

Enhancing Fire Department Operations Through American-Made UAS Technology

Prepared by: Burnet County ESD 9 / Spicewood Fire Rescue

Date: July 14, 2025

Executive Summary

In the early hours of July 5, 2025, unprecedented flash flooding devastated western Travis and eastern Burnet Counties. With over 10 inches of rain falling in a matter of hours, roads were destroyed, homes inundated, and emergency responders faced rapidly deteriorating conditions. These were 1,000-year floods, and the scope of the disaster triggered widespread mutual aid and search and rescue operations across the region.

At 4:58 a.m., Spicewood Fire Rescue received a request to deploy a drone to assist in the search for Marble Falls Area VFD Fire Chief Michael Phillips, who had been swept away while responding to the flooding. Unfortunately, the heavy rain conditions at the time were too dangerous for drone operations, and crews remained on standby.

Just two hours later, at 6:51 a.m., Spicewood Fire Rescue units were dispatched to a swift water rescue at Cedar Stays RV Park on FM 1431 in Marble Falls. Already in the area providing coverage while Marble Falls Area VFD continued their search efforts for Chief Phillips, SFR crews arrived within minutes. However, rising waters from Hamilton Creek had already made the FM 1431 bridge impassable, and responders could only watch as floodwaters ravaged the RV park. A Coast Guard helicopter and swift water boats were dispatched and began rescues, but when the helicopter was diverted to other emergencies, Spicewood Fire Rescue deployed a personally owned thermal drone operated by one of our FAA Part 107-certified members.

That drone—despite being a lower-tier, privately owned unit—provided real-time operational overwatch, assessed hazards, and scanned the area for survivors. Critically, it detected thermal signatures, one of which led to the location of a deceased individual.

This tragic event confirmed what we already suspected: drone technology is no longer optional for modern fire service—it is a life-saving asset.

Spicewood Fire Rescue is now seeking grant or state-level funding to acquire a \$38,000 American-made, public safety-grade drone system capable of all-weather thermal imaging, real-time mapping, encrypted communications, and extended endurance. This investment would not only fill a critical gap in our department's capabilities but also position us as a regional Center of Excellence for Public Safety Drone Operations, offering mutual aid, inter-agency training, and deployment across the Hill Country.

Organizational Background

Spicewood Fire Rescue is a combination fire department operating under Burnet County Emergency Services District 9 in Burnet County, Texas. Our response area includes a growing wildland/urban interface, critical infrastructure, and expanding residential developments. We maintain readiness for structural fires, wildfires, medical emergencies, technical rescues, and large-scale incidents, often with limited resources and long response times due to the rural area, terrain, and district size.

Our personnel include FAA Part 107 licensed UAS pilots, enabling immediate legal and safe deployment of drone assets for public safety missions.

The Need for UAS Technology

Current challenges in emergency responses include:

- **Lack of aerial perspective** in wildfire, structure fire, and search operations.

- **Limited manpower** for wide-area SAR and disaster assessments.
- **Delayed intelligence** during large-scale or remote incidents.
- **Increased complexity** of managing wildland incidents in rough, wooded terrain.

A robust drone system mitigates these issues by offering:

- **Thermal imaging for hotspot detection** and locating lost or injured persons.
- **Live aerial views** for command and control during fireground operations.
- **Real-time mapping** of incident perimeters.
- **Rapid damage assessments** post-disaster (tornadoes, wildfires, flooding).
- **Pre-incident planning** via orthomosaic imaging and site mapping.

Why American-Made Matters

While DJI drones dominate the consumer and some public safety markets, cybersecurity concerns and federal procurement restrictions are pushing departments toward secure, domestic alternatives. Spicewood Fire Rescue supports the national and state-level move to "Made in the USA" systems for critical infrastructure and public safety operations.

By choosing an American manufacturer such as:

- BRINC Drones
- Teal Drones
- Skydio

We ensure compliance with federal guidance, support domestic innovation, and future-proof our program for mutual aid, state deployments, and potential grant funding sources that prioritize U.S. vendors.

Proposed System and Cost

We propose to acquire a drone platform with the following specifications:

- Thermal and optical camera systems (zoom capable)
- Autonomous flight modes (mapping, orbit, etc.)
- Live streaming for incident command
- Encrypted communications
- American-made or NDAA-compliant
- Ground station/controller
- Extra batteries and rugged transport case
- Optional tethered system for persistent overwatch

Estimated Total Cost: \$32,000 – \$38,000

This includes hardware, accessories, initial training, initial software, and integration support.

Personnel and Certification

Our department currently has FAA Part 107 certified pilots, trained in public safety UAS operations. Additionally, we maintain internal SOPs for flight safety, privacy compliance, airspace coordination, and NFPA 2400-aligned operational procedures.

Regional Impact & Center of Excellence Vision

This drone will not serve only our jurisdiction. We aim to become a regional resource by:

- Hosting **UAS training events** for surrounding departments.
- Providing **aerial overwatch for large-scale incidents** in neighboring districts.
- Creating SOP templates and program guides for other ESDs.

This investment strengthens **regional resilience** and encourages inter-agency collaboration while centralizing UAS expertise in the Hill Country.

Funding Request and Alignment

We seek grant or state-level funding of approximately **\$38,000** to procure and field this platform.

Conclusion

Drone technology represents a transformative capability for fire departments—especially those operating in rural or WUI regions. Our department is trained, certified, and ready to lead the region in safe, effective, and innovative UAS use for public safety.

We respectfully request funding assistance to equip our agency with the tools necessary to safeguard our citizens, protect our responders, and elevate regional emergency capabilities.

Contact Information

Administrative Captain / Program Lead

Andrew Hunt

BCESD9 Spicewood Fire Rescue

512-839-8736

ahunt@bcesd9.org

<https://bcesd9.org>

Responder Ops Bundle (Drone Kit Only + 1 Year of Software)

- 1x Responder Kit Including: 1x Responder Airframe, 1x Controller, 2x Battery, 1x Charging Kit (1x Power Supply, 2x Chargers, 3x USB-C Cables, 1x Power Supply Cable), 1x Spare Parts Kit, 1x Tool Kit, 1x Hard Case
- 1x Accessory Kit Including: 1x Spotlight, 1x Dropper, 1x Robot Mount
- Software: LiveOps Overwatch W/ Storage For One Year, \$7,499.00/yr after that
- One-time Purchase Price: \$34,999.00
- Warranty: Manufacturer's Warranty

Two - Responder Extra Battery (2-pack) - \$1,399.00/each - \$2,798 total