

GEOHERMAL MANAGEMENT PLAN

Attachment B

<u>I. Changes in PGV's Drilling Procedures and Supervision (Element I)</u>	<u>DUE DATE</u>	<u>AGENCIES:</u> <u>1. LEAD</u> <u>2. SUPPORT</u>	<u>COMMENTS/SCHEDULE</u>
A. Operators Supervisory Personnel			COMPLETED. All items under A. incorporated in amended Plan of Operations approved by DLNR on December 10, 1991.
1. DLNR require operators to: (pg. 13 & 15) a. Have supervisors on rig floor while drilling, especially during crew changes b. Enter all blowout prevention drills and BOPE operations in A.I.D.C. tour reports c. School all toolpushers, drillers and derrickmen in the use of recommended monitoring equipment d. Ensure all drilling personnel understand the implications of changes in subsurface conditions as indicated by the monitoring equipment e. Establish criteria for all drilling personnel to communicate significant changes in subsurface conditions to supervisors and regulators	10/01/91	DLNR	
2. Be conservative and flexible in their approach to casing wells above 2,000 ft. (pg. 13)	10/01/91	DLNR	
3. When drilling below 500 feet, without BOPE, to: (pg. 14) a. Run maximum bottom hole temperatures at every connection, looking for increase in thermal gradient b. Take representative water samples and analyze as soon as possible for salinity and conductivity increases c. Catch cutting samples every 10 feet and analyze for hydrothermal minerals d. If it appears geothermal zone is to be encountered, with approval of DLNR, operator run casing, cement and rig BOPE	10/01/91	DLNR	

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<u>1. Changes in PGV's Drilling Procedures and Supervision (Element 1)</u>	<u>DUE DATE</u>	<u>AGENCIES:</u> 1. LEAD 2. SUPPORT	<u>COMMENTS/SCHEDULE</u>
B. Equipment Modifications			COMPLETED. All items under B. incorporated in amended Plan of Operations approved by DLNR on December 10, 1991.
1. DLNR require operators to: (pg. 14 & 15) <ul style="list-style-type: none"> a. Install larger flow relief from BOPE stack b. Install low pressure burst plate in flow line to divert flow c. Include an additional double gate preventer in the BOPE stack d. Install a silencer or muffler in the 13 3/8 inch diverter line e. Equip mud pumps with the maximum sized pump liners f. Provide adequate cool water supply, on site, to kill well g. Provide a larger mud cooler or add a mud cooler h. Install monitor to alert driller to downhole pressures and changes i. Install mud pit alarm system to alert driller 	10/01/91	DLNR	
C. Regulatory Oversight (pg. 15 & 16)			Items C.1. through C.4. COMPLETED. Incorporated in amended Plan of Operations approved by DLNR on December 10, 1991.
1. Prepare MOU between DLNR and DOH assigning oversight and control of both production and injection wells to one agency	10/01/91	DLNR DOH	
2. Establish mechanism whereby operator permitted to propose and agency approve on-site modifications to casing program or drilling operations	10/01/91	DLNR	

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3.	DLNR review casing program on a well-to-well basis, incorporating accumulated knowledge	10/01/91	DLNR	
4.	Require operators to inform DLNR of changes in the reservoir model	10/01/91	DLNR	
5.	DLNR to update independent reservoir model	12/31/91	DLNR	DLNR working with GeothermEx to refine and update reservoir model.
6.	Delete specific BOPE and casing requirements in administrative rules.	12/31/91	DLNR	Amendments to Ch. 13-183 Administrative Rules have been drafted. Public hearings to be held.
7.	Prepare standard specifications with specific construction details to include BOPE and procedures for the construction of geothermal production and injection wells	12/31/91	DLNR	DLNR Consultant currently preparing drilling and BOPE guidelines.
8.	Ask NGO and ASTM to review current procedures and establish standards for geothermal drilling	12/31/91	DLNR	DLNR Consultant currently preparing drilling and BOPE guidelines.

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II. Emergency Response (Element II)

	DUE DATE	AGENCIES:	COMMENTS/SCHEDULE
		1. LEAD 2. SUPPORT	
A. Agencies review and approve PGV's Emergency Response Plan (pg. 11):	12/31/91	HEER, HCD	DOH approved ERP in February 1992.
1. Evaluate the analysis of the hazard of an uncontrolled well venting	11/30/91	1. DOH 2. HCD, DLNR	ON-GOING. Analysis using available data is COMPLETED.
2. Re-evaluate the warning, alert and emergency action levels for H2S	11/30/91	1. DOH 2. HCD	COMPLETED
3. Develop an emergency action level for noise	11/30/91	DOH	COMPLETED
4. Complete a review of H2S monitoring capability and procedures	11/30/91	1. DOH 2. HCD, HPD, HFD	Review of monitoring and procedures COMPLETED. Purchasing is ON-GOING.
5. Ensure communications and awareness of the plan contents with all responding agencies	11/30/91	DOH, HCD	ON-GOING. Communications and awareness of plan with agencies COMPLETED.
B. Resolve confusion over housing reimbursement (El. II, pg. 11)	08/30/91	HCPD	COMPLETED
C. Resolve function of PGV employee alarm system (El. II, pg. 11)	08/30/91	HCPD	COMPLETED
D. Review notification procedures and provide appropriate verbal and written notification to ensure compliance with the Emergency Planning and Community Right-to-Know Act of 1986 (El. II, pg. 11)	08/30/91	1. DOH 2. HCD	COMPLETED

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<u>III, Part I. Air and Noise Monitoring (Element II, Part I, Reynolds)</u>		<u>DUE DATE</u>	<u>AGENCIES:</u> 1. LEAD 2. SUPPORT	<u>COMMENTS/SCHEDULE</u>
A. Air Monitoring Network				
1.	Discontinue unneeded background monitoring sites and redirect savings to source control, evaluation and high quality portable field monitors (pg. 5)	07/01/92	CAB	DOH will retain Nanawele as a background monitoring station; and relocate Wood Station downwind.
2.	Establish a unified air monitoring system, managed and audited by DOH, and follows input from Stakeholders, to include (pg. 5 & 6):			Need to better define scope of this program
a.	Verification of concentrations of other (non-H ₂ S) toxic pollutants	11/30/91	CAB	Awaits resumption of PGV drilling and well tests
b.	A meteorological measurement system at each permanent H ₂ S monitoring station	3 mos. after funding		Procurement initiated
c.	The acquisition of a password protected remote access modem capability system at each permanent H ₂ S monitoring system in order to provide timely information to regulatory agencies	3 mos. after funding		Procurement initiated
d.	A uniform, functional, short, sampling intake, manifold and monitor intake line to be cleaned regularly	11/01/91		COMPLETED
e.	Add a meteorological station to the Irvine site	3 mos. after funding	ASAB	Procurement initiated
f.	Establish a QA program, using GAMP or existing SAIC program, at all stations with quarterly independent DOH staff audits.	11/01/91	ASAB	COMPLETED (Supplies require on-going funding)
g.	Obtain additional portable H ₂ S monitors (Jerome equivalent). Configure 1 for automatic data recording	11/01/91	CAB	DOH has borrowed Jerome monitors until items ordered from manufacturer are received.
h.	At existing H ₂ S monitoring stations:			
(1)	Modify or replace manifold intake probe and sample line at Alvarez and Wade stations to remove condensation	11/01/91	CAB	COMPLETED
(2)	Conduct independent gas phase audit at Alvarez and Wade stations	11/01/91	ASAB	COMPLETED (Supplies require on-going funding)

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<u>III. Part I. Air and Noise Monitoring (Element III. Part I, Reynolds)</u>	<u>DUE DATE</u>	<u>AGENCIES:</u>		<u>COMMENTS/SCHEDULE</u>
		<u>1. LEAD</u>	<u>2. SUPPORT</u>	
(3) Improve written station procedures, data handling and station equipment diagram at Alvarez, Wade, Leilani and Nanawele stations	11/01/91	CAB		COMPLETED
(4) Regularly clean manifold, intake probe and sample line at all H2S monitor stations	11/01/91	CAB		COMPLETED
(5) Establish a station log and perhaps a monitor log that remains with station and equipment at Alvarez, Wade, Leilani and Nanawele stations	10/01/91	CAB		COMPLETED
(6) Offset chart zero by 10% and carefully document drift if accuracy in the 2-6 ppb range is to be claimed. Establish tolerances in the QA program that reflect the desired low concentration accuracy at all stations except Leilani and Nanawele	11/01/91	ASAB		COMPLETED
(7) Add password level remote access integration into QA and data reduction of station data. Provide password level controlled immediate access to appropriate agencies at all stations	07/01/92	1. CAB 2. ASAB		Refer to Task A.2.C. Equipment procurement initiated. (Telecommunication maintenance requires on-going funding)
(8) Add meteorological capability to Nanawele station	07/01/92	1. ASAB		COMPLETED
(9) Direct PGV to add meteorological capabilities to PGV SE and Woods Stations	07/01/92	CAB		COMPLETED (MOU with PGV)
(10) Calibrate and audit station at a lower range of H2S than presently utilized at all stations	11/01/91	ASAB		COMPLETED
(11) Add functional data loggers (CAB presently preferred) at Leilani and Nanawele stations	07/01/92	ASAB		Refer to Task A.2.C. Equipment procurement initiated.
(12) Prepare monthly tables showing hourly averages and peak daily H2S rates (and DOH clearly identify station location, name and operator) at all stations	07/01/92	CAB		CONTINUING
3. Redistribute H2S monitoring stations (pg. 7)				
a. Drop PGV Woods Station; retain only one background Station at Nanawele	07/01/92	CAB		Woods relocated downwind; Nanawele to be retained.
b. Relocate PGV Southeast Station more to Southwest	07/01/92	CAB		Woods to be located Southwest. (Southeast to remain)

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<u>III, Part I. Air and Noise Monitoring (Element III, Part I, Reynolds)</u>	<u>DUE DATE</u>	<u>AGENCIES: 1. LEAD 2. SUPPORT</u>	<u>COMMENTS/SCHEDULE</u>
c. Drop Alvarez Station	11/30/91	CAB	DOH will retain and relocate if necessary.
d. Retain Irvine Station for met only and add multi-level wind and temperature capability		ASAB	Refer to Task A.2.E. Equipment procurement initiated.
B. Geothermal Resources Permit and Noise Monitoring (El. III, Pt. 1, pg. 7 & 8)			Comprehensive State-wide noise standards will be developed by DOH. (Drafting in progress)
1. Clarify GRP requirements for noise	10/01/91	1. NR 2. HCPD	COMPLETED. More stringent noise conditions incorporated in revised Plan of Operations issued by DLNR.
2. Designate one government office to receive and investigate noise complaints	10/01/91	DOH	COMPLETED. Included in Task C.3.
3. Acquire one mobile/portable unmanned noise monitor with shelter and modem	07/01/92	NR	Procurement process initiated. (Delivery by July 1, 1992) Equipment set-up pending Consultant's assistance. Training scheduled.
4. More frequently perform agency spot checks of developer's noise control efforts and periodically compare calibrators	09/01/91	NR	On-going
5. Evaluate present noise standards with, if necessary, an expert opinion on BACT assessments	07/01/92	NR	COMPLETED. See III.B.1.
6. Direct noise monitoring effort toward resolution of complaints and identification of source problem solutions. Redirect part of monitoring effort to specific problem noise identification	07/01/92	NR	On-going
7. Noise BACT determination should be sensitive to worker safety, and not allow equipment choices to dictate subsequent noise control steps	07/01/92	NR	Included in Task B.5.
C. Permit and Compliance Review (El. III, Pt. 1, pg. 8 & 9)			
1. Evaluate 100 ppbv one hour average limitation (AAQS)	11/01/91	CAB	Revised to 25 ppb, one-hour average; 10 ppb, 24-hour average.
2. Evaluate remaining KS-8 health complaints	On-going	DOH	COMPLETED. Center for Disease Control has evaluated complaints.
3. Designate one government office to receive and investigate air and noise complaints. Avoid referring complaints to developer	10/01/91	1. CAB 2. NR	DOH designated. COMPLETED.

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<u>III, Part I, Air and Noise Monitoring (Element III, Part I, Reynolds)</u>	<u>DUE DATE</u>	<u>AGENCIES: 1. LEAD 2. SUPPORT</u>	<u>COMMENTS/SCHEDULE</u>
4. Characterize resource (test and analyze all components of all fluids)	11/30/91	CAB	Awaits resumption of PGV drilling and well tests.
5. DOH actively participate in source tests and independently quantify H ₂ S emissions during drilling, stacking and controlled or uncontrolled venting, specifically (Pg. 8 & 9):			Also relates to Task II.A, "Worst-Case Scenarios"
a. Obtain expertise to measure drift and trace toxics contained in particulate and gas phases during emission release events until they are well documented and established	11/30/91	DOH	COMPLETED. Expertise is currently available to complete study. Study unnecessary since planned open venting not permitted.
b. Develop accurate and comprehensive emissions inventory and geothermal resource chemical constituent database specific to the project and individual wells	11/30/91	CAB	DOH recently acquired resources to do this.
c. Develop emission limits and/or technology development and application to all known emission points based upon BACT, and test performance under good dispersal conditions (start with stacking control system)	on-going	CAB	ON-GOING. BACT analysis is done for all emission points. Testing is done to determine compliance with ATC before PTO is issued. This recommendation more applicable to power plants.
d. Remove restriction on air drilling from ATC, if possible	11/01/91	CAB	THIS ITEM WILL NOT BE ACCOMPLISHED. PGV does not intend to air drill due to noise limitations.
e. Determine if KS-8 explosions caused by a pressure surge (gas pressured from bottom of hole) or it was a water/mud hammer	11/01/91	DLNR	COMPLETED. Independent experts have said that this determination is not possible.
f. Evaluate maximum accidental exposure to close residents and ensure those residents know of circumstances/risk and steps they can take to protect themselves	11/01/91	DOH	To be addressed under Task II.A

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<u>III, Part II. Micrometeorological, Aerometric and Health Effects Analysis (Element III, Part II, Goddard)</u>		<u>DUE DATE</u>	<u>AGENCIES:</u> 1. LEAD 2. SUPPORT	<u>COMMENTS/SCHEDULE</u>
D.	Rigorously enforce H2S limits (pg. 2 & 42)	07/01/92	CAB	Initiated. ON-GOING.
1.	Conduct frequent unannounced field inspections			ON-GOING. Additional staff is now available to do this.
2.	Implement emission rate measuring procedures, equipment and database to quantify emission rates and log emission data			Refer to Tasks IIIA.2.c. and IIIA.2.h.(7)
3.	Frequently verify resource geo-chemical analysis by independent laboratory analysis			Included in Task IIIA.2.f.
4.	Immediately geo-chemically analyze new resources at a frequency at which minimal changes between samples are observed			Included in Task IIIA.2.f.
5.	Chemically analyze developed resources quarterly or more frequent if a 10% change is observed			Included in Task III.C.4.
E.	Establish a Puna Air Monitoring Panel to advise on air and noise monitoring	07/01/92	DOH	DOH is establishing a Puna Advisory Committee which will have 5 community members.
F.	Modify station positions and install additional met equipment and sites as shown in Figure 6-1 and described in pg. 43 and 45 of Element III, Part II. Each station change should be done sequentially starting with existing stations farthest from PGV site (Element III, Part II, Pg. 2, 43, 45)	07/01/92	1. CAB 2. ASAB	See Task III.A.1

1. PREPARE BY SEPTEMBER 13, 1991, FINAL RECOMMENDATION ON FUTURE OF SCIENTIFIC OBSERVATION HOLE (SOH) PROJECT. (DBED)

All drilling activity has been voluntarily suspended until completion of a federal EIS.

Tonto drilling rig has been returned to the mainland until additional environmental documentation and permits for next drilling phase of the SOH program are obtained.

Non-drilling testing and monitoring activity is being conducted for those wells already drilled. Analysis continues on data obtained to date.

[DBED-3/20/92]

Additional water sampling, hydrogeologic, geochemical and seismic surveys, as well as injection and interference testing, are being proposed as part of continued SOH non-drilling program.

(To be funded with \$1.5 million of a \$3 million CIP appropriation for geothermal resource assessments; balance may be reprogrammed by the Legislature for a directional drilling project at NELHA.)

[DBED-3/20/92]

Final rec

2. COMPLETE BY SEPTEMBER 6, 1991, NEGOTIATIONS AND ALL OTHER REQUIREMENTS ON THE SALE OF HGP-A STEAM TO PGV. (DBED)

Negotiations started in earnest in 1990 and NELH and PGV were close to agreement before the June blowout.

PGV is unlikely to make any commitments for use of HGP-A steam pending further evaluation of their own steam resource potential and requirements.

Current plans are to use HGP-A well only for monitoring purposes.

[DBED-3/20/92]

NELHA has proposed the installation of a heat exchanger unit to extract waste heat from PGV's reinjection fluids in order to circulate heated potable water (not geothermal fluids) to the Puna Research Center to continue NELHA's research programs. No decision from PGV on this proposal.

Further, PGV has expressed some concern regarding any program tied to HGP-A and its potential impacts related to the requirement of a federal EIS.

[DBED-3/20/92]

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June 199

3. RECOMMEND BY SEPTEMBER 13, 1991, NELHA/DBED'S POSITION ON PURPOSES FOR WHICH HGP-A STEAM SALE REVENUES CAN BE EXPENDED FOR ASSET FUND, RESEARCH AND DEVELOPMENT, AND GEOTHERMAL REGULATORY AND MONITORING ACTIVITIES. PROJECTED GROSS REVENUES FROM THE SALE TO APPROXIMATELY \$400,000 PER YEAR FROM WHICH OHA'S SHARE AND OPERATIONS AND MAINTENANCE EXPENSES MUST BE DEDUCTED.

DBED continuing to determine appropriate use of revenues from sale of steam. However, \$400,000 annual gross revenue projection is too high; \$200,000 more realistic -- of which OHA is entitled to 20%. After operating and maintenance costs, net proceed projected to be less than \$100,000 per year.

[DBED--10/7/91]

DBED is continuing to seek resolution of temporary and permanent relocation jointly with other state departments and Hawaii County. (Options under consideration include a state land exchange program and the concept of a transfer of development rights.)

[DBED--3/20/92]

Unlikely that NELHA to Therefore asset fund

4. PREPARE BY SEPTEMBER 13, 1991, RECOMMENDATIONS ON THE COUNTY'S ASSET FUND ADDRESSING QUESTIONS SUCH AS: (DLNR)

a. Should the State participate beyond what it has done up to now? So far the State has contributed \$250,000 into the fund authorized by the Appropriations Act of 1990. PGV has also contributed its share. The County of Hawaii must adopt the fund. Mayor Inouye has made public statements on desirability of relocating residents residing in the proximity of project sites presumably with the State and PGV assuming relocation costs, possibly out of the Asset Fund.

Hawaii County must complete administrative rules before the asset fund can be utilized.

Hawaii C Decision

Legislation could authorize the state to contribute to the asset fund on a long term basis from HGP-A steam sale and/or geothermal royalties. Legislation could authorize the DLNR to require developers of geothermal resources in conservation lands to contribute to the asset fund or something similar.

Legislative contribution

b. Should the State administration seek legislation to authorize the State to contribute to the Asset Fund on long-term from HGP-A steam sale revenues or geothermal royalties?

The HGP-A steam sale negotiations have not been concluded pending restoration of activity at PGV.

Final rec

Legislation relating to relocation and use of geothermal royalties are pending before the Legislature.

- c. Should State take a position on purposes for which Asset Fund may be expended, including eligibility criteria to be beneficiaries? Should individuals and families be eligible for benefits or should only communities in general be b

With regard to the state's further participation in the establishment of the asset fund, enabling legislation is necessary to properly authorize funding of the asset fund from net revenues derived from the sale of steam from HGP-A to PGV.

If the purpose of Act 315, SLH 1991, is to share geothermal royalties (30%) with the county for use in mitigating the negative impacts of geothermal development, future legislation may be required to specifically designate the use of such funds for that purpose.

Inasmuch as the state has advanced \$250,000 to the asset fund with provisions for reimbursement, greater state participation is warranted concerning implementation and administration of the fund.

[DLNR--9/18/91]

If the state is to provide continuing input to asset fund, it must look at sources of funding other than from the sale of HGP-A steam. Also, need to address question of extent state resources should be used to compensate private residents and communities for impacts by private development efforts.

[DBED--10/7/91]

The uses of Asset Funds and the related matters of relocation and use of royalties and revenues from possible sale of steam should be reviewed after this year's legislative session.

Final re

Should there continue to be a need for state support to the Asset Fund, legislative proposals for the 1993 session can be prepared at that time.

[DLNR--3/11/92]

5. PREPARE BY SEPTEMBER 30, 1991, RECOMMENDATION ON GO/NO-GO DECISION ON GEOTHERMAL DEVELOPMENT INCLUDING SPECIFIC CONDITIONS UNDER WHICH DEVELOPMENT CAN PROCEED SHOULD THE RECOMMENDATION BE A "GO" DECISION.

Upon completion of review of circumstances of blowout and technical experts' reports and recommendations, the State/County Task Force agreed with the experts' conclusion "that if the recommendation presented in this report are implemented, drilling geothermal wells in the Kilauea East Rift Zone may proceed safely." The task force prepared an Action Plan which identifies specific actions which must be taken to implement the reports' recommendations, and received the Governor's and Mayor's approval to proceed.

[DBED--10/7/91]

*DLNR has initiated a review of True/Mid Pacific Geothermal Venture's drilling procedure and has called for a reaffirmation of True's previously approved Emergency Response Plan.

All recomm
Force's Ge
Implement
suspension
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*DBED--3/20/92; not included in DLNR report.

6. INTEGRATE BY OCTOBER 31, 1991, STATE'S WORK PLAN WITH THAT OF HAWAII COUNTY.

(DBED)

Above referenced Action Plan reflects a joint effort by the state and county, and contains an integrated approach to work that must be done if further development is allowed to take place. Close coordination with PGV by state and county officials is also taking place to ensure that actions required by the developer are also implemented.

[DBED--10/7/91]

The development and implementation of Geothermal Management Plan has provided the foundation and framework for continued cooperation and coordination between the state and county.

Close monitoring of PGV by state and county regulators has been established to ensure that actions required by the developer have been implemented and that activities are in compliance with state and county permits.

State funds administered by DBED have been provided to the county for a county geothermal compliance coordinator.

[DBED-3/20/92]

7. ANNOUNCE TO PUBLIC ON NOVEMBER 1, 1991, STATE'S SHORT AND INTERMEDIATE RANGE GEOTHERMAL DEVELOPMENT PLANS.

(DBED)

(See policy and priority statement in #8 below.)

[DBED-3/20/92]

8. DRAFT BY SEPTEMBER 30, 1991, STATE ADMINISTRATION'S POLICIES AND PRIORITIES ON GEOTHERMAL DEVELOPMENT INCORPORATING STATE POLICY AND INTEGRATED RESOURCE PLANNING EFFORTS. UNVEIL ON NOVEMBER 1, 1991, STATE'S OVERALL POSITION PAPER ON GEOTHERMAL DEVELOPMENT

Requested due date be changed to 11/1/91.
[DBED--10/7/91]

The state's request to participate as a co-lead agency with the U. S. Department of Energy in the preparation of the federal NEPA EIS for a large-scale geothermal/cable development project has been denied.

In addition, the DOE has rejected our request seeking judicial redefinition of the geothermal development project defined by the U. S. District Court.

The State's current position is that the exploration and development that has been permitted to date have been stand-alone projects and should not, for the purpose of the federal or state EIS, be construed as part of any integral first step toward a large-scale geothermal/undersea cable project.

[DBED--3/20/92]

As reflected in the revised Energy Functional Plan, the state is committed to support and assist geothermal development first to serve the electricity needs of the island of Hawaii.

The extent of continued state support for any large-scale geothermal development and the export of power interisland shall be dependent on the social, economic, and environmental feasibility and benefits. The very scope of such a proposal will depend upon the availability, nature, and extent of the geothermal resource, and only when that resource is reasonably confirmed can an interisland master plan and cable route be identified.

DBED is planning to complete a conceptual master plan for the development of geothermal resources in the Kilauea East Rift Zone and a state planning and evaluation/guideline document for private geothermal development which should clarify the state's current geothermal policy and the administration's refocusing of efforts to meet the Big Island's energy needs.

[DBED--3/20/92]

A draft geothermal development priority guidelines

9. ADOPT BY NOVEMBER 30, 1991, AIR QUALITY RULES. NEED PUBLIC HEARING. (DOH)

DOH (in Lewin vs. Ajull) took position that specific rules were not needed to permit geothermal facilities. The state prevailed in Circuit Court.

A final draft has been developed to establish ambient air quality standards for hydrogen sulfide at 25 ppb (1-hour standard).

Public he

The Supreme Court recently ruled that DOH must promulgate air quality standards, which is being expedited.

No specific hydrogen sulfide emission limits for geothermal facilities will be proposed.

10. ADOPT BY NOVEMBER 30, 1991, NOISE STANDARD RULES. NEED PUBLIC HEARING. (DOH)

Original Geothermal Management Plan specified development and promulgation of departmental rules statewide, by July 1, 1992; completion date was revised in August 1991 to December 31, 1992; then subsequently deleted as noise limits have been incorporated into DLNR drilling permit. These include guidelines and provisions for geothermal development operations under which drilling can be resumed. These are presently in effect.

Noise and Radiation Branch developing statewide rules.

Public not
with rules

Funds for adoption of statewide noise rules are in present fiscal year budget.

11. UPDATE BY NOVEMBER 30, 1991, DLNR'S GEOTHERMAL RULES BASED ON LATEST ENABLING LEGISLATION. NEED PUBLIC HEARING.

Draft revisions to administrative rules Chapter 183 (Leasing and Drilling of Geothermal Resources), Chapter 184 (Designation and Regulation of Geothermal Resource Subzones) have been prepared.

DLNR plan

Chapter 185 (Rules of Practice and Procedure for Geothermal and Cable System Development Permitting) did not require revision.

12. MONITOR ON-GOING GEOTHERMAL ACTIVITIES AS REQUIRED BY PERMITS, RULES AND LAWS. (DOH)

Monitoring activities are on-going; during non-drilling periods, staff conducts routine surveillance during daytime working hours; staff on standby evenings and weekends to respond to complaints. 24-hour answering service receives calls from the public.

Permanen
capabilities
PGV site a
assessment

Temporary office established at HGP-A Research building; staff stationed in project area on a 24-hour basis during drilling periods.

Air monitoring by 2 permanent and 2 mobile stations operational 24-hours, 7 days a week.

[DOH-3/25/92]

A memorandum of understanding with DOH gives DLNR added responsibility to monitor and regulate drilling of geothermal injection wells. Improvement of DLNR's regulatory capabilities together with its recently expanded monitoring responsibilities (i.e., injection wells) will require additional positions and resources.

[DLNR-9/18/91]

Pending re
geotherma

DLNR has one person in the field.

Second was interviewed for hire as soon as funds are released to meet additional geothermal tasks resulting from the State/County Geothermal Management Plan.

[DLNR-3/11/92]

13. DETERMINE BY SEPTEMBER 13, 1991, WHICH INVESTIGATIVE CONSULTANTS' RECOMMENDATIONS ARE TO BE ACCEPTED AND IMPLEMENTED, MODIFIED.

Geothermal task force (DOH, DLNR, DBED and Hawaii County) developed the geothermal work plan. A majority of the recommendations were accepted.

Recommendation to allow air drilling was rejected, as it would not be able to meet noise standards and prevent gas escaping during boring process.

Puna Air Monitoring Program was modified to change the role of the committee from an operations management committee to an advisory committee, which will meet on a monthly basis, or more frequently if necessary.

[DOH-3/25/92]

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12/31/91.

14. PREPARE BY SEPTEMBER 13, 1991, RECOMMENDATION ON PGV'S ROYALTY WAIVER REQUEST. LAND BOARD BY LAW CAN, AS AN INCENTIVE, PAYMENTS TO THE STATE FOR UP TO EIGHT YEARS. FOR PGV THE AMOUNT THAT COULD BE WAIVED WOULD EQUATE TO APPROXIMATELY \$30 PER YEAR. THE TIMING OF PGV'S WAIVER REQUEST IS UNFORTUNATE. SHOULD THE STATE DECIDE TO PARTIALLY OR TOTALLY WAIVE ROYALTY PERCEPTION MAY BE THAT THE STATE IS SUBSIDIZING PGV'S OPERATION TO OFFSET DEVELOPER'S INEFFICIENCY. ALSO, OHA AND COUNTY RECIPIENTS OF PART OF THE ROYALTIES, MAY NOT BE PLEASED WITH WAIVER BEING GRANTED

Prior to determination by BLNR concerning granting of a royalty waiver, DLNR must select method to calculate value of geothermal resources produced. (See discussion of method considered.)

Basis for granting a waiver must take into consideration the progress of geothermal development taking place at the time of application for waiver, the technical and financial capabilities of the applicant to undertake the project, and the need for providing a financial incentive in order for the applicant to proceed.

Also, a determination (administratively or legislatively) must be made regarding the waiver of royalty payments as it relates to the county and OHA. It is unclear whether the BLNR can legally waive royalty payments of which a portion has been designated to another agency (i.e., OHA/county).

[DLNR-9/18/91]

Several methods for evaluating geothermal resources have been reviewed. The U. S. Department of the Interior Minerals Management Service netback depreciation method is the method being recommended to the BLNR. This method results in high yields to the state over the projected 35 years of the project, but provides zero or small amounts of royalties in the early start up years of the project. Therefore, this method helps the developer at the outset but provides high yields to the State as the project matures. This method would not require a waiver of royalties to the developer.

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15. DETERMINE BY SEPTEMBER 13, 1991, RESOURCES (FUNDS, POSITIONS, EQUIPMENT) REQUIRED TO FULLY DISCHARGE DEPARTMENT'S GEOTHERMAL RESPONSIBILITIES.

DLNR's regulatory responsibilities will increase with growth and expansion of geothermal development activities. Proper resource management and regulation of geothermal development includes plans and permit review, leasing of geothermal resources, and inspection and monitoring of all well drilling and power plant operations. Additional resources for the establishment of a Geothermal Branch within the Division of Water Resource Management should be pursued.

[DLNR-9/18/91]

The Task Force Action Plan (submitted to the Governor on September 23) requested funds and positions required by DBED, DOH and DLNR to implement the plan. DBED has requested \$100,000 which includes one position. The others have requested approximately \$1.5 million, including 14 positions. Since the scope of the plan addressed primarily the blowout incident and what needed to be done in order for that development to proceed safely, there may be additional requirements to support additional geothermal development.

[DBED-10/7/91]

Funding for FY 1992 expenditures were provided through release of departmental restrictions.

[DOH-3/25/92]

DBED has requested Geothermal Co. to provide coordination of DLNR and DOH county and to protect the community.

DLNR requires FY 1993 for geothermal expenses.

Expenditures for supplemental budget Committee deleted positions and a noise monitoring drilling to normal