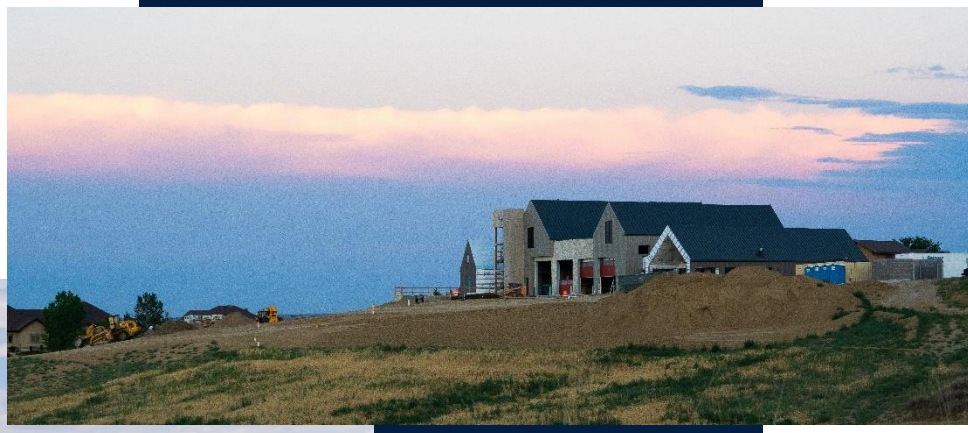
Community Risk Assessment and Standards of Cover 2022



Accreditation Manager
Jeff Dykstra

THIS PAGE LEFT INTENTIONALLY BLANK

WINDSOR SEVERANCE FIRE RESCUE

Community Risk and Standards of Cover

First Publication: August 11, 2022

Author: Accreditation Manager Jeff Dykstra

THIS PAGE LEFT INTENTIONALLY BLANK

Windsor Severance Fire Rescue (WSFR) Board of Directors

President, Robert Thorn
Vice President, Mark Stevenson
Secretary, Andrew Rosen
Treasurer, Trent Hansen
Member, Mike Medhurst

Windsor Town Board

Mayor Paul Rennemeyer
District 1, Scott Charpentier
District 2, Barry Wilson
District 3, Ken Bennett [Mayor Pro Tem]
District 4, Julie Cline
District 5, Victor Tallon
District 6, David Sislowski

Severance Town Board

Mayor Matthew Fries
Stephen Gagliardi [Mayor Pro Tem]
Council Member Dennis "Zeke" Kane
Council Member Frank Baszler
Council Member Michelle Duda
Council Member Tad Stout

WSFR Executive Leadership Team

Fire Chief Kris Kazian
Deputy Chief of Operations Steve Dawald
Fire Marshal Sandra Friedrichsen
Director of Administration Jeff Dykstra

WINDSOR SEVERANCE FIRE PROTECTION DISTRICT

RESOLUTION TO ADOPT THE WINDSOR SEVERANCE FIRE RESCUE COMMUNITY RISK ASSESSMENT AND STANDARDS OF COVER

RESOLUTION 2022-03

WHEREAS, Windsor Severance Fire Rescue has established a mission and vision statement and operates in a culture of Readiness, Excellence, Courage, and Respect which are our organizational values guiding our agency in providing fire, medical, and life safety services to our community: and

WHEREAS, Windsor Severance Fire Rescue has established policies and levels of service for effective responses based on best practices, safety, and operational needs to respond to medical emergencies, traffic accidents, fires, hazardous materials, grass/wildfire, and technical rescue incidents; and,

WHEREAS, Windsor Severance Fire Rescue successfully was recognized in 2018 as an accredited agency through the Commission of Fire Accreditation International (CFAI) and as an agency value the benefits of this process, are seeking reaccreditation; and,

WHEREAS, Windsor Severance Fire Rescue has completed a critical component of the accreditation process, developing an effective Standards of Cover which defines how you will respond to emergencies that are being experienced by the community; and,

WHEREAS, Windsor Severance Fire Rescue has collaboratively developed a comprehensive Community Risk Assessment, which is a process of assessing hazards, vulnerabilities, risks, ability to cope, preparing coping strategies and preparing risk reduction options implementation plan; and,

WHEREAS, the documents that make up the Accreditation process that were originally developed leading up to our 2018 Accreditation status have since been indoctrinated throughout Windsor Severance Fire Rescue personnel and culture. The organization has embraced the concept of a "constant improvement" model throughout our organization and have revised our reaccreditation documents for consideration by the Commission for a hearing in 2023; and,

NOW THEREFORE, be it resolved, that the Board of Directors of Windsor Severance Fire Rescue adopts the Standards of Cover and Community Risk Assessment documents as presented, which embodies Windsor Severance Fire Rescue's commitment to the accreditation process and captures our organizational appreciation for the constant improvement model this process strives to achieve. Windsor Severance Fire Rescue will maintain an expectation for the entire organization assuring our policies and procedures and organizational culture maintain an acute focus on assuring our response to emergencies are in alignment with our expectations as outlined in the accreditation documents submitted. The Board of Directors and all members of Windsor Severance Fire Rescue will remain vigilant in the pursuit of our vision statement which pushes us to build a culture of unwavering commitment and to always strive for greatness.

Approved and adopted this 11 day of August, 2022, by the Windsor Severance Fire Rescue Board of Directors.

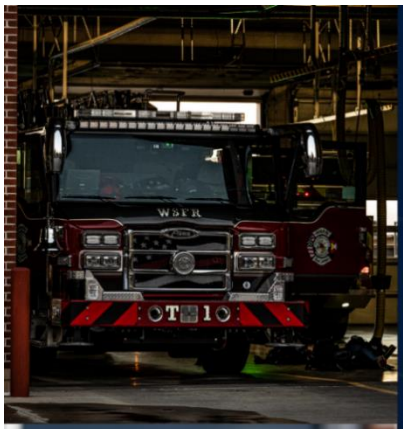
By Robert Thorn

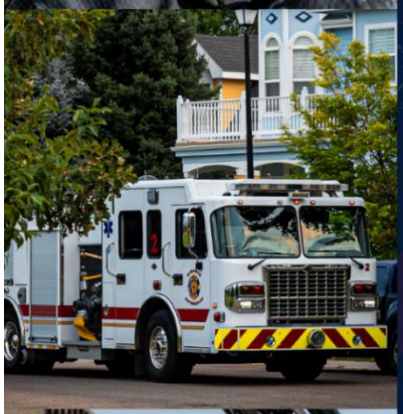
Board President, Robert Thorn

Attest

Andrew Rosen

Board Secretary, Andrew Rosen





WSFR
WINDSOR SEVERANCE
FIRE RESCUE
Est. 1902

MISSION STATEMENT

Providing professional service and compassionate care from our family to yours.

VISION STATEMENT

Building a culture of unwavering commitment to our community and each other while striving for greatness.

VALUES

READINESS:

We will anticipate the needs of our community through preparedness, education, and continual improvement.

EXCELLENCE:

We will pursue mastery of technical knowledge, skills, and abilities.

COURAGE:

We will display the mental strength and moral character to do what is right, even in the presence of personal and professional adversity.

RESPECT:

We will serve our community and each other with dignity, integrity, appreciation, and kindness, while valuing the diversity and efforts of all.

Document Validation Tracking

Description	Author	Version	Date
Published	Jeff Dykstra	1.0	8-11-2022

Acknowledgments:

Administrative Staff

- Thank you for the countless hours contributing, editing, and reviewing the content resulting in a thorough, high-quality, and professional document.

Category and Criterion Managers

- Thank you for providing the subject matter expertise necessary to make the accreditation process meaningful to all WSFR members.

Table of Contents

Message from The Chief

Windsor Severance Fire Rescue (WSFR) is a highly engaged and committed organization that has a laser focus on serving the community and our internal team at the highest level achievable. Embracing the laborious and challenging process of achieving Accreditation status in 2018 and now seeking reaccreditation is just one of the many ways that illustrates our unwavering commitment to those we have taken an oath to protect as well as those who are part of our highly motivated and dedicated team.

While this entire document can be considered technical in many ways, the community and elected officials need to understand that WSFR is constantly striving to benchmark ourselves to industry best practices and standards, that we do what we say we are doing, and the mantra of a constant improvement model is embraced at all levels for our emergency and non-emergency services as we proudly provide our services to our dynamic and growing community. WSFR is currently 1 of only 300 agencies in the world recognized for being accredited.

WSFR is legally responsible for approximately 100 square miles within both Larimer and Weld Counties, including the towns of Severance and Windsor and unincorporated areas. While we have a rich history of our agency starting in 1902 in what was a very rural community, we are now witnessing the rural community feel still exists, but we are also seeing explosive growth in our residential and commercial properties causing a shift in the landscape. Current estimates are that we protect 60,000 people and it is likely to be approaching 100,000 people in 10 years based on projections. This creates a need for WSFR to be proactively managing and engaging in our community, our organization, and in processes such as accreditation to assure our preparedness. Furthermore, operating in a data-driven world has become an expectation and best practice that WSFR embraces.

As the Fire Chief, progressively assessing the risk in the community served, utilizing data responsibly, and assuring there is a forward-thinking approach to the organization you lead is paramount. In 2018 when WSFR sought our original Accreditation, it was done to create a cultural expectation of embracing constant improvement and establishing best

practices. As we look towards our first reaccreditation, I assure you, that we have firmly developed that culture and I commit to you that accepting the status quo is not acceptable to WSFR.

The accreditation process is collaborative and many members within WSFR are part of this process, which is ultimately led by our Accreditation Manager. This daunting task could not be achieved without the help of so many people throughout the organization. There are many aspects of the process that cover areas such as response time analysis, resource allocations, incident concentration, and unit reliability considerations. This is accomplished by considering the relationship to the varying planning zones, property types, and our emergency response matrix while overlaying the varying elements of risk within our jurisdiction. This process requires the team to identify the different hazards, look at the necessary number of personnel needed to respond to efficiently mitigate incidents, and then evaluate the effectiveness of the response.

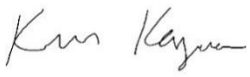
The systematic approach to the process as provided by the Commission on Fire Accreditation includes:

- Establish / Review Performance Measures
- Evaluate Performance
- Develop Compliance Strategies
- Communicate Expectations to the Organization
- Validate Compliance
- Make Adjustments / Repeat the Process

The process is a comprehensive introspective inquiry that is designed to create opportunities for members of the Board, command staff, and operational and administrative support staff to understand the benchmarks that we have established for WSFR and show how we are (or are not) meeting the benchmarks and what actions may need to be taken to accomplish our mission and purpose as the fire and medical services provider in our community. We are in a dynamic and growing community, and everyone must use data to make informed decisions as our operational needs shift, call volume increases, demands for service moderate by geographic location(s), and technology advances in our industry.

As the Fire Chief, it is my commitment to never become stagnant or “comfortable” in our operations as we must thrive in a culture that is dedicated to serving our community effectively and efficiently while always knowing how important the members of our team are as they are the lynchpin to the service and the purpose of our existence. Going forward, you have my commitment to having a collaborative intention to always be working to constantly improve our service and ensuring a strong desire to serve our amazing community as our number one priority.

Respectfully Submitted,



Fire Chief

THIS PAGE LEFT INTENTIONALLY BLANK

Chapter 1 – Description of Community Served

Purpose

The purpose of this document is to assess and describe the various risks within the service area of the Windsor-Severance Fire Protection District, also known as Windsor Severance Fire Rescue (WSFR). Risk is commonly thought of as the potential for an unwanted outcome resulting from an incident or occurrence, as determined by its likelihood and the associated consequences.[1] The assessment of risk is critical to the appropriate development of station response zones, service areas, and overall system effectiveness. This document describes each identified risk factor and establishes mitigation efforts for each factor.

To assess the risks within the Windsor-Severance Fire Protection District, it was necessary to determine what risks were present and the likelihood and consequence of their occurrence. Based upon the risk categories and the establishment of service delivery zones, the risk assessment process has been used to develop an effective emergency response system that is capable of objectively determining WSFR's ability to provide the level of service that is expected by the citizens within the District. The information within this document has also been used to establish a comprehensive Standards of Cover and an up-to-date Strategic Plan for WSFR.

Agency Legal Basis

The Windsor-Severance Fire Protection District is a Special District organized under Title 32 of Colorado Revised Statutes providing fire protection and rescue services within its boundaries. The agency was established in 1950 in accordance with Section 32-1-101, et seq., CRS and continues to operate in accordance with the statutory requirements provided under this Title of Colorado law. The agency was established to provide all legally available fire protection services under Title 32, including but not limited to, providing all forms of fire prevention and rescue service, adopting and enforcing fire codes, fixing and charging

[1] Threat and Hazard Identification and Risk Assessment Guide. Comprehensive Preparedness Guide (CPG) 201. U.S. Department of Homeland Security. 3rd Edition, May 2018, page 7.

fees for fire prevention activities, establishing a property tax, acquiring and disposing of firefighting equipment, having the power of eminent domain, and creating and maintaining a pension fund.

History of the Community

The Windsor Volunteer Fire Department was organized on March 12, 1902, for the protection of the property within the town of Windsor. At the time of its founding, there were 23 members and their equipment consisted of a hose cart with 550 feet of 2-½" hose, a nozzle, two axes, and four buckets. The fire alarm was a flanged rim from a locomotive engine that was hanging on a post at the corner of Fourth and Main Street. A hammer with an iron handle was chained to the post. In the event of a fire, the rim was pounded with the hammer. The first man to reach the hose cart started to the fire, joined by others as the lead rope was unwound. The cart had a gong that rang as it traveled to the fire. The gong let the responding firemen know the location of the cart en route.

In 1914, a chemical cart was added to the department's equipment inventory. The year 1916 was a milestone year for the department as the town of Windsor became formally involved with the department through the Town's decision to begin financially supporting the department with a $10.00 per month payment. Additionally, the department purchased its first motorized apparatus - a chain-driven 1914 American LaFrance. This apparatus was replaced in 1925 with a new REO Speedwagon. In 1941, an International Howe Pumper was purchased. Both apparatus remain operational today and are used as parade and public relations apparatus.

The Windsor-Severance Fire Protection District (WSFPD) was formed in 1950 under the leadership of Fire Chief Jake Erbes, Jr. but did not begin to function as a fire protection district until 1951. At its initial founding, the WSFPD encompassed approximately 70 square miles and had 35 volunteer members. The newly formed fire protection district (the District) was responsible for protecting the two incorporated towns of Windsor and Severance and rural portions of both Weld and Larimer counties surrounding these two communities.

The years 1953 and 1954 were very turbulent years for the new fire district. In 1953, the town of Severance was removed from coverage by the District. The entire membership of the Windsor Fire Department abruptly quit during a Board meeting in 1954, and an entirely new membership was brought in to be re-established as the Windsor Severance Volunteer Fire Department under new leadership. The new leadership helped to guide the department through the process of writing and adopting the Windsor Fire Department constitution in 1955. The town of Severance was also re-admitted to the fire protection district in 1955.

Between the early 1950s and the mid-1970s, growth in the area remained relatively slow and the economy was primarily dependent on agriculture. However, in 1971, the Kodak Manufacturing and Assembly plant was built within the fire district. This industrial development brought with it an increase in population and many small "spin-off" businesses. Kodak operations included a fully staffed private fire department to respond to emergency service calls on their industrial campus. In the mid-to-late-1980s, population growth began to increase and peaked at approximately 18% in 2001. The District has realized a rapid growth rate since 2010 with the Town of Windsor population increasing by 87% [Figure 1] and the Town of Severance population increasing by 242% [Figure 2]. WSFR has seen a steady growth pattern of not only residential construction but also commercial and industrial interests. As the communities continue to grow, the nature and magnitude of fire protection services will continue to change.

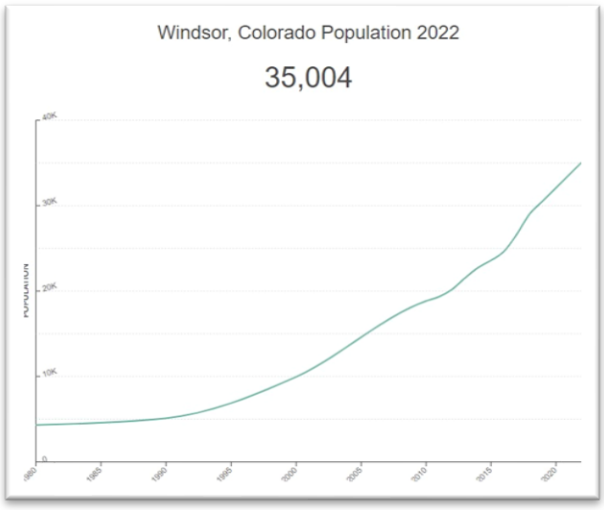


Figure 1: Windsor Population Increase

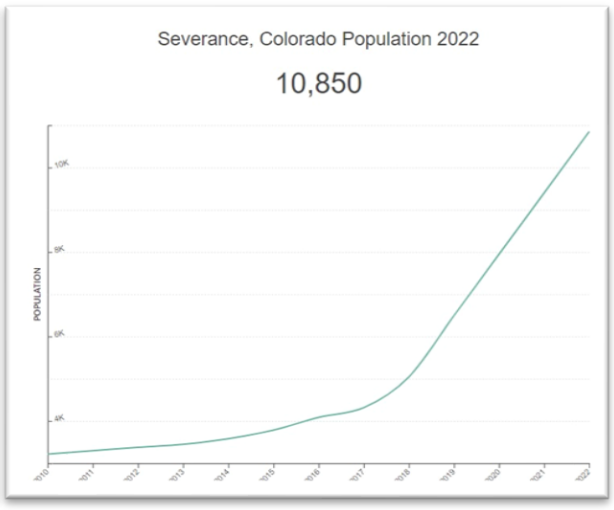


Figure 2: Severance Population Increase

At its inception, WSFPD was staffed exclusively by volunteers. Volunteer staffing served the District well for many years; however, as the communities continued to grow, requests for services increased and customer expectation levels changed. The results of a community survey in 2000 revealed that the majority of the survey respondents expected fire and emergency medical services to arrive within five minutes of placing a 9-1-1 call. To meet the ever-increasing customer expectations, WSFPD opened Fire Station 2 in the town of Severance in 1999 as an unstaffed station to house apparatus for volunteer response. Voters approved a mill levy increase in 2000 to build a new Fire Station 1 and to staff the new fire station with the District's first full-time staff. WSFPD began operating out of the new fire station in June of 2002 with 24-hour paid, full-time staffing. This marked the beginning of a new era for WSFPD – that of being a combination, career-volunteer, fire department. In June of 2011, a newly constructed Fire Station 3 was opened and provided with full-time career staffing. Additionally, towards the end of 2011, Fire Station 2 was remodeled to provide living quarters for full-time career staffing. Recognizing the need for improved living quarters, a new Fire Station 2 was built in Severance and opened in 2014.

The District has seen tremendous growth and activity since 2005. Kodak Colorado Division closed substantial portions of its operations in 2005 and demolished several buildings, but the campus and some of the buildings have been re-occupied by hi-tech companies and manufacturing operations, a small remnant of Kodak Colorado. The area, now known as Great Western Industrial Park, essentially remains a busy industrial park with room to expand. The District is currently experiencing industrial growth outside of the central business districts of Windsor and Severance. New developments in these areas include several industrial companies such as Intersand America Corporation, Rocky Mountain Transload, Schlumberger Lift Solutions, Lineage Ceti Cold Storage, and Gotham Greens. Other existing businesses such as Vestas Blades, Bobcat of the Rockies, and Metal Container Corporation completed major expansions.

Another significant project for the WSFR District that broke ground in 2021 is the Future Legends Sports Complex [Figure 3]. The 118-acre facility will open in 2022 and will be the home of 2 professional sports teams and a championship stadium, including

Figure 3: Future Legends Sports Complex

multiple sports fields, a field house, a hotel conference center, dormitories, restaurants, and other retail establishments. The facility is projected to bring 2 million visitors annually to the District.

The Windsor-Severance Fire Protection District changed its moniker to Windsor Severance Fire Rescue (WSFR) in 2010 to better reflect the agency's mission. WSFR currently responds to all calls for assistance within the 97-square-mile district, including the town of Windsor, the town of Severance, and portions of Weld and Larimer Counties. WSFR's response area includes urban and rural service areas. These categories are based on population density and accessibility.

WSFR's emergency response is currently provided from four fire stations that each operate with a minimum staffing level of three fire suppression personnel supervised by a Battalion Chief. Emergency response is further augmented with a Fire Chief, Deputy Chief of Operations, Fire Marshal, and Division Chief of Training, who are all based at Fire Station 1. WSFR maintains a contractual agreement with the University of Colorado Health (UCH) for that agency to provide 24-hour advanced life support (ALS) ambulance treatment and transportation coverage that is based out of WSFR Fire Stations #1 and #2. Additionally, WSFR maintains auto-aid agreements with Loveland Fire Rescue Authority, Poudre Fire Authority, Front Range Fire Rescue Authority, and the Eaton Fire Protection District for additional response to both commercial and residential structure fires. Mutual-aid

agreements are also in place with other neighboring fire districts including the Greeley Fire Department.

Community Financial Basis

WSFR's total budget for 2021 was $11,052,081. WSFR is funded primarily through tax revenue in the form of a 7.75 mill levy for properties within the District and accounts for 89% of revenue. This amounts to $10,850,803 in tax revenue and $1,357,757 in revenue from other sources. The other sources include impact fees, permit and plan review fees, grants, and a previously voter-approved bond issue set to expire in 2023. WSFR's mill levy is one of the lowest in the region when compared to other fire protection districts. The mill rate will increase by 0.5 mills in both 2023 and 2026 as approved by voters in 2019. A separate bond, referenced above, was passed by voters to construct Station 3 and purchase equipment in 2008. This was scheduled to be paid off on December 1, 2023, but as a result of the WSFR Board of Directors approving an early payment, the bond will be completed in 2022.

Community Boundaries

The District's response area includes the towns of Windsor and Severance, as well as unincorporated portions of Weld and Larimer counties, with roughly 80% of the District within Weld County [Figure 4]. The response area encompasses approximately 96.6 square miles roughly in the center of a triangle formed by the cities of Greeley, Fort Collins, and Loveland [Figure 5]. The population is primarily centered around the two towns of Windsor and Severance, with additional rural development scattered throughout the rest of the response area. The town of Windsor is located east of Interstate 25 and is bisected by Colorado State Highway 392, running east and west, and Colorado State Highway 257, running north and south. The town of Severance is located northeast of Windsor and is bisected by Weld County Road 74, running east and west as seen in Figure 6.

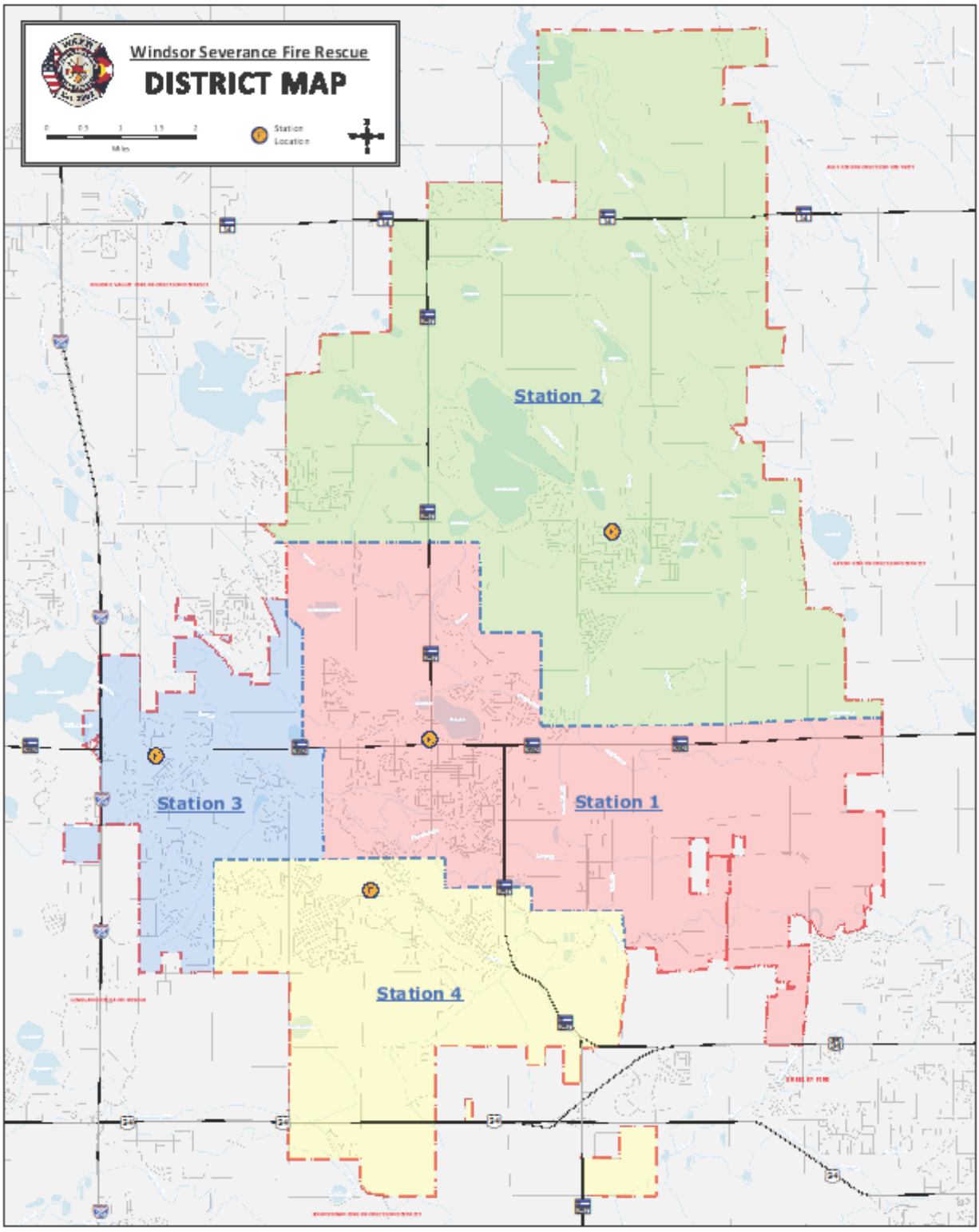


Figure 4: The Windsor-Severance Fire Protection District

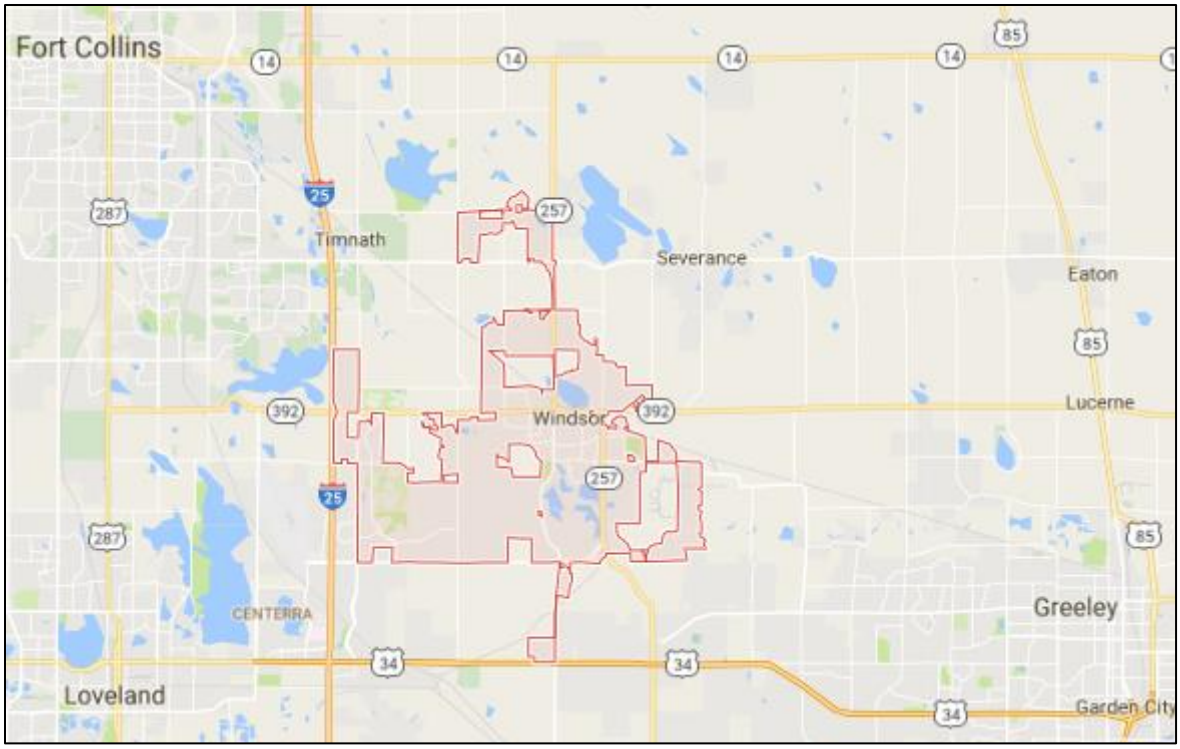


Figure 5: Windsor Town Limits in Relation to Nearby Jurisdictions

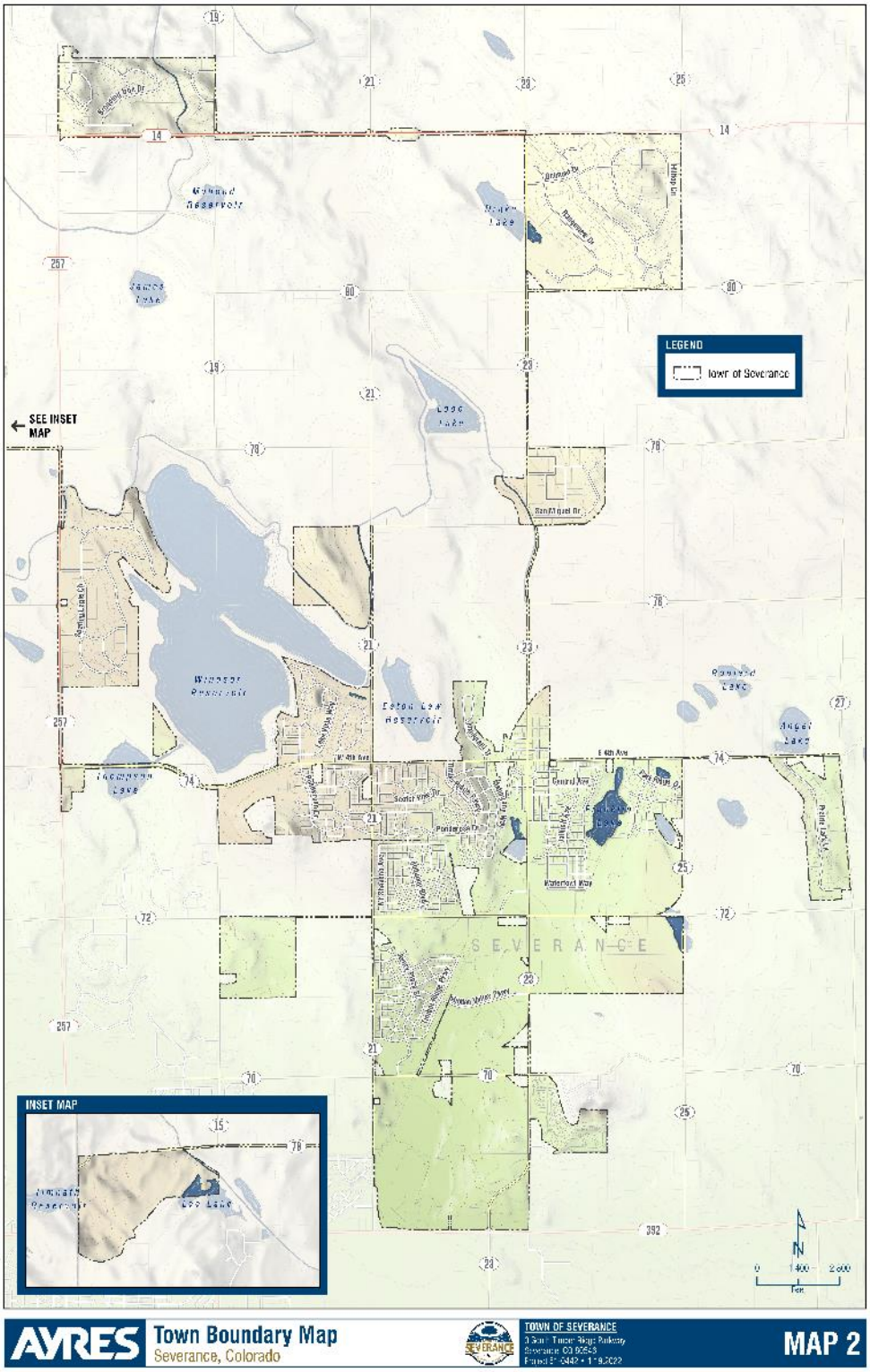


Figure 6: Severance Town Limits

Surrounding Jurisdictions

WSFR maintains effective and mutually beneficial relationships with all the emergency services agencies with borders that are adjacent to WSFR's response area. Written automatic and mutual aid agreements have been established, approved, and reviewed annually with all the surrounding jurisdictions and are described later in this document. Following is a brief overview of each jurisdiction.

University of Colorado Health

University of Colorado Health (UCH) maintains a contractual relationship with WSFR to provide advanced life support (ALS) ambulance treatment and transportation. UCH staffs an ambulance 24 hours per day, 7 days per week at WSFR's Fire Station 1 and Station 2 as well as a division captain who supervises Division 5. Division 5 consists of the ambulance response area for WSFR and Front Range Fire Rescue. UCH is also the primary ALS provider for the City of Fort Collins and Poudre Fire Authority, the City of Greeley and Greeley Fire Department, the City of Evans and the Evans Fire Protection District, and the Town of Kersey and the Platte Valley Fire Protection District.

Poudre Fire Authority

Poudre Fire Authority (PFA) shares WSFR's northwestern border. PFA is the largest of WSFR's neighboring departments and protects the City of Fort Collins and the communities within the Poudre Valley Fire Protection District. PFA covers a 230-square-mile service area with eleven staffed fire stations and two volunteer stations.

Thompson Valley EMS

Thompson Valley EMS (TVEMS) is the advanced life support ambulance provider for the Thompson Valley Health Services District (TVHSD). The TVHSD service area includes the City of Loveland, Loveland Rural Fire Protection District, Berthoud Fire Protection District, and a portion of WSFR's district. TVEMS is governed by the TVHSD Board of Directors who oversees the business operations of this special tax district. The district is approximately 450 square miles and service is provided from six staffed stations.

Loveland Fire Rescue Authority

Loveland Fire Rescue Authority (LFRA) is located along the southern and western borders of WSFR's jurisdiction. LFRA provides fire and rescue services to the City of Loveland and the Loveland Rural Fire Protection District within their approximately 194-square-mile response area. LFRA responds out of seven staffed fire stations and two volunteer stations. A tenth station is currently under construction and will be staffed when it opens in late 2022.

Greeley Fire Department

The Greeley Fire Department (GFD) is located along WSFR's eastern border and encompasses a 64-square-mile service area protecting the City of Greeley. GFD provides services from seven staffed fire stations.

Front Range Fire Rescue Authority

Front Range Fire Rescue Authority (FRFRA) is a fire authority that is located along the southern edge of the WSFR response area. FRFRA was formed as a result of an intergovernmental agreement between the Johnstown and Milliken Fire Protection Districts. FRFRA provides fire and rescue services from three fire stations to a coverage area of approximately 100 square miles.

Eaton Fire Protection District

The Eaton Fire Protection District (EFPD) encompasses 64 square miles due east of the town of Severance. The agency responds out of one fire station and is staffed with a combination of paid and volunteer firefighters.

Ault Fire Protection District

The Ault Fire Protection District (AFPD) serves the rural communities of Ault and Pierce, northeast of Severance. The agency's 80 square mile response area is protected by two fire stations staffed with combination personnel.

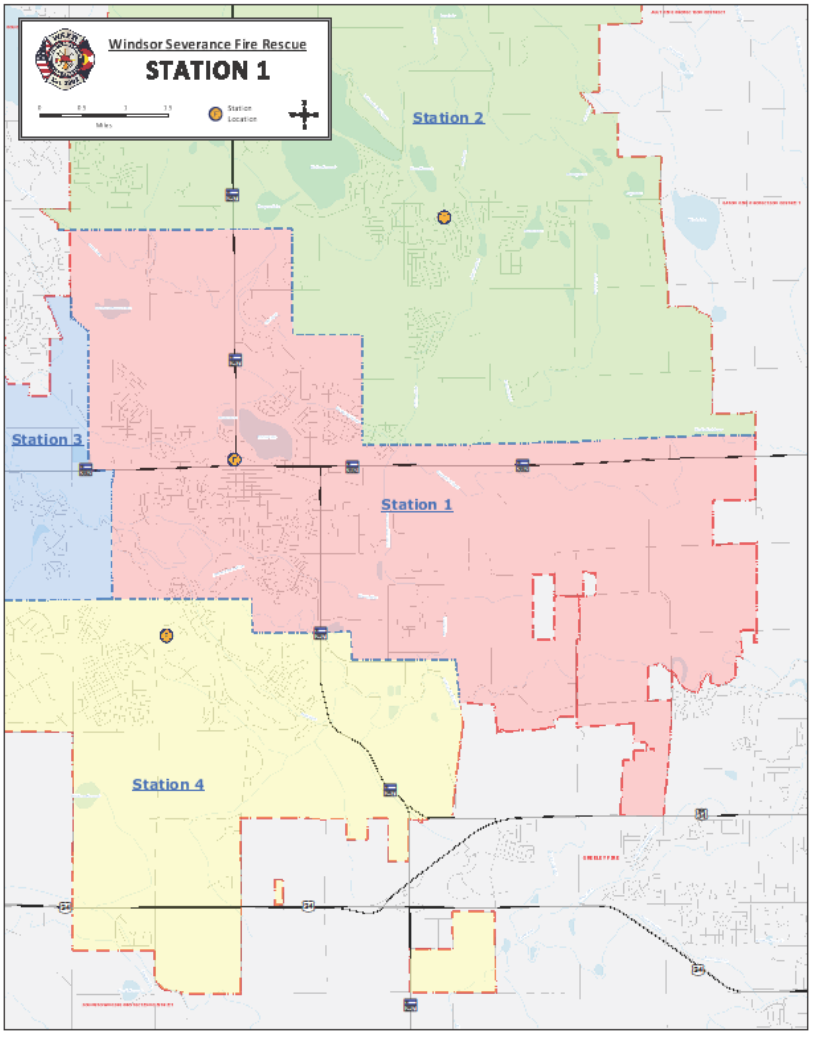
Community Planning Areas/Zones

Each of WSFR's four fire stations is geographically located near a primary population center of the communities of Severance and Windsor. WSFR provides 24/7 staffing at three fire stations within Windsor town limits and one fire station in the town of Severance. In addition to the first-due apparatus, each fire station also houses reserve, secondary, and/or support apparatus.

FIRE STATION 1 PLANNING ZONE

Description of Planning Zone:

The Fire Station 1 planning zone is by far the busiest and most diverse of the District's four planning zones. This zone consists of approximately 25 square miles, covering the central business district of Windsor and includes the Great Western Industrial Park. In addition to the commercial corridor running east-to-west through Windsor, the zone also includes several residential developments, numerous bodies of water, and a very busy industrial center.



Water Supply:

The water supply in this zone is provided by 3 different water districts. Hydrant coverage within the Windsor town limits is generally very good, with adequate pressures available.

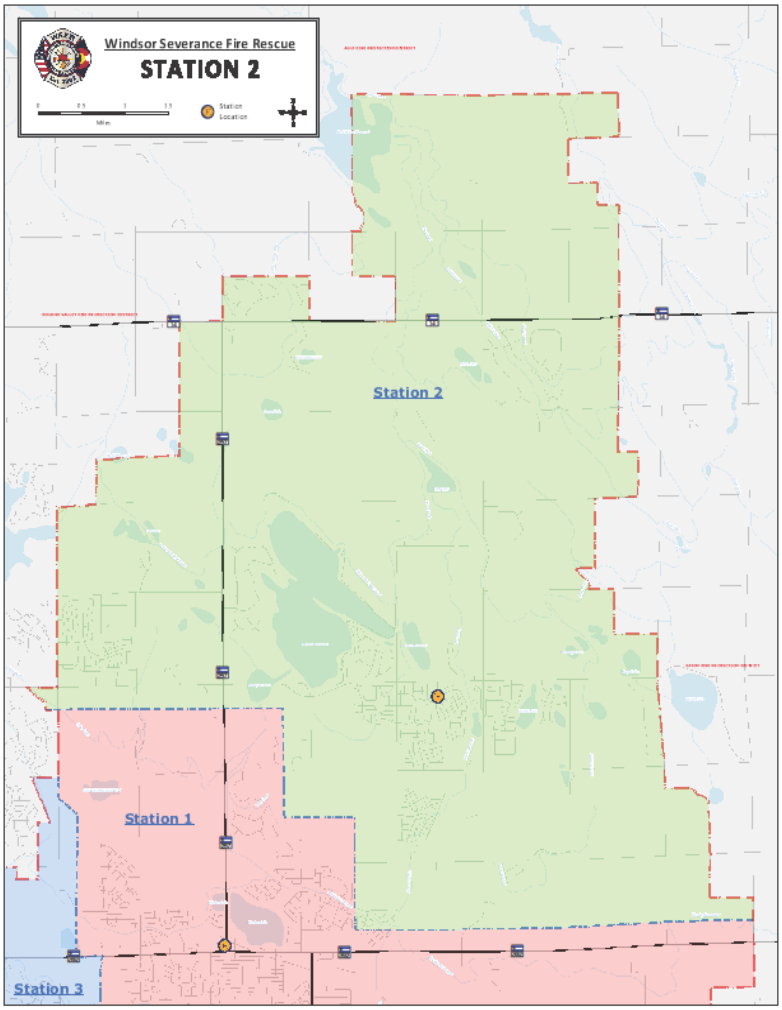
Risk Analysis:

This planning zone contains all risk levels from Low to Maximum. Call volume in the District is primarily driven by the dense residential areas,

but calls are increasing in the Great Western Industrial Park, which presents the greatest hazards.

Special Risks in the Planning Zone

For the greatest part of WSFR history, Fire Station 1 was the only station in the District. With the construction and staffing of Fire Station 2, Fire Station 3, and Fire Station 4, call volume has been better distributed. Fire Station 1 is the first due station for coverage of the Great Western Industrial Park (GWIP) as well as for the downtown business district and the older neighborhoods of Windsor. In addition, the rail line that serves the GWIP crosses 7th Street immediately north of Fire Station 1. With the frequency and volume of rail traffic on this rail line, it is possible that a passing train or a parked train could restrict fire apparatus from driving north out of the station.



FIRE STATION 2 PLANNING ZONE

Description of Planning Zone:

The Fire Station 2 planning zone is the largest of the District's planning zones, encompassing approximately 43 square miles. The Severance area includes several newer residential developments with very large homes. This zone also includes the most expansive undeveloped areas within the District.

Water Supply:

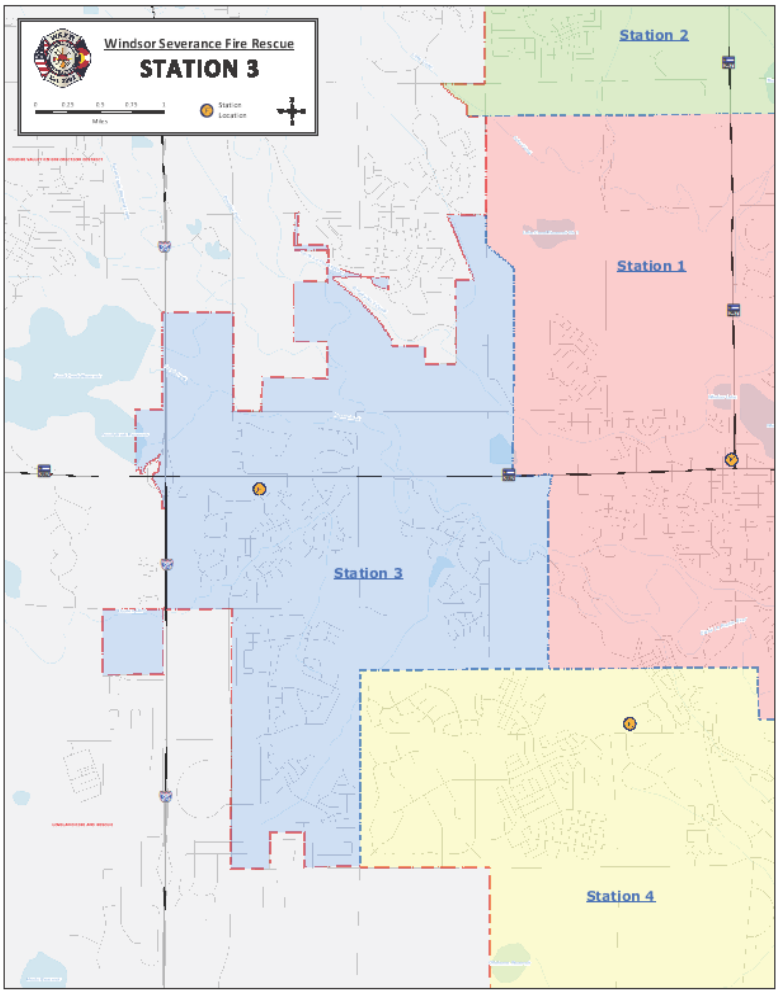
The water supply in this District is provided by 1 provider. There are several areas in this District without fire hydrants and/or without adequate pressure available from hydrants that are present.

Risk Analysis:

This planning zone contains risk levels from Low to Significant. Call volume in the District is primarily driven by the residential areas, but call volume is also affected by State Highway 14. Additionally, the wildland fire risk in this zone is the highest in the District.

Special Risks in the Planning Zone

Fire Station 2 is the Severance fire station, covering the largest portion of the wildland-urban interface (WUI) in the District. Fire Station 2 was a non-staffed station until late 2009. Until that time, the station was only used to store apparatus for volunteers to use in the event of a call. Calls in this planning zone were assigned to Fire Station 1 until full-time staffing was provided. In addition to the WUI risks, this planning zone also has the least amount of fire hydrant coverage of the entire fire protection district, due to its rural nature. If a fire develops in a rural area, the initial water supply for fire attack operations may need to be provided by a water tender. Mutual aid water tender support may be the most efficient water supply available in some areas of District #2. Fire Station 2 was replaced with a new station in January 2014.



FIRE STATION 3 PLANNING ZONE

Description of Planning Zone:

The Fire Station 3 planning zone is the busiest of the District's planning zones in terms of aid given, due to its proximity to many of our busiest neighbors. This approximate 16-square-mile zone also covers I-25, State Hwy 392, and several residential developments.

Water Supply:

The water supply in this District is provided by 1 provider. The majority of this District has an adequate number of hydrants with adequate pressure available.

Risk Analysis:

This planning zone contains risk levels from Low to Significant. Call volume in the District is primarily driven by the residential areas, but call volume is also dramatically affected by providing aid to neighboring fire departments. Finally, the transportation corridors in this District are extremely busy.

Special Risks in the Planning Zone

Fire Station 3 was built to address the coverage deficiencies in the western portions of the fire district. Construction of Fire Station 3 began in 2010 and the station was staffed in late 2011. Station 3 covers a very busy portion of Interstate 25 (Auto Aid), Colorado State Highway 392 which serves as the primary route accessing Windsor, numerous large residential developments, and light industrial and recreational facilities. Loveland Fire Rescue Authority (LFRA) response area borders the southern and western side of Station

3's response area, while Poudre Fire Authority (PFA) borders the northern and west side. Automatic aid agreements were formed to address extensive housing and commercial development occurring in the areas.

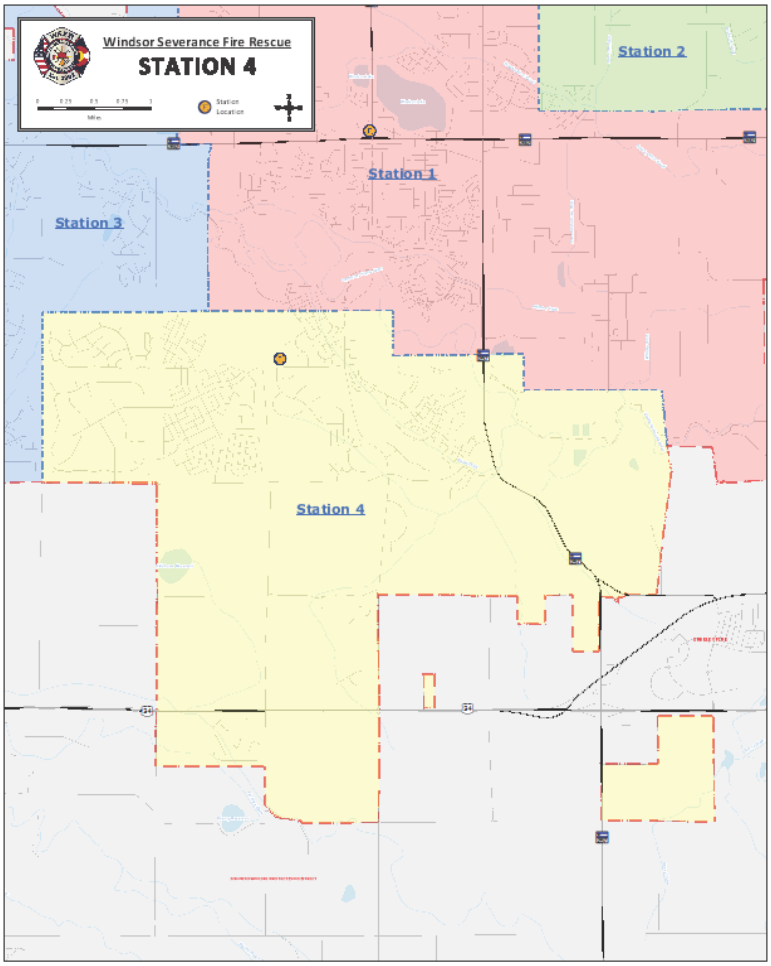
FIRE STATION 4 PLANNING ZONE

Description of Planning Zone:

The Fire Station 4 planning zone is the second busiest of the District's four planning zones. This zone consists of approximately 14 square miles, covering the southern portion of the district, and is primarily residential. The zone covers a few bodies of water, a large 5-story senior living facility, a community college, and a portion of a major four-lane highway. A large percentage of this zone is undeveloped or agricultural land.

Water Supply:

The water supply in this zone is provided by 3 different water districts. Hydrant coverage within the Windsor town limits is generally very good, with adequate pressures available.



Risk Analysis:

This planning zone contains all risk levels from Low to Maximum. Call volume in the District is primarily driven by the dense residential areas and the large senior living facility.

Special Risks in the Planning Zone

Fire Station 4 construction began in 2021 and was completed in 2022 becoming the fourth staffed station for WSFR. Station 4 became the second busiest station upon its opening with the Good Samaritan

Senior Living facility a short distance from the station. This facility accounted for nearly 6% of WSFR's total calls in 2021.

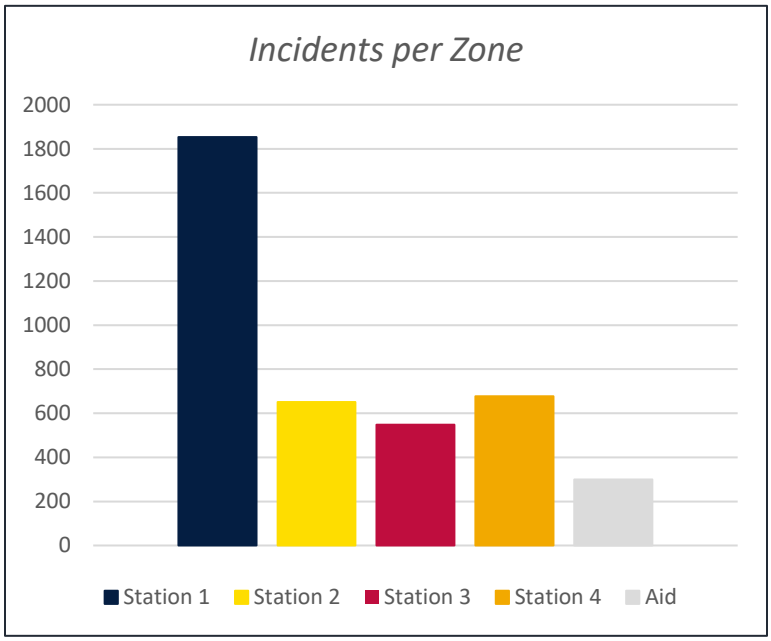


Figure 7: Incidents per Zone

Summary of Incidents per Fire Station Planning Zone

As described above, the planning zone for Fire Station 4 is the second busiest of the four fire station planning zones [Figure 7]. Emergency medical calls are the primary call type with a large percentage of those originating at the senior living facility as previously mentioned.

Community Transportation Systems [2]

The communities of Windsor and Severance are interconnected with adjacent municipalities via a significant network of county roads, state highways, and federal highways. Interstate 25 (I-25) is the primary north/south highway that traverses the state of Colorado. Population and employment growth in the north Front Range area is anticipated to focus along I-25. The Colorado Department of Transportation (CDOT) has completed an environmental impact statement (EIS) in cooperation with the Federal Highway Administration and the Federal Transit Administration to evaluate and identify multi-modal transportation improvements along the I-25 corridor from the Fort Collins-Wellington area to Denver [Figure 8]. This EIS identifies and discusses the regional and inter-regional movement of people, goods, and services along the I-25 corridor.

[2] Weld County 2045 Transportation Plan

Other major highways throughout the WSFR response area include State Highway 392 which traverses the Town of Windsor from west to east and connects Interstate-25 with US Highway 85 (US-85); State Highway 14 which traverses the Town of Severance from west to east and connects I-25 with US-85; US Highway 34 (US-34) which crosses the southern border of the WSFR response area and connects the cities of Loveland and Greeley; and State Highway 257 which traverses the Town of Windsor from north to south, connecting US-34 to State Highway 14.

There is significant oil and gas exploration activity throughout all of Weld County, resulting in an extremely high volume of truck traffic on a variety of roads within the county. The products associated with the oil and gas industry are classified as hazardous materials. Hazardous materials are defined by the United States Department of Transportation as *"a substance or material which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and which has been designated as hazardous under section 5103 of Federal hazardous materials transportation law. This term includes hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, etc."*

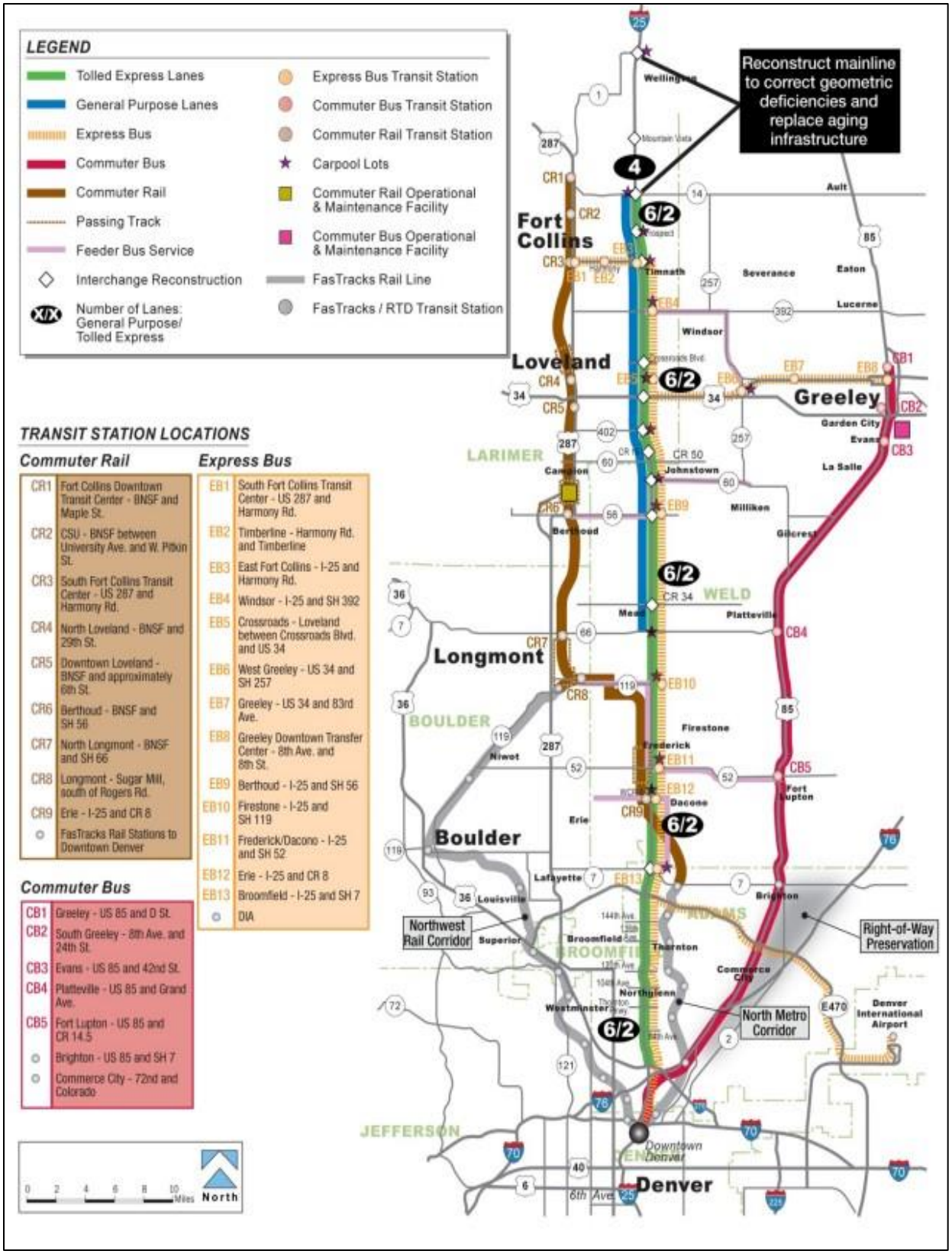


Figure 8: Recommended Alternatives for Transportation Improvements in Northern Colorado

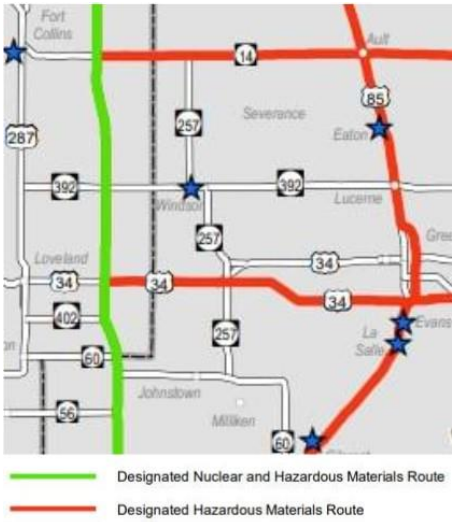


Figure 9: Hazardous Materials Transportation Routes

Typically, hazardous materials transportation is restricted to major highways to reduce the risk to the public. On November 17, 2010, the Board of County Commissioners passed a Resolution designating all county roads to be considered "local pick-up and delivery" truck routes for oil production purposes. This Resolution allows for the transportation of hazardous materials associated with the oil and gas industry on all county roads [Figure 9]. While this allows for improved efficiencies for these vehicles, it presents unique risks that must be addressed by WSFR.

WSFR also faces hazardous materials transportation risks aside from the oil and gas industry. Agriculture is still a prominent part of our community and with it comes several hazardous materials risks related to fertilizers, chemicals, and fuel transportation. Additionally, WSFR has railroad and truck traffic transporting hazardous materials through the community, primarily into and out of the industrial region located in the southeastern portion of the district.

The Town of Windsor Engineering Department is responsible for the planning and maintenance of all roadways within town limits. The transportation plan within Windsor includes a summary of arterial and collector streets within the town's growth management area [Figure 10].

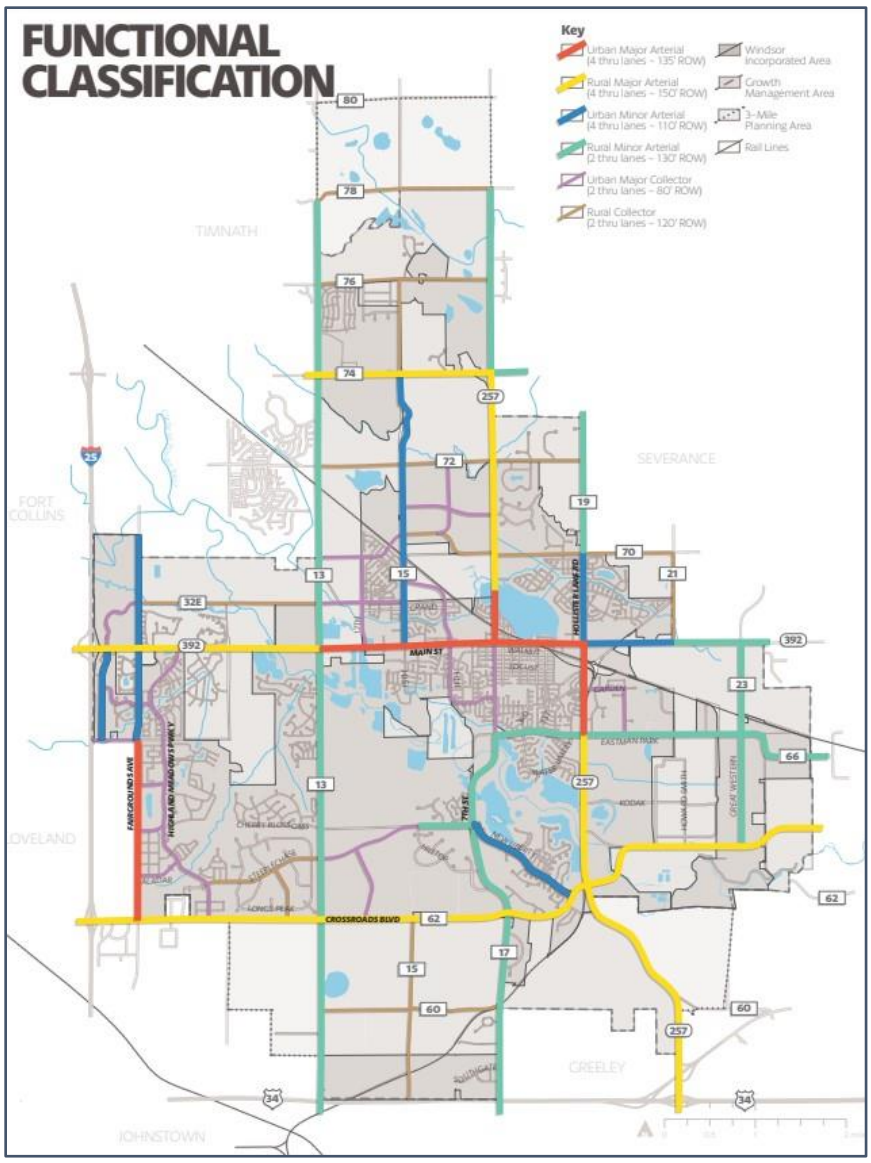


Figure 10: Town of Windsor Roadway Classifications

In April 2015, the town of Severance adopted its first transportation master plan to accommodate projected growth through 2035. This document includes a list of projects that would be necessary to realize the goals and objectives established within the plan. Right-of-way requirements to accommodate the build-out of the community are also identified, as are guidelines to assist staff and policymakers in reviewing development proposals and implementing transportation improvements. The existing roadway system for the town of Severance is displayed in Figure 11.

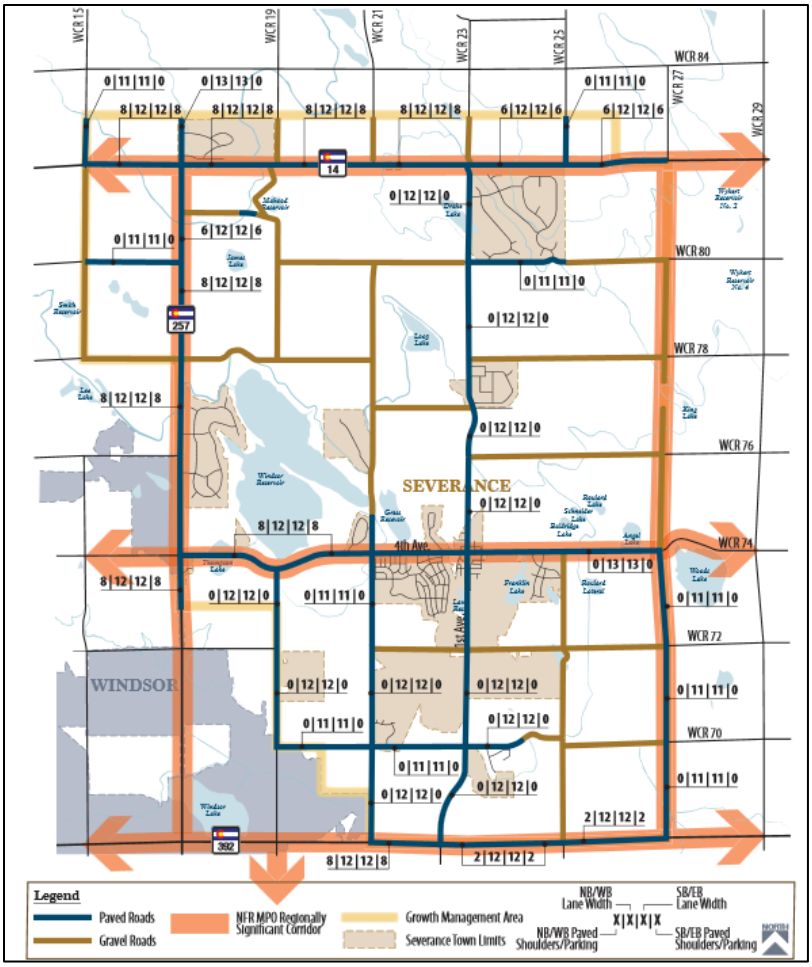


Figure 11: Existing Roads in Severance

Community Critical Infrastructure

Water Supply Systems

Water supply systems within the WSFR response area are provided by 3 water districts and 2 municipalities. Water is supplied to the water supply systems by 4 water suppliers: Fort Collins-Loveland Water District, Little Thompson Water District, North Weld Water District, and Greeley Water District. WSFR works to maintain positive relationships with the service providers that are responsible for the water supply systems, including hydrants in the WSFR response area [Figure 12].

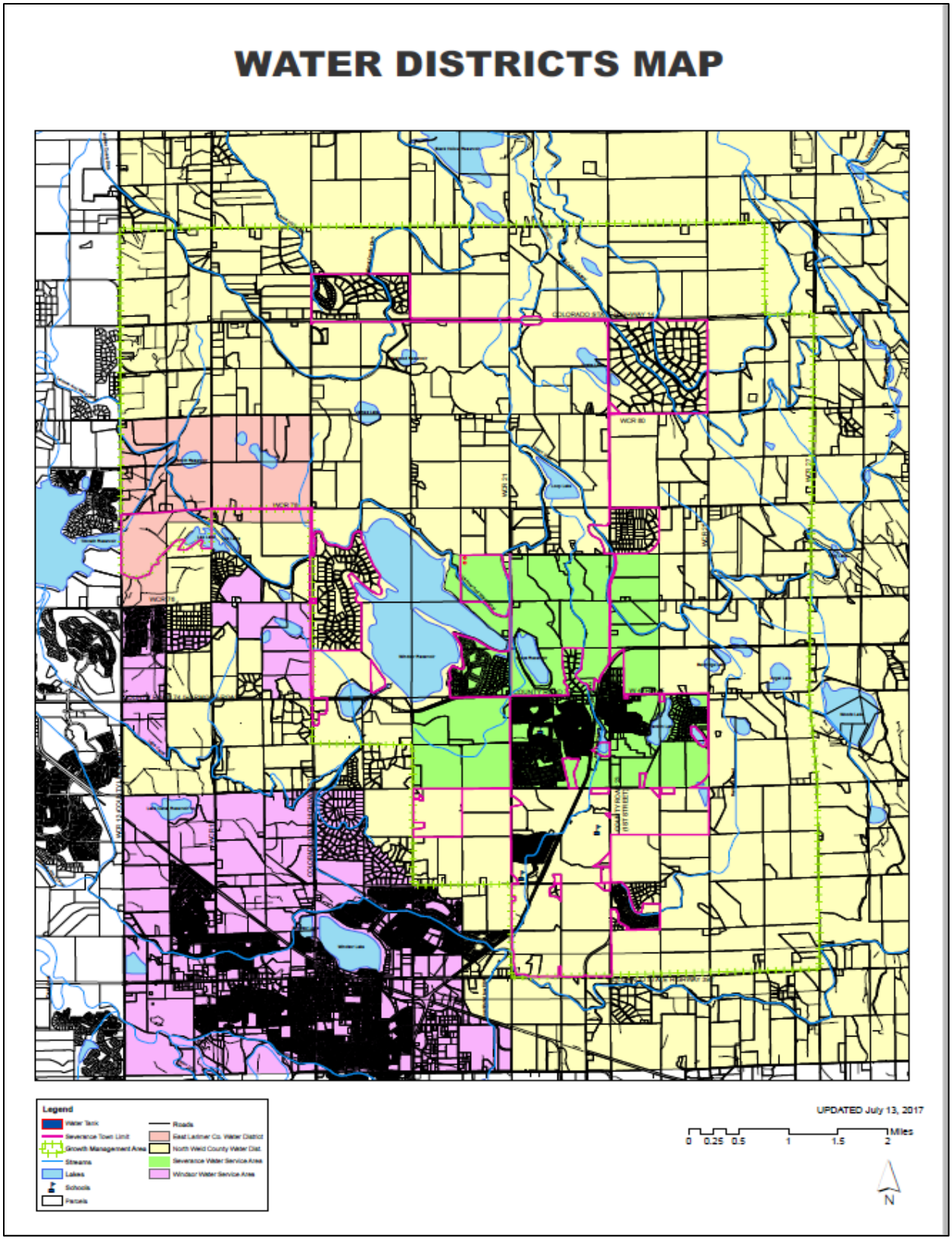


Figure 12: Water Districts Service Area

Town of Windsor Water Division

The Town of Windsor provides water services to a large portion of the WSFR response area. The Town of Windsor delivers approximately 3.1 million gallons of water each day to Windsor residents and businesses. Windsor has two water storage tanks with a combined total of 5-million gallons of storage available. Water for the storage tanks is provided by North Weld Water District and Greeley Water District. The water lines, pump stations, and hydrants are maintained by the Town of Windsor. There are approximately 961 fire hydrants within Windsor town limits and all hydrants are installed on minimum 6-inch branch lines and feature a steamer outlet and two 2-½ inch outlets.

Town of Severance

The Town of Severance provides water services to residents and businesses within the town limits. In 2021 the Town of Severance delivered 205 million gallons of water or approximately 562,000 gallons per day. The water supply system is supplied with water from North Weld Water District and distributed through approximately 37 miles of pipelines. The water lines, pump stations, and hydrants are maintained by the Town of Severance. There are approximately 308 fire hydrants within Severance town limits. All hydrants are installed on a minimum of 6-inch branch lines and feature a steamer outlet and two 2-½ inch outlets.

Fort Collins-Loveland Water District

The Fort Collins-Loveland Water District (FCLWD) provides and maintains a water distribution system to a service area of roughly 60 square miles, including the western portion of the WSFR response area [Figure 13]. The FCLWD district boundaries are generally Harmony Road to the north, 57th Street to the south, the foothills to the west, and the Larimer/Weld County line to the east. The FCLWD water delivery system serves over 50,000 people with a system that consists of 26 pressure zones with three close-loop booster pump systems, 5 pump stations, and 5 storage tanks. FCLWD owns and maintains 561 fire hydrants within the WSFR service area. All hydrants are installed on a minimum of 6-inch branch lines and feature a steamer outlet and two 2-½ inch outlets.

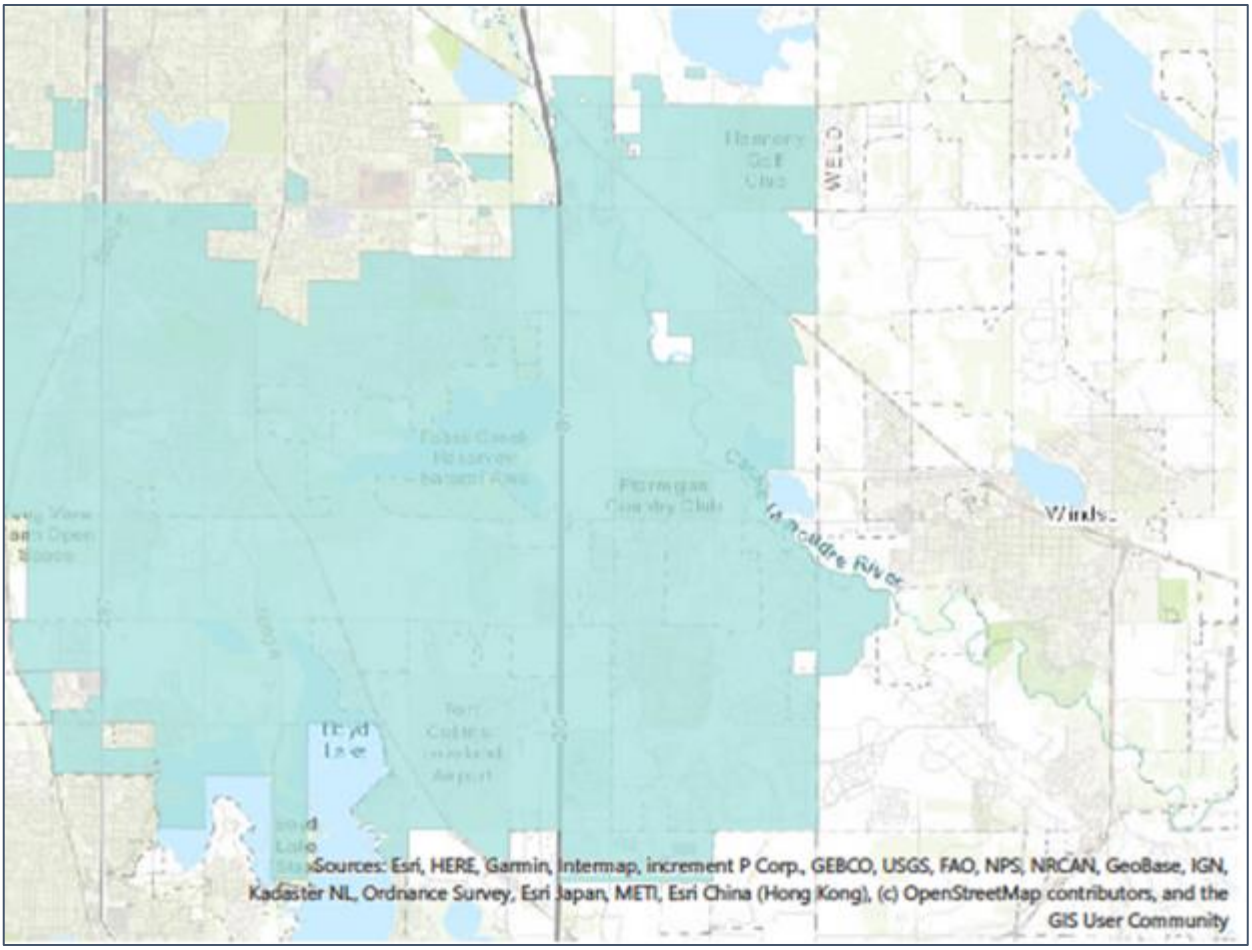
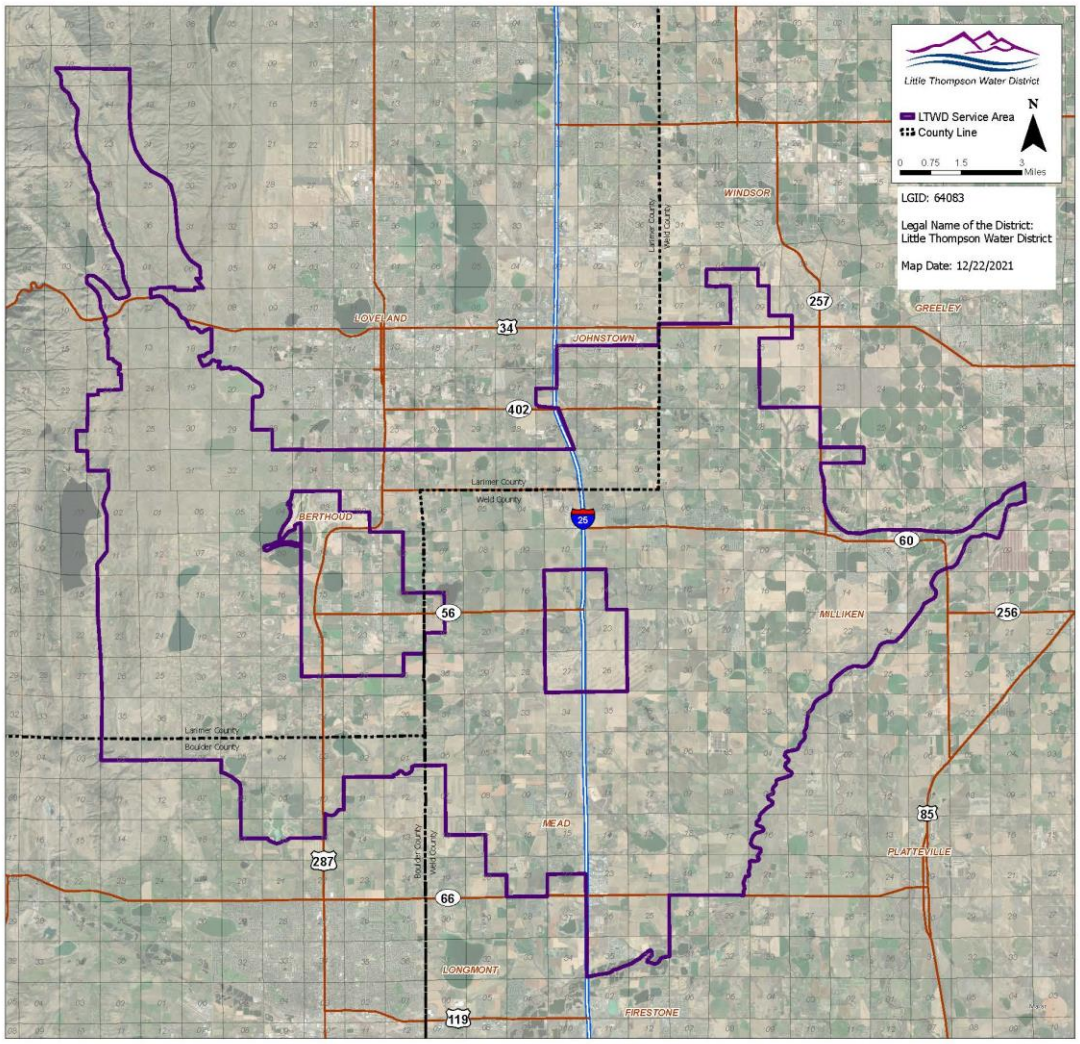


Figure 13: Fort Collins-Loveland Water District Service Area

Little Thompson Water District

The Little Thompson Water District (LTWD) service area represents a small area of the southern portion of the WSFR service area. LTWD covers nearly 300 square miles that are bounded to the north by the City of Loveland, to the south by the Longs Peak Water District, to the west by the foothills, and to the east by the City of Greeley [Figure 14]. The LTWD distribution system consists of more than 670 miles of water lines, ranging in size from 1-inch to 42 inches in diameter. LTWD maintains 19 fire hydrants within the WSFR response area.



LTWD SERVICE BOUNDARY MAP

Figure 14: Little Thompson Water District Service Area

North Weld County Water District

The North Weld County Water District (NWCWD) provides water to the majority of the rural portion of the WSFR response area. NWCWD was formed in 1962 and serves customers in northern Weld and eastern Larimer counties over a service area of 325 square miles [Figure 15]. The NWCWD currently serves 5,200 water taps and delivers more than 1.75 billion gallons of water per year. NWCWD owns 209 fire hydrants within the WSFR response area.

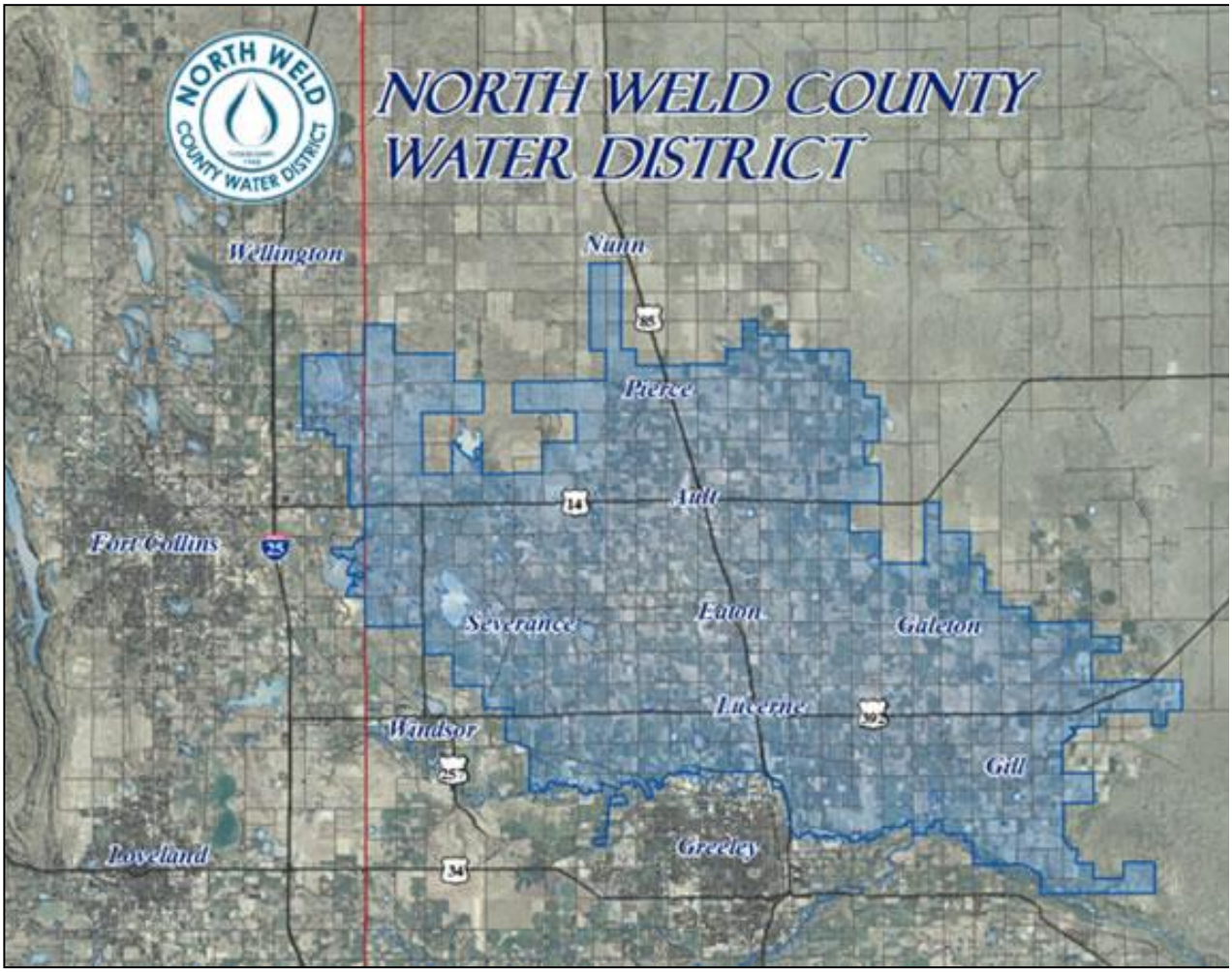


Figure 15: North Weld County Water District Service Area Map

Natural Gas Service

Xcel Energy provides most of the natural gas service in the WSFR response area. Service includes both residential and commercial customers. A small area in the District's southeast response area receives gas services from Atmos Energy.

Electrical Power Service

Electrical power within the WSFR response area is provided by 2 different service vendors: Poudre Valley REA and Xcel Energy. Both service vendors provide residential and commercial customers with electrical power.

Communications

Telephone and internet communications are provided by several different vendors in the WSFR response area. Century Link is the largest provider of telephone services while Comcast is the largest provider of internet services. Several smaller providers for both telephone and internet service can be found throughout the WSFR response area.

Community Land Use and Zoning

The communities of Windsor and Severance have experienced tremendous residential and commercial growth from 2000 until 2008 with the global recession; however, development picked back up starting in 2012 and continued to grow until the Coronavirus pandemic in 2020 which caused some slowing. Single-family homes, commercial, and industrial permits declined from 2019-to 2020 while multi-family permits continued to grow. All categories increased again in 2021 and appear to be on pace for large growth in 2022 [Figure 16] [3].

[3] Town of Windsor: http://windsorgov.com/414/Building-Permit-Reports

	2017	2018	2019	2020	2021	*2022
Development						
Single-Family Platted Lots	681	1156	1087	903	433	880
Single-Family Permits Issued	516	546	781	640	921	153
Single-Family Not Platted Lots	3457	3457	3457	3922	3648	2756
Multi-Family Platted Lots	379	226	260	370	432	461
Multi-Family Permits Issued	46	27	17	23	32	11
Multi-Family Not Platted Lots	3056	3027	2966	2780	2780	2634
New Building Permits Issued						
Single-Family	516	546	781	640	921	153
Multi-Family Units	46	27	17	23	32	11
Commercial	7	23	8	5	12	2
Industrial	3	9	13	5	8	3
Other	1501	1609	2089	1655	1750	206

Figure 16: *Reported through February 2022

Residential growth within the two communities is widespread with multiple developments underway. Commercial growth is greater in Windsor as compared to Severance with the development of the Great Western Industrial Park, commercial growth along Main Street and in the southwestern part of the District, and the development of the Future Legends Sports Park. WSFR Administration maintains relationships with community planners, developers, and administrative officials in Windsor, Severance, Weld, and Larimer Counties to ensure that the agency stays informed of planning and development trends within its response area. [Figures 17 and 18]

To assist WSFR with the financial costs associated with growth, an impact fee schedule was developed and implemented in 2021. These fees will be used to help fund agency needs associated with the growth and increased development in the District.

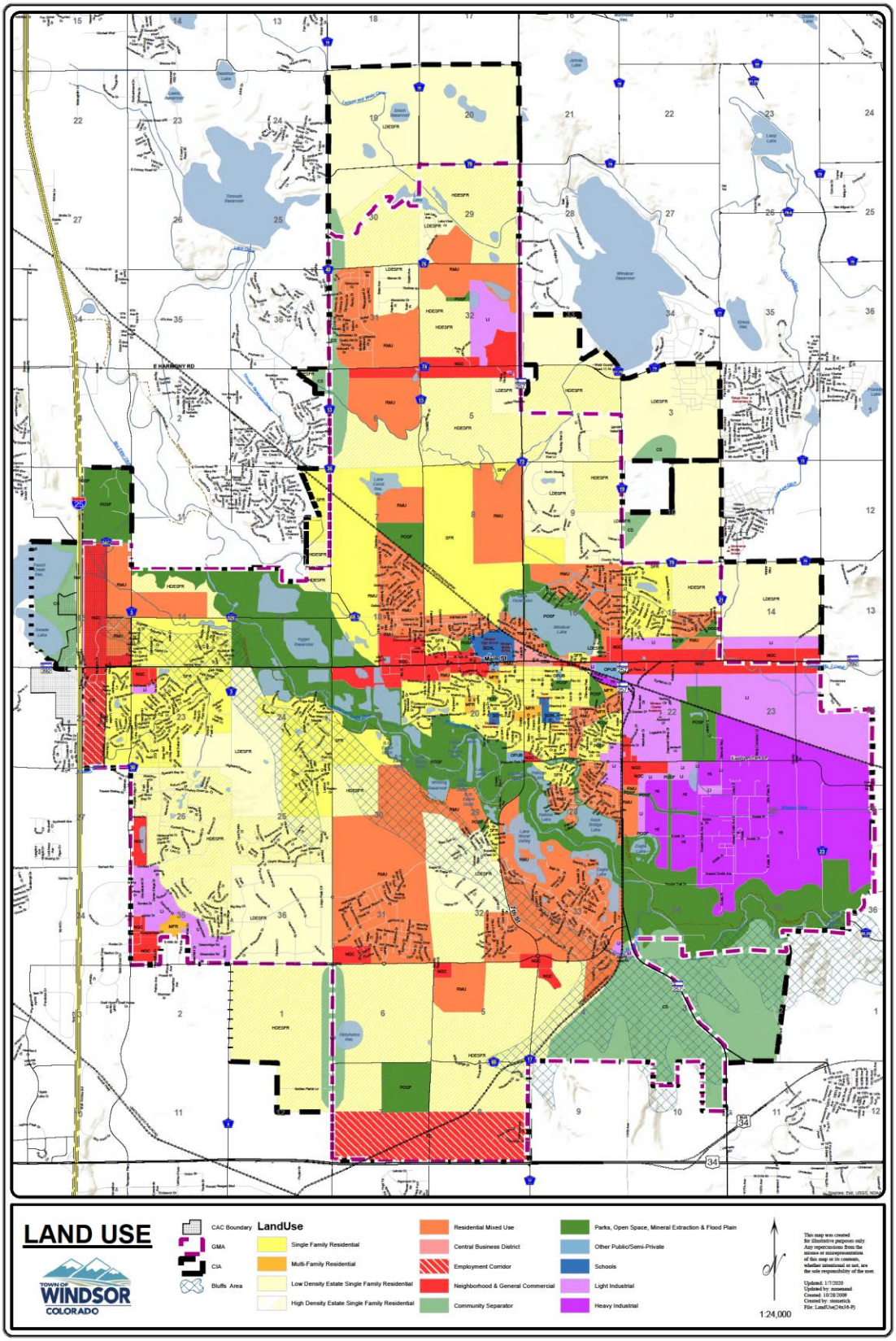


Figure 17: Land Use Plan - Town of Windsor

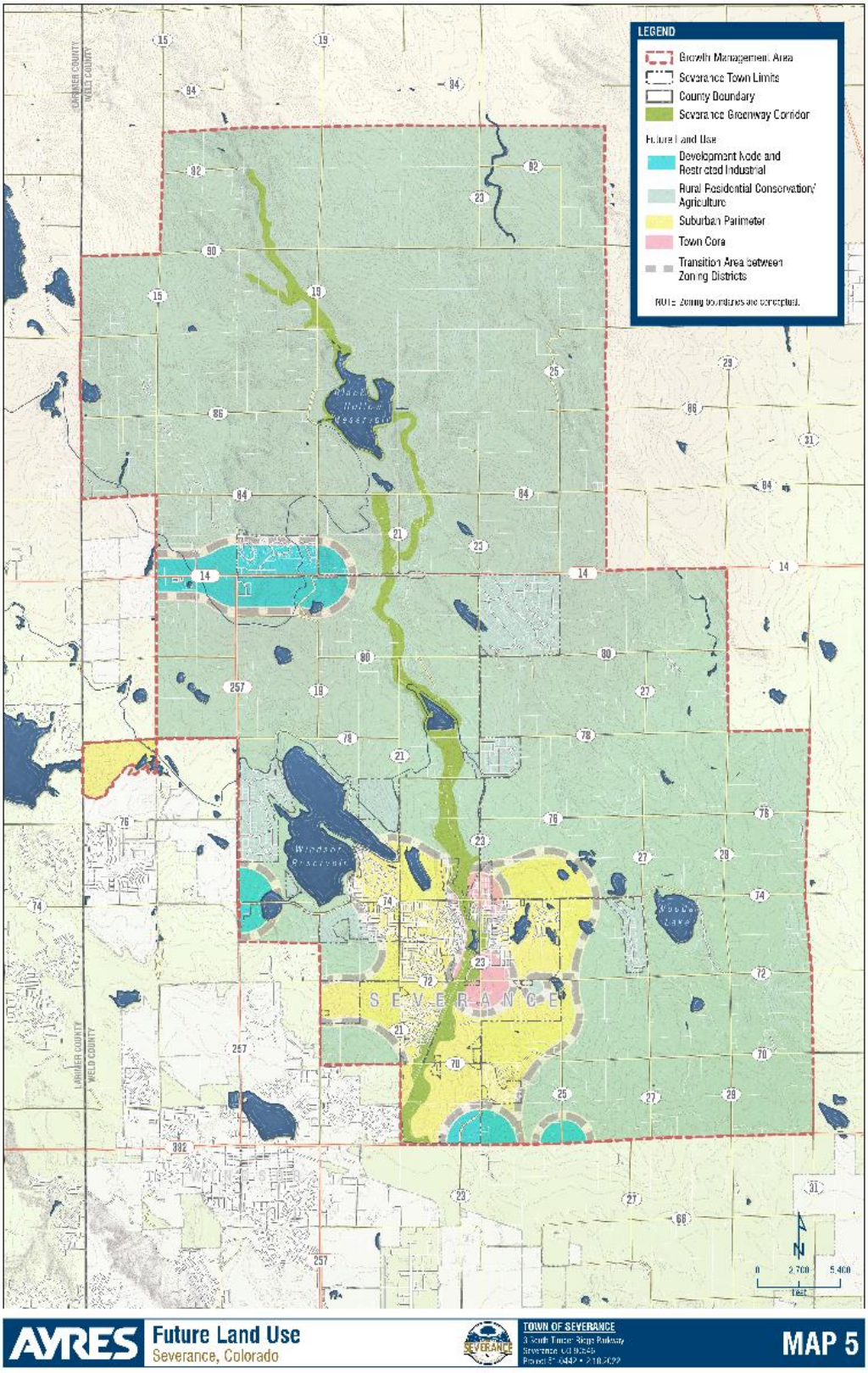


Figure 18: Land Use Plan - Town of Severance

Schools

In direct correlation to population growth in both Windsor and Severance, the school systems have also expanded rapidly. The school district includes 5 primary elementary schools, 1 charter school that spans kindergarten thru twelfth grade, 2 middle schools, and 2 high schools. Enrollment within the school district has steadily increased annually since 2004 [Figure 19]. In November 2016, two voter initiatives were passed via ballot to remodel the Windsor High School, build a new High School in Severance, and hire staff. Severance High School opened in 2019. In 2021 a ballot initiative for another bond to build additional facilities was unsuccessful. School District staff are currently engaged with the community to seek solutions. The WSFR response area is served by the Weld RE-4 Windsor/Severance School District (RE-4) as reflected in Figure 20.

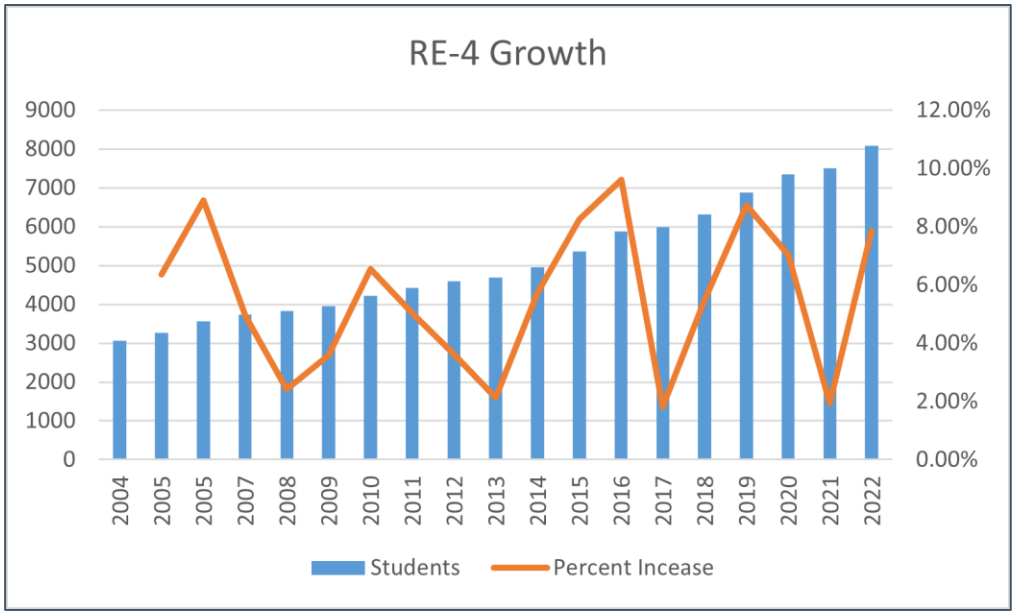


Figure 19: Weld School District RE-4 Enrollment (2004-2022)

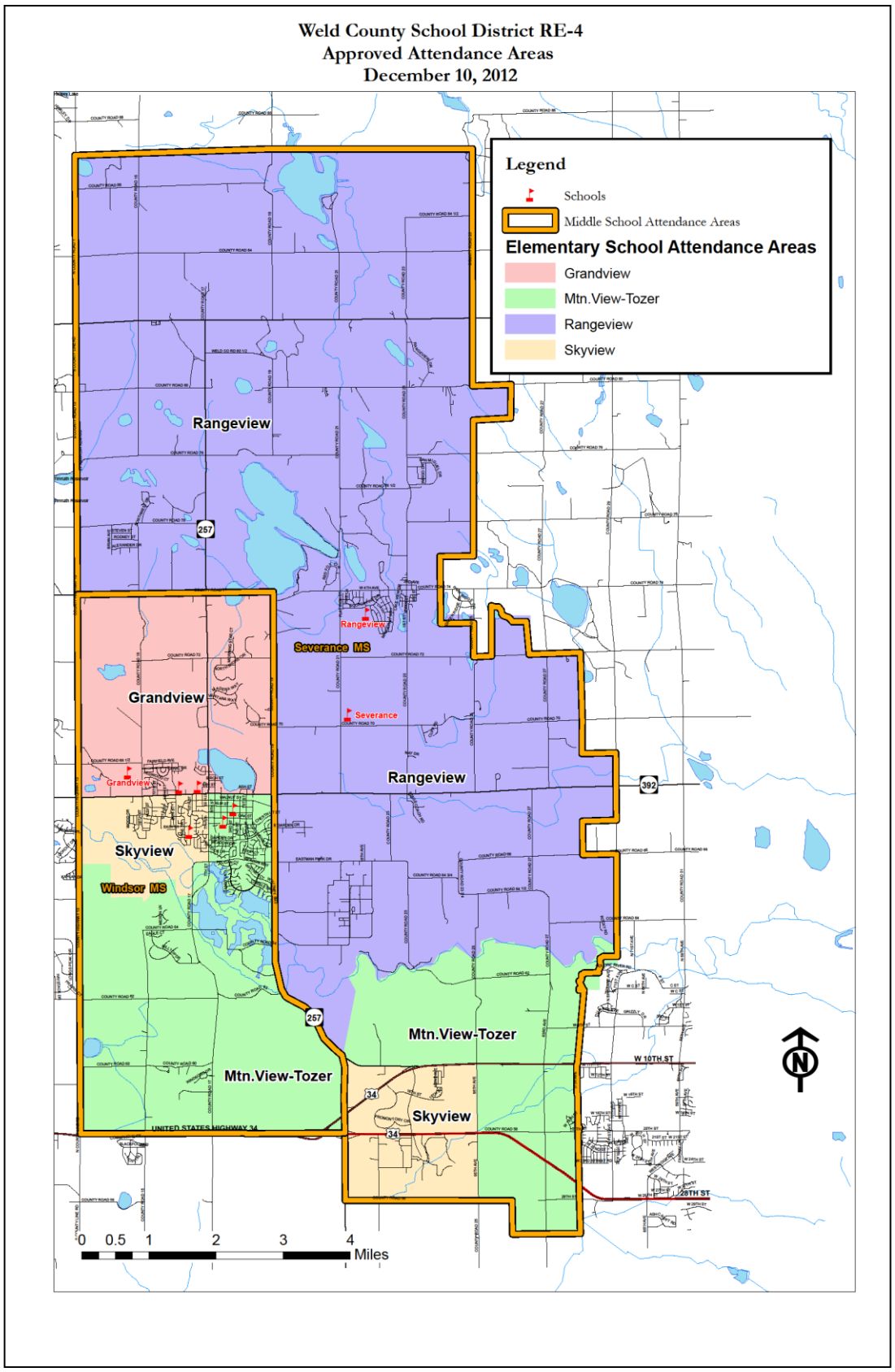


Figure 20: Weld School District RE-4 Boundaries

Community Topography

The WSFR response area is located east of Interstate 25 in an area commonly referred to as the Front Range of Colorado. The terrain can generally be characterized as having rolling hills, grassy plains, ravines, and agricultural land, with an average elevation of 4,800 feet above sea level. Views of the Rocky Mountain Front Range to the west are visible from most areas of the district. There are numerous bodies of water, including lakes, rivers, and streams throughout the area. The Cache la Poudre River runs through the western and southern portions of the district. [Figures 21 and 22]

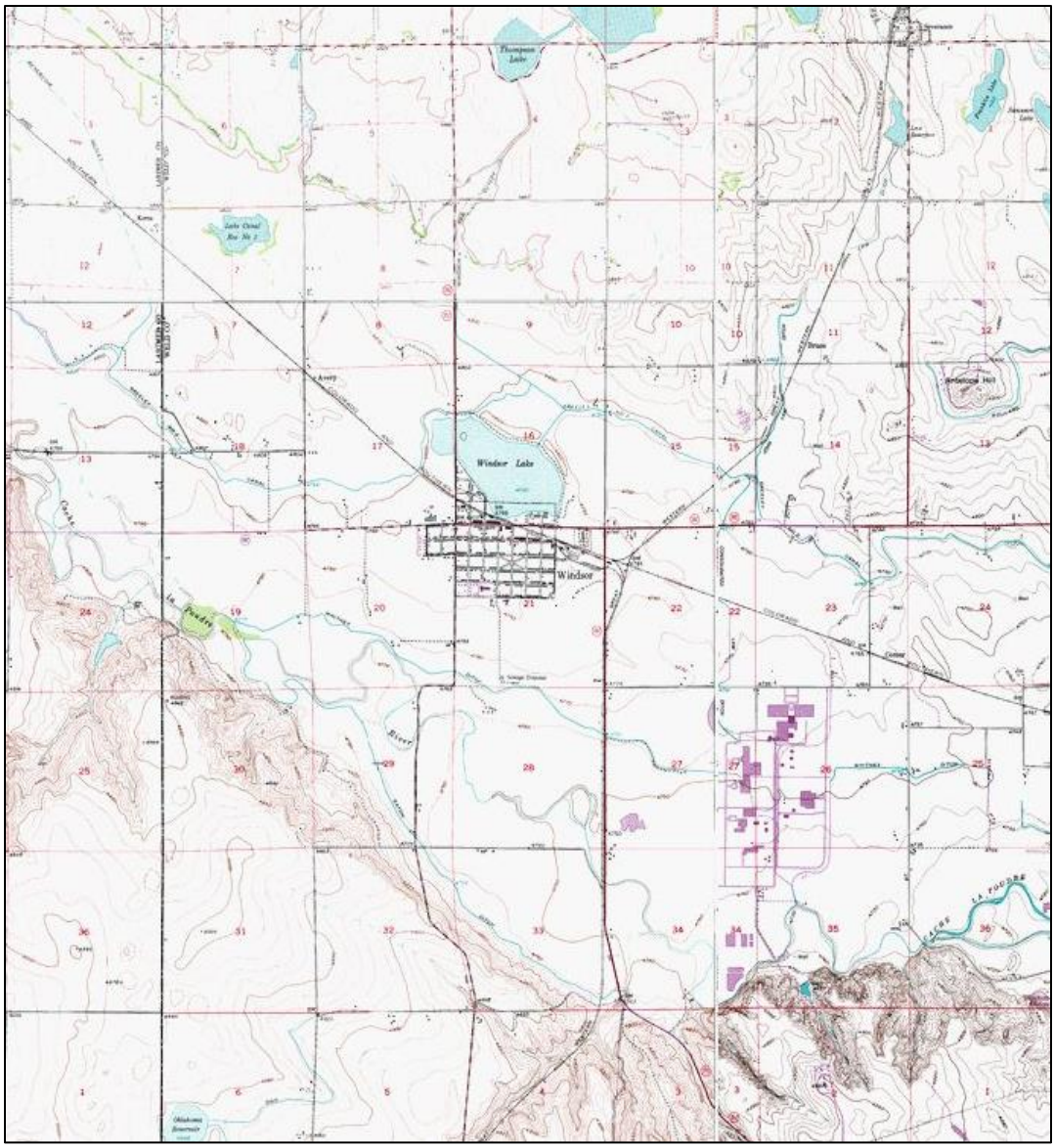


Figure 21: Topography - Town of Windsor

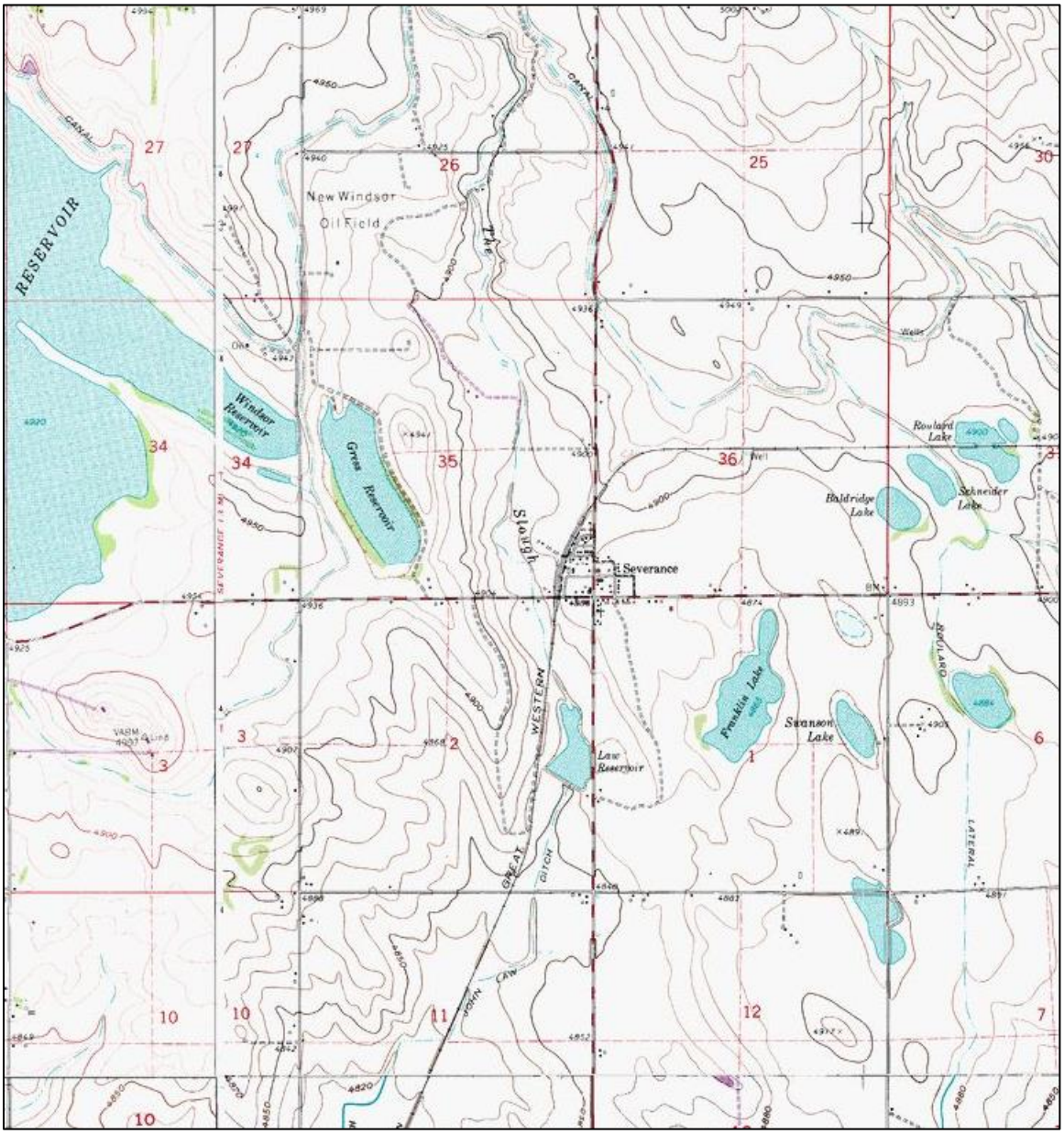


Figure 22: Topography - Town of Severance

Community Climate

The area enjoys a moderate climate with an annual average of more than 300 days of sunshine. The relatively low humidity tends to make winters feel warmer and summers cooler than might be experienced in the mid-western part of the country. The average high and low temperatures range from 88°F in July to an average low of 17°F in December and January [Figure 23]. The highest recorded temperature was 104°F in June 2012, while the lowest recorded temperature was -41°F in December 1951.

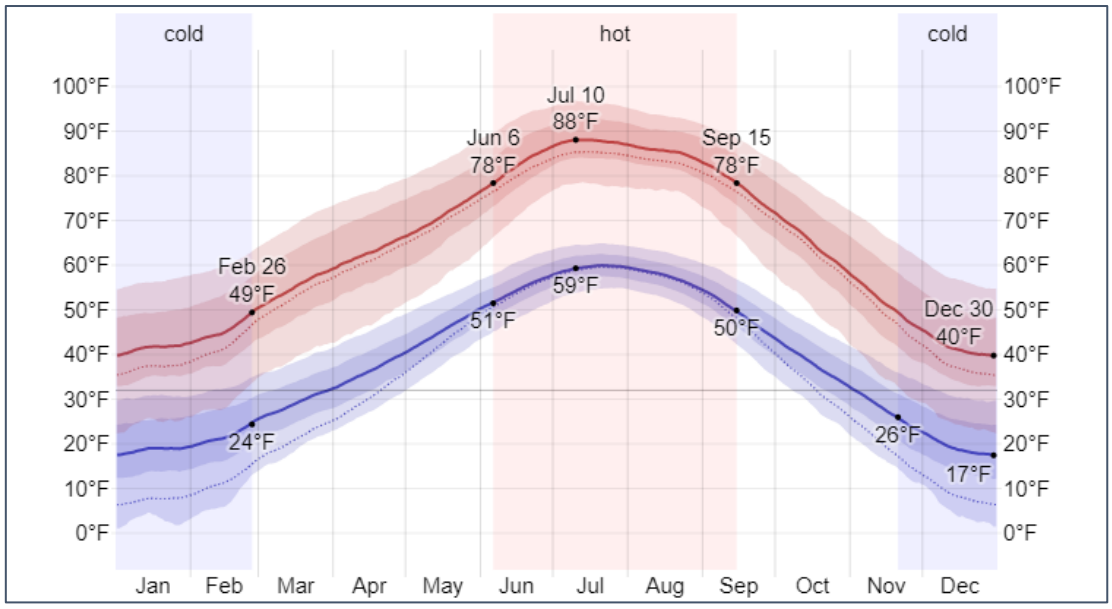


Figure 23: Regional Temperature Ranges

(Source: www.WeatherSpark.com)

The area receives approximately 20 inches of total annual precipitation, with the wettest month usually being in May [Figure 24]. While the area typically receives moderate amounts of snowfall, snow can and often does become extreme, particularly in March and April. [Figure 25]

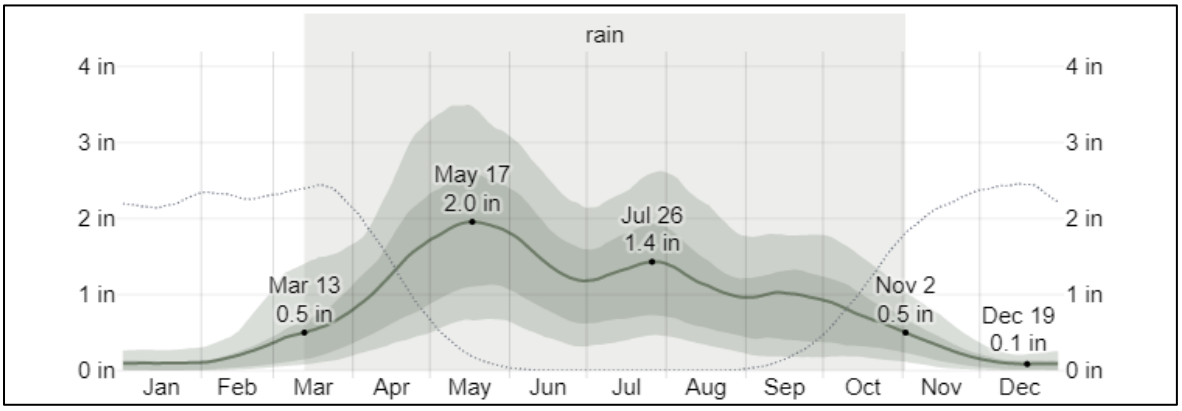


Figure 24: Rainfall by Month

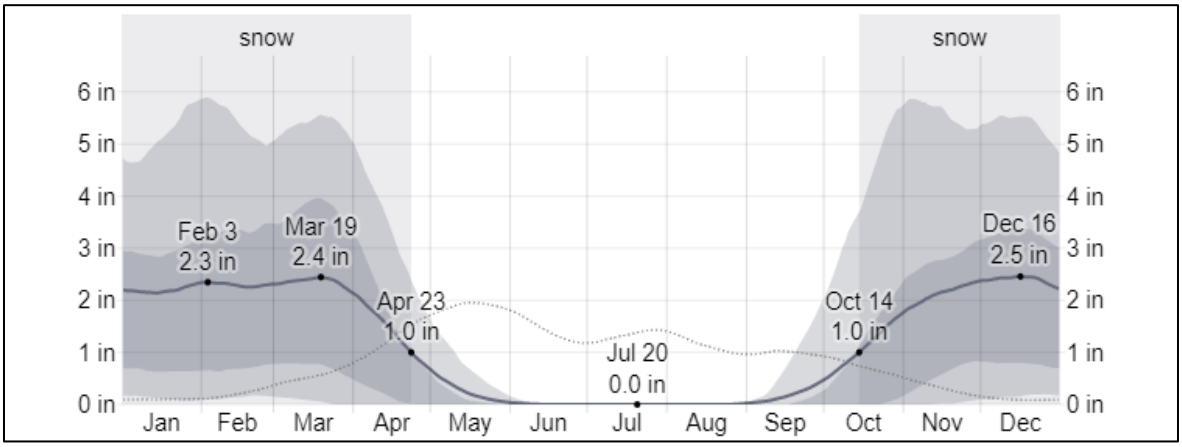


Figure 25: Snowfall by Month

The region is susceptible to severe thunderstorms and other severe weather events. Lightning is one of the most common and frequent weather-related hazards in the region. Lightning causes numerous fires in the wildland-urban interface throughout the year. The most severe lightning strike incident occurred on July 3, 2005, when at least nine people were injured by a lightning strike on the swim beach at Boyd Lake State Park, a short distance west of Interstate 25.

In recent years, there have been several extreme winter weather events that have each dumped several feet of snow on the region, resulting in extensive road closures, catastrophic property damage, and numerous emergency calls for service. Additionally, the regional flood of September 12-13, 2013, resulted in massive flooding throughout the district and disrupted north-to-south traffic on most of the main roads between Windsor and nearby Highway 34.

Winter Storms and Blizzards

Winter storms occur in many forms and vary significantly in size, strength, intensity, duration, and impact. The elements to consider in the definition of a winter storm include temperature and temperature extremes, wind and wind chill temperatures, and snow and blowing snow. Winter storms can severely impact the District in a very short period. Possible consequences of these storms may include disruption of transportation systems, utility outages, school cancellations, and delayed emergency response. Other results may include communication disruption, vehicle accidents, and hypothermia. Typically, storms of this nature are short-lived. Three significant incidents that occur in the winter are the Winter Storms, Blizzard, and Ice Storms.

Winter Storms include a combination of snow and wind that threatens life but are not severe enough to be a blizzard. A blizzard is when considerable snowfall is accompanied by winds of 35 mph or more. Visibility is reduced to ¼ mile or less. Blizzards may also include fine, powdery particles of snow which are whipped from the ground in such great density that visibility is often reduced to only a few yards. Ice Storms are a condition that will produce significant and damaging accumulations of ice when heavy rains are combined with below freezing surface temperatures. Although these definitions may not sound critical, the combinations of temperatures, wind, snow, wind chill temperatures, and reduced visibility can make these storms very deadly and costly in terms of property damage and recovery operations.

High Winds

The entire Northern Colorado region is prone to high winds, frequently referred to as windstorms. For these events, there may be little to no advanced warning. Duration of

the event and wind speed experienced during the event often results in serious property damage and personal injury. Several significant wind events have been responsible for severe damage to property, including buildings, vehicles, and large trees. As a direct result of these extreme winds, the northern Colorado region has experienced widespread utility outages, downed and/or arcing power lines, debris blocking streets, personal injuries, and structure fires resulting from this natural weather event. Associated hazards include fires from arcing power lines, debris in the streets disrupting transportation routes, and power loss. Several occurrences of large commercial vehicles being overturned due to high winds have also occurred in the region. Although they are not buildings, the impact and resources necessary to alleviate the emergency may take the same amount or more resources than typical wind damage to structures. The National Weather Service has recorded dozens of wind events (recorded wind speeds over 50 knots) in Weld and Larimer counties since 2012.

Severe Thunderstorms (Rain and Hail)

Severe thunderstorms are very common in the region throughout the Spring and Summer seasons with severe weather events often occurring into the autumn months. In addition to extreme wind, these storms frequently bring heavy rains as well as large and damaging hail with them. Colorado's official hail season runs from April 15 to September 15, with the greatest number and most severe events occurring in June. The primary resource for historical records of notable rain and hail events in northern Colorado is the Community Collaborative Rain, Hail, and Snow network (CoCoRaHS). CoCoRaHS is a non-profit network of volunteers coordinated through the Colorado Climate Center and Department of Atmospheric Science at Colorado State University in Fort Collins. CoCoRaHS data reveals that Colorado is one of the most hail-prone states in the United States, with hail occurring more frequently along the northern Front Range of the Rockies than anywhere else in North America. It is not uncommon for hailstones in the area to measure one to two inches in diameter, but hailstones as large as 4-½ inches in diameter have been observed in the region. Severe thunderstorms are generally localized and have limited impact. However, they may be of sufficient severity that they could potentially cause severe property damage and/or shut down critical facilities and services for long periods.

Tornados

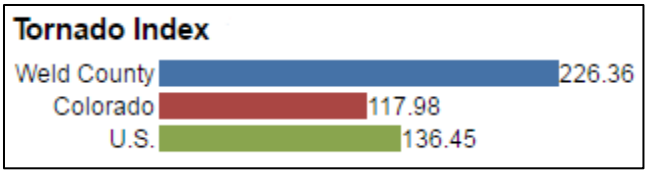


Figure 26: USA.com Tornado Index Comparison

Weld County has an extremely high tornado index rating according to USA.com [Figure 26]. The tornado index value is a calculated value that is based on historical tornado events. It may be used as an indicator of potential tornado activity in a given region. The risk of a tornado is higher with the higher the numeric value of the tornado risk index rating.

FIRST REPORTED LOCATION	DATE	EF RATING	DEATHS	REPORTED DAMAGE
PLATTEVILLE	5/22/2008	EF3	1	147,000,000
DACONO	5/22/2008	EF1	0	0
GILL	5/23/2008	EF0	0	0
KAUFMAN	5/23/2008	EF1	0	0
LIBERTY	6/9/2009	EF0	0	0
SEVERANCE	6/10/2009	EF0	0	0
NUNN	6/22/2009	EF0	0	0
KAUFMAN	8/8/2009	EF0	0	0
NUNN	5/15/2010	EF0	0	0
ROCKPORT	5/18/2010	EF0	0	0
FIRESTONE	5/18/2010	EF0	0	0
KEENESBURG	5/26/2010	EF0	0	0
PROSPECT	6/10/2010	EF0	0	0
GROVER	6/6/2012	EF0	0	0
DOVER	6/7/2012	EF0	0	0
ROGGEN	9/27/2012	EF0	0	0
GATES	8/3/2013	EF0	0	10,000
JOHNSTOWN	8/3/2013	EF0	0	0
PLATTEVILLE	5/7/2014	EF0	0	0
GROVER	6/6/2014	EF0	0	0
GROVER	6/8/2014	EF0	0	0
FT LUPTON	7/28/2014	EF0	0	0
FT LUPTON	5/7/2015	EF0	0	0
GILL	8/16/2015	EF0	0	0
LUCERNE	4/25/2016	EF0	0	0
MASTERS	5/7/2016	EF2	0	0
NUNN	7/27/2016	EF0	0	0
HEREFORD	6/12/2017	EF1	0	0
GROVER	5/28/2018	EF0	0	0
PROSPECT VALLEY	6/19/2018	EF0	0	0
PAWNEE BUTTES	7/29/2018	EF0	0	0
KEOTA	8/8/2018	EF0	0	0
GALETON	3/22/2019	EF0	0	0
PAWNEE BUTTES	5/26/2019	EF0	0	0
HUDSON	5/27/2019	EF0	0	0
BUCKINGHAM	6/17/2019	EF0	0	0
ROGGEN	8/22/2019	EF0	0	0
EATON ARPT	5/20/2020	EF0	0	0

Figure 27: Tornado Data Chart

Severe thunderstorms consisting of heavy rains, hail, high winds, and tornados frequent this area of Colorado. Weld County is ranked by the National Weather Service as one of the regions in the nation that is at the highest risk for tornados. Until recently, the region had not incurred any major damage from tornados as seen in Figure 27. However, in May 2008, a tornado that was measured at more than one mile wide traveled through the center of Windsor and devastated a large portion of the town. One fatality and numerous injuries were reported. This tornado was rated as an EF-3 based on the extent of the damage.

Flooding

A flood can be defined as an overflow or inundation from a river or other body of water that causes or threatens damage. Floods occur throughout all regions of the United States and at all times of the year. In Colorado's north Front Range, flooding is most common during the spring run-off and periods of intense rainfall. Severe thunderstorms can produce winds greater than 100 mph with accompanying heavy rain and the potential for flash floods. The water inundation into lowlands, the temporary backup of sewer and stormwater systems, the rise of groundwater, and the failure of flood control facilities also contribute to flash flooding. Floods can also occur when the ground is frozen and/or saturated with moisture and cannot absorb any further moisture. Runoff from excessive rainfall can cause man-made and natural drainage systems to fail resulting in flash flooding. The loss of life and severe damages can result when floodwaters strike cities, industries, and/or farms located in or near waterways or floodplains. Flooding is considered by local emergency managers to be the greatest risk of natural disaster in the region. Numerous floods in the history of this region have resulted in the loss of life and substantial property-related dollar loss [Figure 28].

LOCATION	DATE	DAMAGE	DESCRIPTION
Weld County	5/20/2015	$250,000+	The Cache La Poudre and South Platte River rose above flood stage producing a prolonged period of minor to moderate lowland floodings.
Windsor/Greeley	6/1/2014	$250,000+	Spring runoff from an above normal snowpack caused river flooding. Several road closures. An estimated 11 homes and 12 businesses were damaged by flooding.
Larimer County	9/12/2013	7 deaths $1 Billion (statewide)	Heavy rainfall from September 9th through the 13th cause extensive flooding across the Northern Front Range. The Big Thompson River and Poudre River both over-topped their banks throughout the region, leading to severe road damage and numerous road closures. Experts have called this event a 1,000-year flood.
Larimer County (Berthoud)	7/12/2001	$ unknown	Heavy rain caused flooding and flash flooding problems in the Berthoud area. Some parts of town were under two to three feet of standing water. Major crop damage was reported on the west side of town as 320 acres of corn, wheat and beets were flooded. The storm also caused the Burlington Northern/Santa Fe railroad to shut down tracks for 4 hours while repair crews fixed a 100-foot and 75-foot stretches of track that were washed out.
Front Range Foothills	5/1/1999	$200,000 +	Heavy snow occurred in the foothills above 7,000 feet with a steady period of moderate rainfall below this elevation. Normal runoff was accelerated, causing several rivers to jump their banks. Several rural roads were either closed due the floodwaters or washed out completely. In Windsor, the Cache la Poudre River flooded the basements of several homes along the river.
Fort Collins	7/28/1997	5 deaths $190 Million	More than eight inches of rainfall was measured during the evening hours as a series of storms dumped heavy rain. A 10-15-foot wall of water surged through two mobile home parks in Fort Collins, destroying 108 homes and damaging 481 others and severely damaging 86 homes. The high water also derailed 4 railroad cars.
Fort Collins	7/23/1994	50000	Heavy rain caused flash flooding in Fort Collins. Rain amounts of up to 2 inches caused flooding of the main streets through downtown Fort Collins. Several basements of residences and businesses were flooded, causing damage.
Drake/Loveland	7/31/1976	145 deaths $40 million (in 1976 dollars)	Heavy overnight rainfall came without warning. Within a few hours, a severe flash flood swept down the Big Thompson Canyon, causing one of the greatest natural disasters in the history of the state.

Figure 28: History of Flood Events in the Region

Drought

A drought is typically thought of as a shortage of water associated with a deficiency of precipitation. However, water shortages can also be induced by humans through water mismanagement practices. Perhaps it is easier to think of drought as being a function of supply versus demand. Droughts occur when a normal amount of moisture is not available to satisfy an area's usual water-consuming activities. For this document, a drought shall be

a condition of climatic dryness that is severe enough to reduce soil moisture and water below the minimum necessary for sustaining plant, animal, and human life systems.

Several hazards are associated with drought, the greatest of which is an increased fire danger in urban natural areas, the wildland/urban interface, and open space areas. The risk to public safety personnel is also increased as they respond to these fire incidents. The reduction in vegetative cover will expose soil to wind and erosion. The quality of rivers and lake water will change and water quality in streams and rivers can be reduced because of sediment. Severe drought could deplete water sources in the areas where natural water sources are used for domestic and/or agricultural water supplies. Streams, ponds, and wells often dry up during a drought. Although agricultural production is the most obvious recipient of this type of loss, drought will also impact urban areas by reducing domestic and industrial water supplies. Drought situations can last for several years and take many years to recover.

In the years between 1952 and 1956, Northern Colorado experienced a significant drought. Because there were no significant water supplies in place, the drought during this period had a severe economic impact on area agriculture. The periods between 2000-2003 and 2011-2015 were identified by the Colorado Water Conservation Board (CWCB) as "significant multi-year statewide drought, with many areas experiencing the most severe drought conditions in Colorado instrumented history."[4] Since 2003, the region has continued to experience moderate drought conditions with periods of severe drought [Figure 29]. Seasonal weather patterns continue to maintain abnormally dry conditions and below-average snowpack in the mountains that supply water to the northern Colorado region.

[4] "Updated Information Provided in Support of the 2013 Colorado Drought Mitigation and Response Plan." Colorado Water Conservation Board, August 2013.

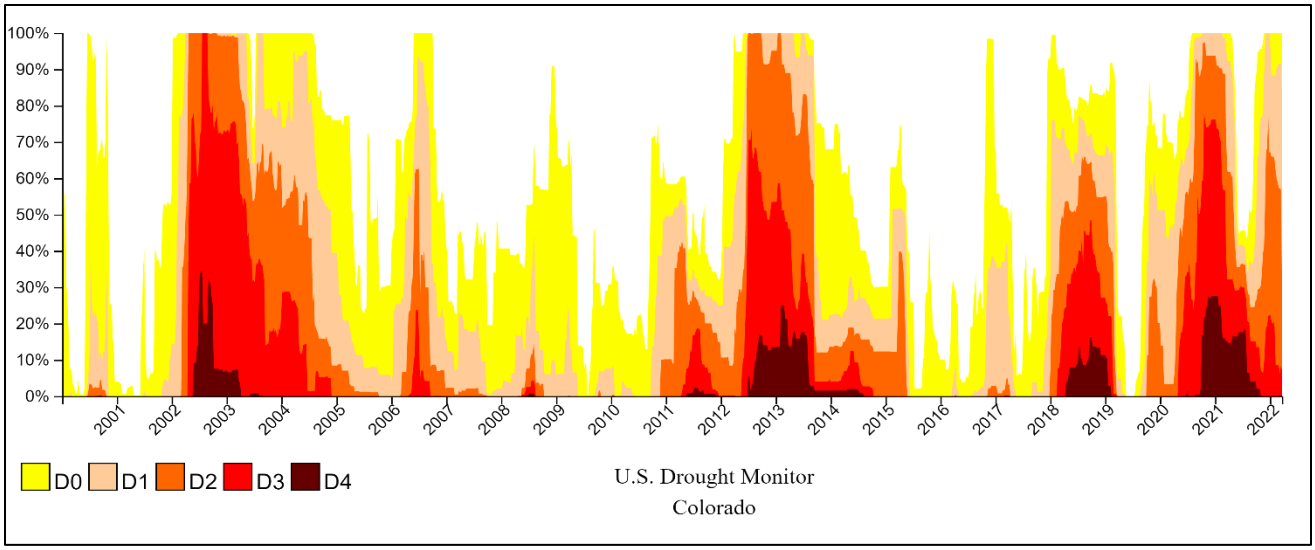


Figure 29: Drought Conditions

Weather-Related Risk Summary

	Low Risk	Moderate Risk	High Risk
High Frequency		Hail Storms Severe Thunderstorm High Wind Events	
Low Frequency	Drought	Winter Storm/Blizzards Severe Rains/Flooding	Tornado

Community Population, Population Densities, and Demographic Features

There has been rapid growth in both of the primary communities that comprise the District, as indicated in Figure 30 below. According to both the 2010 and 2020 U.S. Census, Weld County has been one of the fastest-growing counties in the nation. Both Windsor and Severance saw tremendous growth between 2010 and 2020, with Windsor's total

population growing by more than 75% and the population of Severance exploding by more than 142%. According to the 2020 U.S. Census Bureau report, the population of Windsor was 32,716 and the population of Severance was 7,683. Weld County's population of 328,981 has grown by 30% since the 2010 U.S. Census. Weld County is rated as one of the top ten most heavily populated counties in the state, and it saw the highest growth rate in Colorado between the 2010 and 2020 census reports. By way of comparison, Colorado has grown 15% overall since the year 2010 doubling the national average.

Windsor Demographics	*2010 Census*	*2020 Census*	*Difference*
Total Population	18,644	32,716	14,072
Median Household Income	$75,970	$103,933	$27,963
Population by Race			
American Indian & Alaska Native	0.5%	0.6%	0.10%
Asian	1.2%	2.0%	0.80%
Black or African American	0.5%	0.4%	-0.10%
Native Hawaiian & Pacific Islander	0.0%	0.0%	0.00%
Other	2.1%	2.3%	0.20%
Two or more races	2.1%	3.7%	1.60%
White	93.6%	91.0%	-2.60%
Population by Hispanic or Latino Origin			
Hispanic or Latino Origin	9.0%	8.5%	-0.50%
Non-Hispanic or Latino	91.0%	86.7%	-4.30%
Population by Gender			
Male	49.8%	50.1%	0.30%
Female	50.2%	49.9%	-0.30%
Population by Age			
0-4 years	7.3%	5.7%	-1.60%
5-17 years	22.2%	20.8%	-1.40%
18-64 years	60.6%	57.4%	-3.20%
65 years & over	10.0%	16.1%	6.10%

Severance Demographics	*2010 Census*	*2020 Census*	*Difference*
Total Population	3,165	7,683	4,518
Median Household Income	$82,100	$109,207	$27,107
Population by Race			
American Indian & Alaska Native	0.3%	0.6%	0.30%
Asian	0.9%	0.4%	-0.50%
Black or African American	0.4%	0.0%	-0.40%
Native Hawaiian & Pacific Islander	0.0%	0.0%	0.00%
Other	1.7%	1.4%	-0.30%
Two or more races	2.2%	5.1%	2.90%
White	94.4%	92.5%	-1.90%
Population by Hispanic or Latino Origin			
Hispanic or Latino Origin	7.0%	9.6%	2.60%
Non-Hispanic or Latino	93.0%	86.7%	-6.30%
Population by Gender			
Male	51.3%	50.2%	-0.90%
Female	48.7%	49.8%	1.10%
Population by Age			
0-4 years	10.0%	12.5%	2.50%
5-17 years	19.1%	19.0%	-0.10%
18-64 years	65.6%	58.3%	-7.30%
65 years & over	5.2%	10.2%	5.00%

Figure 30: Windsor & Severance Demographic Information

The daily population of the District is affected by several large industrial complexes located within the Great Western Industrial Park in the southeast portion of the District. Several of these industrial occupancies, which have numerous employees who live outside the District boundaries, are operated 24 hours per day, leading to an increased volume of calls for service at all hours. Windsor's Great Western Industrial Park features several large-scale industrial occupancies, including Vestas Blades America, Owens Illinois, Front Range Energy, CareStream Health, Metal Container Corporation, Halliburton, and others.

The construction of the Future Legends Sports Park, scheduled to open in 2022, will cause additional population surges for WSFR. This park will be the home of a minor league professional baseball team (Northern Colorado Owlz) and a professional soccer team (Northern Colorado Hailstorm). This facility will include a stadium, dormitories, hotels, restaurants, and other supporting commercial development. This is projected to result in annual visitors of about 1.2 million people in the first year and reaching 2 million people by the 5th year.

WSFR's fire stations are located within the most densely populated centers of the communities protected. The agency has established an "Urban Response Area" where improved emergency response capabilities should be expected. The "Urban Response Area" consists, in general, of the locations within a five-minute travel distance from each of WSFR's four fire stations [Figure 31]. The population density within the WSFR response area includes both urban clusters and rural. The Commission on Fire Accreditation International (CFAI) defines an "urban" area as one "that is comprised of a densely settled core of census tracts and/or census blocks that meet minimum population density requirements, along with contiguous territory containing non-residential urban land use as well as a territory with low population density included to link outlying densely settled territory with the densely settled core. To qualify as an area on its own, the territory identified according to the criteria must encompass at least 2,500 people, at least 1,500 of which reside outside of institutional group quarters." The CFAI further defines an area cluster as an area that "contains at least 2,500 and less than 50,000 people" and a rural area

as an area “encompasses all population, housing, and territory not included within an urban area.”[5]

[5] Community Risk Assessment: Standards of Cover 6th Edition, Page 105

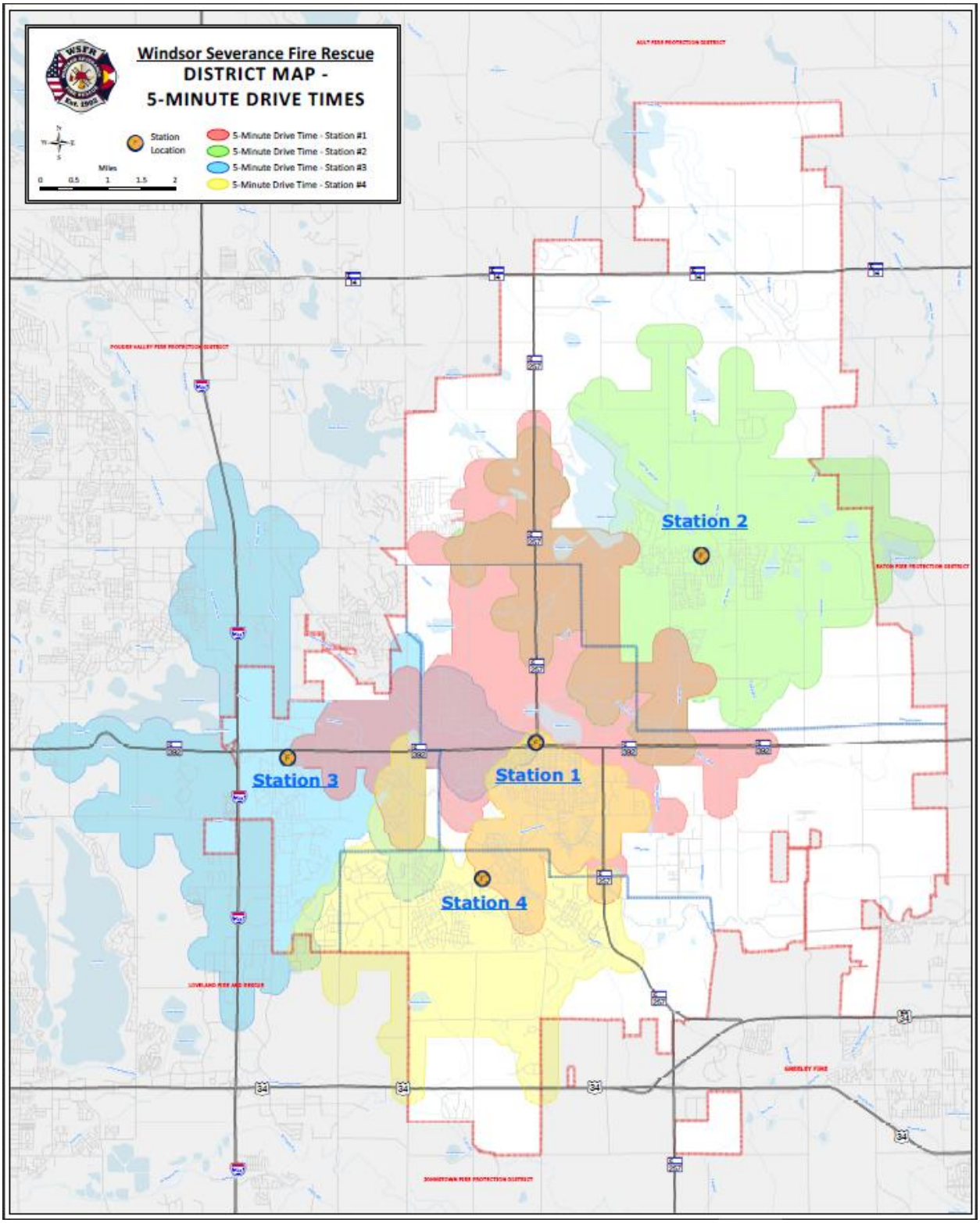


Figure 31: WSFR Response Area

Chapter 2 – Description of Current Fire and Emergency Services

WSFR is a combination career/volunteer fire agency consisting of 84 members (44 full-time firefighters, 12 part-time firefighters, 3 volunteer/reserve firefighters, 10 administrative/support staff, 5 elected board members, and 10 museum docents). The agency provides fire suppression, emergency medical services, basic and technical rescue, hazardous materials mitigation, and fire prevention services to residents, businesses, and visitors within the towns of Windsor and Severance and the surrounding area.

Responsibilities of the Agency

All public fire service agencies exist to save lives and property from natural and/or human-caused situations and prevent harm through planning and pre-incident planning. WSFR adheres to that common theme, with the added emphasis on a family relationship with our communities as reflected in our mission statement. The fire protection and emergency services system has been built by WSFR to reflect the unique demands of the two communities served. Agency administration manages and operates the emergency preparedness and response system to be as economically efficient as practical. Economic downturns and public demand for transparency and governmental efficiency have emphasized that local government must be frugal and involve the community in planning efforts to be successful in the long term.

WSFR is organized into four (4) divisions: Operations, Training, Life Safety, and Administration. The Operations Division, supervised by the Deputy Chief of Operations, represents the largest and most visible component of WSFR. Operations Division personnel are staffed at each of the agency's four fire stations and respond to emergency and non-emergency calls for service. The Operations Division provides the following services:

structural firefighting, wildland firefighting, emergency medical services, technical rescue, hazardous materials response, fire alarm investigation, pre-incident planning, and public assistance.

The Training Division supervised by the Deputy Chief of Operations, is staffed with a Division Chief. The Training Division is responsible for the development and implementation of the operations training plan. The Division monitors all progress of the training plan and ensures compliance with all operations personnel compliance and certifications.

The Life Safety Division provides a variety of fire prevention services including new construction plan review, fire code enforcement, development services, permit administration, fire investigation, and public education/information. Additionally, the division coordinates other community outreach activities such as Child Passenger Safety Seat inspections and installations, smoke and carbon monoxide detector installations, bike helmet programs, community access AED programs, Safe-Sitter education, and fall prevention program for senior citizens.

The Administrative Division, with assistance from various contract services, maintain all business-related functions of the agency including financial planning, human resources, inter-agency relations, governmental relations, budgeting, strategic leadership, reporting, payroll, accounts payable, accounts receivable, data analysis, fleet management, facility management, information technology support, and customer service.

Agency Organization

WSFR is a Special District organized and operated under Title 32 of Colorado revised statutes. The WSFR Fire Chief reports to the WSFR Board of Directors. Beneath the Fire Chief are the Deputy Chief of Operations, the Fire Marshal, the Director of Administrative Services, and the Finance Director. The Operations Division is organized into three shifts, each working a rotating 48/96 shift schedule. Each of the three shifts is supervised by a Battalion Chief. Each shift's minimum staffing consists of four Engine Company Lieutenants, four Engineers, and four Firefighters. The Division Chief of Training also reports to the Deputy Chief of Operations.

University of Colorado Health (UCH) ambulance maintains an advanced life support (ALS) ambulance and a paramedic field Captain at WSFR Station 1 and an ALS ambulance at WSFR Station 2. The ambulances are staffed by UCH paramedics and EMTs working 24-hour shift schedules.

Deployment Capabilities

WSFR currently has three front-line fire engines and one front-line tower ladder responding from four stations. All apparatus are staffed by a minimum of three (3) personnel. The District owns one heavy rescue, three wildland brush trucks, and two water tenders that are cross-staffed by on-duty engine personnel or other available staff. Additionally, the District owns a foam trailer, a surface water rescue boat, a swift water rescue boat, two reserve fire engines, one reserve brush truck, and several staff vehicles.

All fire suppression personnel, whether paid or volunteer, are required to be certified to the minimum level of Firefighter I, Hazardous Materials Operations, Emergency Medical Technician-Basic (EMT-B) and are trained in the Wildland Firefighter Type II certification. Six (6) District employees are certified to the level of Hazardous Materials Technician, eight (8) employees are trained as technical rescue technicians, and three (3) employees are certified as wildland engine bosses. The technical rescue technicians participate in area special operations teams and are available for mutual aid callouts for those teams. Additionally, our wildland and hazardous materials personnel will assemble if needed to augment staffing levels for emergency response. To date, our technical expertise in various arenas has not driven any staffing or distribution models. The District does not currently have an SOP for personnel distribution based on level of training, nor does the District adhere to any other specific personnel distribution procedures.

Fire Suppression

Fire suppression incidents in the WSFR response area have been historically low with the most common being grass fires and vehicle fires. However, structure fires do occur with the most common being fires in one- and two-family residential structures. The agency may also respond to reports of a fire in a wide variety of commercial buildings, such as schools, mercantile, factory/industrial buildings, medical facilities/nursing homes, and

multi-family residential structures. The four WSFR fire stations are located strategically within the busiest locations of the response area. Each fire engine is equipped with a 2000 gallon per minute fire pump, 750 gallons of water, more than 2500 feet of hose, ladders, vehicle extrication equipment, stabilization equipment, and a variety of firefighting tools and equipment. Tower 1 is equipped with a 100-foot aerial platform device, a 1750-gallon per minute fire pump, 300 gallons of water, more than 500 feet of large diameter supply hose, and several ground and roof ladders. A Heavy Rescue truck is equipped with hydraulic extrication tools, stabilization equipment, ground ladders, and other tools and equipment for firefighting and specialized rescue operations. The heavy rescue is also equipped with hazmat equipment to mitigate minor incidents as well as a wide variety of tools and equipment to support special operations incidents.

Wildland Firefighting

The primary goal of WSFR's wildland firefighting program is initial attack during the early stages of wildfire development. The topography within the WSFR response area is predominantly rolling prairie grasslands. WSFR operates three Type 6 fire engines that are cross staffed with front-line fire engines. Two water tender apparatus are also available to provide water to areas without sufficient pressurized water sources.

During the period from January 1, 2017, through December 31, 2021, the agency responded to 155 wildland fire incidents in the WSFR's response area. WSFR's involvement in wildland-urban interface operations has expanded in the past five (5) to ten (10) years. All members of the Operations Division completed basic wildland firefighting training in accordance with National Wildfire Coordinating Group (NWCG) courses S130 and S190. Personnel are also able to achieve more advanced certifications, such as Engine Boss, Squad Boss, Sawyer, etc. Enhanced certification and training requirements have allowed

agency members to deploy on large-scale wildland fires, which has dramatically increased the real-world training and experience of those members. This allows WSFR to improve the level of service provided to our citizens.

Emergency Medical Services (EMS)

The goal of the EMS program is to provide the highest level of patient care to the citizens we serve. WSFR provides basic life support (BLS) and some advanced life support first response medical care. All Operations Division personnel are required to maintain certification as an Emergency Medical Technician-Basic through the Colorado Division of Public Health and Environment (CDPHE). The agency also employs two individuals who are certified as Emergency Medical Technician – Intermediate or Emergency Medical Technician-Paramedic. Most WSFR apparatus are equipped with BLS equipment including automated external defibrillators (AEDs) and trauma supplies. Continuous advanced life support (ALS) treatment and patient transport are provided by the University of Colorado Health (UCH), which provides 24/7 staffing of a WSFR-owned ambulance located at Fire Station 1 and a UCH-owned ambulance at Station 2. Thompson Valley Ambulance Service (TVAS), a special District ambulance service, provides ALS to the Southwest portion of our District in areas served by Station 3. In 2021, WSFR responded to 2664 EMS incidents and motor vehicle accidents (MVA's), which accounted for nearly 66% of the agency's annual call volume.

Hazmat

Typical hazmat incidents that WSFR responds to are small fuel spills and natural gas line breaks due to the increase in construction and development. Other areas that are considered in which hazmat response is possible include rail transport of crude oil, highway transportation, industrial and manufacturing facilities, and oil and gas wells. All WSFR operations personnel are certified to the Hazmat Operations level. Additionally, 6 career personnel are certified at the Hazmat Technician level.

A Heavy Rescue apparatus is equipped with a full complement of tools and equipment to support the agency's hazmat program. It is centrally located at Fire Station 1.

When the agency is dispatched to a hazmat call, on-duty personnel will cross-staff this apparatus to deliver it to the scene as necessary.

Technical Rescue

Technical rescue services include extrication, collapse rescue, confined space rescue, rope rescue, trench rescue, machinery rescue, animal rescue, ice rescue, dive rescue, surface water rescue, and swift water rescue. All WSFR personnel are trained to the awareness level for technical rescue. Additionally, all career personnel in the Operations Division are trained to the operations level in the discipline of vehicle extrication and ice water rescue and most personnel are operations level for swift water rescue.

The technical rescue program is provided oversight by a shift battalion chief. Each discipline has an identified team lead who is trained to the technician level and support personnel who are trained to a minimum of the operations level with others also trained to the technician level. The agency is continually evaluating needs and expanding the number of personnel who are trained to higher levels for each discipline.

Tools and equipment to support the agency's technical rescue program are distributed between the Tower Ladder, the Heavy Rescue, and the dive trailer, with

additional equipment located on front-line engines. The Tower, Rescue, and dive trailer are centrally located at Fire Station 1. When the agency is dispatched to a technical rescue call, on-duty personnel from the Tower will cross-staff the Rescue as necessary to deliver the appropriate equipment to the scene.

Life Safety Division

The agency's Life Safety Division provides a wide variety of fire prevention and emergency management services to both WSFR members as well as the citizens within the agency's service area. The Division is staffed by a Fire Marshal, an Inspector, and a Community Risk Reduction Manager, and is assisted by members of the Operations Division, who complete a variety of fire safety preplans, community outreach, and community education each year. The agency's fire prevention office services new construction plan review, development review, fire origin and cause investigation, permit administration, and public education/outreach. Plan reviews are conducted on all new commercial projects, new multi-family residences, and new residential subdivisions. Inspections are conducted throughout construction and final approval for the Certificate of Occupancy is granted after all requirements are satisfactorily met.

The Life Safety Division completes building inspections based upon a schedule as determined by risk classification and need. All the schools within the district are inspected by the Fire Marshal and/or other certified personnel annually. In addition, plans are reviewed, permits are issued, and inspections are conducted for tents, open burning, special events, flammable liquid storage tanks, emergency radio amplification systems, and fireworks.

The agency's educational efforts are focused on youth up to age nine with programs provided to all schools in the agency's district on an annual basis during Fire Prevention Month. The agency owns and uses a Fire Safety Trailer which is also loaned to other nearby fire service organizations to assist with their public education programs.

The agency hosts an annual Safety Open House every June at Fire Station 1. The event includes residential fire sprinkler demonstrations, electrical safety education, texting and driving and drinking and driving demonstrations, water safety, fire safety, Fire Safety Trailer demonstrations, and many other safety-related activities. The collaboration with neighboring organizations including fire districts, police agencies, county resources, and many other service organizations has increased since 2013.

Resource Deployment

WSFR's Operations Division maintains a minimum of 13 on-duty personnel 24 hours per day, 7 days per week, operating out of four staffed fire stations. The first due apparatus includes three Type 1 engines and one tower ladder that are each staffed with a minimum of three personnel and one battalion chief who responds in a command vehicle. [Figure 32]

Fire Station 1	Fire Station 2	Fire Station 3	Fire Station 4
Tower 1 (first due truck) Battalion 1 Heavy Rescue 1 Ambulance Med 1 Support Vehicles Rescue Boat Dive Rescue Engine 13 (reserve engine) Collapse Trailer (in process)	Engine 2 (first due engine) Engine 12 (reserve engine) Brush Patrol 2 Water Tender 2 Ambulance Med 2 Foam Trailer	Engine 3 (first due engine) Brush Patrol 3 Reserve Brush Truck	Engine 4 (first due engine) Brush Patrol 4 Water Tender 4

Figure 32: WSFR Apparatus Locations

Response Matrix

WSFR has established a Response Matrix [Figure 33] that is used by the Weld County Regional Communications Center (WCRCC) to assign the correct type and number of resources to each incident type. Through proper triaging of requests via WCRCC, WSFR can send the correct resources to provide a safe and effective response to the reported incident. This is accomplished through the use of integrated medical priority dispatching and the use of other relevant information. Proper utilization will manage the inherent risk in emergency response, keep unnecessary resources in readiness, and offer the most complete coverage of the response area. Each officer, firefighter, and EMS responder is expected to know and follow the WSFR Response Matrix. The on-duty Battalion Chief or ranking WSFR officer is authorized to change the response to meet specific incident needs as appropriate.

The included matrix is anticipated to change in late 2022 when WCRCC completes an upgrade to a new Computer Aided Dispatch (CAD) system. The new matrix will include more alarm types as well as second and third alarm capabilities which will offer the agency the opportunity to specify resource needs more efficiently at a more granular level. This will increase the overall efficiency of WSFR in resource utilization.

AIRAF	*Aircraft Accident*	**A, BC, E, E, HR, FT, T or WT**
AIRLIF	*Medivac Response*	**BC, E**
ALARMC	*CO Alarm*	**E (A, BC with patients as EMD appropriate)**
ALARMF	*Fire Alarm*	**BC, E, E, T, or WT (WT2 in place of T1 if rural)**
ALARMM	*Medical Alarm*	**A, E**
EMS	*EMD Coded Medical*	**A, (Alpha, Omega), A, (Bravo)** **A, E (Charlie, Delta, Echo), (BC Echo)**
EXPLOF	*Explosion*	**A, BC, E**
FASIST	*Fire Assist*	**E**
FIREGC	*Ground Cover Fire*	**BC, E, B, WT**
FIRES	*Structure Fire*	**BC, E, E, E, T, HR, A**
FIRES	*Rural Structure Fire*	**BC, E, E, WT, E, WT, HR, A (Rural areas include all areas outside of Windsor city limits with or without hydrants.)**
FIRET	*Trash Fire*	**BC, E (Large dumpster add second E)**
FIREV	*Vehicle Fire*	**BC, E (Consider WT in rural areas.)**
HAZ	*HazMat Incident*	**BC, E, HR, E (Foam Trailer if incident calls for it)**
MUT	*Mutual Aid* *Auto-Aid*	**E** **E, BC (for all confirmed structure fires)**

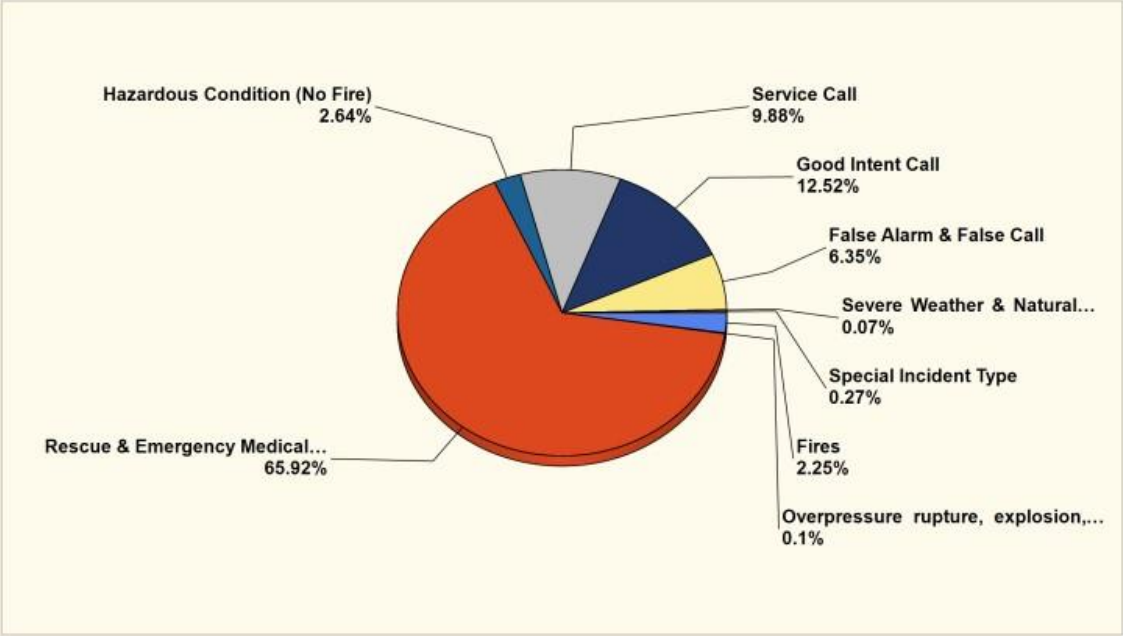
RA	*Request Assistance*	E
SCUBAI	*Water Rescue*	A, BC, E, Boat, HR, E
SHOOTF	*Assault w/ Gun*	A, E, BC if advised to stand by in the area.
SMKODR	*Smoke Odor*	BC, E, E, T
SMKODR	*Smoke Odor in Rural Area*	BC, E, E, WT **(Rural areas include all areas outside of Windsor city limits with or without hydrants.)**
STABF	*Assault w/ Knife*	A, E, BC if advised to stand by in the area.
STAND	*Stand-by in the Area*	A, E
TAIF	*Traffic Accident w/ Injuries*	A, BC, E, E, HR
TAUF	*Traffic Accident w/ Unknown*	A, BC, E, E, HR
UNK	*Unknown*	E **(Response determined by dispatch information.)**

Apparatus Abbreviations:	
A	*Ambulance*
E	*Engine*
BC	*Battalion Chief*
HR	*Heavy Rescue*
FT	*Foam Trailer*
T	*Truck*
WT	*Water Tender*
B	*Brush Truck*
BOAT	*Swift Water or Open Water*

Response Indicator:
Emergent Response
Routine Response

Figure 33: WSFR Response Matrix

All WSFR resources are dispatched by the Weld County Regional Communications Center (WCRCC). In 2021, WCRCC assigned WSFR resources to 4049 calls for service. Of those calls, 91 were dispatched as fires, and 2664 were emergency medical calls [Figure 34].



Fires	91	2.25%
Overpressure rupture, explosion, overheat - no fire	4	0.1%
Rescue & Emergency Medical Service	2664	65.92%
Hazardous Condition (No Fire)	107	2.64%
Service Call	400	9.88%
Good Intent Call	507	12.52%
False Alarm & False Call	257	6.35%
Severe Weather & Natural Disaster	3	0.07%
Special Incident Type	11	0.27%

Figure 34: 2021 Incident Response Summary

Automatic Aid and Mutual Aid Agreements

The administration for WSFR understands that the agency has limited resources due to the current size of the organization. To be better prepared to meet the potential needs in all portions of the widespread response area, WSFR has negotiated numerous written automatic aid and mutual aid agreements with surrounding agencies [Figure 35]. Through the risk assessment process, the agency identified the need for periodic review of all IGAs

and has developed a process for an annual review of all IGAs so that agreements can be updated and/or revised as needed.

Parties (w/ WSFR)	Nature of Agreement	Effective Date
All Weld County Fire Service Agencies	IGA: Fire/Rescue mutual aid	1/1/2016
Ault-Pierce Fire Protection District	IGA: Fire/Rescue mutual aid & automatic aid	3/1/2018
CJIS: City of Greeley & Weld County	IGA: Criminal Justice RMS, CJIS & Communications	4/21/1997
Eaton Fire Protection District	IGA: Fire/Rescue mutual aid & automatic aid	12/31/2015
Front Range Fire Consortium, Multi-Agency	IGA: Establishment of Consortium	10/12/2016
Front Range Fire Rescue Authority	IGA: Auto & Mutual Fire/Rescue	5/3/2018
Larimer Emergency Telephone Authority	IGA: GIS & Pictometry Data Access	7/7/2010
Loveland Fire Rescue Authority	IGA: Special Operations Team	4/27/2016
Loveland Fire Rescue Authority	IGA: Auto & Mutual Fire/Rescue	7/29/2015
Northern Colorado Regional Communication Network	IGA: Membership & Infrastructure	7/10/2018
Poudre Fire Authority	IGA: Fire/Rescue mutual aid & automatic aid	9/1/2021
Poudre Fire Authority	IGA: Fleet Services	7/14/2020
Severance, WSFR	IGA: WSFR Severance Mutual Aid	3/21/2016
Severance, WSFR	IGA: Collection & Disbursement of Fee Revenue	4/20/2015
Severance, WSFR	IGA: Transfer & Convey Real Property In Lieu Of Fees	1/9/2014
Town of Windsor	IGA: Town fee collection for WSFR	9/10/2012
Town of Windsor	IGA: Mutual Aid (personnel & equipment)	9/23/1997
Town of Windsor	IGA: Fire Museum Land Lease	10/13/2008
Town of Windsor	IGA: Waiver of Development-Related Fees	12/12/2016
Weld County	Contract: GIS Data Access & Use	8/14/2009

Figure 35: Table of Automatic and Mutual Aid Agreements

Chapter 3 – Study of Community Hazards and Risks

The response data was obtained from Emergency Reporting, the agency's computer-based records management system (RMS). Statistical data was obtained from the following sources: U.S. Census Bureau, Colorado Demographics, State of Colorado Department of Local Affairs, U.S. Centers for Disease Control and Prevention (CDC), Colorado State Patrol (CSP), Great Western Railway of Colorado, Colorado Department of Public Health, National Wildfire Coordinating Group, National Weather Service, State of Colorado Division of Emergency Management, and many others.

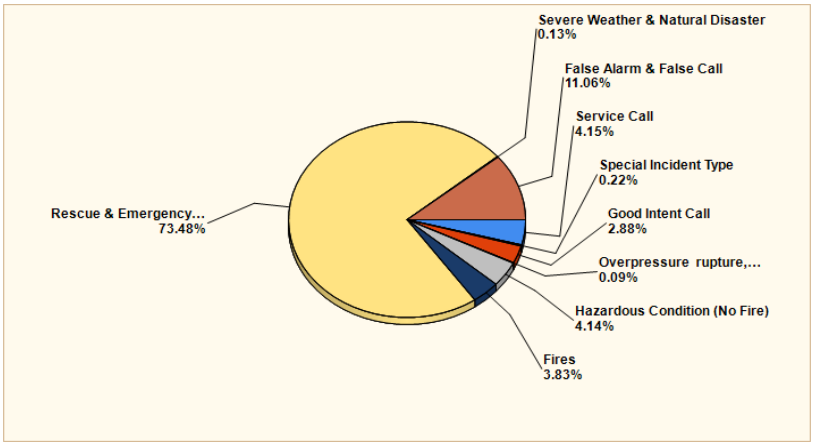


Figure 36 – Call Summary (2017-2021)

To determine what risks are faced by the District, it was necessary to first identify and categorize those risks according to the likelihood and potential consequence of them occurring. The agency reviewed call data from January 1, 2017, through December 31, 2021, to determine the different types of incidents that occurred, and the frequency with which they occurred [Figure 36]. All analysis was performed using a variety of reports available through Emergency Reporting.

The matrix displayed in Figure 37 is applied to all call types to help the agency assess the distribution and concentration of agency resources to match system resources with risks. The distribution of resources (i.e., fire engines in fire stations) are placed, equipped, and staffed to respond to low and moderate risk incidents. Additional resources (i.e., foam trailer, aerial ladder truck, hazmat truck, and wildland Type 6 engines) are concentrated in the areas where the risk is higher and they can "do the most good." An example of the application of this concept is that a single fire engine is expected to be able

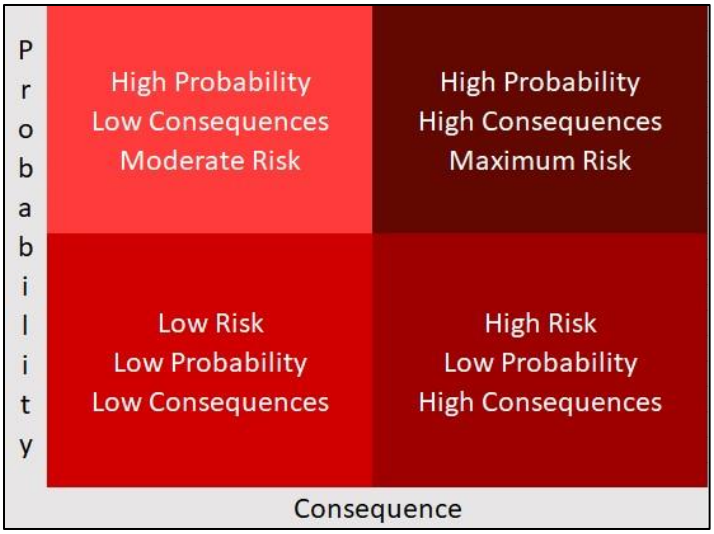


Figure 37 – Risk Probability Analysis

to handle a routine emergency medical call or a dumpster fire in its assigned response area, but specific specialty resources are expected to be in the first wave of arriving apparatus for a hazardous materials incident or a wildland fire.

The agency recognizes that there will inevitably be incidents occurring in the future that did not occur during the period that was analyzed. Thus, incident histories in neighboring jurisdictions and both counties were also assessed. The historical analysis of call types was also compared with local hazard mitigation and/or disaster preparedness plans to ensure that the lists were appropriately comprehensive.

Each incident type was evaluated for:

1. Life safety risk to determine the number of personnel and equipment that would be required to protect the public and responding firefighters from life-threatening situations,
2. Economic impact from the loss of property, high-value occupancies, loss of income to the community's workforce, and
3. Significant community impact from the loss of critical infrastructure or historical buildings.

This analysis of consequence, when combined with the probability of the incident, was used to develop the information presented below [Figure 38].

	Low Risk	Moderate Risk	High Risk
High Frequency	- EMS (Basic Life Support) - Fire/CO Alarm (no patients) - Wildland Fire: <1 acre - Odor Investigation - Outside Smoke Report - Gas Leak (Outside)	- EMS (Advanced Life Support) - Severe Weather Event - MVA: No Extrication	- MVA: Extrication - Fire: Residence - Gas Leak: Industrial
Low Frequency	- HazMat: Small Fuel Spill (<25 gallons) - Fire: Landscape - Fire: Trash/Dumpster - Fire: Vehicle	- Fire: Detached Out-Building - Wildland Fire: >1 acre -Confined Space Rescue -Rope Rescue -Water Rescue - Winter Storm/Blizzard - Flooding - HazMat: Large Fuel Spill (>25 gallons)	- Wildland Fire: Structures Threatened - Fire: Commercial - Fire: Multi-Family - Fire: Industrial/HazMat - Structural Collapse - Trench Rescue - HazMat: Rail - HazMat: Highway - Chemical Spill/Leak

Figure 38: Incident Classification

Occupancy Vulnerability Assessment Profile (OVAP)

The agency's fire safety inspection program plays a critical role in risk assessment and hazard mitigation planning. The Life Safety Division's primary inspection focus is on new construction, new development, and annual business inspections.

Between January 1, 2017, and December 31, 2021, agency personnel completed a total of 1,111 business inspections (180 in 2017, 218 in 2018, 302 in 2019, 164 in 2020, and 247 in 2021). Beginning in 2013, with each inspection completed, the inspector was also instructed to complete a Risk Assessment Form for all businesses inspected to capture information related to hazards and risks for each occupancy. The information was then used to calculate a risk score using the VISION™ risk calculation module in the agency's RMS system Emergency Reporting.

VISION™ was developed in 2005 by Emergency Reporting under contract with the Commission on Fire Accreditation International (CFAI) to update and improve their existing RHAVE hazard assessment software. Evaluations of commercial buildings in WSFR's response area were documented on the Risk Assessment Form [Figure 37] and then transferred into the occupancy information in Emergency Reporting. Upon completion of the necessary data entry, each building received a calculated numerical Occupancy Vulnerability Assessment Profile (OVAP) score that classified that building as Low, Moderate, Significant, or Maximum risk.

The equation used by VISION™ to develop the OVAP score is:

OVAP = (Building + Life Safety + Risks + Water) * [Property Value]

The individual scoring criterion for each value within the above equation is explained below.

BUILDING = AES + TOC + Stories + AC + SQFT

AVERAGE EXPOSURE SEPARATION	SCORE
AES > 100 feet	1
60 feet <= 99.9 feet	2
30 feet <= 59.9 feet	3
10 feet <= 29.9 feet	4
0 feet <= 9.9 feet	5
STORIES	**SCORE**
1 or 2	1
3 or 4	2
5 or 6	3
7, 8 or 9	4
10 or greater	5
OCCUPANCY ACCESS	**SCORE**
All sides	1
Three sides	2
Two sides	3
One side	4
Extraordinary Effort	5

TYPE OF CONSTRUCTION	SCORE
Wood frame	1
Ordinary (joisted masonry)	2
Heavy timber	3
Non-Combustible (all metal)	4
Non-Combustible (masonry)	5
Modified (fire resistive)	6
SQUARE FOOTAGE	**SCORE**
0 <= 7,500	1
7,501 <= 15,000	2
15,001 <= 25,000	3
25,001 <= 40,000	4
40,000 or greater	5

LIFE SAFETY = (Occupancy Load + OM + WAS) * Exits

OCCUPANT LOAD	SCORE
0 to 10	1
11 to 50	2
51 to 100	3
101 to 300	4
301+	5
OCCUPANT MOBILITY	**SCORE**
Stories = 1 or 2 & Awake	1
Stories = 1 or 2 & Asleep	2
Stories = 3+ & Awake	3
Stories = 3+ & Asleep	4
Non-Ambulatory or Restrained	5

WARNINGALARM SYSTEM	SCORE
Not a factor	0
Auto – Central	1
Auto – Local	2
Manual – Central	3
Manual – Local	4
EXITS	**SCORE**
Conforming	1
Non-Conforming	2

RISKS = X * Y

X = [Regulatory Oversight] + [Human Activity] + [Experience]

Y = [Capacity to Control] + [Hazard Index] + [Fire Load]

REGULATORY OVERSIGHT	SCORE
Not a factor	0.00
Highly regulated, mandatory compliance	0.333
Highly regulated, inspections scheduled	0.666
Regulated, random inspections	1.0
Regulated, voluntary compliance	1.333
Unregulated, Uninspected	1.666
HUMAN ACTIVITY	**SCORE**
No access to unauthorized persons	0.333
Controlled access to unauthorized persons	0.666
Business activity, sales and retail	1.0
Group activity, transient population	1.333
Domestic activity, no occupant control	1.666
Not a factor	0.0

EXPERIENCE	SCORE
Daily events	0.333
Weekly events	0.666
Monthly events	1.0
Annual events	1.333
Rare occurrence	1.666

CAPACITY TO CONTROL	SCORE
Control within the building of origin	0.333
Exposure to the same complex	0.666
Major deployment	1.0
Extreme resistance to control	1.333
Hazardous to firefighting activities	1.666
FIRE LOAD	**SCORE**
Non-Combustible	0.333
Limited-Combustible	0.666
Combustible	1.0
Free-Burning	1.333
Fire-Burning	1.666

HAZARD INDEX	SCORE
Limited hazards	0.333
Common hazards (residential type)	0.666
Mixed hazards (business type)	1.0
Industrial hazards	1.333
Hazardous to firefighting activities	1.666

WATER = This value is a constant that depends on the available water supply versus the fire flow needed by the given building. If needed fire flow is less than available water supply, then the Score = 2; if needed fire flow is equal to or greater than available water supply, then the Score = 1. All fire flow calculations are in gallons per minute (GPM). Available water supply is a user-input field.

NEEDED FIRE FLOW = ((C * TOC) * ((SQFT)^2) * FL)

C = Coefficient (C = 18)

TYPE OF CONSTRUCTION	SCORE
Wood frame	1
Ordinary (joisted masonry)	2
Heavy timber	3
Non-Combustible (all metal)	4
Non-Combustible (masonry)	5
Modified (fire resistive)	6
Fire resistive	7
FIRE LOAD	**SCORE**
Non-Combustible	0.75
Limited-Combustible	0.85
Combustible	1.0
Free-Burning	1.15
Fire-Burning	1.25

SQUARE FOOTAGE	SCORE
0 <= 7,500	1
7,501 <= 15,000	2
15,001 <= 25,000	3
25,001 <= 40,000	4
40,000 or greater	5

PROPERTY VALUE	SCORE
Personal/Family loss	1.0
Business loss, minor casualty exposure	1.1
Moderate economic impact, severe casualty exposure	1.2
Severe economic impact to community, tax base or job loss	1.3
Major loss to community (non-monetary), infrastructure, cultural or historic loss	1.4

The OVAP score is calculated by Emergency Reporting after all data entry is complete for that occupancy. The scores are classified into one of four risk categories as detailed in the chart below:

RISK CLASSIFICATION	OVAP SCORE
Maximum Risk	60+
Significant Risk	40 to 59
Moderate Risk	15 to 39
Low Risk	0 to 14

It is important to note that the OVAP scoring process is only applied to commercial, industrial, and multi-family occupancies. There is currently no plan to expand this risk assessment process to one- and two-family homes because Emergency Reporting is not established for that purpose. WSFR's comprehensive risk assessment is a work in progress and all risk assessments will be updated with each inspection. The following hazard statistics reflect the results of WSFR's business risk assessment process [Figure 39].

Hazard Statistics

Risk Level	OVAP Score	# of Occupancies	%
Maximum	60 +	0	0.00%
Significant	40 - 59	15	1.83%
Moderate	15 - 39	803	97.81%
Low	0 - 14	3	0.37%
Average Score	31.30	-	-

Figure 39: Total OVAP Score Summary

WSFR also used the opportunity created by performing this comprehensive risk assessment to update records on the numbers and types of commercial occupancies in the

response area [Figure 40]. As of this publication, an accurate classification for all businesses operating within the WSFR response area has been established.

OCCUPANCY TYPE	COUNT
Assembly	146
Business	483
Educational	18
Factory Industrial	64
High-Hazard	11
Institutional	6
Mercantile	76
Miscellaneous Unclassified	5
Mixed Business-Storage	35
Residential	140
Storage - moderate or low hazard	97

Figure 40: 2022 Commercial Occupancy

Risk Profile and Incident Priorities

WSFR has established a risk profile to define a functional system to manage risk on any emergency scene. The risk profile defines three (3) distinct levels for the assessment of risk, thereby providing all WSFR personnel with a means to quantify risk for any given incident. The appropriate risk profile is broadcast by the incident commander over the fireground tactical radio channel so all personnel operating on the incident are informed.

Life Risk: High-risk operation - We may risk our lives a lot, within a structured plan, to save savable lives.

Property Risk: Medium risk operation - We will assume some calculated risk, within a structured plan, to save savable property.

Low Risk: We will not risk our lives at all to save lives or property that are already lost.

The risk profile is used by the incident commander to evaluate risk versus gain before assigning personnel to a hazard zone. Any time that an established incident benchmark is

reached, the risk profile is re-evaluated by all personnel operating on the incident scene and the appropriate risk profile is broadcast by the incident commander over the fireground tactical radio channel. All personnel actions taken on the scene are expected to align with the risk profile established for that phase of the incident response. In addition to the established risk profile, WSFR follows the three (3) incident priorities that have been incorporated into all fire service literature.

Life Safety: Provide for citizen and firefighter safety.

Incident Stabilization: Mitigate the incident circumstances.

Property Conservation: Reduce property loss due to the incident.

WSFR personnel are expected to apply the risk profile and incident priorities to all incidents when developing an incident action plan.

Domestic Preparedness

WSFR views domestic preparedness risks as including those regional risks such as weather and human-caused risks. These risks may be found anywhere within the WSFR response area and may occur at any time, usually without warning. WSFR works with both Weld and Larimer Counties as well as other nearby municipal organizations in hazard mitigation planning efforts. Most recently, the agency participated in the Weld County 2021 Multi-Jurisdictional Hazard Mitigation Plan and the Larimer County 2021 Multi-Jurisdictional Hazard Mitigation Plan to improve understanding of these risks. Improved understanding of risks and hazards allows WSFR to be better prepared for natural and man-made hazards, thereby reducing risk and preventing loss. WSFR also trains regularly with the Town of Windsor Public Works Department, Windsor Police Department, Weld RE-4 School District, and other regional agencies to better prepare for and effectively respond to any incidents involving public safety.

Risks by Response Category

In 2021, WSFR responded to 4,034 calls for service. WSFR analyzes the NFIRS call description for all calls to which the agency responds to help build awareness of the risks present within the WSFR response area. Figure 41 provides a visual summary of the incidents that occurred in 2021, differentiated by incident type description.

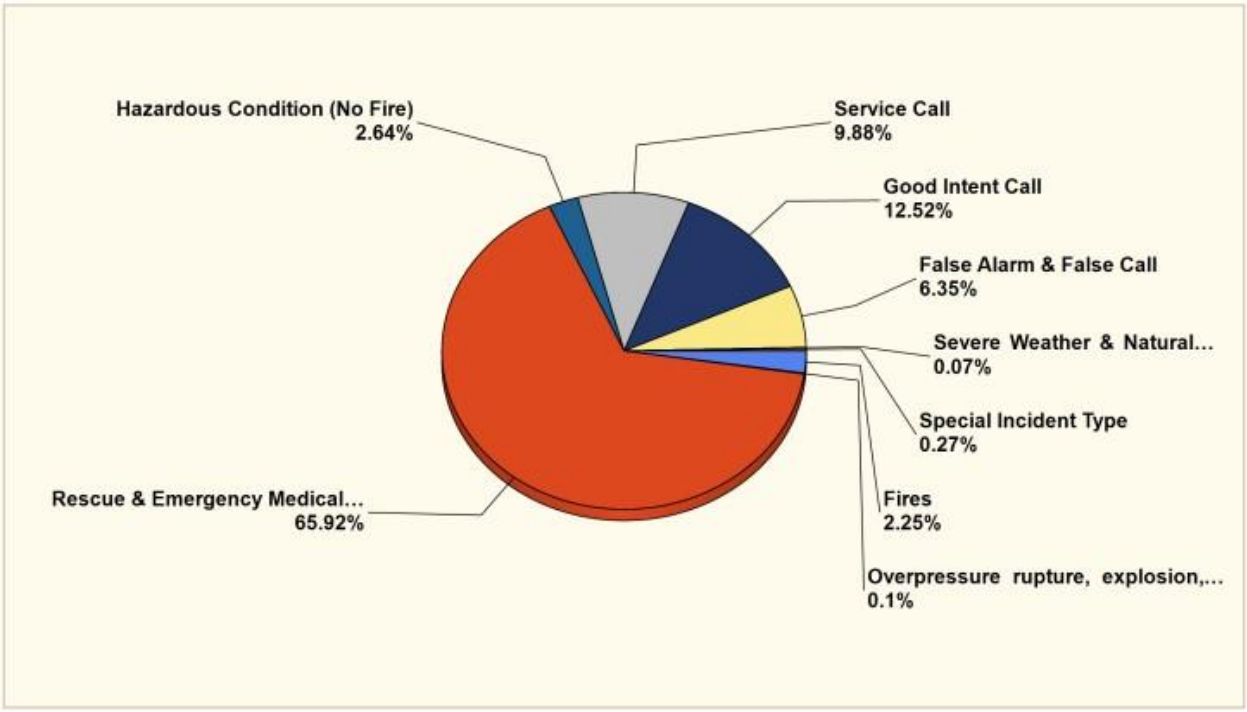


Figure 41: 2021 Incidents by Type

Fire-Related Risks

The primary purpose of local government is to provide for citizen safety. Public fire protection is the function of local government that is provided solely by WSFR for the communities of Windsor and Severance. Fire-related risks within WSFR's response area include structure fires, vehicle fires, wildland fires, and other types of fire. The agency examined the different fire-related incidents that have occurred in the past and evaluated them against both the anticipated probability for recurrence as well as the expected risk to firefighters and the public [Figure 42].

	RISK/CONSEQUENCE TO FIREFIGHTERS AND PUBLIC Low → Moderate → High		
PROBABILITY OF OCCURRENCE High ↑ Low	Vehicles Dumpsters/Trash Containers Grass/Wildland Fires within City Limits	One- and Two-Family Homes Grass/Wildland Fires in Eastern Areas	Grass/Wildland Fires in the Western Area Grass/Wildland Fires on Highways
	Out-Buildings Other Types of Fires	Sprinkled Commercial and/or High-Rise Buildings Sprinkled Multi-Family Buildings	Non-Sprinkled Commercial and/or High-Rise Buildings Non-Sprinkled Multi-Family Buildings

Figure 42: Risk vs Probability Comparison of Fire-Related Incidents

Fire Risks

The District overlays four local governments and covers roughly 96.6 square miles, with fire risks spread throughout all portions of the District. The town of Windsor was incorporated in 1890 and has a town center consisting of smaller and older buildings that are relatively closely spaced. The town of Severance was incorporated in 1920 and has an even smaller town center than that of Windsor. Despite its prime location east of Interstate 25, about halfway between Fort Collins and Greeley, the town of Windsor did not begin to see rapid population growth until only recently. The same could be said for the town of Severance. Growth management has received greater attention from all local governments in the past five to ten years with both towns recognizing rapid population growth. Fortunately, WSFR has been able to keep pace with residential and commercial development.

Because of growth and development, both towns have a very eclectic mix of old and new construction. The older portions of both towns have many buildings that were originally built in the early 1900s and have not seen renovation since that time. Most of the

older areas of Windsor feature smaller homes with adequate separation, while many of the newer neighborhoods feature larger homes with relatively little separation. With the tremendous growth that Severance has experienced in recent years, many of the residential sections of town feature extremely large homes on large and spacious lots. Outside of the town centers, there are several senior living occupancies and numerous industrial facilities.

Fortunately, WSFR has experienced very few large and historically significant fires during its history. Call types in the four fire station response areas are relatively similar, with call volumes being higher in Station 1's district followed by Station 4's district. Stations 2 and 3 experience similar call volumes in each of their respective areas. There are residential occupancies located in every portion of the District, except within the Great Western Industrial Park (GWIP). The GWIP is in the first-due area for Fire Station 1, but the presence of parked or slow-moving trains could result in Station 2 or Station 4 being first-due. The remainder of the District has a mix of assembly, business/commercial, educational, factory/industrial, institutional, residential, storage, and specialty properties.

The District's fire loss for the period from January 1, 2017, through December 31, 2021, was $4,328,714. The total pre-incident value of these structures was $241,073,340 according to the county assessor's annual reports. Based on total dollar value versus fire loss information, the District demonstrated a real total property conservation value of $236,744,626 for the five-year period.

Fire Flow Calculations

WSFR uses the International Fire Code (IFC) 2018 Edition for calculating the fire flow needed to fight structure fires. Fire flow calculations also help District staff evaluate offensive versus defensive strategic needs. This determination is based on a "Worst Possible Case" scenario for the building involved in the fire. The actual determination of strategy is determined on the scene by the incident commander.

All high-value/high hazard commercial occupancies in the District were evaluated to determine the risks associated with each. These occupancies were further evaluated based on the assigned first-due engine company. This assessment determined that Fire Station 3 does not have any high value/high hazard commercial occupancies within their

assigned first-due response area. Conversely, with the presence of the Great Western Industrial Park, Fire Station 1 has the majority of the District's high value/high hazard commercial occupancies in their assigned first-due response area.

Low-Risk Fires

The District classifies any single-engine company fire response as a low-risk fire. Examples of low-risk fires include car fires, trash/dumpster fires, and other similar types of small-scale fire incidents. Commercial occupancies with an OVAP score below 15 are classified by Emergency Reporting as low-risk fires, but they have distinctly different response plans from other low-risk fires due to the potential complications associated with commercial structure fires.

Moderate Risk Structure Fires

The moderate risk classification is applied to all commercial structures with an OVAP score of 15-39. The District has also applied this classification to structure fires in one- and two-family residences due to the risks that are present during residential fire attack operations.

Significant Risk Structure Fires

The Significant Risk classification is applied to commercial occupancies with a calculated OVAP score of 40-59. Multi-family residential and institutional occupancies are included within this category, regardless of their OVAP score. This classification is also often referred to as "High Risk." Commercial occupancies that are deemed High Risk are inspected annually.

Maximum Risk Structure Fires

The Maximum Risk classification is applied to commercial occupancies with a calculated OVAP score of 60 or greater. The District does not have any occupancies that fall into this classification.

Fire Risk Summary

The primary fire risk in the District is a one- or two-family residential structure fire. These are the most common type of structure fires that occur in the District. United States

Fire Administration (USFA) statistics indicate that this type of fire tends to kill and/or injure the greatest number of people, including firefighters. Between January 1, 2017, and December 31, 2021, the District responded to 407 fire-related incidents distributed across all days of the week and times of the day. However, call volume for fires (NFIRS types 100 through 173) tended to increase between the hours of 11:00 am and 7:00 pm daily [Figure 43].

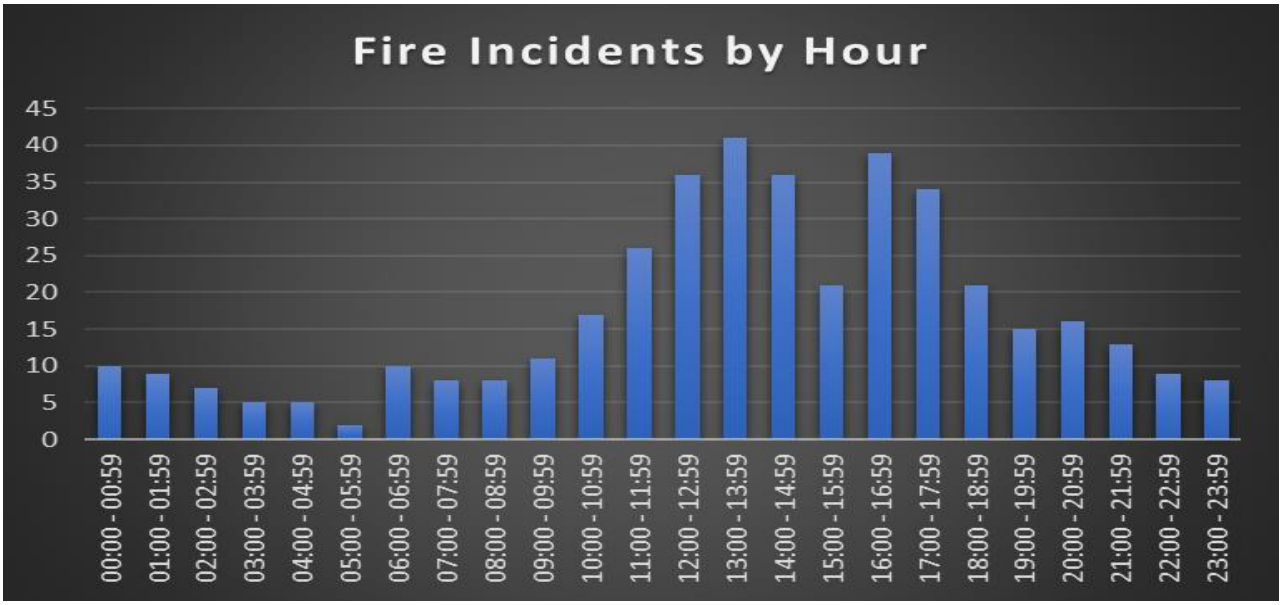


Figure 43: Occurrence of All Fires by Hour (Jan 1, 2017, through Dec 31, 2021)

	Low Risk	Moderate Risk	High Risk
High Frequency			
Low Frequency	Dumpster/Trash Fires Car/Vehicle Fires Fires in Detached Outbuildings	1- & 2-Family Residential Structure Fires RV/Truck Fires	Commercial/Industrial Fires Multi-Family Residential Structure Fires Fire Involving HazMat Explosions

Vehicle Fire Risk

The category of vehicle fires includes any mobile conveyance that is primarily intended to carry persons and/or cargo. This includes automobiles, recreational vehicles, semi-trucks, aircraft, and boats. Vehicle fires occur with the same general frequency as structure fires, but generally pose less risk to firefighters and the public than a structure fire. Generally, fires involving passenger vehicles can be effectively handled by a single fire engine. However, if a large vehicle (e.g., bus, semi-tractor trailer, RV, etc.) is on fire, or if a vehicle fire is threatening a nearby structure, it generates an enhanced response plan.

Wildland Fire Risk

The District is located in Northern Colorado's Front Range, between the three largest cities in the region. The WSFR response area covers 96.6 square miles in both Weld and Larimer Counties. Approximately 65% of the District is considered to be rural. The District also provides additional training in the areas of strategy, tactics, and apparatus operations. Wildland-type fire responses make up approximately 2.25% of the fire-related calls within the District.

Fuel Types

The National Wildfire Coordinating Group (NWCG) defines 13 different fuel models. These fuel models are based on the predominant type of vegetation in the area: Fuel Models 1 through 3 are predominantly Grasses; Fuel Models 4 through 7 are primarily Shrubs; Fuel Models 8 through 10 consist primarily of Timber Litter; Fuel Models 11 through 13 are defined as Logging Slash. Fire behavior is significantly different between fuel models. Fires in the Grass fuel models (1-3) typically exhibit rapid burnout, low intensity, flame lengths up to 12 feet, and a rate of spread of up to 6600 feet per hour. Fires in the Shrub fuel models (4-6) typically have rates of spread up to 4950 feet per hour and flame lengths between 4 and 19 feet. The primary fuel models in the District are fuel models 1 through 6.

Fire Weather

The Windsor area historically has extremely hot summers with low relative humidity (RH). The summer temperatures regularly reach near 100 degrees Fahrenheit

with an RH below 20%. These conditions coupled with the high winds that are common in our area, especially during approaching thunderstorms, create "red flag" conditions. Red flag warnings are issued when fire danger is extreme. These warnings occur throughout the warmer months in Windsor.

Wildland-Urban Interface (WUI)

The primary wildland-urban interface risk within the District is located along the Poudre River corridor and in the southern portions of the District east of Weld County Road 13. These areas often have dense vegetation bordering on dense residential development leading to a greater risk of wildfire extending from a natural area into populated areas. District personnel receive periodic training on the topic of fire suppression operations within the wildland-urban interface.

Wildland Risk Summary

The primary wildland fire risk that the District encounters are small grass fires of less than one acre. These fires typically do not threaten residential or commercial structures. These fires are usually handled by the first-due engine with a brush patrol apparatus being included in the assignment for all possible wildland fire calls. Depending on the location of the call, a water tender may be added to the assignment to provide water where pressurized water supplies are not available. For larger grass/wildland fires a second engine and brush truck are added to the assignment. Mutual aid can be requested by the Battalion Chief on duty or by any of the responding company officers.

	Low Risk	Moderate Risk	High Risk
High Frequency	Small Grass Fires <1 acre		
Low Frequency		Large Grass/Wildland Fires >1 acre	Grass/Wildland Fires in the Urban Interface

Non-Fire Related Risks

The category of non-fire related risks is very broad and includes all other incident types to which WSFR responds. Incidents within this category include emergency medical services (EMS), hazardous materials, technical rescue, and domestic preparedness. As with fire-related incidents, non-fire incidents are distributed across all days of the week and times of the day. However, call volume for non-fire related incidents (NFIRS types 300 through 900) tend to be at their highest between the hours of 7:00 am and 9:00 pm daily [Figure 44].

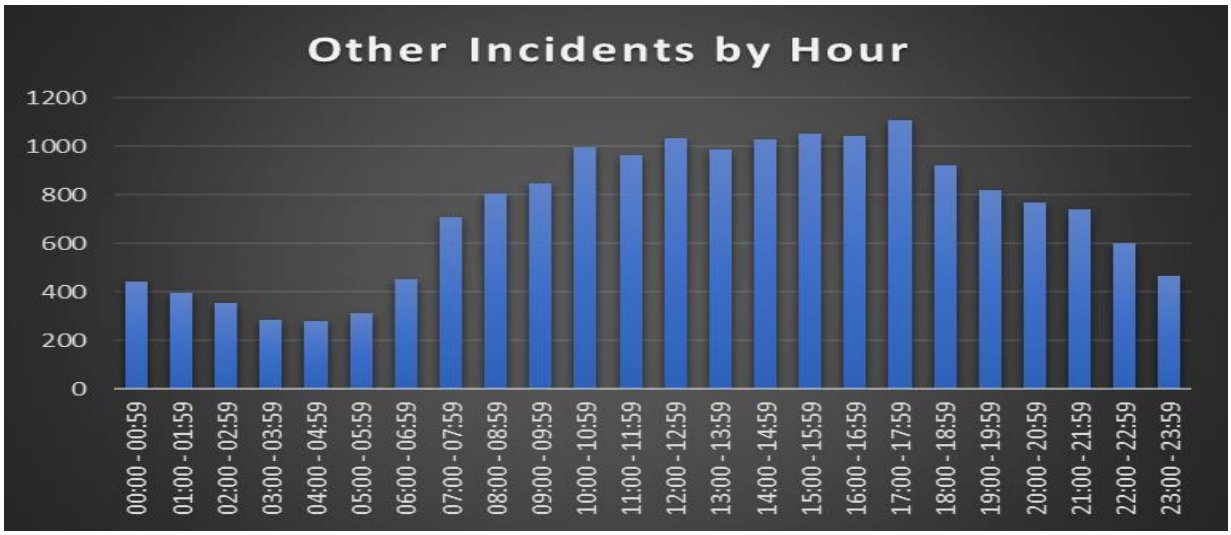


Figure 44: Occurrence of All Non-Fire Incidents by Hour (Jan 1, 2017, through Dec 31, 2021)

Emergency Medical Services (EMS) Risks

WSFR responds to more than 2600 emergency medical service (EMS) calls annually. These calls account for more than 65% of the District's calls for service [Figure 31]. Typical EMS calls in the District vary from very minor calls requiring only basic life support (BLS) skills to severe life-threatening emergencies that require advanced life support (ALS) services and ambulance transport to a local hospital. The District acknowledges that it is important to understand the factors that affect the frequency and severity of EMS calls because they account for a significant percentage of the District's calls for service. The call volume for EMS related incidents [NFIRS types 300 through 321] tend to be the highest between the hours of 7 am to 9 pm. [Figure 45]. Understanding the EMS risks allows the

agency to adequately distribute and prepare agency personnel and equipment to effectively respond to the varying types of calls they can expect.

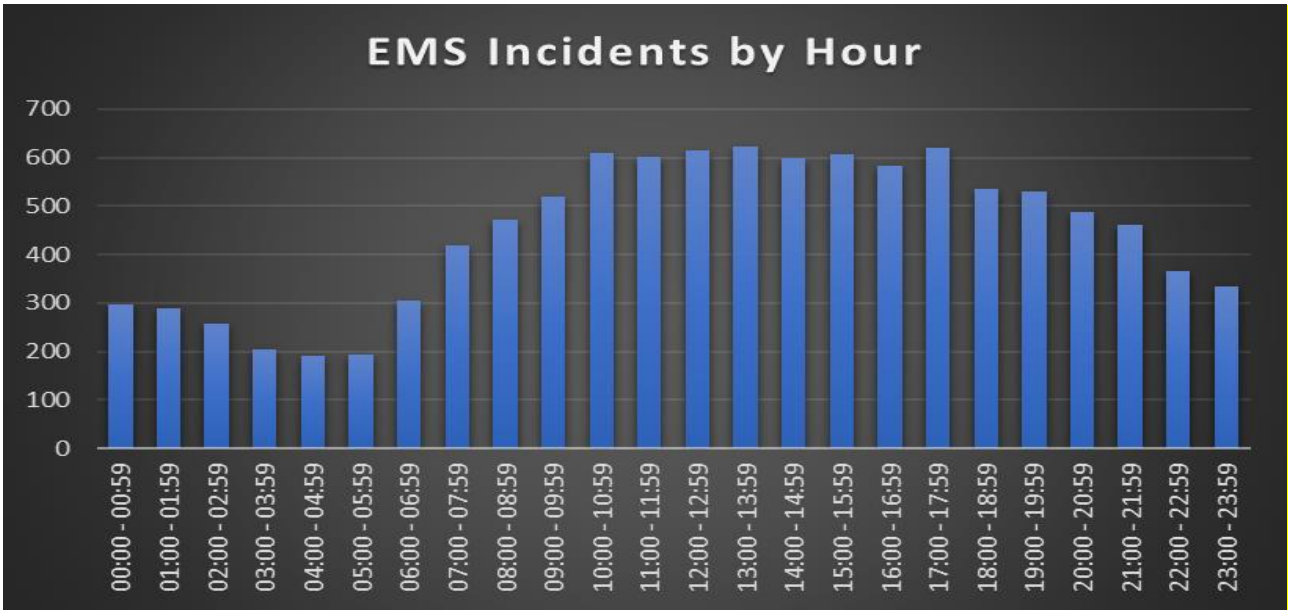


Figure 45: EMS Calls by Time of Day (Jan 1, 2017, through Dec 31, 2021)

WSFR provides basic life support (BLS) emergency medical care. To meet this directive, all WSFR operations personnel are required to maintain a minimum certification level as an Emergency Medical Technician. Most personnel also maintain the certification necessary to establish intravenous access to assist with the administration of medications. Advanced life support (ALS), including patient transport to a hospital, is provided by the University of Colorado Health (UCH) through a contract with WSFR that went into effect in May 2013. Under the terms of this contract, UCH stations an ALS ambulance with 24/7 staffing at WSFR Fire Station 1 and Station 2. There is an EMS Captain on 24/7 who covers the District as well as the Front Range Fire Authority Districts. Thompson Valley Ambulance Service (TVAS), a Special District ambulance service, provides ALS to the Southwest portion of our District in areas served by Station 3. WSFR has established standard operating procedures (SOPs) and standing orders/protocols to direct EMS response activities and to meet the required level of EMS response.

WSFR operates under the medical and protocol direction of the District's Medical Director, Doctor Darren Tremblay, and UCH operates under the medical and protocol

direction of Doctor Michael Apostle. All WSFRs medical protocols and SOPs are uploaded to the District's online records management program, Emergency Reporting System (ERS) for ease of use and access by all agency members. WSFR personnel works closely with UCH and TVAS medical staff to develop and maintain proficiency in providing emergency medical care.

EMS Risk Summary

Emergency medical service (EMS) is the largest service demand for WSFR. The agency responded to 9379 EMS calls for service from January 1, 2017, through December 31, 2021, or an average of approximately five (5) EMS-related calls per day. In general, most EMS calls are classified as High Probability/Low-Risk events, but several call types carry a higher risk to either the patient or the rescue, or both. The three most common EMS call types are Falls, Sick persons, and Traffic accidents. Many of the agency's highest risk EMS responses are to assisted living facilities located in the agency's response area.

	Low Risk	Moderate Risk	High Risk
High Frequency	Abdominal Pain Falls Sick Person Psychiatric Problem Unconscious/Fainting	Diabetic Problem Heart Problem Hemorrhage/Laceration Traumatic Injury	Traffic Accident Breathing Problem Cardiac Arrest Chest Pain Convulsion/Seizure
Low Frequency	Back Pain Eye Problem Headache	Burns Heat/Cold Exposure MCI Unknown Problem/Person Down	Allergic Reaction Animal Bite Assault Drowning Electrocution Pregnancy/Childbirth

Hazardous Materials Risk

The District is exposed to and at risk from accidents and/or incidents involving hazardous materials. A large portion of the local economy is based upon agriculture with a rapidly growing manufacturing and industrial complex in the Great Western Industrial

Park (GWIP). All of the industrial occupancies in the GWIP rely heavily on the production, use, transportation, and/or storage of hazardous materials. Several other commercial facilities in the community also utilize hazardous materials extensively. Explosives, flammable liquids, flammable solids, gases, poisons, pesticides, oxidizing substances, and radioactive materials are either used or stored throughout the District. Additionally, there is an 18-inch diameter pressurized natural gas line that runs through the eastern portion of our District, traveling from Cheyenne, WY, to Denver, CO. Local industries, including oil and gas exploration facilities, present the opportunity for a fixed site hazardous materials incident anywhere within the District. A hazardous materials incident is any occurrence resulting in the uncontrolled release of materials capable of posing risk to health, safety, and property. Areas at risk include the locations of hazardous materials manufacturing, processing, or storage facilities, as well as all hazardous waste treatment, storage, and disposal sites.

Hazardous materials can be defined as any substance in any quantity or form that may pose an unreasonable risk to safety, health, environment, and/or property. The potential severity of hazards of these materials is varied but all present clear risks to public safety. Many different factors affect the Hazardous Materials (HazMat) risk of the District. The three primary sources are fixed facilities, railways, and highways. Each of these categories is discussed further below.

Fixed Facilities

Great Western Industrial Park

This 1,800-acre industrial park opened in the early 2000s when Denver-based The Broe Group purchased a portion of the Kodak Colorado property in the southeast end of Windsor. The industrial park [Figure 46] is currently home to approximately ten (10) companies that employ roughly 1,300 people and is crisscrossed with numerous rail lines. Due to the nature of the various industrial occupancies in this park, there is a tremendous emphasis on hazardous materials risks associated with this property. Additionally, the activities along the various rail lines feeding the parcel frequently disrupt automobile traffic in and around the town of Windsor. It is possible for a parked train to block several

of the primary roads within town, including Highway 392/Main Street just east of Fire Station 1, and 7th Street immediately north of Fire Station 1.

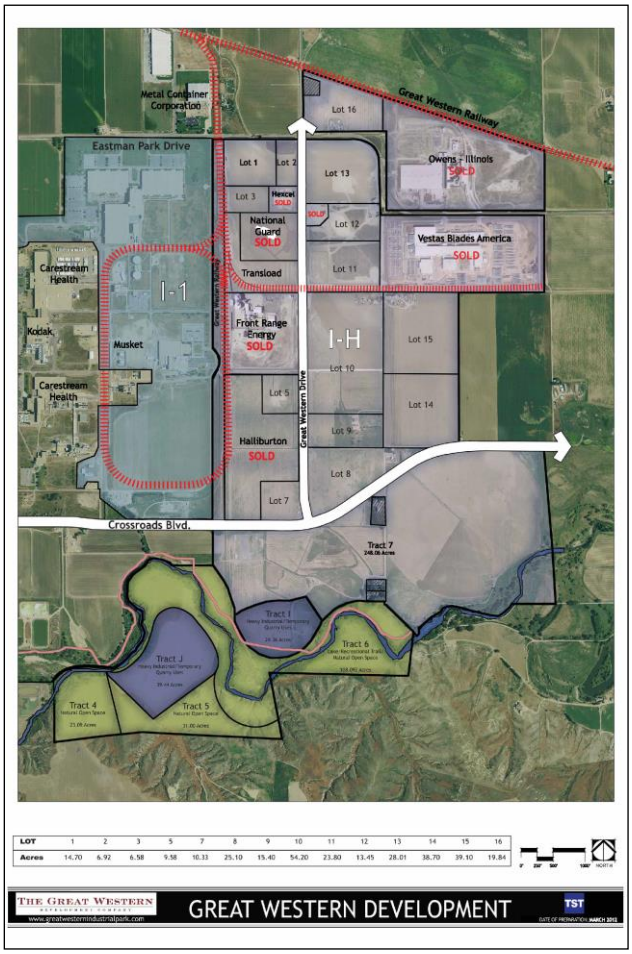


Figure 46: Great Western Industrial Park

The occupancies presented alphabetically below have received special attention in WSFR's planning efforts because they either present significant threats that could involve a large population, or they present significant hazards to emergency responders.

A. <u>Carestream Health</u>

This facility occupies many of the buildings on the Kodak campus. Carestream has 21 buildings consisting of approximately 1.5 million square feet. These buildings house offices, laboratories, chemical storage, darkrooms, warehouses, utility buildings, boilers, and a water treatment facility. The buildings range in size from large five-story buildings to small single-story storage sheds. Each building has a Knox box which includes map books

and site preplans. Building #C43 is the building that presents the greatest risk to personnel. It contains multiple flammable liquid-rated rooms, each containing a variety of highly complex hazardous materials.

B. Front Range Energy

Front Range Energy is a producer of E-85 and Ethanol. The facility is located in the Great Western Industrial Park. It produces approximately four million gallons of product each month. It also has storage facilities for roughly one million gallons of fuel-grade ethanol, 100,000 gallons of gasoline, 100,000 gallons of 190-proof alcohol, and 100,000 gallons of 200-proof alcohol. According to internet-based research, more than 95% of all fires involving ethanol plants are related to the stored grains and the grain dryers, and not the ethanol.

C. Kodak Colorado Division

This facility is located along Highway 257 in the south portion of the District. It has been steadily decreasing in size since 2007. Kodak currently occupies approximately nine buildings on the campus and uses a large number of hazardous materials. Most buildings have fire sprinklers installed and there remains an active corps of employees who are trained to respond to emergencies on the campus.

D. Metal Container Corporation

This facility is located in the Great Western Industrial Park. MCC produces aluminum cans and lids for the Anheuser-Busch brewery. There are several hazardous materials stored and used on-site, including a water-based coating with a flashpoint of 120°F.

E. Owens Illinois

This facility, located in the Great Western Industrial Park, manufactures glass bottles for beverages. It produces approximately 3,000,000 bottles per day. There are several heat and fire hazards within the facility, but the greatest risk of fire comes from the furnaces involved in producing the bottles.

F. PraxAir

This facility is adjacent to the Owens Illinois facility. PraxAir produces cryogenic liquids, primarily for Owens Illinois. The facility does not produce any flammable cryogenics, but it does produce cryogenic oxygen. The greatest fire risk associated with the facility is the presence of two 1.8 megawatt electrical transformers.

G. Transportation Management Services

This 300,000-square foot warehouse facility is located across the street from the Metal Container Corporation. The warehouse contains palletized drink containers (i.e., cans and bottles). The building is fully sprinkled, so the primary fire risk associated with the building is the palletized contents.

H. Universal Forest Products

Universal Forest Products operates two lumber storage facilities in Windsor. The facilities sit on either side of Highway 257, near the intersection with East Main Street. Between the two facilities, there are approximately 15 million board feet of stored lumber products. There is a risk of combustible dust explosion/deflagration at these facilities due to the nature of work.

I. Vestas Blades America

This facility is located in the Great Western Industrial Park. Vestas produces wind turbine blades for power generation equipment. The facility occupies more than 63 acres, with nearly 400,000 square feet of buildings. There is a designed flammable vapor spray area within the facility and there are numerous highly-flammable chemicals used during the various stages of product completion. The greatest risk of fire is associated with the flammable vapor spray area.

J. Waste Management

This 115-acre landfill is located near the intersection of Weld County Roads 25 and 82. There are very few buildings on this property, and all buildings deemed to contain hazardous operations have installed fire sprinkler systems. The greatest fire risk associated with this facility is associated either with a vehicle fire or with a smoldering fire within the accumulated debris.

Oil and Gas Exploration

Heavy industrial occupancies and a strong presence from the oil and gas industry can be found throughout the entire eastern edge of the District. Traversing the District is a heavily used rail line, three major highways, and a high-pressure natural gas pipeline.

Most of the District lies within Weld County. According to the Colorado Oil & Gas Conservation Commission (COGCC), Weld County has accounted for over 85 percent of the oil produced annually in Colorado for nearly a decade. In 2021, 131,429,513 of the 153,815,653 barrels of oil produced in Colorado were from Weld County.

As with any form of mining or petrochemical production, there are some health and safety risks associated with oil and gas exploration and production. In addition to leaks and well failures, other risks associated include groundwater contamination, fires and explosions, and hazardous materials incidents during transportation/shipment of the products from the wells.

There are several hundred active wells within the District's boundaries, with many more permit applications pending with the Colorado Oil and Gas Conservation Commission (COGCC). Information obtained from the COGCC indicates that Colorado is currently experiencing a steady increase in gas and oil production. The upward trend in the State's oil production is largely due to increased activity in the Wattenberg Oil Field. This field is one of the largest oil and gas production zones in the United States and it is situated almost entirely within Weld County.

Railways

Substantial amounts of hazardous materials pass through the District daily via railway [Figure 47]. Several active railways traverse the District. The Great Western Industrial Park is tied into the various rail lines throughout the District. The rail system crosses several major highways, bisects the Windsor downtown business district, and is near several large residential developments. One of the risks associated with the active rail lines in the District is the all-too-real possibility of a parked train blocking emergency responder access to many portions of the District.

The magnitude of a railway hazardous materials incident in the District could be catastrophic to the community. Although building damage may be minimal with a hazardous material release, the cost of containment, decontamination, and clean-up, along with injury and loss of life could be tremendous. The following is a summary of the hazardous materials that are transported by rail through the District on an annual basis.

Type of HazMat	# of Cars	Quantity (tons)
Acids	52	4,420
Alcohols	0	0
Ammonium Nitrate	0	0
Anhydrous Ammonia	0	0
Bulk (liquid)	0	0
Bulk (solid)	0	0
Combustible Liquids	0	0
Corrosives	0	0
Explosives	0	0
Flammable Liquids	1,688	160,360
Heated Substances	0	0
Liquefied Petroleum Gas	0	0
Marine Pollutants	4	340
Oxidizers	0	0
Poisons	0	0
Radioactive	0	0
Sodium Hydroxide	0	0

Figure 47: HazMat Transportation by Railway (as reported by Great Western Railway)

Highway Risk

The District contains several very active highways, including Interstate 25 along the western edge of the District, U.S. Highway 34, and State Highways 392, 14, and 257 [Figure 48]. Highway 34 lies along the District's southern border and is the primary route between Loveland and eastern Colorado. Highway 14 travels north of Severance while Highway 392 becomes Main Street when it enters Windsor town limits. Highway 257 connects Highways 34 and 14, traveling alongside the Great Western Industrial Park and the eastern industrial district of Windsor. Several localized transportation emergency events have occurred in the past on all of these major roadways. There is a tremendous volume of hazardous materials transport trucks that travel all of these highways throughout the District. Numerous hazardous materials deliveries take place throughout the District and Interstate 25 is designated as the state's Hazardous and Nuclear Materials Transportation Route (WIPP and nuclear materials transport route). The Colorado Department of Transportation (CDOT) is the agency with primary jurisdiction over the transportation of hazardous materials by road in the state. The Colorado State Patrol conducts regular flow studies to monitor the amount of HazMat traveling through the region by road.

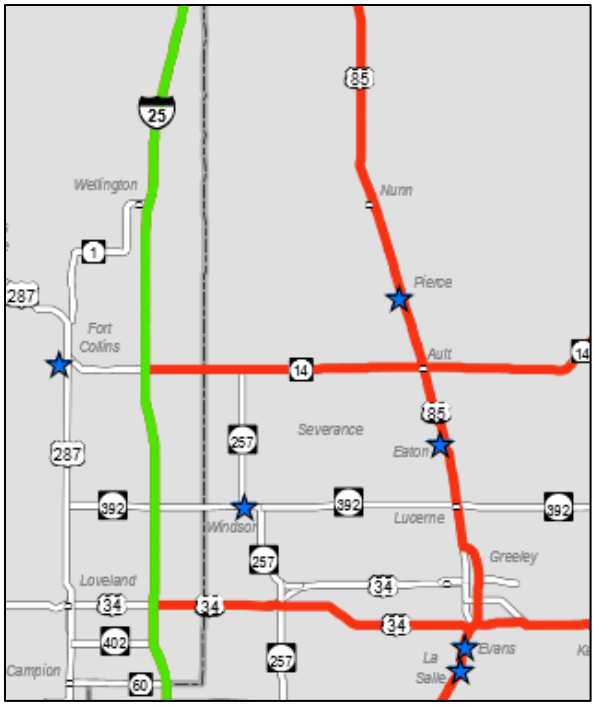


Figure 48: Designated HazMat Transportation Routes

Hazardous Materials Risk Summary

There is potential for a hazardous material-related incident anywhere within the District. Acts of individuals, such as terrorist acts and illegal dumping, cannot be predicted by time and/or location. Transportation-related incidents and fixed facility incidents are similarly difficult to predict by time, but incident locations can be more accurately predicted based on known transportation routes and known facilities. The agency's

planning efforts are centered around improving understanding of the various risks that are present and then preparing agency personnel to respond to the most likely types of incidents that could reasonably be expected to occur.

	Low Risk	Moderate Risk	High Risk
High Frequency	Small Fuel/Oil Spill <25 gallons LPG leak CO Alarms Natural Gas Leak (outside)	Residential Natural Gas Leak (inside)	
Low Frequency		Fixed Facility Hazmat Incident Large Fuel/Oil Spill Chemical Spill/Leak	Commercial Natural Gas Leak (inside) Hazmat Rail Incident Hazmat Highway Incident

Technical Rescue Risk

The term "technical rescue" encompasses a very broad range of rescue situations. Each rescue situation requires personnel who are highly trained in the very specialized skills and equipment that are involved in that rescue. WSFR employs personnel that are trained at various levels in the disciplines of "technical rescue." A plan is in place to have all front line personnel trained at the technical rescue operations level by 2025 for all disciplines. WSFR also maintains relationships with larger neighboring jurisdictions to provide expertise through mutual aid agreements.

WSFR has worked to classify each type of technical rescue situation that could occur in the District. While each of the following types of technical rescue events have a low probability of occurrence, each comes with a high risk due to life safety and the challenges each present for personnel.

Water Rescue

Colorado's Northern Front Range is known for water-based recreation. The areas which make up the District are no exception. Within WSFR's approximately 100 square mile response area, approximately 3.45% of the area is covered by water, accounting for roughly three-square miles of water. Water risks within the District include lakes, rivers, reservoirs, canals, ponds, and numerous irrigation ditches. The Poudre River is the only river within the District. The District's three large lakes are popular outdoor recreation locations, and several smaller lakes and ponds are also frequented by water enthusiasts.

All bodies of water pose a risk to public safety. The greatest water rescue risks in the District are recreational swimming, boating accidents, and ice rescue. WSFR responds to an average of 1 water rescue-type incident per year.

Confined Space/Collapse Risk

The confined space risk in the District is minimal, with the greatest risk being elevator entrapment. However, the tornado that devastated the District in 2008 caused extensive damage to numerous buildings. To meet the sudden and extremely high demand for confined space and collapse technicians to search and evaluate the damaged buildings, the District sent out mutual aid requests to all of our neighboring fire service agencies. The immediate mutual aid response allowed for rapid response to the hardest-hit areas.

Trench Rescue Risk

The District has seen a significant amount of growth since 2018. The increase in the number of construction sites creates the opportunity for a person to become trapped in an excavated site. A trench rescue is highly technical event that requires a significant amount of personnel and equipment to remove a trapped person safely. While the frequency of

occurrence has been historically low for the District, the agency has made significant changes to our operational processes and capabilities to be better prepared for this type of special rescue event.

Extrication Risk

Extrication is a term used to describe the need for mechanical advantage systems and/or tools to remove a person from entrapment created by a machine. The most common type of extrication involves removing someone from an automobile; however, WSFR personnel are also called upon to remove persons from various types of machinery and equipment, including farm equipment, industrial machines, and elevators.

Automobile Extrication

Vehicle counts conducted by the Colorado State Patrol and Colorado Department of Transportation estimate that vehicle traffic on the highways in WSFR's primary emergency response district accounts for approximately 130,000 vehicles traveling through the District daily. Automobile extrication accidents typically involve two or more passenger vehicles and tend to occur with the greatest frequency on highways and rural county roads. Every front-line apparatus in the District is equipped with extrication tools and a complete set of hand tools. There are also 2 sets of hydraulic extrication tools on the Heavy Rescue which is housed at Fire Station 1.

Heavy Equipment Extrication

Heavy equipment extrication rescue is an infrequent yet probable occurrence due to the agricultural and construction industry that is active in the District. Another potential source for this type of call can be found at many of the industrial/manufacturing facilities located within the District. The extrication tools and hand tools on the front-line apparatus can reasonably be expected to meet the most common extrication needs in the District. If personnel encounter an extrication incident that requires specialized tools not available on District apparatus, mutual aid assistance is requested from technical rescue teams associated with adjacent agencies.

High Angle / Low Angle Risk

High and Low-angle rope rescue incidents are rare in the District. There are no high-rise buildings over 5 stories located inside District boundaries, and most of the topography is relatively flat.

Elevator Rescue Risk

WSFR responses to persons trapped in an elevator are relatively rare due to the low number of buildings with elevators installed. The most common type of elevator rescue call encountered in the District is for persons trapped in an elevator between floors. This type of call is typically handled by the first due apparatus. These incidents tend to occur most frequently in the larger senior care facilities in the District. The most common cause of elevator entrapment is due to equipment failure.

Technical Rescue Risk Summary

Call history reveals that automobile extrication and elevator rescue are the two most predominant types of technical rescue incidents in the WSFR response area. To meet the extrication needs of the agency, all firefighters are provided with training during their initial academy, and ongoing training is provided several times throughout the year.

	Low Risk	Moderate Risk	High Risk
High Frequency	Elevator Rescue		Vehicle Extrication
Low Frequency		Confined Space Rescue Equipment Extrication High/Low Angle Rescue Water Rescue	Structural Collapse Trench Rescue

Aircraft Rescue and Firefighting Risk

The District does not feature any type of commercial airfield. An airport is within the Loveland Fire Rescue Authority (LFRA) response area and is within WSFR's automatic aid area [Figure 49]. Thus, it is possible that WSFR Engine 3 could respond to an aircraft emergency at the Fort Collins-Loveland Municipal Airport if the LFRA apparatus are out of position or otherwise on a delayed response. LFRA's expectation for WSFR personnel on ARFF-related incidents is to only assist with patient care. If an aircraft incident occurred within the WSFR response area, the initial apparatus response would be the same as a moderate risk structure fire.

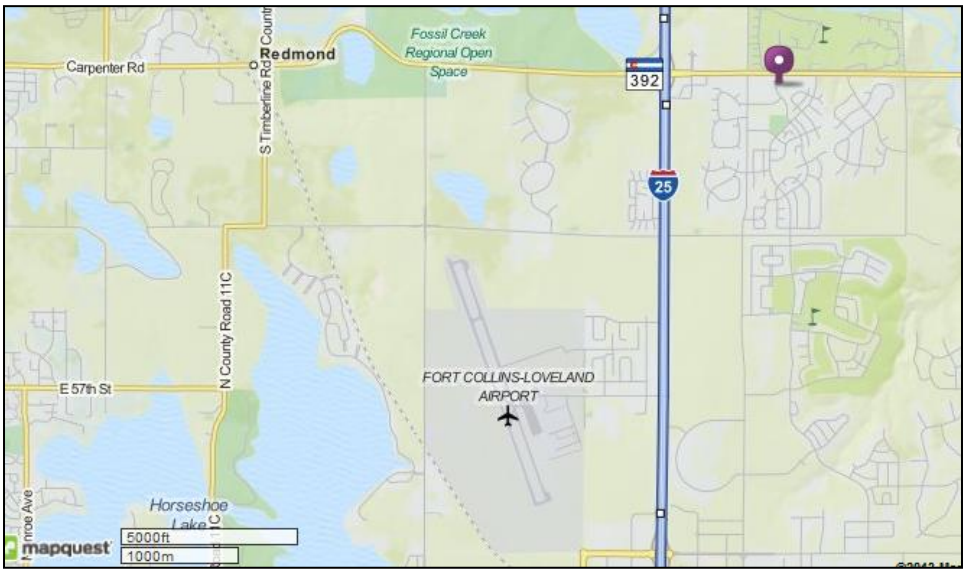


Figure 49: WSFR Station 3 Relationship to Fort Collins-Loveland Municipal Airport

Chapter 4 – Current Deployment and Performance / Measure of System Performance

Community Expectations

WSFR responds to all emergency and non-emergency calls for service to which it is dispatched. Types of calls for service include, but are not limited to, structural fire suppression, emergency medical services, hazardous materials incidents, technical rescue (including water rescue), wildland fires, and a wide variety of other types of service calls. In May 2013, WSFR entered into a contractual relationship with the University of Colorado Health (UCH) to provide 24-hour advanced life support (ALS) coverage in the District served by Stations 1 & 2. The contract also provides for an EMS Captain and an EMS Division Chief. All UCH services in the District are based out of Fire Station 1 and Fire Station 2.

WSFR needs to understand what its community expects so that the agency can dedicate time, energy, and resources to those services that are in the highest demand. Customer priorities must be considered, in conjunction with historical incident history, to accurately prepare an agency to respond to incident circumstances and meet customer service expectations. Key to understanding community expectations, WSFR facilitated external stakeholder workshops during the development of the 2022-2024 Strategic Plan. The workshops included attendees representing a cross-section of the community. The attendees were surveyed for input and priorities based on the current services that the agency provides. The survey results were compiled and ranked to establish expectations and priorities. [Figure 50].

PROGRAMS	Average Score (4.0 total)	Classification
Fire/Emergency Medical Services	3.5	Essential
Special Operations	2.9	Very Important
Plan Reviews and Code Enforcement	2.8	Very Important
Domestic Preparedness and Planning	2.8	Very Important
Community Involvement and Presence	2.5	Very Important
Public Education and Outreach	2.4	Important
Fire Investigation	2.4	Important
Smoke/CO detector service	1.6	Somewhat Important

Figure 50: Customer Service Expectations from Strategic Plan [6]

Performance Goals and Expectations

WSFR establishes realistic performance measures to help the agency evaluate services provided by WSFR employees. The agency utilizes fire service-specific tools to assess the quantity and quality of agency services. Performance measurement and standards comparisons are used to evaluate services. Information collected by organizations such as the Insurance Services Office (ISO) and National Fire Protection Association (NFPA) are the primary sources of information and data used to measure fire service efficiency and effectiveness.

Mission, Vision, and Values

In September 2015, members of the Technical Advisor Program (TAP) from the Center for Public Safety Excellence (CPSE) visited WSFR to assist the agency in developing a community-driven strategic plan. During that process, the WSFR internal stakeholder group collaborated to update the terms that define the agency's values. The Mission and Values were further clarified during this process. The Mission[7] of WSFR is:

[6] WSFR Strategic Plan 2022-2024, page 18.
[7] WSFR Strategic Plan 2022-2024, page 8.

"Providing professional service and compassionate care from our family to yours."

The internal stakeholder group that developed this mission statement believes that it embodies the essence of why WSFR exists and emphasizes that the employees of WSFR view themselves as a family, working together to serve the citizens and visitors of the communities of Windsor and Severance.

The Values[8] that support this mission were defined as follows:

> **Readiness:** We will anticipate the needs of our community through preparedness, education, and continual improvement.
>
> **Excellence:** We will pursue mastery of technical knowledge, skills, and abilities.
>
> **Courage:** We will display the mental strength and moral character to do what is right, even in the presence of personal and professional adversity.
>
> **Respect:** We will serve our community and each other with dignity, integrity, appreciation, and kindness while valuing the diversity and efforts of all.

These values are embraced by all agency employees as the guiding doctrine that binds all employees together. They are applied by all members of the agency through the decision-making process to ensure that all decisions directly correlate to the agency's goals and objectives.

In February of 2021, WSFR contracted the services of Fire/EMS Consulting Services, LLC to assist with the development of the WSFR 2022-2024 Strategic Plan. During the process, it was recognized that the previous Vision statement did not align with the identity the organization was striving for. The following Vision[9] Statement was developed to help challenge WSFR to be the best at what we do and guide us into the future:

[8] WSFR Strategic Plan 2022-2024, page 8.
[9] WSFR Strategic Plan 2016-2020, page 39.

"Building a culture of unwavering commitment to our community and each other, while striving for greatness."

Relationship Between Outcome and Response Time

WSFR exists to serve the communities of Windsor and Severance by providing an effective and efficient response to incidents. Ultimately, WSFR personnel strives to minimize loss of life and property damage. The agency seeks to measure both outputs (quantity of work completed) as well as outcomes (measurable results from work completed) to analyze the agency's ability to be effective and efficient. Two quantifiable periods have been published repeatedly in the emergency response media: time to flashover and cardiac arrest survivability.

To measure the effectiveness and efficiency of fire suppression operations, a fire service agency must deploy a sufficient number of personnel and apparatus to a reported fire incident. Those resources must arrive on the scene within an appropriate time frame and effectively accomplish the critical tasks necessary to extinguish the fire. While every fire is unique in its circumstances, fire behavior can and should be, anticipated. The transition from a developing fire to a fully involved fire is called flashover. Flashover is the time at which all available fuel packages within the entire fire area simultaneously reach their ignition temperature [Figure 51]. This produces a hostile fire event with extreme heat, rapid free burning, extremely high pressure, and tremendous smoke production. If a fire reaches the flashover stage, any persons within the fire compartment have an

extremely minimal chance of survival. Fire modeling experiments conducted as part of the Report on Residential Fireground Field Experiments (NIST, 2010) indicated that a fire environment can be expected to become untenable for human survival within approximately ten (10) minutes simply based on atmospheric concentrations of carbon monoxide and carbon dioxide.[10] Response and on-scene performance goals are established to allow resources to intercede in the fire event as early as possible.

Comparing the expected or anticipated fire behavior with the expected or anticipated incident response timeline and critical tasks that can be controlled or otherwise influenced by agency personnel allows WSFR leaders to build effective response plans. A glance at Figure 52 can lead to the logical inference that increased response time leads to decreased success in containing a fire in a room or area of origin. Similarly, the increased response time has a negative effect on patient survival from cardiac arrest. In both cases, the agency must have a timely response to the incident while also implementing a skilled response for there to be the greatest opportunity for success.

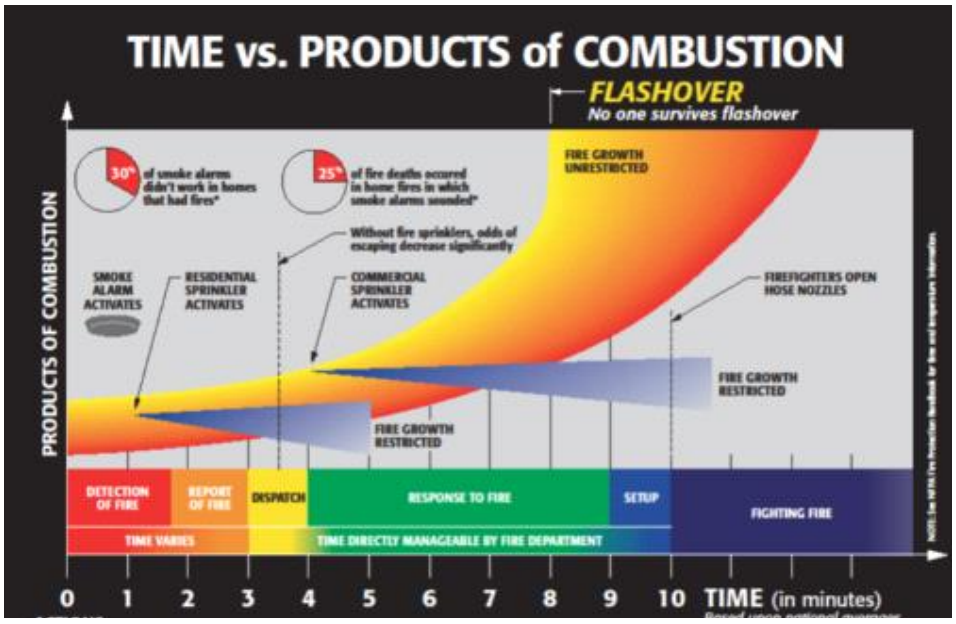


Figure 51: Time versus Products of Combustion

[10] Report on Residential Fireground Field Experiments. National Institute of Standards and Technology. April 2010, page 43.

Community Response History

WSFR has analyzed the incident response history for the period from January 1, 2017, through December 31, 2021. The analysis included the days and times that incidents were reported but also the frequency that different incident types occurred. This understanding of incident response history is used to help agency personnel understand which types of incidents they can reasonably be expected to respond to, as well as when those incidents can most likely be anticipated to occur.

Hour of Day, Day of Week, Month of Call Studies

As part of the District's risk assessment, information from the Emergency Reporting RMS was analyzed to determine the frequency with which incidents tend to occur in the District. Calls from January 1, 2017, through December 31, 2021, were assessed based on the hour of the day, day of the week, and month of call [Figures 52-54]. This information is being used to help plan for future staffing needs.

To understand how the time of day affects call frequency, incidents were analyzed for the time of dispatch. Figure 52 shows that the busiest time for calls is from 7:00 am until 10:00 pm.

Figure 52: Incidents by Hour of Day (January 1,2017 through December 31,2021)

The agency's plan for increasing staffing due to increased need is based upon the use of a shift recall, whereby off-duty personnel is notified of the need to return to duty to staff reserve and/or secondary apparatus while on-duty staff mitigates incident needs. While a shift recall does not guarantee any additional staffing, it is frequently able to meet system needs and matches similar plans by regional fire service agencies. Planned staffing is the same across the board according to the Minimum Staffing Policy OP002.

An examination of the frequency of calls throughout the various days of the week revealed that call volume was relatively consistent, with little variation seen on weekdays versus weekends [Figure 53].

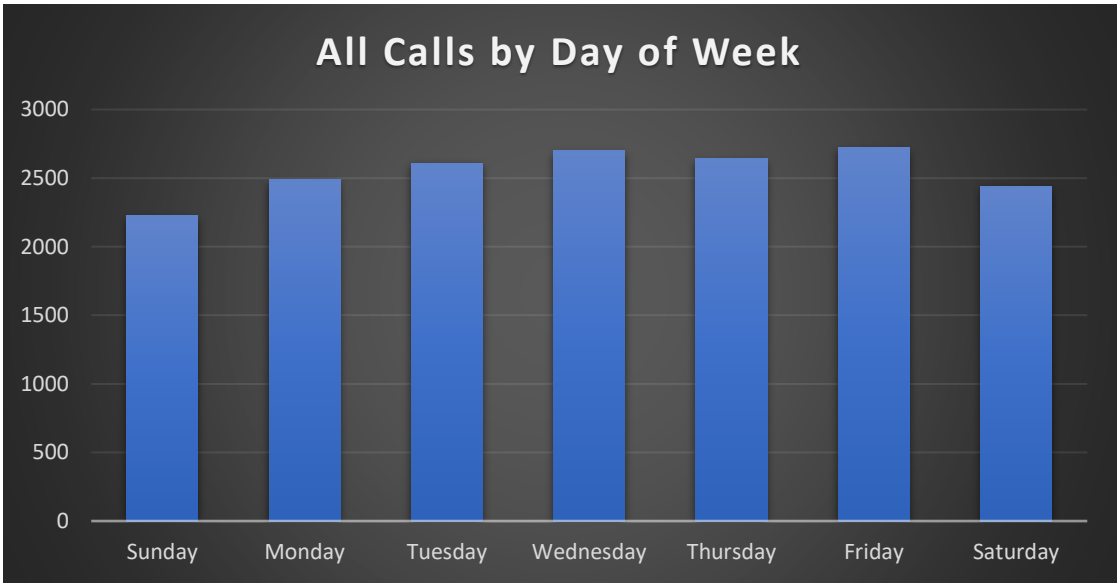


Figure 53: Incidents by Day of Week (January 1, 2017, through December 31, 2021)

Reviewing incident statistics for the month of occurrence revealed that call volume is relatively consistent without regard for the month [Figure 54].

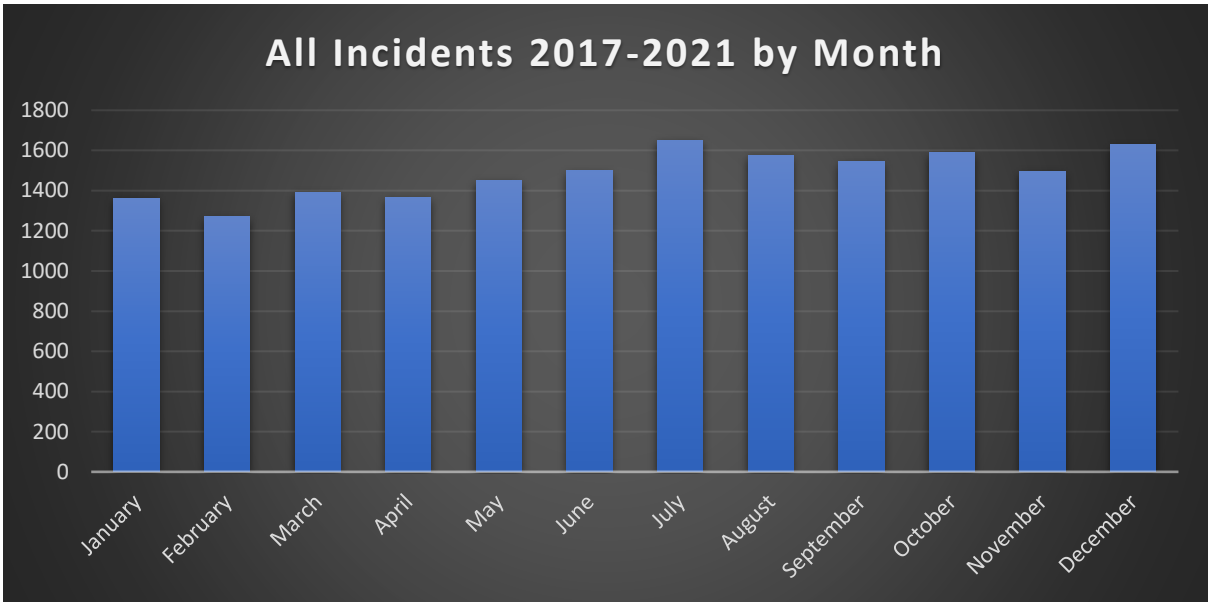


Figure 54: Incidents by Month of Call (January 1, 2017, through December 31, 2021)

Resource Distribution

Distribution refers to the number of resources (e.g., first-due apparatus) located throughout the response area. In other words, the distribution looks at the locations of fire stations to provide personnel and equipment for initial response to calls for service. In an ideal situation, every fire station would be located so that call volume is equally distributed between all stations. Unfortunately, it is not possible to accomplish such a task. Instead, WSFR has focused on providing staffed fire stations nearest to population centers, where an increased call volume can be expected. The geographic regions surrounding each fire station are referred to as fire station planning areas.

Fire station planning areas are used by WSFR to improve understanding of anticipated incident responses. WSFR analyzed anticipated drive times from each of the agency's four fire stations and assigned responsibility for pre-fire planning based on which apparatus should be first due based on anticipated drive time from their respective fire station. See the following maps, Figures 55-59.

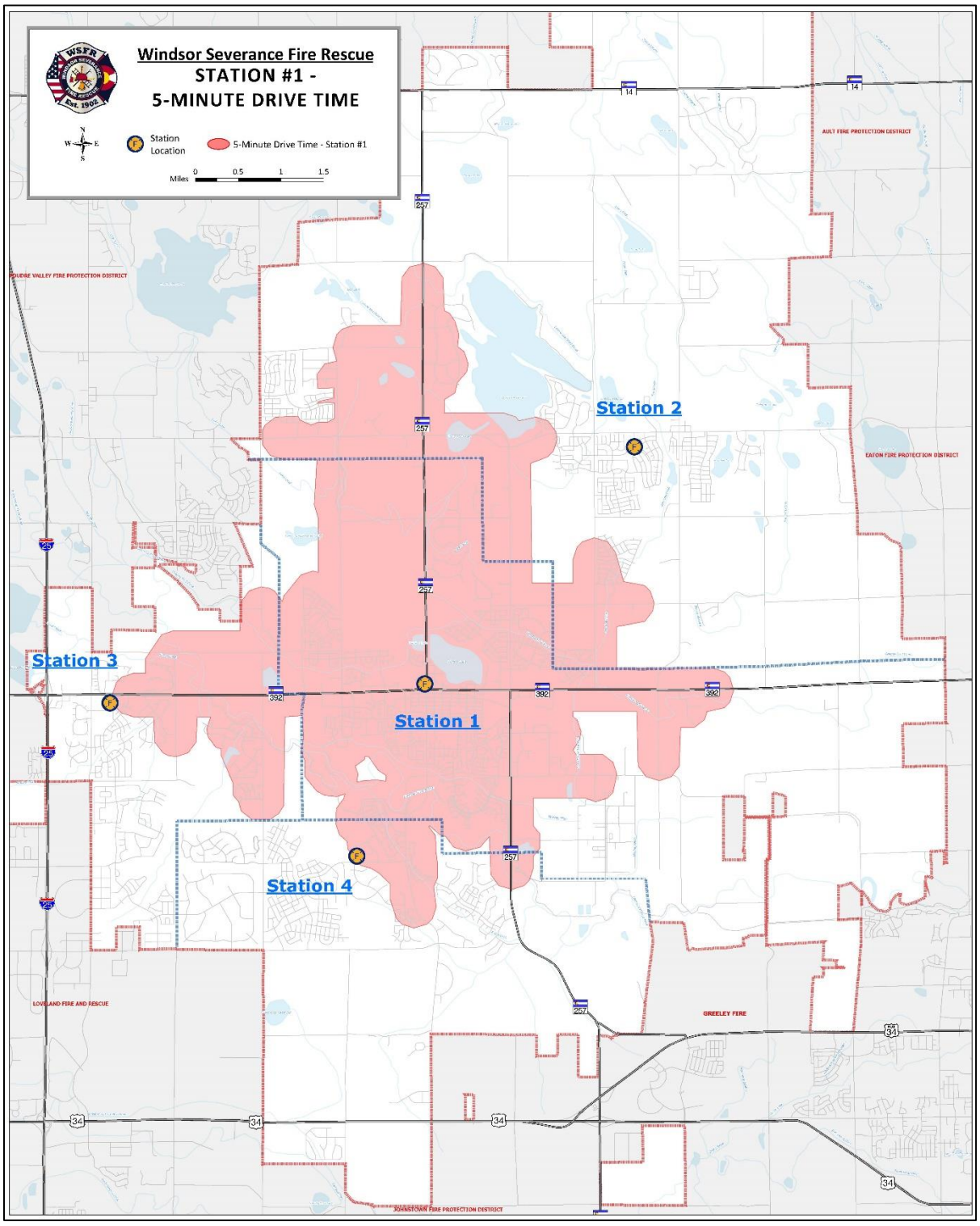


Figure 55: Station 1 Drive Time Response Area

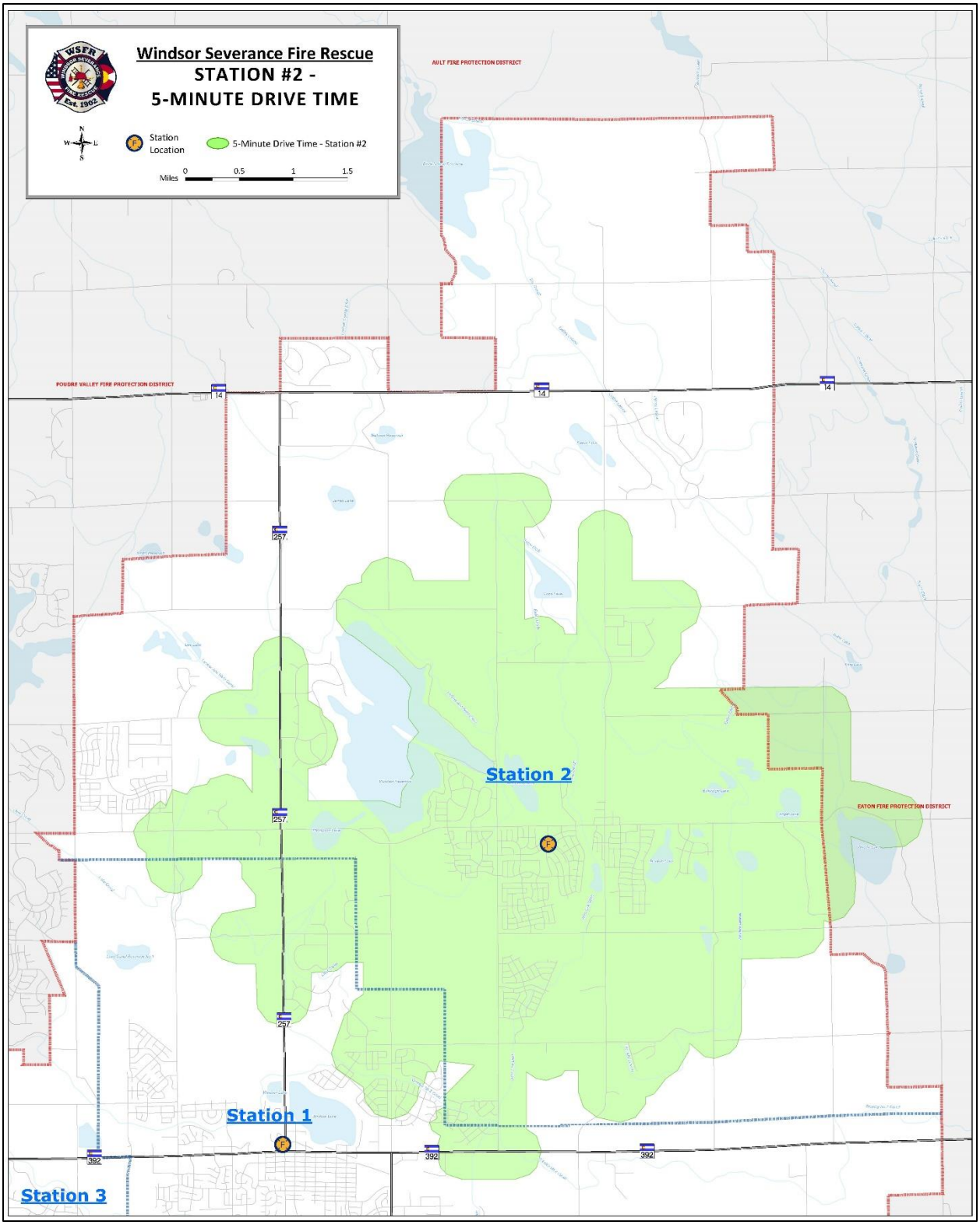


Figure 56: Station 2 Drive Time Response Area

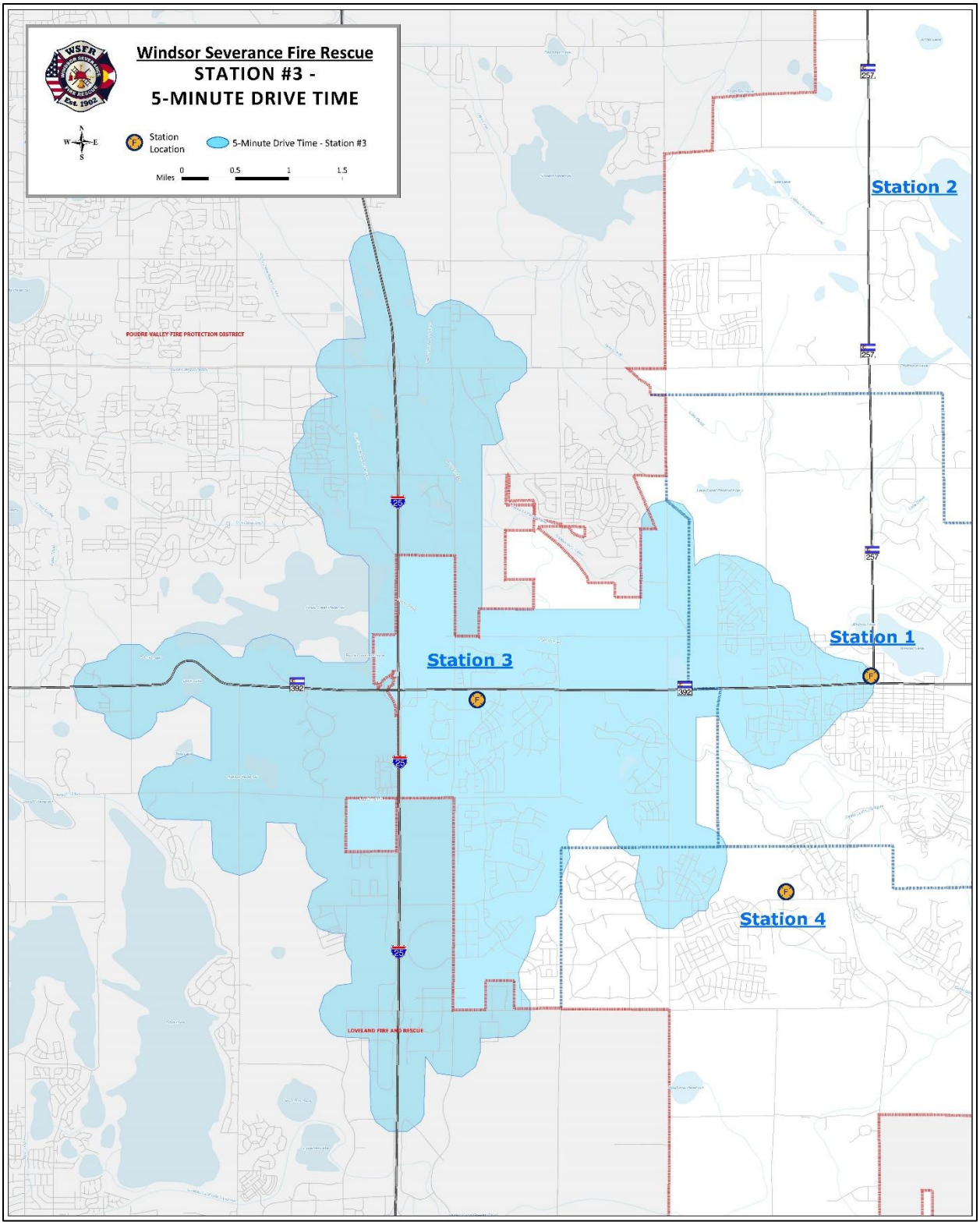


Figure 57: Station 3 Drive Time Response Area

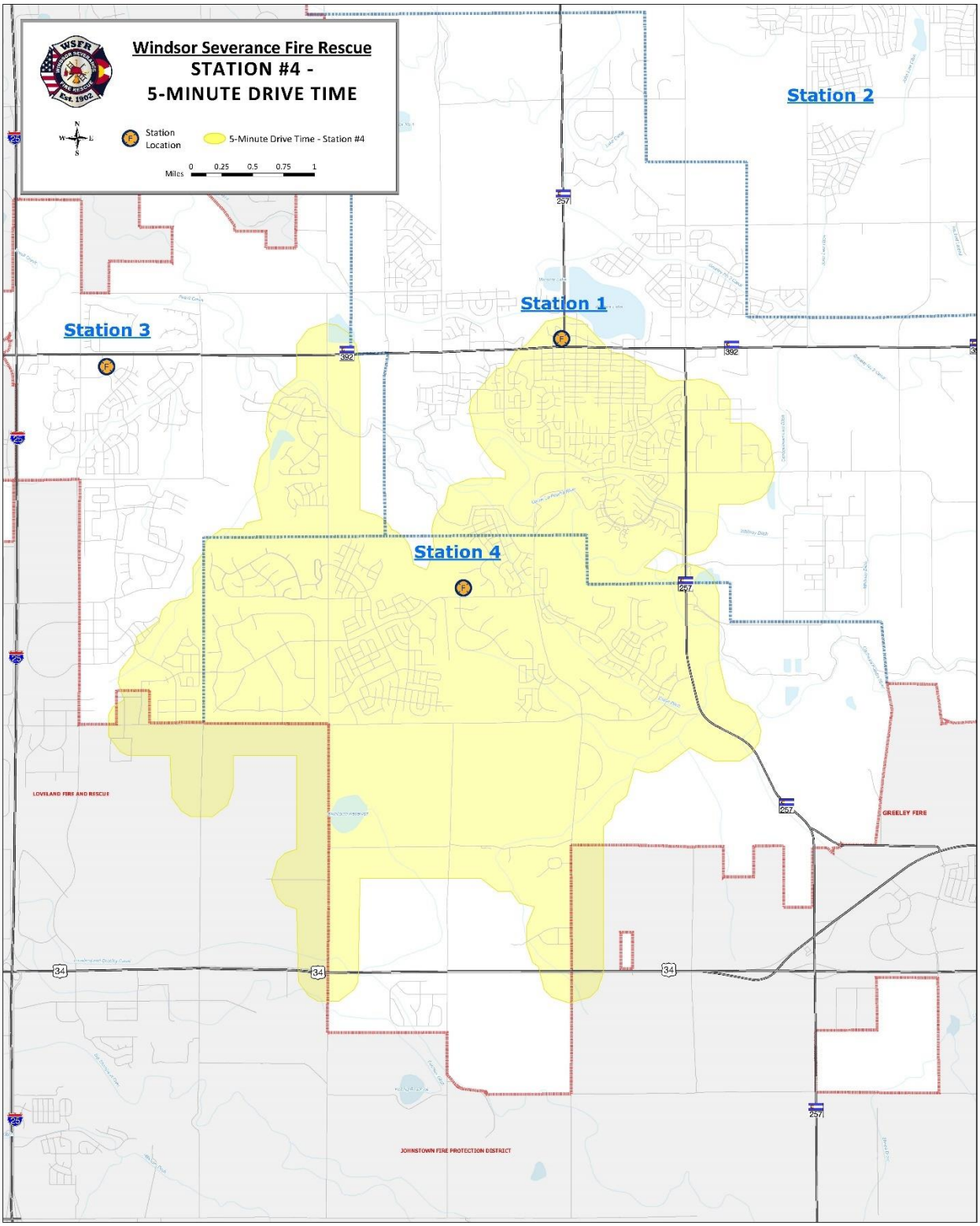


Figure 58: Station 4 Drive Time Response Area

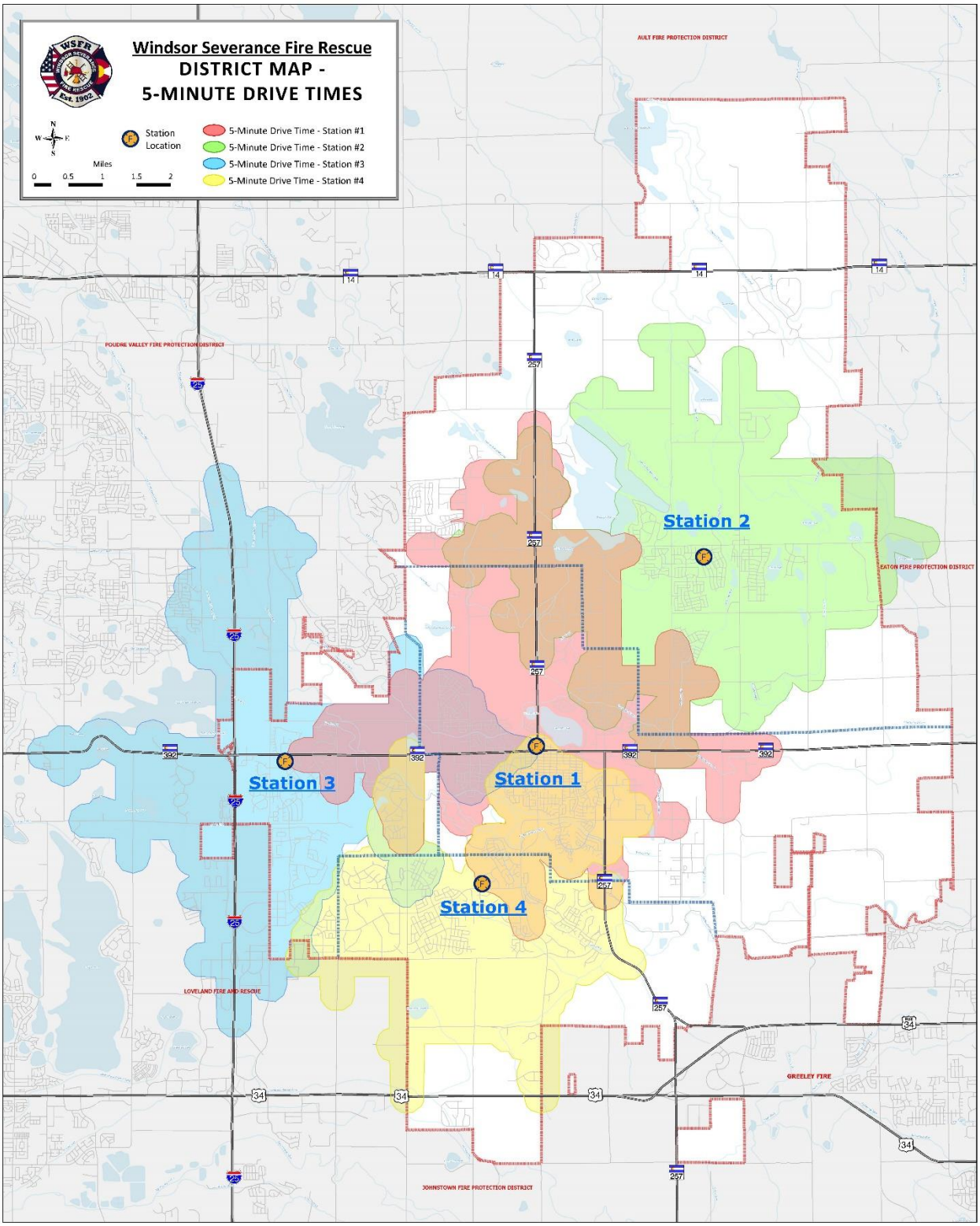


Figure 59: All Station Drive Time Response Area

Resource Concentration

The concentration of resources examines the placement of multiple resources in proximity to support establishing an effective response force (ERF) on an emergency scene within an established timeframe. In other words, the agency must place a sufficient number of resources in strategic locations throughout the response area so that enough resources can arrive on the scene quickly enough to mitigate the circumstances of any given incident. Larger and more complex incidents require a larger ERF, while smaller or simpler incidents require a correspondingly smaller ERF. Thus, it can be inferred that a greater amount of time will be necessary to assemble the requisite personnel and equipment for a larger and more complex incident than for a smaller and simpler incident.

WSFR is somewhat limited in capacity to place multiple resources throughout the community simply due to the relatively small size of the agency, with only four (4) fire stations. However, the agency has been effective at strategically locating the most commonly used secondary apparatus. In addition to the first-due fire engine, each fire station also houses a Type 6 wildland apparatus. In addition, a water tender is located at Stations 2 and 4, in the areas most expected to have decreased availability of a pressurized water supply. All other support and secondary apparatus are centrally located in the WSFR response area at Fire Station 1. This location was chosen based on the response history which indicates this planning zone is the busiest. Figure 60 shows the historical distribution of incidents by fire station planning zones.

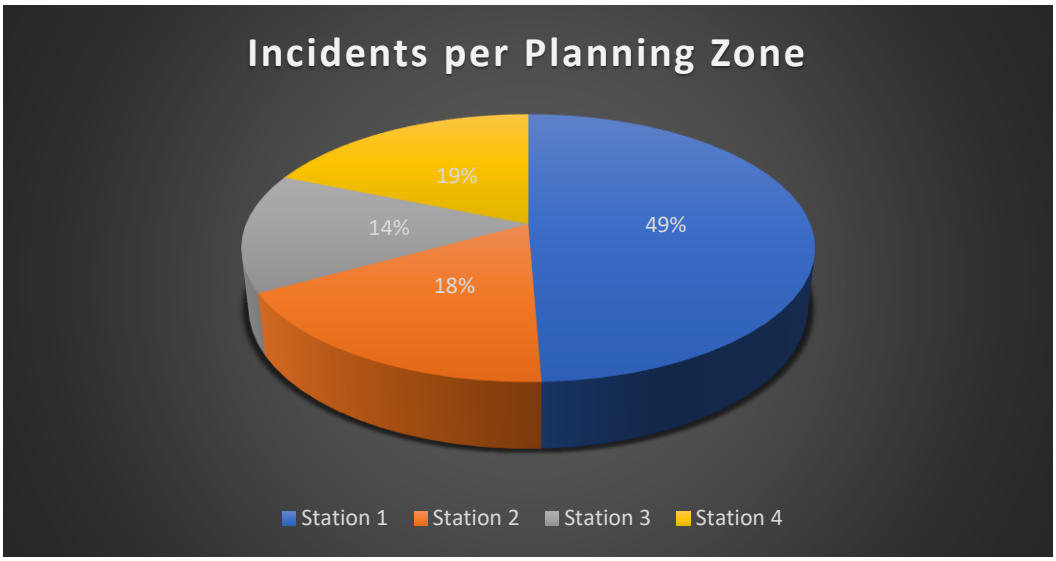


Figure 60: Distribution of Incidents by Fire Station Planning Zone

Chapter 5 – Standards of Cover

Critical Task Analysis

When a citizen calls 911, they expect a quick skilled response from a sufficient number of emergency personnel to effectively mitigate the circumstances of their emergency. WSFR has established several response plans that are intended to provide that quick skilled response to a wide variety of emergency and non-emergency calls for service. In developing these response plans, WSFR has performed a critical task analysis to develop an understanding of the amount of work that each responder should reasonably be expected to perform on any given incident. The analysis of these critical tasks improves agency awareness about the adequacy of current staffing levels, mutual and auto-aid agreements, and other resources in terms of their ability to provide a sufficient number of personnel and equipment to an emergency scene promptly to effectively mitigate the circumstances of that incident.

Critical tasks can be defined as those tasks that must be performed to successfully mitigate the circumstances of the incident. Critical tasks are based upon risk assessment summaries, agency policies and procedures, accepted industry standards, National Fire Protection Association guidelines, and expert counsel. The analysis of these tasks and the numbers of personnel needed to complete them serves as the basis and rationale for establishing a risk-specific effective response force (ERF). In other words, the critical task analysis provides data that allows WSFR to determine the appropriate response plan to effectively control the circumstances of each incident type. It is important to note that WSFR understands that some situations will necessitate dependence on neighboring agencies to provide personnel and equipment through automatic-aid and/or mutual-aid agreements. Where applicable, this has been built into the Effective Response Force determination.

Low-Risk Fire Suppression

The risk analysis conducted by WSFR determined that Low-Risk Fire Suppression includes fires other than a structure fire or a large grass/wildland fire. For example, this would include fires involving passenger vehicles, dumpsters, boats, or other similar objects. If dispatch information indicates that fire is close to a structure, it is classified as a fire

threatening a structure and is upgraded to a full first alarm assignment. Additionally, if a large motor vehicle such as a bus or semi-tractor trailer is reported to be on fire, the incident response plan is the same as a residential structure fire or moderate risk.

The following table provides the Effective Response Force (ERF) and associated Critical Tasks for initial Low-Risk Fire Suppression responses.

Low-Risk Fire Suppression		
APPARATUS	**STAFFING**	**CRITICAL TASK DESCRIPTION**
Engine or Truck	Officer	Establish Incident Command
		360-degree scene size-up Develop incident action plan
		Initial Safety Officer
	Engineer	Position and pump apparatus
	Firefighter	Form fire attack crew
Command Vehicle	Battalion Chief	Upgrade Incident Command and Safety
		Review and update the incident action plan
ERF = 2 units with	**4 personnel**	**To perform 8 critical tasks**

Low-Risk Fire Suppression: Baseline Performance

The following information contains response data for Low-Risk Fires to which WSFR responded during the period from January 1, 2017, through December 31, 2021. During this period agency responded to a total of 101 Low Risk Fires in all response zones in both the Urban and Rural Areas.

For 90 percent of Low-Risk Fires, the total response time for the arrival of the first due apparatus, staffed with at least one (1) Officer, one (1) Engineer, and one (1) Firefighter was 8 minutes and 37 seconds in the Urban Response Area and 15 minutes and 10 seconds for the Rural Response Area. The first due Engine or Truck was capable of delivering a minimum of 750 or 300 gallons of tank water respectively, with a minimum of 2,000 gallons per minute rated pumping capacity. Both units were capable of establishing incident command, performing a 360-degree scene size-up, developing an appropriate incident action plan, deploying an appropriate fire attack, providing sufficient water volume and pumping capacity, and applying water to the fire.

For 90 percent of Low-Risk Fires, the total response time for the arrival of the effective response force (ERF), staffed with a minimum of one (1) Officer, one (1) Engineer, one (1)

Firefighter, and one (1) Battalion Chief was 8 minutes and 53 seconds in the Urban Response Area and 15 minutes and 29 seconds for the Rural Response Area. The ERF was capable of providing a dedicated incident commander, performing a 360-degree scene size-up, developing an appropriate incident action plan, deploying an appropriate fire attack, providing sufficient water volume and pumping capacity, and applying water to the fire.

Low-Risk Fire Suppression: Performance Benchmarks

For 90 percent of all Low-Risk Fires, the total response time for the arrival of the first due apparatus, staffed with at least one (1) Officer, one (1) Engineer, and one (1) Firefighter shall be 7 minutes and 49 seconds in the urban response area and 11 minutes and 49 seconds in the rural response area. The first due Engine or Truck shall be capable of delivering a minimum of 750 or 300 gallons of tank water respectively, with a minimum of 2,000 gallons per minute rated pumping capacity. Both units shall be capable of establishing incident command, performing a 360-degree scene size-up, developing an appropriate incident action plan, deploying an appropriate fire attack, providing sufficient water volume and pumping capacity, and applying water to the fire.

For 90 percent of all Low-Risk Fires, the total response time for the arrival of the effective response force (ERF), staffed with a minimum of one (1) Firefighter, one (1) Engineer, one (1) Officer, and one (1) Battalion Chief shall be 11 minutes and 49 seconds in the urban response area and 15 minutes and 49 seconds in the rural response area. The ERF shall be capable of providing a dedicated incident commander, performing a 360-degree scene size-up, developing an appropriate incident action plan, deploying an appropriate fire attack, providing sufficient water volume and pumping capacity, and applying water to the fire.

Low-Risk Fire Suppression Standards of Cover Calculations Methodology

The following lists describe the methods used to develop first due and ERF calculations for incidents evaluated for Low-Risk Fire Suppression. The Emergency Reporting records management system was used to extract response performance data for analysis.

Low-Risk Fire Suppression

Resources:	1 Engine or 1 Truck, 1 Command Vehicle
Handling/Turnout:	Reporting time for 1st apparatus to arrive on scene
ERF:	Minimum 4 personnel
	Reporting time for all apparatus to arrive on scene
Inclusion Criteria:	1st due apparatus is an Engine or Truck
NFIRS Codes:	113, 114, 118, 131, 134, 151, 152, 154

Low Risk Fire - 90th Percentile Times - Baseline Performance			2017-2021	2021	2020	2019	2018	2017	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	2:56	3:10	2:54	2:44	2:42	1:14	1:30
		Rural	3:41	3:15	5:27	2:19	2:30	0:41	1:30
Turnout Time	Turnout Time 1st Unit	Urban	2:23	2:34	1:53	2:00	1:51	2:20	1:20
		Rural	2:16	2:26	5:10	1:42	1:53	3:01	1:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	6:59	5:45	8:06	5:28	4:30	6:48	4:59
		Rural	13:48	12:09	10:55	10:33	13:27	13:02	8:59
	Travel Time ERF **Concentration**	Urban	8:36	11:18	9:36	3:51	4:43	6:49	8:59
		Rural	15:02	33:28	13:02	10:33	13:27	13:12	12:59
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	8:37	8:08	9:24	6:54	6:19	8:34	7:49
			n=71	n=19	n=25	n=5	n=7	n=15	
		Rural	15:10	13:21	15:04	12:15	14:50	14:55	11:49
			n=30	n=8	n=8	n=1	n=9	n=4	
	Total Response Time ERF **Concentration**	Urban	8:53	12:20	9:07	4:43	5:12	8:18	11:49
			n=36	n=7	n=11	n=3	n=5	n=10	
		Rural	15:29	35:10	14:52	9:26	11:25	14:57	15:49
			n=24	n=6	n=4	n=1	n=9	n=4	

Moderate Risk Fire Suppression

WSFR has defined a Moderate Risk Fire Suppression as one involving a one- or two-family residential structure, a commercial structure having an OVAP score of 15 to 39, or a large vehicle fire. This could also include a structure that is threatened by an exterior fire involving a vehicle, trash container, and/or vegetation. The three (3) primary goals when responding to a reported structure fire are Life Safety, Incident Stabilization, and Property Conservation. WSFR's primary goal for fire suppression is to provide for public and firefighter safety by reducing the potential of flashover in the involved compartment(s). All initial tasks performed on the fire ground are directed towards accomplishing this goal within the established risk profile. Firefighter safety is of paramount concern to all personnel operating

on the scene. WSFR recognizes that all structure fires contain an environment that is immediately dangerous to life and health (IDLH) and expects all personnel actions to conform to the risk profile established by incident command.

The first alarm assignment for a Moderate Risk Fire Suppression is displayed. WSFR staffs all first-due apparatus with one (1) Officer, one (1) Engineer, and at least one (1) Firefighter. Depending on the incident type or location, the Officer may split his/her crew and staff one of the secondary apparatus such as a water tender that is housed at the fire station. Additional personnel to staff secondary apparatus may be provided by qualified on-duty administrative personnel and/or personnel responding to a shift recall. If an incident type can reasonably be expected to exceed the capabilities of WSFR's staffing capabilities, the responding Battalion Chief will request additional resources from surrounding mutual aid providers.

The critical task analysis presented assumes that an offensive strategy is established, and all personnel are operating with the intent of saving savable lives. All WSFR Officers function as embedded Safety Officers within their assigned crew or workgroup during all incident response activities. Finally, ALS ambulance personnel and equipment are not included in the critical task analysis because they are not trained or equipped as firefighters.

The following tables provide the Effective Response Force (ERF) and associated Critical Tasks for initial Moderate Risk Fire Suppression response, including areas with pressurized water supply and areas requiring rural water supply operations.

Moderate Risk Fire Suppression - In areas with pressurized water supply		
APPARATUS	**STAFFING**	**CRITICAL TASK DESCRIPTION**
First Due Engine	Officer	Establish Incident Command 360-degree size-up Develop incident action plan Initial Safety Officer
	Engineer	Pump apparatus
	Firefighter	Form fire attack crew
Second Due Engine	Officer	360-degree survey, update the incident action plan
	Engineer	Establish water supply to first due Engine
	Firefighter	Second attack line
Third Due Engine	Officer	Rapid intervention or on-deck crew as determined by IC
	Engineer	

	Firefighter	
First Due Truck	Officer	Outside truck functions Primary search or ventilation as determined by IC
	Engineer	
	Firefighter	
Command Vehicle	Battalion Chief	Upgrade Incident Command and Safety Review and update the incident action plan
ERF = 5 Units with	**13 personnel**	**To perform 14 Critical Tasks**

Moderate Risk Fire Suppression – In areas requiring rural water supply operations		
APPARATUS	**STAFFING**	**CRITICAL TASK DESCRIPTION**
First Due Engine	Officer	Establish Incident Command 360-degree size-up Develop incident action plan Initial Safety Officer
	Engineer	Pump apparatus Establish rural water supply from water tender
	Firefighter	Form fire attack crew
Second Due Engine split with Water Tender	Officer	360-degree survey, update the incident action plan
	Engineer	Establish rural water supply to first due Engine Second attack line or pump apparatus as determined by IC
	Firefighter	Deliver water tender apparatus to the scene
Third Due Engine	Officer	Rapid intervention or on-deck crew as determined by IC
	Engineer	
	Firefighter	
First Due Truck	Officer	Outside truck functions Primary search or ventilation as determined by IC
	Engineer	
	Firefighter	
Command Vehicle	Battalion Chief	Upgrade Incident Command and Safety Review and update the incident action plan
ERF = 6 Units with	**13 personnel**	**To perform 16 Critical Tasks**

Moderate Risk Fire Suppression: Baseline Performance

The following information contains response data for Moderate Risk Fires to which WSFR responded during the period from January 1, 2017, through December 31, 2021. During this period, the agency responded to a total of 33 moderate risk fires in all response zones in both the Urban and Rural areas. Given the low volume of data, the agency was not able to

determine a performance baseline based on historical data. Instead, the agency reviews each Moderate Risk Fire as they occur to identify areas for improvement.

Moderate Risk Fire Suppression: Performance Benchmarks

For 90 percent of all Moderate Risk Fires, the total response time for the arrival of the first due apparatus, staffed with at least one (1) Officer, one (1) Engineer, and one (1) Firefighter, shall be 7 minutes and 49 seconds in the urban response area and 11 minutes and 49 seconds in the rural response area. The first due Engine or Truck shall be capable of delivering a minimum of 750 or 300 gallons of tank water respectively, with a minimum of 2,000 gallons per minute rated pumping capacity. Both units shall be capable of establishing incident command, performing a 360-degree scene size-up, developing an appropriate incident action plan, deploying an appropriate fire attack, providing sufficient water volume and pumping capacity, and applying water to the fire.

For 90 percent of all Moderate Risk Fires, the total response time for the arrival of the effective response force (ERF), staffed with a minimum of four (4) Officers, four (4) Engineers, four (4) Firefighters, and one (1) Battalion Chief shall be 14 minutes and 49 seconds in the urban response area and 18 minutes and 49 seconds in the rural response area. The ERF shall be capable of providing a dedicated incident commander, performing a 360-degree scene size-up, developing an appropriate incident action plan, deploying an appropriate first and second attack, providing sufficient water volume and pumping capacity, establishing a secured water supply, completing a primary search of the structure or providing ventilation, and providing a rapid intervention crew.

Moderate Risk Fire Suppression Standards of Cover Calculations Methodology

The following lists describe the methods used to develop first due and ERF calculations for incidents evaluated for Moderate Risk Fire Suppression. The Emergency Reporting records management system was used to extract response performance data for analysis.

Moderate Risk Fire Suppression

Resources: 3 Engines, 1 Truck, 1 Command Vehicle (add 1 Water Tender w/ rural water supply)

Handling/Turnout: Reporting time for 1st apparatus to arrive on scene

ERF: Minimum 13 personnel. Reporting time for all apparatus to arrive on scene

Inclusion Criteria: 1st due apparatus is an Engine or Truck

NFIRS Codes: 111,121,122,123,132,133,136,137,138

Moderate Risk Fire - 90th Percentile Times - Baseline Performance			2017-2021	2021	2020	2019	2018	2017	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	2:46	3:13	2:02	2:17	2:03	0:34	1:30
		Rural	2:14	N/A	2:18	2:14	2:05	0:09	1:30
Turnout Time	Turnout Time 1st Unit	Urban	2:06	2:12	1:59	1:42	1:42	4:15	1:20
		Rural	2:27	N/A	2:19	1:36	2:31	1:57	1:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	5:30	4:26	4:48	7:16	3:15	3:50	4:59
		Rural	7:40	N/A	10:11	6:10	6:57	7:40	8:59
	Travel Time ERF **Concentration**	Urban	12:44	8:43	11:35	12:02	11:48	12:06	11:59
		Rural	18:54	N/A	19:10	11:00	11:49	N/A	15:59
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	7:24	5:20	5:54	8:17	4:33	8:04	7:49
			n=22	n=7	n=3	n=6	n=3	n=3	
		Rural	9:37	N/A	11:29	7:46	9:13	9:37	11:49
			n=11	n=0	n=5	n=1	n=4	n=1	
	Total Response Time ERF **Concentration**	Urban	14:40	10:33	12:40	16:58	13:23	14:28	14:49
			n=18	n=4	n=2	n=6	n=3	n=3	
		Rural	20:15	N/A	20:39	17:16	13:17	N/A	18:49
			n=6	n=0	n=3	n=1	n=2	n=0	

High-Risk Fire Suppression

WSFR's response area includes several occupancies that could be High-Risk structures. This term was defined and discussed extensively in the Community Risk and Emergency Services Assessment of this document. WSFR has established that a structure that meets one or more of the following criteria shall be classified as a High-Risk Occupancy:

1. Building requires the use of high-rise firefighting tactics, or
2. Building was identified by Emergency Reporting OVAP scoring over 39

WSFR utilizes automatic and mutual aid with partner agencies to ensure a reliable and consistent response to High-Risk Fire occupancies.

The following table provides the Effective Response Force (ERF) and associated Critical Tasks for initial High-Risk Fire Suppression responses.

High-Risk Fire Suppression		
APPARATUS	**STAFFING**	**CRITICAL TASK DESCRIPTION**
First Due Engine	Officer	Establish incident command 360-degree scene size-up Develop incident action plan
	Engineer	Pump apparatus
	Firefighter	Form fire attack crew
Second Due Engine	Officer	360-degree survey, update the incident action plan
	Engineer	Establish water supply to 1st due Engine and FDC
	Firefighter	Second attack line
Third Due Engine	Officer	Group/Division Supervisor Rapid intervention crew
	Engineer	
	Firefighter	
Fourth Due Engine*	Officer	Staging operations
	Engineer	Establish a second water supply
	Firefighter	Third attack line
First Due Truck	Officer	Search and Rescue – fire floor or Ventilation – fire floor as determined by IC
	Engineer	
	Firefighter	
Second Due Truck*	Officer	Group/Division Supervisor
	Engineer	Search and Rescue – floor above fire or Ventilation – floor above the fire as determined by IC
	Firefighter	
Command Vehicle	Battalion Chief	Upgrade Incident Command and Safety Review and update the incident action plan
ERF = 7 units with	**19 personnel**	**To perform 18 critical tasks**

*Auto/mutual aid

High-Risk Fire Suppression: Baseline Performance

The following information contains response data for High-Risk structure fires to which WSFR responded during the period from January 1, 2017, through December 31, 2021. During this period, the agency responded to a total of 1 High-Risk structure fire in all response zones and both Urban and Rural areas. Given the low volume of data, the agency was not able to determine a performance baseline based on historical data. Instead, the agency reviews each High-Risk fire as they occur to identify areas for improvement.

High-Risk Fire Suppression: Performance Benchmarks

For 90 percent of all High-Risk fires, the total response time for the arrival of the first due apparatus staffed with at least one (1) Officer, one (1) Engineer, and one (1) Firefighter, shall be 7 minutes and 49 seconds in the urban response area and 11 minutes and 49 seconds in the rural response area. The first due Engine or Truck shall be capable of delivering a minimum of 750 or 300 gallons of tank water respectively, with a minimum of 2,000 gallons

per minute rated pumping capacity. Both units shall be capable of establishing incident command, performing a 360-degree scene size-up, developing an appropriate incident action plan, deploying an appropriate fire attack, providing sufficient water volume and pumping capacity, and applying water to the fire.

For 90 percent of all High-Risk fires, the total response time for the arrival of the effective response force (ERF) including mutual aid, staffed with a minimum of (6) six Officers, (6) six Engineers, (6) Firefighters, and (1) Battalion Chief shall be 22 minutes and 49 seconds in the urban response area and 26 minutes and 49 seconds in the rural response area. The ERF shall be capable of providing a dedicated incident commander, establishing a secured water supply, completing a primary search of the structure, providing ventilation, advancing a second attack line, providing a rapid intervention crew, controlling utilities, establishing operational groups and/or divisions as appropriate, and providing ladders and other necessary equipment to support fire ground operations.

High-Risk Fire Suppression Standards of Cover Calculations Methodology

The following lists describe the methods used to develop first due and ERF calculations for incidents evaluated for High-Risk Fire Suppression. The Emergency Reporting records management system was used to extract response performance data for analysis.

High-Risk Fire Suppression

Resources:	4 Engines, 2 Trucks, 1 Command Vehicle
Handling / Turnout:	Reporting time for 1st apparatus to arrive on scene
ERF:	Minimum 19 personnel. Reporting time for all apparatus to arrive on scene
Inclusion Criteria:	1st due unit is an Engine or a Truck
NFIRS Codes:	111

High Risk Fire - 90th Percentile Times - Baseline Performance			2017-2021	2021	2020	2019	2018	2017	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	0:11	N/A	N/A	N/A	N/A	0:11	1:30
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	1:30
Turnout Time	Turnout Time 1st Unit	Urban	0:59	N/A	N/A	N/A	N/A	0:59	1:20
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	1:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	1:57	N/A	N/A	N/A	N/A	1:57	4:59
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	8:59
	Travel Time ERF **Concentration**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	11:59
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	15:59
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	2:56	N/A	N/A	N/A	N/A	2:56	7:49
			n=1	n=0	n=0	n=0	n=0	n=1	
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	11:49
			n=0	n=0	n=0	n=0	n=0	n=0	
	Total Response Time ERF **Concentration**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	14:49
			n=0	n=0	n=0	n=0	n=0	n=0	
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	18:49
			n=0	n=0	n=0	n=0	n=0	n=0	

Wildland Fire Incidents

Grass/Wildland fires vary in size, location, and intensity as influenced by the fuels, weather, and topography associated with the incident. WSFR routinely responds to many low-risk, small grass fires that are handled by the first due Engine company that will cross-staff a brush truck. These fires are typically found in the rural response areas and are reported with no structures threatened.

The following table provides the Effective Response Force (ERF) and associated Critical Tasks for initial Low-Risk Grass/Wildland responses.

Low-Risk Grass/Wildland Fire		
APPARATUS	**STAFFING**	**CRITICAL TASK DESCRIPTION**
Engine or Truck	Officer	Establish Incident Command Scene size-up Develop incident action plan
	Engineer	Position and pump apparatus and/or joins fire attack
Brush Truck	Firefighter	Initiate fire attack
Command Vehicle	Battalion Chief	Upgrade Incident Command and Safety Review and update the incident action plan
ERF = 3 units with	**4 personnel**	**To perform 7 critical tasks**

Low-Risk Grass/Wildland Fire: Baseline Performance

The following information contains response data from all Low-Risk Grass/Wildland fires to which WSFR responded during the period from January 1, 2017, through December 31, 2021. During this period, the agency responded to a total of 105 Low-Risk Grass/Wildland fires in all response zones and both the Urban and Rural Response Areas.

For 90 percent of Low-Risk Grass/Wildland fire incidents, the total response time for the arrival of the first due apparatus, staffed with at least one (1) Officer and one (1) Engineer, or one (1) Firefighter was 11 minutes and 08 seconds in the Urban response area and 13 minutes and 33 seconds for the Rural response area. The first due Engine or Truck was capable of delivering a minimum of 750 or 300 gallons of tank water respectively, with a minimum of 2,000 gallons per minute rated pumping capacity, and the first due Brush Truck was capable of delivering a minimum of 300 gallons of tank water with a minimum of 100 gallons per minute rated pumping capacity. Each was capable of establishing incident command, deploying an appropriate fire attack, providing sufficient water volume and pumping capacity, and applying water to the fire.

For 90 percent of Low-Risk Grass/Wildland fire incidents, the total response time for the arrival of the effective response force (ERF) staffed with a minimum of (1) Officer, one (1) Engineer, one (1) Firefighter, and one (1) Battalion Chief was 12 minutes and 16 seconds in the Urban response area and 16 minutes and 33 seconds for the Rural response area. The ERF was capable of providing a dedicated incident commander, deploying an appropriate fire attack, providing sufficient water volume and pumping capacity, and applying water to the fire.

Low-Risk Grass/Wildland Fire: Performance Benchmarks

For 90 percent of all Low-Risk Grass/Wildland fire incidents, the total response time for the arrival of the first due apparatus, staffed with at least one (1) Officer and one (1) Engineer, OR (1) Firefighter shall be 7 minutes and 49 seconds in the Urban response area and 11 minutes and 49 seconds in the Rural response area. If an Engine or Truck, the first due apparatus shall be capable of delivering a minimum of 750 or 300 gallons of tank water respectively, with a minimum of 2,000 gallons per minute rated pumping capacity. If a Brush Truck, the first due apparatus shall be capable of delivering a minimum of 300 gallons of tank

water with a minimum of 100 gallons per minute rated pumping capacity. Each unit shall be capable of establishing incident command, deploying an appropriate fire attack, providing sufficient water volume and pumping capacity, and applying water to the fire.

For 90 percent of all Low-Risk Grass/Wildland fire incidents, the total response time for the arrival of the effective response force (ERF) staffed with a minimum of one (1) Officer, one (1) Engineer, one (1) Firefighter, and one (1) Battalion Chief shall be 11 minutes and 49 seconds in the Urban response area and 15 minutes and 49 seconds in the Rural response area. The ERF shall be capable of providing a dedicated incident commander, deploying an appropriate fire attack, providing sufficient water volume and pumping capacity, and applying water to the fire.

Low-Risk Grass/Wildland Fire Standards of Cover Calculations Methodology

The following list describes the methods used to develop first due and ERF calculations for incidents evaluated for Low-Risk Grass/Wildland Fire Suppression. The Emergency Reporting records management system was used to extract response performance data for analysis.

Low-Risk Grass/Wildland Fire

Resources:	1 Engine or 1 Truck, 1 Brush truck, 1 Battalion Chief
Process /Turnout:	Reporting time for 1st apparatus to report on scene
ERF:	Minimum 4 personnel
	Reporting time for all apparatus to arrive on scene
Inclusion Criteria:	1st due unit is an Engine or Truck or Brush Truck
NFIRS Codes:	140, 142, 143, 171, 172, 173

Low Risk Grass/Wildland - 90th Percentile Times - Baseline Performance			2017-2021	2021	2020	2019	2018	2017	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	3:49	2:43	5:10	3:29	4:25	0:48	1:30
		Rural	4:38	4:23	4:20	2:37	5:47	1:01	1:30
Turnout Time	Turnout Time 1st Unit	Urban	2:18	2:33	2:09	1:29	1:42	3:23	1:20
		Rural	3:04	1:46	1:55	1:13	3:47	4:51	1:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	9:25	4:19	10:22	7:52	8:30	7:35	4:59
		Rural	12:53	13:20	12:58	12:06	10:46	12:15	8:59
	Travel Time ERF **Concentration**	Urban	11:11	7:46	10:47	10:47	10:55	11:01	8:59
		Rural	15:15	10:24	14:06	14:50	13:01	15:09	12:59
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	11:08	6:36	12:19	10:41	10:12	9:35	7:49
			n=46	n=6	n=14	n=11	n=6	n=9	
		Rural	13:33	14:14	14:31	13:00	12:09	13:24	11:49
			n=59	n=8	n=16	n=4	n=18	n=13	
	Total Response Time ERF **Concentration**	Urban	12:16	9:59	12:28	11:00	12:04	11:45	11:49
			N=21	n=1	n=7	n=3	n=4	n=6	
		Rural	16:33	10:01	18:52	17:44	14:35	15:33	15:49
			n=39	n=3	n=11	n=3	n=9	n=13	

Moderate to High-Risk Grass/Wildland Fires

Larger Grass/Wildland fires typically found in the rural response areas present unique hazards that dictate enhanced response plans. These fires are considered moderate or high risk based on dispatch information. WSFR's response plan includes the addition of a second Engine and a cross-staffed second brush truck. Water tenders or additional brush trucks may be requested by the Battalion Chief with the assignment filled by qualified administrative personnel, mutual aid, or a shift recall. If there are reports of structures threatened, a third due Engine may be requested by the Battalion Chief.

The following table provides the Effective Response Force (ERF) and associated Critical Tasks for initial Moderate to High-Risk Grass/Wildland responses.

Moderate to High-Risk Grass/Wildland Fire		
APPARATUS	**STAFFING**	**CRITICAL TASK DESCRIPTION**
First Due Engine or Truck	Officer	Establish Incident Command Scene size-up Develop incident action plan Join Brush Truck fire attack as appropriate
	Engineer	Position and pump apparatus and/or joins fire attack
First Due Brush Truck	Firefighter	Initiate fire attack
Second Due Engine	Officer	Sector or Division joins fire attack as appropriate
	Engineer	Position and pump apparatus and/or joins fire attack
Second Due Brush Truck	Firefighter	Initiate fire attack
Command Vehicle	Battalion Chief	Upgrade Incident Command and Safety Review and update the incident action plan
= 5 Units with	**7 personnel**	**To perform 10 Critical Tasks**

Moderate to High-Risk Grass/Wildland Fire: Baseline Performance

The following information contains response data from all Moderate to High-Risk Grass/Wildland fires to which WSFR responded during the period from January 1, 2017, through December 31, 2021. During this period, the agency responded total of 8 Moderate to High-Risks/Wildland fires in all response zones and both Urban and Rural response areas. Given the low volume of data, the agency was not able to determine a performance baseline based on historical data. Instead, the agency reviews each Moderate to High-Risks/Wildland fire as they occur to identify areas for improvement.

Moderate to High-Risk Grass/Wildland Fire: Performance Benchmarks

For 90 percent of all Moderate to High-Risk Grass/Wildland fire incidents, the total response time for the arrival of the first due apparatus, staffed with at least one (1) Officer and one (1) Engineer, OR one (1) Firefighter shall be: 7 minutes and 49 seconds in the urban response area and 11 minutes and 49 seconds in the rural response area. If an Engine or Truck, the first due apparatus shall be capable of delivering a minimum of 750 or 300 gallons of tank water respectively, with a minimum of 2,000 gallons per minute rated pumping capacity. If a Brush Truck, the first due apparatus shall be capable of delivering a minimum of 300 gallons of tank water with a minimum of 100 gallons per minute rated pumping capacity. Both units shall be capable of establishing incident command, deploying an initial attack, providing sufficient water volume and pumping capacity, and applying water to the fire.

For 90 percent of all Moderate to High-Risk Grass/Wildland fire incidents, the total response time for the arrival of the effective response force (ERF) staffed with a minimum of two (2) Officers, two (2) Engineers, two (2) Firefighters, and one (1) Battalion Chief shall be 11 minutes and 49 seconds in the urban response area and 15 minutes and 49 seconds in the rural response area. The ERF shall be capable of providing a dedicated incident commander, deploying an initial attack, providing sufficient water volume and pumping capacity, establishing operational groups and/or divisions as appropriate, and applying water to the fire.

Moderate to High-Risk Grass/Wildland Fire Standards of Cover Calculations Methodology

The following lists describe the methods used to develop first due and ERF calculations for incidents evaluated for Moderate to High-Risk Grass/Wildland Fire Suppression. The Emergency Reporting records management system was used to extract response performance data for analysis.

Moderate to High-Risk Grass/Wildland Fire

Resources: 2 Engines (or 1 Truck in place of 1 Engine), 2 Brush Trucks, 1 Command Vehicle

Process / Turnout: Reporting time for 1st apparatus

ERF: Minimum 7 personnel

Report time for all apparatus to arrive on scene

Inclusion Criteria: 1st due unit is an Engine or Truck or Brush Truck

NFIRS Codes: 140, 142, 143, 171, 172, 173

Moderate-High Risk Grass/Wildland - 90th Percentile Times - Baseline Performance			2017-2021	2021	2020	2019	2018	2017	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	0:50	N/A	N/A	N/A	N/A	0:50	1:30
		Rural	2:08	2:15	N/A	N/A	N/A	1:11	1:30
Turnout Time	Turnout Time 1st Unit	Urban	0:00	N/A	N/A	N/A	N/A	0:00	1:20
		Rural	3:04	1:09	N/A	N/A	N/A	3:56	1:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	9:38	N/A	N/A	N/A	N/A	9:38	4:59
		Rural	12:47	7:55	N/A	N/A	N/A	14:00	8:59
	Travel Time ERF **Concentration**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	8:59
		Rural	15:28	14:35	N/A	N/A	N/A	15:10	12:59
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	9:38	N/A	N/A	N/A	N/A	9:38	7:49
			n=2	N=0	N=0	N=0	N=0	n=2	
		Rural	15:01	9:00	N/A	N/A	N/A	15:53	11:49
			n=6	N=3	N=0	N=0	N=0	n=3	
	Total Response Time ERF **Concentration**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	11:49
			N=0	N=0	N=0	N=0	N=0	N=0	
		Rural	15:58	16:24	N/A	N/A	N/A	13:44	15:49
			n=4	N=1	N=0	N=0	N=0	n=3	

Emergency Medical Services (EMS) Incidents

The scope of WSFR's Emergency Medical Services (EMS) program includes both basic life support (BLS) and advanced life support (ALS) services. This service is augmented by the University of Colorado Health (UCH) and Thompson Valley EMS (TVEMS) which provide advanced life support (ALS) and ambulance transport within the WSFR response area. Patients are transported to the nearest appropriate hospital emergency department for assessment and treatment.

EMS service demand is heavily influenced by population density and commercial development. Thus, it can reasonably be inferred that EMS incidents will occur more frequently within the population centers of both communities. These population centers correlate to WSFR fire station locations allowing agency apparatus to be ideally located to provide a rapid response to a reported emergency medical situation.

The Weld County Regional Communications Center (WCRCC) is the dispatch center for both WSFR and UCH. WCRCC uses an emergency medical dispatching (EMD) system that allows dispatchers to obtain information to categorize calls for service according to the level of severity. The intent of the EMD system is to assign resources based on the anticipated severity of the incident. The following table provides a summary of the different EMD priorities and the corresponding apparatus response plans [Figure 60].

CALL PRIORITY	DESCRIPTION	WSFR	UCH
Alpha or Omega	Non-life threatening Non-emergency	1 Engine if requested No lights or siren	1 ambulance No lights or siren
Bravo	Non-life threatening Emergency	1 Engine if requested No lights or siren	1 ambulance Lights and siren
Charlie or Delta	Life-threatening emergency	1 Engine Lights and siren *Command Vehicle	1 ambulance *Shift supervisor Lights and siren
Echo	Critical emergency	1 Engine Lights and siren *Command Vehicle	1 ambulance *Shift supervisor Lights and siren
* Indicates that the position has the discretion to respond if deemed necessary			

Figure 60: EMD Priorities and Response Plans

Low-Risk EMS incidents are considered non-life-threatening. For Low-Risk EMS incidents in the WSFR Station 1 and Station 2 zones, only an ambulance is dispatched. In the situation where an ambulance is not located in quarters, then a single Engine will respond in addition to the next closest ambulance. For Low-Risk EMS incidents in the WSFR Station 3 and Station 4 zones, both an ambulance and an Engine are dispatched. This difference is because the ambulance service is not located in the station quarters, so it is not easy to determine the location of the ambulance.

The following tables provide the Effective Response Force (ERF) and associated Critical Tasks for initial Low-Risk EMS responses.

Low-Risk EMS - Alpha (A), Bravo (B)		
APPARATUS	**STAFFING**	**CRITICAL TASK DESCRIPTION**
Ambulance	EMT Paramedic	Establish Incident Command Scene size-up Develop incident action plan Initial Safety Officer ALS or BLS patient care and transport
ERF = 1 units with	**2 personnel**	**To perform 5 critical tasks**

Low-Risk EMS: Baseline Performance

The following information contains response data from all Low-Risk EMS incidents to which WSFR responded during the period from January 1, 2017, through December 31, 2021. During this period, the agency responded to a total of 4,182 Low-Risk incidents in all response zones and both the urban and rural response areas.

For 90 percent of all EMS incidents, the total response time for the arrival of the first due apparatus staffed with at least one (1) Officer, one (1) Engineer, and one (1) Firefighter, or at least one (1) Paramedic and one (1) EMT, was 8 minutes and 41 seconds in the urban response area and 12 minutes and 58 seconds in the rural response area. The first due apparatus was capable of establishing incident command, providing for scene safety, assessing the patient, and providing basic life support (BLS) emergency care that included administering cardiopulmonary resuscitation and implementing automated external defibrillation.

For 90 percent of all EMS incidents, the total response time for the arrival of the effective response force (ERF) staffed with at least one (1) Officer, one (1) Engineer, one (1) Firefighter, or one (1) Paramedic and one (1) EMT was 11 minutes and 12 seconds in the Urban response area and 15 minutes and 02 seconds in the Rural response area. The ERF was capable of providing all first-due apparatus responsibilities, as well as advanced life support (ALS) care and initiating ambulance transportation to a hospital.

Low-Risk EMS: Performance Benchmarks

For 90 percent of all Low-Risk EMS incidents, the total response time for the arrival of the first due apparatus staffed with at least one (1) Officer, one (1) Engineer, and one (1) Firefighter or at least one (1) Paramedic and one (1) EMT shall be 7 minutes and 29 seconds in the urban response area and 11 minutes and 29 seconds in the rural response area. The first due apparatus shall be capable of establishing incident command, providing for scene safety, assessing the patient, and providing basic life support (BLS) emergency care that includes administering cardiopulmonary resuscitation and implementing automated external defibrillation.

For 90 percent of all Low-Risk EMS incidents, the total response time for the arrival of the effective response force (ERF) staffed with at least one (1) Officer, one (1) Engineer, one (1) Firefighter, or one (1) Paramedic, and one (1) EMT shall be 9 minutes and 29 seconds in the urban response area and 13 minutes and 29 seconds in the rural response area. The ERF shall be capable of completing all first-due apparatus responsibilities, as well as providing advanced life support (ALS) care and initiating ambulance transportation to a hospital.

Emergency Medical Services Standards of Cover Calculations Methodology

The following lists describe the methods used to develop first due and ERF calculations for incidents evaluated for Low-Risk EMS incidents. The Emergency Reporting records management system was used to extract response performance data for analysis.

Emergency Medical Services

Resources:	1 Engine or Truck, 1 Ambulance
Process / Turnout:	Reporting time for 1st apparatus
ERF:	Minimum 2 personnel
	Report time for all apparatus to arrive on scene
Inclusion Criteria:	Times determined for 1st due apparatus
Dispatch Nature Codes:	Alpha, Bravo
NFIRS Codes:	320, 321, 331

Low Risk EMS - 90th Percentile Times - Baseline Performance			2017-2021	2021	2020	2019	2018	2017	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	2:47	2:59	2:40	2:49	2:50	0:35	1:30
		Rural	3:16	2:52	3:51	3:15	3:11	1:13	1:30
Turnout Time	Turnout Time 1st Unit	Urban	1:45	1:42	1:51	1:36	1:44	1:58	1:00
		Rural	2:00	1:34	1:59	2:13	1:41	2:17	1:00
Travel Time	Travel Time 1st Unit **Distribution**	Urban	7:39	7:57	8:00	7:26	7:21	7:37	4:59
		Rural	11:49	12:10	11:21	11:30	13:08	9:08	8:59
	Travel Time ERF **Concentration**	Urban	10:02	10:21	10:07	9:49	9:43	9:14	6:59
		Rural	14:27	16:10	16:04	12:47	13:06	12:33	10:59
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	8:41	8:43	9:01	8:26	8:18	8:59	7:29
			n=3966	n=1131	n=877	n=809	n=807	n=342	
		Rural	12:58	13:15	12:08	12:46	13:57	11:01	11:29
			n=216	n=47	n=52	n=49	n=53	n=15	
	Total Response Time ERF **Concentration**	Urban	11:12	11:31	11:07	10:53	10:59	10:44	9:29
			n=3668	n=1129	n=874	n=809	n=721	n=135	
		Rural	15:02	16:47	17:10	13:00	14:13	13:43	13:29
			n=197	n=47	n=52	n=48	n=41	n=9	

For all Moderate and High-Risk EMS incidents, WSFR's initial response includes an Engine and an ambulance capable of providing patient care and transport. WSFR does not differentiate between Moderate and High-Risk EMS incidents as the same level of resource response can complete the critical tasks of each. However, High-Risk situations may call for different deployment tactics which may alter the critical tasks required. In all cases, the Incident Commander (IC) has the discretion to add appropriate resources as additional information is provided or as the incident expands.

The following tables provide the Effective Response Force (ERF) and associated Critical Tasks for initial EMS responses.

Moderate and High-Risk EMS - Charlie (C), Delta (D), Echo (E)		
APPARATUS	**STAFFING**	**CRITICAL TASK DESCRIPTION**
Engine or Truck	Officer	Establish Incident Command Scene size-up Develop incident action plan Initial Safety Officer
	Engineer	BLS patient care, address scene hazards as needed
	Firefighter	
Ambulance	Paramedic	BLS and/or ALS patient care and transport
	EMT	
*Command Vehicle	Battalion Chief	Upgrade Incident Command and Safety
*Discretionary response		
ERF = 2 units with	**5 personnel**	**To perform 7 critical tasks**

Moderate and High-Risk EMS: Baseline Performance

The following information contains response data from all Moderate and High-Risk EMS incidents to which WSFR responded during the period from January 1, 2017, through December 31, 2021. During this period, the agency responded to a total of 4,406 Moderate and High-Risk incidents in all response zones and both the urban and rural response areas.

For 90 percent of all EMS incidents, the total response time for the arrival of the first due apparatus staffed with at least one (1) Officer, one (1) Engineer, and one (1) Firefighter, or at least one (1) Paramedic and one (1) EMT, was 7 minutes and 33 seconds in the urban response area and 11 minutes and 47 seconds in the rural response area. The first due apparatus was capable of establishing incident command, providing for scene safety, assessing the patient, and providing basic life support (BLS) emergency care that included administering cardiopulmonary resuscitation and implementing automated external defibrillation.

For 90 percent of all EMS incidents, the total response time for the arrival of the effective response force (ERF) staffed with at least one (1) Officer, one (1) Engineer, one (1) Firefighter, one (1) Paramedic and one (1) EMT was 9 minutes and 43 seconds in the Urban response area and 13 minutes and 54 seconds in the Rural response area. The ERF was capable of providing all first-due apparatus responsibilities, as well as advanced life support (ALS) care and initiating ambulance transportation to a hospital.

Moderate and High-Risk EMS: Performance Benchmarks

For 90 percent of all Moderate and High-Risk EMS incidents, the total response time for the arrival of the first due apparatus staffed with at least one (1) Officer, one (1) Engineer, and one (1) Firefighter or at least one (1) Paramedic and one (1) EMT shall be 7 minutes and 29 seconds in the urban response area and 11 minutes and 29 seconds in the rural response area. The first due apparatus shall be capable of establishing incident command, providing for scene safety, assessing the patient, and providing basic life support (BLS) emergency care that includes administering cardiopulmonary resuscitation and implementing automated external defibrillation.

For 90 percent of all Moderate and High-Risk EMS incidents, the total response time for the arrival of the effective response force (ERF) staffed with at least one (1) Officer, one (1) Engineer, one (1) Firefighter, one (1) Paramedic, and one (1) EMT shall be 9 minutes and 29 seconds in the urban response area and 13 minutes and 29 seconds in the rural response area. The ERF shall be capable of completing all first-due apparatus responsibilities, as well as providing advanced life support (ALS) care and initiating ambulance transportation to a hospital.

Emergency Medical Services Standards of Cover Calculations Methodology

The following lists describe the methods used to develop first due and ERF calculations for incidents evaluated for Moderate and High-risk EMS incidents. The Emergency Reporting records management system was used to extract response performance data for analysis.

Emergency Medical Services

Resources:	1 Engine or Truck, 1 Ambulance
Process / Turnout:	Reporting time for 1st apparatus
ERF:	Minimum 5 personnel
	Report time for all apparatus to arrive on scene
Inclusion Criteria:	Times determined for 1st due apparatus
Dispatch Nature Codes:	Charlie, Delta, Echo
NFIRS Codes:	320, 321, 331

Moderate and High EMS - 90th Percentile Times - Baseline Performance			2017-2021	2021	2020	2019	2018	2017	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	2:23	2:33	2:27	2:36	2:26	0:35	1:30
		Rural	2:34	2:39	2:29	2:50	2:35	0:33	1:30
Turnout Time	Turnout Time 1st Unit	Urban	1:49	1:39	1:44	1:35	1:51	2:04	1:00
		Rural	1:55	1:32	1:46	1:50	1:47	2:16	1:00
Travel Time	Travel Time 1st Unit **Distribution**	Urban	6:28	6:40	6:48	6:09	5:59	6:31	4:59
		Rural	10:50	9:15	10:13	9:30	10:52	12:32	8:59
	Travel Time ERF **Concentration**	Urban	8:32	8:49	8:29	8:01	7:55	8:56	6:59
		Rural	12:22	12:18	11:13	11:50	12:03	13:46	10:59
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	7:33	7:40	7:54	7:07	6:59	7:47	7:29
			n=4141	n=1021	n=754	n=725	n=613	n=1028	
		Rural	11:47	10:22	11:21	10:39	12:12	14:29	11:29
			n=265	n=41	n=47	n=49	n=62	n=66	
	Total Response Time ERF **Concentration**	Urban	9:43	9:55	9:34	9:01	8:51	10:19	9:29
			n=4042	n=996	n=709	n=712	n=605	n=1020	
		Rural	13:54	12:54	11:55	13:03	13:52	16:03	13:29
			n=260	n=39	n=44	n=49	n=62	n=66	

Motor Vehicle Accidents (MVA) EMS

Motor vehicle accidents with injury are inclusive with EMS services. Due to the nature of the incident and the potentially hazardous working conditions, WSFR's response to MVA's includes an upgraded response plan. The response plan includes the addition of a Command Vehicle and a second Engine that responds non-emergent to assist with traffic control. The second Engine is not included in the ERF as there are no critical tasks assigned to the personnel. If needed, the second Engine response can be upgraded to emergent by the Battalion Chief or first arriving Officer based on the scene size-up.

The following table provides the Effective Response Force (ERF) and associated Critical Tasks for the initial Motor Vehicle Accident with Injuries response.

Motor Vehicle Accident (MVA) with Injuries		
APPARATUS	**STAFFING**	**CRITICAL TASK DESCRIPTION**
Engine or Truck	Officer	Establish Incident Command Scene size-up Develop incident action plan Initial Safety Officer
	Engineer	Addresses scene hazards
	Firefighter	Patient assessment and care
Ambulance	Paramedic	Patient assessment, care, and transport
	EMT	
Battalion Chief	Battalion Chief	Upgrade Incident Command and Safety
ERF = 3 units with	**6 personnel**	**To perform 8 critical tasks**

Motor Vehicle Accident EMS: Baseline Performance

The following information contains response data from all motor vehicle accidents to which WSFR responded during the period from January 1, 2017, through December 31, 2021. During this period, the agency responded to a total of 977 motor vehicle accident incidents in all response zones and both the urban and rural response areas.

For 90 percent of all motor vehicle accident incidents, the total response time for the arrival of the first due apparatus staffed with at least one (1) Officer, one (1) Engineer, and one (1) Firefighter was 7 minutes and 13 seconds in the urban response area and 10 minutes and 47 seconds in the rural response area. The first due apparatus was capable of establishing incident command, providing for scene safety, assessing the patient, and providing basic life support (BLS) emergency care that included administering cardiopulmonary resuscitation and implementing automated external defibrillation.

For 90 percent of all motor vehicle incidents, the total response time for the arrival of the effective response force (ERF) staffed with at least one (1) Officer, one (1) Engineer, one (1) Firefighter, one (1) Paramedic, one (1) EMT, and one (1) Battalion Chief was 11 minutes and 08 seconds in the urban response area and 14 minutes and 26 seconds in the Rural response area. The ERF was capable of providing all first-due apparatus responsibilities, a dedicated command Officer, as well as advanced life support (ALS) care, and initiating ambulance transportation to a hospital.

Motor Vehicle Accident EMS: Performance Benchmarks

For 90 percent of all motor vehicle accident incidents, the total response time for the arrival of the first due apparatus staffed with at least one (1) Officer, one (1) Engineer, and one (1) Firefighter shall be 6 minutes and 49 seconds in the urban response area and 9 minutes and 49 seconds in the rural response area. The first due apparatus shall be capable of establishing incident command, providing for scene safety, assessing the patient, checking for hazards, and providing basic life support (BLS) emergency care that includes

administering cardiopulmonary resuscitation and implementing automated external defibrillation.

For 90 percent of all motor vehicle accident incidents, the total response time for the arrival of the effective response force (ERF) staffed with at least one (1) Officer, one (1) Engineer, one (1) Firefighter, one (1) Paramedic, one (1) EMT, and one (1) Battalion Chief shall be 9 minutes and 49 seconds in the urban response area and 12 minutes and 49 seconds in the rural response area. The ERF shall be capable of completing all first-due apparatus responsibilities, providing a dedicated command Officer, as well as providing advanced life support (ALS) care, and initiating ambulance transportation to a hospital.

Motor Vehicle Accident EMS Standards of Cover Calculations Methodology

The following lists describe the methods used to develop first due and ERF calculations for incidents evaluated for Motor Vehicle Accident incidents. The Emergency Reporting records management system was used to extract response performance data for analysis.

Motor Vehicle Accident

Resources:	1 Engine or Truck, 1 Ambulance, 1 Command Vehicle
Process / Turnout:	Reporting time for 1st apparatus
ERF:	Minimum 6 personnel
	Report time for all apparatus to arrive on scene
Inclusion Criteria:	1st due unit is an Engine or Truck or Ambulance
NFIRS Codes:	322, 323, 324

Moderate and High MVA - 90th Percentile Times - Baseline Performance			2017-2021	2021	2020	2019	2018	2017	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	3:13	4:06	3:26	3:26	3:27	0:54	1:30
		Rural	3:44	3:32	3:42	4:14	3:51	1:23	1:30
Turnout Time	Turnout Time 1st Unit	Urban	1:50	1:47	1:41	1:22	1:52	2:06	1:20
		Rural	1:51	1:33	1:57	1:36	1:53	2:19	1:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	6:04	5:41	6:05	5:56	5:51	6:59	3:59
		Rural	9:30	9:19	9:48	9:58	8:45	9:45	6:59
	Travel Time ERF **Concentration**	Urban	10:07	10:24	8:58	10:26	9:16	9:48	6:59
		Rural	13:12	14:30	12:11	14:46	11:51	12:09	10:59
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	7:13	6:54	7:20	6:49	7:00	8:13	6:49
			n=590	n=122	n=86	n=129	n=100	n=153	
		Rural	10:47	10:43	11:04	10:58	10:05	11:24	9:49
			n=387	n=78	n=58	n=79	n=105	n=67	
	Total Response Time ERF **Concentration**	Urban	11:08	11:19	9:58	12:34	10:17	10:49	9:49
			n=393	n=83	n=60	n=90	n=75	n=85	
		Rural	14:26	14:37	12:05	15:50	12:52	13:51	13:49
			n=285	n=59	n=42	n=55	n=78	n=51	

Hazardous Materials Incidents

Hazardous Materials (HAZMAT) incidents range in complexity from a small spill that can be handled by a single engine company, to large-scale and highly complex incidents that involve numerous mutual aid partners. WSFR's goal is to provide personnel and equipment capable of mitigating smaller scale incidents with a group of personnel trained to the Hazardous Materials Operations level. These personnel are expected to initiate defensive actions to prevent the spread of contamination beyond an initial containment zone. WSFR personnel do not routinely perform offensive hazardous materials mitigation activities.

Low-Risk Hazardous Materials Incidents

WSFR defines a Low-Risk Hazardous Materials incident as one that can be controlled by a single Engine company trained to the Hazardous Materials Operations Level, such as a small fuel spill. The incident will not require evacuation beyond one involved building, is confined to a small area, and poses no threat to life. A Low-Risk HAZMAT incident is identified by both the size of the affected area and the material released.

The following table provides the Effective Response Force (ERF) and associated Critical Tasks for the initial Low-Risk Hazardous Materials response.

Low-Risk Hazardous Materials		
APPARATUS	**STAFFING**	**CRITICAL TASK DESCRIPTION**
Engine or Truck	Officer	Establish Incident Command Scene size-up Develop incident action plan Initial Safety Officer
	Engineer	Mitigate incident as directed
	Firefighter	
ERF = 1 unit with	**3 personnel**	**To perform 5 critical tasks**

Low-Risk Hazardous Materials: Baseline Performance

The following information contains response data from all Low-Risk Hazardous Materials incidents to which WSFR responded during the period from January 1, 2017, through December 31, 2021. During this period agency responded to a total 325 Low-Risk HAZMAT incidents in all response zones and both the urban and rural response areas.

For 90 percent of all Low-Risk Hazardous Materials incidents, the total response time for the first due apparatus, staffed with at least one (1) Officer, one (1) Engineer, and one (1) Firefighter, all certified at the Hazardous Materials Operations level, was: 11 minutes and 19 seconds in the urban response area, and 13 minutes and 56 seconds in the rural response area. The first due apparatus was capable of establishing incident command, performing a scene size-up to include a 360-degree scene survey, and providing a basic complement of operations-level hazardous materials equipment to include absorbent materials, four-gas air monitoring equipment, Class B foam, and small plug and patch kits, and mitigating the incident.

For 90 percent of all Low-Risk Hazardous Materials incidents, the total response time for the arrival of the effective response force (ERF), staffed with one (1) Officer, one (1) Engineer, and one (1) Firefighter, all certified at the Hazardous Materials Operations level, was: 11 minutes and 19 seconds in the urban response area, and 14 minutes and 20 seconds in the rural response area. The first due apparatus was capable of establishing incident command, performing a scene size-up to include a 360-degree scene survey, and providing a basic complement of operations-level hazardous materials equipment to include absorbent

materials, four-gas air monitoring equipment, Class B foam, and small plug and patch kits, and mitigating the incident.

Low-Risk Hazardous Materials: Performance Benchmarks

For 90 percent of all Low-Risk Hazardous Materials incidents, the total response time for the first due apparatus, staffed with at least one (1) Officer, one (1) Engineer, and one (1) Firefighter, all certified at the Hazardous Materials Operations level, shall be: 7 minutes and 49 seconds in the urban response area and 11 minutes and 49 seconds in the rural response area. The first due apparatus shall be capable of establishing incident command, performing a scene size-up to include a 360-degree scene survey, providing a basic complement of operations-level hazardous materials equipment to include absorbent materials, four-gas air monitoring equipment, Class B foam, and mitigating the incident.

For 90 percent of all Low-Risk Hazardous Materials incidents, the total response time for the arrival of the effective response force (ERF), staffed with one (1) Officer, one (1) Engineer, and one (1) Firefighter, all certified at the Hazardous Materials Operations level, shall be 7 minutes and 49 seconds in the urban response area, and 11 minutes and 49 seconds in the rural response area. The ERF shall be capable of establishing incident command, performing a scene size-up to include a 360-degree scene survey, providing a basic complement of operations-level hazardous materials equipment to include absorbent materials, four-gas air monitoring equipment, Class B foam, and mitigating the incident.

Low-Risk Hazardous Materials Standards of Cover Calculations Methodology

The following lists describe the methods used to develop first due and ERF calculations for incidents evaluated for Low-Risk HAZMAT incidents. The Emergency Reporting records management system was used to extract response performance data for analysis.

Low Risk Hazardous Materials

Resources:	1 Engine or Truck
Process /Turnout:	Reporting time for 1st apparatus
ERF:	Minimum 3 personnel
	Reporting time for all apparatus to arrive on scene

NFIRS Codes: 411, 412, 413, 421, 422, 424

Low Risk Hazmat - 90th Percentile Times - Baseline Performance			2017-2021	2021	2020	2019	2018	2017	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	3:21	3:13	3:24	3:28	3:46	1:05	1:30
		Rural	4:22	4:59	5:50	3:55	2:59	2:31	1:30
Turnout Time	Turnout Time 1st Unit	Urban	2:19	2:06	2:08	2:27	2:20	2:24	1:20
		Rural	2:13	1:31	0:41	2:34	2:15	2:01	1:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	9:27	9:18	9:32	9:36	8:48	9:06	4:59
		Rural	12:23	10:29	11:05	13:16	11:25	12:15	8:59
	Travel Time ERF **Concentration**	Urban	9:27	9:18	9:32	9:36	8:48	9:06	6:59
		Rural	12:21	10:40	8:45	13:16	11:25	12:15	10:59
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	11:19	10:53	11:30	11:43	10:24	10:55	7:49
			n=288	n=80	n=67	n=59	n=51	n=31	
		Rural	13:56	11:56	11:24	15:31	12:36	13:38	11:49
			n=37	n=7	n=4	n=10	n=10	n=6	
	Total Response Time ERF **Concentration**	Urban	11:19	10:53	11:30	11:43	10:24	10:55	7:49
			n=288	n=80	n=67	n=59	n=51	n=31	
		Rural	14:20	12:08	9:30	15:31	12:36	13:38	11:49
			n=35	n=6	n=3	n=10	n=10	n=6	

Moderate Risk Hazardous Materials Incidents

Larger spills or affected areas that require an upgraded HAZMAT response are defined as a moderate risk. The incident may pose a threat to life and/or property. The upgraded response includes a second Engine and the Heavy Rescue to support and/or backup an entry team working at the Hazardous Materials Operations Level. The second due Engine will split its crew to accommodate the delivery of the Heavy Rescue to the scene for additional HAZMAT tools and equipment.

The following table provides the Effective Response Force (ERF) and associated Critical Tasks for the initial Moderate Risk HAZMAT response.

Moderate Risk Hazardous Materials		
APPARATUS	**STAFFING**	**CRITICAL TASK DESCRIPTION**
Engine or Truck	Officer	Establish Incident Command Scene size-up Develop incident action plan Join entry team
	Engineer	Establish safety zones/site access control
	Firefighter	Entry/mitigation as appropriate
Second Due Engine	Officer	Safety Officer
	Engineer	Support to entry team/ air monitoring
Heavy Rescue	Firefighter	Deliver HAZMAT tools/equipment to the scene
Command Vehicle	Battalion Chief	Upgrade Incident Command and Safety
ERF = 4 units with	**7 personnel**	**To perform 10 critical tasks**

Moderate Risk Hazardous Materials: Baseline Performance

The following information contains response data from all Moderate Risk Hazardous Materials incidents to which WSFR responded during the period from January 1, 2017, through December 31, 2021. During this period, the agency responded to a total of 26 Moderate Risk Hazardous Materials incidents in all response areas and both the rural and urban areas. Given the low volume of data, the agency was not able to determine a performance baseline based on historical data. Instead, the agency reviews each Moderate Risk Hazardous Materials incident as they occur to identify areas for improvement.

Moderate Risk Hazardous Materials: Performance Benchmarks

For 90 percent of all Moderate Risk Hazardous Materials incidents, the total response time for the first due apparatus, staffed with at least one (1) Officer, one (1) Engineer, and one (1) Firefighter, all certified at the Hazardous Materials Operations level, shall be: 7 minutes and 49 seconds in the urban response area and 11 minutes and 49 seconds in the rural response area. The first due apparatus shall be capable of establishing incident command, performing a scene size-up to include a 360-degree scene survey, providing a basic complement of operations-level hazardous materials equipment to include absorbent materials, four-gas air monitoring equipment, Class B foam, making entry and mitigating the incident as appropriate.

For 90 percent of all Moderate Risk Hazardous Materials incidents, the total response time for the arrival of the effective response force (ERF), staffed with two (2) Officers, two (2) Engineers, two (1) Firefighters, and one (1) Battalion Chief, all certified at the Hazardous Materials Operations level, shall be 14 minutes and 49 seconds in the urban response area, and 18 minutes and 49 seconds in the rural response area. The ERF shall be capable of establishing incident command, performing a scene size-up to include a 360-degree scene survey, providing a basic complement of operations-level hazardous materials equipment to include absorbent materials, four-gas air monitoring equipment, Class B foam, and making entry and mitigating the incident as appropriate.

Moderate Risk Hazardous Materials Standards of Cover Calculations Methodology

The following lists describe the methods used to develop first due and ERF calculations for incidents evaluated for Moderate Risk Hazardous Materials incidents. The Emergency Reporting records management system was used to extract response performance data for analysis.

Moderate Risk Hazardous Materials

Resources: 2 Engines (or 1 Truck in place of 1 Engine), 1 Heavy Rescue, 1 Command Vehicle

Process /Turnout: Reporting time for 1st apparatus

ERF: Minimum 7 personnel
Reporting time for all apparatus to arrive on scene

Inclusion: First due apparatus is an Engine or Truck

NFIRS Codes: 411, 412, 413, 421, 422, 451

Moderate Risk Hazmat - 90th Percentile Times - Baseline Performance			2017-2021	2021	2020	2019	2018	2017	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	2:13	N/A	1:57	2:08	3:35	0:47	1:30
		Rural	1:27	N/A	N/A	N/A	N/A	1:27	1:30
Turnout Time	Turnout Time 1st Unit	Urban	2:57	N/A	1:40	1:43	1:58	3:43	1:20
		Rural	2:24	N/A	N/A	N/A	N/A	2:24	1:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	7:43	N/A	2:20	4:14	7:37	7:46	4:59
		Rural	10:35	N/A	N/A	N/A	N/A	10:35	8:59
	Travel Time ERF **Concentration**	Urban	11:06	N/A	10:00	0:00	9:25	11:30	11:59
		Rural	14:25	N/A	N/A	N/A	N/A	14:25	15:59
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	10:28	N/A	4:00	5:57	9:35	11:19	7:49
			n=17	n=0	n=1	n=2	n=2	n=12	
		Rural	12:33	N/A	N/A	N/A	N/A	12:33	11:49
			n=9	n=0	n=0	n=0	n=0	n=9	
	Total Response Time ERF **Concentration**	Urban	13:50	N/A	14:00	0:00	10:11	12:45	14:49
			n=12	n=0	n=1	n=0	n=1	n=10	
		Rural	16:03	N/A	N/A	N/A	N/A	16:03	18:49
			n=6	n=0	n=0	n=0	n=0	n=6	

High-Risk Hazardous Materials Incidents

HAZMAT incidents that involve a severe hazard or a large area which pose an extreme threat to life and property are considered high risk. High-Risk incidents require the assistance of a specialized HAZMAT team. WSFR will request assistance from the appropriate Designated Emergency Response Authority (DERA). Additionally, high-risk incidents may require notification and involvement from both State and Federal agencies. A High-Risk Hazardous Materials incident adds the third Engine to the WSFR response plan. The additional personnel will be used to help provide additional support, fire protection, and/or assistance to other agencies that have responded.

The following table provides the Effective Response Force (ERF) and associated Critical Tasks for the initial High-Risk HAZMAT response.

High-Risk Hazardous Materials		
APPARATUS	**STAFFING**	**CRITICAL TASK DESCRIPTION**
First Due Engine or Truck	Officer	Establish Incident Command Scene size-up Develop incident action plan Join the entry team if applicable
	Engineer	Establish safety zones/site access control
	Firefighter	Entry/mitigation as appropriate
Second Due Engine	Officer	Safety Officer
	Engineer	Support entry team/air monitoring
Heavy Rescue	Firefighter	Deliver HAZMAT tools/equipment to the scene
Third Due Engine	Officer	Establish safety procedures/Assist DERA Assist DERA/Support/Fire protection
	Engineer	
	Firefighter	
Battalion Chief	Battalion Chief	Upgrade Incident Command and Safety Request DERA
ERF = 5 Units with	**10 personnel**	**To perform 11 Critical Tasks**

High-Risk Hazardous Materials: Baseline Performance

The following information contains response data from all High-Risk Hazardous Materials incidents to which WSFR responded during the period from January 1, 2017, through December 31, 2021. During this period the agency responded to a total of 0 High-Risk Hazardous Materials incidents in all response zones and both the urban and rural areas. Given the low volume of data, the agency was not able to determine a performance baseline based on

historical data. Instead, the agency reviews each High-Risk Hazardous Materials incident as they occur to identify areas for improvement.

High-Risk Hazardous Materials: Performance Benchmarks

For 90 percent of all High-Risk Hazardous Materials incidents, the total response time for the first due apparatus, staffed with at least one (1) Officer, one (1) Engineer, and one (1) Firefighter, all certified at the Hazardous Materials Operations level, shall be: 9 minutes and 49 seconds in the urban response area and 14 minutes and 49 seconds in the rural response area. The first due apparatus shall be capable of establishing incident command, performing a scene size-up to include a 360-degree scene survey, isolating and establishing safety zones, and making initial entry if appropriate.

For 90 percent of all High-Risk Hazardous Materials incidents, the total response time for the arrival of the effective response force (ERF), staffed with three (3) Officers, three (3) Engineers, three (3) Firefighters, and one (1) Battalion Chief, all certified at the Hazardous Materials Operations level, shall be 19 minutes and 49 seconds in the urban response area, and 24 minutes and 49 seconds in the rural response area. The ERF shall be capable of completing all first due apparatus responsibilities, providing a dedicated incident commander and Safety Officer, requesting additional resources, providing backup to the entry team, and assisting the DERA.

High-Risk Hazardous Materials Standards of Cover Calculations Methodology

The following lists describe the methods used to develop first due and ERF calculations for incidents evaluated for High-Risk Hazardous Materials incidents. The Emergency Reporting records management system was used to extract response performance data for analysis.

High-Risk Hazardous Materials

Resources:	3 Engines (or 1 Truck in place of 1 Engine), 1 Heavy Rescue, 1 Command Vehicle
Process /Turnout:	Reporting time for 1st apparatus
ERF:	Minimum 12 personnel Reporting time for all apparatus to arrive on scene
Inclusion:	First apparatus is an Engine or Truck
NFIRS Codes:	411, 412, 413, 421, 422, 451

High Risk Hazmat - 90th Percentile Times - Baseline Performance			2017-2021	2021	2020	2019	2018	2017	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	N/A	N/A	N/A	N/A	N/A	N/A	1:30
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	1:30
Turnout Time	Turnout Time 1st Unit	Urban	N/A	N/A	N/A	N/A	N/A	N/A	1:20
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	1:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	4:59
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	8:59
	Travel Time ERF **Concentration**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	16:59
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	21:59
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	7:49
			n=0	n=0	n=0	n=0	n=0	n=0	
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	11:49
			n=0	n=0	n=0	n=0	n=0	n=0	
	Total Response Time ERF **Concentration**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	19:49
			n=0	n=0	n=0	n=0	n=0	n=0	
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	24:49
			n=0	n=0	n=0	n=0	n=0	n=0	

Technical Rescue Incidents

There is a wide range of technical rescue incidents which could reasonably be expected to occur within the District. WSFR is staffed and equipped to provide an initial response to assess and stabilize the incidents that are most likely to occur. Incidents that could be expected to exceed a first alarm incident or necessitate Technician-level expertise in a technical rescue discipline will be upgraded through mutual aid requests by the Incident Commander.

The most common type of technical rescue incident that WSFR responds to is motor vehicle accidents with a party trapped and needing to be extricated. The response for this type of incident is two (2) Engines or one (1) Truck in place of one (1) Engine), one (1) Ambulance, and one (1) Command Vehicle. The first due truck and all Engines carry a complement of extrication equipment, and all WSFR personnel are trained on the use of the equipment and procedures for removing a trapped party.

The following table provides the Effective Response Force (ERF) and associated Critical Tasks for an initial Technical Rescue Extrication response.

Technical Rescue Extrication (Motor vehicle accident or other equipment)		
APPARATUS	**STAFFING**	**CRITICAL TASK DESCRIPTION**
First Due Engine or Truck	Officer	Establish Incident Command Scene size-up Develop incident action plan Initial Safety Officer
	Engineer	Prepare/position extrication equipment
	Firefighter	Patient assessment
Second Due Engine	Officer	Extrication Boss
	Engineer	Operates extrication equipment
	Firefighter	Operates/assists with extrication
Ambulance	Paramedic	Patient assessment, treatment, and transport
	EMT	
Command Vehicle	Battalion Chief	Upgrade Incident Command and Safety
ERF = 4 Units with	**9 personnel**	**To perform 9 Critical Tasks**

Technical Rescue Extrication: Baseline Performance

The following information contains response data from all extrication incidents to which WSFR responded during the period from January 1, 2017, through December 31, 2021. During this period, the agency responded to a total of 28 extrication incidents in all response

zones and both the urban and rural areas. Given the low volume of data, the agency was not able to determine a performance baseline based on historical data. Instead, the agency reviews each technical rescue extrication incident as they occur to identify areas for improvement.

Technical Rescue Extrication: Performance Benchmarks

For 90 percent of all technical rescue extrication incidents, the total response time for the first due apparatus, staffed with at least one (1) Officer, one (1) Engineer, and one (1) Firefighter shall be 7 minutes and 49 seconds in the urban response area and 9 minutes and 49 seconds in the rural response area. The first due apparatus shall be capable of establishing incident command, performing a scene size-up, preparing extrication equipment, and assessing patients.

For 90 percent of all technical rescue extrication incidents, the total response time for the arrival of the effective response force (ERF), staffed with two (2) Officers, two (2) Engineers, two (2) Firefighters, one (1) EMT, one (1) Paramedic, and one (1) Battalion Chief shall be 11 minutes and 49 seconds in the urban response area, and 13 minutes and 49 seconds in the rural response area. The ERF shall be capable of completing all first-due apparatus responsibilities, providing a dedicated command Officer, extricating the patient, providing advanced life support (ALS) care, and initiating ambulance transportation to a hospital.

Technical Rescue Extrication Standards of Cover Calculations Methodology

The following lists describe the methods used to develop first due and ERF calculations for incidents evaluated for Extrication incidents. The Emergency Reporting records management system was used to extract response performance data for analysis.

Technical Rescue Extrication

Resources:	2 Engines (or 1 Truck in place of 1 Engine), 1 Ambulance, 1 Command Vehicle
Process /Turnout:	Reporting time for 1st apparatus
ERF:	Minimum 9 personnel

	Reporting time for all apparatus to arrive on scene
Inclusion:	First apparatus is an Engine or Truck
NFIRS Codes:	352, 357

Extrication Tech Rescue - 90th Percentile Times - Baseline Performance			2017-2021	2021	2020	2019	2018	2017	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	2:31	2:45	2:08	1:59	2:14	N/A	1:30
		Rural	2:53	3:14	2:20	1:50	2:38	N/A	1:30
Turnout Time	Turnout Time 1st Unit	Urban	1:36	1:33	1:33	0:49	1:51	N/A	1:20
		Rural	1:32	1:35	1:19	1:15	0:52	N/A	1:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	6:12	6:37	5:29	1:38	3:37	N/A	4:59
		Rural	8:59	7:58	5:35	9:01	9:00	N/A	6:59
	Travel Time ERF **Concentration**	Urban	8:52	7:31	10:37	6:33	5:06	N/A	8:59
		Rural	11:44	10:14	9:46	11:59	11:17	N/A	10:59
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	7:24	8:00	6:50	2:27	3:53	N/A	7:49
			n=15	n=5	n=5	n=1	n=4	n=0	
		Rural	9:50	9:21	6:29	10:11	9:52	N/A	9:49
			n=13	n=6	n=2	n=4	n=1	n=0	
	Total Response Time ERF **Concentration**	Urban	10:01	8:09	11:31	6:56	5:52	N/A	11:49
			n=12	n=5	n=3	n=1	n=3	n=0	
		Rural	13:10	11:40	10:29	12:52	11:17	N/A	13:49
			n=12	n=6	n=1	n=4	n=1	n=0	

Technical Water Rescue

Water rescue incidents can pose an immediate risk to life and are considered a high-risk, low probability incidents. Due to the high risk, a multiple company response is required. Depending on the type or location of the water emergency, the Officer of the second due Engine may split his/her crew to transport the boat and dive equipment to the scene. Qualified on-duty administrative personnel and/or personnel responding to a shift recall may assist in staffing other apparatus as needed. If an incident type can reasonably be expected to exceed the capabilities of WSFR's staffing capabilities, the Battalion Chief will request additional resources from surrounding mutual aid providers.

The following table provides the Effective Response Force (ERF) and associated Critical Tasks for the initial Water Rescue response.

Technical Water Rescue		
APPARATUS	**STAFFING**	**CRITICAL TASK DESCRIPTION**
First Due Engine or Truck	Officer	Establish Incident Command Scene size-up Develop incident action plan Initial Safety Officer
	Engineer	Conduct witness interviews and triangulation
	Firefighter	Prepare/position rescue equipment/Throw bag rescuer
Second Due Engine split with Boat*	Officer	Rescue Group Supervisor (or first arriving Dive team member)
	Engineer	Don rescue equipment/ Prepare for rescue or recovery
	Firefighter	Deliver boat to the scene/Support rescuer
Third Due Engine	Officer	Shore Support
	Engineer	Downstream safety
	Firefighter	Assist with boat deployment/Shore support/Line tender
Ambulance	Paramedic	Patient assessment, care, and transport
	EMT	
Command Vehicle	Battalion Chief	Upgrade Incident Command and Safety
*Boat as needed for static or swift water rescue		
ERF = 5/6* Units with	**12 personnel**	**To perform 14 Critical Tasks**

Technical Water Rescue: Baseline Performance

The following information contains response data from all technical water rescue incidents to which WSFR responded during the period from January 1, 2017, through December 31, 2021. During this period the agency responded to a total of 1 technical water rescue incident in all response zone and both urban and rural areas. Given the low volume of data, the agency was not able to determine a performance baseline based on historical data. Instead, the agency reviews each technical water rescue incident as they occur to identify areas for improvement.

Technical Water Rescue: Performance Benchmarks

For 90 percent of all technical water rescue extrication incidents, the total response time for the first due apparatus, staffed with at least one (1) Officer, one (1) Engineer, and one (1) Firefighter, shall be 7 minutes and 49 seconds in the urban response area and 11 minutes and 49 seconds in the rural response area. The first due apparatus shall be capable of establishing incident command, performing a scene size-up, developing the IAP, interviewing witnesses, and preparing rescue equipment.

For 90 percent of all technical water rescue extrication incidents, the total response time for the arrival of the effective response force (ERF), staffed with three (3) Officers, three

(3) Engineers, three (3) Firefighters, one (1) Paramedic, one (1) EMT, and one (1) Battalion Chief shall be 14 minutes and 49 seconds in the urban response area, and 18 minutes and 49 seconds in the rural response area. The ERF shall be capable of completing all first-due apparatus responsibilities, providing a dedicated command Officer, deploying a rescue boat or water rescue ropes, establishing a dedicated group supervisor, as well as providing advanced life support (ALS) care, and initiating ambulance transportation to a hospital.

Technical Water Rescue Standards of Cover Calculations Methodology

The following lists describe the methods used to develop first due and ERF calculations for incidents evaluated for Water Rescue incidents. The Emergency Reporting records management system was used to extract response performance data for analysis.

Technical Water Rescue

Resources:	3 Engines (or 1 Truck in place of 1 Engine), 1 Ambulance, 1 Command Vehicle
Process /Turnout:	Reporting time for 1st apparatus
ERF:	Minimum 12 personnel Reporting time for all apparatus to arrive on scene
Inclusion:	First apparatus is an Engine or Truck
NFIRS Codes:	361, 362, 363

Water Tech Rescue - 90th Percentile Times - Baseline Performance			2017-2021	2021	2020	2019	2018	2017	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	N/A	N/A	N/A	N/A	N/A	N/A	1:30
		Rural	1:31	1:31	N/A	N/A	N/A	N/A	1:30
Turnout Time	Turnout Time 1st Unit	Urban	N/A	N/A	N/A	N/A	N/A	N/A	1:20
		Rural	1:18	1:18	N/A	N/A	N/A	N/A	1:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	4:59
		Rural	3:48	3:48	N/A	N/A	N/A	N/A	8:59
	Travel Time ERF **Concentration**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	11:59
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	15:59
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	7:49
			n=0	n=0	n=0	n=0	n=0	n=0	
		Rural	5:06	5:06	N/A	N/A	N/A	N/A	11:49
			n=1	n=1	n=0	n=0	n=0	n=0	
	Total Response Time ERF **Concentration**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	14:49
			n=0	n=0	n=0	n=0	n=0	n=0	
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	18:49
			n=0	n=0	n=0	n=0	n=0	n=0	

Technical Confined Space Rescue

Technical confined space rescue incidents can pose an immediate risk to life and are considered a high-risk, low probability incidents. Due to the high risk, a multiple company response is required. Additionally, the Officer of the second due Engine may split his/her crew to transport the Heavy Rescue to the scene. Qualified on-duty administrative personnel and/or personnel responding to a shift recall may assist in staffing other apparatus as needed. WSFR's response includes the necessary equipment and personnel to assess and stabilize a Technical Confined Space Rescue but may rely on a mutual aid technical team to mitigate the incident if necessary.

The following table provides the Effective Response Force (ERF) and associated Critical Tasks for the initial Confined Space Rescue response.

Technical Confined Space Rescue		
APPARATUS	**STAFFING**	**CRITICAL TASK DESCRIPTION**
First Due Engine	Officer	Establish Incident Command Scene size-up Develop incident action plan Initial Safety Officer
	Engineer	Identify/contact patient/gather witness statements
	Firefighter	Atmospheric monitoring/Perform rescue if appropriate
Truck	Officer	Rescue Group Supervisor
	Engineer	Establish safety zones/site access control
	Firefighter	Prepare/position rescue equipment
Second Due Engine	Officer	Support SOT or HAZMAT
	Engineer	Secure Utilities/Lock Out-Tag Out/Support SOT or HAZMAT
Heavy Rescue	Firefighter	Deliver Heavy Rescue to scene/Support SOT or HAZMAT
Ambulance	Paramedic	Patient assessment, treatment, and transport
	EMT	
Command Vehicle	Battalion Chief	Upgrade Incident Command and Safety Request mutual aid Special Operations Team/HAZMAT Team
ERF = 6 Units with	**12 personnel**	**To perform 16 Critical Tasks**

Technical Confined Space Rescue: Baseline Performance

The following information contains response data from all technical confined space rescue incidents to which WSFR responded during the period from January 1, 2017, through December 31, 2021. During this period, the agency responded to a total of 0 technical confined space rescue incidents in all response zones and both urban and rural areas. Given the low volume of data, the agency was not able to determine a performance baseline based on historical data. Instead, the agency reviews each technical confined space rescue incident as they occur to identify areas for improvements.

Technical Confined Space Rescue: Performance Benchmarks

For 90 percent of all technical confined space rescue incidents, the total response time for the first due apparatus, staffed with at least one (1) Officer, one (1) Engineer, and one (1) Firefighter, shall be 7 minutes and 49 seconds in the urban response area and 11 minutes and 49 seconds in the rural response area. The first due apparatus shall be capable of establishing incident command, performing a scene size-up, securing the scene, attempting to contact the patient, beginning to monitor the atmosphere/ventilation needs, and performing a rescue if appropriate to do so.

For 90 percent of all technical rescue confined space incidents, the total response time for the arrival of the effective response force (ERF), staffed with three (3) Officers, three (3) Engineers, three (3) Firefighters, one (1) Paramedic, one (1) EMT, and one (1) Battalion Chief shall be 14 minutes and 49 seconds in the urban response area, and 18 minutes and 49 seconds in the rural response area. The ERF shall be capable of completing all first-due apparatus responsibilities, providing a dedicated command Officer, gathering appropriate equipment, securing utilities, designating a Rescue Group Supervisor, supporting mutual aid Special Operations and/or HAZMAT teams, providing advanced life support (ALS) care, and initiating ambulance transportation to a hospital.

Technical Confined Space Standards of Cover Calculations Methodology

The following lists describe the methods used to develop first due and ERF calculations for incidents evaluated for Confined Space incidents. The Emergency Reporting records management system was used to extract response performance data for analysis.

Technical Confined Space Rescue

Resources:	1 Truck, 2 Engines, 1 Ambulance, 1 Command Vehicle
Process /Turnout:	Reporting time for 1st apparatus
ERF:	Minimum 12 personnel
	Reporting time for all apparatus to arrive on scene
Inclusion:	First apparatus is an Engine or Truck
NFIRS Codes:	355

Confined Space Rescue - 90th Percentile Times - Baseline Performance			2017-2021	2021	2020	2019	2018	2017	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	N/A	N/A	N/A	N/A	N/A	N/A	1:30
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	1:30
Turnout Time	Turnout Time 1st Unit	Urban	N/A	N/A	N/A	N/A	N/A	N/A	1:20
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	1:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	4:59
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	8:59
	Travel Time ERF **Concentration**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	11:59
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	15:59
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	7:49
			n=0	n=0	n=0	n=0	n=0	n=0	
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	11:49
			n=0	n=0	n=0	n=0	n=0	n=0	
	Total Response Time ERF **Concentration**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	14:49
			n=0	n=0	n=0	n=0	n=0	n=0	
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	18:49
			n=0	n=0	n=0	n=0	n=0	n=0	

Technical Trench Rescue

Technical trench rescue incidents can pose an immediate risk to life and are considered a high-risk, low probability incident. Due to the high risk, a multiple company response is required. Additionally, the Officer of the second due Engine may split his/her crew to transport the Heavy Rescue to the scene. Qualified on-duty administrative personnel and/or personnel responding to a shift recall may assist in staffing other apparatus as needed. WSFR's response includes the necessary equipment and personnel to assess and stabilize a Technical Trench Rescue but may rely on a mutual aid technical team to mitigate the incident if necessary.

The following table provides the Effective Response Force (ERF) and associated Critical Tasks for the initial Trench Rescue response.

Technical Trench Rescue		
APPARATUS	**STAFFING**	**CRITICAL TASK DESCRIPTION**
First Due Engine	Officer	Establish Incident Command Scene size-up Develop incident action plan Initial Safety Officer
	Engineer	Identify/contact patient/gather witness statements
	Firefighter	Recon hazards/Site survey
Truck	Officer	Rescue Group Supervisor (if cert.)/Site Access Control Officer
	Engineer	Establish safety zones/Support for Site Access Control Officer
	Firefighter	Mitigate scene hazards/Support SOT
Second Due Engine	Officer	Staging Officer
	Engineer	Assist in mitigating scene hazards/Support SOT
Heavy Rescue	Firefighter	Deliver Heavy Rescue to scene/Support SOT
Ambulance	Paramedic	Patient assessment, treatment, and transport
	EMT	
Command Vehicle	Battalion Chief	Upgrade Incident Command and Safety Request mutual aid Special Operations Team
ERF = 6 Units with	**12 personnel**	**To perform 15 Critical Tasks**

Technical Trench Rescue: Baseline Performance

The following information contains response data from all Technical Trench Rescue incidents to which WSFR responded during the period from January 1, 2017, through December 31, 2021. During this period, the agency responded to a total of 1 technical trench rescue incident in all response zones and both the urban and rural areas. Given the low volume of data, the agency was not able to determine a performance baseline based on historical data. Instead, the agency reviews each technical trench rescue incident as they occur to identify areas for improvement.

Technical Trench Rescue: Performance Benchmarks

For 90 percent of all technical trench rescue incidents, the total response time for the first due apparatus, staffed with at least one (1) Officer, one (1) Engineer, and one (1) Firefighter shall be 7 minutes and 49 seconds in the urban response area and 11 minutes and 49 seconds in the rural response area. The first due apparatus shall be capable of establishing

incident command, performing a scene size-up, securing the scene, obtaining patient information, and assessing scene hazards.

For 90 percent of all technical trench rescue incidents, the total response time for the arrival of the effective response force (ERF), staffed with three (3) Officers, three (3) Engineers, three (3) Firefighters, one (1) Paramedic, one (1) EMT, and one (1) Battalion Chief shall be 14 minutes and 49 seconds in the urban response area, and 18 minutes and 49 seconds in the rural response area. The ERF shall be capable of completing all first-due apparatus responsibilities, providing a dedicated command Officer, identifying special equipment or personnel needs, securing scene hazards, establishing staging areas, providing advanced life support (ALS) care, and initiating ambulance transportation to a hospital.

Technical Trench Rescue Standards of Cover Calculations Methodology

The following lists describe the methods used to develop first due and ERF calculations for incidents evaluated for Trench Rescue incidents. The Emergency Reporting records management system was used to extract response performance data for analysis.

Technical Trench Rescue

Resources:	1 Truck, 2 Engines, 1 Ambulance, 1 Command Vehicle
Process /Turnout:	Reporting time for 1st apparatus
ERF:	Minimum 12 personnel
	Reporting time for all apparatus to arrive on scene
Inclusion:	First apparatus is an Engine or Truck
NFIRS Codes:	354

Trench Tech Rescue - 90th Percentile Times - Baseline Performance			2017-2021	2021	2020	2019	2018	2017	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	1:34	N/A	N/A	1:34	N/A	N/A	1:30
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	1:30
Turnout Time	Turnout Time 1st Unit	Urban	0:00	N/A	N/A	0:00	N/A	N/A	1:00
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	1:00
Travel Time	Travel Time 1st Unit **Distribution**	Urban	5:40	N/A	N/A	5:40	N/A	N/A	4:59
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	8:59
	Travel Time ERF **Concentration**	Urban	8:13	N/A	N/A	8:13	N/A	N/A	11:59
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	15:59
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	5:40	N/A	N/A	5:40	N/A	N/A	7:49
			n=1	n=0	n=0	n=1	n=0	n=0	
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	11:49
			n=0	n=0	n=0	n=0	n=0	n=0	
	Total Response Time ERF **Concentration**	Urban	9:13	N/A	N/A	9:13	N/A	N/A	14:49
			n=1	n=0	n=0	n=1	n=0	n=0	
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	18:49
			n=0	n=0	n=0	n=0	n=0	n=0	

Technical Structural Collapse Rescue

Technical structural collapse rescue incidents can pose an immediate risk to life and are considered a high-risk, low probability incident. Due to the high risk, a multiple company response is required. Additionally, the Officer of the second due Engine may split his/her crew to transport the Heavy Rescue to the scene. Qualified on-duty administrative personnel and/or personnel responding to a shift recall may assist in staffing other apparatus as needed. WSFR's response includes the necessary equipment and personnel to assess and stabilize a Technical Structural Collapse Rescue but may rely on a mutual aid technical team to mitigate the incident if necessary.

The following table provides the Effective Response Force (ERF) and associated Critical Tasks for the initial Structural Collapse response.

Technical Structural Collapse Rescue		
APPARATUS	**STAFFING**	**CRITICAL TASK DESCRIPTION**
First Due Engine	Officer	Establish Incident Command Scene size-up Develop incident action plan Initial Safety Officer
	Engineer	Identify/contact patient/gather witness statements
	Firefighter	Secure the site/Recon hazards
Truck	Officer	Rescue Group Supervisor (if cert.) or Site Access Control Officer
	Engineer	Establish safety zones/Support for Site Access Control Officer

	Firefighter	Secure utilities/Mitigate scene hazards/Support SOT
Second Due Engine	Officer	Staging Officer
	Engineer	Assist in mitigating scene hazards/Support SOT
Heavy Rescue	Firefighter	Deliver Heavy Rescue to scene/Support SOT
Ambulance	Paramedic	Patient assessment, treatment, and transport
	EMT	
Command Vehicle	Battalion Chief	Upgrade Incident Command and Safety Request mutual aid Special Operations Team
ERF = 6 Units with	**12 personnel**	**To perform 16 Critical Tasks**

Technical Structural Collapse Rescue: Baseline Performance

The following information contains response data from all technical structural collapse rescue incidents to which WSFR responded during the period from January 1, 2017, through December 31, 2021. During this period, the agency responded to a total of 1 technical structural collapse rescue incidents in all response zones and both the urban and rural areas. Given the low volume of data, the agency was not able to determine a performance baseline based on historical data. Instead, the agency reviews each technical structural collapse rescue incident as they occur to identify areas for improvements.

Technical Structural Collapse Rescue: Performance Benchmarks

For 90 percent of all technical structural collapse rescue incidents, the total response time for the first due apparatus, staffed with at least one (1) Officer, one (1) Engineer, and one (1) Firefighter, shall be 7 minutes and 49 seconds in the urban response area and 11 minutes and 49 seconds in the rural response area. The first due apparatus shall be capable of establishing incident command, performing a scene size-up, developing an initial incident action plan, attempting to contact the patient(s), obtaining witness statements, identifying hazards, and securing the scene.

For 90 percent of all technical structural collapse rescue incidents, the total response time for the arrival of the effective response force (ERF), staffed with three (3) Officers, three (3) Engineers, three (3) Firefighters, one (1) EMT, one (1) Paramedic, and one (1) Battalion Chief, shall be 14 minutes and 49 seconds in the urban response area, and 18 minutes and 49 seconds in the rural response area. The ERF shall be capable of completing all first-due apparatus responsibilities, providing a dedicated command Officer, identifying the need for

specialty equipment or personnel, securing utilities, establishing safety zones and staging areas, providing advanced life support (ALS) care, and initiating ambulance transportation to a hospital.

Technical Structural Collapse Standards of Cover Calculations Methodology

The following lists describe the methods used to develop first due and ERF calculations for incidents evaluated for Structural Collapse Rescue incidents. The Emergency Reporting records management system was used to extract response performance data for analysis.

Technical Structural Collapse Rescue

Resources: 1 Truck, 2 Engines, 1 Ambulance, 1 Battalion Chief

Process /Turnout: Reporting time for 1st apparatus

ERF: Minimum 12 personnel

Reporting time for all apparatus to arrive on scene

Inclusion: First apparatus is an Engine or Truck

NFIRS Codes: 351

Structural Collapse Rescue - 90th Percentile Times - Baseline Performance			2017-2021	2021	2020	2019	2018	2017	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	2:14	N/A	2:14	N/A	N/A	N/A	1:30
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	1:30
Turnout Time	Turnout Time 1st Unit	Urban	0:05	N/A	0:05	N/A	N/A	N/A	1:20
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	1:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	4:32	N/A	4:32	N/A	N/A	N/A	4:59
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	8:59
	Travel Time ERF **Concentration**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	11:59
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	15:59
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	4:37	N/A	4:37	N/A	N/A	N/A	7:49
			n=1	n=0	n=1	n=0	n=0	n=0	
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	11:49
			n=0	n=0	n=0	n=0	n=0	n=0	
	Total Response Time ERF **Concentration**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	14:49
			n=0	n=0	n=0	n=0	n=0	n=0	
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	18:49
			n=0	n=0	n=0	n=0	n=0	n=0	

Technical Rope Rescue

Technical rope rescue incidents can pose an immediate risk to life and are considered a high-risk, low probability incident. Due to the high risk, a multiple company response is required. Additionally, the Officer of the second due Engine may split his/her crew to transport the Heavy Rescue to the scene. WSFR's response includes the necessary equipment and personnel to assess and develop a plan for rope rescue but relies on mutual aid technical team to mitigate the incident.

The following table provides the Effective Response Force (ERF) and associated Critical Tasks for the initial Rope Rescue response.

Technical Rope Rescue		
APPARATUS	**STAFFING**	**CRITICAL TASK DESCRIPTION**
First Due Engine	Officer	Establish Incident Command Scene size-up Develop incident action plan Initial Safety Officer
	Engineer	Identify/contact patient
	Firefighter	Secure the site/Recon site characteristics and hazards
Truck	Officer	Rescue Group Supervisor (if cert.) or Site Access Control Officer
	Engineer	Identify anchor options / Assist with rescue equipment prep.
	Firefighter	Prepare/position rescue equipment / Support SOT
Second Due Engine	Officer	Incident Safety Officer
	Engineer	Support Special Operations Team
Heavy Rescue	Firefighter	Deliver Heavy Rescue to scene/Support SOT
Ambulance	Paramedic	Patient assessment, treatment, and transport
	EMT	
Command Vehicle	Battalion Chief	Upgrade Incident Command Request mutual aid Special Operations Team
ERF = 6 Units with	**12 personnel**	**To perform 14 Critical Tasks**

Technical Rope Rescue: Baseline Performance

The following information contains response data from all technical rope rescue incidents to which WSFR responded during the period from January 1, 2017, through December 31, 2021. During this period, the agency responded to a total 0 technical rope rescue incidents in all response zones and both the urban and rural areas. Given the low volume of

data, the agency was not able to determine a performance baseline based on historical data. Instead, the agency reviews each technical rope rescue incident as they occur to identify areas for improvement.

Technical Rope Rescue: Performance Benchmarks

For 90 percent of all technical rope rescue incidents, the total response time for the first due apparatus, staffed with at least one (1) Officer, one (1) Engineer, and one (1) Firefighter, shall be 7 minutes and 49 seconds in the urban response area and 11 minutes and 49 seconds in the rural response area. The first due apparatus shall be capable of establishing incident command, performing a scene size-up, developing an initial incident action plan, attempting to contact the patient, and securing the scene.

For 90 percent of all technical rope rescue incidents, the total response time for the arrival of the effective response force (ERF), staffed with three (3) Officers, three (3) Engineers, three (3) Firefighters, one (1) EMT, one (1) Paramedic, and one (1) Battalion Chief, shall be 14 minutes and 49 seconds in the urban response area, and 18 minutes and 49 seconds in the rural response area. The ERF shall be capable of completing all first-due apparatus responsibilities, providing a dedicated command Officer, identifying the need for specialty equipment or personnel, gathering rescue equipment, identifying suitable anchor points, identifying scene characteristics and hazards, providing advanced life support (ALS) care, and initiating ambulance transportation to a hospital.

Technical Rope Rescue Standards of Cover Calculations Methodology

The following lists describe the methods used to develop first due and ERF calculations for incidents evaluated for Rope Rescue incidents. The Emergency Reporting records management system was used to extract response performance data for analysis.

Technical Rope Rescue

Resources:	2 Engines, 1 Truck, 1 Ambulance, 1 Command Vehicle
Process /Turnout:	Reporting time for 1st apparatus
ERF:	Minimum 9 personnel
	Reporting time for all apparatus to arrive on scene

Inclusion: First apparatus is an Engine or Truck

NFIRS Codes: 356

Technical Rope Rescue - 90th Percentile Times - Baseline Performance			2017-2021	2021	2020	2019	2018	2017	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	N/A	N/A	N/A	N/A	N/A	N/A	1:30
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	1:30
Turnout Time	Turnout Time 1st Unit	Urban	N/A	N/A	N/A	N/A	N/A	N/A	1:00
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	1:00
Travel Time	Travel Time 1st Unit **Distribution**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	4:59
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	8:59
	Travel Time ERF **Concentration**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	11:59
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	15:59
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	7:49
			n=0	n=0	n=0	n=0	n=0	n=0	
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	11:49
			n=0	n=0	n=0	n=0	n=0	n=0	
	Total Response Time ERF **Concentration**	Urban	N/A	N/A	N/A	N/A	N/A	N/A	14:49
			n=0	n=0	n=0	n=0	n=0	n=0	
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	18:49
			n=0	n=0	n=0	n=0	n=0	n=0	

Chapter 6 – Compliance Methodology / Performance Maintenance and/or Improvement Plan

Fostering an Attitude of Continuous Improvement

With 65 combined personnel and 4 fire stations, WSFR is still a small agency, in relative terms. However, the agency is now primarily staffed with full-time and part-time paid firefighters, supplemented by a few remaining volunteers. As the agency continues to grow and mature, personnel are constantly looking to the future to find new and better ways to get things done. These new processes will serve as the foundation for the agency's continuous improvement process.

One of the primary growth opportunities that were discovered was in data entry into the agency's records management system. Inconsistencies have been identified in the use of NFIRS codes and call type classification. This has led to some necessary rework before accurately analyzing some of the call data. While the agency had put a system in place to standardize call classification, the opportunity for further improvement was identified and additional guidance and staff communication are being developed.

Another pending challenge for the agency is the elimination of the current records management system. Emergency Reporting has been acquired by ESO and this has caused the agency to evaluate its options for records management moving forward as Emergency Reporting will no longer be supported. Finding a system that will provide the necessary services, reliability, and effective data collection and evaluation is a priority for the agency.

WSFR has realized significant growth in gaining Accredited Agency status, performing annual appraisals, and seeking reaccreditation. Accreditation has become ingrained in the agency's identity. Continuous improvement is a result of hard work, dedication, and commitment. To that end, WSFR will establish several goals and objectives to assist in that:

1. Maintain strong and effective relationships with external agencies
2. Further improve the consistency and accuracy of data entry to maximize its effective use for the agency

3. Identify and implement the most effective records management system for the agency to replace Emergency Reporting
4. Base decisions on data as appropriate
5. Regularly review, update, and communicate progress in executing the community-driven Strategic Plan
6. Promote the accreditation model to help create a culture of continuous improvement across the entire organization

Chapter 7 – Evaluation and Recommendations

As a direct result of this risk assessment, the current community-driven strategic plan, and the continued growth in the community, the agency identified several areas for improvement. The agency has determined a weakness in response to special operations rescues, and the need for mutual aid support on the first alarm. Specifically, the capability to manage a water rescue or trench rescue incident was limited based on the number of trained specialized personnel. The agency has since created a plan that will implement a "60 minute special operations team". This plan when fully implemented will provide the resources needed to handle an operation period for the first 60 minutes for a special operations rescue. This will be a significant improvement compared to the current model which requires mutual aid resources with the initial alarm. Another area of improvement

The agency has evaluated both itself and the community it serves, in terms of hazards, risks, service delivery, and response performance. This evaluation compared WSFR practices and performance with established standards as well as fire service "best practice" recommendations. The agency identified not only when things were done well, but also areas where improvements could be made. Procedures have been established to help the agency remain vigilant in the self-assessment process as well as in the continued monitoring of established programs and services. In order to continue to promote the pursuit of excellence, the following recommendations are made, based on the lessons learned during the development of this document:

1. The agency should continue to seek opportunities to improve reporting procedures to better capture incident information.
2. The agency should continue to evaluate response performance in comparison with population density, resource location, and community risk to ensure that performance goals and objectives are met.
3. The agency should develop dashboards or other reporting mechanisms to share "real time" performance goals and objective data with personnel in an effort to further promote continuous improvement.