

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



RECIPIENT: Black & Veatch Special Project Corp

STATE: CA

PROJECT TITLE: Next-Gen Nitrogen Removal Process for Low-Energy, Low-N20 Nutrient removal

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002855	DE-EE0010986	GFO-0010986-001	GO10986

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 Black & Veatch Special Project Corp (BV) to design, operate, demonstrate, and test a Next-Generation Nitrogen Removal (NGNR) process against conventional nitrogen removal techniques both with machine learning artificial intelligence (ML-AI) tools and in an operational wastewater management facility.

Award activities would focus primarily on the operation of a pilot NGNR within an operational demonstration facility, as well as the continued development of an ML-AI toolkit and application, and sensors for testing nitrogen dioxide. Diversity, equity, inclusion and accessibility measures would be taken to include persons from communities underrepresented in STEM, specifically from Cal State East Bay, a minority-serving institution. Students would be presented with internship opportunities, as well as tours and presentations to encourage involvement.

BV (Walnut Creek, CA; Overland Park, KS) would carry out project management, demonstration design, and data analyses. Hach (Loveland, CO) would design elements associated with the ML-AL toolkit. Columbia University (New York, NY) would conduct bench scale molecular experimentation related to microbial populations. Argonne National Laboratory (Argonne, IL) would develop field-effect transistors for NGNR monitoring. Field testing would be carried out at Hayward Water Pollution Control Facility (Hayward; Hayward, CA), an existing wastewater treatment facility. Hayward would assist in design, fabrication, and operation of the pilot-scale and demonstration-scale units that would be operated at their facility. These units would be added to the existing system inside the facility. The nitrogen dioxide sensors and NGNR system would be tested on real wastewater processed inside the facility.

Award activities would involve some hazardous conditions, for example working in a wet environment. Nanomaterials would be dispersed in solvents and thus would not pose an inhalation risk. Local exhaust would mitigate any potential nanomaterial emission during laboratory processes. Existing safety policies and procedures would be followed, including Environmental Health and Safety regulations. All applicable federal, state, and local health, safety, and environmental regulations would be followed.

All project work would be performed at existing, purpose-built facilities. No modifications to existing facilities, ground disturbing activities, or changes to the use, mission, or operation of existing facilities would be required. No additional permits, licenses, or authorizations would be required. Any work proposed to be conducted at a federal facility may be subject to additional NEPA review by the cognizant federal official and must meet the applicable health and safety

requirements of the facility.

DOE has considered the scale, duration, and nature of proposed activities to determine potential impacts on resources, including those of an ecological, historical, cultural, and socioeconomic nature. DOE does not anticipate impacts on these resources which would be considered significant or require DOE to consult with other agencies or stakeholders.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Industrial Efficiency and Decarbonization Office (IEDO)
NEPA review completed by Alex Colling on 03/11/2024.

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: Andrew Montano

NEPA Compliance Officer

Date: 3/19/2024

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: