

United States Department of the Interior  
Bureau of Land Management  
Northeastern States District  
Lower Potomac Field Station  
LLESM01000

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**Categorical Exclusion/Decision Record**  
for  
**Proposed Research Study of Stream Bank Erosion on  
Thompson Creek at Meadowood SRMA**

NEPA #: DOI-BLM-ES-0920-2015-0015-CX

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**Date:** July 2015

**Type of Action:** Lands & Realty

**Serial Number:** N/A

**Location:** Lower Potomac Field Station  
Meadowood Special Recreation Management Area (SRMA)  
10406 Gunston Road  
Lorton, Virginia

**Project Acreage:** Approximately 1.32 miles (2.12 kilometers) along Thompson Creek

**Proponent:** Western Illinois University

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Bureau of Land Management  
Northeastern States District  
Lower Potomac Field Station  
10406 Gunston Road  
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## MISSION STATEMENT

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

## CATEGORICAL EXCLUSION/DECISION DOCUMENTATION

**1. Proponent:** Western Illinois University  
**NEPA #:** DOI-BLM-ES-0920-2015-0015-CX  
**Project Name:** Proposed Research Study of Stream Bank Erosion on Thompson Creek at Meadowood Special Recreation Management Area (SRMA): Mosses (Division Bryophyta) as Green Engineers in Controlling Bank Erosion Along Low Order Streams: A Geographic and Ecological Analysis  
**Location:** Thompson Creek, Meadowood SRMA, Fairfax County, Virginia

**2. BLM District Office:** Eastern States, Northeastern States District, Milwaukee, Wisconsin

**3. Project Description:** The proposed action would implement a three-year research study on Thompson Creek, located on the Meadowood SRMA in Fairfax County, Virginia (see Figure 1 at the end of this document). The mouth of Thompson Creek is located at the Belmont Bay, which drains into the Potomac River and eventually into the Chesapeake Bay. The proposed research study would conduct a detailed analysis of the effects of moss cover on stream banks and their potential role in stabilization of the stream bank. Thompson Creek is an ideal location for the study because despite minimal human impact, the creek is experiencing bank erosion leading to downstream sedimentation. The study would cover approximately 1.32 miles (2.12 kilometers) along Thompson Creek, where a series of four different experiments would be conducted: Experiment 1 would compare natural stream banks with and without moss cover; Experiment 2 would introduce native moss cover on previously unvegetated stable stream banks; Experiment 3 would introduce native moss cover on previously unvegetated unstable stream banks; and Experiment 4 would remove moss cover from previously moss covered stream banks.

Field components of the study include data gathering and surveys of existing conditions; use of equipment including lysimeters to determine evaporation rates and tensiometers to record soil pore pressure; moss introduction and extraction on field sites; and monitoring for a period of three years. The proposed study would require negligible ground disturbance. Within the study locations (for research purposes, the creek would be divided into nine reaches) potential disturbance would occur within areas of approximately 6.6 feet by 3.2 feet (2 meters by 1 meter) along the stream bank. Tensiometers measure soil pore pressure and would be inserted approximately 3.2 feet (1 meter) deep along the stream bank at several study sites. There would be periodic foot traffic by the researcher and/or a student through the area approximately every three months for a period of three years for research monitoring activities.

#### **4. Plan Conformance Review:**

The proposed action has been reviewed and found to be in conformance with one or more of the following BLM Land Use Plans and the associated decision(s):

- *Meadowood Farm Planning Analysis/Environmental Assessment*, November 2002
- *Meadowood Special Management Recreation Area Integrated Activity Management Plan/Environmental Assessment*, June 2004

## **5. Compliance with National Environmental Policy Act (NEPA)**

The proposed action is categorically excluded from further documentation under the NEPA in accordance with 43 CFR 46.210(e):

Nondestructive data collection, inventory (including field, aerial, and satellite surveying and mapping), study, research, and monitoring activities

## **6. Departmental Exceptions and Critical Resource Values Checklist:**

The proposed action generally does not require the preparation of an Environmental Assessment (EA) or Environmental Impact Statement (EIS), as the proposal has been found to not individually or cumulatively have a significant effect on the human environment. The categorical exclusion is appropriate in this situation because there are no extraordinary circumstances potentially having effects that may significantly affect the environment. The proposed action is an academic research project on stream bank erosion.

The proposed action has been reviewed to determine if any exceptions apply in accordance with 516 Department of the Interior Manual and 43 CFR 46.215, and no exceptions were identified, as discussed below:

### ***Have significant adverse impacts on public health and safety.***

The proposed research study would not involve any activities that would adversely affect public health and safety. Standard research equipment would be used in the study including lysimeters to determine evaporation rates and tensiometers for measuring soil pore pressure. There would be negligible ground disturbance from the proposed research activities that would not result in any public health or safety issues.

### ***Have significant impacts on natural resources and unique geographic characteristics such as historic or cultural resources; park, recreation or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands; floodplains; national monuments; migratory birds; and other ecologically significant or critical areas.***

The proposed research study is a minimally invasive study that would not result in significant impacts on any natural resources or unique geographic characteristics. The only impacts to natural resources that would occur would be from minimal ground disturbance associated with foot traffic, moss extraction, and use of the research equipment. The proposed study would not interfere with ongoing management of any natural or cultural resources at the Meadowood SRMA, nor would it affect public access to recreation. The proposed research study area has been designed to avoid areas where any cultural resources may be present, and the researcher has been provided with a map of areas to avoid during the project. Areas within the research project boundary were examined for cultural resources and the results were negative. Research activities would avoid known locations of cultural resources but if any cultural artifacts are discovered during activities

related to the study, this will immediately be reported to the Lower Potomac Field Station Manager for further investigation. Therefore, no adverse effects to cultural resources are anticipated.

***Have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources.***

The proposed research study is a minimally invasive study that would not result in any controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources. If the study supports the hypotheses that mosses can serve as stream bank stabilizers and help limit the effects of erosion, Thompson Creek as well as other similar creeks could benefit from potential future restoration efforts based on the findings of the research study.

***Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks.***

The proposed research study is a minimally invasive study that would not result in any highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks. If the study supports the hypotheses that mosses can serve as stream bank stabilizers and help limit the effects of erosion, Thompson Creek as well as other similar creeks could benefit from potential future restoration efforts based on the findings of the research study. The creek is already experiencing stream bank erosion and the proposed study would not exacerbate current conditions.

***Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects.***

The proposed research project to study the effects of mosses on stream bank erosion does not establish any precedent for future action with potentially significant environmental effects because all future actions will be subject to the Federal Land Policy and Management Act (FLPMA), NEPA, National Historic Preservation Act (NHPA), Endangered Species Act (ESA), and all applicable regulations that govern public lands.

***Have a direct relationship to other actions with individually insignificant but cumulatively significant environmental effects.***

The proposed research project would not have a direct relationship to other actions or result in significant cumulative environmental effects. Future land use proposals at the Meadowood SRMA would be analyzed in site-specific NEPA analyses, as appropriate.

***Have significant impacts on properties listed, or eligible for listing, on the National Register of Historic Places as determined by either the bureau or office.***

There are no historic architectural resources present along Thompson Creek. The proposed research study area has been designed to avoid areas where any cultural resources listed or eligible for listing on the National Register of Historic Places may be present; however, if any cultural artifacts are discovered during activities related to the study, this will immediately be reported to the Lower Potomac Field Station Manager for further investigation.

***Have significant impacts on species listed, or proposed to be listed, on the list of endangered or threatened species, or have significant impacts on designated critical habitat for these species.***

Table 1 below lists special-status species that are known to occur or have potential to occur in Fairfax County in habitat types that are present within or near the research study area. Since there would be no in-water impacts and the potential ground disturbing activities associated with the proposed research study would be minimally invasive, there would be no significant impacts to any listed species.

**Table 1. Vegetative Special-status Species Potentially Present in Fairfax County, Virginia**

Species	Federal Status	State Status	Habitat	Reason for listing
<b>*Small Whorled Pogonia</b>	Listed Threatened	Listed Endangered	This orchid grows in older hardwood stands of beech, birch, maple, oak, and hickory that have an open understory. Sometimes it grows in stands of softwoods such as hemlock. It prefers acidic soils with a thick layer of dead leaves, often on slopes near small streams.	The primary threat to the small whorled pogonia is the past and continuing loss of populations when their habitat is developed for urban expansion. Some forestry practices eliminate habitat. Also, habitat may be degraded or individual plants lost because of recreational activities and trampling.
<b>Torrey's Mountain-mint</b>	Not Listed (Species of Concern)	Not Listed	Dry, rocky, deciduous woods, along roadsides, and in thickets near streams. One occurrence has been found on the western slope of an exposed ledge with the following associate plant species: <i>Cheilanthes lanosa</i> , <i>Danthonia spicata</i> , <i>Triosteum angustifolium</i> , and other herbaceous xerophytes. At another occurrence in an open right-of-way through an extensive oak-hickory forest, plants were found on the southwest slope of a small diabase knob in dry, rocky silt loam with plant associates such as <i>Helianthus divaricatus</i> , <i>Phaseolus polystachios</i> , <i>P. tenuifolium</i> , and woody invading species such as <i>Cercis canadensis</i> and <i>Rubus</i> spp. Occurrences within this state have been found at elevations ranging from 35-1400 feet. (VA DNH 1992b).	Primary threats include succession and invasion of habitat by exotic, weedy plants, such as Japanese honeysuckle ( <i>Lonicera japonica</i> ). Spraying of herbicides by railroad, highway, or utility crews for right-of-way maintenance threatens populations near these corridors. Other threats to populations include habitat destruction due to general development, road construction, timber harvest, soil disturbance, refuse dumping, trampling by humans, horses, and tractors, and recreational pressures.

Species of Concern is not a regulatory category.

Sources: Federally-listed species (United States Fish & Wildlife Service, 2015); State-listed species and species of concern (NatureServe, 2015).

\* indicates that the species was only found at the county level not the project level for the federal T&E search

**Table 2. Wildlife Special-Status Species Known to, or Having Potential to, Occur in Fairfax County, Virginia**

Species	Federal Status	State Status	Habitat	Reason for listing
*Bald eagle	Recovery	Not Listed	<p>Bald Eagles live near rivers, lakes, and marshes where they can find fish, their staple food. Bald Eagles will also feed on waterfowl, turtles, rabbits, snakes, and other small animals and carrion. Bald Eagles require a good food base, perching areas, and nesting sites. Their habitat includes estuaries, large lakes, reservoirs, rivers, and some seacoasts. In winter, the birds congregate near open water in tall trees for spotting prey and night roosts for sheltering.</p>	<p>Forty years ago, our national symbol was in danger of extinction throughout most of its range. Habitat destruction and degradation, illegal shooting, and the contamination of its food source, largely as a consequence of <a href="#">DDT</a>, decimated the eagle population. Habitat protection afforded by the Endangered Species Act, the federal government's banning of DDT, and conservation actions taken by the American public have helped Bald Eagles make a remarkable recovery.</p> <p>Bald Eagles were removed from the endangered species list in August 2007 because their populations recovered sufficiently. Bald and Golden eagles are protected under the Migratory Bird Treaty Act (<a href="#">MBTA</a>) and the Bald and Golden Eagle Act (<a href="#">Eagle Act</a> )</p>
Northern Long-eared Bat	Threatened	Not Listed	<p>During summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. Males and non-reproductive females may also roost in cooler places, like caves and mines. This bat seems opportunistic in selecting roosts, using tree species based on suitability to retain bark or provide cavities or crevices. It has also been found, rarely, roosting in structures like barns and sheds. Northern long-eared bats spend winter hibernating in caves and mines, called hibernacula. They typically use large caves or mines with large passages and entrances; constant temperatures; and high humidity with no air currents. Specific areas where they hibernate have very high humidity, so much so that droplets of water are often seen on their fur. Within hibernacula, surveyors find them in small crevices or cracks, often</p>	<p>White-nose syndrome, a fungal disease known to affect bats, is currently the predominant threat to this bat, especially throughout the Northeast where the species has declined by up to 99 percent from pre-white-nose syndrome levels at many hibernation sites. Although the disease has not yet spread throughout the northern long-eared bat's entire range (white-nose syndrome is currently found in at least 25 of 37 states where the northern long-eared bat occurs), it continues to spread. Experts expect that where it spreads, it will have the same impact as seen in the Northeast.</p>

Species	Federal Status	State Status	Habitat	Reason for listing
			with only the nose and ears visible.	
<b>Wood Turtle</b>	Not Listed (under review)	Listed Threatened	Wood turtles live along permanent streams during much of each year but in summer may roam widely overland and can be found in a variety of terrestrial habitats adjacent to streams, including deciduous woods, cultivated fields, and woodland bogs, marshy pastures. Use of woodland bogs and marshy fields is most common in the northern part of the range.	The species has been seriously impacted by illegal collection. Entire populations along some streams have been eliminated. As a result, the distribution is now more discontinuous than it once was, and gene flow has certainly been reduced in some areas. Collection for pet trade (now illegal in most of the range) is the major threat to the survival of wood turtles. In the north, where development pressure is not great, collection may be the only serious threat. Collectors can easily clean out an entire population along many miles of stream in only one or two seasons of collecting, by timing collection to coincide with the turtles' emergence from hibernation. Although the level of illegal collecting is undocumented, experts in most states surveyed mentioned collecting as a major threat in their state.
<b>*Dwarf Wedgemussel</b>	Endangered	Not Listed	The dwarf wedge mussel lives on muddy sand, sand, and gravel bottoms in creeks and rivers of various sizes. It requires areas of slow to moderate current, good water quality, and little silt deposition. The species' recent dramatic decline, as well as the small size and extent of most of its remaining populations, indicate that individual populations remain highly vulnerable to extirpation.	Always a rare species confined to Atlantic slope drainages from North Carolina to New Brunswick, the dwarf wedge mussel has been recorded in approximately 70 localities in 15 major drainages since the species' discovery in the early 1800s. It is now thought to have been extirpated from all but 20 localities. The 20 known remaining populations, with one exception, are thought to be relatively small and to be declining as a result of continued environmental assaults in the form of agricultural, industrial, commercial, and domestic pollution/runoff. Channelization, removal of shoreline vegetation, development, and road and dam construction also threaten some populations.
<b>Brook Floater</b>	Not Listed (under	Listed Endangered	No data on natureserve.org	No data on natureserve.org

Species	Federal Status	State Status	Habitat	Reason for listing
	review)			
<b>Appalachian Springsnail</b>	Not Listed (Species of Concern)	Listed Endangered	(100-250 square km (about 40-100 square miles) This species is known from a few localities in the Potomac River basin of the District of Columbia and Maryland and Shenandoah River basin of northwestern Virginia in caves and small springs (Hershler et al., 1990).	No data on natureserve.org
<b>Holsinger's Groundwater Planarian</b>	Not Listed (Species of Concern)	Not Listed	No data on natureserve.org	No data on natureserve.org
<b>Bigger's Groundwater Planarian</b>	Not Listed (Species of Concern)	Not Listed	No data on natureserve.org	No data on natureserve.org

Note: Species of Concern is not a regulatory category.

Sources: Federally-listed species (United States Fish & Wildlife Service, 2015); State-listed species and species of concern (NatureServe, 2015).

\* indicates that the species was only found at the county level not the project level for the federal T&E search

***Violate a Federal law, or a State, local, or tribal law or requirement imposed for the protection of the environment.***

The proposed research study is in compliance with all applicable Federal, State, local and tribal laws or requirements with respect to protection of the environment and no violations are expected.

***Have a disproportionately high and adverse effect on low income or minority populations (Executive Order 12898).***

The proposed research study is confined to the Thompson Creek area and therefore there would be no impact on low income or minority populations.

***Limit access to and ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites (Executive Order 13007).***

There are no known Indian sacred sites along Thompson Creek, and public access to the Meadowood SRMA would not change as a result of the proposed research study.

***Contribute to the introduction, continued existence, or spread of noxious weeds or non-invasive species known to occur in the area or actions that may promote the introduction, growth or expansion of the range of such species (Federal Noxious Weed Control Act and Executive Order 13112).***

The proposed research study would utilize mosses that are native to the area and therefore would not likely contribute to the introduction, continued existence, or spread of noxious weeds or invasive species. However, seeds could possibly travel on clothing and equipment of the researchers. This could be mitigated by the researchers making sure the equipment is clean and free of visible seeds and/or dirt prior to entering the field. Since there are a few noxious and invasive species that occur on the Meadowood property, the research team must report any noxious or invasive species that begin to grow on the plots to the BLM so the plants can be treated timely and monitored.

**7. I certify that none of the Departmental exceptions listed in Part 6 apply to this action.**

Prepared by: Kurt J. Wadzinski  
Kurt Wadzinski  
Planning and Environmental Coordinator

Date: 8/4/2015

Reviewed by: Dean S. Gettner  
Dean Gettner  
District Manager  
Northeastern States District

Date: 8/4/2015

## **8. References**

Hershler, R., Holsinger, J. R., & Hubricht, L. (1990). *A Revision of the North American Freshwater Snail Genus Fontigens (Prosobranchia: Hydrobiidae)*. *Smithsonian Contributions to Zoology*, 509: 1-50.

NatureServe. (2015). *Natural Heritage Resources: Fairfax County, Virginia*. Retrieved from <http://www.natureserve.org/>

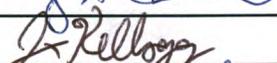
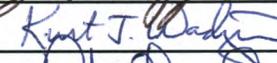
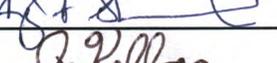
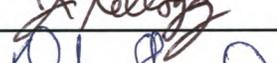
United States Fish & Wildlife Service. (2015). *Thompson Creek Study Area: iPac Trust Resource Report*. Retrieved from <http://ecos.fws.gov/ipac/>

Western Illinois University. (2015). *Mosses (Division Bryophyta) as green engineers in controlling bank erosion along low order streams: A geomorphic and ecological analysis*.

**INTERDISCIPLINARY REVIEW:**

The Proposed Action was presented to, and reviewed by, the Northeastern States District interdisciplinary team listed in Table 1 below.

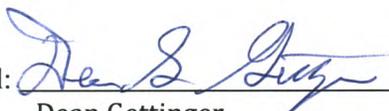
**Table 1. Categorical Exclusion Interdisciplinary Review Record**

Resource	Yes/No*	Assigned Specialist Signature	Date
Air Quality	Yes		7/24/15
Areas of Critical Environmental Concern	Yes		7/24/15
Cultural Resources	Yes		7/24/15
Environmental Justice	Yes		7/24/15
Farm Lands (prime or unique)	Yes		7/24/15
Floodplains	Yes		7/24/15
Invasive Species/Noxious Weeds	Yes		7/24/15
Migratory Birds	Yes		7/24/15
Native American Religious Concerns	Yes		7/24/15
Threatened, Endangered, or Candidate Species	Yes		7/24/15
Wastes (hazardous or solid)	Yes		7/24/15
Water Quality (drinking or ground)	Yes		7/24/15
Wetlands / Riparian Zones	Yes		7/24/15
Wild and Scenic Rivers	Yes		7/24/15
Wilderness	Yes		7/24/15

\*Extraordinary Circumstances apply.

**DECISION:**

It is my decision to approve the proposed action, a three-year research study to conduct a detailed analysis of the effects of moss cover on stream banks and their potential role in stabilization of the stream bank on Thompson Creek at the Meadowood SRMA. This action is covered by one of the Bureau of Land Management's categorical exclusions developed pursuant to the National Environmental Policy Act. The proposed action has been screened against Department of the Interior exceptions to the use of categorical exclusions and none of the exceptions apply. Therefore, neither an environmental assessment nor an environmental impact statement is necessary. The proposed action is in conformance with the approved land use plan(s), and will not involve any significant adverse environmental effects.

Authorized Official:   
Dean Gettinger  
District Manager  
Northeastern States District

Date: 8/4/2015

**Contact Person**

For additional information concerning this project, contact Zachary Reichold, Lower Potomac Field Station Manager at zreichold@blm.gov, or

Bureau of Land Management  
Lower Potomac Field Station  
10406 Gunston Road  
Lorton, Virginia 22079

**Administrative Review**

This decision shall take effect immediately upon the date it is signed by the Authorized Officer and shall remain in effect while any appeal is pending unless the Interior Board of Land Appeals issues a stay (43 CFR 2801.10(b)). Any appeal of this decision must follow the procedures set forth in 43 CFR Part 4.

Within 30 days of the decision, a notice of appeal must be filed in the office of the Authorized Officer at Northeastern States District, 626 East Wisconsin Ave., Suite 200, Milwaukee, WI, 53202-4617. If a statement of reasons for the appeal is not included with the notice, it must be filed with the Interior Board of Land Appeals, Office of Hearings and Appeals, U.S. Department of the Interior, 801 North Quincy St., Suite 300, Arlington, VA 22203 within 30 days after the notice of appeal is filed with the Authorized Officer.

Figure 1: Thompson Creek Research Study Area – Meadowood SRMA, Lorton, Virginia

