

Lessons Learned from Recent Prescribed Burns in Drought-Stricken South Texas

Many of you are aware of the recent burns implemented under historic drought and heat conditions in South Texas on the Refugio-Goliad Conservation Area / Fire Learning Network Demonstration Site, and the Mad Island Marsh Preserve. Some people have expressed interest in how we addressed safety in these extreme conditions, and we have been asked to share Lessons Learned from the experience. The constructs of this incident involved a Fire Learning Network sponsored Prescribed Fire Training Exchange, and a number of TNC staff played key leadership roles allowing it to be a success that we are very proud of. Those people include, but are not limited to: Larry Belles, Jeremy Bailey, John De Leon, Chris Harper, Matt Franklin, others on the Texas state fire team, and the talented multi-agency trainees that completed the large crew.

The environment:

- KBDI of 750 or more, and no significant rain event for eleven months.
- Afternoon heat indices approaching, and sometimes exceeding 105 deg F.
- Drought stressed invasive shrubs offering an unprecedented opportunity to meet ecological goals of grasslands restoration and maintenance.
- Moderate to low Fuel Model 3 in units, and usually lesser fuel loads outside of units. Due to livestock grazing over this prolonged drought, areas outside units were sometimes bare dirt.
- Burn units ranged from 150 to 1000 acres in size with a mix of shrub species varying in abundance and cover both inside and outside of units.
- Maximizing training opportunities was to be emphasized for positions of: RXB2, FIRB, ENGB, FFT1 and FEMO.
- County Judges/Commissioners and Fire Marshals demonstrated their trust by providing permits exempting us from Burn Bans. Texas Commission on Environmental Quality, the agency that regulates outdoor burning also granted permits for units with cordgrass that would produce excessive smoke. The National Weather Service provided excellent forecasts to our agency RXB2 Trainees that were spot-on with few exceptions.
- A strong and practical, yet flexible command structure was established for the 10 day incident thanks to Jeremy Bailey's expertise.

Mitigating Actions:

- We looked at local wildfires for examples of expected fire behavior, and we always expected and prepared for the worst case scenario.
- Resources, both firefighters and water delivery equipment were double and often triple that required in burn plans. Every day we fielded a large crew (18 - 21) comprised of TNC Texas firefighters experienced in these fuels, trainees from federal and state agencies, a municipal fire department, and a fire ecology graduate student. We had three to four Type 6 engines, two to three UTV's with slip-on's, and eight or more ATV's each with 20 gallons of water.
- Mop-up and patrol exceeded what is required in burn plans. We soon learned that this diligence was necessary under these conditions - fuels didn't extinguish like they used to.
- Wind limits in the approved burn plans were likely not acceptable under these drought conditions, so we were more conservative and elected not to burn one burn day even though well within prescription for that parameter.
- Burn Boss Trainees were instructed that crews had to be briefed, lined out and test fire on the ground by 0930 or that days' burn was an automatic no-go. Fire was usually on the ground between 0800 - 0830, and units tied-off about noon.
- Firefighters performed approximately 1/2 hour of fireline work, or roughly the amount of time it takes to drain a drip torch before being placed in air conditioned vehicles, or on a UTV or ATV. No one succumbed to heat stress, and having enough firefighters to accomplish this mandatory rotation was only possible due the attraction of a Training Exchange.
- Firefighters were thoroughly briefed to recognize the signs of heat stress in themselves and others. A paramedic and up to three EMT's were on the crew.
- The first day of this Training Exchange was orientation to the equipment and hands-on water delivery exercises. This was designed to build crew cohesion, which occurred surprising

quickly. Firefighters also received presentations on the local ecology, fire management goals, local economics, and strategies to renew a vanishing fire culture.

- FFT1 Trainees led squads for meal planning, transportation and equipment re-hab. This squad structure dissolved during actual operations to maximize training opportunities, then re-formed after operations were completed for the day.
- With Managing the Unexpected and High Reliability Organizing in mind, firefighters were constantly reminded to check everything, take nothing for granted and ask questions to make sure everything was accounted for and nothing within our control was missed. I believe everyone felt comfortable voicing their ideas, opinions and concerns, and this built a great deal of positive synergy within the crew allowing us to accomplish what we did.
- I believe that easing into operations was key to success. We had a number of burn units to choose from, each with its own characteristics. We were very careful not to commit the crew to a unit that would later prove to be more than we could manage. For example, the first day was an intentional 1 acre test fire that was mop-ed up 100%, and the second day we completed the 178 acre unit. On the third day we we intended to burn 340 acres, but elected cut it off at a 180 acre sub-unit at 1130 hours when the heat began to rise. We completed the unit the following day. On the eighth day we burned a 580 acre unit surrounded by water and roads, and we could easily stop the burn at sub-units divisions if needed. Although pressured to burn an 800 acre unit early in the incident, we elected not to commit ourselves to such a large unit with no opportunities to hold it to a smaller sub-unit. There were a many variables taken into consideration in day to day unit selections, and I felt comfortable burning the average unit of 200 - 300 acres in size. Larger units will need to wait for more moderate conditions, more resources, or more planning.
- After the first day's 1 acre burn we inventoried water and electrolyte replacement beverages and determined we needed to bring more with us for future operations. Coolers with ice water were readily at hand, as were towels that could be used to cool down heat stressed firefighters. Some firefighters believed they drank up to three gallons of fluids in a day, and again, no one succumbed to the effects of heat.

The Burning Question on everyone's mind:

- If the crew had to go IA on fire outside of a unit could firefighters safely stand up to the heat? This possibility was always in the forefront of my mind, but we were not tested beyond the expected minor slop-over's. I often asked firefighters what they thought would happen in IA, and the response was essentially confidence that given the fuel loads, observed fire behavior and resources at hand we would have no issues with suppression.

Successes:

- Nine straight days with fire on the ground
- 1,798 acres burned
- There has not been any negative comments from local media or public officials, and I believe this is due to on-going courtesy calls before and after operations when they were not required.
- There were many quality trainee opportunities and Position Task Book accomplishments; a summary of which is currently being compiled
- Participants in this Training Exchange (the 4th on RGP) expressed a desire to return, and to send other staff from their organizations as well. Taking advantage of these exchanges for focused training opportunities, and to bolster local resources to take on challenging burns is a win-win situation. I heartily recommend we all become more involved in utilizing Training Exchanges to accomplish goals of getting more fire down.

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