

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** University of Utah/EGI**STATE:** UT

PROJECT TITLE: Structurally Controlled Geothermal Systems in the Eastern Great Basin Extensional Regime, Utah

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-EE0000841	DE-EE0006732	GFO-0006732-003	GO6732

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 Utah/Energy and Geoscience Institute to address the overarching theme of uncertainty quantification and reduction for geothermal exploration, specifically through the development of Geothermal Play Fairways. Phase/Budget Period 1 of the Geothermal Play Fairway Analysis FOA was reviewed by GFO-FOA0000841-001 (CX A9; 07/31/14). Budget Period 2 of this project was reviewed by GFO-0006732-001 (CXs A9, B3.1, B3.6; 03/18/16). Budget Period 3 (BP3) of this project was reviewed by GFO-0006732-002 (CXs A9, B3.1; 08/18/17), which restricted Task 19 "Thermal Gradient Drilling" pending the definition of temperature-gradient (TG) well locations and required drilling activities. This final NEPA Determination is for the remainder of BP3 activities associated with Task 19.

Proposed Task 19 activities would involve the integration of existing magnetotelluric, natural seismicity, fluid geochemistry, and lithology data to further investigate the likelihood of potential plays in the southwestern Utah (UT) geothermal fairway by drilling two, 2000-3000 feet (ft) TG wells in the northern Cove Fort-Dog Valley study area for

the measurement of equilibrated temperature gradients. Based on current project plans, the proposed drilling activities would be conducted no earlier than September-October 2018, and are expected to take on the order of two weeks per site within this timeframe to complete. The exploratory boreholes would not be production wells or fluid-flowed, but only drilled (and subsequently plugged and abandoned) for short-term scientific logging (e.g. data and sample collection) to analyze thermal gradients, pressure, fluid samples, and rock chip lithology. Drilling would be conducted by the United States Geological Survey (USGS) under supervision of experienced USGS personnel. The recipient would provide onsite technical assistance and analysis of results during drilling and measurement activities.

The proposed drill sites are located to the northeast of Cove Fort, UT, in the Southern Pavant Range, on public lands administered by the United States Department of Agriculture Forest Service (USFS). One hole would be drilled in the northern Cove Fort area (west of Sulphur Peak) and one in the eastern Dog Valley area (southwest of Thousand Dollar Gulch). The recipient has submitted a complete permit application for the proposed activities on federal lands to the responsible USFS District Office (Richfield, UT). The USFS permit application has been reviewed by DOE with ongoing feedback from USFS, and DOE requires the recipient and USGS to comply with any and all associated USFS permit terms and conditions. The recipient would not begin any Task 19 activities nor would USGS mobilize to the study area until such time as USFS concludes their review and provides written authorization to proceed. In addition, the recipient has already obtained requisite written approval from the State of Utah Department of Natural Resources (Utah DNR) Division of Water Rights to conduct the proposed drilling, casing, and monitoring activities. The recipient and USGS are required by DOE to comply with all terms and conditions of Utah DNR's well approval document.

Both sites are comprised of sagebrush-covered ground with modest relief and substantial prior disturbance, including previously excavated 4x4 roads. (And the proposed northern Cove Fort TG site is located on developed land that has experienced Sulphur open pit mining operations.) Existing dirt roads would be used to access the sites, and there would be no need for overland access or new road construction. The work area associated with the drilling of TG wells would include the construction of a well pad (approximately 50x100 ft) and emergency sump pit (approximately 50x50 ft), which would be restored to original contour upon completion. The project would have a total footprint of less than one acre at each site. After the conclusion of drilling and measurement activities, all equipment, materials, supplies, camp facilities, and personnel would be demobilized from that location. A cement plug would be emplaced in each well upon completion per the aforementioned Federal and state agency regulations and site-specific requirements. Ground disturbance produced by equipment deployment and work camp activities would be shallow and impermanent, and would be restored as obligated by USFS upon site reclamation. No surface equipment (i.e. wellheads) would be left on location once measurements are complete.

Established industry standard operating procedures would be observed by all project participants in order to mitigate hazards associated with rig operations. The proposed project does not involve the use of hazardous materials. Non-hazardous drilling fluids would consist of approximately 30,000 gallons of municipal water purchased from the nearby City of Beaver (UT). All additives (e.g. mud, polymers, etc.) would be NSF drinking water safe, and the natural formation fluids and rock cuttings entering the temporary well effluent pit are anticipated to be completely inert and nontoxic. Isolated and short-term sources of vehicular and drill rig emissions would not have the potential to meaningfully impact atmospheric levels within this rural attainment area.

DOE has reviewed both prospective well sites and the surrounding environment. Given this context for the activities described above, DOE has concluded that no adverse impacts to sensitive resources are expected as a result of Task 19 at either location based on the following summations:

Drilling activities and site access would be located to the extent possible on or immediately adjacent to previously disturbed land and/or 4x4 roads. No work would be located in wetlands, designated wilderness areas, or areas with known protected species. According to the U.S. Fish and Wildlife Service Endangered Species Program website (IPaC), there is one candidate plant species (proposed for listing under the Endangered Species Act) that is endemic to this area of Utah. Although no critical habitat has yet been designated for this species, Frisco Clover populations have not been observed at the proposed drilling sites, which are not believed to contain preferred habitat for this plant. There are two threatened or endangered (T&E) wildlife species (California Condor and Yellow-billed Cuckoo) that are believed to occur in this region, but the two project sites do not contain any designated or proposed critical habitats. IPaC also identifies several Migratory Bird species with an estimated range overlapping this region, but the anticipated timing of project activities does not overlap with nesting or breeding seasons for any of these species. Due to the aforementioned siting elements and lack of suitable habitat, in conjunction with the minimal footprint and short-term duration of the proposed activities, DOE has determined the proposed activities would have no effect on T&E/candidate species or migratory birds at the northern Cove Fort-Dog Valley study area.

At this time, based on recent communication with the USFS Richfield District Office, no cultural resources of concern have been identified during their review of the proposed project, which has included archaeological surveys by a contracted subject matter expert. Nonetheless, if the recipient or other project participants encounter cultural or archaeological artifacts during project activities, all activities must immediately cease in the vicinity of the discovery. The recipient must notify the DOE Project Officer and the USFS Richfield District Office of the discovery within forty-eight hours of the discovery. Project activities in the vicinity of the discovery must cease until an evaluation of the discovery is completed by the appropriate officials and the DOE Contracting Officer provides written authorization to resume the activities. If the recipient seeks to relocate the affected work to another nearby site, the recipient must first obtain written authorization from the DOE Contracting Officer.

Based on the review of the proposal, DOE has determined the proposal fits 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. This proposal is 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:

Before undertaking any Task 19 activities at the northern Cove Fort-Dog Valley study area, including mobilization for drilling to be conducted by the United States Geological Survey, the recipient is required to obtain all requisite permits and/or written authorizations to proceed from the United States Department of Agriculture Forest Service (USFS). The recipient and USGS are required by DOE to comply with all associated terms and conditions set forth by the USFS as well as the State of Utah Department of Natural Resources authorizing the proposed drilling and testing activities. Further, the recipient is required to submit all permits and/or written authorizations obtained from these agencies to the DOE Project Officer.

If the recipient or other project participants encounter cultural or archaeological artifacts during project activities, all activities must immediately cease in the vicinity of the discovery. The recipient must notify the DOE Project Officer and the USFS Richfield District Office of the discovery within forty-eight hours of the discovery. Project activities in the vicinity of the discovery must cease until an evaluation of the discovery is completed by the appropriate officials and the DOE Contracting Officer provides written authorization to resume the activities. If the recipient seeks to relocate the affected work to another nearby site, the recipient must first obtain written authorization from the DOE Contracting Officer.

Note to Specialist :

Geothermal Technologies Office
This NEPA determination requires a tailored NEPA Provision.
NEPA review completed by Whitney Doss, 08/03/2018

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:



Casey Strickland

NEPA Compliance Officer

Date:

8/3/2018

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: _____