

After Action Review of the November 28, 2016, Firestorm

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DISCLAIMER

This After Action Review (AAR) was prepared by ABSG Consulting Inc. (ABS Group) solely for the benefit of the City of Gatlinburg, Tennessee, and Sevier County, Tennessee. Many parties provided information on events that occurred prior to, during, and after the Chimney Tops 2 firestorm. This AAR is a result of this information. Included in this AAR is a listing of what worked well, issues, and lessons learned from a retrospective review of the response actions before and during the firestorm and the recovery efforts following the incident. Recommendations, actions already taken or underway, and identified best practices are provided to improve future response and recovery efforts to such incidents. None of ABS Group, nor the City of Gatlinburg, nor Sevier County, nor any person acting on their behalf gives any warranty (express or implied), or assumes any responsibility with any third party regarding the use of any information or methods disclosed in this report. Any third party to this report, by accepting or using this report or any information contained therein, releases ABS Group, the City of Gatlinburg, and Sevier County from liability for any direct, indirect, consequential, or special loss or damage, whether arising out of the contract, tort (including negligence), or in any other way.

ABS Group and its employees, subcontractors, advisors, and other designees cannot, individually or collectively, predict what will happen in the future. We made a reasonable effort based on the information and scope of work to assist the City of Gatlinburg and Sevier County in reviewing the response and recovery actions taken for the Chimney Tops 2 firestorm. A number of recommendations, actions already taken or underway, and identified best practices, collectively referred to as improvement items, are provided in the AAR. If the improvement items provided in the AAR are followed, the frequency and/or consequences of significant wildfires or other relevant hazards causing harm to the city and county should be reduced; however, even if all improvement items are followed, accidents and abnormal events can still occur. In addition, the physical act of implementing these improvement items may create risks for the City of Gatlinburg, Sevier County, or other government or private entities. Therefore, these parties should independently evaluate the improvement items made in this study (and alternatives for them) in order to help ensure that when implemented they will not create unacceptable risks and to help ensure safe practices are followed when any change is implemented.

ABS Group accepts no responsibility for any event or regulatory impact (federal, state, or local) that may affect the City of Gatlinburg, Sevier County, or any other person or entity using the results of this report.

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ACKNOWLEDGEMENTS

The City of Gatlinburg and Sevier County, Tennessee, commissioned ABS Group to perform this AAR of the November 28, 2016, firestorm. This review was accomplished primarily through multiple interviews with key participants along with a review and analysis of relevant documents, pictures, videos, policies, wide range of related source documents, and national best practices.

This AAR focuses first on obtaining contributions directly from Chief Greg Miller (Gatlinburg Fire Chief [GFC]), Chief Randy Brackins (Gatlinburg Police Chief), Director John Mathews (Sevier County Emergency Management Director [SCEMD]), and Marci Claude (Gatlinburg Public Information Officer [PIO]). This was followed with interviews, which included personnel from the following fire, law enforcement, and emergency management agencies:

- Sevier County Sheriff's Office (SCSO)
- Sevierville Police Department
- Pigeon Forge Police Department
- Sevierville Fire Department
- Pigeon Forge Fire Department
- Knoxville Fire Department
- Tennessee Emergency Management Agency (TEMA)

In addition to this input, interviews were conducted with Great Smoky Mountains National Park (GSMNP) personnel who were directly involved in addressing the wildfire, including the chief ranger and the fire management officer.

ABS Group deeply appreciates the efforts of all of these participants in providing documents and making themselves available on an ongoing basis. They helped to offer an understanding of the events that transpired, what worked well, issues, and associated lessons learned. The participants then supported developing recommendations, listing actions already taken or underway, and recognizing identified best practices.

ABS Group is a leading technical and risk management advisor to both industry and government. With a staff of over 1,500 professionals in more than 30 countries, ABS Group has assisted clients for over four decades with understanding the risks they face and finding practical solutions to address these risks. The company focuses on helping its clients to operate safely, reliably, efficiently, and in compliance with applicable regulations and standards.

The ABS Group team included Mr. Vernon H. Guthrie as the team lead, Mr. Mark J. Finucane as the fire subject matter expert, Mr. Phillip E. Keith as the law enforcement and public policy subject matter expert and Mr. Donald Bart Stinnett as the emergency management subject matter expert.

Vernon H. Guthrie has 40 years of experience in performing and leading safety- and risk-related studies. Mr. Guthrie has led numerous studies for both governmental and commercial organizations including supporting the U.S. Coast Guard in the development of an assessment tool to guide security resource allocation after the attacks of 9/11. Mr. Guthrie has led many teams in the investigation of large loss events including one study that involved about 50 ABS Group personnel working for an international client for almost one year. Mr. Guthrie teaches short courses for ABS Group in Risk-Informed Decision Making, Enterprise Risk Management, Incident Investigation and Root Cause Analysis, and Qualitative and Quantitative Risk Assessment. Before joining the ABS Group Knoxville office in 1983, Mr. Guthrie provided thought-leadership in risk assessment and risk management for the Nuclear Division of Union Carbide Corporation at the Department of Energy facilities in Oak Ridge, Tennessee. Mr. Guthrie earned his undergraduate degree in engineering from Mississippi State University in 1977, and earned his master's in engineering from the University of Tennessee, Knoxville, in 1979, where he focused on risk analysis.

Mark J. Finucane has over 35 years of experience in fire service and public safety. Mr. Finucane retired from the Johnson City, Tennessee, Fire Department as an Assistant Chief with 27 years of service. He performed in many capacities both administratively and operationally. As a Training Captain, Mr. Finucane was the coordinator for the Northeast Tennessee Regional Fire Training Association comprised of nine fire service organizations. Mr. Finucane served 12 years with the Tennessee Commission of Firefighting Personnel Standards and Education, with the last four years as chair of the state commission. Mr. Finucane is a graduate of the National Fire Academy's Executive Fire Officer Program. Prior to his fire service career, Mr. Finucane was a Police Officer Standard Training (P.O.S.T.) certified public safety officer with the East Tennessee State University Police Department, and he graduated from there with a B.S. degree in criminal justice.

Phillip E. Keith has more than 47 years of experience in the fields of criminal justice, public safety, and business administration. He has held numerous high-level policy making positions in law enforcement, public safety, and emergency management preparedness. He has 34 years in active law enforcement service, with nearly 17 years as Chief of Police for the Knoxville, Tennessee, Police Department. He gained major policy development experience through the following:

- Tennessee Peace Officers Standard and Training Commission
- Commission on Accreditation for Law Enforcement Agencies (Commissioner)
- Senior Advisory Council for Homeland Security from its inception until 2008 and was involved in creating the U.S. Department of Homeland Security following the attacks on America in 2001
- Adjunct professor at East Tennessee State University
- Principal project director for the Major Cities Chiefs of Police Association (largest 67 law enforcement agencies in North America)

- Law enforcement policy advisor to the Tennessee Municipal Technical Advisory Service
- U.S. Department of Justice, COPS Office, Law Enforcement Ethics Task Force
- Principal instructor on Policy Development for the North Carolina Governor's Crime Commission

He has also performed more than 100 organizational assessments for law enforcement agencies and conducted the first national survey of best practices and staffing for the U.S. Fire Administration. Mr. Keith earned his undergraduate degree in criminal justice and business administration and an M.S. degree from the University of Tennessee.

Donald Bart Stinnett has over 25 years of experience in the fields of public safety, criminal justice, and emergency management. He has held prior positions including emergency 911 dispatcher; police officer; investigator; and Director of the Blount County, Tennessee, Department of Homeland Security and Emergency Management. Mr. Stinnett has prepared emergency management and physical security plans for schools, businesses, and local governments. He also holds bachelor's degrees in criminal justice and political science from East Tennessee State University and a master's in criminal justice from The University of Cincinnati.

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CITY OF GATLINBURG MANAGER'S AND SEVIER COUNTY MAYOR'S FOREWORD

On November 28, 2016, unprecedented wildfires swept through the Great Smoky Mountains National Park, Gatlinburg, and Sevier County. Drought-stricken forests and high winds created the perfect conditions for a firestorm of epic proportions. Response and support personnel throughout the Southeast responded to help Gatlinburg and Sevier County deal with this tragedy. The firestorm left the people and land of Sevier County with scars, both physical and emotional, that will take a long time to heal. Homes, businesses, and property were destroyed in the course of a few hours. While the rebuilding and restoration of our community continues, the pain of those who lost loved ones still endures. There are not sufficient words to express our sympathies to those who lost family and friends that night. We will continue to remember those who died in this tragedy and those whose lives have been forever changed.

In the midst of the chaos of that evening, there were many acts of bravery and heroism that should be acknowledged. First responders from across the region and state encountered situations they had never seen, and they put their own safety at risk to save lives and property. Our respect for these men and women, while already immense, grew even more after witnessing their actions.

The outpouring of support from across the county, state, and nation was overwhelming. Thousands of people volunteered time, money, and labor to help those in need of a place to stay, clothes to wear, and food to eat. Phones began ringing the morning after from people with no connection to our area who simply wanted to help. Sevier County not only showed, but also felt, the true meaning of a volunteer spirit.

Through it all, the citizens of Gatlinburg and Sevier County have demonstrated their resilience and the fact that we are “Mountain Tough.” Strong character and deep faith, long staples of our population, have been evident in the recovery efforts. Our community will rebuild. Our people will endure.

We will not forget what happened on November 28, 2016. The information in this report, as well as from other reports and the experiences from this event, will be used to make our communities safer. We are honored to serve the people of this proud mountain community.

Cindy Ogle and Larry Waters



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EXECUTIVE SUMMARY

The Chimney Tops 2 wildfires began on November 23 on the north spire of the Chimney Tops in the GSMNP. Park personnel employed an indirect attack strategy that avoided the use of fire retardants or significant air assets to contain the fire. The fire was not monitored during the evening hours including the night of November 27. On the morning of November 28, GSMNP maintenance personnel discovered that under increasing winds, the fire had spread outside the containment zone defined in their indirect attack strategy.

On the afternoon and evening of November 28 through the early morning of November 29, strong winds approaching hurricane force moved the fire from its origin in the GSMNP, into and through the City of Gatlinburg at multiple locations across a three-mile park interface. The fire also reached the southern edge of the City of Pigeon Forge. These wind-driven fires from the GSMNP moved both on the ground and by the transport of airborne embers that created numerous, wide-ranging spot fires in the affected areas. Downed power lines from the high winds also are believed to have contributed to the ignition of some fires within the affected areas. At the firestorm peak, between about 6:00 p.m. and about 11:00 p.m. on November 28, these windblown fires were igniting over 2,000 acres per hour.

The majority of the approximately 14,000 residents and visitors evacuated Gatlinburg and adjacent areas in danger from the fires by approximately 10:00 p.m. on November 28. By the early morning of November 29, three (3) deaths in the City of Gatlinburg and eleven (11) deaths in the adjacent Sevier County area occurred, either directly from the fire or as a consequence of attempting to flee the fire. In addition, about 2,500 structures were impacted and about 17,000 acres were burned.

This AAR was commissioned by Sevier County and the City of Gatlinburg. The overall goal of this review is to identify actions to better prepare the community for potential wildfires or other relevant hazards in the future. This report begins with an Introduction Section that provides an overview of what happened and the associated key events. The Findings Section then focuses on the following functions:

1. Command Staff and Incident Management
 - a. Fire
 - b. Law Enforcement
 - c. Emergency Management
2. Operations
 - a. Fire
 - b. Law Enforcement

c. Emergency Management

3. Interagency Communications
4. Public Information
5. Logistics
6. Recovery and Humanitarian Outreach

Note that the first two functions above have three subordinate elements (fire, law enforcement, and emergency management) for a total of ten functions/sub-functions included in the AAR process.

The Conclusions Section includes recommendations for the City of Gatlinburg/Sevier County and other agencies/jurisdictions, actions already taken or underway, and identified best practices. These items were established based on gathering information from multiple sources and through working meetings for each of the ten sub-functions.

The interview process was dynamic and interactive with the working meetings focused first on establishing (1) what worked well, (2) issues, and (3) lessons learned. These working meetings identified both a broad range of items that worked well and a broad range of issues. This process led to the identification of many significant lessons learned. The working meetings then focused on developing recommendations, listing actions already taken or underway, and recognizing identified best practices.

These items include:

1. Forty-one recommendations for the City of Gatlinburg and/or Sevier County
2. Nine recommendations for other agencies/jurisdictions
3. Twenty actions already taken or underway for the City of Gatlinburg and/or Sevier County
4. Thirty-three identified best practices

The recommendations address identified issues and associated lessons learned. The actions already taken or underway recognize efforts that are also relevant to addressing the issues and the associated lessons learned. The identified best practices are related to actions that worked well during the firestorm and the days following and reflect lessons learned that should be reinforced going forward. These identified best practices should be useful to other communities as they also work to prepare for potential future challenges.

Another way to consider these recommendations, actions already taken or underway, and identified best practices is to frame them in the context of goals addressing key areas of concern raised by the public and those seeking direction from this study. The following list identifies five key goals:

- Goal 1: Help ensure that future GSMNP wildfires are identified, interdicted, and suppressed so that they do not impact the communities adjacent to the GSMNP boundaries.

- Goal 2: Help minimize the initiation and/or movement of wildfire in the City of Gatlinburg and in Sevier County.
- Goal 3: Help ensure the public is appropriately educated and has taken responsible actions concerning the threat of wildfires, safe evacuation procedures, situational awareness, and Firewise methodologies.
- Goal 4: Help ensure that residents and visitors in all relevant areas are informed of the need for an evacuation from a wildland fire in a timely manner.
- Goal 5: Help ensure safe evacuation of residents and visitors who are under an evacuation order for a wildland fire.

This report provides a table in Appendix A that associates recommendations, actions already taken or underway, and identified best practices from this study to the relevant goals. The result is that each of the five goals has multiple applicable actions (Note: some actions are applicable to only one goal while others are applicable to multiple goals). Having numerous actions for each goal helps to provide assurance that each of these goals will be achieved going forward.

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INTRODUCTION

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OVERVIEW

Background Conditions

Drought conditions existed in East Tennessee for most of October and November 2016. On October 26, 2016, TEMA moved the state Emergency Operations Center (EOC) to a Level 4 – Elevated State of Emergency and attempted to prepare for potential impacts and resource needs due to the persistent severe drought. Approximately 302 of Tennessee’s 480 water systems were experiencing some level of drought impact leading to water conservation measures being implemented across the state and burn bans being issued by county and state government officials. As the drought situation worsened, the State of Tennessee took action under state law and activated the Tennessee Emergency Management Plan on November 10, 2016, opening the State EOC to a Level 3 – Declaration of State of Emergency.

On November 13, a fire occurred in the Chimney Tops Trail area of the GSMNP, referred to as Chimney Tops 1 fire. Park service firefighters used tools to remove fuel from the fire, raking away duff (i.e., a layer of decaying forest material consisting of needles, leaves, plants, and tree materials covering the soil), and bringing down vines. These efforts restricted the slow-moving fire, backing/confining the fire to one-quarter acre and extinguishing it on November 16.

November 23–26 (Wednesday–Saturday)

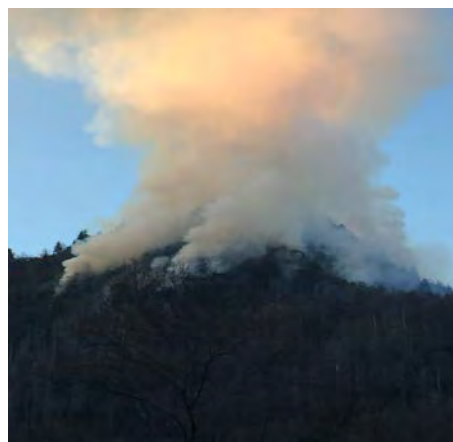
Chimney Tops 2 Firestorm
Beginning on November 23



A second fire of about 1.5 acres was discovered in the Chimney Tops area on November 23, identified as the Chimney Tops 2 firestorm. The duff was thick at the location of this fire. The GSMNP fire personnel decided the best approach to manage the fire was to control it in a 410-acre containment area using an indirect attack strategy. At the time of this fire, the Keetch-Byram Drought Index (KBDI) was 599. A KBDI of 600 or more would indicate severe

drought and increased wildfire potential. According to this index, intense, deep-burning fires with significant downwind spotting should be expected. Live fuels (growing plants, trees, and other vegetation) can also be expected to burn actively at this drought level.

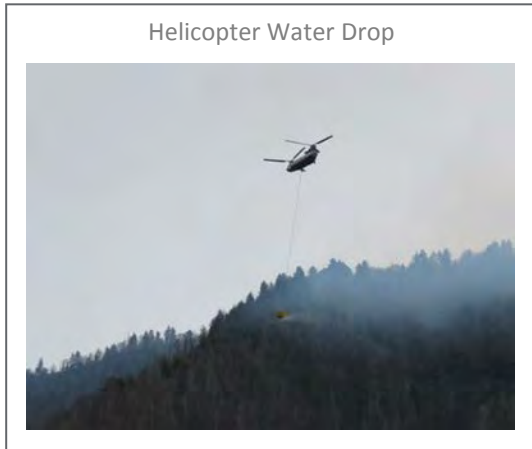
Chimney Tops 2 Firestorm on
November 26



The Chimney Tops 2 firestorm continued to slowly grow from less than 6 acres on November 25 to about 8 acres by the afternoon of November 26. Chimney Tops (elevation 4,800 feet) is about 5.5 miles from Gatlinburg (elevation 1,289 feet).

November 27 (Sunday)

As of the morning of Sunday, November 27, the Gatlinburg Fire Department (GFD) had not been contacted or electronically notified regarding the status of any active fire burning in the GSMNP. In fact, there would be no such contact regarding the Chimney Tops 2 fire until the following morning.



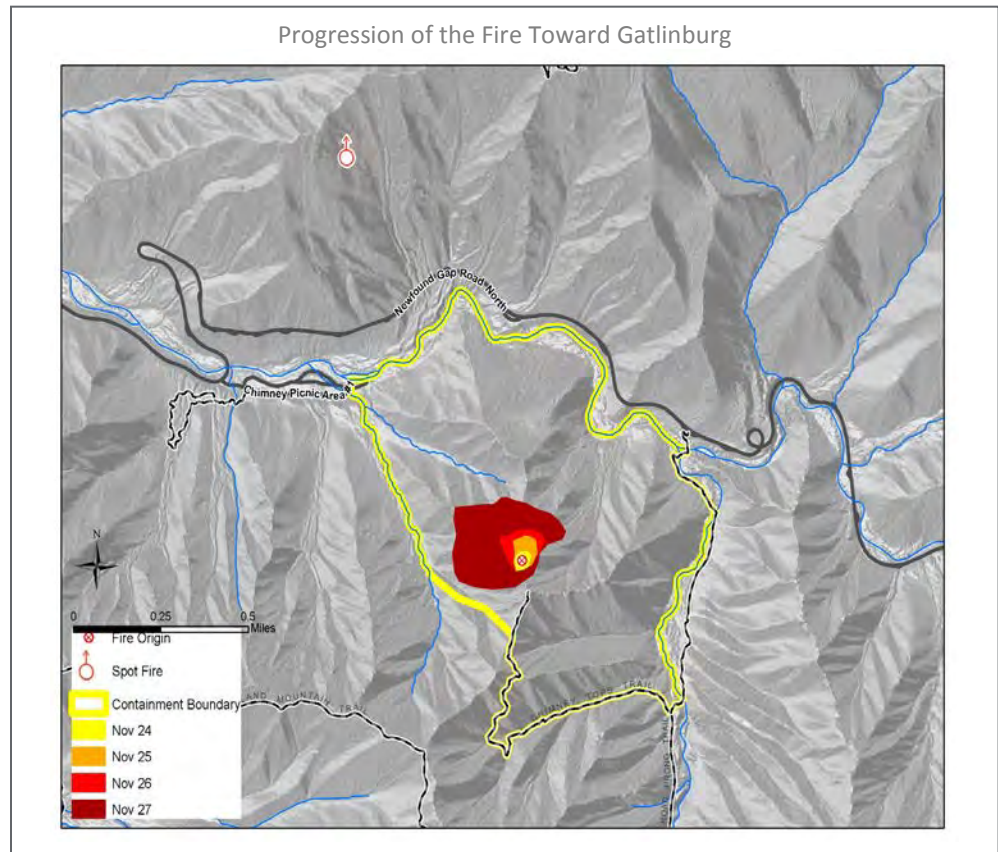
Weather reports for the day warned of “critically dry conditions.” Around 8:00 a.m. on November 27, the relative humidity at Indian Grave Remote Area Weather Station (RAWS), which is located in Cades Cove, dropped to 17 percent and the wind speed was 1 to 3 mph. Humidity in the area remained between 20 and less than 40 percent until 4:00 a.m. on November 28. Based on the conditions and the more rapid expansion of the fire, the GSMNP fire personnel requested more resources. During the afternoon, the GSMNP deployed helicopters to support firefighting operations for a limited number

of water drops before dark. The fire grew to about 35 acres during the day before GSMNP firefighting efforts were suspended for the evening.

Smoke from this fire and other fires in the region continued impacting residents in Gatlinburg, Sevier County, and large portions of East Tennessee. Throughout the weeks prior to the Chimney Tops 2 firestorm, smoke was visible in the City of Gatlinburg from nearby fires, including a significant fire in the Walland area.

November 28 – Morning (Monday)

Early on the morning of Monday, November 28, maintenance employees with GSMNP saw that the intensity and rate of spread of the fire had increased dramatically with the fire burning into a picnic area and having crossed the main road through the park, U.S. Highway 441. Further, by 7:00 a.m., park employees noticed



the fire had spotted to Bullhead Trail on Mount LeConte, growing to more than 100 acres. The higher winds and the heavy smoke from the fire caused very low visibility, grounding small aircraft that might be used for firefighting and surveillance.

After inquiries from the GFD, the GSMNP personnel contacted the GFD at 10:58 a.m. on Monday, November 28, and stated that the Chimney Tops 2 firestorm had expanded with a spot fire on Bullhead Ridge. The GSMNP personnel suggested that the GFD would be alerted if needed, and that they considered the spread of fire to Gatlinburg unlikely at the time and prior to the time of predicted rains. In addition, the GSMNP personnel advised GFD that they did not need assistance. At about 11:30 a.m., GSMNP personnel observed that fire had spotted to the Twin Creeks Science and Education Center about 1.5 miles from the park boundary and the city limits of Gatlinburg. This meant that the fire had spread 3 miles in just 4.5 hours and the fire now covered about 500 acres.

November 28 – Noon to 5:00 p.m. (Monday)

The GFD committed resources to the Gatlinburg boundary in the direction of Twin Creeks. At approximately noon on November 28, first responders began delivering evacuation notices in the Mynatt Park community, which is the nearest city development to Twin Creeks.

Shortly before noon, the GFD C-shift Captain requested the activation of the Sevier County Wildland Fire Task Force, a multi-agency group of trained wildland firefighters, to gain additional firefighting resources. At 1:00 p.m., the National Weather Service (NWS) upgraded a High Wind Watch to a High Wind Warning for the Gatlinburg area.

Wildland Fire Vehicle



The smoke from the fires continued to create very low visibility. At about 2:30 p.m., the GFC issued a mutual aid request for firefighters around the region. By about 3:00 p.m., the fire was moving closer to the park boundary at the Twin Creeks area.

In addition, the NPS *Chimney Tops 2 Firestorm Review Report* indicates that the fire had begun to move toward the Gatlinburg Bypass area. Further, it was estimated that the fire at that time had ignited about 2,000 acres.

Around 4:00 p.m., a press conference was held in Gatlinburg to further communicate the voluntary evacuation for Mynatt Park and the shelter established at the Gatlinburg Community Center at about 1:30 p.m. earlier that day. Another press conference was held around 5:00 p.m. by Gatlinburg officials where the GFC stated, "As of this time, there is no fire in the city limits of Gatlinburg." Firefighting efforts near Mynatt Park included Tennessee Division of Forestry personnel removing fuel and bulldozing a fire line. By 5:00 p.m., the Chimney Tops 2 firestorm had ignited about 4,000 acres.

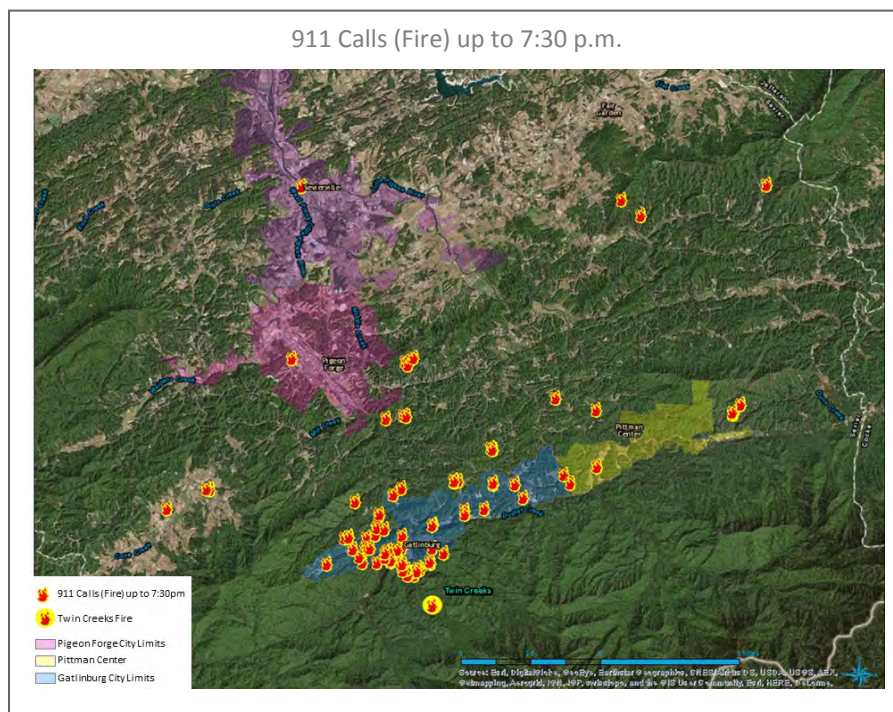
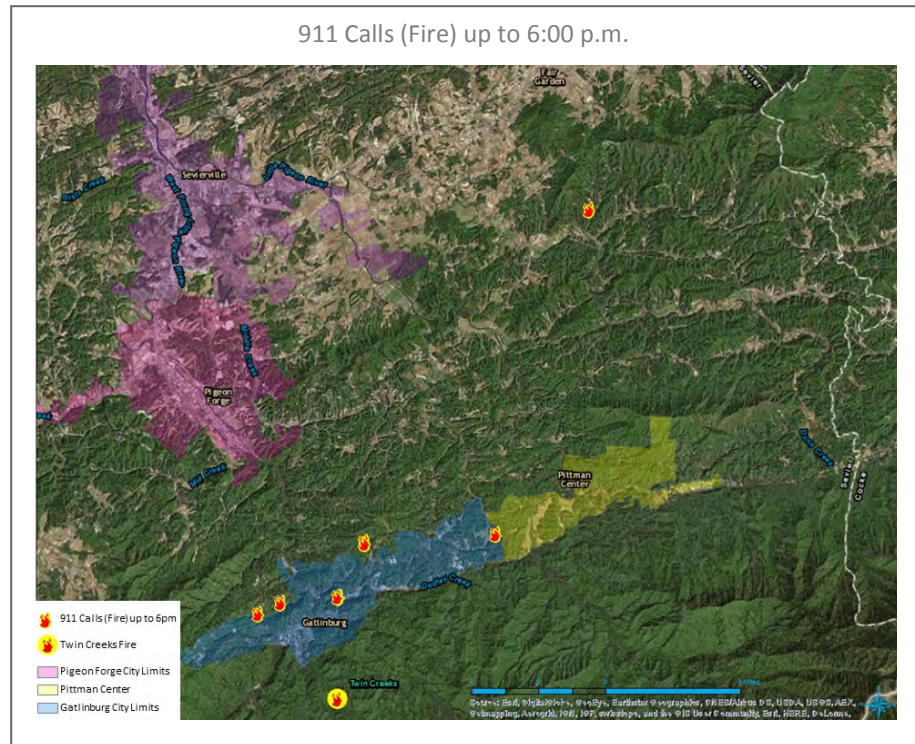
November 28 – 5:01 p.m. to 8:00 p.m. (Monday)

Conditions changed rapidly between 5:00 and 6:00 p.m. with increasing strong winds from the south. Around 6:00 p.m., sustained wind speeds recorded at the Indian Grave RAWS increased from 7 to 15 mph, with gusts of 22 to 32 mph. The fire had ignited about 5,000 acres at this point.

At 6:08 p.m., the GFD C-shift Captain said the fire from Twin Creeks physically crossed the park boundary towards the Park Vista Hotel. Over the next half-hour several other fires started in the City of Gatlinburg.

The GFC stated, “We were forced into a reactive response: multiple trees were falling,

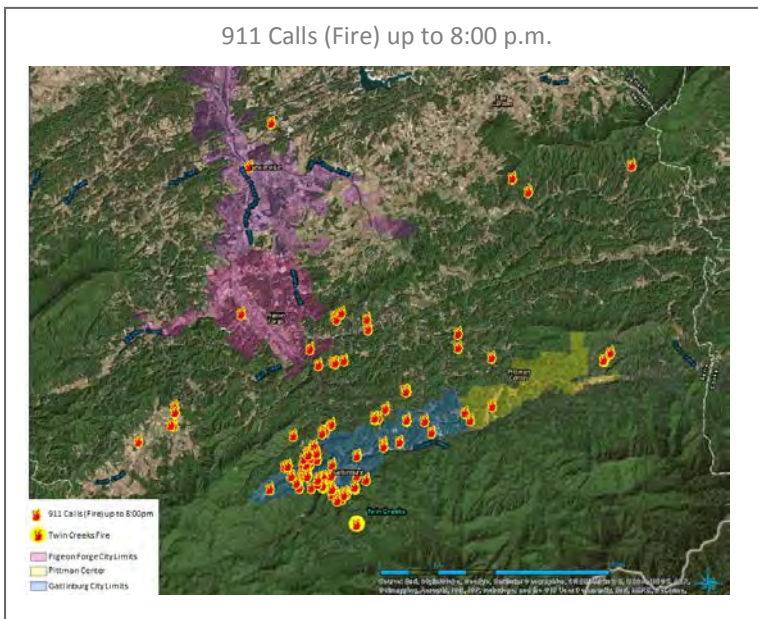
multiple power lines were down, and multiple other areas of ignition occurred.” At 6:11 p.m., fire officials declared an immediate mandatory evacuation of the Mynatt Park neighborhood. Around 6:27 p.m., an immediate mandatory evacuation was declared for the East Foothills Road, Turkey Nest Road, Davenport Road, and Savage Garden areas. At about 6:35 p.m., the



GSMNP Fire Officer observed fire approaching the Bypass and heading toward Ski Mountain. Fire was observed at the Spur (five-mile roadway between Gatlinburg and Pigeon Forge owned by the GSMNP) at about 7:00 p.m.

Around 7:00 p.m., police and fire crews in Gatlinburg started systematically evacuating the most immediately threatened areas with efforts focused around sending emergency resources to new calls and continuing to suppress the fires. In addition, sustained wind speeds at Indian Grave RAWS increased from 13 to 17 mph with gusts from 34 to 49 mph. By this time, airborne embers began to fill the sky throughout the City of Gatlinburg and the surrounding communities.

By 8:00 p.m., the Ski Mountain area was added to the list of mandatory evacuations. The fire had ignited approximately 6,000 acres by about 7:00 p.m. and approximately 7,000 acres by about 8:00 p.m. There were multiple fire fronts approaching the City of Gatlinburg, in Gatlinburg, and in surrounding communities.



November 28 – 8:01 p.m. to 10:00 p.m. (Monday)

At 8:14 p.m., widespread losses of power started across Gatlinburg.

With the wind-driven nature of the fire challenging suppression crews from extinguishing the

growing blaze, a total evacuation of the Gatlinburg area was ordered shortly after 8:30 p.m. While the SCEMD was speaking on his cell phone with a TEMA representative at 8:40 p.m., the GFC asked the SCEMD to request that TEMA issue an Integrated Public Alert and Warning System (IPAWS) notification. This message would provide an

Airborne Embers



evacuation notice to both mobile devices and to the Emergency Alert System (EAS), announcing the City of Gatlinburg was to be evacuated immediately. At 8:47 p.m., the TEMA PIO contacted the SCEMD to get direction on the wording for the emergency evacuation message for IPAWS.

The SCEMD gave his cell phone to the Gatlinburg PIO to communicate the message to the TEMA PIO. After the PIO finished that conversation and returned the phone to the SCEMD, the SCEMD assumed that the information was going out. However, after the TEMA PIO drafted a message based on that conversation, TEMA personnel unsuccessfully tried to contact the SCEMD again to verify the message content as required by TEMA policy. This attempt failed because of power and cell phone outages that occurred soon after the Gatlinburg PIO provided the message. TEMA connectivity with their representative at the EOC and other individuals at the EOC was disrupted for a brief period during this time.

The communication outages contributed to delay of the public broadcast of the evacuation message until the NWS sent the following message via EAS at about 9:00 p.m.: “THE CITY OF GATLINBURG AND NEARBY COMMUNITIES ARE BEING EVACUATED DUE TO WILDFIRES. NOBODY IS ALLOWED INTO THE CITY AT THIS TIME. IF YOU ARE CURRENTLY IN GATLINBURG AND ARE ABLE TO EVACUATE...EVACUATE IMMEDIATELY AND FOLLOW ANY INSTRUCTIONS FROM EMERGENCY OFFICIALS. IF YOU ARE NOT INSTRUCTED TO EVACUATE...PLEASE STAY OFF THE ROADS.” Because this was a non-weather emergency message, the Wireless Emergency Alert (WEA) could not be used for this evacuation. The NWS developed the message content based on television news personnel who had been broadcasting near the EOC and were informed of the evacuation by PIO.

TEMA personnel saw the message issued from the NWS and assumed that the EOC had chosen to inform the public through that method and did not send the requested IPAWS message. A separate IPAWS message was issued at about 10:30 p.m. by the TEMA Director, requesting that everyone stay off their cell phones. SCEMD was unaware for several days that the message initially requested for broadcast by TEMA did not go out. Even if the message had gone out, the communication system outages at that time would have prevented or limited the intended message from reaching the audience.

After the evacuation decision, the manual flood warning sirens system was utilized on two occasions to provide additional notification in the downtown area of Gatlinburg to evacuate. Mandatory evacuation notice was given via the sirens. In addition, police, fire, and mass transit personnel were sent door-to-door in many areas to evacuate citizens and visitors despite being severely challenged by downed trees; intense fire; downed power lines; and loss of power, landline phones, and internet and cell phone service. Many citizens and visitors also made heroic efforts to warn their neighbors and to provide assistance in fleeing the fires.

During these door-to-door evacuations, emergency personnel encountered many residents who were resistant to comply with the evacuation until they literally stepped outside and saw the nearby conditions. Although several attempts were made to evacuate residents, there were some who adamantly refused to evacuate. Evacuation teams made repeated pleas with these residents, warning of the impending peril.



Around 9:00 p.m., a wind gust of 87 mph was recorded at the Cove Mountain weather station before the station lost power. The Cove Mountain weather station is 8 miles northwest of the origin of the Chimney Tops 2 firestorm and 5 miles west of downtown Gatlinburg. By this time, the fire is assumed to have ignited about 9,000 acres. The fire continued to rapidly spread and is assumed to have ignited about 16,000 acres by 12:00 a.m. and about 17,000 acres by about 2:00 a.m. on November 29.

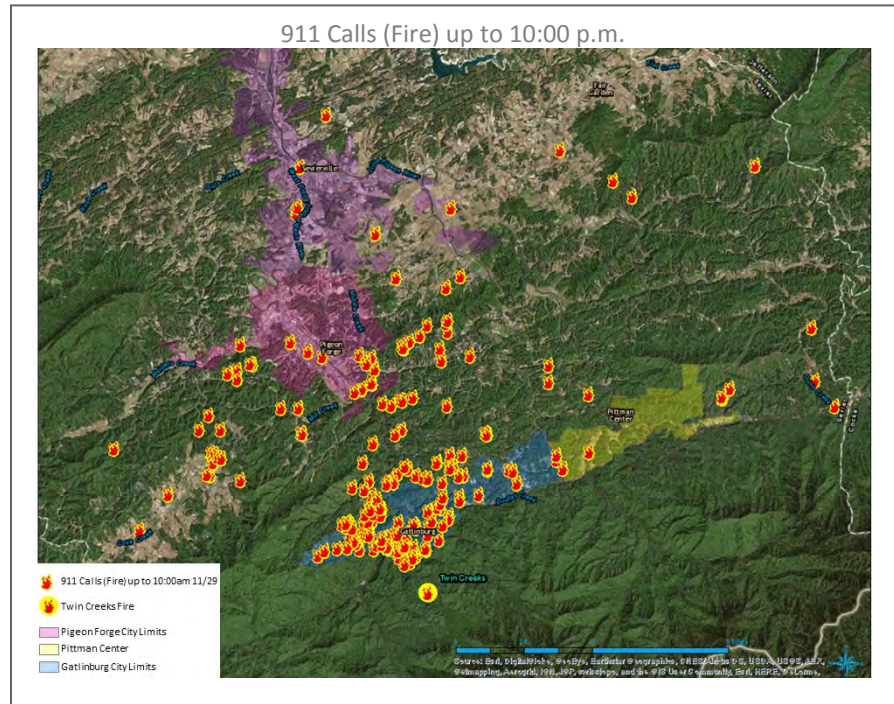
At 9:47 p.m., the NWS issued this message via radio and TV:

“PIGEON FORGE MAYOR DAVID WEAR HAS ISSUED A MANDATORY EVACUATION: IF YOU ARE LOCATED IN THE AREA BETWEEN THE SPUR AND TRAFFIC LIGHT NUMBER 8 IN THE CITY OF PIGEON FORGE, PLEASE FOLLOW THESE INSTRUCTIONS. PEOPLE WHO ARE IN A HARDENED STRUCTURE LOCATED ON THE PIGEON FORGE PARKWAY IN THE DESIGNATED AREA SHOULD REMAIN IN THAT STRUCTURE. IF YOU ARE IN A STRUCTURE LOCATED OFF THE PIGEON FORGE PARKWAY IN THE DESIGNATED AREA, IT IS IN YOUR BEST INTEREST TO EVACUATE NOW. PLEASE USE 441 NORTH PARKWAY TO TRAVEL. PLEASE AVOID SIDE STREETS AND BACKROADS.”

Again, because the fire was a non-weather emergency, the established policy of the NWS did not allow for WEA distribution of this evacuation message.

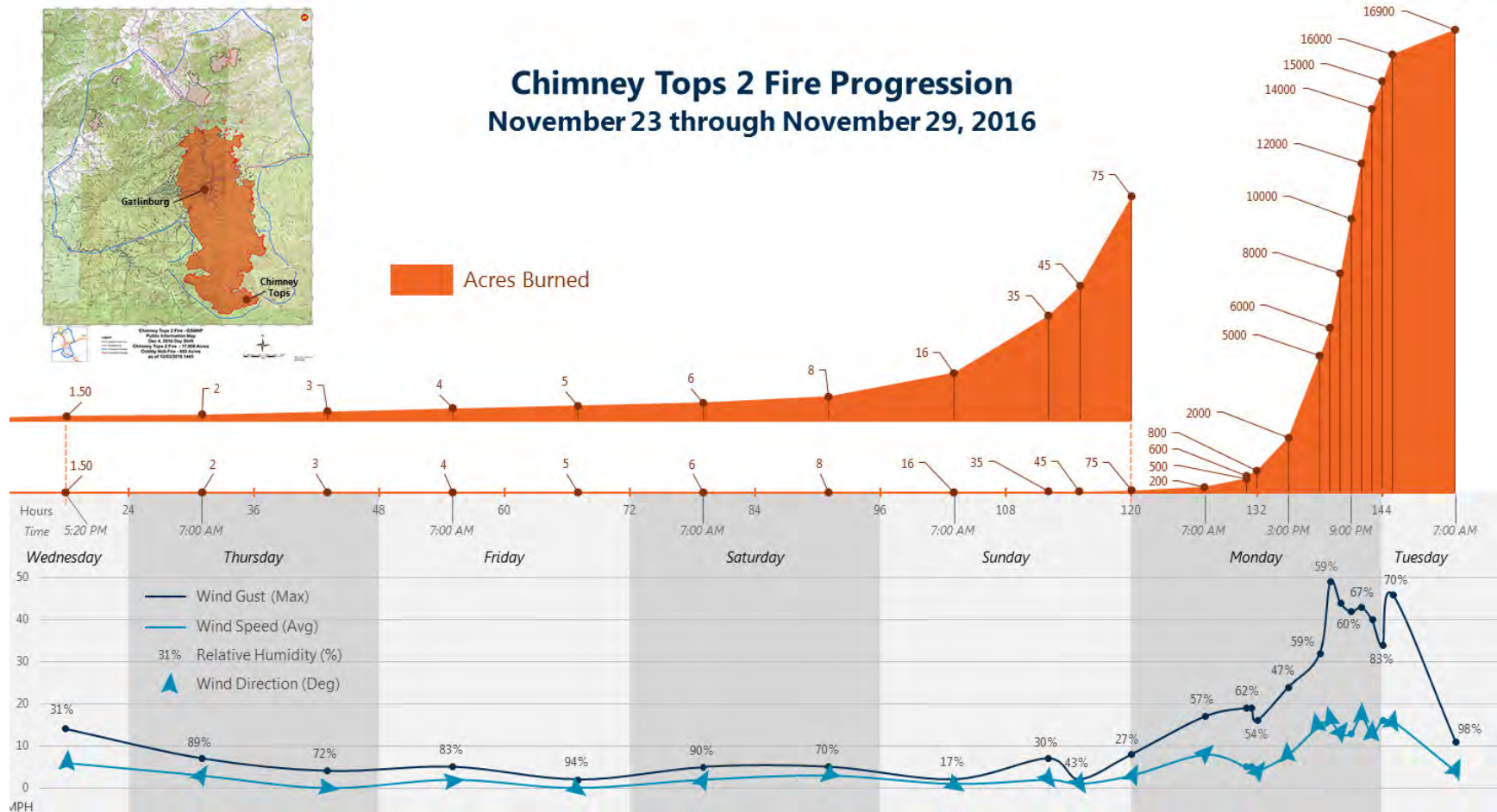
November 28 – 10:01 p.m. (Monday) to the morning of November 29 (Tuesday)

At approximately 10:00 p.m. on November 28, the majority of the residents and visitors (over 14,000) who evacuated from Gatlinburg were out of the area of danger. As a result of the firestorm, three (3) people died in the City of Gatlinburg and eleven (11) people died in the adjacent Sevier County area, either directly from the firestorm or as a consequence of attempting to flee the fire. In addition, 2,501 structures were impacted and approximately 17,000 acres were ignited by about 2:00 a.m. on November 29.



A light rain was detected as early as 10:00 p.m. on November 28. At around 2:00 a.m. on November 29, the winds subsided and steady rain began to fall. While some structure fires continued to burn for days, there was minimal spreading of the wildland fires after this time.

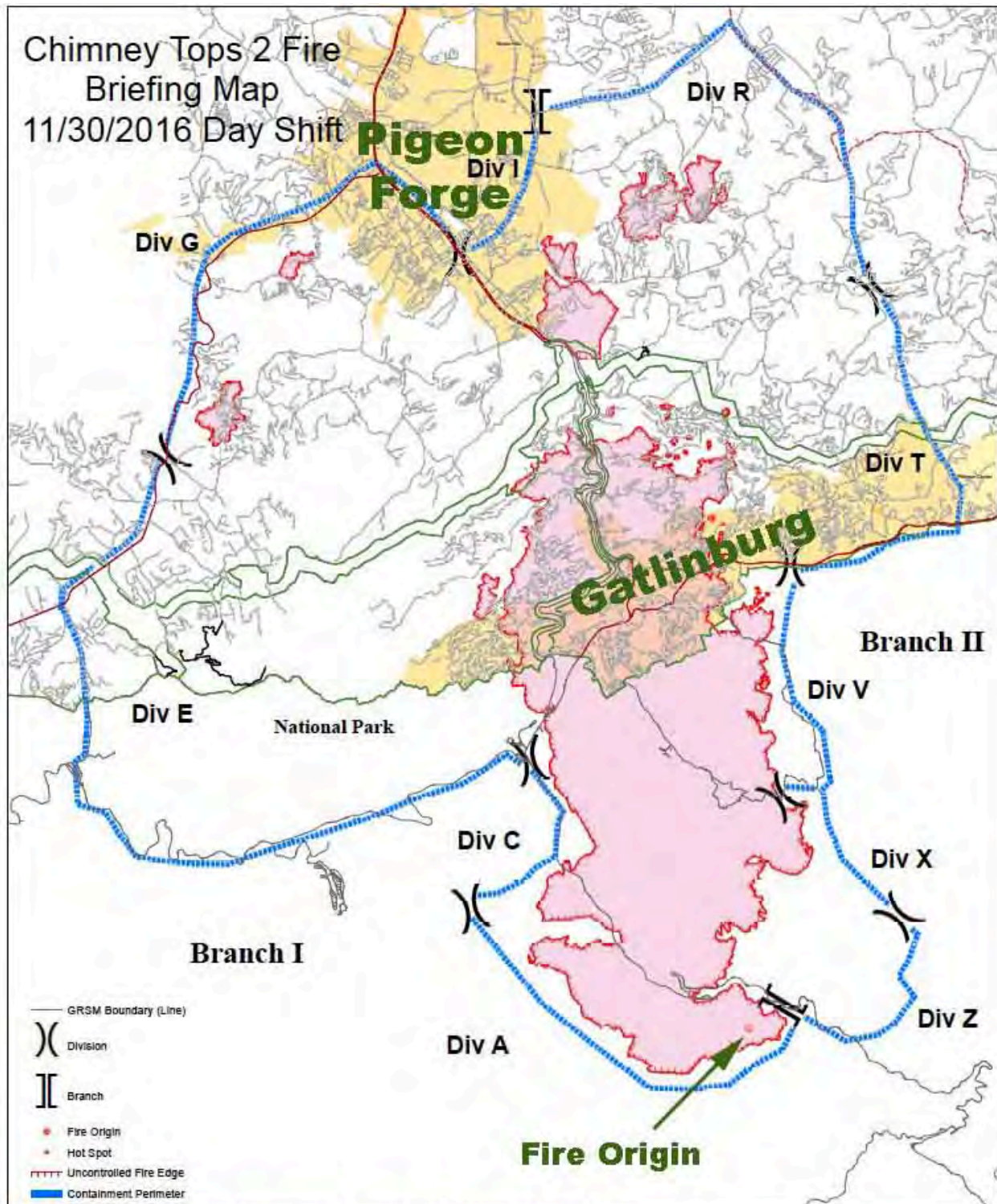
The figure on the following page shows the fire growth from November 23 through November 29, and the subsequent figure shows the ultimate footprint of the fires.



Note 1: The acres burned are based mostly on estimates or interpolation from estimates of acres burned from the GSMNP that were published as the fire grew.

Note 2: The wind data was taken from the Indian Grave Tennessee RAWS (<https://wrcc.dri.edu/cgi-bin/rawMAIN.pl?laTIND>).

Chimney Tops 2 Fire
Briefing Map
11/30/2016 Day Shift



Map by Great Smoky Mountains NP

Green text by Wildfire Today

Chimney Tops 2 Fire - GSMNP - Operations
Nov 29, 2016

SIGNIFICANT EVENTS SYNOPSIS

Table I-1 Significant Events and Descriptions

Event	Description
Drought Conditions	Significant worsening drought conditions existed in East Tennessee for almost 2 months prior to the November 28 firestorm in Gatlinburg and surrounding areas of Sevier County. A burn ban was issued by the State Agriculture Commissioner on November 4 for Claiborne, Jefferson, Loudon, and Sevier Counties at the request of the Sevier County Mayor and the SCEMD. In addition, the GSMNP Superintendent issued a burn ban within the park backcountry on November 1.
Chimney Tops 1 Fire	On November 13, 2016, a fire began near the top of the Chimney Tops in the GSMNP. GSMNP fire personnel actively fought the approximately quarter-acre fire, and it was extinguished on November 16. (Note: The GSMNP personnel have described the firefighting approach for the Chimney Tops 1 fire as a “direct engagement strategy.”)
Chimney Tops 2 Firestorm Discovered	On November 23, 2016, at about 5:23 p.m., GSMNP personnel discovered a fire of approximately 1.5 acres burning on the north spire of the Chimney Tops (identified as Chimney Tops 2 firestorm).
GSMNP Initial Approach for Fighting Fire	GSMNP personnel chose an indirect attack strategy to fight the Chimney Tops 2 wildfire. (The GSMNP personnel described the location of the Chimney Tops 2 firestorm at its origin as a more challenging terrain for firefighting than the Chimney Tops 1 fire.) A 410-acre containment zone was determined and established by the GSMNP personnel as part of the indirect attack strategy. The fire remained within this containment zone until sometime Sunday evening (November 27)/Monday morning (November 28).
GSMNP Firefighting Tactics	The NPS <i>Chimney Tops 2 Fire Review Report</i> issued on September 4, 2017, states that on Sunday, November 27, a decision was made to not use fixed wing-retardant aircraft, and limited water drops were then made that afternoon from helicopters. Aircraft could not be used on November 28 because of the heavy smoke and high winds.
Conditions Conducive to Fire Growth Occurred	The weather report at 3:21 a.m. on November 26 indicated relative humidity was going to plummet over November 26 and 27 and winds were going to increase. On the afternoon of November 27, the GSMNP used helicopters to support the firefighting effort until dark.
Conditions Conducive to Fire Growth Continue and Increase	By the morning of November 28, the NWS issued a High Wind Watch, and at about 1:00 p.m. the NWS upgraded the High Wind Watch to a High Wind Warning. At about 3:00 p.m., wind gusts of up to 56 mph were reported by the NWS.
Initial Communication with the GSMNP	<p>From the initiation of the Chimney Tops 2 wildfires on November 23 until the morning of November 28, there was no communication to the GFD regarding the existence or progression of the Chimney Tops 2 wildfire.</p> <p>The Chimney Tops 2 wildfire was not monitored through the nighttime hours by GSMNP staff. When GSMNP firefighters returned to the fire on the morning of November 28, they discovered that the fire had spotted to distances more than a mile from the origin of the fire. Around the same time, many people in Gatlinburg observed heavy smoke and ash as they went outside.</p> <p>At approximately 9:00 a.m., the GFD began to receive calls inquiring about the presence of smoke and ash conditions. Beginning at 10:30 a.m., 911 began to dispatch in response to calls ranging from smoke investigation to smoke alarm activations.</p> <p>Around 9:00 a.m., the GFC contacted GFD C-shift Captain and requested he contact the GSMNP Fire Management Officer #1 to investigate the smoke traveling toward the city from the GSMNP territory. GFD C-shift Captain attempted to do this, but the phone call went unanswered. GSMNP Fire Management Officer #1 returned the phone call at 10:58</p>

Event	Description
	a.m. November 28. This was the first communication between the park and GFD regarding the fire. During this phone call, GSMNP Fire Management Officer #1 advised GFD C-shift Captain of a fire at the Chimneys and that it had spotted to Bullhead trail. The GSMNP Fire Management Officer #1 explained the smoke was originating from the Chimney Tops 2 fire, and he advised that no assistance was needed regarding this matter at that time.
Initial Meeting with GSMNP Officials	During the same time frame that the GSMNP Fire Management Officer #1 returned the call to GFD C-shift Captain, GFC was contacted by GSMNP Chief Ranger. He said that he and GSMNP Superintendent were en route to the GFD to provide a briefing to the GFC, Gatlinburg Police Department (GPD) Chief, and Gatlinburg City Manager. At 11:30 a.m., GSMNP personnel arrived at the GFD headquarters and met with GFD personnel and the Gatlinburg City Manager. This meeting focused on the potential for fires that had spotted to the Twin Creeks area to move beyond the boundary of the GSMNP.
Twin Creeks' Request from GSMNP	During the briefing by the GSMNP personnel at the GFD, attendees overheard a central dispatch tone alert at 11:44 a.m. and the request for the GFD to respond to the Twin Creeks area of the park for a spot fire. GFD dispatch requested a tanker and firefighters for structural protection within the Twin Creeks area. Once this occurred, the GSMNP administrators and the Gatlinburg officials responded and traveled to Mynatt Park for an onsite briefing and to assess the current conditions. It was at that time, when the first GFD units arrived on scene in the park, that an Incident Command (IC) was established by GFD.
Initial GFD Actions	At about 11:45 a.m. on November 28, GFD resources were dispatched to the Twin Creeks area. The Sevier County Wildland Fire Task Force was activated at 11:52 a.m. At 11:57 a.m., the GFD dispatch issued an ALL CALL to GFD personnel. At 1:30 p.m., the Gatlinburg Community Center was established as an evacuation center. The Red Cross was notified at 1:48 p.m. Statewide mutual aid was activated by the GFD at 2:30 p.m.
Initial Evacuations	At about noon on November 28, personnel were evacuated from the Twin Creeks Science and Education Center. The GPD began evacuations soon after from Mynatt Park, Turkey Nest, and Savage Garden. The GPD made door-to-door notifications, with many residents refusing to voluntarily evacuate.
Conditions Conducive to Fire Growth Become Even More Severe	Around 4:00 p.m. on November 28, the NWS advised of 40- to 50-mph winds. The maximum recorded wind that evening near Gatlinburg was from the Cove Mountain weather station with a wind gust of 87 mph before losing power at about 9:00 p.m. (This station is 8 miles northwest of the origin of the Chimney Tops 2 firestorm and 5 miles west of downtown Gatlinburg.) Some rain began falling by about 10:00 p.m. in the Gatlinburg area, but the winds did not substantially decrease until after midnight. While the fire had grown to only about 500 acres early on the morning of November 28, by the early morning of November 29, the fire had grown to about 17,000 acres. Much of this fire growth is believed to have occurred between 5:00 p.m. and 10:00 p.m. on November 28, indicating that it likely spread more than 2,000 acres per hour or over half an acre per second. No structure fires were recorded in the City of Gatlinburg prior to 5:00 p.m.; however, by 6:30 p.m. multiple fires were reported. (Note that between about 2:50 p.m. and 3:10 p.m., GSMNP crews set backfires in park locations to protect park structures in the Twin Creeks area. Tennessee Division of Forestry also lit backfires in the Mynatt Park area.)
Utility Outages	The City of Gatlinburg began experiencing intermittent power outages on November 28 in the north Gatlinburg area at 3:46 p.m. and in the south Gatlinburg area at 4:11 p.m. At

Event	Description
	<p>5:45 p.m., the Gatlinburg City Headquarters lost power, landlines, and internet. In addition, cell towers began going down, which disabled many of the routine notification systems currently in place. Power went out in Savage Garden at 6:17 p.m., and power interruptions occurred in north Gatlinburg at 6:27 p.m. and Ski Mountain at 6:51 p.m. A request was made to kill all power to East Foothills at 7:48 p.m. Power interruptions and ultimately power outages occurred on Ski Mountain and in north Gatlinburg between 8:14 and 8:38 p.m. At 8:20 p.m., the GFD dispatch notified electric system operations (Sevier County Electric System) to kill power to downtown to avoid the potential for power lines and transformer-related fires. At 8:30 p.m., service was lost from two cell towers that cover the Gatlinburg area. The Tennessee Valley Authority power transmission lines were lost at about 10:20 p.m. and restored at about 10:59 p.m. The Gatlinburg radio system was available throughout the incident and handled a large volume of transmissions.</p>
Expanding Evacuations	<p>On the afternoon of November 28, the SCEMD, GSMNP officials (Park Superintendent and Assistant Park Superintendent), Gatlinburg City Manager, and GPC went to the location of the fire front in the Twin Creeks area. It was about 1.5 miles outside the City of Gatlinburg.</p> <p>Although the fire front did not appear to be moving quickly at the time of the meeting, by 6:11 p.m. the advancing fire prompted fire officials to request the GPD to execute a mandatory evacuation of Mynatt Park. At 6:27 p.m., mandatory evacuations were issued for Turkey Nest Road and Davenport Road areas. The Gatlinburg PIO provided a press release at 6:37 p.m. alerting the public of the mandatory evacuations of Mynatt Park, East Foothills Road, Turkey Nest Road, and Davenport Road. At 6:47 p.m., PIO added the mandatory evacuation of Savage Garden, then the mandatory evacuation of Ski Mountain was added at 7:59 p.m. At about 7:00 p.m., the GSMNP at the Pigeon Forge city limit southbound entrance restricted access to the Spur to emergency vehicle traffic. At 7:52 p.m., all northbound traffic from Gatlinburg to Pigeon Forge was rerouted away from the Spur. There was an ongoing effort by local law enforcement personnel to remove trees blocking the north and south bound sides of the Spur to provide access for evacuation and emergency vehicles.</p> <p>At 8:11 p.m., an e-mail was sent to all businesses in the City of Gatlinburg that stated mandatory evacuations were in effect for Mynatt Park, East Foothills, Turkey Nest, Davenport, Savage Garden, and Ski Mountain.</p>
GSMNP Headquarters Evacuations	<p>At about 5:30 p.m. on November 28, evacuation of the GSMNP Headquarters facilities at Sugarlands including residential, administrative offices, and the Park Communications Center began. By about 6:15 p.m., evacuation of GSMNP Headquarters in the Sugarlands area was completed with the exception of the Park Communications Center. Around 6:41 p.m., the Park Communications Center was evacuated. This dispatch capability was not re-established until about 10:00 p.m. In addition, the Greystone repeater system supporting park communications lost power during this time, which restricted some park personnel to only limited point-to-point communication.</p>
Isolated Firefighters Had to Seek Shelter	<p>At several locations, advancing fires cut off firefighters from their escape routes and they had to seek safety zones where they could survive while the fire moved through the area. Crews looked for areas with no ground vegetation or trees to seek shelter.</p>
Evacuation of the Entire City of Gatlinburg	<p>The manual flood warning sirens system was utilized on two occasions to provide additional notification to the downtown area to evacuate. Shortly after 8:30 p.m. on November 28, the GFC ordered the evacuation of the entire City of Gatlinburg and surrounding communities. At approximately 8:50 p.m., all communications were disrupted with intermittent power outages that contributed to delays in the evacuation</p>

Event	Description
	<p>message being broadcast. However, about 9:00 p.m. the NWS was able to send an evacuation message via EAS.</p> <p>Police, fire, and mass transit personnel were sent door-to-door in many areas to evacuate citizens and visitors despite being severely challenged by downed trees; intense fire; downed power lines; and loss of power, landline phones, internet, and cell phone service. The extreme fire conditions along with downed trees and power lines reduced the available evacuation routes out of the area, making evacuation more difficult. Most individuals were able to evacuate by about 10:00 p.m.</p>
Evacuation of Portions of Pigeon Forge	<p>At 9:47 p.m., the NWS sent a message via radio and TV for a mandatory evacuation of the area between the Spur and Traffic Light Number 8 in Pigeon Forge.</p>
GSMNP Communications Issues	<p>Communication from the GSMNP personnel with the City of Gatlinburg was limited and inconsistent before and during the firestorm entering the city. Before the meeting on the morning of November 28, there was no communication to the GFC regarding the Chimney Tops 2 firestorm or its potential threat to Gatlinburg. During the afternoon and early evening, there was no or very limited information on the scope of the fire beyond the Twin Creeks area and no communication to the EOC regarding the spread of the fire toward Ski Mountain or closure of the Bypass. There was no communication on closing the entrance to the park at Traffic Light Number 10 in Gatlinburg.</p>
Fire-related Losses	<p>By early morning of November 29, three (3) people had died in the City of Gatlinburg and eleven (11) people died in the adjacent Sevier County area, either directly from the fire or as a consequence of attempting to flee the fire. In addition, about 2,500 structures were damaged, burned, or destroyed and about 17,000 acres were burned.</p>
Extended Firefighting	<p>By early morning on November 29, weather conditions had improved substantially with decreased winds and rains. The fires continued to burn with the potential to grow. Firefighting activities continued until December 5.</p>
Extended Recovery Actions	<p>There were 3,066 individuals supported by 4 American Red Cross shelters. The evacuation notice for Gatlinburg was lifted on December 9 at 7:00 a.m. However, government and private efforts to support the recovery of the City of Gatlinburg and Sevier County were already in motion. Substantial materials from the damaged structures were removed to landfills, and efforts to issue building permits are ongoing with many volunteer organizations supporting those who need assistance with rebuilding. In addition, many of the burned acres needed trees cut and vegetation restored to help avoid erosion and flooding-related issues.</p>

WILDFIRE HISTORY IN THE AREA

The GFD typically responds to at least one large wildfire annually, serving as part of a Type 3 Incident Management Team (IMT). The department also responds to multiple smaller fires annually. Some of the more recent wildfires fought by the GFD include:

- 2012 – English Mountain fire multi-agency response that burned English Mountain Condominiums and destroyed 48 units
- 2013 – Black Bear Cub Way fire in Walden’s Creek area multi-agency response where more than 70 cabins were either damaged or destroyed by fire
- 2014 – Gatlinburg Summit Condominium fire multi-agency response
- 2016 – English Mountain wildfire multi-agency response

There are multiple other county-wide structure fire activations and Sevier County Wildland Fire Task Force activations in which GFD responded to assist.

GFD Background



The GFD is an “All Hazards” response department, providing structural fire protection and response, wildland fire response, hazardous materials response and mitigation, confined space rescue, swift water rescue, high angle rescue, and vehicle extrication. The GFD is one of only eight fire departments in the State of Tennessee that provides Advanced Life Support Ambulance response to all medical and trauma calls for service. In addition, the GFD and City of Gatlinburg were awarded a rating of “Class 2” from the Insurance Services Office (ISO) in

2015. Less than 2 percent of all fire departments in the U.S. are rated at a Class 2 or higher. This rating is based on an independent audit evaluation that scores the department and the community in the following areas:

- Firefighting equipment
- Fire response
- Pre-fire planning
- Fire inspection and code enforcement
- Public fire education
- Number of personnel
- Training
- Emergency dispatch procedures
- The community’s water supply
- Hydrant testing and maintenance

ISO ratings significantly influence the cost of fire insurance for businesses and homeowners. All members of the GFD are trained and certified as firefighters from the State of Tennessee Commission on Firefighting (TCFF). Personnel have completed the National Wildfire

Coordination Group courses S-130 and S-190, providing education on wildland fire behavior and training for foundational skills universal to all wildland firefighters. Personnel are also licensed at either the Advanced Emergency Medical Technician or Paramedic level. The department conducts an average of 20 hours of training per month focused on improving individual capabilities and the overall competency of the department. Firefighters complete over 240 hours of training annually to comply with ISO and TCFF standards.

The State of Tennessee has a statewide mutual aid plan created by a state statute. This plan automatically allows for aid to be given and/or received from any other fire department in Tennessee. This mutual aid plan automatically supersedes and replaces any local agreements or memoranda of understanding regarding fire mutual aid. The Tennessee Fire Chiefs Association maintains a resource listing the fire departments that participate in the statewide mutual aid plan as a ready resource to fire chiefs if needed.

The GFD maintains a very positive and professional working relationship with local and regional departments. The GFC is the past president of the Sevier County Fire Chiefs Association, a member of the East Tennessee Fire Chiefs Association, a member of the Tennessee Fire Chiefs Association, a member of the International Association of Fire Chiefs, a member and past president of the Tennessee Region 2 Emergency Management Services (EMS) Directors Association, and a member and past president of the Sevier County Local Emergency Planning Committee. Through these memberships, positions, and committees, the GFD has had the opportunity to network and train with multiple agencies and forge some long-lasting professional relationships.

Historically, the GFD has also enjoyed a professional relationship with the GSMNP and the U.S. Forestry personnel. The GFD provides a significant amount of assistance, direct services, and resources to the GSMNP on a routine basis. The GFD responds into the GSMNP property for every medical and trauma call requiring an ambulance, every vehicle fire, and every structural fire. In addition, the GFD is routinely requested to help perform “carry-outs” of victims from trail-related incidents and specialized rescue situations. This occurs more frequently during times in which the GSMNP may be understaffed. This

Gatlinburg Fire Department Ladder Truck



ongoing working relationship and routine of providing direct fire and emergency services require regular communications and interaction between the GSMNP and GFD.



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SUMMARY OF FINDINGS

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Introduction to Findings and Perspectives – Vernon H. Guthrie

It is important to emphasize that this effort and this report reflect an AAR documenting what worked well, lessons learned, issues, and recommendations based on document review and information gathered from numerous stakeholders. This review assesses actions associated with selected efforts/functions (Command Staff and Incident Management, Operations, Interagency Communications, Public Information, Logistics, and Recovery and Humanitarian Outreach), and did not involve the detailed pursuit of specific situations. The focus stayed at a high level, and as a best practice for AARs, this report intentionally omits names of individuals involved in addressing the event or its aftermath. In addition, this effort relied heavily on the experience and knowledge of those interviewed.

The focus of this AAR is to identify recommendations that will help make sure that Sevier County, the City of Gatlinburg, and other agencies/jurisdictions are better prepared for any future catastrophic events and intentionally does not seek to assign individual credit or blame. In addition to the recommendations, the review identified actions already performed or underway by Sevier County and/or the City of Gatlinburg, and identified best practices that were in place or applied during the firestorm.

ABS Group assigned a subject matter expert to the development of each of the 10 sections for which we established recommendations. The approach ABS Group followed was to review relevant documents; develop draft content; and to then hold interviews with the 10 groups that included fire, law enforcement, emergency management, and public information professionals who were directly involved in addressing the November 28 firestorm in the City of Gatlinburg and Sevier County. The interview format generally involved multiple professionals addressing (1) what worked well, (2) issues, (3) lessons learned, and (4) recommendations. While team members from ABS Group directed the discussions, they sought to accurately capture the input from the professionals who participated in the interviews.

The beginning of each of the following subsections includes a brief “Perspective” from the relevant ABS Group subject matter expert for that function. Each perspective provides an overview regarding the function being reviewed and some of the subject matter expert’s thoughts on the key actions associated with the relevant function. These perspectives end with a summary of the number of items (what worked well, issues, lessons learned, and recommendations) developed from the interviews.

This report identifies many actions that worked well and many issues. From this understanding of what worked well and issues, numerous lessons learned were identified. From the lessons learned, the review teams developed recommendations, recognized actions already taken or underway, and identified best practices. Implementing these recommendations along with the other items should better prepare the City of Gatlinburg

and Sevier County for any future catastrophic events. Included at the end of each of the following subsections is a listing of “what worked well,” “issues,” and “lessons learned.”

The Conclusions Section includes a listing of recommendations for Sevier County and the City of Gatlinburg and for other agencies/jurisdictions, actions already taken or underway, and identified best practices. The Conclusions Section also provides an alignment of the recommendations and other actions to the five goals addressing key areas of concern raised by the public and those seeking direction from this study.



COMMAND STAFF AND INCIDENT MANAGEMENT

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Perspective – Mark J. Finucane

The GFD encountered a dynamic, fast-moving wildfire that presented significant risk to critical infrastructure and homes in the City of Gatlinburg. The challenge of coordinating the needed emergency response was daunting; however, the GFD was up to this immense task. Communication issues due to loss of power, loss of GPS, loss of cellular and landline service, and an extreme call volume overwhelming the communications center were ever present and expanding.

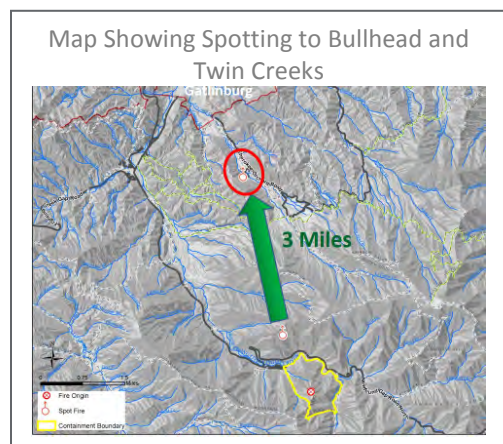
To enhance an effective command and control system that would allow operations management for an incident of this scale and complexity, the Sevier County Wildland Fire Task Force and the Tennessee statewide mutual aid plan were activated. Resources from dozens of agencies were involved in the firefighting effort. The National Incident Management System (NIMS) was followed to help ensure that all agencies involved in the response would be fully integrated and their efforts coordinated. A Unified Area Command was also established to provide command authority and additional coordination of the multiple incident scenes that were ongoing. Establishing this system allowed for coordinated efforts among multiple emergency response agencies and utilized responding fire service resources as interchangeable units within an overall structure. This interoperability provided an efficient process. The goals of setting up an incident management structure, coordinating strategy and tactics, and disseminating timely and accurate information were achieved.

There has been a long-term effort within the local and regional fire service community to meet and communicate on a regular basis to build and maintain relationships outside of a fire event. This had a positive impact on incident management and operational performance for this firestorm. Having strong professional relationships was seen to help build trust between parties and an understanding of each other's roles and intentions.

In addition to providing introductory information, this section identifies actions that worked well, issues, and lessons learned. These items guided the development of recommendations, revealed actions already taken, and identified best practices (located in the Conclusions Section). The evolution of these outcomes focused on (1) analysis of emergency communication/dispatch data; (2) interviews with fire and law enforcement personnel from the City of Gatlinburg and others directly involved in the

management, administration, command, and control and operations of the incident; (3) weather data; (4) incident documentation; and (5) charts and other resources. Supplying first responders with real-time situational awareness for a faster, better-informed response is a key finding. The implementation of recommendations along with the actions already taken and continuance of the identified best practices will help achieve stronger and more effective planning, prevention measures, collaboration, and decision-making for proficient response to large-scale emergencies.

Fire – Situation



As described in the Overview and Significant Events Synopsis sections, the Chimney Tops 2 wildfire in the GSMNP was growing and spreading rapidly on November 28. Heavy smoke filled the air in Gatlinburg and ash was falling in the city. The GFD and 911 were receiving numerous calls regarding the conditions, and resources were dispatched to investigate. During the mid-morning, GSMNP officials (Chief Park Ranger and Superintendent) came to the GFD to brief city officials on the park fire. During the meeting, a central dispatch alert occurred

and the GFD dispatched a tanker and firefighters to the Twin Creeks area in the park for a fire. Personnel at the briefing went to the Mynatt Park area to assess the conditions. As the first GFD units arrived on the scene in the park, the first IC was established by the GFD. Subsequently, the GFD established and activated an EOC for the City of Gatlinburg in the GFD headquarters. The EOC was staffed with key officials performing as Unified Command (UC), which provided face-to-face communication. The GFC, GPC, a Sevier County Emergency Management Agency (EMA) representative, and Gatlinburg City Manager were present, as well as representatives from GSMNP (though they were not actively participating within the command and control). The GFC contacted the Director of the Sevier County Ambulance Service at approximately 7:30 p.m. and requested that he report to the EOC to assume the role of EMS Chief within the Unified Command Structure. While in route, the Director began to activate the Region 2 EMS mutual aid for additional EMS support of the incident. Personnel from the Tennessee Department of Health Office of Emergency Medical Services (TDH-EMS) reported to LeConte Medical Center and established medical command. All EMS operations were coordinated by the medical command and through the EMS Chief in the EOC. This process allowed for seamless integration of outside EMS agencies and Sevier County/City of Gatlinburg EMS personnel. This was successful in providing emergency care and transportation for all incident-related calls for service as well as the routine calls for service that occurred during the firestorm and the days following. The EOC staff progressively augmented throughout the evening with TEMA, Tennessee Highway Patrol (THP), a State Type 3 IMT, county mayor, and other agency heads arriving to assist.

EOC Location in GFD Headquarters

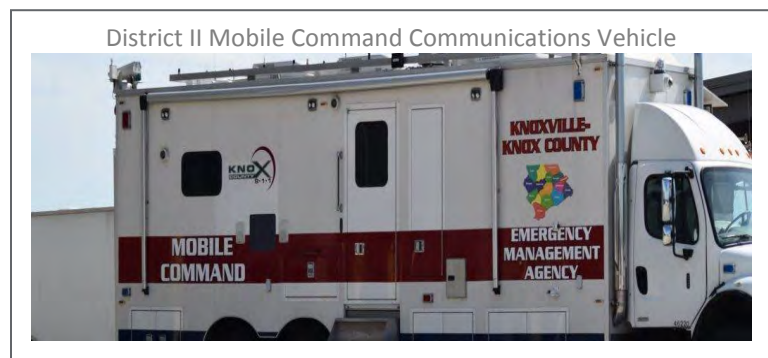


While a single IC Structure (ICS) is typically established for managing incident response operations, a structure to manage multiple command sites was needed due to the scope and scale of this incident. The sheer magnitude of the fire had multiple incident scenes with each having an Incident Commander in charge. These Incident Commanders reported to a Field Incident Commander who would relay status updates to the EOC. Once the weather conditions began to rapidly deteriorate during the evening hours of November 28, the incident grew exponentially to a very large, fast-moving fire in multiple locations. The EOC was now serving as a Unified Area Command, overseeing the management of multiple incidents. The Unified Area Command structure that was present at the EOC was conducive to ensuring that all parties received timely and accurate information. Federal Emergency Management Agency (FEMA) defines a Unified Area Command as an organization established to oversee the management of (1) multiple incidents that are each being handled by ICS units, or (2) large or multiple incidents to which several IMTs have been assigned. Unified Area Command has the responsibility to set overall strategy and priorities, allocate critical resources according to priorities, ensure that incidents are properly managed, and ensure that objectives are met and strategies followed. Unified Area Command is established when incidents are multi-jurisdictional. Additionally, an incident PIO was designated and present at the EOC throughout the incident.

The original EOC was equipped with the supplies, generators, operational necessities, handheld radios, access to the GPD Communications Center, etc. However, phone lines and cellular services were disrupted as power outages and cell tower failures occurred. Amateur radio operators were also prepared to

assist in the event of a loss of communication, with a presence in the EOC around 5:00 to 6:00 p.m. As the fire approached the original EOC location, the decision was made to move the EOC to the Gatlinburg Community Center (even though it did not initially have power or backup power). The justification for the relocation was because it was believed to be far enough away from the fire threat but close enough to easily move about 100 personnel and still allow command to communicate with the responders. Until the power was restored, the command functioned out of the Knox County mobile command trailer that had been located at the Community Center.

Each individual scene was commanded and controlled following NIMS guidelines and consistent with ICS and Unified Area Command protocols. The EOC serving as a Unified Area Command naturally created some overlapping roles within the incident management. However, these overlapping roles served to help ensure that safety guidelines were followed.



Communications and work assignments were successful due primarily to the relationships that had been established over many years between response agencies. This ongoing professional relationship between responding agencies was nurtured through interactions at many joint meetings, conferences, and training sessions throughout the region as well as prior multi-agency response incidents.

Activation and implementation of the Command and Control procedures followed planned coordination. The unprecedented and overwhelming nature of this disaster, including the speed, magnitude, and severity, inhibited optimal planning. Command and control decisions were made based upon the limited amount of information being provided by GSMNP as well as reports from on-scene personnel once the fire entered the City of Gatlinburg. The IC and command staff were not privy to actionable intelligence from the GSMNP personnel regarding the fire dynamics. The limited information provided by the GSMNP indicated that if the fire entered Gatlinburg, it would occur in the Mynatt Park area.

According to NIMS framework, once a disaster escalates to the point where federal, state, and local agencies will be operating for long periods of time, a Federal Type 1 IMT is necessary to provide a higher level of incident management and capability. Once a Federal Type 1 IMT is established and deployed, it typically becomes the incident management system or at a minimum should have set up operations with or near the already established State Type 3 IMT in order to maintain timely communication and coordination between the two entities.

Once the Federal Type 1 IMT arrived, they set up about 8 miles away in Pigeon Forge, somewhat isolated from the State Type 3 IMT established earlier in the fire event. The Type 1 IMT did not merge with the previously established Type 3 team in the Gatlinburg EOC.

During the initial operational period, each individual agency either transitioned radio communications to the GFD frequency or operated on their own frequency. Outside agencies either had compatible systems, or had a representative in the EOC, or were provided a portable radio with the GFD frequency. Personnel from the GFD were assigned to ride along with mutual aid units to assist with response directions and other critical geographic information. Communications were further enhanced once the incident support expanded to include communications assistance from the Regional Communications Center, TEMA, THP, and Knox County EMA.

Situational awareness is an important component in determining incident response actions. This incident presented extreme challenges to situational awareness due to intense smoke; fire; continuous threats from falling trees, power lines, and other fire debris; and fire accelerants contained in residences and businesses. Some of these challenges were further complicated by the lack of visibility, hurricane force winds, exceptional drought conditions, loss of communications, multiple blocked routes of egress, and rapid fire progression. All personnel received a safety briefing prior to working on all incidents and as conditions changed. First responders were presented with very dangerous and untenable conditions, yet

they continued to go into these life-threatening areas to notify/rescue individuals and to fight the multiple fire locations.

Although the prediction of fire progression was impossible due to the conditions mentioned above, a fire predictive model provided by the Pigeon Forge Fire Department was employed at about 4:30 p.m. on November 28. This model predicted fire conditions to take 19 hours for the fire to reach the city limits. In actuality, however, it took less than two hours for the fire to reach the city limits of Gatlinburg. All first responders, EOC personnel, and field command staff were unaware of the rate at which the fire spread was occurring until field units were dispatched to each affected location and provided field observations of the extent of the fires. During subsequent discussions with the GSMNP staff, the chief ranger was asked if fire progression information was available from the NPS and the chief ranger responded by saying the NPS did not have fire progression information at the time of the Chimney Tops 2 firestorm. Park officials also advised during the interview that they had not developed any fire progression data since the incident started.

Due to the lack of visibility and changing wind patterns, crews were advised not to enter the wooded areas. Dangers of falling trees, potential energized power lines, trip and fall hazards, and debris added to this safety advisory. The fire was unable to be fully assessed in its entirety due to mountainous terrain, low visibility, expansive size, and the fire's location within the GSMNP boundaries.

GSMNP personnel only advised the Mynatt Park community was at risk of being threatened by the wildfire. Therefore, the initial firefighting objectives were to prepare the city boundary at the Mynatt Park community for impending fire progression in the wildland urban interface area of common boundaries of the GSMNP and the City of Gatlinburg. This was accomplished by (1) construction of fire lines by hotshot crews under the U.S. Forest Service and Tennessee Division of Forestry, (2) structural protection by the Sevier County Wildland Fire Task Force and mutual aid agencies, and (3) evacuation procedures being initiated. As a proactive measure, the initial Incident Commander from the GFD requested additional resources and activated regional mutual aid from surrounding counties several hours before any fire was inside the City of Gatlinburg. The proactive decision to request mutual aid early is a primary contributing factor to preventing a greater loss of life, additional injuries, and property loss.

Beginning November 29, a written Incident Action Plan (IAP) was prepared by the State Type 3 IMT for each 12-hour-operational period. The IAP was disseminated to all appropriate personnel. The IAP provided the objectives, safety message, and communications plan for each operational period.

Field Incident Commanders were mobile and progressed from scene to scene in the hazardous environment while the EOC was a stationary command within GFD headquarters and subsequently at the Gatlinburg Community Center. The situation within the EOC was busy

with multiple incident scenes and secondary noise. The EOC staff did their best to meet the needs of the first responders to mitigate the disaster under these conditions.

An Incident Commander managed the established ICS for multiple incidents. All on-scene commanders reported to the designated points of contact as directed by the EOC and the Unified Area Command. Additional mutual aid responders and supervisory units continued to respond and assist in the firefighting tactics and rescue efforts during the early morning hours of November 29.

The EOC provided support to each individual incident and served as the point of contact to request additional resources. All communications were directed to the EOC to provide updates regarding the status of fire spread, evacuations, and other important benchmarks. This occurred after the original EOC had to be evacuated at approximately 10:00 p.m. due to threat of fire, loss of power,

loss of cellular and landline phones, and loss of internet. The EOC was relocated to the Gatlinburg Community Center. Mobile command trailers and communication trailers were dispatched to this location to help coordinate the command, control, and communication efforts. This area remained the EOC and overall command until it was ultimately terminated on December 5, 2016. Attack plans were coordinated at the scene and were the responsibility of operational personnel. Communication coordination was directed by the EOC.

Both the on-scene commanders and the Unified Area Command performed as trained and executed their duties to the best of their ability especially considering the unprecedented nature of this disaster as previously described.

The GFD operates on a Kenwood Nexedge Digital ultra high frequency (UHF) radio system with multiple tactical channels for simplex communications. All fire departments within Sevier County utilize this same system along with the Sevier County Ambulance Service, SCSO, GPD, and Sevier County EMA. This allowed for seamless interoperable communications between these agencies. The GFD is dispatched by Sevier County Central Dispatch in the City of Sevierville, where their system operates on the same digital radio system and has a computer-aided dispatch system. All fire departments within Sevier County also have use of a blast messaging system called Active 911. This system notifies each responder's cell phone of the call type and location and includes mapping software. The City of Gatlinburg had a flood warning system in place on November 28. The flood warning system consisted of four Whelen siren/voice towers in the downtown area. This system was designed and installed to provide citizens and visitors of advanced warning of an impending flood, but it was activated twice on the evening of November 28 with a message advising all persons to evacuate the area immediately. The PIO of Gatlinburg, with assistance from the GSMNP Public Affairs Officer (PAO), was responsible for press releases and providing any



known details pertaining to the contents of the press releases and the utilization of any social media platforms.

Under normal, non-catastrophic conditions, fire activities require that all communications are handled and dispatched by Sevier County Central Dispatch. However, during the Chimney Tops 2 firestorm, the communications were routed through the Gatlinburg EOC. This particular shift in responsibilities became a very challenging communications task due to the volume of calls and the number of responders.

Evacuation

As described in detail in the Overview and Significant Events Synopsis sections, evacuations from Gatlinburg and the surrounding areas began around 12:00 p.m. on November 28, 2016. Initial evacuations were voluntary, but as the fire situation worsened throughout the day, the evacuations became mandatory. The Twin Creeks Science and Education Center was first notified to voluntarily evacuate, followed by the Mynatt Park, Turkey Nest, and Savage Garden areas. By early evening, mandatory evacuations were issued for Mynatt Park, East Foothills, Turkey Nest, and Davenport Road areas. Savage Garden and Ski Mountain were subsequently added to the mandatory evacuation areas. Shortly after 8:30 p.m., the GFC ordered the evacuation of the entire City of Gatlinburg. About an hour later, evacuation of a portion of Pigeon Forge was announced.

Evacuation notice was initially accomplished by the GPD going door-to-door to warn residents. SCSO also assisted in evacuation notifications. While most people were cooperative, the GPD did encounter residents who refused to evacuate even after multiple warnings. Notifications were also distributed by the NWS EAS, the Gatlinburg manual flood warning sirens system, and e-mails to the Gatlinburg Chamber of Commerce database (via “e-blast”). A request was made to TEMA to also distribute an IPAWS emergency evacuation notice to the area, but communication failures between the EOC and TEMA to confirm the notification (before broadcast) resulted in no IPAWS notification.

Evacuation from the area was hindered by the numerous fire locations and downed trees and power lines that blocked roads. At about 8:00 p.m., GSMNP personnel locked the gates at the park entrance to the Gatlinburg Bypass, which also blocked an evacuation route. However, most residents and visitors were able to evacuate the area by about 10:00 p.m.

Starting on November 29, search, rescue, and recovery operations became the focal point of the IAPs. Some ongoing firefighting operations also occurred with some new fires being discovered. From November 30 through the close of operations on December 5, first responders continued to perform: search and rescue, recovery, damage assessments, hazard mitigation, loss control, and fire overhaul operations in addition to answering the normal calls for service and caring for shelter occupants. The magnitude of the mutual aid assistance resulted in a total of 3,535 first responders bringing a total of 445 apparatus. This response

was the largest ever in the State of Tennessee, utilizing resources from 50 counties and over 225 agencies.

Fire – What Worked Well?

1. The Sevier County and City of Gatlinburg radio communication systems provided continuous communication links during the catastrophic event. The excessively high call volume did cause busy signals at times. But even when internet service, cell service, and power were lost, the emergency officials throughout the county were still able to continue to communicate via radio.
2. Early activation and request of mutual aid helped get extensive critical resources onsite in a timely manner.
3. Local, regional, and statewide mutual aid plans were instrumental in having adequate quantities of firefighting personnel and resources. These plans also provided a Type 3 IMT, which served to support the Incident Command System and the EOC throughout the seven-day duration.
4. Interagency cooperation helped to ensure efficient and effective command and control of incident management.
5. Following the framework of the NIMS helped to ensure adequate responder health and safety.
6. Early request for and arrival of the mobile communications trailers from Knox County, Madison County, TEMA, and the THP provided essential capabilities for responding agencies with diverse communication systems to interact effectively.
7. Staging management, sites, and associated facilities supported efficient allocation of resources.
8. A condominium development with an external deluge fire suppression system avoided damage from the surrounding wildfire.
9. Expanding the personnel within the Unified Command Structure helped maintain an adequate span of control.

Fire – Issues

1. The GSMNP personnel contacted GFD only after GFD had initiated inquiries regarding the Chimney Tops 2 firestorm.
2. Insufficient information was available from GSMNP fire management personnel and Tennessee Division of Forestry fire management personnel regarding the potential for the fire in the GSMNP to impact the City of Gatlinburg and other areas of Sevier County including anticipated fire growth, current location, size, and direction.
3. Without communicating and coordinating with the EOC, the GSMNP personnel utilized an indirect attack that involved setting backfires. This tactic would be

considered questionable taking into account the environmentally hazardous conditions that were present and the close proximity to the city boundary.

4. There was limited information provided by the GSMNP personnel in the EOC.
5. There was limited action by the GSMNP personnel to extinguish the Chimney Tops 2 firestorm prior to November 27 due to their indirect attack strategy.
6. Substantial long-term communication difficulties occurred from cell phone, landline, internet, and cable TV outages. The existing infrastructure to support many of these technologies was not sufficient and had not experienced the level of failures created by the Chimney Tops 2 firestorm.
7. Due to power outages, winds, blocked roadways, and the firestorm itself, some individuals could not receive notice of evacuation in a timely manner.
8. Interaction between the communications center staff and the State Type 3 IMT command was restricted due to the separate locations of these teams. The command team was located within the community center, while the communications team was located outside the building within their specific communications vehicle (fire, police, and EMS).
9. Numerous environmental and technological factors inhibited firefighting response efforts. These factors included: severe drought conditions; sustained high winds near hurricane force; mountainous terrain; widespread power outages; cellular outages; extremely poor visibility; landline outages; internet outages; extraordinary rate of fire spread; sheer width of the fire line; and blocked roads due to fallen trees, fire debris, and downed power lines.
10. Responses to and evacuations from certain areas were challenging due to speed of fire progression and the inability to access these areas because of the fire, downed trees, and power lines blocking roads.
11. Roads that were not blocked with downed trees or power lines became impassable due to traffic congestion, which further contributed to the delayed responses of off-duty firefighters, off-duty police officers, and mutual aid agencies reporting to Gatlinburg.
12. The widespread loss of power caused an interruption to the pump stations providing Gatlinburg's water supply. This resulted in certain hydrants losing adequate volume and pressure.
13. Unauthorized personnel were entering the EOC during the firestorm, impacting the efficiency of EOC activities.
14. The NWS guidelines did not allow them to send IPAWS notifications regarding a fire.
15. When communications were lost with the EOC, TEMA guidelines did not allow them to send an IPAWS notification without verification.

16. The wildland fires resulted in damage to signage, and created other difficulties in identifying appropriate egress routes.
17. Not all residents and visitors in the area were set up to receive time-sensitive communications during the emergency. Some residents and visitors were not capable of speaking, reading, or comprehending the English language, which created a challenge in recognizing, identifying, and understanding evacuation warnings.
18. Some structures did not meet Firewise guidelines (fire safety guidance developed by the National Fire Protection Association [NFPA] to help communities and homeowners create a more fire safe environment) and were more vulnerable to the wildfire.

Fire – Lessons Learned

1. Wildfires occurring in the Gatlinburg area during periods of extreme drought, relatively low humidity, and strong winds can create very large, rapidly moving fire incidents historically rare in the Eastern United States. Such wildfires, when not extinguished early, can create a wide disbursement of flying embers, igniting “spot fires” substantial distances from the original fire that can grow rapidly. This can increase the necessity for a higher level of threat assessment and situational awareness.
2. Wildfires the size and ferocity of the November 28 Chimney Tops 2 firestorm created under the conditions of extreme drought, relatively low humidity, and high winds, resulting in many downed trees and power lines can become a firestorm that prevents access and escape. These circumstances will exceed the capability of even a massive number of first responders, and can quickly surpass the capability of hundreds of firefighters and police officers to combat the multiple fire locations and to execute large-scale evacuations.
3. Early warning systems, both technologically driven and through human observation, are needed especially in the urban interface areas common to the City of Gatlinburg and the GSMNP.
4. When faced with significant unknowns (e.g., location, direction, rate of movement) regarding an approaching wildfire that has conditions favorable for rapid movement, it is important to err on the side of caution by presuming the worst until proven untrue.
5. Wildland fire management activities require closer coordination and more engagement between the GSMNP and local fire and emergency management officials.
6. Better methods need to be in place to prevent unauthorized access to the EOC.
7. Delays in notification of such evacuation orders during an emergency or disaster can occur because the NWS guidelines do not allow them to send an IPAWS notification.
8. TEMA guidelines did not allow them to send an IPAWS notification without verification.

9. The EOC did not have adequate computers, radio equipment, or operation space to help support this significant incident.
10. Having immediate access to a mobile command center is essential to ensuring timely interoperable communications for the EOC.
11. Fire-resistant signage and other mechanisms to improve identification of the appropriate egress routes are needed.
12. Wildland fires can cause a loss of all phone system service, creating the need for a satellite phone.
13. It is critical to have multiple paths for communication to all residents and visitors in emergencies.
14. Having the community Firewise compliant reduces the vulnerability of structures to wildfire.
15. The City of Gatlinburg and Sevier County need wildland prevention and protection strategies that utilize Firewise approaches for planning development, creating regulations for wildfire risk reduction, designing landscapes and buildings to reduce wildfire risk, and developing adequate infrastructure and community hazard planning.

Fire – Recommendations

See Conclusions Section

Perspective – Phillip E. Keith

The GPD faced an unfolding, dynamic disaster of historical proportion. Yet they performed well as a cohesive unit, working with thousands of emergency responders from multiple agencies. They were challenged by both the extensive threatening conditions of the rapidly moving fire; the very limited information available for good situational awareness; and the difficult and inadequate communications created by loss of power, loss of cellular capabilities, and sometimes limited radio contact. They took heroic actions to evacuate threatened areas, often at personal risk to their own lives.

The extensive training of the staff consistent with NIMS requirements, following best known practices, and practicing discipline to establish and adhere to a well-defined chain of command, proved vital in the efficient execution of their efforts to save lives. In reviewing the information gathered to create this report, it is apparent that the decisions made and actions taken helped maximize evacuation efforts and minimize the loss of life.

In addition to providing introductory information, this section identifies actions that worked well, issues, and lessons learned. These items guided the development of recommendations, revealed actions already taken, and identified best practices (located in the Conclusions Section). The development of these results focused on (1) detailed logs, vehicle camera video, dispatch records, and other information and (2) interviews with law enforcement personnel from Gatlinburg and Sevier County (with some input from other personnel). The implementation of recommendations along with the actions already taken and continuance of the identified best practices will help to further enhance the readiness of law enforcement to meet the challenges of command staff and incident management needs for any future firestorm or other large-scale emergency.

Law Enforcement – Situation

Before the GFD made inquiries with GSMNP personnel, in the early morning hours of November 28, the GPC noticed heavy smoke and falling ashes. This caused him to immediately contact Police Dispatch and inquire about the possibility of fire in the area. According to the GPD Dispatcher, “There is a fire up around the Chimneys at the top. They can’t get to it, but they are going to try and water bomb it today.” In the days leading up to the Chimney fire, several fires in the area produced significant amounts of smoke in Gatlinburg. On this particular morning, however, the smoke was different (best characterized as thicker smoke and falling ash). Information obtained from the GSMNP dispatch center concerning the smoke and ash early that morning indicated that the Chimney’s fire had not changed. By late morning, the smoke intensity created limited visibility and narrow situational awareness to short distances. Over the next 24 hours, there would be decreased visibility and an unprecedented, horrific firestorm moving through Gatlinburg and other parts of Sevier County. These situations necessitated rescue and evacuation actions that would lead to life-saving and heroic actions by police and fire first responders.

The established Gatlinburg EOC would serve as the nerve center for directing resources to aid citizens and visitors, as well as directing the overall response to what would become an unprecedented fire in the Eastern United States. GPD has a history of compliance and operations with the best known practices in law enforcement as evidenced by having been accredited by international and state credentialing organizations. This system-wide preparedness would prove vital throughout the perilous hours of November 28. Existing strong, mature working relationships between senior managers for the City of Gatlinburg and Sevier County were reinforced through compliance with a best practice of establishing a Unified Area Command and supporting the ICS. GPD experienced the dynamics created by an extraordinarily high volume of service calls, continuous request for assistance from police field units, and mutual aid responding agencies from the surrounding area.

The fire surge and intensity created challenges to the GPD as incoming calls for service and demands from the police field units exceeded the capacity. With calls mounting and cross dispatching being the norm, resources were being directed in a reactive environment (focusing on the most threatening issues). Limited radio channel capacity created numerous busy signals for officers in the field and the EOC. The communications staff members were eventually consumed by the volume of activity involving the displacement of communications from the GPD to the second established site of the EOC.

Due to the emergency relocation of the EOC, as well as the high volume of incoming telephone and radio calls, the continuity of operations was adversely affected. Compounding the adversity was the necessity to deploy all resources to the field, thus minimizing the availability of support staff to complete the re-call of off-duty officers and manage the staging area for incoming mutual aid responding agencies. Additionally, insufficient actionable

intelligence on the firestorm movement and dynamics resulted in limited situational awareness.

Although police field units were actively engaged in removing fire debris from the roadways, evacuation efforts were hampered by the lack of visibility and unpredictable movement of the fire. Self-evacuation by citizens and visitors helped accelerate the efforts; however, some residents/visitors consumed valuable time by refusing to evacuate and ignoring the multiple pleas from police officers warning of the impending perils. When visibility decreased, in some cases to just a few feet, police personnel utilized their professional training and without regard for their individual safety conducted evacuations of many areas using door-to-door verifications. Limited EOC space, staffing, radio inadequacies, ability to assemble actionable intelligence, and the sheer demand for assistance created a very difficult situation for those involved. Persistent focus on coordination of efforts in a very demanding environment contributed to successes experienced, although the event was not without tragedy.

GPD policy states: *The Chain of Command descends from the Gatlinburg Chief of Police and ascends from the lowest rank. The chain of command shall be strictly adhered to and be respected in the delegation of authority and all inter-departmental communications. During emergencies or when other exceptional situations occur, the supervisor on duty will command the situation until the end, unless he or she is relieved by a higher command.* This policy is consistent with the best practices for law enforcement established by the Commission on Accreditation for Law Enforcement Agencies and Tennessee Law Enforcement Accreditation.

It is the policy for all GPD officers to have FEMA NIMS Certifications. The GPD has a policy regarding evacuations and emergency natural disasters. These policies are available for reading and review by all employees of the GPD. Emergency plans and operations are reviewed by staff during regular supervisor meetings. This level of commitment and proficiency to NIMS Certification and police and fire proficiency in ICS creates a uniform command and coordination between the police and fire departments of Gatlinburg during significant public safety responses.

Because this was a multi-agency and multi-jurisdictional incident, a UC structure was established within the EOC. The UC allowed all agencies with responsibility for the incident to manage the emergency by establishing a common set of incident objectives and strategies. Personnel from the GFD, GPD, and others (e.g., SCSO) worked cooperatively to advance an IAP that addressed the critical tactical objectives for what needed to be done. This was accomplished without losing or abdicating agency authority, responsibility, or accountability. The GFC was in charge of firefighting and rescue operations once the GSMNP wildfire entered into the city. At the direction of the GFC, evacuation orders were communicated and were coordinated and carried out by the GPD and other agencies.

Note that when the GFC initially issued the evacuation notice there was no differentiation given as to voluntary or mandatory. The GSMNP Fire Management Officer (FMO) states in the *Chimney Tops 2 Firestorm Review Report* that he recommended starting voluntary

evacuations of the Mynatt Park Subdivision area. The FMO further states that he did this because he believed it would be the first area to receive the wildfire if it made it out of the park. Therefore, when the GPD was initially implementing the evacuation, they communicated the evacuations as voluntary. In addition, the initial announcements made by the PIO indicated that the evacuations were voluntary. At that time, the GFC also designated the initial evacuations as voluntary.

Before leaving the scene at Mynatt Park, the GPC met with the Assistant GPC and clarified areas of evacuation with the Shift Supervisor Sergeant #1. The GPC also notified the department dispatch that an EOC was being established at the GFD headquarters. In addition, the GPC initiated the first re-call of off-duty police personnel to assist in voluntary evacuations.

The GPC stated that during the GSMNP firestorm, the span of control was very demanding with everyone assigned to calls for service and evacuation, resulting in no or very limited administrative staff to support the functions of the EOC. As part of the UC, the police command staff in the EOC and GPD dispatch were both assigning tasks to officers in the field to accommodate the demand for assistance and execute evacuations.

Sevier County has a radio infrastructure utilized by most Sevier County agencies (i.e., only Pigeon Forge Police Department is on a different radio system) with each agency having its own designated channel. All communication between local public safety agencies and the GSMNP personnel is through the GPD dispatch, telephone, or the Sevier County 911 Emergency Center dispatchers. The GPD radio system is provided by Land Air Communications. The Land Air system is a digital radio trunk system with UHF. The GPD computer-aided dispatch system is provided by MM Micro out of Maryville, Tennessee. Note that GFD and GPD and other Sevier County fire and law enforcement departments could communicate with each other via portable radio.

Normal operation of the GPD Communications Center consists of one or two dispatchers on duty per shift, depending on the anticipated calls for service load. The GPD dispatchers serve as the internal “Private Branch Exchange” (PBX) operators, who route incoming calls to the correct person or office, for all internal calls and calls received on the seven-digit, non-emergency phone lines. Their primary duty is to dispatch all calls for service (received from the Sevier County 911 Emergency Center and seven-digit, non-emergency phone lines) to all GPD patrol and investigative personnel. Dispatchers are also responsible for maintaining radio communication with all on-duty officers in the patrol and investigative units, as well as all administrative radio communications. On a normal day of activity, the GPD receives an average of more than 150 calls per day on in-house and 911 lines. During the first day of the Chimney Tops 2 firestorm entering the city, the GPD received more than 600 phone calls.

The radio traffic and transmissions for all City of Gatlinburg departments was extremely heavy during the Chimney Tops 2 firestorm, resulting in some “talk over” by field units

causing some busy signals. Both the GFD and GPD work off the same digital trunking system as described above.

The situational awareness of the communications staff relied greatly on radio communication from officers and fire department personnel in the field. Command staff was also updating the GPD Communications Center of additional fires and the locations as they were made aware. In addition, communications staff was informed via radio traffic of mandatory and voluntary evacuation areas. Communications staff, although overwhelmed at times (i.e., because of radio channel saturation, incoming phone calls, relaying information, and recording information), was answering phones as quickly as possible and addressing questions from callers using the information they had at that time. This was not a flawless effort, although information provided to callers was reliable to the knowledge of the individual dispatchers.

There were no communications issues or points of failure within the “hardware” side of the radio system. The radio system handled more than 29,000 transmissions in the first 24 hours of the event with no failures; however, there were some busy signals experienced. The radio system operated as designed, but the design is not sufficient to manage the volume experienced during the firestorm. Because the phone lines are limited in number, there were times the phone lines were inoperable or busy. There was little information sharing to the communications center via telephone as a result. Updates that were given to the communications staff were done so directly by the radio communications of officers and/or command staff. Dispatchers and support staff in the GPD Communications Center were provided direct updates from officers in the field responding to calls for assistance and their own visual experiences encountered in rescue efforts. Officers in the field were vigilant in reporting their locations, conditions, and challenges throughout the Chimney Tops 2 firestorm.

There is a standing mutual aid agreement with other state agencies created by Tennessee Code Annotated (TCA) Section 12-9-101. There is also an agreement for mutual aid with the National Park Service (NPS) for law enforcement services, dispatch (12:00 a.m. until 7:00 a.m.), and National Crime Information Center/Tennessee Information Enforcement System (NCIC/TIES). Public safety agencies in Sevier County, as well as surrounding counties, volunteered assistance and provided manpower and vehicles for evacuation efforts.

City officials including the city manager and county mayor were present in the City of Gatlinburg EOC, joining the GPC and the GFC, Trolley Department, Street Department, and others during the Chimney Tops 2 firestorm. The GFC also had an assistant chief and GFD B-shift Captain assisting him and eventually a State Type 3 IMT. GSMNP representatives were also present in the EOC.

The Gatlinburg City Attorney was notified, and prepared a curfew proclamation. The curfew proclamation was in effect from 6:00 p.m., November 29, until the “proclamation” was rescinded on December 9, 2016.

Implementing the evacuation issued by the GFC for Mynatt Park began as a voluntary evacuation after the GSMNP personnel indicated that the fire had spotted to Bullhead and was potentially in the Twin Creeks area. Radio calls from the patrol division personnel, City Departments (Street, Water/Utility, etc.), and resident/visitor reports played a large part in directing resources and implementing additional evacuations (e.g., Turkey Nest and Savage Garden).

Implementing mandatory evacuations was based on the rapid growth and intensity of the wildfire progression and field information on fire dynamics, power lines downed, spot fires, trees downed, roads blocked by debris, and other challenges being experienced by patrol units and fire department personnel in the field. However, there was no specific information or communication from the GSMNP or their representative in the EOC regarding the potential for fire to move from the GSMNP into the western portion of the City of Gatlinburg.

Prior to the mandatory evacuation order issued for the Ski Mountain area, which occurred just after 8:00 p.m. on November 28, the GPD, SCSO, and firefighters were already in the area performing evacuations. However, evacuations could not be fully executed by these first responders in certain areas because their efforts were blocked by fire conditions and multiple downed trees and power lines. The expanding firestorm, difficult terrain, poor visibility, and heavy smoke created extreme threats to the police and fire personnel attempting to execute the evacuation effort. Police-issued protective gear does not combat the temperatures from the fires or offer respiratory protection to provide relief from the heavy smoke. Filter masks were made available for all personnel, but they provided limited protection.

Law Enforcement – What Worked Well?

1. In the EOC, the Gatlinburg City Manager, GPD, Sevier County EMA, SCSO, GFD, and the IC personnel maintained continuous interaction to keep up with departments' activities and understand what others were doing.
2. Although extremely busy from the sheer scope and scale of the Chimney Tops 2 firestorm, radio communications remained steadfast in supporting the overall efforts to combat the wildfire and rescue citizens and visitors in Gatlinburg and the adjacent areas of unincorporated Sevier County. Specifically, the radio system functioned as designed, handling a large volume of transmissions with no hardware failures. However, significant talk over busy signals occurred during the height of the firestorm.
3. Long-term and mature working relationships helped to provide efficient communication and understanding among departments during the intense working conditions.
4. The ICS proved reliable in its functional areas, consistent with NIMS standards.

Law Enforcement – Issues

1. The incoming calls and radio traffic created a situation in the GPD Communications Center where the call volume exceeded the capacity to respond, resulting in extreme stress on the personnel and equipment functionality. (There are two dispatch consoles in the GPD initially staffed by two dispatchers, and expansion was not possible due to the limited number of existing consoles.) This complication resulted in call stacking, cross dispatching, and potential delayed actions in the communications center and in police responses.
2. There were extended periods where multiple officers attempted to communicate at the same time, which is not possible with the radio system using a single channel. (Channel saturation exceeded 100 percent multiple times.)
3. The volume of the calls also created a situation where the log-in process could not keep up with the incoming and outgoing calls for service and self-initiated activities. In some instances, calls initiated within the EOC and from other agencies necessitated immediate dispatching but were not always documented. These calls may have been recorded and documented at a future time. However, once the recorder was lost, some calls were never documented.
4. The GPD experienced some difficulties in communication between the EOC and GPD dispatch (e.g., cell phone service was intermittent, and radio communication was so saturated that at times it was not audible or understandable).
5. Limitations of the computer-aided dispatch system resulted in some calls having to be manually logged and entered into the computer later. This created periodic delays in dispatching of calls and active monitoring of call status or changes during this high volume call period.
6. Incoming calls were frequently dropped, interrupting communications because of line failure from high winds and fire intensity.
7. The heavy volume of incoming calls and radio traffic created a situation in the communications center that made the re-call of off-duty officers time consuming. The logistical problem added to the challenge of an already overburdened dispatch staff. The totality of the demand on the dispatchers resulted in delay of officers receiving initial notices of the “call back.” Then when officers attempted to report, they were informed their traffic routes to the City of Gatlinburg were blocked, creating additional delays.
 - a. There were not sufficient numbers of portable GPD radios to issue to mutual aid assisting agencies.
 - b. Lack of a fusion center to receive incoming field assessments contributed to the inability to create actionable intelligence for combatting the Chimney Tops 2

firestorm, rescuing stranded people from multiple fire scenes, and performing evacuation duties as needed.

8. Situational awareness for the EOC regarding the extent and potential progression of the Chimney Tops 2 firestorm on the afternoon and evening of November 28 was limited to information from the GSMNP, NWS, fire modeling by Pigeon Forge Fire Department, and reporting from public safety personnel and residents/visitors in their respective locations.
9. There was limited information to support appropriate fusion into an actionable, coherent picture to support forward looking decisions regarding the progression of the fire from the GSMNP into the west side of the City of Gatlinburg.
10. The fusion of the available information was limited to establishing where immediate responses were required (e.g., reacting to a person calling in for assistance).
11. Throughout the Chimney Tops 2 firestorm, the tactical demand in the field minimized available staff who could be used to capture administrative activities or events, resulting in limited record keeping during the first day at the EOC.
12. Initially, the “staging” of law enforcement officers responding to the mutual aid request was not always directed to one staging area, hindering the ability to track or account for all personnel and location. This issue resulted in assignment of responding officers and vehicles to an alternative staging area closer to field command.
13. At the original City of Gatlinburg EOC location (the GFD), there was so much activity creating considerable noise levels that personnel had to leave the EOC to talk on a radio or communicate by cell phone.
14. When the EOC was moved, there was a general lack of continuous, uninterrupted power sources in the new location.
15. Insufficient staffing to coordinate transition of mutual aid responding police staff from staging to field assignments limited the number of law enforcement staff assigned to the field. However, this issue did not result in any delay in executing evacuations by the joint efforts of the GPD and GFD personnel.
16. Interoperability of radio communications between GPD and mutual aid responding agencies forced all communications to go through the Gatlinburg Dispatch Center and later through the Sevier County 911 Emergency Communications Center.
17. Insufficient designated space for a City of Gatlinburg EOC resulted in the initial EOC location becoming extremely crowded and noisy.
18. Insufficient support staff to assist in documenting activities, critical incidents, changing information, and the fusion of such information to provide decision makers with key information put an additional burden on the staff during the height of the fires.

19. Planning for future operational periods at the EOC on November 28 was ad hoc and was not formalized until the early morning of November 29.
20. Insufficient warning by the GSMNP personnel contributed to a dramatically reduced time frame to conduct needed evacuations.
21. In some hotels and multi-family residences, police officers had to go door-to-door to effect evacuations, which delayed the overall evacuation process.

Law Enforcement – Lessons Learned

1. Large-scale emergencies can overload the capacity and limit the capabilities of the GPD Communications Center, the City of Gatlinburg EOC, and support staff.
2. The record of calls for service can be lost without proper continuous recording, which is currently vulnerable to power outages.
3. An uninterrupted power source for emergency operations (e.g., police, fire, and EOC) is critical for maintaining key services.
4. Delays in the re-call of off-duty personnel, including extra dispatch personnel, can be difficult to overcome in deteriorating situations and assistance should be requested as early as possible.
5. Policies and practices are needed to manage catastrophic events that create continuous high call volumes exceeding GPD human, equipment, and technology capacity. Realignment of assignments, sphere of supervision, and specific roles of staff involved in personnel re-calls, continuous staffing, and relief challenges will need to be considered. Although policies and supporting practices were in place, catastrophic events create extraordinary demands, challenging the ability to manage high volumes of calls for assistance, field-initiated activities, and support functions within traditional spans of control.
6. For evacuation during a wildfire, extensive coordination is required with surrounding communities regarding options and anticipated time requirements for functioning egress routes.
7. Extreme emergencies create the need for technology and appropriate staffing to support the City of Gatlinburg EOC in managing incoming/outgoing telephone communications with citizens and all responders.
8. Extreme emergencies can create the need for complex staging with sufficient areas for human and equipment assets and with planning to manage the logistical requirements.
9. Extreme emergencies can create the need for robust evacuation plans around a wide range of crisis scenarios.

10. Some hotel and multi-family residences, even though they were fire-code compliant, did not have an emergency communication system to alert occupants via audible, visual, or textual means of the need to evacuate.
11. Police officers feel a heightened sense of duty to take action when confronted with a life and death situation from quickly advancing wildland fire. This situation requires appropriate protective equipment that enhances their ability to safely provide rescue operations.

Law Enforcement – Recommendations

See Conclusions Section

Perspective – Donald Bart Stinnett

By design, the emergency management functions, in concert with the command staff in the EOC and consistent with the NIMS, to provide overall support and assistance to the Incident Commander. Throughout events of the Chimney Tops 2 firestorm, the emergency management director and staff worked to provide the EOC and IC with needed resources and information to assist with the response, process planning, and the recovery phases of the crisis. The goal of the Sevier County EMA was to provide administrative support and guidance to the Gatlinburg EOC and key decision makers on obtaining resources and assets to mitigate crisis and facilitate recovery. As with all emergency events, there is always a mix of issues, lessons learned, and outcomes. This was true in the worst firestorm in history for the State of Tennessee and the Eastern United States. Decisions made during the Chimney Tops 2 firestorm were made in a crisis environment and based on the most accurate available information during the time sequence of the actual operational decision.

The coordination of resources and cooperation among numerous first responders from all across the state provided an effective force. The face-to-face communication, utilizing the Unified Area Command, allowed for quicker response along with limiting the possibility for confusion among agencies and first responders. The Incident Commander was faced with unprecedented problems during the crisis, including loss of phone, data, and power services; weather (wind) that was more severe than forecasted; and the relocation of the EOC at the height of the operation.

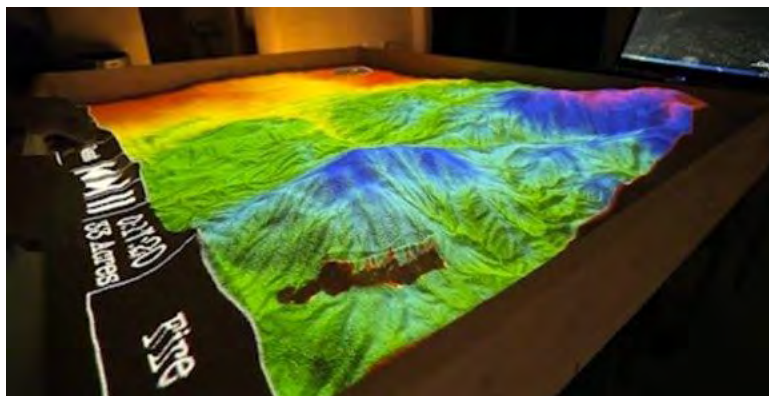
In addition to providing introductory information, this section identifies actions that worked well, issues, and lessons learned. These items guided the development of recommendations, revealed actions already taken, and identified best practices (located in the Conclusions Section). The implementation of recommendations along with the actions already taken and continuance of the identified best practices will provide enhanced methods for emergency management of major disasters in the future.

Emergency Management – Situation

At noon on November 28, the Sevier County Wildland Fire Task Force was activated and a representative of Sevier County EMA was dispatched to the EOC to assist the Incident Commander and EOC staff with resource request. While no formal plan existed, the common practice is to have an IMT provide relief to the command EOC staff.

An emergency shelter was opened in Gatlinburg at the request of the Incident Commander at 1:30 p.m. to provide a relief location for residents and visitors in the event they decided to relocate because of the amount of smoke in the area. At 4:30 p.m., a member of the Pigeon Forge Fire Department arrived at the EOC to conduct a modeling of the fire coming from Cherokee Orchard with the SIMTABLE, a software application utilized to estimate fire progression and behavior. At that time and using a fire starting at Cherokee Orchard, the modeling put the estimate of the fire reaching the City of Gatlinburg at about 19 hours.

SIMTABLE Application Utilized to Estimate Fire Progression



At 5:50 p.m., key City of Gatlinburg officials, EMA staff, and representatives from the GSMNP went to the Twin Creeks area to observe the fire. There it was determined that the fire was approximately 1.5 miles outside the City of Gatlinburg. At 6:00 p.m., a power disruption in the area caused the SIMTABLE to fail. The Pigeon Forge firefighters deployed to assist the GFD were called back to Pigeon Forge to begin fire suppression activities within their response area. The EOC staff and the Incident Commander continued to make preparations and gather additional information that would allow them to make the most accurate decisions for the impending firestorm and what would come throughout the rest of the night.

At approximately 5:00 p.m., the SCEMD requested the HAM radio operators and the District II mobile command communications vehicle as a preemptive measure. Shortly after 8:30 p.m., the GFC directed the SCEMD, who was in contact with a TEMA representative via the telephone, to request that TEMA issue an IPAWS message to assist in the evacuation of Gatlinburg and other affected areas. Several hours later, TEMA used IPAWS notification to request that people stay off their cell phones. At approximately 2:00 a.m. on November 29, the SCEMD requested a Type 3 IMT through the TEMA representative to arrive at 6:00 p.m. for the next operational period.

Emergency Management – What Worked Well?

1. Great inter/intra agencies coordination and cooperation supported efficient and effective decision making and execution among 225 different agencies and 445 apparatus and 3,535 individual responders. Executive leadership (city and county) governments worked in unison throughout the incident.
2. The coordination of local and state resources requested that the IC provide prompt mobilization of the needed resources.
3. The Unified Area Command system supported face-to-face communication that resulted in efficient and effective communication.

Emergency Management – Issues

1. Loss of phone service, data, and power created communications challenges.
2. Around 3:30 p.m. on November 28, in a regular update from the NWS, they stated 20- to 40-mph winds would not move into the area until the 10:00 p.m. to midnight hours. With that information, at about 4:30 p.m., a fire model estimated the wildfire moving at a slow pace and not reaching the city limits for another 19 hours. While that result was questioned, this estimate, combined with a lack of information from the GSMNP personnel that a fire was also coming toward Gatlinburg from the Sugarlands area, did support the initial response strategy.
3. The fire model (SIMTABLE) and input data used has the following limitations:
 - a. It does not account for winds greater than 60 mph.
 - b. It only models the ground progression of the fire and does not address spotting by ember throw/air transport.
 - c. The application performed on the afternoon of November 28 was based on a specific initial spot for fire ignition rather than a fire front.
 - d. It is dependent on a power source for running the table for at least one hour.
4. The movement of the fire approaching the original designated EOC forced it to relocate where it did not have an uninterrupted power source.
5. Due to the transient population and emergency conditions, it was difficult to communicate with all individuals and locations.

Emergency Management – Lessons Learned

1. Alternatives need to be considered to any weather prediction.
2. Expect difficulty in communicating with the transient population during urgent emergency situations.
3. It is imperative to follow NIMS principles along with having face-to-face communications in the EOC with all major decision makers.

4. Continue to regard fire modeling during active wildland fire response as relevant information but not the sole source of decision making.
5. There is an ongoing need for a trained fire modeling resource to be included in a Sevier County IMT.
6. There is a need for a Sevier County Type 3 IMT. Fires that do not immediately rise to the level of needing state or federal resources could benefit from this improved management at a local level.

Emergency Management – Recommendations

See Conclusions Section



OPERATIONS

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Perspective – Mark J. Finucane

The command staff and GFD firefighters were confronted with extremely dangerous conditions from a fast-moving, wind-driven wildfire originating in the GSMNP and advancing towards and entering the City of Gatlinburg. Strong, erratic winds pushed the flames in different directions causing multiple fire fronts. The progressing fire fronts moved into the city threatening life and property. Intense flames could be seen raging in the surrounding areas.

Gatlinburg firefighters and commanders moved quickly to various locations to assess and control the wildfire. Based on known information, resources were strategically placed at the most critically vulnerable areas. To bridge the communications gap, firefighters, police officers, and public works personnel worked together effecting door-to-door evacuations from several residential and multi-family developments. Also, firefighters, working in extremely poor visibility conditions established protective zones around structures. This wildfire was problematic due to the high winds that carried sparks and firebrands ahead of the main fire, causing spot fires in multiple locations. The firestorm at one point was bearing down on a crew's location, and they had to take immediate measures to escape to a safe zone to allow the fire to pass over them. Hazardous circumstances surrounded fire control and rescue operations, which were complicated and compounded by communication glitches, blocked ingress and egress routes due to downed trees and power lines, encumbered radio communications, and lost cellular and GPS service. The professionalism, dedication, and bravery shown by the first responders under such dangerous and adverse conditions should be commended.

In addition to providing introductory information, this section identifies actions that worked well, issues, and lessons learned. These items guided the development of recommendations, revealed actions already taken, and identified best practices (located in the Conclusions Section). The evolution of these outcomes focused on (1) analysis of emergency communication/dispatch data, (2) interviews with fire and law enforcement personnel from the City of Gatlinburg and others directly involved in the operations of the incident, (3) weather data, (4) incident documentation, and (5) charts and other resources. Supplying first responders with real-time situational awareness for a faster, better-informed, and safer response is a key finding. The implementation of recommendations along with the actions already taken and continuance of the identified best practices will advance

wildland firefighting operations by identifying and managing risks in a proactive manner.

Fire – Situation

NIMS principles were utilized throughout the incident by all agencies. In addition, portions of existing emergency operations plans (Gatlinburg and Sevier County) were referenced during the incident (e.g., wildland fire and evacuation).

At 11:44 a.m. on November 28, GSMNP staff made a request to GFD to respond to the Twin Creeks area due to the potential fire threat. (GSMNP requesting GFD to search for fires in the National Park is unusual.) The GFD dispatched a tanker and a Sevier County Wildland Fire Task Force Unit. The first officer to arrive, a lieutenant, established the Twin Creeks IC because there was no evidence, physical or otherwise, that the GSMNP personnel had done so. On arrival, the Incident Commander's assessment found poor visibility due to heavy smoke and ash and sustained winds of approximately 10 to 20 mph. At this time, no visible flame front or spot fires were seen. The main focus of the GFD was to assess and look for possible spot fires believed to have developed and to conduct "structural protection" operations by removing brush and leaves away from structures with rakes and blowers. Based on the reported conditions by Twin Creeks IC, it was deemed unsafe to enter into the forest area beyond line of sight. GSMNP officials and firefighting personnel (hotshots) were present within Twin Creeks IC. The GFD

C-shift Captain requested mutual aid from surrounding departments to assist Twin Creeks IC. Additional fire units were sent to Mynatt Park to evaluate structures and to remedy any conditions that would facilitate the spread of fire if it reached the community.

GFC ordered an evacuation of the Mynatt Park community. This order was carried out by the GPD as a voluntary evacuation. The GPD went door-to-door and advised the residents that they needed to leave because of the threat that the fire imposed. This occurred in multiple areas in the city throughout the evening. This was a proactive measure, and it was initiated hours before any fire existed within the city limits of Gatlinburg. Residents who were evacuating were advised that the Gatlinburg Community Center had been designated as an evacuation shelter.

Throughout the afternoon, Sevier County Wildland Fire Task Force Units were continually arriving at the Reagan Drive Fire Station #2. Staging and rehab were established and units were deployed. Approximately 10 to 15 apparatus, consisting of tankers and wildland support vehicles, were initially present.

Once the fire began rapidly progressing into certain areas of the city without any forewarning, crews continued to go door-to-door advising the public of the evacuation order. The impetus was the actual presence of fire based on direct observation or dispatch advising on-scene personnel of a report of fire in an area. Crews found that some citizens had already vacated their homes, some followed the evacuation orders immediately and without question, and others were belligerent and refused to evacuate (instead retreating into their structure).

Fire and Smoke in Gatlinburg

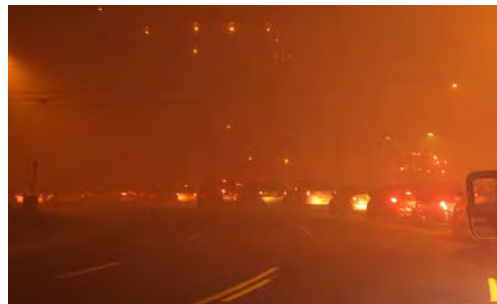


During their firefighting efforts, the Twin Creeks IC was advised of a spot fire between their current position and their egress route. The Twin Creeks IC then notified the GFD C-shift Captain of an alternate location where his crew could continue operations and take shelter if needed. This was achieved by the crews relocating to a safety zone until the fire front passed by/over them.

County and city officials later learned (after the incident) that, at about 5:58 p.m., GSMNP personnel locked the gates at entrances to the Gatlinburg Bypass in GSMNP. This blocked an evacuation route as well as restricted inbound access from responding mutual aid public safety departments. The EOC was not consulted nor advised of the decision to close the National Park gates.

Traffic flow by evacuees and inbound mutual aid assistance created congestion and confusion in some cases; however, police and fire personnel made appropriate decisions to minimize problems to the best of their abilities. Inbound mutual aid fire departments were guided to the designated staging area for assignments and deployment. All assignments from the EOC, IC, or the on-scene commanders were based on the estimated speed and intensity of fire spread and retreat options/routes for emergency responders. Hundreds of these tactical judgments were made throughout the Chimney Tops 2 firestorm.

Evacuation Traffic



Starting on November 29, fire intensity was decreasing, and search, rescue, and recovery operations became the focal point of the IAPs developed and communicated by the State Type 3 IMT. By 7:00 a.m. on November 29, adequate support resources were arriving from emergency services departments in both Tennessee and in North Carolina (the majority being

from Cherokee). This period of time also involved ongoing firefighting operations with some new fires being discovered.

From November 30 through the close of operations on December 5, first responders continued to perform: search and rescue, recovery, damage assessment, hazard mitigation, loss control, and fire overhaul operations in addition to answering the normal calls for service and caring for shelter occupants.

The magnitude of the mutual aid assistance resulted in a total of 3,535 first responders bringing a total of 445 apparatus. This response was the largest ever in the State of Tennessee, utilizing resources from 50 counties and over 225 agencies.

Fire – What Worked Well?

1. Despite the unprecedented conditions of extreme drought, abundance of fuel, and hurricane force winds creating an extremely dangerous and volatile environment, fire and police crews frequently acted in “no-go situations,” disregarding the risk to their personnel safety. Fortunately only two injuries (which were minor) were reported by first responders throughout the fire. Significant fatigue was the most frequent challenge as crews worked intensely to combat the fire, execute rescues, and conduct evacuations without the benefit of rest or recuperation periods. Training, situational awareness, and communications contributed to the low number of injuries among responders. As personnel were given assignments, they were made aware of special known hazards they might encounter and to use due diligence in executing their assignment in a safe manner.
2. While it appears that this fire was unstoppable regardless of the number of first responders, the mutual aid request for first responders worked satisfactorily according to mutual aid activation protocol.
3. Staging logistics at the Reagan Drive Fire Station #2 were successful because of the sufficient parking area and centralized location. Station #2 apparatus bay was utilized for storage of equipment and set up for responder rehabilitation. Station #2 is equipped with an emergency generator to assist during power interruptions.
4. Tracking the status of resources per the NIMS training proved valuable in accurately deploying personnel and equipment.
5. It is unfortunate that any loss of life or injury occurred in this disaster. However, it should be noted that the heroic efforts of the first responders under extremely challenging conditions (mountainous terrain, limited visibility, and fractured communications, etc.) saved many lives. There were multiple calls for help that required first responders to rescue individuals from immediately dangerous conditions, burning structures, elevators, and along the roadside.
6. Considering that the City of Gatlinburg and adjacent areas had a limited amount of advanced notification concerning the status and potential path of the wildfires, it is

commendable that ultimately over 14,000 residents and visitors were able to evacuate the area.

7. Beginning on November 29, ongoing logistical support of first responders with food, water, and other rehabilitation services allowed for continuing well-staffed operations.
8. Beginning on November 29, ongoing logistical support of equipment including fueling, minor repairs, and maintenance provided by the Gatlinburg City Service Center helped ensure sufficient equipment could be fielded as needed.
9. Beginning on November 29, clearing roads of trees, brush, power lines, and other obstructions by Gatlinburg Street Department, Gatlinburg Water Utility, Sevier County Electric System, and the Tennessee Department of Transportation quickly provided access to operational areas by first responders.
10. Following NFPA Standards related to apparatus equipment procurement helped to ensure capability and functionality.
11. Standardization of firefighting equipment and the uniform storage of apparatus enhanced firefighter safety and efficiency by not having to adjust to using differing or unfamiliar equipment and allowed diverse units to work effectively together.

Fire – Issues

1. Severe weather, high winds, mountainous terrain, numerous power outages, cellular outages, poor visibility, landline outages, internet outages, rapid rate of fire spread, and blocked roads due to fallen trees and downed power lines all contributed to preventing access to certain areas for notifications, firefighting, and rescue operations.
2. Radio communications had challenges in certain areas of the park (e.g., Twin Creeks area) due to the inherent “dead spots” that existed prior to the fires and were made worse by mountainous terrain, heavy smoke, and high wind noise.
3. Water system pump stations in a few areas were either damaged by fire or lost power, reducing either volume and/or pressure to some hydrants. This hampered the efficiency of some firefighting operations.
4. More timely and accurate communications from the GSMNP personnel would have helped the city to prepare sooner for what was a catastrophic event. Using the limited information from the NWS and the GSMNP personnel, the predicted speed and severity of the impending firestorm was inaccurate. In retrospect, firefighting and evacuation plans would likely have been better directed and accelerated if more accurate fire location data from the GSMNP personnel and NWS wind data had been used to model fire progression.
5. During the rapid fire growth, several crews had to retreat due to imminent threats and other crews had egress routes blocked, requiring them to take safety measures and seek shelter in safe zones.

6. During the peak of the explosive fire growth, the resources available to assist GFD were called back to their own community due to the presence of fire threats in the areas of: Pigeon Forge, Pittman Center, and Wears Valley. This resulted in a decrease in available firefighting personnel and apparatus. This decrease lasted for several hours and was only remedied as state-wide mutual aid resources arrived at the staging area and became available for deployment.
7. GFD answers an average of 150 calls per year for service within the GSMNP, ranging from fire to rescue to EMS with no funding or reimbursement from the GSMNP.
8. Volunteer departments constitute about three-quarters of the fire department in Sevier County, which limited the availability of quick response from on-duty firefighters.
9. During the wildfire, the GSMNP could not communicate with local and regional fire response agencies by radio.
10. The amount of GFD wildland firefighting equipment that met NFPA Standards was limited in part due to minimal funding from the GSMNP to pay for mutual aid requests.
11. There were gaps between the National Park Fire Management Personnel and local and state agencies regarding the interoperability of communications equipment, establishment of UC, information sharing, and public notification of threats from rapidly moving wildfires.
12. There were substantial fuel accumulations along the Sevier County boundary of the park.
13. The Unified Area Command had to abandon the initial EOC, and the alternate EOC experienced a loss of power and did not have backup power.
14. City and county officials later learned, according to GSMNP staff Chronology of Events, the 441 (the Spur) northbound traffic was shut down due to presence of fire.

Fire – Lessons Learned

1. Wildland fires in the eastern mountains of the United States under similar drought and severe weather conditions are largely unpredictable at best, and challenge any existing firefighting capabilities. The occurrence of such an enormous fire will easily exceed the emergency response capacity of the City of Gatlinburg, Sevier County, and the Sevier County Wildland Fire Task Force. It will also likely result in a major loss of homes, businesses, and possibly lives. Significant resources from mutual aid are needed to help mitigate such events.
2. This was a wildland fire with conditions that were never experienced in this jurisdiction, nor in the Eastern United States. The GFD encountered hurricane force winds, multi-flank core fires, and an extremely fast and dangerous advancing fire front. First responder on-scene experiences attest that explosive fire conditions can and do

exist in this region. Up-to-date extensive training of emergency personnel helped ensure best practices were used in firefighting and evacuation.

3. Because the command staff activated and requested multiple layers of mutual aid resources early in the fire event, a more catastrophic outcome was prevented. The layers of incoming resources continued throughout the evening of November 28 and were sustained throughout the duration of 15 operational periods (7 days).
4. Response from volunteer firefighters can be substantially delayed because of availability and traffic situations created by the emergency.
5. Communications with Sevier County Wildland Fire Task Force or mutual aid firefighters is vulnerable to “dead spots” while performing structure protection in the GSMNP.
6. Severe wildfires can result in widespread loss of power, preventing the functioning of water pumps and other critical infrastructure.
7. Pump stations are vulnerable to fire exposure.
8. There is a radio communications gap between the GSMNP personnel and local and regional fire response agencies.
9. Wildland fire responders in the GSMNP may be overwhelmed by a fast-moving wildfire, creating the need for pre-designated wildland fire “safe zones” for responder safety.
10. Having the GFD as a Class 2 organization in the ISO Fire Suppression Rating Schedule helps to ensure firefighting capability.
11. Regular and specialized wildland fire training for GFD and the Sevier County Wildland Fire Task Force helped to ensure firefighting readiness.
12. To maintain wildland firefighting equipment per NFPA Standards, it is important to have funding consistent with the mutual aid provided.
13. The system of resource tracking per NIMS is effective.
14. Following NFPA Standards related to apparatus equipment procurement helped to ensure capability and functionality.
15. Uniformity of configuration of equipment helps to ensure interchangeability of equipment in difficult situations and keeps firefighters from having to adjust to using differing equipment.
16. Training exercises are needed between the National Park Fire Management Personnel and local and state agencies to address gaps in the interoperability of communications equipment, establishment of UC, information sharing, and public notification of threats caused by rapidly moving wildfires.

17. Reductions in fuel accumulations reduce the risk of large, uncontrollable wildfires.

18. Power can be lost to the EOC or IC for an extended period of time during a wildfire.

Fire – Recommendations

See Conclusions Section

Perspective – Phillip E. Keith

The officers of the GPD and deputies from SCSO were severely challenged by the rapidly deteriorating conditions as the firestorm approached and entered the City of Gatlinburg. Communication outages, blocked roads from downed power lines and trees, lost cellular (GPS) service, overloaded radio communications, poor/limited visibility, and rapid fire movement made evacuation efforts increasingly difficult. When considering the added challenge of coordinating the efforts of law enforcement staff and volunteers from multiple organizations, it is admirable how well everyone worked as a cohesive unit.

Officers from the GPD, deputies from the SCSO, and THP worked in a coordinated effort to conduct evacuations. Initial calls for assistance to the SCSO from GPD were both quick and robust, including the deployment of more than 35 deputies to assist in evacuation efforts. Law enforcement officers from responding agencies, with the assistance of local public works and utility organizations cleared roadways to aid in the evacuations. The ability to maintain communications with field units proved to be critical and aided key decisions on evacuation activities. Clearly the mental and physical endurance of law enforcement, while operating under extraordinary circumstances, served as signs of courage and determination to assist those in the path of a horrific firestorm.

Evacuation efforts were hampered by residents who refused to leave or delayed leaving in order to gather personal items. Risking their personal safety, officers often tried multiple times to encourage residents to quickly leave. Even when fire conditions dictated officers immediately leave, they stayed another 10 to 20 minutes to evacuate residents. Further complicating the evacuation effort was the frequent loss of open paths of egress.

Professional relationships with surrounding public safety agencies allowed quicker response by other agencies to assist in Gatlinburg's need for additional personnel. The agencies that quickly responded to the area were essential, and their assistance was much appreciated. Regarding the assistance, the GPC stated, *"It is also noted that not only these professional relationships were a mitigating factor in the response of a lot of these departments, but simply the character of our neighbors and the 'volunteer spirit' of our law enforcement and fire personnel in this state."*

In addition to providing introductory information, this section identifies actions that worked well, issues, and lessons learned. These items guided the development of recommendations, revealed actions already taken, and identified best practices (located in the Conclusions Section). The development of these results focused on (1) detailed logs, vehicle camera video, dispatch records, and other information and (2) interviews with law enforcement personnel from Gatlinburg and Sevier County with some input from other personnel. The implementation of recommendations along with the actions already taken and continuance of the identified best practices will help to further enhance the readiness of law enforcement to meet the challenges of operational needs for any future firestorm or other large-scale emergency.

Law Enforcement – Situation

Being confronted with a scenario that could not be replicated in a training environment, law enforcement officers were challenged by heavy smoke, falling trees, and other fire debris, as well as shifting fire surges without the benefit of protective gear or personal breathing devices. The overwhelmed civilian staff of the GPD could not efficiently call back off-duty officers. This resulted in fewer officers available to assist those

Area on Fire



in the field who were engaged in the evacuation efforts. Even when contact was made with off-duty officers, their ability to respond under emergency situations was limited. The off-duty officers were driving privately owned vehicles with no emergency equipment, which required the officers to first gain access to the GPD headquarters before being deployed to the field. Further compounding the effort to respond, the officers who were called back in encountered fallen trees on the roadways, traffic congestion, and a lack of real-time communications with the Communications Center or the EOC. The lack of available vehicles resulted in significant delays, and required officers doubling up in vehicles. This proved to be crucial when officers transported residents to safe areas, consuming available time to continue evacuations.

In general, all police vehicles and support equipment were utilized and deployed throughout the City of Gatlinburg. The Gatlinburg Street Department assisted with tree and other fire debris removal in areas where evacuation routes were blocked. Volunteer groups brought water and food for the personnel working the incident, as well as for the evacuated persons located at the Red Cross Shelter. Blalock Construction Company from Sevierville provided assistance with a front-end loader to remove trees and fire debris, as well as deliver fuel for vehicles. Sevier County Board of Education and TEMA also provided access to fuel.

GPD personnel tried to make every effort to ensure residents were informed and followed evacuation orders provided throughout the wildfire event. In incidents where residents refused to evacuate their residences, officers advised each individual present of the potential peril from the wildfire. In cases of refusal to evacuate, police or fire personnel made multiple pleas for compliance with the order to evacuate and then moved to the next residence.

Officers engaged in the evacuation efforts utilized loud speakers equipped on all police vehicles to make evacuation announcements and knocked on each door in the accessible areas

under evacuation to verify if the home was occupied. Visibility and breathing were extremely impaired due to the overwhelming amount of smoke from the fires. Hearing was also limited due to high winds and the sound of the fire. Officers were reporting via police radio as evacuations occurred.

In areas not under evacuation orders, law enforcement personnel were primarily responding to specific emergency calls as directed by the EOC, by dispatch, and by other units requesting assistance. As they responded to these calls, they would update the EOC regarding the “as found situation.” Increasingly, the winds were knocking down trees and power lines, preventing access to areas. As some trees were removed, more would fall. As the evening progressed, the air in many areas began to fill with flying embers and resulted in multiple ignitions.

The speed and intensity of the Chimney Tops 2 firestorm created a need and urgency for all law enforcement and firefighting personnel to evacuate and rescue citizens and visitors. Although discussed, exercising arrest powers when citizens refused to evacuate was not deemed an appropriate action, as it would have consumed valuable time that was critically needed to rescue and evacuate others in the path of destruction.

The GPD assisted hundreds of individuals in evacuating to the Gatlinburg Community Center. There were some limited incidents of persons refusing to evacuate, but most occupants were thankful and very cooperative.

The SCSO sent deputies to assist the Gatlinburg Fire and Police during the evacuations. At about 7:00 p.m., a fire was reported on Ski Mountain, about a quarter of a mile from the bottom. Between 7:30 and 8:00 p.m., individuals began making multiple calls for service from both the incorporated and unincorporated portions of Ski Mountain. At about 7:59 p.m., the GFC ordered evacuation from Ski Mountain. Attempts were also made to go into North Chalet Village and Beech Branch, but these areas were mostly inaccessible until early morning on November 29 due to downed trees and power lines. At about 8:15 p.m., Sevier County deputies were ordered to evacuate Ski Mountain as the fire intensity exceeded the capacity of officers and deputies to protect themselves. Against the order, deputies and officers continued their collective efforts to evacuate for another 10 to 20 minutes.

Critical occurrences impacting evacuation efforts included continuous changes in evacuation routing, resulting from shifts in the fire movement, intense heat and smoke, as well as falling trees and other fire debris. In many cases, law enforcement personnel engaged in life-threatening activities in complete contradiction to safety training received. In some cases, delays occurred as residents would not immediately evacuate, gathering personal items or in some cases refusing to evacuate at all. Gaining information in the field was challenging given a number of system failures occurred, including the loss of the GPD communications, insufficient communications consoles, and limited contact with GSMNP personnel.

Following the fury of the firestorm, law enforcement focused on security of Gatlinburg and re-entry.

Law Enforcement – What Worked Well?

1. In accessible areas, officers assigned to go door to door to notify residents of evacuations and in some cases rescuing residents proved to be the most appropriate action by GPD rescuers.
2. Prior to the mutual aid request, prompt assistance was provided by the SCSO, surrounding law enforcement agencies, and THP.
3. Local public works and utility organizations provided field units that worked well in clearing numerous roadways, assisting in some evacuations, and controlling utilities.
4. Communication between GPD officers was well maintained via radio.
5. A quick decision to activate additional manpower alleviated pressure on existing staff, which made evacuations more efficient and provided for timely answering of routine calls for service.
6. Mental and physical endurance of law enforcement officers and civilian staff, while under extraordinary stress and demand, allowed them to function as a team (seasoned officers with years of experience and training, good utilization of the chain of command, self-discipline, and professional judgment and discretion). This minimized confusion or duplication of manpower, and allowed for more efficient evacuation under rapidly deteriorating conditions.
7. Communication among neighbors helped to spread the news and reinforce the urgency of the evacuation notification.

Law Enforcement – Issues

1. Some residents refused to evacuate after being notified by the GPD regarding the voluntary and mandatory evacuations.
2. The most significant issues and challenges were nature related. The strong, extreme winds coupled with the intensity of the wildfire made evacuation much more difficult and elevated the risk to police and fire personnel executing evacuations.
3. Staffing levels during the most intense surges of the wildfire would have benefitted greatly from additional mutual aid assisting law enforcement officers. However, during those periods, numerous issues prevented additional officers from arriving (e.g., roadways were blocked, mutual aid had not been secured with some agencies, dynamics of the fire and weather created a threat intensity never experienced in East Tennessee, and some public safety agencies arriving early to assist were required to return to protect their own jurisdictions as the Chimney Tops 2 firestorm spread).
4. Off-duty officers who were called in encountered heavy traffic and were delayed at times up to 1.5 hours due to driving private vehicles, thus not having emergency lights to navigate the heavy traffic. Once officers arrived at GPD, some were delayed awaiting an available police vehicle because the officers on duty were busy with calls

for service. Officers doubled up two to a car at that time, which decreased the potential number of additional evacuation operations.

5. With downed trees and power lines, as well as fire jumping over roadways and fire spotting, evacuation efforts had to continuously be revised or changed to fit the working environment and maintain some level of safety for the police officers executing the evacuation.
6. Law enforcement personnel performed evacuations and notification functions in the areas that were the most threatened by the fire. However, when the firestorm surge hit, they did not have access to some roadways for evacuations to occur.
7. Due to the volume of calls and the sudden onset of the firestorm, all areas could not be accessed for evacuation.
8. During the Chimney Tops 2 firestorm, the existing vehicle and radio assets (channels, dispatchers, and consoles) were insufficient, creating delays in responses to citizen request for assistance and limiting the radio communications with the GPD Communications Center and the EOC.
9. Downed trees tangled in power lines created impassable barriers on roadways.
10. Residents spent considerable time gathering items instead of evacuating in a time of immediate danger.
11. Because of the space limitations of patrol cars that allowed seating for only two or three citizens, substantial officer resources were often consumed transporting citizens to the evacuation center.
12. Some older hotels did not have a centralized fire alarm system, which required officers to conduct door-to-door evacuations.
13. Business personnel with critical time interests were allowed exceptions to the evacuation order, which exposed the need for organized re-entry processes.
14. There were difficulties in controlling re-entry for specially authorized individuals because the system was developed on an ad hoc basis and law enforcement was not always aware of changes to the ad hoc process.
15. Some individuals struggled with which egress route to take.
16. Police personnel encountered wildland fire situations where they needed personal protective equipment (PPE) while performing evacuation and other law enforcement activities.
17. The GSMNP staff closed access to GSMNP roads that were potential key egress routes with no communication to the EOC.

Law Enforcement – Lessons Learned

1. Residents and visitors who ignore law enforcement notifications of voluntary or mandatory evacuations can create additional hazards and threats to the officers and other residents and visitors. Disregarding evacuation pleas from police and fire personnel slows the evacuation, increases the threat level to public safety professionals attempting to safeguard citizens, and may contribute to further losses experienced during the catastrophic wildfire.
2. Some citizens may not understand the risk of remaining after a voluntary or mandatory evacuation has been issued and may become non-compliant, which will require future attention to remove or arrest them for their own safety.
3. A full-scale door-to-door evacuation of every street, hotel, condo, and/or residence in the City of Gatlinburg could require an extended period of time to completely execute depending on the number of visitors present. Mandatory evacuations require more time for public safety personnel to search each residence and business. After notification, unknown dynamics may impact the amount of time available for citizens to evacuate.
4. While it is difficult to anticipate the available routes for evacuation in a future emergency, portable signs and additional signage could be helpful in marking roads and evacuation routes selected during such events.
5. Evacuation of the entire community would be more successful with timely evacuation notices coupled with a mass notification system.
6. Using police cars to transport evacuees is less efficient than specifying a drop-off point and then transferring them to larger vehicles with the capacity to transport more individuals.
7. Emergencies may be regional rather than limited to a city or a county, which can place a severe strain on the timeliness and effectiveness of mutual aid requests.
8. Knowledge of terrain is critical to work safely and efficiently in a fire-affected area.
9. Police personnel may encounter wildland fire situations where they need PPE (breathing protection, clothing, etc.) available in the police vehicles to perform evacuation and other law enforcement activities during a wildfire.
10. Police personnel may need chain saws to help manage the hazards that could result from extreme wind situations.
11. Decision makers in the EOC need up-to-date mapping of critical information (911 calls, fire progression, documentation of any refusals, locations of citizens with known special needs, etc.).
12. Wildland fires can cause a loss of all radio and phone capabilities resulting in the need for satellite phone capabilities.

13. Evacuation of residential and commercial areas creates the need for a detailed plan for organized re-entry.
14. Personnel from mutual aid responding agencies often have a lack of understanding of the terrain.
15. The agreements of the GSMNP and the surrounding communities should be expanded/clarified to maintain traffic on GSMNP roads, which may be key egress routes during an emergency.

Law Enforcement – Recommendations

See Conclusions Section

Perspective – Donald Bart Stinnett

The emergency management function includes damage assessment and providing data and information for decision makers, first responders, recovery personnel, TEMA, and FEMA.

On December 1, the emergency management office provided an interactive damage assessment map for property owners and other interested parties to view online to determine the extent of damage to their property. The Geographic Information System (GIS) maps were utilized by first responders who were tasked with search, rescue, recovery, damage assessment, and fire suppression assessments. Task execution was difficult for a number of reasons—no cell phone coverage; GPS was non-operational; and road signs had melted, making the location and identification process difficult at best.

The emergency management office worked alongside the American Red Cross in managing shelters that provided medical and pharmacy needs of the residents. At times, the shelters experienced multiple challenges and required additional resources.

Emergency management operations had several successes. The District II mobile command communications vehicle provided phone and electricity during the loss of utilities. The cell phone company provided portable communication towers, allowing limited cell and data usage. The GIS team was a valuable resource, providing maps that were utilized in the damage assessment process and in obtaining a FEMA Presidential Disaster Declaration. While GIS is important, the need for printed maps is critical to the overall operation.

Recommendations include the need for continued networking among individuals and groups that provide emergency and recovery services. Such networking will create stronger personal relationships among emergency management private and professional organizations. GIS mapping was a valuable tool, and it is recommended more resources be applied to this function. The county and city could also benefit from something similar to the District II mobile command communications vehicle.

The Emergency Management Operations function provided a tremendous amount of resources and coordination during the event. Additional enhanced equipment will serve the first responders and the community well during emergency operations.

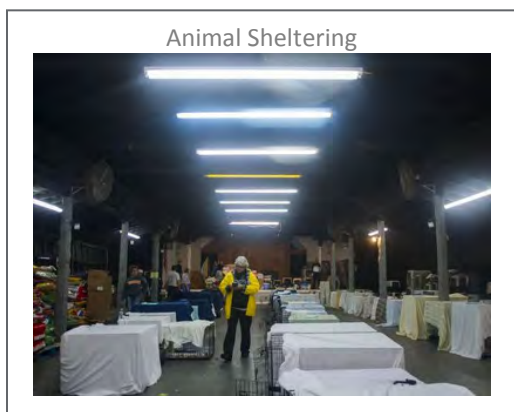
In addition to providing introductory information, this section identifies actions that worked well, issues, and lessons learned. These items guided the development of recommendations, revealed actions already taken, and identified best practices (located in the Conclusions Section). The development of these items was the result of numerous interviews and review of documentation. The implementation of recommendations along with the actions already taken and continuance of the identified best practices will provide the city and county valuable tools and resources to better enable first responders to quickly and effectively execute their duties.

Emergency Management – Situation

Once it was deemed safe, but still during the ongoing incident, a damage assessment was conducted. The Sevier County GIS team was deployed and utilized to conduct the following aspects of this assessment:

- On December 1, an interactive damage assessment map was created for the property owners to view online and see if their property was damaged. The map was the most used map to date hosted by ESRI (a GIS mapping company) with 1.5 million clicks.
- The GIS maps were handed out to the responders who were tasked with search and rescue, recovery, damage assessment, and fire suppression.
- The team faced many complications in gathering data to update the maps, such as no cell phone reception (lack of GPS location), melted/destroyed road signs, lack of street numbers on houses or mailboxes, and unfamiliarity with the area. Therefore, it made it difficult to navigate. Search grids were set up to make it as uniform as possible.

The Regional Medical Communications Center provided vacant bed updates from all of the hospitals in the area.



The Red Cross set up and managed a designated shelter in Gatlinburg. Other shelters were later opened in the area. In addition, several local nurses and doctors volunteered their time to help treat people at the shelter, and pharmacies donated medicine to those who lost their medications in the fires.

The Emergency Support Function 11 (ESF11) was activated to care for area animals. This includes the animal shelter, University of Tennessee agriculture extension, local veterinarians, and the SCSO.

Emergency Management – What Worked Well?

1. The District II mobile command communications vehicle allowed for ongoing EOC operations even during the loss of phones and electricity.
2. The cell phone companies, that brought mobile towers to Gatlinburg, began restoring cell service on November 29.
3. The GIS team did an excellent job getting the interactive damage assessment map out to the public. The damage assessment map also provided the information that TEMA needed for a FEMA Presidential Disaster Declaration.

Emergency Management – Issues

1. Responders who had never been in the Gatlinburg area found it difficult to search 2,500 structures without GPS, with no land street signs or house numbers/mailbox numbers, and with no cell phone service to call someone to help if they got lost.
2. During the first week of the recovery, it was necessary to find old map books along with GIS maps to hand out.
3. At times shelters experienced multiple challenges including congestion, illness, and crime.

Emergency Management – Lessons Learned

1. A mobile communication capability is vital to providing the agility needed to address the dynamics of a massive, complex, and deteriorating emergency situation.
2. It is important to have hard copy map books in case of communication outages.
3. Ongoing relationships with a network of local and state leadership prior to events/disasters proved vital in supporting the efficient communication necessary in emergencies.
4. Having skilled GIS personnel from each jurisdiction of the community working together with the ability to efficiently generate relevant maps is important.
5. Wildfires and high winds can cause an extended loss of cell phone coverage. Having preplanned alternative communication links is important.
6. Community groups and clubs provide a vital element to the recovery process.
7. Emergency shelters require a level of security and discipline while operational.

Emergency Management – Recommendations

See Conclusions Section

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INTERAGENCY COMMUNICATIONS

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Perspective – Phillip E. Keith

Given the severe weather conditions and the size and rapid movement of the Chimney Tops 2 firestorm, a quick and massive response by the GFD, GPD, Sevier County Wildland Fire Task Force, SCSO, and numerous state and local support agencies was needed to protect the lives and property threatened by the fire. Without such a response, significantly more losses would likely have occurred. When the call went out to gain mutual aid assistance, the response was significant and appropriate, and the many responders worked well together as a cooperative, cohesive team.

When the Gatlinburg EOC was created, the key decision makers were present and took on the daunting challenges of a historically significant firestorm. Well-established relationships between the key decision makers in Gatlinburg and Sevier County provided seamless communications in the EOC. When technology failed and created confusion, these ongoing relationships showed their worth. The backbone of the Gatlinburg public safety communications system and SCSO proved to be reliable. However, when radio channels were saturated with voice communications and mutual aid agencies arrived to assist, the question of interoperability challenged all parties.

Without communication with the GSMNP personnel during some of the most critical times during the disaster, the fire progression and decisions being made by the GSMNP personnel could not be determined. This issue was compounded by the number of agencies engaging in the rescue efforts that were unable to communicate with the EOC and Gatlinburg public safety responders (because their radio systems were not compatible). Field units experienced difficulties due in part to the noise created by the high winds and raging fires, but also because of system busy signals caused by the limited number of radio frequencies available to Gatlinburg police and fire departments.

In addition to providing introductory information, this section identifies actions that worked well, issues, and lessons learned. These items guided the development of recommendations, revealed actions already taken, and identified best practices (located in the Conclusions Section). The development of these results focused on (1) detailed logs, vehicle camera video, dispatch records, and other information and (2) interviews with law enforcement personnel from Gatlinburg and Sevier County with some input from other personnel. The implementation of recommendations along with the actions already taken and continuance of the identified best practices will

help to further enhance interagency communications in the event of another large-scale emergency.

Interagency Communications – Situation

The magnitude of the mutual aid response was the largest ever in Tennessee, utilizing resources from 50 counties, over 225 agencies, 445 apparatus, and 3,535 first responders. These responders were arriving throughout the unfolding of the firestorm, requiring staging, coordination, and deployment. Efficiently coordinating the logistics and support of these many units while the dynamics of the fire situation were rapidly evolving was a major challenge.

Clear, concise, and prompt communications were necessary for a successful emergency response. Communications within the EOC, although at times noisy and extremely busy due to the scope and scale of the Chimney Tops 2 firestorm, remained fluid and effective based on the information being received. To provide a constant flow of communications, this information was often updated with area law enforcement and firefighting personnel. When evacuation decisions were reached, the outcome and direction were immediately disseminated to police and fire personnel deployed in the field. Teams of police and firefighters organized at the incident level to help ensure all residents in homes that could be reached were notified of the evacuation.

Interagency communications between fire and police personnel actively engaged in firefighting, rescue, evacuation, and general assistance remained constant although the weather, fire debris, and fire dynamics and intensity created brief interruptions between the EOC and field units.

The fire progression toward the initial EOC intensified to the point that the EOC had to be relocated. Compounding this development was the loss of landlines linked to the GPD Communications Center, resulting in disruption of 911 calls and links to the Sevier County 911 Emergency Communications Center.

Interagency Communications – What Worked Well?

1. All mutual aid responding law enforcement, firefighting, and rescue agencies demonstrated a clear commitment to aid and assist the Gatlinburg public safety departments to the best of their collective abilities. They demonstrated a common focus to combat the Chimney Tops 2 firestorm, rescue and assist citizens and visitors, and further eliminate gaps in providing appropriate responses to the general public. Departments that came to the GPD's assistance worked well together and quickly in an effort to save lives and property during this horrific event.
2. Proximity of key decision makers in the EOC enhanced the communication among all agencies.
3. Well-established relationships, IC training, and management of previous events supported seamless communication among key City of Gatlinburg officials (e.g., city manager, GFC, GPC, and public works and utility personnel).

4. Communications and interaction in the field proved to be very effective and, although interrupted periodically, well-coordinated resources resulted in few injuries to the professionals combating the fires and rescuing citizens.

Interagency Communications – Issues

1. The radio communications overloaded the Sevier County radio system at times. Some busy signals occurred due to the abundance of radio traffic and the lack of available radio frequencies for the GPD.
2. Communication between departments became an issue as a result of a lack of interoperability of radio frequencies and channel allocation.
3. Communications were hampered due to the fire intensity and high winds (e.g., at times field personnel could not hear voice commands over the radio).
4. Critical communications links between the City of Gatlinburg EOC and TEMA were significantly interrupted and contributed to TEMA not sending the requested IPAWS message to evacuate Gatlinburg.
5. Lack of sufficient interoperability among city, county, state, and federal agencies created critical obstacles to direct communications. This issue required working around the inability of mutual aid responding agencies to communicate with each other and the established EOC or the GPD Communications Center.
6. The original EOC and other offices of city officials had to be evacuated to another location in Gatlinburg.

Interagency Communications – Lessons Learned

1. Assembling key decision makers in the EOC enhances the communications among multiple agencies, and it is extremely vital when battling an emergency of this nature.
2. The use of earpieces and remote microphones helps to ensure uninterrupted communications in high-noise environments.
3. City of Gatlinburg and Sevier County did not have compatible communications systems with state and federal agencies. When incompatible systems are involved, communication gaps and misinformation can result.
4. The lack of dispatch capabilities in the proximity of the EOC created difficulties in communication to the public and to emergency personnel.
5. There needs to be redundant communications capabilities between state and local agencies.
6. Loss of power can contribute to a loss of communications capabilities.
7. Offices of city officials may have to be abandoned during an emergency, creating the need for effective continuity of operations plans.

Interagency Communications – Recommendations

See Conclusions Section

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PUBLIC INFORMATION

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Perspective – Phillip E. Keith

The City of Gatlinburg does not employ a full-time PIO or have a crisis communications plan. It contracts for limited PIO services with the Gatlinburg Convention and Visitors Bureau (GCVB). In the early afternoon hours of November 28, this designated PIO GCVB was requested to fulfill the public information officer function, supporting the officials at the EOC and coordinating information provided to the public and media. Armed with LISTSERV, a group email system to distribute information to the business membership of the GCVB, the designated PIO notified the more than 900 members of the available information on the Chimney Tops 2 firestorm. As the day progressed, updates were provided to the public and media on the fire progression, continuing until the firestorm interrupted the electrical and communications systems, which proved to be a major obstacle to continuing communications. Although there was no formal plan to utilize social media to assist with notifications or collect information from the public, the power outages made the few attempts ineffective.

Limited staffing for the PIO function and absence of a crisis communications plan created challenges in maintaining a needed awareness of developments surrounding the fire. From the early afternoon and throughout the firestorm, the absence of a crisis communications plan would prove problematic in establishing protocols, issuing community notifications, and keeping the media informed.

Prior to the GSMNP firestorm, there were no inventories taken to determine what notification systems existed beyond what was established by the GCVB, such as hospitality networks of hotels, motels, and cabins, United Way, and Boys & Girls Clubs of America. Due to the relocation of the EOC to the Gatlinburg Community Center, the PIO lost situational awareness of the fire response. The energies of all personnel in the EOC were focused on evacuation, rescue, and firefighting. Once the initial emergency response was over, the key decision makers convened twice a day for updates. From those meetings, talking points for press conferences and joint news releases were developed. The lack of preparation and experience in a crisis of this magnitude created a very stressful situation for the PIO, which would only intensify in the coming hours as the media expectations and demands grew.

In addition to providing introductory information, this section identifies actions that worked well, issues, and lessons learned. These items guided the development of recommendations, revealed actions already taken, and identified best practices (located in the Conclusions Section). The

development of these results focused on (1) detailed logs and other information and (2) interviews with law enforcement and fire personnel from Gatlinburg and the Sevier County EMA. The implementation of recommendations along with the actions already taken and continuance of the identified best practices will help to further enhance readiness of the City of Gatlinburg in meeting the challenges for any future firestorm or other large-scale emergency.

Public Information – Situation

The Chimney Tops 1 fire occurred from November 13 through November 16. During that fire, the GCVB received notifications from the GSMNP regarding the fire and provided electronic notification using LISTSERV to send e-blasts to their membership. This group e-mail technology application is routinely utilized to keep the Chamber of Commerce membership of more than 900 businesses informed on a wide range of topics, events, and/or other issues with the potential of impacting business commerce in the City of Gatlinburg. The three notifications received from GSMNP and sent to GCVB members included (with dates indicated):

- November 14, 2016 – Trail closures related to a small wildfire on Chimney Tops/reiteration of backcountry campfire burn ban
- November 15, 2016 – GSMNP expanded burn ban notice for all campfires in backcountry, front country, and open grills
- November 16, 2016 – The GCVB issued an Air Quality Statement including where to go for updates

The initial communication received by the GCVB from the GSMNP regarding the Chimney Tops 2 firestorm was on the morning of November 28, 2016, and it addressed road closures. On that day, at the request of PIO, the GCVB sent e-mails at the indicated times to the chamber membership database with the following press releases based on communications from the GSMNP:

- 11:26 a.m. – “Road Closures Related to the Wildfire Movement in the GSMNP”
- 11:45 a.m. – “Air Quality Alert”
- 1:33 p.m. – “Twin Creeks Fire Encroachment”

The e-mails were sent to 879 local businesses with an average open rate of 305, which is considered by the GCVB as a significantly good open rate.

At 2:00 p.m., PIO was requested to go to the fire hall and serve as the point of contact for the City of Gatlinburg to the press and others as needed.

At 2:30 p.m., PIO began work at the initial EOC established at Gatlinburg Fire Hall #1, with the responsibility to assist the GPD and GFD, and to coordinate, write, and release information notices as needed for the established IC, the Sevier County EOC, Sevier County EMA, and the GSMNP personnel. Additionally, the PIO was to coordinate media requests and set up periodic news conferences to update both the media and general public on the Chimney Tops 2 firestorm. Although no information was provided to the PIO from the GSMNP, fire monitoring alerts were issued when information became available, as well as both voluntary and mandatory evacuation notices. Information concerning shelter locations and available public transportation was also provided to the media and community. No information was provided by GSMNP personnel during the afternoon or early evening regarding the progression of the fire west of Mynatt Park.

At 3:15 p.m., PIO sent out the first news release to media outlets on behalf of the City of Gatlinburg via e-mail, “City of Gatlinburg Monitoring Wildfires in National Park,” requesting voluntary evacuations in Mynatt Park, identifying the Red Cross Shelter location, and describing the availability of transportation from the Gatlinburg Trolley Department.

At 4:00 p.m., PIO and GFC conducted the first press briefing, providing information to media representatives present, including Knoxville television stations WVLT, WBIR, and WATE. The information released included the status of voluntary evacuations for Mynatt Park, Turkey Nest, and Savage Garden communities.

At 4:33 p.m., PIO requested and issued a press release regarding voluntary evacuation of Mynatt Park, and reiterated the Red Cross Shelter location and public transportation available from the city’s trolley department. PIO worked directly via text message and e-mail with the GCVB Social Media Manager to provide updated information for Chamber e-mail notifications concerning the fires.

At 6:00 p.m., GFC ordered a mandatory evacuation for Mynatt Park, East Foothills Road, Turkey Nest Road, and Davenport Road areas. A press release was sent to media outlets including local radio (WIVK, WSEV 105.5 FM, and WPFT 106.3 FM); Knoxville television stations; Knoxville radio stations, and the Knoxville News Sentinel. The release included information on evacuations as “Officers were going door to door; public transportation availability via the Gatlinburg Trolley Department; and, updating information reflecting the Red Cross Shelter is allowing service animals.”

At 6:15 p.m., Savage Garden was added to mandatory evacuation and PIO sent an UPDATE to media outlets.

Also at 6:15 p.m., GSMNP personnel issued the following statement to the media, *“Park officials reported additional fire activity including the Park Headquarters area and a spot fire between Elkmont and Newfound Gap Road off of the Sugarland Mountain Trail approximately 1 mile south of the Husky Gap Trail intersection. The park has closed the Gatlinburg Bypass and Little River Road from Sugarlands Visitor Center to Metcalf Bottoms Picnic Area due to fire activity and downed trees. The park has evacuated employees from the Elkmont and Park Headquarters housing areas. Due to continued erratic winds, the fires are very unpredictable and more fire growth is expected. Wind conditions continue to worsen with 40 mph average winds being recorded and 74 mph gusts.”* However, this information was not directly provided to PIO, and was not included in any press releases from PIO.

At 7:00 p.m., the city manager, GFC, and GSMNP Superintendent held a press conference at the EOC with television stations present and local radio and news outlets notified. The focus was on the available information regarding the fire situation and existing evacuation orders. However, at that press conference there was no mention from the GSMNP Superintendent regarding the potentially imminent movement of the Chimney Tops 2 firestorm from the park into the Ski Mountain portion of Gatlinburg.

At about 7:59 p.m., the evacuation was expanded to include Ski Mountain and the PIO soon issued an e-mail to the GCVB database and a press release indicating that the evacuation was mandatory. Power outages and other factors prevented citizens and visitors located in this area from receiving this notice.

Shortly after 8:30 p.m., a citywide mandatory evacuation order was issued by GFC that encompassed adjacent unincorporated communities, including the Ski Mountain area. The PIO immediately approached the media staging area to notify media representatives present (e.g., WVLT, WATE, and WBIR) of the citywide evacuation order. In general, the PIO utilized local print, television, and radio representatives and the Gatlinburg Chamber of Commerce to disseminate information as provided by the Incident Commander. In addition, PIO e-mailed press releases and provided updates to media representatives present at the nearby EOC. After the power/cellular/internet interruption occurred, electronic transmissions were no longer utilized. However, the actual location of the media representatives in proximity to the EOC provided an alternative to disseminate critical fire updates, evacuations, and notices.

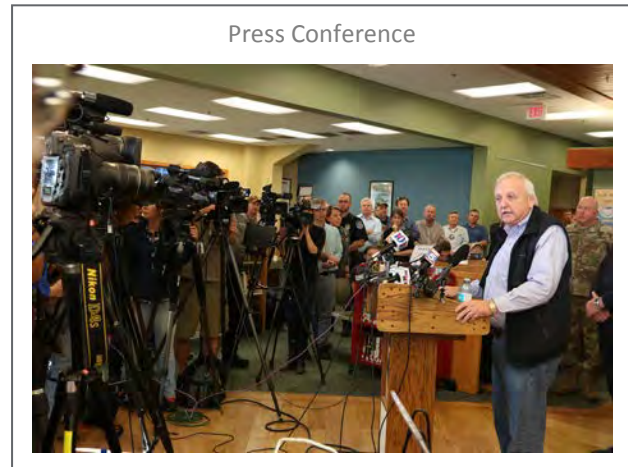
The Sevier County PIO and GSMNP PAO and PIO coordinated the first joint press conference scheduled for 4:00 a.m. on Tuesday, November 29. This press conference, conducted at the Anna Porter Public Library, focused on providing an update on the conditions resulting in the Chimney Tops 2 firestorm progression into Gatlinburg, continuing mandatory evacuation notice and efforts, motorist advisories, road closures, and location of the Red Cross Shelter.



Upon the influx of multiple local, regional, and national media outlets, it was determined that the Sevier County, City of Gatlinburg, GSMNP personnel, and state officials (when present) would hold two daily press briefings, at 11:00 a.m. and 4:00 p.m. This schedule was deemed the most efficient process to release information and accommodate the daily news cycle.

During the recovery phase, the public needed updated communication regarding:

- Re-entry requirements for entering the City of Gatlinburg by property owners, renters, and business representatives
- Reopening the City of Gatlinburg for business and relief resources for the displaced
- Coordination of volunteers, physical donations collected (clothing/water), and monetary donations
- Distribution of donated items and relief money



Public Information – What Worked Well?

1. Establishing a designated area for the local media near the EOC (Knoxville television stations WBIR, WATE, and WVLT were present at Fire Hall #1) and providing a mechanism for communication to the public (although local power, internet, phone, and cell service were not working) proved successful.
2. Having the Gatlinburg Chamber of Commerce e-blast mechanism provided an essential link to communicating to the community prior to the formal establishment of the EOC.
3. The PIO functioned as a direct point of contact for media on scene and via phone by:
 - a. Fielding the questions the media asked that could not be immediately addressed so that the media could be directed to the right resource or serving as a reference point for the line of questions for upcoming press conferences.
 - b. Providing media with organized press tours in a pooled format with video sharing,
4. Individuals “tweeted” the information from the e-blast, which helped disseminate information more broadly to the public.

Public Information – Issues

1. The loss of internet, phone, and cell phone service made communications problematic. This created a situation where it was very difficult to know if the messages regarding mandatory evacuation were going out and being received by the public.
2. The lack of communication through social media limited direct contact with the public.

3. There was no formal crisis communications plan in place at the time of the Chimney Tops 2 firestorm, resulting in improvised protocols and actions to be taken by the PIO.
4. Existing notification systems were not inventoried (e.g., Gatlinburg Chamber of Commerce e-blast system, and hospitality network linking hotels and other lodging facilities; United Way, and subordinate systems; and Boys & Girls Club).
5. At the second location of the EOC, no uninterrupted power source was available to maintain power for critical functions and no alternative transmitting capability existed (e.g., satellite link, satellite phone).
6. There was no platform for utilizing social media to communicate to the community at large nor the media.
7. There was no redundancy in the emergency notification systems, emergency request for assistance, nor public messaging.
8. Media interest in the Chimney Tops 2 firestorm exceeded expectations, and the demand for information was overwhelming.

Public Information – Lessons Learned

1. Daily press briefings at scheduled times with joint information from all involved was an excellent way to inform the media during the crisis.
2. Major disasters involving large-scale emergencies require a specific media plan and crisis communications plan to be more effective.
3. Major disasters of broad-scale emergencies and involving multiple utility losses require robust methods to inform the public.
4. There is a need for redundant notification systems to help ensure the public is informed during a crisis, including a social media platform strategy, advanced notification technology, and use of existing notification systems (e.g., Chamber of Commerce, Hospitality Network, United Way electronic links, HAM (i.e., amateur) radio operators, blast networks to inform the media, etc.).

Public Information – Recommendations

See Conclusions Section

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LOGISTICS

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Perspective – Phillip E. Keith

In a rapidly developing crisis response involving multiple agencies, the question quickly arises: “Who is in charge of what and when?” The U.S. Department of Homeland Security established two operational protocols and training requirements, commonly known as the NIMS and the ICS, which address incident management. During the early developments of the Chimney Tops 2 firestorm, when approaching the City of Gatlinburg, the GFC established an IC. This critical first step was made with ease, as all members of the GPD and GFD are proficient in the protocols required. The GFC is a certified instructor in both NIMS and ICS, making him knowledgeable of what is required to be successful.

The coordination and adaptation to the IC and the NIMS succeeded in part due to the preparation of the GPD and GFD, through policy and training. All personnel of both the police and fire departments are very well versed in IC and NIMS protocols. Review of the information and records from both departments (GPD and GFD) strongly suggest these departments were proficient in policy and training.

The GFC established the initial EOC at the GFD headquarters adjacent to the GPD and City Hall, providing decision makers who occupied the EOC with ready access to government offices. However, the fire threat would later force the EOC to move to the Gatlinburg Community Center. Although a challenging situation, the move was made in an orderly and disciplined manner. The Gatlinburg Community Center, while sufficient for the EOC, had some shortcomings. The center was near the staging area and the Red Cross Shelter, creating an even more hectic working environment. The center also lacked a backup uninterruptible power supply and redundant communication links.

In addition to providing introductory information, this section identifies actions that worked well, issues, and lessons learned. These items guided the development of recommendations, revealed actions already taken, and identified best practices (located in the Conclusions Section). The development of these results focused on (1) detailed logs and dispatch records from GPD and other information from GPD and GFD and (2) interviews with fire and law enforcement personnel from Gatlinburg and Sevier County with some input from other personnel. The implementation of recommendations along with the actions already taken and continuance of the identified best practices will help to further enhance the readiness of public

safety agencies in Gatlinburg and Sevier County to meet the challenges posed by any future firestorm or other large-scale emergency.

Logistics – Situation

As described in the Significant Events Synopsis, the GFD established the first situation IC after responding to a call of a spot fire in the Twin Creeks area. Shortly after, the GFC established the Gatlinburg EOC, located at the GFD headquarters immediately adjacent to the GPD and City Hall. This location was believed to be a logical choice, making access to needed information in the respective city government offices readily available. As the firestorm from the Chimney Tops 2 firestorm grew and encroached the city limits of Gatlinburg at multiple locations, the original EOC was relocated to the Gatlinburg Community Center, which provided substantially more space and safety from the fires. The combination of working knowledge to run an EOC was augmented by the use of the State of Tennessee's Web EOC, an application software to provide support in requesting needed resources.

The GFD established a staging area for mutual aid first responder agencies at the nearby Rocky Top Sports. This location provided an abundance of surface space to stage fire apparatus and deploy the resources as demands increased through the coming hours and into the following days. A total of 445 apparatus would arrive and be deployed.

Once on the scene at the EOC, TEMA provided staffing, logistical support, and vital face-to-face communications. As the fire event continued through the evening and into the coming days, logistical demands presented challenging problems, including providing support to more than 3,000 first responders. Coordination was further hampered by inconsistencies in common software used by first responders, as well as failed attempts to use software to track activities and equipment usage. Although mandatory for safety, the relocation of the EOC to the Community Center in the proximity of the media staging and the Red Cross Shelter created congestion, confusion, and unauthorized access to restricted areas.

Logistics – What Worked Well?

1. Experience and following the NIMS process allowed the IMT to provide continuity of command for the 12-hour-operational periods.
2. The state's Web EOC application software worked as intended to support the request for resources.
3. The location of the staging area provided ample space for the apparatus, refueling trucks, and food services for responders.
4. TEMA provided manpower, logistical support, communications, resource fulfillment, and monetary support.
5. TEMA's presence in the EOC and Command Post allowed for face-to-face communication resulting in getting resources faster.

Logistics – Issues

1. It was difficult to feed more than 3,000 first responders and keep them rotated in and out of missions.
2. Having to move the EOC during a deteriorating situation was disruptive.
3. Some assisting agencies were forced to use laptops and software that they were unfamiliar with, which resulted in inefficiencies.
4. There were attempts to use technology-driven tracking systems. However, this approach did not function well for a variety of reasons leading to the continued use of pen, paper, and radios in the emergency response staging area.
5. During the early hours of the incident, congestion-related inefficiencies and conditions for unauthorized access existed at the shelter, EOC, Command Post, and media staging area due to the lack of available law enforcement personnel.

Logistics – Lessons Learned

1. Plan to include a TEMA representative in the EOC and Command Post to allow for face-to-face communication facilitating faster access to resources.
2. The location of the staging areas selected should have room to expand, level terrain, adequate space for easy asset movement, and appropriate facilities and services to support efficient operations.
3. TEMA's continual updating of the Web EOC provided needed real-time information to all parties, helping to avoid communication issues.
4. Updating software on diverse computers during field operations is too time consuming, forcing personnel using unfamiliar computers to experience inefficiencies.
5. The simplicity of pen, paper, and radio provided the most implementable and efficient method for resource tracking for the emergency response staging area.
6. Providing visible law enforcement in strategic locations of the staging area helped to minimize unauthorized access to secure areas and congestion-related issues.
7. The practice of TEMA participating in the EOC is vital to efficient and effective emergency resource management.
8. Using multiple avenues of food providers (e.g., donations from Rocky Top, Red Cross, and Zac Brown Band) to feed first responders over numerous days was critical to establishing continuity in the food services.
9. It may be necessary to move the EOC at the worst possible time of the disaster (e.g., during loss of power, road blockage, threatening fire, loss of phone service).
10. Training was essential in providing experienced personnel who follow the NIMS command system.

Logistics – Recommendations

See Conclusions Section

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RECOVERY AND HUMANITARIAN OUTREACH

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Perspective – Donald Bart Stinnett

The City of Gatlinburg and Sevier County began the Recovery and Humanitarian Outreach process immediately after the firestorm, with a long-term recovery vision. Committees were created with a combination of private and government representation that addressed the most pressing needs of the community. The ad hoc committees worked extremely well with emergency management. Creating committees that focused on the particular needs provided a continuity of support that was effective throughout the operation. The creation of the Mountain Tough organization addressed unmet needs of victims such as transportation, housing, food, and employment. Sevier County EMA launched a website (MountainTough.org) on December 5 that focused on two categories: (1) “I need help” and (2) “I want to help.” This website provided an avenue for people seeking assistance and for those volunteering. Mountain Tough eventually became the umbrella for the entire humanitarian outreach component of the recovery process.

Individual assistance was addressed through multiple areas. The Disaster Resource Center (DRC) provided a centralized location where people could apply for FEMA and Small Business Administration (SBA) assistance. The Dollywood Foundation and Dolly Parton provided monetary support to those who were affected by the firestorm. FEMA, in regards to the public assistance (reimbursement of counties, municipalities, and utility organizations), was not as successful as the individual assistance component. Hiring a consulting firm that focused on maximizing the public assistance program through FEMA helped expedite the federal reimbursement process. The Multi-Agency Resource Center (MARC) provided a location where people could obtain lost government documents such as driver’s licenses and social security cards. Boyd’s Bear created a one-stop shop for anyone seeking supplies (e.g., water, food, clothes, and baby formula). Coordinating locations streamlined the process of seeking and granting assistance, allowing more people to be served in less time.

Volunteers were extremely helpful during the recovery process, assisting with debris cleanup, processing, warehousing, and distribution of donated goods. Groups like Voluntary Organizations Active in Disaster (VOAD) were instrumental, providing and managing qualified volunteers with valuable skill sets. The Volunteer Reception Center (VRC) provided a centralized location where volunteers could be assigned opportunities and tracked to accurately account for their presence and number of hours worked. Accurate

documentation was essential for accounting practices so that the county and city could report the volunteers' time as a donated resource.

There were many challenges that occurred during the recovery process, with housing being the most difficult. Before the fire, Sevier County and Gatlinburg already had a shortage of affordable housing. After the fire, numerous people and organizations stepped up to provide housing options for affected individuals.

Continuing to build upon the existing relationship within the lodging community will provide a network of individuals with the necessary knowledge base and resources to effectively address the problem. The local governments worked with state and federal representatives to handle governmental issues that arose throughout the process. Working with and communicating with government representation on all levels will be vital to the success of the overall recovery process.

Debris removal created issues on many levels including the overwhelming amount of trees and brush, and building material that had to be gathered and transported to the landfill. The landfill was above capacity, and the county had to apply for a temporary location to place the amount of materials that resulted from the fire. Hydro seeding was conducted to mitigate the amount of erosion in the affected area.

Donations, from multiple areas across the nation and world, needed to be managed. The monetary donations had to be tracked, and a system was implemented for the proper disbursement. The Mountain Tough organization provided the necessary resources for accepting monetary donations. Donations arrived in bulk, and needed to be sorted, categorized, and warehoused for distribution.

Gatlinburg and Sevier County provided a well-thought-out recovery plan that addressed many needs. Issues and problems were handled quickly with creative and effective responses. The plan and process that Gatlinburg and Sevier County developed with private partners will provide a best practices, industrial standard for future disasters. The key to their success was that multiple jurisdictions and private agencies saw the needs and worked together for a common purpose. The Sevier County EMA office along with its partners provided leadership and a steady presence throughout the operation.

In addition to providing introductory information, this section identifies actions that worked well, issues, and lessons learned. These items guided the development of recommendations, revealed actions already taken, and identified best practices (located in the Conclusions Section). The

development of these items was the result of numerous interviews and review of documentation. The implementation of recommendations along with the actions already taken and continuance of the identified best practices will prepare the city and county for the humanitarian and recovery process following any future disaster.

Recovery – Situation

Immediately after the fire on November 28, no access was allowed into Gatlinburg or the surrounding affected areas. The initial factor for allowing re-entry to Gatlinburg for some citizens (on a limited basis) was because employers needed to get to their respective offices and pay their employees (Friday, December 2, 2016). The Tennessee National Guard, Tennessee Highway Patrol, and local law enforcement were used to control all re-entry. With the help of the civilian park employees, city personnel, and the use of the American Legion facility, re-entering individuals were escorted to the needed location with a one-hour limit. Individuals with repeated needs for entry were provided a card with a “free” pass to come into town.

A Long-Term Recovery Committee called “Mountain Tough Recovery Team (MTRT)” was announced on February 2 and was established as a formal body on June 1, 2017, to help address any unmet need (e.g., transportation, housing, food, employment) of fire victims.

Organizations responding to the mutual aid request were reimbursed under the authority created by TCA 58-8-101 provisions and submitted to the requesting department (i.e., City of Gatlinburg and Pigeon Forge). The cities then paid the invoices and sought reimbursement from FEMA. FEMA did not reimburse all invoices even though they were consistent with requirements under the TCA (e.g., FEMA does not reimburse sleep time and other down time whereas TCA does not exclude it). FEMA also does not recognize volunteer fire departments as an eligible applicant, which led Sevier County volunteer fire departments to choose to record their contributions as donated resources. FEMA was very helpful when it came to individual assistance (e.g., providing housing assistance, SBA loans, and financial assistance) but was less helpful with the public assistance portion (e.g., permanent work—no reimbursement for the electric system repairs). FEMA was very helpful in providing a permanent presence, but often had difficulties in providing specific resources (e.g., pallets, forklifts, and loaders) to Sevier County in a timely manner due to distance and other logistical challenges.

The Tennessee Fire Chaplain Association and another non-profit called Mane Support, provided Critical Incident Stress Debriefing to dispatchers and responders.

Several ad hoc groups and committees under the emergency support functions of the Basic Emergency Operations Plan were created to help make sure that county, city, and private sector organizations were working together in a coordinated way with as little duplication as possible. These groups/committees included a Debris Committee, Donations Committee, Warehouse Committee, Housing Committee, Unmet Needs Committee, and VOAD. While private sector organizations have their own auditing and accounting processes in place, there



are no direct auditing and accounting processes imposed on them from Sevier County or the City of Gatlinburg.

Regarding funds provided from loans, grant programs, and organizations contributing to recovery:

- FEMA provided assistance, and the SBA gave out loans.
- The State of Tennessee, through the Governor's Task Force working with the state legislature, appropriated substantial funding for a range of recovery efforts.
- The Dollywood Foundation and Dolly Parton herself (established as "My People Fund") helped raise \$12 million. Out of that, \$9 million was provided directly to affected individuals (i.e., \$10,000 in checks to each family displaced by the Chimney Tops 2 firestorm).
- The East Tennessee Foundation helped with housing including a one-time grant of \$100,000 from U.S. Department of Housing and Urban Development (HUD).
- The Gatlinburg Relief Fund helped with fire victims and the business community.
- The Sevier County Relief Fund (at Citizens National Bank [CNB]) helped with MTRT and Volunteer East Tennessee.
- Representatives from area Rotary Clubs helped with donations.

Regarding debris removal:

- The state environmental agencies arrived in the early days of recovery. They set the guidelines of what must be done with the debris. This was essential for efficient cleanup and recovery.
- Sevier Solid Waste, Inc., also participated early on to help guide the movement of debris to a temporary site.
- Volunteer agencies met early in the process to establish the guidelines set by the EMA office for accountability and to disseminate guidelines to help ensure safe operations that met Tennessee Department of Environmental Conservation (TDEC) regulations.

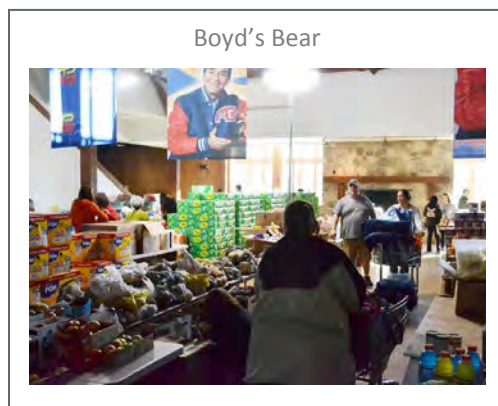
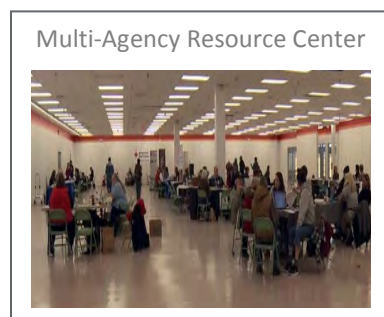
Regarding recovery plans for the immediate future (next three years). Plans could include:

- Debris removal from the structures (Year 1), which will take up another year.
- The rebuilding of all the homes and other structures (Years 2–3).
- Promoting the area for tourism (Years 1–3).



Recovery – What Worked Well?

1. Members of various committees met frequently to provide consistency and to avoid duplication of efforts.
2. People across the country joined in to help meet the need for donations, both monetary and otherwise. The EMA director scheduled frequent meetings for organizations that solicited donations from the community to discuss (1) what needs existed, (2) what existing needs each organization would pursue to avoid duplication of efforts, and (3) what amount had been raised and how the funds would be distributed.
3. Non-profit organizations in the community provided support through various promotions. They organized donation drives to collect and distribute money and items as quickly as possible. These organizations also met frequently to minimize duplication and help ensure efficient operations.
4. The MARC provided a broad range of civil support resources such as driver's licenses and social security cards (open December 12, 2016, through February 22, 2017).
5. The DRC provided a place for victims to apply for FEMA assistance and SBA assistance in both Pigeon Forge and Gatlinburg (opened December 23, 2016, through February 10, 2017).
6. Boyd's Bear provided supplies for fire victims (e.g., clothes, water, food, baby formula, etc.). Victims were allowed to come every three days (opened December 5, 2016, through February 15, 2017).
7. Centers were designated for tangible items to be received, sorted, and distributed.
8. The Mountain Tough website was quickly launched on December 5, providing a readily accessible communication path for victims and volunteers to specify (1) "I need help" or (2) "I want to help." It was a trusted source of communication to all parties.
9. The VRC provided a location for volunteers to register and receive assignments (opened December 5, 2016, through May 19, 2017).



10. A VOAD provided guidance and support in managing volunteers to run the VRC.
11. The VRC used a standard web-based tracking system (i.e., Crisis Cleanup) that provided an efficient way to request work and to record who fulfilled the request.
12. AmeriCorps led inexperienced volunteers in the understanding required to safely perform cleanup tasks.
13. Hydro seeding of selected burned areas helped avoid potential erosion and flooding issues.
14. TDEC was involved early on in all debris removal and management meetings and addressed everyone's questions.
15. A consulting firm was hired to help EMA maximize the public assistance program with FEMA.

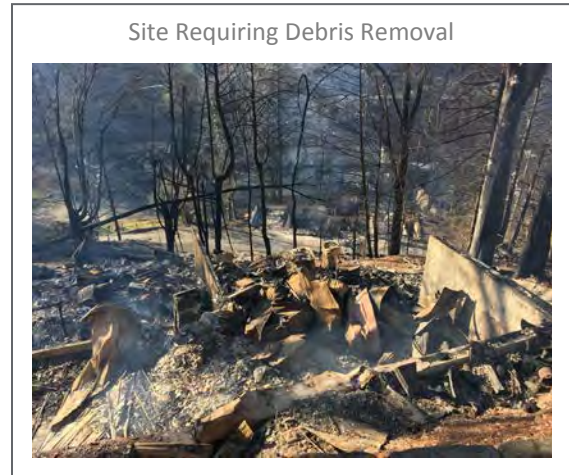
VOAD Picture



Recovery – Issues

1. Housing was the most challenging recovery activity.
 - a. Before the fire, there was a housing shortage in Sevier County and the fire has extremely exacerbated this problem.
 - b. By surveying the needs, people communicated through Mountain Tough, MARC, and hot line at VRC, housing was often one of the most difficult needs to address.
 - c. The rental market for the area exceeded HUD's fair market value. The county was granted an exception that had never before been done by the federal government. For several households, this allowed for HUD money to be spent on the deposit and the first month's rent when the rent exceeded fair market value.
 - d. There was a language barrier with the Hispanic community that was difficult to overcome during the recovery process. (Note: Translators were provided at the shelters, and church organizations were utilized to assist communicating with the Hispanic population.)
2. Debris removal presented a number of challenges:
 - a. The local landfill was at capacity, requiring the county to apply for a temporary holding site and to plan for future removal to a permanent Type I landfill.

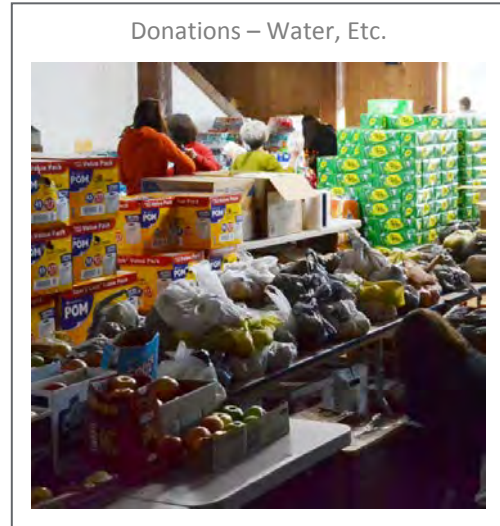
- b. The debris from residential structures had to be placed at the side of the road for removal. This created a traffic issue. The roads are naturally narrow, and placing debris at the side of the road only made traveling those roads more difficult. The county had to make an official request through FEMA on January 5, 2017, to be able to remove debris from residential property.



- c. It is necessary to have a working knowledge of the debris to be moved, because some of it had to be disposed of in a Type I landfill.
- d. There was no established debris removal plan, which resulted in the need to anticipate issues and develop solutions during the recovery effort.
- e. Approval through FEMA was needed for the removal of standing dead trees, demolition of residential and commercial structures, removal of commercial debris, and removal of residential private property.
3. At one time, warehousing and distribution were in the same location, which created congestion issues.
4. Almost immediately after the fire event, people from all over the U.S. wanted to make donations for the recovery efforts. To expedite the proper collection and tracking of monetary donations, a temporary bank account (Sevier County Relief Fund at CNB) needed to be opened. Methods were then published on the process for giving to the account on MountainTough.org. By going through the bank, all transactions were recorded, whether cash or check. The funds were then transferred to the MTRT. The board of directors of Mountain Tough is composed of community leaders and follows non-profit organization accounting practices.



5. Early on, it was difficult to handle the volume of donations (e.g., used clothes and bottled water) with several hundred semi-trucks of items and no designated sorting or staging area.
6. Because there are no empty warehouses in the county, it was difficult to find places to put all the donated resources (e.g., a vacant theater was used, and it was too small).
7. Running donation intake and distribution centers (e.g., Boyd's Bear, Jubilee, Knoxville Warehouse, and Sevier County Fair Grounds) required about 600 volunteers a day. It was difficult to find enough volunteers given all the other demands on the community.
8. Some used clothes were unusable due to hygiene and condition, which substantially increased the demand on the sorting resources.
9. Having only one location to receive, store, and distribute donated items was not efficient and created numerous challenges.
10. Tracking the donated resources (water, clothes, diapers, etc.) required extensive documentation beyond the capabilities of the county's resources.
11. During the recovery phase, unqualified construction workers and contractors arrived and attempted to take advantage of displaced homeowners.
12. Economic impact on Sevier County as a whole was significant (e.g., loss of tax revenue, loss of jobs, loss of work force, and a notable reduction in tourism—the largest industry in the county).



Recovery – Lessons Learned

13. It is important to define relevant committees that are consistent with ESF6 and 14 early in the process and for these committees to meet often to coordinate activities and address challenges.
14. Housing
 - a. It is necessary for someone with a background working with displaced and homeless persons to lead the housing plan. Tennessee Valley Coalition for Homeless Executive Director managed all the case work for homeless fire victims.
 - b. Grant dollars will provide a stream of funding to supplement the housing plan. HUD money was used for more than fair market value rent.

15. Following a major wildfire, the community could benefit from an established debris removal process that provides suggested solutions to the multitude of issues faced in an event of this magnitude. The process should address the specific challenges of the difficult terrain and emphasize that the debris removal will require a long-term solution (to minimize cost and handling it more than once).

Site Requiring Debris Removal



16. During the recovery phase, if FEMA reimbursement and a local match are sought, the receiving, warehousing, and distribution of donated and provided goods and services will require an accounting and auditing system.

17. Volunteers filled many critical positions during the recovery process. It is essential to have a tracking process in place that can account for the time and services of the many critical positions filled by volunteers during the recovery process. By utilizing a tracking system, FEMA will have access to the necessary documentation to obtain the local match towards FEMA reimbursement.

18. Consider the number of victims who will seek assistance when selecting a help center location. Originally, the MARC was located outside at Boyd's Bear store, but it was too congested with pedestrian and vehicle traffic to function well. Subsequently, it was moved to Belz Mall, which worked much better with plenty of parking, a good location, and indoor space for transactions, allowing the MARC to function as planned.

Boyd's Bear



19. Trained and prepared volunteers participating in the early phases of a disaster are essential to the speed and coordination of the recovery process.

20. Following a major disaster, some unqualified people will descend upon the area to work construction jobs or projects, oftentimes re-victimizing the very people needing assistance.

21. Following a disaster, the economic impact may be greater than the cost of the initial response. The cost will affect the area for months if not years (e.g., gross sales receipts and loss of property taxes).
22. Having multiple disaster resource centers helps to avoid congestion and supports convenience.

Recovery – Recommendations

See Conclusions Section

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CONCLUSIONS

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Introduction

This section first introduces items that should reduce the risk associated with potential catastrophic events. These items include:

1. Recommendations for the City of Gatlinburg and/or Sevier County
2. Recommendations for other agencies/jurisdictions
3. Actions already taken or underway by the City of Gatlinburg and/or Sevier County
4. Identified best practices that should be continued or applied in future emergencies

Five key areas of concern raised by the public and those seeking direction from this study are then defined, and the relevant items are aligned with these areas of concern. Making these alignments demonstrates that key concerns are being addressed with multiple actions. Again, this section first introduces items that should reduce risk and then aligns some of these with five areas of concern.

IMPROVEMENT ITEMS

This AAR addresses both a broad range of what worked well and a broad range of issues, leading to many lessons learned and the development of a total of 50 recommendations, 20 actions already taken or underway, and 33 identified best practices, which are categorized in the following four tables:

- Table C-1 contains 41 recommendations for the City of Gatlinburg and/or Sevier County.
- Table C-2 contains 9 recommendations for other agencies/jurisdictions.
- Table C-3 contains 20 actions already taken or underway by the City of Gatlinburg and/or Sevier County.
- Table C-4 contains 33 identified best practices that should be continued or applied in future emergencies.

GOALS ADDRESSING KEY AREAS OF CONCERN

Another way to consider the recommendations for Sevier County and the City of Gatlinburg in Table C-1, the recommendations for other agencies/jurisdictions in Table C-2, the actions already taken or underway in Table C-3, and the identified best practices in Table C-4 is to frame each in the context of goals addressing key areas of concern raised by the public and those seeking direction from this study. The following list identifies the five goals:

- Goal 1: Help ensure that future GSMNP wildfires are identified, interdicted, and suppressed so that they do not impact the communities adjacent to the GSMNP boundaries.

- Goal 2: Help minimize the initiation and/or movement of wildfire in the City of Gatlinburg and in Sevier County.
- Goal 3: Help ensure the public is appropriately educated and has taken responsible actions concerning the threat of wildfires, safe evacuation procedures, situational awareness, and Firewise methodologies.
- Goal 4: Help ensure that residents and visitors in all relevant areas are informed of the need for an evacuation from a wildland fire in a timely manner.
- Goal 5: Help ensure safe evacuation of residents and visitors who are under an evacuation order for a wildland fire.

Appendix A provides an alignment table that associates recommendations (for the City of Gatlinburg and/or Sevier County and for other agencies/jurisdictions), actions already taken or underway, and identified best practices from this study to relevant goals. The result is that each of the five goals has multiple applicable items. (Note: Some items are applicable to only one goal while others are applicable to multiple goals.) Having numerous items for each goal, many of which are already completed, underway, or implemented best practices, helps to provide assurance that each of these items will be achieved going forward.

There are some items listed in Table C-1 through Table C-4 that are not included in the table in Appendix A. This is because those actions generally focus on activities after the firestorm and do not address any of these goals. Please note that the applied item number from Tables C-1 through C-4 below remains consistent with the number in Appendix A.

The remainder of this section is composed of Tables C-1 through C-4.

RECOMMENDATIONS FOR THE CITY OF GATLINBURG AND/OR SEVIER COUNTY

The set of recommendations presented in Table C-1 focuses on new actions that need to be taken by the City of Gatlinburg and/or Sevier County. These recommendations address “Issues” and the associated “Lessons Learned” for each of the six functions or sub-functions (i.e., fire, law enforcement, and emergency management under “Command Staff and Incident Management” and “Operations”) addressed in the Findings Section.

Table C-1 Recommendations for the City of Gatlinburg and/or Sevier County	
Command Staff and Incident Management (10)	
Fire (4)	
1-1	Update the city’s and county’s EOCs to provide adequate computers, radio equipment, and operation space to help support significant incidents or major events.
1-2	Obtain a Mobile Command Center for use by Sevier County and associated municipalities that is capable of being deployed to large incidents and equipped to handle a multi-agency, multi-day response.
1-3	Request federal and/or state support/funding for the development of a wildland fire risk rating system for specified areas of Sevier County (e.g., the system would define a method for establishing a fire risk rating for a specific geographic area; develop the approach for notifying the residences of the risk status for the geographic area; and help inform officials regarding the need for a specified area to take action, including implementing a mandatory evacuation).
1-4	Develop a plan to enhance the security of an EOC during an emergency to prevent unauthorized personnel from entering.
Law Enforcement (4)	
1-5	Determine the capacity and functionality of the City of Gatlinburg Police Communications Center to include, at a minimum: interoperability solutions, needed consoles, available space, personnel, training, and procedures.
1-6	Assign existing staff to support City of Gatlinburg EOC in managing incoming/outgoing telephone communications on a variety of levels to include citizens, police and fire staff, city officials, all city departments, etc.
1-7	Revise the City of Gatlinburg emergency operations plan to include, at a minimum: (1) an early designation of law enforcement staging area for human and equipment assets; (2) a predetermined list of adequate locations; (3) the necessary space for logistical support and controlled access; and (4) guidance for briefing arriving mutual aid first responders on the terrain, hazards, and other working environmental challenges prior to being deployed.
1-8	Conduct a feasibility study for the emergency response coordination of City of Gatlinburg services to include resources needed for the technology infrastructure, continuity of operations (for all city departments), and mobile communications.
Emergency Management (2)	
1-9	Create printed disaster preparedness information to be distributed to all city and county residents and visitors through all media outlets, explaining specific actions to be followed if evacuations are directed by the public safety officials (e.g., directional maps with all egress routes clearly marked).
1-10	Conduct an EOC drill that involves a relocation.

Table C-1 Recommendations for the City of Gatlinburg and/or Sevier County

Operations (17)	
Fire (5)	
1-11	Acquire an adequate number of portable generators capable of being deployed to pump stations to get water pumps and other critical infrastructure (e.g., a stand-alone EOC or Incident Command Post [ICP]) back in service in a timely manner.
1-12	Build pump stations using fire resistive construction.
1-13	Establish pre-designated wildland fire “safe zones” for responder safety in all jurisdictional geographic areas.
1-14	Identify funding streams such as grants, normal budgeting, and/or National Park stipend necessary to maintain wildland firefighting equipment per NFPA Standards.
1-15	Study the Sevier County staffing levels needed for additional on-duty paid firefighters ready to respond to large, complex emergencies.
Law Enforcement (9)	
1-16	Update the evacuation plan to provide multiple options for coordinated and time-sensitive evacuation notification, routing, and drop-off points for evacuees through adjacent communities—including use of the City of Gatlinburg’s public education channel (Public Education Guide [PEG]).
1-17	Develop standard verbiage to use in printed notifications to be distributed during evacuations. This should include consequences for non-compliance with the order.
1-18	Provide take-home emergency vehicles for all City of Gatlinburg officers to achieve quicker response time and more coverage during emergencies.
1-19	Develop evacuation planning alternatives and associated resources (e.g., portable message boards and additional signage) required for implementation at various levels of voluntary and mandatory evacuations.
1-20	Provide PPE in the police vehicles during wildland fires (breathing apparatus, clothing, etc.).
1-21	Acquire a centralized traffic management system for the City of Gatlinburg that will allow programing and automatic adjustment of traffic flow patterns, equipped with traffic cameras for monitoring by the police department.
1-22	Require a log of all refusals to evacuate.
1-23	Create a memorandum agreement between the GSMNP, City of Gatlinburg, City of Pigeon Forge, and Sevier County regarding operational protocols for maintaining traffic on the Spur (connector road between Gatlinburg and Pigeon Forge through the GSMNP) and Gatlinburg Bypass.
1-24	Evaluate options to provide underground utilities (e.g., underground power and communication lines at radio and cell tower locations and other vulnerable sites) to reduce communications and power issues in remote areas during extreme conditions.
Emergency Management (3)	
1-25	Schedule regular interactions among civic clubs, commission meetings, conventions, professional association meetings, Emergency Management personnel, and state/local leaders to encourage development of ongoing relationships. Such relationships contribute to more efficient communications needed during an unfolding disaster or emergency.
1-26	Include VOADS (e.g., Volunteer East Tennessee) in the drill and exercise program for Sevier County.
1-27	Plan for increased security at shelters (in addition to sworn law enforcement), using a contracted security firm to supplement the limited availability of local law enforcement personnel during an emergency.

Table C-1 Recommendations for the City of Gatlinburg and/or Sevier County

Interagency Communications (5)	
1-28	Create redundancy in critical messaging and communications with state and federal agencies.
1-29	Develop a continuity of government plan to enable the city or county government to function in the event the government buildings were unsafe or destroyed or government officials became unable to serve.
1-30	Address the potential for radio communication “dead spots,” and continue to consider the need for enhanced radio capacity, capabilities, and access. (For example, work with the GSMNP to research the possibility of installing radio repeaters in the Twin Creeks area and other areas to remedy the radio communications dead spot areas.)
1-31	Add radio frequencies to provide appropriate capacity to manage unusual occurrences, major events, or catastrophic incidents and to provide remote interface with established City of Gatlinburg EOC.
1-32	Acquire an adequate number of hand-held radios to supplement the existing radio count in providing emergency communications devices to mutual aid responding agencies, City of Gatlinburg leadership, and volunteers in policing.
Public Information (4)	
1-33	Evaluate the public communication and notification system for the City of Gatlinburg and surrounding communities to identify any notification gaps.
1-34	Create crisis communication plans for the City of Gatlinburg and Sevier County with redundant communications technology methods, including the use of social media (e.g., create a “standby site” on Twitter that is only utilized for official communications during a crisis).
1-35	Set up an online joint information sharing capability with area/regional PIOs with a procedure that press releases must have signoff from at least one person representing affected agencies or local governments before distribution.
1-36	Provide regularly updated resource listings in one location for mass distribution of information (e.g., chamber of commerce database of all businesses, hospitality associations, and non-profit contact lists).
Logistics (1)	
1-37	Maintain awareness of criteria for best-suited areas for staging of apparatus (e.g., the location of the staging area must have adequate space for expansion as well as robustness in facilities and services with a terrain that supports efficient operations).
Recovery and Humanitarian Outreach (4)	
1-38	Incorporate a representative from the Hispanic community on boards and planning teams to help address housing (ESF6) needs.
1-39	Design, develop, and implement a strategy to effectively provide a debris removal plan with emphasis on post-catastrophic event action to be taken to minimize congestion within the affected areas.
1-40	Establish an accounting and auditing system for the recovery phase, if FEMA reimbursement and a local match is sought, to document the receiving, warehousing, and distribution of donated and provided goods and services. Alternatively, utilize a VOAD that is able to provide similar capabilities.
1-41	Incorporate a plan or policy—consistent with ESF14—that addresses individuals advertising after disasters to interdict scams, fraudulent representations, and, in general, false or misleading business practices (e.g., construction or debris removal).

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RECOMMENDATIONS FOR OTHER AGENCIES/JURISDICTIONS

The set of recommendations presented in Table C-2 focuses on new actions that need to be taken by other agencies/jurisdictions. These recommendations address “Issues” and the associated “Lessons Learned” across the six functions or sub-functions (i.e., fire, law enforcement, and emergency management under “Command Staff and Incident Management” and “Operations”) addressed in the Findings Section.

Table C-2 Recommendations for Other Agencies/Jurisdictions	
2-1	Request the GSMNP to establish a method of early fire detection and early warning capabilities to notify the communities of interest of the threat of approaching fires.
2-2	Request a change to NWS guidelines, which would allow members of the agency to send IPAWS notifications regarding a fire.
2-3	Request the state legislature to revise existing evacuation statutes to include county officials (e.g., county mayor).
2-4	Request the GSMNP to participate in a standing leadership group as a committee (GSMNP, local fire departments, county EMA) to address the following: <ul style="list-style-type: none"> • Explore options for improved policies within the GSMNP pertaining to immediate extinguishment of all fires. • Define a process that will help ensure better, timely communication from GSMNP to surrounding communities. • Create a detailed memorandum agreement to provide mandatory communications requirements with communities adjacent to the GSMNP and especially to those communities in Sevier County. • Establish redundant communications between the City of Gatlinburg and the GSMNP to ensure communications and “hot links” are available to GSMNP and City of Gatlinburg officials. • Provide a semiannual report to Sevier County and municipalities in Sevier County.
2-5	Encourage installation of an emergency communication system, if not already present in hotels and multi-family residences, to alert occupants via audible, visual, or textual means of the need to evacuate.
2-6	Consider the following in regards to fire modeling: <ul style="list-style-type: none"> • Study the future use and resource requirements of fire modeling in Sevier County for large wildland fires. • Acquire backup power for the SIMTABLE fire progression software. • Request that the SIMTABLE include the modeling of ember throwing under high wind conditions, and include the modeling of winds greater than 60 mph. • In the near term, provide training to at least two additional SIMTABLE users in Sevier County.
2-7	To help ensure that routine mutual-aid requests from the GSMNP—as well as wildland fire responses—are adequately communicated in a timely manner, suggest that the GSMNP acquire radio equipment enabling park rangers and fire management personnel to communicate with all of Sevier County’s response agencies.
2-8	Conduct annual training exercises in the GSMNP for personnel from National Park Fire Management, Sevier County, the City of Gatlinburg, Sevier County Wildland Fire Task Force, and Tennessee Division of Forestry. These exercises should test the interoperability of communications equipment, establishment of UC, information sharing, and public notification of threats from rapidly moving wildfires.
2-9	Encourage the GSMNP to perform controlled burns and conduct mechanical fuel reduction along the Sevier County boundary of the park to reduce hazardous fuel accumulations; reduce fuel levels to a healthy state; and reduce the risk of large, uncontrollable wildfires in the area.

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ACTIONS ALREADY TAKEN OR UNDERWAY BY THE CITY OF GATLINBURG AND/OR SEVIER COUNTY

The information presented in Table C-3 focuses on actions that have already been taken or are underway by the City of Gatlinburg and/or Sevier County. These items address “Issues” and the associated “Lessons Learned” across the six functions or sub-functions (i.e., fire, law enforcement, and emergency management under “Command Staff and Incident Management” and “Operations”) addressed in the Findings Section.

Table C-3 Actions Already Taken or Underway	
3-1	Develop an enhanced Emergency Notification System with the capability to provide advanced notifications and warnings to the public.
3-2	Procure technology to enable recording of all radio channels and phone lines with an uninterrupted power source to avoid manual logging of calls during high volume situations.
3-3	Request a change to TEMA guidelines that would allow them to send an IPAWS notification even if communications are lost with the EOC.
3-4	Enhance the county’s CodeRed subscription and IPAWS alert capabilities, as well as advertise and arrange mass enrollment opportunities as needed.
3-5	Create a redundant and robust citizen/visitor notification and warning system.
3-6	Maintain awareness (e.g., ESF11 – food emergency service function and others) of the potential need to use multiple avenues of food providers to feed first responders over numerous days to provide continuity in the food services.
3-7	Establish a protocol for providing regular communication to the public and all residents and visitors in Sevier County, using multiple communication methods (e.g., TV, social media, radio) addressing non-emergency public safety information.
3-8	Provide signage to all roads and intersections in mountainous portions of Sevier County to aid in the navigation of the terrain, and conduct a study to determine if alternative routing technologies could be applied to the roadways in the City of Gatlinburg and surrounding communities.
3-9	Obtain a cache of satellite phones for Sevier County and associated municipalities to be deployed during an emergency when other forms of communication are fractured, and request that the GSMNP also have accessibility.
3-10	Design, develop, and implement a Firewise public education system, and include materials to be provided to all residents and visitors.
3-11	Begin self-evaluation, conduct workshops, and initiate steps to become a Firewise-recognized community.
3-12	Establish a backup communications center in Sevier County that is available for use by the City of Gatlinburg and other Sevier County agencies.
3-13	Establish redundancy in phone system for the City of Gatlinburg.
3-14	Install a warning system and an AM radio frequency system. Sevier County and the City of Gatlinburg have as of this date upgraded the CodeRed system as well as other notification systems.
3-15	Apply to FEMA to allow Sevier County to utilize IPAWS.
3-16	For emergency situations, use the same notification methods for non-emergency as for door-to-door notification, IPAWS, emergency notification (CodeRed), siren systems, and AM radio frequency.
3-17	Acquire a sufficient number of chain saws for use by law enforcement during an emergency.

Table C-3 Actions Already Taken or Underway

3-18	Require printing of updated map books from the 911 emergency communications district at a minimum of every two years. Place the books in all the response vehicles as backup in case data service is lost, and store them for distribution in emergencies.
3-19	Identify technology options to achieve interoperability across city, county, state, and federal agencies without diminishing existing city and county radio capabilities.
3-20	Engage a VOAD group that is skilled in disaster response and volunteer management: (1) include this group in training and disaster drill exercises with local first responders and (2) perform periodic communications with this particular group to ensure that the leadership with the EMA office and the VOAD group remains strong and effective.

CONTINUED PERFORMANCE OF IDENTIFIED BEST PRACTICES

The set of identified best practices presented in Table C-4 focuses on actions that worked well during the firestorm and in the following days and need to be sustained to help ensure preparedness for future events. In addition, these identified best practices should be applicable to other communities. These identified best practices address “What Worked Well” and the associated “Lessons Learned” across the six functions or sub-functions (i.e., fire, law enforcement, and emergency management under “Command Staff and Incident Management” and “Operations”) addressed in the Findings Section.

Table C-4 Continued Performance of Identified Best Practices	
4-1	Maintain the system of resource tracking per NIMS.
4-2	Continue to follow NFPA Standards related to apparatus equipment procurement.
4-3	Keep uniformity of configuration of equipment placed in and on GFD and Sevier County Wildland Fire Task Force apparatus.
4-4	Ensure the GIS mapping person and dispatch person in the command center work in close proximity to record evacuation efforts (notifications and documentation of any refusals).
4-5	Continue the process of having all the various agencies represented inside the EOC so the decision makers can be briefed face to face.
4-6	Continue to include Sevier County and City of Gatlinburg executive leadership (e.g., county mayor and city manager) in EOC operations and IC training.
4-7	Reinforce the current NIMS training and practice of requesting mutual aid in a proactive manner (e.g., as soon as you perceive the possible need) with the following tasks: <ul style="list-style-type: none"> • Carry two portable radios: one for line of sight (portable to portable) and one for communication with central dispatch. • Maintain line of sight with crew members.
4-8	Continue to maintain GFD as a Class 2 organization in the ISO Fire Suppression Rating Schedule.
4-9	Develop a process for organized re-entry during a period with limited access and implemented curfews to provide for legitimate authorized exceptions.
4-10	Continue to work together with the county to support team building and training of key officials in the succession plans for the City of Gatlinburg and Sevier County.
4-11	Continue combined efforts from Sevier County, City of Gatlinburg, City of Pigeon Forge, and City of Sevierville to support their GIS departments with sufficient funding, training, and equipment to maintain their services in the county.
4-12	Continue to have the IMT, EMA office, and the Incident Commander request a TEMA representative in the EOC and the command post for the duration of the response phase.
4-13	Continue being prepared to use pen, paper, and radios for resource tracking system during large, complex emergency situations.
4-14	Continue with training to establish experienced personnel who follow the NIMS command system.
4-15	Continue housing practices: <ul style="list-style-type: none"> • Establish relationships with your lodging community before, during, and after the disaster to help find temporary housing for victims. • Establish relationships with housing agencies and volunteer organizations. This will allow for a faster, more efficient process to find temporary housing. Knowing names and establishing relationships with

Table C-4 Continued Performance of Identified Best Practices

	<p>the decision makers will allow for a more effective method of meeting the emergency housing needs of the community in a time of crisis.</p> <ul style="list-style-type: none"> Have one or more donation/revenue sources dedicated to addressing housing needs. During disasters there will be multiple donation/revenue streams to support the recovery phase of the operation. Dedicating one or more streams to focus on housing needs will allow for a more efficient and effective process.
4-16	Continue to establish separate centers during emergencies for receiving, processing, and distributing (e.g., food, water, clothes, small furniture), and designate a single coordinator for all operations.
4-17	Continue to provide regular and specialized wildland fire training opportunities for GFD and the Sevier County Wildland Fire Task Force via classroom instruction, hands-on evolutions, and interagency drills based on ISO and NFPA Standards.
4-18	Continue to provide training and education regarding emergency operations and evacuations, including the need for early call for additional resources.
4-19	Established formal committees (e.g., donations committee for money and items) that include the ESFs (managers and alternates), all jurisdictions, and municipalities affected by the disaster. This will provide continuity over multiple months through regular meetings and communication. Achieving continuity will help to avoid duplication of efforts.
4-20	Establish the MARC and the distribution center in separate locations to avoid congestion.
4-21	Establish, when possible, multiple DRCs to sign up for FEMA.
4-22	Immediately establish a website for victims and volunteers that focus on (1) "I need help" and (2) "I want to help."
4-23	Establish a VRC to provide a location for volunteers to register and receive assignments.
4-24	Create a policy and supporting activities to bring volunteers into the relief effort, providing needed guidance on function, reporting, accounting, etc., to appropriately use the strengths of these individuals.
4-25	Establish a long-term recovery committee to make recommendations on how to accommodate prolonged unmet needs of citizens impacted by catastrophic disasters.
4-26	Document all distributions of donations to each person receiving assistance, and track all actions through the Crisis Assistance Network. This action will complement the mission of long-term recovery.
4-27	For receiving, processing, and distributing during emergencies, implement a strategy consistent with the current practice regarding location of emergency receiving, warehousing, and distribution facilities for donations of goods. Location should be selected with the intention that the facility will be in use for a minimum of four months. This strategy should be augmented with volunteer organization capacity, utilization plan, and accounting systems.
4-28	Review the benefits and challenges of continuing the long-term recovery committee (e.g., MTRT) as a dormant organization until needed, including accounts for receiving funds. (For example, under most circumstances donations of dollars, goods, services, etc., will quickly occur after disasters. A plan should be developed [pre-disaster] to appropriately advertise for assistance and define needed items. The plan should address conducting media notifications and using social media to clearly indicate addresses for different types of donations, local drop-off points, and other information to improve the operational effectiveness of the collection effort.)
4-29	Direct the VRC to use a standard web-based tracking system (i.e., Crisis Cleanup) to provide an efficient way to request work and to record who fulfilled the request.
4-30	Work with local, state, and federal officials to develop a plan to alleviate the loss of revenue (e.g., create an advertising campaign to get the message out that the area is open for business).
4-31	Execute a plan to mitigate erosion (e.g., hydro seeding).
4-32	Prioritize the hiring of a consulting firm to help EMA maximize the public assistance program with FEMA.

Table C-4 Continued Performance of Identified Best Practices

4-33	Expand personnel within the UC to include EMS to provide emergency care and transportation for all incident-related calls for service as well as the routine calls for service.
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APPENDIX A. ALIGNMENT TO GOALS

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Introduction

This appendix frames each item from Tables C-1 through Table C-4 (see Conclusions Section) in the context of goals addressing key areas of concern raised by the public and those seeking direction from this study.

The following list identifies the five goals (and the number of associated actions):

- Goal 1: Help ensure that future GSMNP wildfires are identified, interdicted, and suppressed so that they do not impact the communities adjacent to the GSMNP boundaries (27 associated actions).
- Goal 2: Help minimize the initiation and/or movement of wildfire in the City of Gatlinburg and in Sevier County (50 associated actions).
- Goal 3: Help ensure the public is appropriately educated and has taken responsible actions concerning the threat of wildfires, safe evacuation procedures, situational awareness, and Firewise methodologies (26 associated actions).
- Goal 4: Help ensure that residents and visitors in all relevant areas are informed of the need for an evacuation from a wildland fire in a timely manner (51 associated actions).
- Goal 5: Help ensure safe evacuation of residents and visitors who are under an evacuation order for a wildland fire (50 associated actions).

This appendix provides an alignment table (Table A-1) that associates recommendations (for the City of Gatlinburg and/or Sevier County and for other agencies/jurisdictions), actions already taken or underway, and identified best practices from this study to relevant goals. The result is that each of the five goals has multiple applicable actions. (Note: some actions are applicable to only one goal while others are applicable to multiple goals.) Having numerous actions for each goal helps to provide assurance that each of these goals will be achieved going forward.

There are some items listed in Tables C-1 through Table C-4 in the Conclusions Section not included in the Table A-1. This is because those items generally focus on activities after the firestorm and do not address any of these five goals. Please note that the applied item number from Tables C-1 through C-4 remains consistent with the item numbers in this Table A-1.

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Table A-1 Alignment to Goals						
Selected Recommendations from Table C-1 through Table C-3 and Identified Best Practices from Table C-4		Goal Addressed				
		1	2	3	4	5
Recommendations from the City of Gatlinburg and/or Sevier County (see Table C-1)						
Command Staff and Incident Management						
Fire						
1-1	Update the city's and county's EOCs to provide adequate computers, radio equipment, and operation space to help support significant incidents or major events.		✓		✓	✓
1-2	Obtain a Mobile Command Center for use by Sevier County and associated municipalities that is capable of being deployed to large incidents and equipped to handle a multi-agency, multi-day response.		✓		✓	✓
1-3	Request federal and/or state support/funding for the development of a wildland fire risk rating system for specified areas of Sevier County (e.g., the system would define a method for establishing a fire risk rating for a specific geographic area; develop the approach for notifying the residences of the risk status for the geographic area; and help inform officials regarding the need for a specified area to take action, including implementing a mandatory evacuation).			✓	✓	
1-4	Develop a plan to enhance the security of an EOC during an emergency to prevent unauthorized personnel from entering.		✓			
Law Enforcement						
1-5	Determine the capacity and functionality of the City of Gatlinburg Police Communications Center to include, at a minimum: interoperability solutions, needed consoles, available space, personnel, training, and procedures.	✓	✓	✓	✓	✓
1-6	Assign existing staff to support City of Gatlinburg EOC in managing incoming/outgoing telephone communications on a variety of levels to include citizens, police and fire staff, city officials, all city departments, etc.	✓	✓		✓	✓
1-7	Revise the City of Gatlinburg emergency operations plan to include, at a minimum: (1) an early designation of law enforcement staging area for human and equipment assets; (2) a predetermined list of adequate locations; (3) the necessary space for logistical support and controlled access; and (4) guidance for briefing arriving mutual aid first responders on the terrain, hazards, and other working environmental challenges prior to being deployed.		✓			
1-8	Conduct a feasibility study for the emergency response coordination of City of Gatlinburg services to include resources needed for the technology infrastructure, continuity of operations (for all city departments), and mobile communications.		✓	✓	✓	✓

Table A-1 Alignment to Goals						
Selected Recommendations from Table C-1 through Table C-3 and Identified Best Practices from Table C-4		Goal Addressed				
		1	2	3	4	5
Emergency Management						
1-9	Create printed disaster preparedness information to be distributed to all city and county residents and visitors through all media outlets, explaining specific actions to be followed if evacuations are directed by the public safety officials (e.g., directional maps with all egress routes clearly marked).			✓		✓
1-10	Conduct an EOC drill that involves a relocation.	✓	✓		✓	✓
Operations						
Fire						
1-11	Acquire an adequate number of portable generators capable of being deployed to pump stations to get water pumps and other critical infrastructure (e.g., a stand-alone EOC or Incident Command Post [ICP]) back in service in a timely manner.		✓		✓	✓
1-12	Build pump stations using fire resistive construction.		✓			
1-13	Establish pre-designated wildland fire “safe zones” for responder safety in all jurisdictional geographic areas.		✓			
1-14	Identify funding streams such as grants, normal budgeting, and/or National Park stipend necessary to maintain wildland firefighting equipment per NFPA Standards.		✓			
1-15	Study the Sevier County staffing levels needed for additional on-duty paid firefighters ready to respond to large, complex emergencies.		✓		✓	✓
Law Enforcement						
1-16	Update the evacuation plan to provide multiple options for coordinated and time-sensitive evacuation notification, routing, and drop-off points for evacuees through adjacent communities—including use of the City of Gatlinburg’s public education channel (Public Education Guide [PEG]).			✓	✓	✓
1-17	Develop standard verbiage to use in printed notifications to be distributed during evacuations. This should include consequences for non-compliance with the order.			✓	✓	✓
1-18	Provide take-home emergency vehicles for all City of Gatlinburg officers to achieve quicker response time and more coverage during emergencies.			✓		
1-19	Develop evacuation planning alternatives and associated resources (e.g., portable message boards and additional signage) required for implementation at various levels of voluntary and mandatory evacuations.		✓	✓	✓	✓
1-20	Provide PPE in the police vehicles during wildland fires (breathing apparatus, clothing, etc.).		✓	✓		

Table A-1 Alignment to Goals						
Selected Recommendations from Table C-1 through Table C-3 and Identified Best Practices from Table C-4		Goal Addressed				
		1	2	3	4	5
1-21	Acquire a centralized traffic management system for the City of Gatlinburg that will allow programing and automatic adjustment of traffic flow patterns, equipped with traffic cameras for monitoring by the police department.			✓	✓	✓
1-22	Require a log of all refusals to evacuate.			✓	✓	
1-23	Create a memorandum agreement between the GSMNP, City of Gatlinburg, City of Pigeon Forge, and Sevier County regarding operational protocols for maintaining traffic on the Spur (connector road between Gatlinburg and Pigeon Forge through the GSMNP) and Gatlinburg Bypass.				✓	✓
1-24	Evaluate options to provide underground utilities (e.g., underground power and communication lines at radio and cell tower locations and other vulnerable sites) to reduce communications and power issues in remote areas during extreme conditions.	✓	✓			✓
Emergency Management						
1-25	Schedule regular interactions among civic clubs, commission meetings, conventions, professional association meetings, Emergency Management personnel, and state/local leaders to encourage development of ongoing relationships. Such relationships contribute to more efficient communications needed during an unfolding disaster or emergency.			✓		
Interagency Communications						
1-28	Create redundancy in critical messaging and communications with state and federal agencies.			✓	✓	✓
1-29	Develop a continuity of government plan to enable the city or county government to function in the event the government buildings were unsafe or destroyed or government officials became unable to serve.	✓	✓	✓		
1-30	Address the potential for radio communication “dead spots,” and continue to consider the need for enhanced radio capacity, capabilities, and access. (For example, work with the GSMNP to research the possibility of installing radio repeaters in the Twin Creeks area and other areas to remedy the radio communications dead spot areas.)	✓	✓			
1-31	Add radio frequencies to provide appropriate capacity to manage unusual occurrences, major events, or catastrophic incidents and to provide remote interface with established City of Gatlinburg EOC.	✓	✓		✓	✓
1-32	Acquire an adequate number of hand-held radios to supplement the existing radio count in providing emergency communications devices to mutual aid responding agencies, City of Gatlinburg leadership, and volunteers in policing.	✓	✓		✓	✓

Table A-1 Alignment to Goals						
Selected Recommendations from Table C-1 through Table C-3 and Identified Best Practices from Table C-4		Goal Addressed				
		1	2	3	4	5
Public Information						
1-33	Evaluate the public communication and notification system for the City of Gatlinburg and surrounding communities to identify any notification gaps.		✓		✓	✓
1-34	Create crisis communication plans for the City of Gatlinburg and Sevier County with redundant communications technology methods, including the use of social media (e.g., create a “standby site” on Twitter that is only utilized for official communications during a crisis).			✓	✓	✓
1-35	Set up an online joint information sharing capability with area/regional PIOs with a procedure that press releases must have signoff from at least one person representing affected agencies or local governments before distribution.			✓		
1-36	Provide regularly updated resource listings in one location for mass distribution of information (e.g., chamber of commerce database of all businesses, hospitality associations, and non-profit contact lists).		✓		✓	✓
Logistics						
1-37	Maintain awareness of criteria for best-suited areas for staging of apparatus (e.g., the location of the staging area must have adequate space for expansion as well as robustness in facilities and services with a terrain that supports efficient operations).	✓	✓			
Recommendations for Other Agencies/Jurisdictions (see Table C-2)						
2-1	Request the GSMNP to establish a method of early fire detection and early warning capabilities to notify the communities of interest of the threat of approaching fires.	✓	✓		✓	✓
2-2	Request a change to the NWS guidelines, which would allow members of the agency to send IPAWS notifications regarding a fire.				✓	✓
2-3	Request the state legislature to revise existing evacuation statutes to include county officials (e.g., county mayor).				✓	✓

Table A-1 Alignment to Goals						
Selected Recommendations from Table C-1 through Table C-3 and Identified Best Practices from Table C-4		Goal Addressed				
		1	2	3	4	5
2-4	<p>Request the GSMNP to participate in a standing leadership group as a committee (GSMNP, local fire departments, county EMA) to address the following:</p> <ul style="list-style-type: none">• Explore options for improved policies within the GSMNP pertaining to immediate extinguishment of all fires.• Define a process that will help ensure better, timely communication from GSMNP to surrounding communities.• Create a detailed memorandum agreement to provide mandatory communications requirements with communities adjacent to the GSMNP and especially to those communities in Sevier County.• Establish redundant communications between the City of Gatlinburg and the GSMNP to ensure communications and “hot links” are available to GSMNP and City of Gatlinburg officials.• Provide a semiannual report to Sevier County and municipalities in Sevier County.	✓	✓		✓	✓
2-5	<p>Encourage installation of an emergency communication system, if not already present in hotels and multi-family residences, to alert occupants via audible, visual, or textual means of the need to evacuate.</p>				✓	✓
2-6	<p>Consider the following in regards to fire modeling:</p> <ul style="list-style-type: none">• Study the future use and resource requirements of fire modeling in Sevier County for large wildland fires.• Acquire backup power for the SIMTABLE fire progression software.• Request that the SIMTABLE include the modeling of ember throwing under high wind conditions, and include the modeling of winds greater than 60 mph.• In the near term, provide training to at least two additional SIMTABLE users in Sevier County.	✓	✓			
2-7	<p>To help ensure that routine mutual-aid requests from the GSMNP—as well as wildland fire responses—are adequately communicated in a timely manner, suggest that the GSMNP acquire radio equipment enabling park rangers and fire management personnel to communicate with all of Sevier County’s response agencies.</p>	✓	✓			
2-8	<p>Conduct annual training exercises in the GSMNP for personnel from National Park Fire Management, Sevier County, the City of Gatlinburg, Sevier County Wildland Fire Task Force, and Tennessee Division of Forestry. These exercises should test the interoperability of communications equipment, establishment of UC, information sharing, and public notification of threats from rapidly moving wildfires.</p>	✓	✓		✓	✓

Table A-1 Alignment to Goals						
Selected Recommendations from Table C-1 through Table C-3 and Identified Best Practices from Table C-4		Goal Addressed				
		1	2	3	4	5
2-9	Encourage the GSMNP to perform controlled burns and conduct mechanical fuel reduction along the Sevier County boundary of the park to reduce hazardous fuel accumulations; reduce fuel levels to a healthy state; and reduce the risk of large, uncontrollable wildfires in the area.	✓				
Actions Already Taken or Underway by the City of Gatlinburg and/or Sevier County (see Table C-3)						
3-1	Develop an enhanced Emergency Notification System with the capability to provide advanced notifications and warnings to the public.				✓	
3-2	Procure technology to enable recording of all radio channels and phone lines with an uninterrupted power source to avoid manual logging of calls during high volume situations.		✓	✓		
3-3	Request a change to TEMA guidelines that would allow them to send an IPAWS notification even if communications are lost with the EOC.				✓	✓
3-4	Enhance the county’s CodeRed subscription and IPAWS alert capabilities, as well as advertise and arrange mass enrollment opportunities as needed.			✓	✓	✓
3-5	Create a redundant and robust citizen/visitor notification and warning system.			✓	✓	✓
3-6	Maintain awareness (e.g., ESF11 – food emergency service function and others) of the potential need to use multiple avenues of food providers to feed first responders over numerous days to provide continuity in the food services.	✓	✓			
3-7	Establish a protocol for providing regular communication to the public and all residents and visitors in Sevier County, using multiple communication methods (e.g., TV, social media, radio) addressing non-emergency public safety information.				✓	✓
3-8	Provide signage to all roads and intersections in mountainous portions of Sevier County to aid in the navigation of the terrain, and conduct a study to determine if alternative routing technologies could be applied to the roadways in the City of Gatlinburg and surrounding communities.			✓	✓	✓
3-9	Obtain a cache of satellite phones for Sevier County and associated municipalities to be deployed during an emergency when other forms of communication are fractured, and request that the GSMNP also have accessibility.		✓		✓	
3-10	Design, develop, and implement a Firewise public education system, and include materials to be provided to all residents and visitors.			✓		✓
3-11	Begin self-evaluation, conduct workshops, and initiate steps to become a Firewise-recognized community.		✓	✓		

Table A-1 Alignment to Goals						
Selected Recommendations from Table C-1 through Table C-3 and Identified Best Practices from Table C-4		Goal Addressed				
		1	2	3	4	5
3-12	Establish a backup communications center in Sevier County that is available for use by the City of Gatlinburg and other Sevier County agencies.	✓	✓		✓	✓
3-13	Establish redundancy in phone system for the City of Gatlinburg.		✓	✓	✓	✓
3-14	Install a warning system and an AM radio frequency system. Sevier County and the City of Gatlinburg have as of this date upgraded the CodeRed system as well as other notification systems.				✓	✓
3-15	Apply to FEMA to allow Sevier County to utilize IPAWS.				✓	✓
3-16	For emergency situations, use the same notification methods for non-emergency as for door-to-door notification, IPAWS, emergency notification (CodeRed), siren systems, and AM radio frequency.				✓	✓
3-17	Acquire a sufficient number of chain saws for use by law enforcement during an emergency.		✓	✓	✓	✓
3-18	Require printing of updated map books from the 911 emergency communications district at a minimum of every two years. Place the books in all the response vehicles as backup in case data service is lost, and store them for distribution in emergencies.			✓	✓	✓
3-19	Identify technology options to achieve interoperability across city, county, state, and federal agencies without diminishing existing city and county radio capabilities.	✓	✓		✓	✓
Continued Performance of Identified Best Practices (Table C-4)						
4-1	Maintain the system of resource tracking per NIMS.		✓			
4-2	Continue to follow NFPA Standards related to apparatus equipment procurement.		✓			
4-3	Keep uniformity of configuration of equipment placed in and on GFD and Sevier County Wildland Fire Task Force apparatus.		✓			
4-4	Ensure the GIS mapping person and dispatch person in the command center work in close proximity to record evacuation efforts (notifications and documentation of any refusals).				✓	✓
4-5	Continue the process of having all the various agencies represented inside the EOC so the decision makers can be briefed face to face.	✓	✓		✓	✓
4-6	Continue to include Sevier County and City of Gatlinburg executive leadership (e.g., county mayor and city manager) in EOC operations and IC training.	✓	✓		✓	✓

Table A-1 Alignment to Goals						
Selected Recommendations from Table C-1 through Table C-3 and Identified Best Practices from Table C-4		Goal Addressed				
		1	2	3	4	5
4-7	Reinforce the current NIMS training and practice of requesting mutual aid in a proactive manner (e.g., as soon as you perceive the possible need) with the following tasks: <ul style="list-style-type: none">Carry two portable radios: one for line of sight (portable to portable) and one for communication with central dispatch.Maintain line of sight with crew members.	✓	✓			
4-8	Continue to maintain GFD as a Class 2 organization in the ISO Fire Suppression Rating Schedule.		✓			
4-9	Develop a process for organized re-entry during a period with limited access and implemented curfews to provide for legitimate authorized exceptions.				✓	✓
4-10	Continue to work together with the county to support team building and training of key officials in the succession plans for the City of Gatlinburg and Sevier County.	✓	✓	✓		
4-11	Continue combined efforts from Sevier County, City of Gatlinburg, City of Pigeon Forge, and City of Sevierville to support their GIS departments with sufficient funding, training, and equipment to maintain their services in the county.	✓	✓		✓	✓
4-12	Continue to have the IMT, EMA office, and the Incident Commander request a TEMA representative in the EOC and the command post for the duration of the response phase.	✓	✓		✓	✓
4-13	Continue being prepared to use pen, paper, and radios for resource tracking system during large, complex emergency situations.	✓	✓		✓	✓
4-14	Continue with training to establish experienced personnel who follow the NIMS command system.	✓	✓			
4-17	Continue to provide regular and specialized wildland fire training opportunities for GFD and the Sevier County Wildland Fire Task Force via classroom instruction, hands-on evolutions, and interagency drills based on ISO and NFPA Standards.	✓	✓		✓	✓
4-18	Continue to provide training and education regarding emergency operations and evacuations, including the need for early call for additional resources.		✓		✓	
4-33	Expand personnel within the UC to include EMS to provide emergency care and transportation for all incident-related calls for service as well as the routine calls for service.					✓

APPENDIX B. ACRONYMS

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AAR	After Action Review
CNB	Citizens National Bank
DRC	Disaster Resource Center
EAS	Emergency Alert System
EMA	Emergency Management Agency
EMS	Emergency Management Services
EOC	Emergency Operations Center
ESF	Emergency Support Function
FEMA	Federal Emergency Management Agency
FMO	Fire Management Officer
GCVB	Gatlinburg Convention and Visitors Bureau
GFC	Gatlinburg Fire Chief
GFD	Gatlinburg Fire Department
GIS	Geographic Information System
GPC	Gatlinburg Police Chief
GPD	Gatlinburg Police Department
GSMNP	Great Smoky Mountains National Park
HUD	U.S. Department of Housing and Urban Development
IAP	Incident Action Plan
IC	Incident Command
ICP	Incident Command Post
ICS	Incident Command Structure
IMT	Incident Management Team
IPAWS	Integrated Public Alert and Warning System
ISO	Insurance Services Office
KBDI	Keetch-Byram Drought Index
MARC	Multi-Agency Resource Center
MTRT	Mountain Tough Recovery Team
NCIC	National Crime Information Center
NFPA	National Fire Protection Association

NIMS	National Incident Management System
NPS	National Park Service
NWS	National Weather Service
PAO	Public Affairs Officer
PBX	Private Branch Exchange
PEG	Public Education Guide
PIO	Public Information Officer
PPE	Personal Protective Equipment
RAWS	Remote Area Weather Station
SBA	Small Business Administration
SCEMD	Sevier County Emergency Management Director
SCSO	Sevier County Sheriff's Office
TCA	Tennessee Code Annotated
TCFF	Tennessee Commission on Firefighting
TDEC	Tennessee Department of Environmental Conservation
TDH-EMS	Tennessee Department of Health Office of Emergency Medical Services
TEMA	Tennessee Emergency Management Agency
THP	Tennessee Highway Patrol
TIES	Tennessee Information Enforcement System
UC	Unified Command
UHF	Ultra High Frequency
VOAD	Voluntary Organizations Active in Disaster
VRC	Volunteer Reception Center
WEA	Wireless Emergency Alert