

PMC-EF2a

(201002)

**U.S. DEPARTMENT OF ENERGY
EERE PROJECT MANAGEMENT CENTER
NEPA DETERMINATION**



RECIPIENT: University of Utah

STATE: UT

PROJECT TITLE : Enhanced Geothermal Systems – Concept Testing and Development at the Raft River Geothermal Field, Idaho

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-PS36-08GO98008	DE-EE0000215	GFO-0000215-002	GO215

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:

- B5.12** Workover (operations to restore production, such as deepening, plugging back, pulling and resetting lines, and squeeze cementing) of an existing oil, gas, or geothermal well to restore production when workover operations will be restricted to the existing wellpad and not involve any new site preparation or earth work that would adversely affect adjacent habitat.
- B3.1** Onsite and offsite site characterization and environmental monitoring, including siting, construction (or modification), operation, and dismantlement or closing (abandonment) 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. Activities covered include, but are not limited to, site characterization and environmental monitoring under CERCLA and RCRA. Specific activities include, but are not limited to:
- A9** Information gathering (including, but not limited to, literature surveys, inventories, audits), data analysis (including computer modeling), document preparation (such as conceptual design or feasibility studies, analytical energy supply and demand studies), and dissemination (including, but not limited to, document mailings, publication, and distribution; and classroom training and informational programs), but not including site characterization or environmental monitoring.

Rational for determination:

University of Utah (U of U) proposes to use DOE and cost share funding to stimulate a privately owned production geothermal well (RRG-9) in the existing Raft River geothermal field in Cassia County, Idaho using various stimulation techniques to increase the power generation at the existing U.S. Geothermal (USG) power plant to form and sustain the EGS reservoir.

Phase I of this project was previously approved by GFO-09-122 on August 5, 2009 with a CX A9, B3.1, and B3.6. The project was modified and a task was added into Phase I (Task 1.3.1 Well Readiness), so another NEPA Determination (GFO-10-282) of C12 was made because impacts due to well stimulation had not been identified on May 11, 2010. Originally Task 1.3.1 included Pipeline Installation which was thought to be a connected action to the stimulation activities planned for Phase II. Additional information was submitted by USG, showing that the pipeline had independent utility separate from any stimulation activities and would be installed regardless of stimulation of the well. Subsequently, other tasks (1.3.1 Pipeline Installation, 1.3.2 Collect and Analyze Microseismic Data, and 1.3.3 Well Readiness) were added into Phase I separating out into three separate tasks what was initially in one task, therefore another NEPA review was needed. Tasks 1.3.1, 1.3.2, and 1.4.1 were approved by GFO-10-501 on July 2, 2010 but Task 1.3.3, Phase II, and Phase III still remained under a C12 determination because impacts due to well stimulation were still unknown. This NEPA determination is specific to Task 1.3.3, Phase II, and Phase III (see SOPO for details of individual tasks associated with the project).

Task 1.3.3. Well Readiness: Prepare the well for recompletion and EGS with a workover rig

PHASE II: Well Stimulation – this includes well stimulation, testing, modeling, data analysis, logging, flow rate and temperature analysis, produced fluids chemistry, and reporting.

PHASE III: Long Term Monitoring – this includes flow testing, logging, monitoring, geochemical analysis, reporting, and publication.

On March 7, 2011, a Protocol for Induced Seismicity Associated with Enhanced Geothermal Systems Report was completed for the Raft River EGS Project by the Energy & Geoscience Institute. The Raft River geothermal site lies in an area of low seismic activity. Seismic activity at the Raft River site is being monitored by an eight station array of seismographs operated by the LBNL. The system was established in August, 2010, and has operated continuously since that time. Injection and normal field operations have been ongoing throughout this period. A single earthquake with a magnitude of <1 was detected on December 27, 2010. Based upon information contained within this report, monitoring and mitigation protocols were developed (see below). After a thorough review of the information submitted for the proposed project, DOE has determined that the proposed action will not have a significant impact to human

health and/or the environment as a result of induced seismic events.

According to US Geothermal, safety protocols are in place for the proposed work by a Health and Safety officer that meet or exceed state and federal requirements.

According to data gathered by DOE, there are no expected adverse effects to threatened and endangered species, wetlands, floodplains, or cultural resources as a result of the proposed project. The project would occur on an existing geothermal well pad with access using existing roads. The U.S. Fish and Wildlife Service lists two endangered species in Cassia county, Idaho. Both species are snails that are found in the mainstream Snake River and associated tributary stream habitats. Neither species is known to be present at the Raft River Geothermal Field.

Remaining funds released by this NEPA determination: \$5,079,074 (DOE) \$2,199,467 (cost share) \$7,278,421 (Total)

The proposed project will result in the further development of an existing geothermal resource and therefore is hereby Categoricaly Excluded by A9, B3.1, and B5.12 (actions to conserve energy using renewable energy, site characterization, data gathering, deepening an existing geothermal well) from further NEPA review.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

Insert the following language in the award:

You are required to:

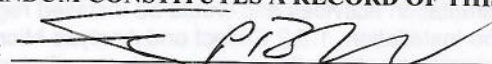
1. During the stimulations, seismicity will be monitored with seismic arrays that will provide information in "real time."
2. Pressure, injection fluid temperature and flow rate will be monitored and recorded at well RRG-9.
3. Pressures and flow rates will be monitored on all other operating geothermal wells.
4. DOE has established the following criteria for a ground movement threshold of "0.2 inches/second at 1 hertz measured at Malta." Malta is 12 miles away. A measuring device will be installed at Malta capable of measuring the 0.2 inches/second at 1 hertz. This is an engineering standard. In the event this level is exceeded, the stimulation will immediately be halted.
5. In accordance with U.S. Geothermal's Risk Management Plan filed with the EPA, the Cassia County Sherriff and the Cassia County Emergency Management Coordinator will be immediately notified, if the threshold is exceeded.

Note to Specialist :

This EF2A was written by Christopher Carusona II/Casey Strickland

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:


NEPA Compliance Officer

Date: 7/5/11

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: _____