PMC-EF2a
(2.04.02)

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

**RECIPIENT:** The Regents of the University of California, U.C. San Diego **STATE:** CA

**PROJECT TITLE :** Development of Renewable Biofuels Technology by Transcriptomic Analysis and Metabolic Engineering of Diatoms

| Funding Opportunity Announcement Number | Procurement Instrument Number | NEPA Control Number | CID Number |
|---|---|---|---|
| NSF 08-588 | DE-EE0001222 | GFO-10-184 | 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:

**A9** Information gathering (including, but not limited to, literature surveys, inventories, audits), data analysis (including computer modeling), document preparation (such as conceptual design or feasibility studies, analytical energy supply and demand studies), and dissemination (including, but not limited to, document mailings, publication, and distribution; and classroom training and informational programs), but not including site characterization or environmental monitoring.

**B3.6** Siting, construction (or modification), operation, and decommissioning of facilities for indoor bench-scale research projects and conventional laboratory operations (for example, preparation of chemical standards and sample analysis); small-scale research and development projects; and small-scale pilot projects (generally less than two years) conducted to verify a concept before demonstration actions. Construction (or modification) will be within or contiguous to an already developed area (where active utilities and currently used roads are readily accessible).

Rational for determination:

University of California San Diego will use DOE funds to perform two tasks:
Task 1: Transcriptomic analysis of environmentally triggered lipid accumulation in two species of diatom algae
Task 2: Metabolic engineering of the cell to alter carbon partitioning for abundant lipid accumulation coupled with high biomass accumulation

In the first task, environmental conditions will be manipulated in order to trigger higher lipid accumulation and sequencing analysis will be conducted to identify those genes that affect lipid accumulation and carbon partitioning in order to prepare for the second task of metabolic engineering. In the second task, the two strains will be metabolically engineered to produce both a high lipid and high carbohydrate content based upon the results from the first task. The approaches developed in both tasks will be taught to high school students and undergraduate students at the university.

Analysis and engineering will be performed on Thalassiosira pseudonana and Cyclotella cryptica diatom species, both of which are commonly occurring non-pathogenic algae species. UCSD has permits in place for biohazardous and chemical wastes and has disclosed that no additional permits will be required for this work. All work will be performed in a laboratory at Scripps Institute of Oceanography, and will be conducted in accordance with all UCSD Environment Health and Safety Guidelines. These guidelines address chemical, biological, and hazardous waste handling and disposal and dictate extensive training of all employees and students prior to working in the lab. All GMOs will be maintained in the lab environment, killed prior to disposal, and delivered to an off-site biowaste vendor incineration facility, in accordance with UCSD EH&S standards.

This project comprises conventional research and laboratory operations in an existing laboratory facility and is therefore classified under CX B3.6. The education and outreach component of this project is classified under CX A9.

**NEPA PROVISION**
Note to Specialist :

None Given.

**SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.**

NEPA Compliance Officer Signature: _____ Date: 3/30/10
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