In the past, actual noise monitoring around geothermal drill rigs during operation has always proved satisfactory. Furthermore, standard construction methods are available to attenuate the noise of drill rig operations to acceptable levels and State and County noise standards.

MAR 23 1989

Applicant's request to establish two, instead of five, noise-monitoring sites at the nearest residential homesites (Kaohe Homesteads and Upper Kaimu Homesteads) is deemed to be adequate and satisfactory by staff. These two sites are the nearest residences to the first drill site (site A-1) and, therefore, the likeliest people to be affected. The five sites required by the D/O at the perimeter of the overall project area is believed to relate to the time when geothermal development production actually occurs.

### CONCLUSIONS

Based on staff's review, our Department proposes to approve the above requested modifications to the D/O. Our position is that the modifications are acceptable and may be ministerially approved as provided by the conditions of the D/O.

We respectfully request your review of staff's rationale and plan to approve True/Mid-Pacific Venture's "Environmental Monitoring Plans and Programs, Geothermal Exploration Activities, Kilauea Middle East Rift Subzone," (enclosed) submitted for approval in accordance with the D/O of April 11, 1986. Should you have any questions, please contact Manabu Tagomori at Ext. 7533.



WILLIAM W. PATY

Enc.

JOHN WAIHEE  
GOVERNOR



WARREN PRICE, III  
ATTORNEY GENERAL

CORINNE K. A. WATANABE  
FIRST DEPUTY ATTORNEY GENERAL

STATE OF HAWAII  
DEPARTMENT OF THE ATTORNEY GENERAL  
LAND/TRANSPORTATION DIVISION

ROOM 300, KEKUANAO'A BUILDING  
465 SOUTH KING STREET  
HONOLULU, HAWAII 96813

March 22, 1989

The Honorable William W. Paty  
Chairperson of the Board of  
Land and Natural Resources  
State of Hawaii  
Kalanimoku Building, Room 130  
1151 Punchbowl Street  
Honolulu, Hawaii 96813

Attention: DOWALD and OCEA

Dear Mr. Paty:

Re: True/Mid-Pacific's Proposed Plan of Operation  
and Request for Modification of BLNR Conditions  
in Decision and Order (June 18, 1986) CDUA No.  
HA-12/20/85-1830

We recommend the addition of the following condition in  
the staff's proposal:

True/Mid-Pacific's requested modifications to the  
BLNR's Decision and Order shall only apply to the first  
well drilling in the exploration phase. After the first  
well is drilled and the data regarding abated venting,  
unabated venting, air quality monitoring, and noise  
monitoring has been gathered, True/Mid-Pacific shall  
present the information to the Board for review. If  
True/Mid-Pacific can show and the Board finds that the  
modifications provide sufficient data and safeguards  
consistent with the Decision and Order, the Board may then  
choose whether to continue the requested modifications  
during the exploration phase. Any requests to modify the



The Honorable William W. Paty  
March 22, 1989  
Page 2

conditions in the Decision and Order for the development and production phases must be separately applied for and considered at that time.

Very truly yours,

A handwritten signature in cursive script, appearing to read "William M. Tam". The signature is written in black ink and is positioned above the typed name.

William M. Tam  
Deputy Attorney General

WMT:kk