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(1.08.09.13)

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

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

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

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000841	DE-EE0006729	GFO-0006729-001	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.
B3.6 Small-scale research and development, laboratory operations, and pilot projects	Siting, construction, modification, operation, and decommissioning of facilities for smallscale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); and small-scale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible). Not included in this category are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial deployment.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to the University of Hawaii 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.

The proposed University of Hawaii project was one of 11 projects included in a previous, FOA-wide NEPA determination (GFO-FOA0000841-001; CX A9; 7/31/2014) for Funding Opportunity Announcement, DE-FOA-0000841. The previous NEPA determination reviewed Phase/Budget Period 1 activities (Tasks 1-7) only which included literature searches, compilation of data, GIS analysis, computer simulation, and presentation of results. Following a competitive down-select, six projects were selected to move forward into Budget Period 2 (BP2). This NEPA determination is only for BP2 activities listed below that would be conducted by the University of Hawaii. At the conclusion of BP2, there would be a Go/No-Go decision to determine whether or not the project would continue to Budget Period 3.

BP2 would consist of six tasks:

Task 8: Validate and refine the groundwater indications of geothermal activity by obtaining new groundwater data
Task 9: Develop 3-D crustal stress models to help infer subsurface permeability
Task 10: Explore for heated fluid and delineate its distribution with new MT/AMT and gravity surveys
Task 11: Integrate all data and produce improved and new resource probability models
Task 12: Rank Plays for Budget Period 3
Task 13: Write final BP2 report

Task 8 would involve sampling water from existing wells and conducting water chemistry analysis. While the exact locations of the water wells to be sampled have not been identified, no impacts to sensitive resources are expected as a result of the sampling activities. Tasks 9, 11, 12, and 13 would consist of desktop research and analysis and computer modeling

Task 10 would involve performing geophysical surveys on the islands of Lanai and Maui. The geophysical surveys include establishing temporary magnetotelluric (MT), audiomagnetotelluric (AMT) data collection stations and gravity surveys. At this time, there is not enough information to complete a thorough review of the survey activities on Lanai and Maui; therefore, all Task 10 activities are prohibited until an additional NEPA review by DOE has been completed.

Based on review of the project information and the above analysis, DOE has determined that Tasks 8, 9, 11, 12, and 13 would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined the activities associated with these tasks are consistent with actions contained in DOE categorical exclusion A9 "information gathering, analysis and dissemination," B3.1 "Site Characterization" and B3.6 "small-scale research and development, laboratory operations and pilot projects" and is 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 10: Explore for heated fluid and delineate its distribution with new MT/AMT and gravity surveys
This restriction does not preclude you from:
Task 8: Validate and refine the groundwater indications of geothermal activity by obtaining new groundwater data
Task 9: Develop 3-D crustal stress models to help infer subsurface permeability
Task 11: Integrate all data and produce improved and new resource probability models
Task 12: Rank Plays for Budget Period 3
Task 13: Write final Budget Period 2 report

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.

Insert the following language in the award:

You are required to:

The recipient is required to submit a new EQ-1 for geophysical survey activities on Lanai and Maui to DOE for additional NEPA review prior to beginning work on those activities.

Note to Specialist :

Geothermal Technologies Office
This NEPA determination requires a tailored NEPA provision. Please see above.
Review completed by Logan Sholar on 4/25/2016

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Kristin Kerwin Date: 4/25/2016
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: _____ Date: _____
Field Office Manager