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Quantifying Human Impact on Wetland Landscapes in Utah Valley

The Meadows, American Fork, Utah

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This Research Project involved the use of Geographic Information Systems, Remote Sensing Images, Fragstats, GIS Data layers obtained from Utah County, and database programs to quantify change to the natural landscape following human development in the area commonly known as “The Meadows” Shopping Center, located in American Fork, Utah.

The project began by creating a GIS layer on top of aerial photographs to represent areas of urban development and non-urban areas. Figure 1 shows the landscape before development took place, while Figure 2 shows the same area in 2004, after much of the area had been developed.

Additional data was needed to quantify which of these areas are classified as sensitive wetlands. Figure 3 shows GIS layers obtained from Utah County that show the distribution of wetland types in the area.

By using ESRI ArcGis 9, the Wetlands layer was intersected with the layer representing urban and non-urban areas. With this intersection the wetlands that were replaced with urban buildup were able to be extracted, as shown in Figure 4. After extracting these polygons, their areas were calculated and added together using database software. The percentage of the various types of wetlands were calculated (see Table 1). These results indicate a need for increased awareness of wetland locations before proceeding with urban development.

This research project was a great experience and great experience learning how to apply Geographic Information Systems technology to a real-world situation. Further research could be done to utilize GIS to find an area that would have been better suited for this type of development in order to lessen human impact on the environment in the future. Much of my learning involved learning about why wetlands are important and how we can utilize better planning skills to preserve these sensitive areas.

Figure 1: Before Development



Figure 2: After Development (2004)

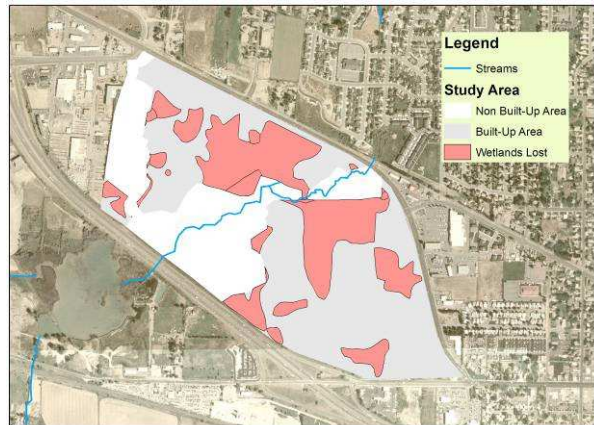
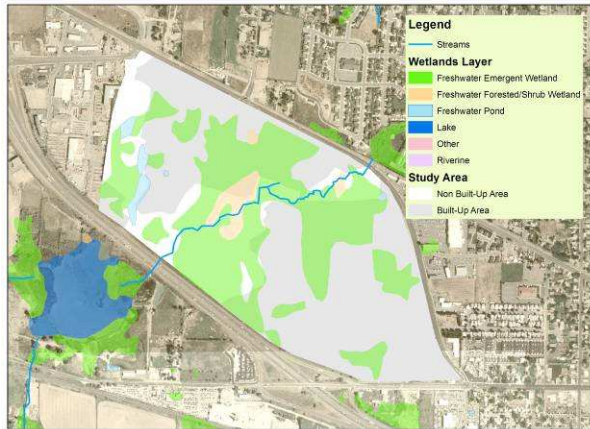


Table 1: Results

Total Wetlands Area Before Development (Square Feet)	
Freshwater Emergent Wetland	4,339,112.96
Freshwater Forested/Shrub Wetland	319,932.80
Freshwater Pond	157,753.23

Wetlands Area Lost (Square Feet)	
Freshwater Emergent Wetland	2,638,259.96
Freshwater Forested/Shrub Wetland	99,981.85
Freshwater Pond	27,448.81

Percentage of Wetlands Area Lost in the Development of The Meadows	
Freshwater Emergent Wetland	60.8%
Freshwater Forested/Shrub Wetland	31.3%
Freshwater Pond	17.4%



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