

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Ohio University**STATE:** OH

PROJECT TITLE: Combined Nitrogen and Phosphorous Recovery via Electrochemical Technology Integration into Municipal Wastewater Treatment Plants

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002336	DE-EE0009502	GFO-0009502-001	GO9502

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Policy 451.1), 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 funding to Ohio University to design, develop, and test an electrochemical wastewater treatment technology for recovering fertilizer from wastewater streams high in nitrogen and phosphorous content. The project would be completed over three Budget Periods (BPs) with a Go/No-Go decision point between each BP. This NEPA determination is applicable to both BPs.

Project activities would be conducted at Ohio University in Athens, OH. The University's Institute for Sustainable Energy and the Environment would develop batch and continuous electrochemical reactors for recovery of nutrients from synthetic wastewater simulating municipal waste. After determining conditions necessary to recover phosphorous from synthetic wastewater, a small-scale electrochemical reactor would be constructed containing electrodes and an agitator for flow turbulence. The reactor would be tested in a batch mode to recover nutrients from synthetic wastewater. Operating variables and performance of the electrochemical reactor would be analyzed. In order to extend the electrode performance, methods of dislodging solids deposited on the electrode surface would be evaluated. Less than 5 gallons of wastewater would be collected from wastewater treatment facilities in Ohio, sampled from routine activities performed as a part of the regular course of business and would be analyzed for nutrient content. Results would be used to assist in making modifications to the electrolyte used in the electrochemical reactor. The electrochemical reactor would be scaled up and run in a continuous mode to recover nutrients from synthetic wastewater. At the Ohio University Student Farm, which routinely grows crops including corn, the recovered resource would be evaluated for use as a fertilizer and compared to performance of conventional fertilizers. Approximately 360 corn plants would be grown with the different fertilizers to compare height and yield of plants and soil quality would be assessed. Techno-economic assessments and life-cycle analyses would be run throughout the project.

Project activities would involve the use and handling of various hazardous materials, including metals and industrial solvents. Any risks associated with the handling of these materials would be mitigated through adherence to established health and safety policies and procedures. Protocols would include employee training, the use of personal protective equipment, monitoring, internal assessments, and engineering controls. All waste products would be disposed of by licensed waste management service providers. Ohio University would observe all applicable Federal, state, and local health, safety, and environmental regulations. No changes in the use, mission, or operation of existing facilities would be required as part of this project and no additional permits would be required in order to conduct any of the work activities.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Advanced Manufacturing Office
This NEPA determination does not require a tailored NEPA provision.
Review completed by Shaina Aguilar on 7/7/21.

FOR CATEGORICAL EXCLUSION DETERMINATIONS

The proposed action (or the part of the proposal defined in the Rationale above) fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D. To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

There are no extraordinary circumstances related to the proposed action that may affect the significance of the environmental effects of the proposal.

The proposed action has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

The proposed action is categorically excluded from further NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:

 Electronically Signed By: Casey Strickland
NEPA Compliance Officer

Date: 7/7/2021

FIELD OFFICE MANAGER DETERMINATION

- Field Office Manager review not required
- Field Office Manager review required

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature:

Field Office Manager

Date: