Finding of No Significant Impact

Hoe Creek Underground Coal Gasification Test Site Remediation

AGENCY: U.S. Department of Energy (DOE)

ACTION: Finding of No Significant Impact (FONSI)

SUMMARY: The DOE has prepared an Environmental Assessment (EA), DOE/EA-1219, to analyze the potential impacts of alternatives for remediating subsurface and groundwater contamination at the Hoe Creek Underground Coal Gasification (UCG) Test Site in Campbell County, Wyoming. DOE proposes to use air sparging with bioremediation for UCG test site cleanup.

Based on the analyses in the EA, DOE has determined that the proposed action is not a major Federal action significantly affecting the quality of the human environment, within the meaning of the National Environmental Policy Act (NEPA) of 1969, U.S.C. 4321 et seq. Therefore, the preparation of an Environmental Impact Statement is not required and DOE is issuing this FONSI.

COPIES OF THE EA ARE AVAILABLE FROM:

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BACKGROUND: In the late 1970s several UCG tests were conducted at the Hoe Creek test site by DOE and its predecessor agency, the U.S. Energy Research and Development Administration. Subsequent examinations at the site detected contaminated groundwater, which led to a Site Clean-Up Agreement between the DOE and the State of Wyoming in 1993. This Agreement commits DOE to conduct cleanup and restoration actions at the Hoe Creek site to protect the public and the environment. An interim pump and treat action, for which an EA was previously prepared and a FONSI was signed, was conducted between 1989 and 1995 to limit the migration of contaminated groundwater.

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DESCRIPTION OF THE PROPOSED ACTION: The proposed action is to perform air sparging with bioremediation at the Hoe Creek 2 and 3 sites to remove groundwater contaminants resulting from the UCG experiments performed at these sites. This action would involve adding support structures and drilling additional wells at the Hoe Creek 2 and 3 test sites. Oxygen or hydrogen peroxide would be pumped into the wells to volatilize benzene dissolved in the groundwater and enhance bioremediation of the subsurface UCG by-products that are providing source material for groundwater contamination.

The air sparging would be conducted cyclically in eight hour intervals with eight hour rest intervals in between. The initial cycle for sparge system operation would be 90 days of sparging, followed by 14 days of rest and seven days of sampling. Levels of benzene, the main contaminant of concern as well as an indicator for other contaminants present in the subsurface, would be monitored and the operating cycle would be adjusted based on monitoring results. Pilot studies conducted at the site indicate that the bioremediation program should be able to reduce contaminant levels to the target remediation concentration of less than 50 micrograms per liter in five years; however, the point at which the remediation is considered complete would be decided jointly by DOE and the State of Wyoming.

ENVIRONMENTAL IMPACTS: Impacts to the environment associated with both construction and operation of the proposed action were considered. The main issues of concern examined under the EA were possible impacts related to the health and safety of workers, the impact of noise on the public, soil erosion and loss of vegetation, loss of habitat of threatened and endangered species, and the use of limited groundwater resources. Review of the available environmental information indicates that no significant environmental impacts would be expected to occur as a result of the proposed action due to the temporary nature of the action and the mitigative measures that would be employed.

Support buildings, monitoring wells, roads, and utilities already exist at the site. Two additional acres of the 71-acre site would be temporarily disturbed by the proposed action to provide areas for parking, air sparging wells, soil storage, compressors, and equipment staging areas. Topsoil would be collected and stored during the project, and would be reapplied and seeded with a native seed mix approved by the State of Wyoming upon completing subsurface remediation. Mitigative measures such as sediment fences and erosion control berms would be used as necessary to minimize erosion.

A health risk assessment indicated that the level of worker exposure to benzene during operations would be well below exposure limits established for health protection.

The Hoe Creek site is located in a remote area; however, one resident does live nearby. No significant noise impacts would be expected because work would occur during normal daytime hours, construction would be short term, operations would be intermittent, and compressors would be electrically powered and enclosed in buildings to minimize noise. The project site is a

potentially suitable habitat for mountain plover and swift fox. Surveys conducted at the site have not found evidence of either species inhabiting the site or adjacent areas. The Department of Interior's Fish and Wildlife Service and the Wyoming Game and Fish Department have concurred that no impacts to either species would be expected.

The water in the aquifer that has been affected by the UCG experiments is classed as being suitable for livestock use only. Because the groundwater that would be removed for well purging and sampling to conduct the proposed action represents less than 7% of the annual groundwater outflow from the Hoe Creek aquifers, and because much of the purge water would be expected to return to the subsurface by infiltration, no significant impact to water resources is anticipated.

ALTERNATIVES CONSIDERED: A detailed study of remedial alternatives was conducted and four alternatives, including the proposed action, were chosen for further consideration. The following three alternatives to the proposed action were considered in the EA: Excavation, Annual Pump and Treat, and the No Action Alternative.

Excavation of the subsurface in areas immediately surrounding the cavities formed by the UCG experiments was considered. This alternative would disturb approximately 40 acres of land surface for excavation, soil stockpiling, and treatment equipment and staging. While the excavation alternative would be expected to take a similar length of time as the proposed action and result in a similar level of success, the high cost and the possible environmental consequences of such an extensive excavation makes this alternative unattractive.

The annual pump and treat alternative would require reinstituting the groundwater pumping and treatment that took place between 1989 and 1995. This action was performed as an interim measure to minimize the migration of contaminated groundwater. While recent investigations at the site have shown evidence of progress in the natural biological attenuation of contaminants in the subsurface, neither the annual pump and treat nor the no action alternative would be expected to effectively remove the non-aqueous phase coal gasification by-products in the subsurface that are the source material for the contaminated groundwater. Because the annual pump and treat alternative and the no action alternative do not address treatment of the source material and because of the lengthy period of time that would be required for natural attenuation to significantly reduce the levels of contaminants in the immediate vicinity of the cavity areas where the UCG experiments were performed, neither of these alternatives would fully meet the requirements of the Site Clean-Up Agreement between the DOE and the State of Wyoming.

PUBLIC AVAILABILITY: The draft EA was distributed for review by officials of the State of Wyoming and by the public in the Hoe Creek area; copies were made available in the public library, and public notices were placed in the local newspaper to advertise its availability. No adverse comments regarding the proposed action were received.

This FONSI, and the EA on which it is based, will be distributed to all persons and agencies

known to be interested in or potentially affected by the proposed action, including appropriate agencies within the State of Wyoming. Additional copies of the FONSI and EA may be obtained from the Federal Energy Technology Center at the address previously identified.

DETERMINATION: Based upon the information and analyses provided in the EA, DOE has determined that the proposed Federal action, to conduct air sparging with bioremediation at the Hoe Creek Underground Coal Gasification Test Site in Campbell County, Wyoming, does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act. Therefore, an Environmental Impact Statement is not required and DOE is issuing this FONSI.

ISSUED IN MORGANTOWN, WV this 16 day of October, 1997.

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Director
Federal Energy Technology Center