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

RECIPIENT: Baylor University **STATE:** TX

PROJECT TITLE : DEVELOPMENT OF A NOVEL, NEAR REAL TIME APPROACH TO GEOTHERMAL SEISMICEXPLORATION AND MONITORING VIA AMBIENT SEISMIC NOISE INTERFEROMETRY

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001445	DE-EE0007699	GFO-0007699-002	GO7699

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 Baylor University to build and test a Raspberry Pi Enhanced REF TEK (RaPiER) seismic nodal system that is capable of acquiring, transmitting, and processing seismic data in near real-time. This study is intended to develop a novel technology for characterizing geothermal sites by extracting information from ambient seismic noise surveys.

A previous NEPA Determination (GFO-0007699-001; CX A9, B3.1; 08/25/2016) reviewed Budget Period 1 activities. This NEPA Determination is to review Budget Period 2.

Budget Period 2 of the proposed project would involve data analysis, computer modeling, preliminary engineering and design, and field work consisting of instrumentation and short term site monitoring/characterization. A small-scale field test of 20 RaPiER nodes was conducted during Budget Period 1; during Budget Period 2 (Task 5), an additional 130 RaPiERs would be built and integrated with the previously built 20 nodes for initial testing and troubleshooting of a 150 RaPiER system with software and hardware for data transmission and processing. A separate, large-scale field test of 150 RaPiER nodes (Task 6) at a different site is also planned for Budget Period 2. The number of seismic lines to be deployed for the 150 RaPiER system and the testing location is not known at this time. Therefore this NEPA review only applies to activities associated with Tasks 5 and 7 of Budget Period 2. Additional NEPA review will be required for

Task 6.

Activities associated with Tasks 5 and 7 would include: project planning and reporting; data analysis; construction and testing of individual RaPiER units and arrays; development, fabrication, and field testing of a 130 RaPiER system; and site selection. Paper studies related to survey planning, analysis, and reporting would take place at Baylor University in Waco, TX in addition to the offices of 3rd party geophysical contractors. Initial tests of the functionality and interoperability of RaPiER units and up to 150 node arrays would be performed at an existing, previously utilized test site the Baylor University campus in Waco, TX. These tests would occur as needed and their durations would be a few minutes to several hours.

Due to the previously developed nature of the Baylor campus site in conjunction with the minimal disturbance and short duration of the proposed small-scale test deployment, DOE has determined that no adverse impacts to sensitive resources are to be expected.

Based on the review of the proposal, DOE has determined Tasks 5 and 7 within Budget Period 2 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 5 and 7 within Budget Period 2 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 6.0: Large-scale Field Test 150 RaPiER Nodal System at a Site to Be Determined in Nevada
This restriction does not preclude you from:
Task 5.0: Construct 130 Additional RaPiER Nodes (note: includes testing at the Baylor University campus only)
Task 7.0: Reporting and Publications
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.
NEPA review completed by Whitney Doss, 11/17/2017

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Lori Gray /Lori Gray/ Date: 11/17/2017
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