PMC-EF2a
(2.06.02)

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

RECIPIENT: First District **STATE:** SD

PROJECT TITLE : Big Sioux Community Water System, Inc. Geothermal System

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000119			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:

Moody County, SD (Big Sioux River Water Treatment Plant) is proposing to install 2 heat exchanger units to their existing water wells and piping lines. They will be using a stainless steel heat-exchanger in a dual-loop configuration. The two loops will only be connected by the stainless steel heat exchanger; at no point during the process will there be any fluid exchange.

The Dual Loop system consists of:
Loop 1: Pre-treated drinking water; they pump the potable water from the "Big Sioux Aquifer", the system then processes the water through a series of treatments including water-softing, lime-wasting, and fluoride additions (The heat exchanger will be installed in the pipe directly after the water is pumped from the aquifer, before any treatment).
Loop 2: The loop between the heat exchanger and the HVAC system, this loop will use Food Grade Propylene Glycol 20-30% as the heat exchange medium.

There is a stipulation set forth by the South Dakota Dept of Health ("Ten State Standards"). The regulation stipulates that raw water used for the HVAC purposes cannot be reintroduced into the process stream. However this system is not directly using the raw water for HVAC purposes. The Stainless Steel heat exchanger will be the only part of the proposed project that comes in direct contact with the raw water.

We have communicated our concerns for possibility of both increased draw-down on the aquifer and of the ability for the aquifer to recharge itself at the proposed pumping rates for the "Big Sioux Aquifer". However we received a letter from the Dept of Environmental and Natural Resources for the State of South Dakota stating:

"Big Sioux Community Water presently holds water rights and water permits authorizing a diversion rate of 3.96 cfs from six wells and an annual volume of 1,491 acre-feet from their Egan Well Field. Groundwater availability is not a concern from the Big Sioux aquifer in your area. Recharge to the aquifer is sufficient to sustain withdrawals. The Water Rights Program of the Department of Environment and Natural Resources continues to recommend approval of new Water Permit applications for water from the Big Sioux aquifer. Big Sioux Community Water has the diversion capacity and volume of water available to do geothermal heating and cooling at their facility. Existing pumping does not cause significant drawdown in this area of the aquifer. There have never been any complaints concerning water vailability in this area and it is anticipated this use will not change that fact. If there are any questions or concerns please let me know."

James A Goodman, PE
Natural Resources Engineering Director (SD-DENR)

This proposed project will mitigate any risk of water contamination by using this dual system. In the most unlikely case of a fluid transfer only Propylene Glycol (*A known food additive) would be exchanged. The system already possess the infrastructure and capacity for the project; with their existing production wells, internal space to house the heat exchangers, the existing water rights and permits with the commitment by the applicant that they will not exceed water withdrawals and/or discharge limits. This project is considered an internal retrofit to any existing infrastructure/building.

After a through review of the proposed project it has been concluded that this project will not have a significant impact to human health and/or environmental. The project is therefore Categorically Excluded under B5.1 "Actions to Conserve Energy".

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

Note to Specialist :

None Given.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____ Date: 4/27/10

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