

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.** _____ (?) **Type of Funding:** other- DOE EERE
B&R Code 1004172

(?) **Identifying number:** _____ WFO proposal # _____ CRADA proposal # _____
Work Project # _____ ANL accounting # (item 3a in Field Work Proposal) 49789-00-155
Other (explain) _____

(?) **Project Manager:** M. Cristina Negri Signature: [Signature] Date: 3/11/11

(?) **NEPA Owner:** William Brocker Signature: [Signature] Date: 3/14/11

ANL NEPA Reviewer: M. A. Kamiya Signature: [Signature] Date: 3/14/2011

I. (?) **Description of Proposed Action:**

This project will establish a field test site (approximately 15 acres) to test the environmental benefits of planting biofuel crops (willows, and/or poplars, switchgrass and miscanthus) as riparian buffers and test plots to passively recover the nitrate from corn farming through root uptake. The project will last five years. Installation of monitoring equipment and planting the perennial biofuel crops will occur in year 1, after which monitoring will continue throughout the test period. Harvesting of the biofuel crop will also be conducted using applicable farm implements and is expected in year 3-4 (miscanthus and switchgrass) and 4-5 years (willow, poplar). No replanting is expected. We plan to plant the target biofuel crops in place of corn, between corn and the Indian Creek stream to determine the effectiveness of the biofuel crop to uptake nitrate from the surface/groundwater flowing from the corn field before it is discharged to the creek. Conventional agricultural practices will be utilized to plant the biofuel crops. Limited soil grading may be necessary to separate runoff from different "plots" into different collection points. Although the implements may be somewhat different from what is currently used to plant corn, the project will use standard farming implements and employ techniques that have been selected (by others) as representative of best management practices to minimize potential environmental impacts (example: no-till or minimum till). The more invasive activities will be the installment of several shallow temporary groundwater monitoring wells, the placement of soil moisture sampling devices (rhizons) and the collection of soil samples (in coincidence with placement of wells and rhizons). Tile drains, if present, will be instrumented with flow monitors and sampling devices. No nitrogen fertilizer will be applied, and conventional phosphorous and potassium fertilizer may be applied if the soil analysis will recommend it. Likewise, the intention is not to use any pesticides unless extreme infestation with crop disease occurs (not expected at this time). Herbicide application will be conducted by licensed operators (typically the farmer) according to standard farming practices to control weeds. Overall, except for the installation of the monitoring equipment, we do not expect to deviate significantly from what would be done by the farmer in growing corn if we did not plant the biofuel crop.

II. (?) **Description of Affected Environment:**

The proposed site is an existing farm field in Fairbury IL, along Highway 24. This town is 90 miles south of Argonne. The field site is currently cultivated with continuous corn. The land is expected to be less productive than other agricultural land for corn and other grains as it is adjacent to the Indian Creek and classified, in the Soil survey, as "frequently flooded" and "poorly drained", which makes it attractive for biofuel cropping as these crops are more tolerant of these unfavorable conditions than grain crops. To our knowledge (and confirmed by the Livingston County Soil and Water Conservation District, a partner in this project) there are no

wetland resources involved, or natural habitats of endangered species. A map of the proposed field site is attached. Both the landowner and farmer who rents the land are interested in working with us. A rental agreement will be established with the landowner for the 5-year duration of this project, and the farmer who crops the land will be subcontracted to conduct the farming operations (tilling, planting, etc).

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.
All chemical and pesticide uses will be minimized and only applied in case of extreme need. Liquid effluent will be the sampled runoff water and soil water/groundwater collected during the sampling activities. No chemicals will be added to this water as a consequence of our work so we plan to pour any remaining amounts where they were collected from. There is no contamination at the site to the extent of our knowledge. Yes X No
2. (?)Air Pollutant Emissions Yes No X
3. (?)Noise Yes No X
4. (?)Chemical/Oil Storage/Use Yes X No
Chemical use may involve commonly used fertilizers such as urea, anhydrous ammonia, di-ammonium phosphate and potash. Fertilizers will be applied by the farmer and/or licensed operator under contract with Argonne as necessary based on soil analysis. Applications will follow usual farming practices.
5. (?)Pesticide Use Yes X No
Pesticide use is not envisioned at this time, and will only be considered in case of extreme infestation of the biofuel crops with crop pests. In case pesticide is necessary, we will hire a licensed firm to recommend the type of pesticide appropriate to the case and to conduct the application. Herbicides will be applied by the farmer or licensed personnel to control weeds, in accordance to standard farming practices.
6. (?) Polychlorinated Biphenyls (PCBs) Yes No X
7. (?) Biohazards Yes No X
8. (?)Liquid Effluent (wastewater) Yes X No
Small amounts of water (groundwater, surface runoff) will be generated as a residual of the sampling activities. As this water is not expected to contain any pollutants, we plan to return it to the soil at the end of the activities.
9. (?)Waste Management
 - a) Construction or Demolition Waste Yes No X
 - b) Hazardous Waste Yes X No
Pesticide waste may be generated in case of application of pesticide. In this case, it will be disposed by the licensed applicator.

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| c) Radioactive Mixed Waste | Yes _____ | No <u>X</u> _____ |
| d) Radioactive Waste | Yes _____ | No <u>X</u> _____ |
| e) PCB or Asbestos Waste | Yes _____ | No <u>X</u> _____ |
| f) Biological Waste | Yes _____ | No <u>X</u> _____ |
| g) No Path to Disposal Waste | Yes _____ | No <u>X</u> _____ |
| h) Nano-material Waste | Yes _____ | No <u>X</u> _____ |
| 10. (?)Radiation | Yes _____ | No <u>X</u> _____ |
| 11. (?)Threatened Violation of ES&H Regulations or Permit Requirements | Yes _____ | No <u>X</u> _____ |
| 12. (?)New or Modified Federal or State Permits | Yes _____ | No <u>X</u> _____ |
| 13. (?)Siting, Construction, or Major Modification of Facility to Recover, Treat, Store, or Dispose of Waste | Yes _____ | No <u>X</u> _____ |
| 14. (?)Public Controversy | Yes _____ | No <u>X</u> _____ |
| 15. (?)Historic Structures and Objects | Yes _____ | No <u>X</u> _____ |
| 16. (?)Disturbance of Pre-existing Contamination | Yes _____ | No <u>X</u> _____ |
| 17. (?)Energy Efficiency, Resource Conserving, and Sustainable Design Features | Yes <u>X</u> _____ | No _____ |
- This project aims at determining the overall sustainability of biofuel crops when grown as riparian buffers to recover the nitrate from the adjacent corn. It will use best management practices as applicable.

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

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| 18. (?)Threatened or Endangered Species, Critical Habitats, and/or other Protected Species | Yes _____ | No <u>X</u> _____ |
| 19. (?)Wetlands | Yes _____ | No <u>X</u> _____ |
| 20. (?)Floodplain | Yes <u>X</u> _____ | No _____ |
- The site is in a 100-year floodplain, according to the Livingston County Soil and Water Conservation District, and purposefully so as the purpose of this work is to determine the suitability of this type of land to support biofuel production. The Livingston County SWCD is a partner in this project. We are determining the environmental benefits of new management practices compared to current corn production methods as far as nutrient leaching and greenhouse gas emissions. We do not expect to impact the floodplain more negatively than what is currently ongoing with traditional agricultural crops.
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|-------------------------------|--------------------|-------------------|
| 21. (?)Landscaping | Yes _____ | No <u>X</u> _____ |
| 22. (?)Navigable Air Space | Yes _____ | No <u>X</u> _____ |
| 23. (?)Clearing or Excavation | Yes <u>X</u> _____ | No _____ |
- Some limited soil grading will need to be conducted to channel runoff from separate plots to specific sampling points. For this work, typical farming implements will be used, not differently from what is usually done in regular farming. All earth moved will be used to create small berms to channel runoff. The farmer will be subcontracted to conduct

this work with his farming implements. The farmer or others (such as USDA) will plant the trees and other biofuel crops using standard farming implements. Similarly, any spoils from well installation (small temporary wells will be installed to water table, approximately 4-6 feet below ground surface) will be returned to the soil. Upon project completions, temporary wells will be abandoned following procedures established by the Livingston County Health Department. Permitting, well installation and well closure will be handled by a subcontracted licensed engineering firm according to Livingston County Health Department requirements.

24. (?) Archaeological Resources Yes _____ No X
25. (?) Underground Injection Yes _____ No X
26. (?) Underground Storage Tanks Yes _____ No X
27. (?) Public Utilities or Services Yes _____ No X
28. (?) Depletion of a Non-Renewable Resource Yes _____ No X

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 X No _____
 Prime, Unique, or Locally Important Farmland: According to the Livingston County SWCD, this land is prime farmland, however none of the proposed activities will affect this land use and definition, rather will help find ways to better protect it and test the benefits of alternative crops that are proposed as biofuel crops. Activities are not expected to adversely impact soil quality and plans are being prepared to return the land to its original cropping rotation (corn) at the end of the test period, if desired by the landowner.
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 ☒ 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. Appendix B "B3.8 Outdoor ecological/environmental research in small areas"

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: Kaushik N. Joshi

Signature: KN Joshi

Date: 3-17-2011

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
Peter R. Siebach
Acting Argonne Site Office NCO

Date: 3/17/2011

ASO NCO EA or EIS Recommendation:

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
Manager

Date: _____

Attachment 1- location of proposed field site in Fairbury, IL

<http://maps.google.com/maps?hl=en&ie=UTF8&ll=40.742477,-88.506039&spn=0.04383,0.11776&t=f&z=14&ecpose=40.72964066,-88.50604111,9521.82,0.006,8.713,0>

Proposed field site and planting locations.

