Story Map for Stormwater Management Projects at the University of Maryland

Final Report

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INST490: Integrated Capstone for Information Science
Spring 2020

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Project Context

The College of Agriculture and Natural Resources seeks to stimulate conversations around sustainable ecosystems by informing the University and external partners about the impact of cutting-edge technologies, innovative approaches, and research projects addressing stormwater management and other environmental projects across the College Park campus. However, this data is disconnected and unconsolidated, and decision makers involved in the development of the AgroEcology Corridor cannot fully demonstrate the breadth of projects that currently exist across the campus.

This project was introduced by Dr. Frank J. Coale, Professor and Acting Assistant Dean for the College of Agriculture and Natural Resources. Additional contacts and clients include:

- TJ Rainsford, INST490 Instructor and Chief Information Officer
- Astha Khurana, INST490 Teaching Assistant and Project Director
- Michael Carmichael, SWM and Maintenance Inspector
- Christopher Ho, P.E., Civil Engineer
- Darwin Feuerstein, Assistant Director of Site Projects
- Dr. Allen Davis, Professor, Department of Civil and Environmental Engineering

Throughout the semester, we met with the individuals above to determine project scope, timelines, and deliverables. All were equally helpful during this process and provided the insight and data we needed to complete this project.

Project Description

Our group was tasked with retrieving and consolidating datasets/databases and primary accounts of enhanced stormwater management projects. These facilities have been installed across campus over time, so we needed to visualize that data through an ArcGIS StoryMap. We included information about individuals, project descriptions including size and/or area impacted, deliverables, projected impact, geographic locations, and organizations. The Story Map will be used as part of an informational website that displays why these stormwater facilities are important and how similar facilities are necessary elsewhere on campus.

Project Goal

The project goal was to create a functional website that highlights the importance of stormwater management on the University of Maryland campus. This website will serve as an informational resource to learn more about the stormwater management and why it's essential in urban areas. There isn't currently a resource that provides information about how stormwater is managed on campus and this website will offer an overview of the campus' approach.

Another related goal was to assist with the development of the AgroEcology Corridor; the concept idea of integrating green spaces and urban areas to promote a more sustainable campus ecosystem. By doing this, the university can incorporate experiential learning and research opportunities for all students at all levels. As Dr. Coale explained, the informational StoryMap should also be a fundraising tool for the AgroEcology corridor project.

Our project will aim to serve as an informational resource that will help to educate potential AgroEcology Corridor investors on why these facilities are necessary.

Methods

We began by assigning roles, creating a schedule, and reviewing client goals and potential resources. An interview with Dr. Coale developed the idea of what the project was about. Further interviews with related contacts gave us vital information on ArcGIS, stormwater management practices, and UMD's stormwater management projects. Early research included information on technical aspects—such as different types of permits the University needs for these projects. Based on the interviews and gathered information, we began creating the story map.

The first step was to find a design that accommodates this map's features, and we settled on the "cascading" style design. The next step was to gather the information to be included in the story map. The map was divided into different sections. The title/cover page has information about the impact of stormwater management on the UMD campus. The next section highlights the eight major on-campus stormwater management projects, which are displayed in an immersive format with pictures and detailed information for each project. The map includes a tour route that users can follow to see the different sites and projects on campus. The map also locates those sites, indicated by points that the user can click on to learn more about the site. Each point on the map has a fun fact and photos about the site to keep users engaged. The last section of the story map has information about the College of Agriculture and Natural Resources future projects, like the AgroEcology Corridor.

Obstacles to the project included getting complete information, not being on campus, and an adjusted schedule due to COVID-19. Getting information was challenging. An initial online search didn't provide much, so we reached out to individuals associated with UMD's stormwater management projects for more information. This was a lengthy data collection process: scheduling meetings, finding resources, online and email conversations. Therefore, work on the actual StoryMap started later than anticipated. But meetings with researchers and university staff directly involved with stormwater management provided detailed information.

Deliverables

Story Map
Our project was to create a story map and template that Dr. Coale could use to display and highlight projects completed by the College of Agriculture and Natural Resources. The ArcGIS StoryMap for Stormwater Management on campus, records those projects, but also provides an example and framework for other types of projects at the University of Maryland for the College of Agriculture and Natural Resources.

>Story Map 1:
>https://uofmd.maps.arcgis.com/apps/Cascade/index.html?appid=770d8fc83a384d69974f182a911bc967

>Story Map 2:
>https://storymaps.arcgis.com/stories/97872e1e496b4f63a5972cd0c4b9a677

Manual
The manual creates a template for the project based on a cascade design that works like a website and has features that can best display the projects. However, some features are limited or difficult to fix with this style.

The manual is designed to be easy-to-read, cover all bases, and provide links to helpful tutorials. Taylor Keen (tkeen@umd.edu), UMD GIS Coordinator, can help with setting up an account that will allow access to those tutorials.

>The Manual:
>https://drive.google.com/open?id=1-JC_u7g2Bwu19DKLSAveR31aPF4t2Wg3

Final Report
This final report is made to seamlessly describe processes, challenges, and results over the course of this project.

Recommendations

We recommend the following additions and updates to improve the template and story map.

Add more Data Points to the Story Map
Due to the abbreviated Spring 2020 timeline, we were unable to provide as much information and show of as many facilities as planned. With the manual and explanations, adding more facilities to the story map should be possible.

Add Seasonal Photos of Plant Materials and Facilities
The project timeline took place over a single season. Adding photos to the story map in each season would show the facilities more completely and further demonstrate each facility, drawing in audiences who may not be as knowledgeable about rain gardens, bioretention, and other stormwater techniques. More pictures also allow users to better understand what each facility looks like so they can recognize these sites in the future.

Add a Timeline
A timeline feature using the "immersive" media detailed in the manual would add more data points to the story map.

Add Filters and a Legend
We recommend adding a finished legend. StoryMaps allows for custom points on the maps but the cascade format doesn't allow filters or legends. Both would improve the map but can't be added in this version. Words and pictures can be added on to the map in our design, and we've made our own legend. Each point is marked as a type of facility (rain garden/ garden, bioretention, creek restoration, etc.). As points and facilities are added, they may not fit in existing categories and the legend will have to be updated.

Conclusion

The project goal was to create a functional website that highlights the importance of stormwater management on the University of Maryland campus. This goal was later changed to a template with stormwater management as the vehicle. The three deliverables are a story map of stormwater projects that can be edited (with two design options), a manual of detailed instructions on how to edit the story map and descriptions of each added section, and this report that documents our processes, challenges, and results.

In the future, the StoryMap template or a new StoryMap can be applied to other types of College of Agriculture and Natural Resources projects. This will develop a larger digital footprint for the College, create online repositories for its projects, answer frequently asked questions, and help launch the AgroEcology Corridor.

For Further Questions

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