Please submit this completed application and any relevant supporting documentation by the deadline listed on the SSC website to Sustainability-Committee@Illinois.edu.The Working Group Chairs will be in contact with you regarding any questions about the application. If you have any questions about the application process, please contact the SSC Program Advisor, Micah Kenfield, at kenfield@illinois.edu

General Information

Project Name:

The 21st century version of The Morrow Plots: **The Mahomet Lots**
Permeable Parking Lots for the University of Illinois Campus

Total Amount Requested from SSC:
estimated $25,000 (please see last section at the bottom of this submission)

Project Topic Area(s): Water

Contact Information

Applicant Name:
Mary Pat McGuire, RLA, Assistant Professor

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Project Team

Name	Department	Email
Mary Pat McGuire	Dept of Landscape Architecture	mpm1@illinois.edu
Keith Erickson	Facilities & Services	krericks@illinois.edu
Eliana Brown	Illinois-Indiana Sea Grant	brown12@illinois.edu
TBD	Environmental Engineering	
TBD	Environmental Psychology	
TBD	ISEE	
TBD	Graphic Design	

Project Information

Background of the proposed project

Stormwater run-off is a huge sustainability issue, and impervious surfaces such as parking lots contribute large amounts of stormwater to this problem. At the same time, potable water is created by pumping and treating water, often from far away sources, in a costly and energy-intensive manner. This pattern of allowing rainwater to run-off while bearing the additional cost of importing water from afar is a lost opportunity. It is expensive in infrastructure and energy costs, and does not fit with the goals of an economically and ecologically sustainable future.

The "Mahomet Lots" will contribute to closing the loop on this issue of stormwater in our university landscape. The project will redesign campus parking lots from impermeable to permeable surfaces in order to capture valuable rainwater. The project will be a research and design demonstration of an important sustainability initiative, that of reducing stormwater run-off to meet the short, medium, and long term Climate Action water goals of the University.

Just as in 1876 the Morrow Plots were established to research soil and the agricultural production of corn, the Mahomet Lots would be established to research parking lots and the sustainable design of water. The Mahomet Lots would be so named to highlight the connection between our above-ground treatment of rainwater and the deep water source of the region, the Mahomet Aquifer. Everything we do to inhibit water from infiltrating back into the ground, and any withdrawals we take from the Mahomet Aquifer, create the double effect of diminishing water resources of the region. Therefore, the Mahomet Lots project is aimed at redesigning our parking lots to reduce run-off and to store water for re-use. Both reduction in run-off and reducing our dependence on pumping water from the Aquifer are targets within the UIUC iCap plan.

Big goals of the Project

- To help achieve the University iCAP goals related to stormwater, by converting impermeable parking lots (water run-off surfaces) to permeable parking lots (water capture systems),
- To support students working with faculty, staff, and F&S to investigate this opportunity, and to redesign two parking lot "research plots" devoted to testing the hypothesis,
- To potentially develop a prototype that the University can implement widely over time,
- To extend education about sustainable stormwater strategies across the University to the broader regional community of the value of the Mahomet aquifer and to share findings for adoption elsewhere,
- To develop a project that puts Illinois on the national radar of sustainable and regenerative campuses, and
- To share the findings with educators, designers and planners throughout the world.

Desired outcomes of the specific project

There are 87.5 acres of impervious surface parking lots on our campus. Each year, these lots contribute almost 90M gallons of surface run-off into Boneyard Creek, and a loss of potential infiltration and/or capture of water for re-use on campus. Retaining this water on campus will help to meet the Water and Stormwater goals of iCAP 2020. Redesigning the parking lots for water capture will have the additional benefits of improving the environmental conditions on campus through temperature moderation and energy reduction.

The overall desired outcome of the "Mahomet Lots" project is to be the first demonstration of visible, high-performance stormwater parking lots on our campus. The Mahomet Lots will be research and design sites, for testing effective designs of parking surfaces, measuring rain fall, and the capture and storage and re-use of that water. What we learn from the Mahomet Lots will help us to make long-term decisions about conversion of parking lots over time. The Lot Project therefore falls into the topic area of Water meeting the criteria of Visibility and Student Engagement/Education, while promoting ecological practices for stormwater on the campus.

Project-based outcomes:

- To create a publicly visible project exhibiting an original design that is beautiful and memorable for the University of Illinois campus,
- To create multi-functional uses of the converted surface, such as an urban plaza, when not in use as a parking lot, (multi-functionality is a sustainability principle)
- To install measuring instruments to monitor ecological performance of the lot, in order to provide landscape performance data, that will support wider adoption, and
- To develop a parking lot design that represents a multi-disciplinary team process.

Summary of how students will be involved in the project

Students will be involved in every phase of this project. First, Professor McGuire will offer a course in Landscape Architecture, open to all interested students, that will teach the principles of design for rainwater, and how to apply those principles to urban/paved surfaces. In this course, students will study the condition of impervious parking lots on campus, evaluate candidate lots for conversion to permeable Mahomet Lots, and make design and research proposals.

The students will make public presentations of the proposed design to students across the campus, soliciting ideas and feedback for the project. Student research projects, led by faculty from other departments and disciplines, would be incorporated, and we would create a process for input and involvement.

Professor McGuire will work with the students to develop a design for the site such that we can collaborate with Campus F&S to implement and construct the design. During the spring semester design phase, one outside local consultant would be hired to provide landscape architecture design review, through which the students will have the opportunity to learn and engage this process.

Through our partnership with F&S, students will observe and learn about the site construction process; and thereafter, measure and report how well the sites perform.

Throughout this process, students would share their learning and progress in public formats. We anticipate that public presentations will be essential during the design process. A website devoted to sharing information and live reporting would be advantageous. The Mahomet Lots themselves, once constructed, will be the live demonstration sites, and student activities and research projects would take place there in the coming years.

There is a lot of discussion on campus right now about student learning. I feel that students must be directly involved in projects from conception through to their lived state. This is essential to their participation in creating the world outside the university, once they leave the campus.

Brief summary of the project timeline
This project, will be initiated in Spring 2017, with an anticipated construction completion in 2018.

February - April 2017 : The design process

- Students will learn about rainwater design in urban/constructed environments. We will learn about the history of parking lots and surface materials, and investigate ideas for alternative (21st century) solutions to these spaces.
- We will collaborate with Facilities & Services, led by Keith Erickson, to investigate and select university parking lot sites for the project.
- Students will develop the design, and will make public presentations to students and administrators.

May 2017 : Final public presentation and approval to move forward

A design review and approval will take place the first week of May, to be attended by key administration of the College and University.

Summer 2017 : Bidding, permitting, and coordination

Led by F & S

Fall 2017 : Construction period

Note: this could also take place Spring 2018 depending on approvals, coordination, and preferred sequence by the university.

Spring 2018 and beyond : observation, monitoring, testing

Research monitoring and other experiments to take place on the site

Additional comments

This project is intended primarily as an educational learning experience for the students in the context of supporting university sustainability efforts. In 2013, Professor McGuire led the first-place winning student team from IIT in Chicago in the first US-EPA's Campus Rainworks Challenge, a national student competition to develop green infrastructure on home campuses. Now at UIUC, she is motivated to continue efforts for creating student/faculty/staff collaborations for implementing green infrastructure on the UIUC campus. The Mahomet Plots project would be documented and disseminated as a new area of trans-disciplinary research of 21st century stormwater practices taking place on our University campus.

Budget

The budget quoted above of $25,000 is the initial start up cost associated with materials for the course, promotion and research for the project, and the hiring of one consultant to assist Professor McGuire in spring 2017.

The full budget estimate for this project would be primarily driven by construction cost, which cannot be determined at this time. For this project, it will depend on the size of the parking lots selected and the design proposed, and this will be integrally part of the design decisions of the students in combination with F&S bidding and cost estimation process, to take place between spring and summer 2017. The SF cost for the Mahomet Lots could range anywhere from $10-100/SF depending on the complexity of the design, and the infrastructure developed to infiltrate water versus capture water. These decisions would be made during the Spring 2017 period, based on an evaluation of alternatives and approvals by university F&S and administrators. The future construction cost for the project would potentially have to be funded separately, either through F&S, university allocation, or donor. Likewise, cost items could be supported separately, such as F&S covering the construction cost, whereas monitoring equipment and management could be covered by a specific department or grant-support, including from SSC.

If invited to Step 2, we would like to address the issue of budget planning with SSC in more depth to tie funding to the goals and timeline of the project.

Thank you for reviewing this proposed project. It would be a pleasure to move forward to Step 2. We look forward to your response, and if invited to Step 2, to incorporating your questions and feedback to the proposed project.

Thank you,

Mary Pat McGuire, RLA
Assistant Professor of Landscape Architecture
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