



Merced Vernal Pools and Grasslands Reserve (MVPGR) GIS Data Hub

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Background and Description

The main goal of this project was to create a website where various users can access GIS data layers on a centralized website. End users include researchers, educators, students and community members. The project also consisted of data review, data management, metadata creation, analysis of LiDAR, and the creation of new GIS layers.

GIS Hub Development

The ultimate goal of a public online GIS hub for the MVPGR is to:

- The ultimate goal of a public online GIS hub for Create a collaborative website that highlights the research and activities of the stakeholders
- Create an educators space that allows learners to explore the reserve using an interactive map
- Provide an centralized website to access published data sets that researches, educations and other collaborators can utilize

Reaching these goals required knowledge and understanding of what the goal is and the tools and skills necessary to get there. Aside from data review and GIS skills, there was a lot of learning on the following tools:

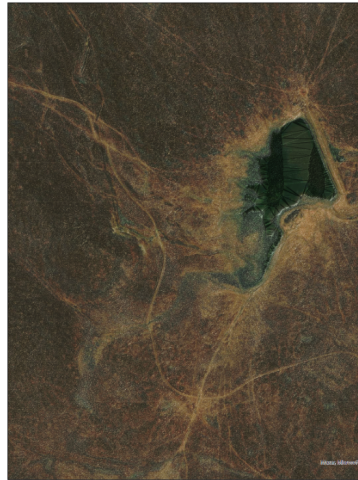
- HTML, CSS, and Javascript
- Canva for creating visuals
- Figma for creating website mock-ups
- ArcGIS Hub and ArcGIS online for creating webmaps and using the built-in tools and features

Creation of a public website while providing different needs of different users was a very important point to note. It required and will continue to require a lot effort from the MVPGR team.

Analysis Layers



LiDAR data layer



Hillshade Layer



Roads, fences, and boundary layers

Web Hub



Explore the reserve

Flora of the reserve

Learn about the plants that live and grow on the reserve. Know which areas they grow in the reserve, what soil type do the thrive in, and a lot more!

[Click here to learn more](#)



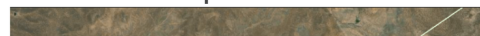
Fauna of the reserve

Learn about the animals that both live or use the reserve as stop or destination for migration. Birds such as the American Kestrel, Burrowing owl, and Meadow lark are of the several birds in the reserve. Find out what else calls the reserve their home!

[Click here to learn more](#)



Maps and data



Output

The methods used in this study involved:

- Utilizing GIS (Geographic Information Mapping System) to create maps and contours of provided LiDAR data
- Reviewing existing data and metadata and updating them to current standards
- Creation of a web access hub for said data through the use online tool ArcGIS Hub
- Utilization of HTML and Javascript to add extra functionality to the ArcGIS Hub
- Study of design and experience that makes it easy to access as well as recognizable as a part of UC Merced

Learning outcomes

The project and tasks were great learning experiences, but it was not without its own hurdles. Collaboration with mentors and other MVPGR interns was challenging especially doing so remotely lead to less time for communicating.

Analysis of the LiDAR data resulted in different analysis layers that would be valuable to the research community. A challenge was cross-referencing multiple versions of data sets from different sources that required careful planning and guidance from the mentor.

The creation of the website using ArcGIS hub was the most time consuming and the task that needed the most learning. While a very convenient tool, utilizing it to its full capacity was difficult given its several technical limitations such as very limited support with HTML and CSS.

Despite the challenges, the internship was a valuable experience that allowed me to hone existing skills and learn new ones such as:

- Utilizing ArcGIS for creating analysis layers such as slopes and hillshades.
- Web development languages (HTML and Javascript)
- Research into QGIS as an option for GIS work
- Practice of python for using the ArcPy library
- Visual creation tools such as Canva, Illustrator, and Figma

Other outputs

The MVPGR has several GIS data sets with different versions and my internship involved the review and documentation and metadata creation of these layers

- Reserve boundary, Fences, and roads
- Hillshade map of the reserve from LiDAR data
- Contour map of the reserve