PMC-ND
(1.08.09.13)

U.S. DEPARTMENT OF ENERGY
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
NEPA DETERMINATION

RECIPIENT: Colorado School of Mines **STATE:** CO

PROJECT TITLE: PACE: Producing Algae for Coproducts and Energy

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
	DE-EE0007089	GFO-0007089-002	GO7089

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.)
B3.6 Small-scale research and development, laboratory operations, and pilot projects	Siting, construction, modification, operation, and decommissioning of facilities for smallscale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); and small-scale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible). Not included in this category are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial deployment.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to the Colorado School of Mines (CSM) to reduce the cost of fuel produced from algae to less than $5.00/gallon gasoline equivalent (gge), and enhance the sustainability of algal biofuel production systems to qualify algal biofuels as advanced biofuel feed stocks.

A previous NEPA review has been completed (GFO-0007089-001; CX A9, B3.6; 8/31/2015) that applied to Task 0: Process and Data Validation. This NEPA review is for Tasks 1 through 3.

Proposed project activities would include generating, sorting and DNA sequencing of algal mutants/transformants; design and fabrication of hydrothermal liquefaction units; growth, harvest and assessment of selected transgenic algae strains; liquefaction of algal biomass and separation of high-value products; design, fabrication and operation of acoustic focusing cell harvesters; conversion of biomass to biofuel and testing of biofuel; development of processing methods, polysaccharide recovery and biofuel production; techno-economic analyses of fuel and co-product production systems; and large-scale production, harvesting and conversion of algae into fuel.

Life-cycle and techno-economic analyses of algal co-product and fuel production systems would occur at Pan Pacific Technologies, Ltd. in Paradise, South Australia. These analyses would consist of office-based computer work only.

Design of hydrothermal liquefaction units would occur at Genifuel in Salt Lake City, UT, and design and construction of acoustic focusing cell harvesters would take place at Sonosep Technologies, Inc. in Vancouver, Canada. The Genifuel and Sonosep facilities are previously established and are purpose-built for the type of work being proposed; therefore, no adverse impacts to sensitive resources are expected.

Routine, indoor laboratory work involving solvents, compressed gases, hazardous chemicals, transgenic algae and E. coli, potential carcinogens, and potential aerosols would occur at Los Alamos National lab (LANL) and the New Mexico Consortium (NMC) in Los Alamos, NM, Arizona State University (ASU) in Mesa, AZ, Washington State University (WSU) in Pullman, WA, CSM in Golden, CO, Pacific Northwest National Laboratory (PNNL) in Richland,

WA and Colorado State University (CSU) in Fort Collins, CO.

CSM, the NMC, WSU and LANL would generate transgenic Chlorella sorokiniana expressing either microbial, plant or algal genes. Each institution would apply for permits for each gene construct and transgenic organism through its institutional biosafety committee and the U.S. Environmental Protection Agency (EPA) and follow appropriate regulations for genetically modified organisms. At the end of the contained experiment, all transgenic organisms would be sterilized by autoclaving or using bleach and disposed of through municipal waste treatment facilities. No transgenic organisms would be released into the environment. All work would be completed in approved laboratory facilities following corporate health and safety policies and procedures, including employee training, proper protective equipment, engineering controls, monitoring, and internal assessments. Hazard mitigation and health and safety issues would be managed by each institution's safety and biosafety committees including rigorous training and monitoring of all participants. The institutions would be in compliance with all federal, state and local environmental, health and safety standards and regulations.

Outdoor cultivation, harvesting, and processing of algae would occur at ASU and Reliance Industries Limited (Reliance) in Mumbai, India. The existing ASU and Reliance algae cultivation facilities are designed for the type of work being proposed, and there would be no increase in the amount of algae grown and harvested as a result of the proposed project; therefore, no adverse impacts to sensitive resources are expected. ASU would cultivate transgenic algae outdoors. ASU would apply for permits to grow transgenic algae from their institutional biosafety committees and from the EPA prior to beginning work on the proposed project.

Any work proposed to be conducted at a DOE laboratory may be subject to additional NEPA review by the cognizant DOE NEPA Compliance Officer for the specific DOE laboratory prior to initiating such work. Further, any work conducted at a DOE laboratory must meet the laboratory's health and safety requirements.

Based on review of the project information and the above analysis, DOE has determined the proposed project would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined the proposed project is consistent with actions contained in DOE categorical exclusion A9 "information gathering, analysis and dissemination," and B3.6 "small-scale research and development, laboratory operations and pilot projects" and is 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 the Recipient intends to make changes to the scope or objective of this project, the Recipient is required to contact the Project Officer, identified in Block 15 of the Assistance Agreement before proceeding. The Recipient must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved. If the Recipient moves forward with activities that are not authorized for Federal funding by the DOE Contracting Officer in advance of a final NEPA decision, the Recipient is doing so at risk of not receiving Federal funding and such costs may not be recognized as allowable cost share.

Insert the following language in the award:

You are required to:
Any work proposed to be conducted at a DOE laboratory may be subject to additional NEPA review by the cognizant DOE NEPA Compliance Officer for the specific DOE laboratory prior to initiating such work. Further, any work conducted at a DOE laboratory must meet the laboratory's health and safety requirements.

Note to Specialist :

Bioenergy Technologies Office
This NEPA determination requires a tailored NEPA provision.
Review completed by Logan Sholar on 2/24/2016

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____ Date: 2/25/2016
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