PMC-EF2a

(2.06.02)

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

RECIPIENT: ND Dept. of Commerce **STATE:** ND

PROJECT TITLE: Minot State University Geothermal Heating Project

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000052	DE-EE0000142	GFO-09-267-005	0

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:

B5.1 Actions to conserve energy, demonstrate potential energy conservation, and promote energy-efficiency that do not increase the indoor concentrations of potentially harmful substances. These actions may involve financial and technical assistance to individuals (such as builders, owners, consultants, designers), organizations (such as utilities), and state and local governments. Covered actions include, but are not limited to: programmed lowering of thermostat settings, placement of timers on hot water heaters, installation of solar hot water systems, installation of efficient lighting, improvements in generator efficiency and appliance efficiency ratings, development of energy-efficient manufacturing or industrial practices, and small-scale conservation and renewable energy research and development and pilot projects. The actions could involve building renovations or new structures in commercial, residential, agricultural, or industrial sectors. These actions do not include rulemakings, standard-settings, or proposed DOE legislation.

Rational for determination:

The State of North Dakota will provide $3,000,000 in Recovery Act funds to Minot State University to replace the University's existing fossil fuel steam boilers and electric chillers with a geothermal heat pump system. The University operates 19 major buildings and is located in Minot, ND.

Sixteen (16) of the University's 19 major buildings will receive geothermal HVAC upgrades. Installation of the system will require removal of a buried steam pipe that connects each building to the power house and removal of existing HVAC equipment from the interior of the building and in some cases rooftop units. New HVAC equipment will be installed in each building. Some alterations or modifications to the building's interior or exterior may be necessary. The State Historical Preservation Office (SHPO) has been contacted and has approved the work proposed for the affected buildings.

The proposed ground source heat pump system will be a vertical, closed-loop system with 1,850 tons of heating and cooling capacity. Drilling the well fields and construction of the main distribution loop will be the predominant ground disturbance associated with the installation of the system. The well field will consist of 1,200 boreholes drilled to a depth of 300ft deep. Well drillers and pump installers are required to be certified through the Board of Water Well Contractors of the State Water Commission. The installation contractor will be required to be IGSPHA certified and follow the NGWA Guidelines for the Construction of Vertical Boreholes for Closed Loop Heat Pump Systems. The well fields will be located under an existing practice field located north of the University's stadium and under six existing parking lots. The total area affected is approximately 900,000 square feet. All well fields will be drilled on existing, previously disturbed land within the property boundary of the University campus. The areas disturbed will be sodded and repaved.

The system will use a refrigerant consisting of 25% solution of food grade and non-toxic Propylene Glycol. High density polyethylene pipe will be used to reduce the risk of system leakage. A thermally enhanced bentonite grout will be used to fill each borehole and prevent surface runoff from contaminating ground water. The project will have an Erosion and Sediment Control Plan in place during installation that will conform to the erosion and sediment requirements of the 2003 EPA Construction General Permit and the National Pollutant Discharge Elimination System (NPDES) program. All waste generated during construction will be disposed of in an approved landfill. The recipient has committed to obtaining permits from federal, state and local agencies when and where needed and applicable.

The geothermal system will incorporate approximately 5,250 square feet of roof-mounted, flat plate solar thermal panels installed in a drain-back configuration to provide additional heat to the geothermal system. The solar thermal array will

consist of 250, 3ftx7ft solar thermal panels, appropriately sized for the building. The solar thermal configuration will provide back-up heat to the ground source loop for extraction by the heat pump systems located in the campus buildings.

There are no known cultural resources to be affected by the system installation. The University has a letter from the North Dakota SHPO documenting a determination of "No Historic Properties Affected." None of the species identified by the North Dakota State Game and Fish Department as threatened and endangered, or that breed or migrate in this area of North Dakota, will be affected by the project.

Portions of the system will fall within an identified flood plain. The floodplain zones include 500-year floods; 100-year floods with average depths less than 1 foot or with drainage areas of less than one square mile; and areas protected by levees from 100-year floods. There are no wetlands in close proximity to the proposed well field locations. Adverse effects are not anticipated for floodplains or wetlands due to the installation or operation of the ground source heat pump system.

The project site is located above the Minot Aquifer, which is hydraulically connected to the Northwest Buried-Channel and Lower Souris aquifers at both ends. Ground water occurs under both water-table and artesian conditions in the Minot aquifer. The closed-loop system will not affect the area aquifers or ground water.

Based on the information provided by the State and recipient, DOE has determined that the work outlined is consistent with activities identified in Categorical Exclusion B5.1.

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:
Submit to a waste stream management plan to the DOE project officer before initiating work on the project.

Note to Specialist :

According to the project officer, funding for this project is $3,000,000. Absent a significant change in the scope of this effort or a finding of some environmental significance during the installation of the system, a change in funding will not affect my determination.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: David Boron Date: 7/8/2010
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