

FMC-ND

(1.08.09.13)

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



RECIPIENT: University of Wisconsin

STATE: WI

PROJECT TITLE: POROELASTIC TOMOGRAPHY BY ADJOINT INVERSE MODELING OF DATA

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000842	DE-EE0006760	GFO-0006760-002	GO6760

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:

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 University of Wisconsin – Madison (UWM) would utilize DOE and cost share funding to quantify reservoir complexity for characterizing and managing the Enhanced Geothermal System (EGS) at Brady Hot Springs, Nevada. The objective of the project is to assess an integrated technology for characterizing and monitoring changes in an EGS reservoir in three dimensions with a spatial resolution better than 50 meters. A previous NEPA Determination (GFO-0006760-001; CX A9; 09/11/14) approved all project tasks except Task 6. This NEPA Determination is specific to Task 6 activities only.

Task 6 of the project is an innovative geophysical survey known as Poroelastic Tomography (PoroTomo) that would take place at the Brady geothermal power plant site located approximately 19 miles northeast of Fernley, Nevada in Churchill County on private lands and public lands administered by the Bureau of Reclamation (BOR) and the Bureau of Land Management (BLM) Winnemucca District, Humboldt River Field Office. The PoroTomo survey would combine seismic geophysical techniques (270 seismometers installed) with high-resolution fiber optic cable sensors (29,300 linear feet of cabling) to produce detailed three-dimensional images of the site's geology and structure (faults). The seismic signal would mostly be generated by a vibroseis truck at approximately 215 locations, most of which are planned along existing roads, on the shoulder of existing paved roads, or within existing disturbance. No new roads would be constructed. Any new surface disturbance from the vibroseis would be limited to cross-country travel. The survey would measure seismic responses over the area of the test site while varying the production and injection rates of different wells to further define the structures and fluid flow paths without the high costs of deep exploration drilling. Sundry notices for sensor deployment within existing geothermal wells on private property would be obtained from the Nevada Division of Minerals prior to deployment. No other permits or modification to permits would be

needed for work occurring on private property.

As the owner/operator of the Brady geothermal power plant, Brady Power Partners, a subsidiary of Ormat Technologies, Inc. (Ormat), submitted a Notice of Intent to Conduct Geothermal Resource Exploration Operations to the BLM on April 15, 2015 for activities which include those proposed by UWM as part of Task 6 of this DOE project. The BLM completed an Environmental Assessment (EA) for the proposed activities (DOI-BLM-NV-W010-2015-0038-EA) with a Finding of No Significant Impact (FONSI) and a Decision Record (DR) approving the activities on January 12, 2016. The BLM was the lead agency for the EA because the proposed activity would occur on leases issued to Ormat and administered by the BLM. Although BOR was not a cooperating agency for this EA, the BLM worked closely with BOR regarding this proposal and the early development of the EA.

During development of the EA, BLM determined that the only resources of concern present that might be affected by the proposed activities were cultural resources including a National Historic Trail (California Trail). All portions of the direct affects assessment area were previously surveyed or were surveyed for cultural resources as part of this analysis. Based on the analysis in the EA, no direct impacts to cultural resources or the California Trail are anticipated and indirect impacts would likely be minimal. Any visual change resulting from the project would likely not attract nor capture the attention of the casual observer given the greater scale of visual intrusions in the area. See Section 4.1 of the BLM EA for additional information.

Brady Power Partners worked closely with the BLM during development of the EA to develop additional environmental protection measures (EPMs) to prevent unnecessary and undue environmental degradation during construction and operation activities (see Section 2.1.2 of the EA). The BLM DR approving the Proposed Action in the EA (which includes the activities in Task 6 of the DOE project SOPO) incorporated these EPMs as requirements of the BLM approval of project activities. DOE will also incorporate these EPMs into the Special Terms and Conditions of the DOE award.

Based on a review of the project information and the BLM EA and associated FONSI/DR, DOE has determined that Task 6 of the proposed project would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined that these activities are consistent with actions contained in DOE categorical exclusion B3.1 "Site characterization and environmental monitoring," and are categorically excluded from further NEPA review.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

If the Recipient intends to make changes to the scope or objective of this project, the Recipient is required to contact the Project Officer, identified in Block 15 of the Assistance Agreement before proceeding. The Recipient must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved. If the Recipient moves forward with activities that are not authorized for Federal funding by the DOE Contracting Officer in advance of a final NEPA decision, the Recipient is 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:

Because project activities are occurring on leases issued by the BLM to Ormat Technologies, Inc., the recipient is responsible for ensuring that their activities comply with all environmental protection measures as described in Section 2.1.2 of the Brady Hot Springs PoroTomo Project Environmental Assessment (DOI-BLM-NV-W010-2015-0038-EA).

Note to Specialist :

This NEPA Determination requires a tailored NEPA provision.
Geothermal Technologies Office
Casey Strickland 01/27/16

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____



Electronically Signed By: Kristin Kerwin

NEPA Compliance Officer

Date: 1/28/2016

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: _____