

PMC-EF2a

(2.04.02)

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



RECIPIENT: Illinois Department of Military Affairs

STATE: IL

PROJECT TITLE : RECOVERY ACT: Geothermal Retrofit of Illinois National Guard's State Headquarters Building

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000116	DE-EE0003002	GFO-0003002-002	GO3002

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.)
- B2.1 Workplace enhancements** Modifications within or contiguous to an existing structure, in a previously disturbed or developed area, to enhance workplace habitability (including, but not limited to, installation or improvements to lighting, radiation shielding, or heating/ventilating/air conditioning and its instrumentation, and noise reduction).
- B5.19 Ground source heat pumps** The installation, modification, operation, and removal of commercially available smallscale ground source heat pumps to support operations in single facilities (such as a school or community center) or contiguous facilities (such as an office complex) (1) only where (a) major associated activities (such as drilling and discharge) are regulated, and (b) appropriate leakage and contaminant control measures would be in place (including for cross-contamination between aquifers); (2) that would not have the potential to cause significant changes in subsurface temperature; and (3) would be located within a previously disturbed or developed area. Covered actions would be in accordance with applicable requirements (such as local land use and zoning requirements) in the proposed project area and would incorporate appropriate control technologies and best management practices.

Rational for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to the Illinois Department of Military Affairs (ILDMA) to upgrade an existing heating, ventilation, and air conditioning system (HVAC) by installing a 61.6 ton vertical closed-loop ground source heat pump system (GSHP) at Camp Lincoln, which is an Illinois Army National Guard (ILNG) base. Funding would be used to install and commission the GSHP system and upgrade the existing HVAC system. Funding would also be used for data collection, analysis and dissemination activities to produce a report that would be used to market similar GSHP systems for potential application at other sites within the State of Illinois and the Army National Guard.

A previous DOE NEPA determination for Phase I of this award was made on 4/1/2010, (CX A9 and CX B3.1) to allow feasibility studies and environmental site monitoring, including drilling of test wells for a proposed open-loop geothermal system into an abandoned mine shaft below Camp Lincoln. During Phase 1 it was determined the proposed open-loop geothermal system was not feasible and the scope of the proposed project was changed. This DOE NEPA determination is for the revised scope of work and would apply to Phases II and III of this award. The proposed project received a NEPA review and Categorical Exclusion (C-1) determination by the Army National Guard on 10/3/2012.

The proposed project would be located within Camp Lincoln, an ILNG base located at 1301 N. MacArthur Boulevard, Springfield, Sangamon County, Illinois 62702. The GSHP system would serve the existing Headquarters Adjutant General's Office (AGO) Building.

ILDMA completed a GSHP Questionnaire describing the proposed system, the project site and the installation of the system. The project would follow International Ground Source Heat Pump Association (IGSHPA) guidelines for GSHP installations and Illinois Department of Public Health (Section 920.180) regulations regarding geothermal installations. The selected contractor would be certified by IGSHPA and accredited by the Geothermal Alliance of Illinois (GAOI). The 61.6 ton vertical closed-loop GSHP system has been sized to service the entire 70,000 sq. ft. AGO building, but would only service 27,300 sq. ft. of office space within the northern half of the building. The AGO building is less than 50 years old. The GSHP system would have a borefield of approximately 48,000 sq. ft. and consist of 111 boreholes

spaced approximately 20 ft. apart at an average depth of 154 ft. The borefield would be adjacent to the AGO building in a previously disturbed area that is currently landscaped with grass turf lawn and trees. A directional bore, approximately 300 ft. long, would be used to connect the AGO building to the borefield and would cross under an existing access road. Trenching, approximately 4 ft. deep, would connect the boreholes within the borefield. Less than one acre (~0.6 acres) would be disturbed by excavation and drilling. The test wells drilled during Phase I of this project indicated the borefield is not in an aquifer and the soil profiles are a mixture of clay, sand, shale and limestone. The exchange fluid in the system would be contained within polyethylene piping; heat fused in accordance to ASTM D2610, ASTM D2683 and the manufacturer's specifications and it would be an antifreeze solution of propylene glycol and water. A bentonite based grout plug would be used to case the boreholes from the bottom up to the top. A construction storm-water management and erosion control plan would be formulated and would follow the requirements of the 2003 EPA Construction General Permit. All waste generated by the proposed project would be handled and disposed of in accordance with all applicable Federal, State, and Local regulations and requirements.

The project site consists of grass turf lawn and trees, and areas of disturbance would be backfilled, graded and restored with grass turf. During installation of the system, trees within the project area would not be removed and would be avoided. To avoid contact with trees during trenching a tree protection zone would be constructed with snow fencing. If construction is to occur within the limits of a tree's drip line, the tree trunks would be wrapped with lumber to prevent scarring. All roots that would be affected by trenching or drilling would be pruned.

The Army National Guard performed a NHPA Section 106 review and Tribal consultation for the proposed project and made a "no adverse affect" to historic or archaeological resources determination and received a concurrence from the Illinois Historic Preservation Agency (SHPO) on 9/26/2012. The U.S. Fish and Wildlife Service Endangered Species Program website identifies three federally listed species within Sangamon County; the endangered Indiana Bat (*Myotis sodalists*), the threatened Eastern Prairie Fringed Orchid (*Platanthaera leucophaea*), and the endangered Sheepsnose Mussel (*Plethobasus cyphus*). The Army National Guard performed a Section 7 Consultation and determined the proposed project would have "no effect" to the federally listed species as the habitats of these species are not found at the proposed project site. The DOE has determined the proposed project would not have adverse effects on wetlands, floodplains, historic and cultural resources, and threatened or endangered species, as these resources are not known to occur at the proposed project site.

Based on review of the project information and the above analysis, DOE has determined the proposed installation of a 61.6 ton GHSP system and upgrade of an existing HVAC system in the AGO building at Camp Lincoln and the data collection, analysis and dissemination activities under Phases II and III of this award would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined the proposed activities are consistent with actions contained in DOE categorical exclusions A9 "information gathering, analysis and dissemination," B2.1 "workplace enhancements," and B5.19 "ground source heat pumps," 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 you intend to make changes to the scope or objective of your project you are required to contact the Project Officer identified in Block 11 of the Notice of Financial Assistance Award before proceeding. You must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved.

Note to Specialist :

Obadiah Broughton 1/2/2013

DOE funding: \$1,200,000

Cost share: \$400,000

Total Project Cost: \$1,600,000

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____



Kristin Kerwin
NEPA Compliance Officer

Date: 1/14/2013

FIELD OFFICE MANAGER DETERMINATION

Field Office Manager review required