

DOE-ID NEPA CX DETERMINATION

Idaho National Laboratory

SECTION A. Project Title: The Role of Coherent Structures in Scalar Transport over Heterogeneous Landscapes

SECTION B. Project Description and Purpose:

The proposed National Science Foundation (NSF)-funded study between Boston University and Washington State University examines coherent atmospheric boundary structures responsible for mass and energy exchanges between Earth's surface and the atmosphere to improve understanding of land and atmosphere interactions including dispersion and transport and to validate plume dispersion models at the Grid III weather tower and field site on the Idaho National Laboratory (INL) Site north of the Idaho Nuclear Technology and Engineering Center (INTEC) and east of the Advanced Test Reactor Complex (ATR). The Grid III tower and meteorological instruments (SODAR, mesonet equipment) and the open terrain surrounding the area make it an ideal site for the proposed study.

Beginning in July 2019, the project installs five eddy-covariance systems that measure three dimensional winds and CO₂/H₂O concentrations and seven sonic anemometers measuring turbulent winds on the Grid III tall tower and installs four separate small towers with eddy-covariance systems powered by solar panels and batteries at 10 m above ground extending about 300 m to the south of the tall tower to quantify coherent structures in vertical and horizontal directions. The proposed action installs other meteorological instruments such as net radiometers and temperature/relative humidity probes on the Grid III tall tower to record atmospheric radiation, temperature and humidity. The proposal also installs the following:

- Soil temperature profile sensors, including soil heat flux plates, within 10 meters of the Grid III tower
- One or two soil temperature profile sensor sets extending down to 100 cm below the surface
- Soil moisture sensors 5 cm deep at 20 places randomly selected within 300 meters of the Grid III tower
- A ceilometer near the Grid III tower.

The ceilometer uses an upward directed Class 1M laser and will be co-located with the existing SODAR system.

In 2020, the proposed action plans observations to run for a few months and adds then removes additional instruments. The project installs a fibre-optic temperature sensing system with one leg running vertically up the Grid III tower, a second leg running 300 m straight south from the Grid III tower, and a third leg running 300 m straight east of the Grid III tower. Posts 2-3 meters above ground support the horizontal legs, and the proposal installs anemometers along the horizontal legs. Additional wind and temperature profiling equipment may also be added.

In 2021, the instruments will continue collecting data, but new instrument installation is not anticipated. The experiment concludes in 2022, and instruments will be removed from the Grid III area.

SECTION C. Environmental Aspects or Potential Sources of Impact:

Air Emissions

Minor amounts of fugitive dust would be generated while traveling to and from the study locations on existing gravel roads and two track trails.

Disturbing Cultural or Biological Resources

Prior to locating equipment, cultural resource surveys and/or clearance in writing from the Cultural Resource Management (CRM) office would be completed to ensure that potential cultural resources would not be impacted. Project activities would be organized to minimize impacts to any culturally sensitive materials identified during these surveys. Suzann Henrikson (526-2985) of the INL CRM office should be contacted to arrange for a cultural resource review. Impacts to any identified resources would be minimized using existing roadways, placing equipment in previously disturbed areas whenever possible, and avoidance of ground disturbance in any sensitive areas identified. If objects of potential archaeological or historical significance (e.g., arrowheads, flints, bones, etc.) are encountered during project activities, personnel would discontinue disturbance in the area and contact the CRM office [Suzann Henrikson (526-2985)].

There is the potential for this work to impact desert vegetation and for project personnel to interact with various animal species. The potential for impact would be minimized by the short duration, small footprint, infrequent access to equipment, and the commitment of the project to use existing roadways and previously disturbed areas whenever possible. Within two weeks of the initiation of any activities that might disturb soil or vegetation, an ecological evaluation including a nesting bird survey would be completed. Jackie Hafila (525-9358) at Veolia Nuclear Solutions - Federal Services should be contacted two weeks prior to beginning work to arrange for biological resource review.

Generating and Managing Waste

Project activities are expected to generate only minor amounts of uncontaminated industrial waste. The small amount of waste that may be generated could include uncontaminated garbage such as plastic water bottles or other miscellaneous waste. All waste would be disposed of in appropriate recycling containers at INL facilities or in the INL Landfill Complex through Waste Generator Services (WGS). Project personnel would incorporate waste minimization measures by using reusable materials where practical.

Releasing Contaminants

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Typical construction chemicals such as fuels, lubricants, adhesives, etc., will be used while installing the trailers and will be submitted to chemical inventory lists with associated Safety Data Sheets (SDSs) for approval in the vendor data system prior to use. The Facility Chemical Coordinator will enter these chemicals into the INL Chemical Management Database. All chemicals will be managed in accordance with laboratory procedures.

Although not anticipated, there is a potential for spills when using chemicals or fueling equipment. In the event of a spill, notify facility PEL. If the PEL cannot be contacted, report the release to the Spill Notification Team (208-241-6400). Clean up the spill and turn over spill cleanup materials to WGS.

Using, Reusing, and Conserving Natural Resources

Fuel would be used in vehicles while traveling to and from the study locations. Project personnel would carpool and/or use alternative fuel vehicles when appropriate. Project personnel would incorporate waste minimization measures by using reusable materials and recycling where practical.

SECTION D. Determine Recommended Level of Environmental Review, Identify Reference(s), and State Justification: Identify the applicable categorical exclusion from 10 Code of Federal Regulation (CFR) 1021, Appendix B, give the appropriate justification, and the approval date.

For Categorical Exclusions (CXs), the proposed action must not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environmental, safety, and health, or similar requirements of Department of Energy (DOE) or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment or facilities; (3) disturb hazardous substances, pollutants, contaminants, or Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources (see 10 CFR 1021). In addition, no extraordinary circumstances related to the proposal exist that would affect the significance of the action. In addition, the action is not "connected" to other action actions (40 CFR 1508.25(a)(1)) and is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1608.27(b)(7)).

References: 10 CFR 1021, Appendix B, B3.1 "Site characterization and environmental monitoring"

Justification: Project activities are consistent with 10 CFR 1021, Appendix B, B3.1 "Site characterization and environmental monitoring (including, but not limited to, siting, construction, modification, operation, and dismantlement and removal or otherwise proper closure (such as of a well) of characterization and monitoring devices, and siting, construction, and associated operation of a small-scale laboratory building or renovation of a room in an existing building for sample analysis). Such activities would be designed in conformance with applicable requirements and use best management practices to limit the potential effects of any resultant ground disturbance. Covered activities include, but are not limited to, site characterization and environmental monitoring under CERCLA and Resource Conservation and Recovery Act (RCRA). (This class of actions excludes activities in aquatic environments. See B3.16 of this appendix for such activities.) Specific activities include, but are not limited to:

- a. Geological, geophysical (such as gravity, magnetic, electrical, seismic, radar, and engineering surveys and mapping, and the establishment of survey marks. Seismic techniques would not include large-scale reflection or refraction testing;
- b. Installation and operation of field instruments (such as stream-gauging stations or flow-measuring devices, telemetry systems, geochemical monitoring tools, and geophysical exploration tools);
- c. Drilling of wells for sampling or monitoring of groundwater or the vadose (unsaturated) zone, well logging, and installation of water-level recording devices in wells;
- d. Aquifer and underground reservoir response testing; (e) Installation and operation of ambient air monitoring equipment;
- e. Sampling and characterization of water, soil, rock, or contaminants (such as drilling using truck- or mobile-scale equipment, and modification, use, and plugging of boreholes);
- f. Sampling and characterization of water effluents, air emissions, or solid waste streams;
- g. Installation and operation of meteorological towers and associated activities (such as assessment of potential wind energy resources);
- h. Sampling of flora or fauna; and
- i. Archeological, historic, and cultural resource identification in compliance with 36 CFR part 800 and 43 CFR part 7.

Is the project funded by the American Recovery and Reinvestment Act of 2009 (Recovery Act) Yes No

Approved by Jason Sturm, DOE-ID NEPA Compliance Officer on: 7/25/2019