

Environmental Review Form for Argonne National Laboratory

Click on the blue question marks (?) for instructions, contacts, and additional information on specific line items.

(?)Project/Activity Title: Biomass production and nitrogen recovery in 21st century riparian buffers

(?)ASO NEPA Tracking No. ASO-CX-268 **(?)Type of Funding:** _____
B&R Code _____

(?)Identifying number: _____ WFO proposal # _____ CRADA proposal # _____
Work Project # _____ ANL accounting # (item 3a in Field Work Proposal) 49147-NE-155
Other (explain) _____

(?)Project Manager: M. Cristina Negri Signature: *M. Cristina Negri* Date: 6/8/10

(?)NEPA Owner: R. Riel Signature: *R. Riel* Date: 6/9/10

ANL NEPA Reviewer: M. A. Kamiya Signature: *M. A. Kamiya* Date: 6/9/2010

I. (?)Description of Proposed Action: Collect soil samples, and place small soil moisture samplers approximately 4 feet below ground surface near and away from Argonne-planted phytoremediation trees. Collect soil moisture samples from the installed samplers and ship overnight to Argonne Lab for chemical analysis of nitrate, dissolved nitrous oxide and methane, and other standard chemistry.

II. (?)Description of Affected Environment: the activities will be occurring at a USDA-leased field site in Murdock, Nebraska, where Argonne has been operating since 2005 to clean up a contaminated plume under USDA funding. No environmental disturbance is expected except for the localized use of small hand augers to place the soil moisture samples in the ground.

III. (?)Potential Environmental Effects: (Attach explanation for each "yes" response. See Instructions for Completing Environmental Review Form)

A. Complete Section A for all projects.

- | | | |
|---|---|--|
| 1. (?)Project evaluated for Pollution Prevention and Waste Minimization opportunities and details provided under items 2, 4, 6, 7, 8, 16, and 20 below, as applicable | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |
| 2. (?)Air Pollutant Emissions | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 3. (?)Noise | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 4. (?)Chemical Storage/Use | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |
| 5. (?)Pesticide Use | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 6. (?) Polychlorinated Biphenyls (PCBs) | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 7. (?) Biohazards | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 8. (?)Liquid Effluent (wastewater) | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 9. (?)Waste Management | | |

- | | | |
|--|---|--|
| a) Construction or Demolition Waste | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| b) Hazardous Waste | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |
| c) Radioactive Mixed Waste | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| d) Radioactive Waste | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| e) PCB or Asbestos Waste | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| f) Biological Waste | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| g) No Path to Disposal Waste | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| h) Nano-material Waste | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 10. (?)Radiation | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 11. (?)Threatened Violation of ES&H Regulations or Permit Requirements | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 12. (?)New or Modified Federal or State Permits | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 13. (?)Siting, Construction, or Major Modification of Facility to Recover, Treat, Store, or Dispose of Waste | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 14. (?)Public Controversy | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 15. (?)Historic Structures and Objects | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 16. (?)Disturbance of Pre-existing Contamination | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 17. (?)Energy Efficiency, Resource Conserving, and Sustainable Design Features | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |

B. For projects that will occur outdoors, complete Section B as well as Section A.

- | | | |
|--|---|--|
| 18. (?)Threatened or Endangered Species, Critical Habitats, and/or other Protected Species | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 19. (?)Wetlands | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 20. (?)Floodplain | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 21. (?)Landscaping | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 22. (?)Navigable Air Space | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 23. (?)Clearing or Excavation | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |
| 24. (?)Archaeological Resources | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 25. (?)Underground Injection | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 26. (?)Underground Storage Tanks | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 27. (?)Public Utilities or Services | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 28. (?)Depletion of a Non-Renewable Resource | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |

C. For projects occurring outside of ANL complete Section C as well as Sections A and B.

- 29. (?) Prime, Unique, or Locally Important Farmland Yes ___ No X
- 30. (?) Special Sources of Groundwater (such as sole source aquifer) Yes ___ No X
- 31. (?) Coastal Zones Yes ___ No X
- 32. (?) Areas with Special National Designations (such as National Forests, Parks, or Trails) Yes ___ No X
- 33. (?) Action of a State Agency in a State with NEPA-type Law Yes ___ No X
- 34. (?) Class I Air Quality Control Region Yes ___ No X

IV. (?) Subpart D Determination: (to be completed by DOE/ASO)

Are there any extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal? Yes ___ No X

Is the project connected to other actions with potentially significant impacts or related to other proposed action with cumulatively significant impacts? Yes ___ No X

If yes, is a categorical exclusion determination precluded by 40 CFR 1506.1 or 10 CFR 1021.211? Yes ___ No ___

Can the project or activity be categorically excluded from preparation of an Environment Assessment or Environmental Impact Statement under Subpart D of the DOE NEPA Regulations? Yes X No ___

If yes, indicate the class or classes of action from Appendix A or B of Subpart D under which the project may be excluded. B.3.4 (j), off-site characterization / environmental monitoring including sampling of flora and fauna.

If no, indicate the NEPA recommendation and class(es) of action from Appendix C or D to Subpart D to Part 1021 of 10 CFR.

ASO NEPA Coordinator Review: Ken Chiu

Signature: Ken Chiu Date: 6/10/10

ASO NCO Approval of CX Determination:

The preceding pages are a record of documentation that an action may be categorically excluded from further NEPA review under DOE NEPA Regulation 10 CFR Part 1021.400. I have determined that the proposed action meets the requirements for the Categorical Exclusion identified above.

Signature: Peter R. Siebach Date: 6/10/10
Peter R. Siebach
Acting Argonne Site Office NCO

ASO NCO EA or EIS Recommendation: N/A

Class of Action: _____

Signature: _____

Peter R. Siebach
Acting Argonne Site Office NCO

Date: _____

Concurrence with EA or EIS Recommendation:

CH GLD: _____

Signature: _____

Date: _____

ASO Manager Approval of EA or EIS Recommendation:

An ___ EA ___ EIS shall be prepared for the proposed _____ and
_____ shall serve as the document manager.

Signature: _____

Dr. Joanna M. Livengood
Acting Manager

Date: _____

Explanations for "yes" responses

1- Pollution prevention and waste minimization: this project is not expected to generate any significant amount of waste.

4- Small amounts of preserving chemicals will be added to the sample vials in the field, either as pre-dosed vials or directly while collecting the samples. These chemicals will be 80% solution zinc chloride (0.3 mL per vial) and 1:1 hydrochloric acid (2 drops per vial). The risk of dispersion in the environment is minimal and all chemicals will be returned to Argonne either in samples or as unused chemical. Other chemicals will be used at Argonne in the labs for analytical purposes. Their quantities, use and disposal will fully conform to a categorical exclusion for bench scale research.

9-b- Hazardous waste: because of the presence of carbon tetrachloride as a site pollutant, any waste liquid generated at the site will be shipped back to Argonne and analyzed so that the proper disposal method is selected. We however do not envision any contamination issues at the locations we are planning on sampling. Small amounts of liquid effluent may be generated while rinsing, testing and bailing the field samplers. The effluent waste generated will be shipped back to Argonne for lawful disposal.

17- Energy Efficiency, Resource Conserving, and Sustainable Design Features. This project is studying the ability of trees to remove pollutant nitrate leaching from nearby farm fields, while generating biomass for transformation into advanced biofuels. The USDOE EERE is funding these activities as a proof-of-concept of this synergistic opportunity to make biofuels and at the same time tackle a significant non-point source pollution problem using environmentally impacted land.

23- A hand auger will be used to core one-inch diameter cores in the soil at selected locations and up to 4 feet in depth for collecting soil samples and placing soil moisture sampling probes. Most of the cored soil will be sent for analysis, residual soil will be used to fill voids in place and ensure the probe fits snugly within the core. The State of Nebraska Diggers hotline will be notified 48 prior to auguring.

Scope of work: Biomass production and nitrogen recovery in 21st century riparian buffers

This project will investigate the removal of nitrate ions and the potential for mitigation of greenhouse gases by poplar and willow trees grown to intercept shallow groundwater and surface water exfiltrating from agricultural farmland. We will work at an existing USDA-leased field site which is part of an already active, USDA-funded EVS program in Murdock NE under CERCLA. At this site, poplars and willows are already planted. The activities covered in this NEPA form are incremental research activities funded by the USDOE-EERE Office of the Biomass Programs, who is interested in determining the sustainability and environmental benefits of biofuel crops grown as a buffer to intercept and recover the nutrients lost by grain farming. The already planted site was found to be a good and cost-effective model for the new work.

As part of this specific DOE-funded project, ES personnel will interact with the USDA-funded team and will conduct independent activities to collect additional soil and soil water from within the root zone of the existing trees, from non-rooted soils, and from existing sampling points. Samples will be collected using minimally disturbing samplers manually placed in the soil at approximately 4 feet below ground surface, and connected to the surface with small plastic tubing. It is expected that these samplers will be placed using a hand auger or similar equipment. Collection of the small volume samples (<100 mL each) will be conducted using a hand-held vacuum syringe or small peristaltic pump operated via battery. Because the site is under remediation and monitoring from legacy pollution (carbon tetrachloride) (activities funded by the USDA), 40-hour Hazardous operator training is required. Because of the potential presence of small concentrations of carbon tetrachloride in the water, any waste water from the activities will be collected, analyzed and shipped to Argonne for lawful disposal. Samples will be sent

back to Argonne (Bldg 362 labs) for processing and analysis or sent to appropriate third party laboratories for specialized analysis. Lab activities will fully conform to bench-scale research.