Wildfire Evacuation Route Planning

Bobcat Wildfire Consultants



Progress Report

(March 28th, 2025)

Client: Austin Fire Department – Wildfire Division

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Introduction

Summary

Progress on our wildfire evacuation route pre-planning for the Austin Fire Department is moving steadily. Our team has successfully gathered essential spatial data, divided the study area into manageable zones, and begun identifying communities with limited ingress and egress. These steps are critical to designing a robust network analysis to connect vulnerable communities with appropriate TAPs.

Purpose Statement

This progress report outlines the status of our GIS-based wildfire evacuation route planning project. Our aim is to help the Austin Fire Department Wildfire Division improve evacuation readiness for Austin-area residents by identifying limited access communities, assigning appropriate TAPs, and modeling reliable vehicle-based evacuation routes.

Scope

The overall scope of our project remains consistent with our original proposal. However, we have expanded our data collection beyond Travis County to include adjacent portions of Bastrop, Blanco, Burnet, Hays, and Williamson County. These expansions were necessary for a more comprehensive roadway and TAP network, using client-provided data.

Work Completed

Our team began by collecting and organizing the required datasets, including road networks, community polygons, ingress/egress points, TAP locations, address points, and fire station locations. We divided our dataset and study area into three separate zones for each group member, with Dawson Speer assigned to the northwest region (west of I-35 and north of the Colorado River), Hank Hall to the southwest region (west of I-35 and south of the Colorado River), Hank Hall to the southwest region (west of I-35 and south of the Colorado River), and AJ Carter to the east region (east of I-35). We created density-based clustering layers using address points to identify community clusters with 20 or more structures. We used "Map Notes" to record our potential new features, such as new communities and their points of in/egress, as well as new TAPs. We are also keeping note of sites that appear to have new housing developments being constructed that may eventually exhibit the same characteristic of limited in/egress. These notes will later be reviewed by our clients, who will then confirm whether they should be included. Community polygons and ingress/egress points have been completed for the Northwest, 30% completed for the Southwest, and 60% completed for the East.

Present Work

We are currently finalizing community polygons and their ingress/egress points across all three zones. Our focus is shifting toward TAP analysis. This includes verifying existing TAPs, identifying new candidates, and classifying each location into one of three types based on parking capacity. Following TAP validation, we will develop network analysis routes from community ingress/egress points to TAPs, ensuring each community has

four evacuation routes. Additional data will be added to the route layers to support attribute-based interpretation and final map design.

Work Scheduled

Project Timetable			
Phase	Dates	Tasks	
Data Collection	January 27 – February 24	Data Collection Proposal	
Data Processing	February 25– March 31	Data Processing Progress Report	
Network Analysis	April 1– April 14	Network Analysis	
Final Consultation	April 15– April 23	Final Project Consultations	
Final Presentation	April 28	Final Presentation	

(Figure 1: Consultants Timetable)

Problems

It was challenging for our group to find new limited ingress/egress communities when using only the address-points data. However, we utilized the density-based cluster geoprocessing tool to help highlight areas with denser populations. This provided the visual aid necessary to swiften our identification of new locations for limited in/egress communities.

Conclusion

So far, our wildfire evacuation planning project for the City of Austin Fire Department Wildfire Division is progressing well. Some adjustments to the timeframe have been made, but the timing for the project's completion has remained. As a group, we are successfully mapping limited ingress/egress communities and refining the final dataset for accuracy. We have established a clear plan for the remainder of the project. Categorizing primary and secondary TAPs into tiers is now in progress with additional TAPs being evaluated. Network-route analysis is soon to be started, and afterwards we will just need to finalize the evacuation model. Our final product aims to provide first responders with knowledge on where to safely direct evacuees during a wildfire scenario.