

PMC-ND

(1.08.09.13)

**U.S. DEPARTMENT OF ENERGY**  
**OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY**  
**NEPA DETERMINATION**

**RECIPIENT:** University of Hawaii Manoa**STATE:** HI

**PROJECT TITLE :** Comprehensive analysis of Hawaii's geothermal potential through Play Fairway integration of geophysical, geochemical, and geological data

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0000841	DE-EE0006729	GFO-0006729-005	GO6729

**Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:**

**CX, EA, EIS APPENDIX AND NUMBER:**

Description:

- A9 Information gathering, analysis, and dissemination** Information gathering (including, but not limited to, literature surveys, inventories, site visits, and audits), data analysis (including, but not limited to, computer modeling), document preparation (including, but not limited to, conceptual design, feasibility studies, and analytical energy supply and demand studies), and information dissemination (including, but not limited to, document publication and distribution, and classroom training and informational programs), but not including site characterization or environmental monitoring. (See also B3.1 of appendix B to this subpart.)
- B3.1 Site characterization and environmental monitoring** Site characterization and environmental monitoring (including, but not limited to, siting, construction, modification, operation, and dismantlement and removal or otherwise proper closure (such as of a well) of characterization and monitoring devices, and siting, construction, and associated operation of a small-scale laboratory building or renovation of a room in an existing building for sample analysis). Such activities would be designed in conformance with applicable requirements and use best management practices to limit the potential effects of any resultant ground disturbance. Covered activities include, but are not limited to, site characterization and environmental monitoring under CERCLA and RCRA. (This class of actions excludes activities in aquatic environments. See B3.16 of this appendix for such activities.) Specific activities include, but are not limited to: (a) Geological, geophysical (such as gravity, magnetic, electrical, seismic, radar, and temperature gradient), geochemical, and engineering surveys and mapping, and the establishment of survey marks. Seismic techniques would not include large-scale reflection or refraction testing; (b) Installation and operation of field instruments (such as stream-gauging stations or flow-measuring devices, telemetry systems, geochemical monitoring tools, and geophysical exploration tools); (c) Drilling of wells for sampling or monitoring of groundwater or the vadose (unsaturated) zone, well logging, and installation of water-level recording devices in wells; (d) Aquifer and underground reservoir response testing; (e) Installation and operation of ambient air monitoring equipment; (f) Sampling and characterization of water, soil, rock, or contaminants (such as drilling using truck- or mobile-scale equipment, and modification, use, and plugging of boreholes); (g) Sampling and characterization of water effluents, air emissions, or solid waste streams; (h) Installation and operation of meteorological towers and associated activities (such as assessment of potential wind energy resources); (i) Sampling of flora or fauna; and (j) Archeological, historic, and cultural resource identification in compliance with 36 CFR part 800 and 43 CFR part 7.

**Rationale for determination:**

The U.S. Department of Energy (DOE) is proposing to provide federal funding to the University of Hawaii at Manoa to address the overarching theme of uncertainty quantification and reduction for geothermal exploration, specifically through the development of Geothermal Play Fairways. A play fairway analysis defines levels of uncertainty with respect to the presence and utility of geothermal system elements, and translates them into maps to high grade the geographic area over which the most favorable combinations of heat, permeability, and fluid are thought to extend. Previous NEPA Determinations (GFO-FOA0000841-001, GFO-0006729-002, and GFO-0006729-003) reviewed Budget Periods (BP) 1 and 2 of the project. A review of BP3 was completed (GFO-0006729-004) but since that review, project activities were modified from data collection at a well being drilled separately from the DOE project to the deepening of one, possibly two, existing water wells, sampling of formation fluids, and downhole geophysics. Pending well access and available funding, the project may also collect groundwater samples around the state and perform magnetotelluric (MT) geophysics at up to three locations in the state. This NEPA review is for the modified BP3 activities but currently there is only enough project information available to review Tasks 14, 15, and 16 within

BP3. Completion of these tasks would define the remaining BP3 activities and determine the details needed for DOE's review of those activities. All remaining BP3 tasks will require further NEPA review.

Task 14 and 16 would include the lowering of a camera and gyroscopic logging equipment into one of the existing wells to determine if the well is straight enough for core drilling or if there are any blockages or issues that would preclude moving forward with deepening of the well. Video footage would also be obtained from a similar previous camera inspection of the other well being considered for deepening. Task 15 is for the preparation and submission of environmental documents required by the state of Hawaii as part of the Hawaii Environmental Policy Act prior to moving forward with the subsequent activities of the project. This task would consist exclusively of information gathering, document preparation, and dissemination. DOE does not anticipate any impacts to resources of concern due to the activities proposed in these two tasks.

Based on the review of the proposal, DOE has determined that Tasks 14, 15, and 16 within BP3 fit within the class of action(s) and the integral elements of Appendix B to Subpart D of 10 CFR 1021 outlined in the DOE categorical exclusion(s) selected above. DOE has also determined that: (1) there are no extraordinary circumstances (as defined by 10 CFR 1021.410(2)) related to the proposal that may affect the significance of the environmental effects of the proposal; (2) the proposal has not been segmented to meet the definition of a categorical exclusion; and (3) the proposal is not connected to other actions with potentially significant impacts, related to other proposals with cumulatively significant actions, or an improper interim action. Tasks 14, 15, and 16 within BP3 are categorically excluded from further NEPA review.

#### NEPA PROVISION

DOE has made a conditional NEPA determination for this award, and funding for certain tasks under this award is contingent upon the final NEPA determination.

Insert the following language in the award:

You are restricted from taking any action using federal funds, which would have an adverse affect on the environment or limit the choice of reasonable alternatives prior to DOE/NNSA providing either a NEPA clearance or a final NEPA decision regarding the project.

Prohibited actions include:

Task 17: Ship UH drill rig and ship/purchase preliminary supplies to Lanai

Task 18: Install temporary casing in Lanai Well 10

Task 19: Deepening of Lanai Well 10. Collection of core and fluids

Task 20: Downhole Geophysics on Lanai Well 10

Task 21: Analyses and Archiving of Drill Core

Task 22: Geophysical and Groundwater Data Collection

Task 23: Refine and improve Play Fairway BP2 probability and confidence models

Task 24: Integration of Results into improved Conceptual Model of Lanai's Geothermal Resource, and updated Phase 3 probability and confidence maps

This restriction does not preclude you from:

Task 14: Lower state owned camera down Lanai Well 10. Obtain video from similar exercise conducted on Lanai Well 9 in June 2016

Task 15: Prepare Environmental Assessment and submit to Office of Environmental Quality Control

Task 16: Performance of Gyroscopic Log on Lanai Well 10

If you move forward with activities that are not authorized for federal funding by the DOE Contracting Officer in advance of the final NEPA decision, you are doing so at risk of not receiving federal funding and such costs may not be recognized as allowable cost share.

Note to Specialist :

Geothermal Technologies Office

This NEPA determination requires a tailored NEPA provision.

#### SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:



Casey Strickland

Date: 9/18/2018

NEPA Compliance Officer

**FIELD OFFICE MANAGER DETERMINATION**

Field Office Manager review required

**NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:**

- Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
- Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

**BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :**

Field Office Manager's Signature: \_\_\_\_\_  
Field Office Manager

Date: \_\_\_\_\_