GOLDER RANCH FIRE DISTRICT

COMMUNITY RISK ASSESSMENT – STANDARDS OF COVER

First Edition
January 2023

Mission Statement

With integrity – Golder Ranch Fire District provides responsive and caring fire and life safety services that meet the emerging needs of our community through teamwork, dedication and professionalism.

District Mottos

Community First.

Serving with strong hands and caring hearts.

Vision Statement

To be progressive, professional, fiscally responsible and customer centered.

Value Statement

Accountability is achieved by our actions to each other, the organization and the citizens we serve.

Dependable service is accomplished by being fast, capable, consistent and proactive.

Integrity is always doing the right thing even when it's the hard thing.

Respect is recognizing individual differences while appreciating the value of each person.

Excellence is achieving the best possible in every situation.

Compassion is treating each other and our customer as an extension of our family.

Trust is building and strengthening relationships through our words and actions.

Community Risk Assessment/Standards of Cover

First Edition – January 2023

Golder Ranch Fire District
Fire Chief Randy Karrer

Accreditation Manager
Division Chief Eric Perry

As adopted by the Golder Ranch Fire District Board on January 17, 2023 .

Resolution No. 2023-0001

CRA-SOC Update Log

Description	CRA-SOC Team Facilitator	Signature	Fire Chief	Signature	Date
2023 CRA-SOC	Eric Perry	Eric Perry	Randy Karrer	R. Karrer	1/17/2023
2024 Update					
2025 Update					
2026 Update					
2027 Update					

The CRA-SOC is designed to be a dynamic document and shall be updated on an annual basis.

GOLDER RANCH FIRE DISTRICT

www.grfdaz.gov

Errata Sheet #1

Issued January 17, 2023

GRFD Community Risk Assessment – Standards of Cover, 1st Edition

The governing board of the Golder Ranch Fire District has approved the following change to the GRFD Community Risk Assessment-Standards of Cover 1st edition:

Pg 18

Golder Ranch Fire District Governing Board – The titles of each of the board members should read as follows

- Vicki Cox-Golder Chairperson
- Richard Hudgins Vice Chairperson
- Wally Vette Clerk of the Board
- Steve Brady Board Member
- Sandra Outlaw Board Member

Vicki Cox Golder
Chairperson of the Governing Board
of the Golder Ranch Fire District

ATTEST:

Wally Vette
Clerk of the Governing Board
of the Golder Ranch Fire District

CONTENTS

CONTENTS

CONTENTS

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Jenn Akins, Fire Marshal

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TABLE OF FIGURES

TABLE OF FIGURES

TABLE OF FIGURES

MESSAGE FROM THE FIRE CHIEF

Reflecting on the journey that brought Golder Ranch Fire District (GRFD) to completing this Community Risk Assessment - Standards of Cover (CRA-SOC) document, I immediately think of the mottos of “Strong hands and caring hearts” and “Community First.” These are foundational statements of why GRFD is known for providing exceptional customer service. Customer service is deeply embedded into the culture of this organization, and our employees exhibit that daily.

The CRA-SOC document provides specific information about how we operate as a fire district. Identifying areas of improvement and providing transparency to the public we serve is critical to effectively managing the services we provide. For example, this analysis identified that a third of District residents are over 65. However, our current public education program targets grade school levels, which clearly indicates a need for public education geared toward our older demographic.

The District has experienced explosive growth over the past ten years, further inflating its long slender geographical boundaries. As population and call load increase, it becomes challenging to maintain appropriate coverage. Identifying and quantifying the risks specific to our community is critical to maintaining our high level of service.

I want to thank the community for their input in sharing service expectations, and Ironwood Strategic Solutions for guiding us through a proven and effective process that unveiled some “ah ha” moments that will drive the future of this organization. I also want to thank Division Chief Eric Perry, whose collaborative approach, attention to detail, and vast knowledge of our systems and processes produced an exceptional result that will forever change GRFD.

As I pass the baton to a new Fire Chief of GRFD, I find comfort in knowing that the District has embarked on this critical analysis of the services currently provided and dared to ask the tough questions to identify the future needs of the District. The transparency of our performance and the improvement goals identified will translate into a more effective and efficient level of service and provide the incoming Fire Chief a clear road map to success. Most importantly, it will save countless lives.

Respectfully,

Randy Karrer

INTRODUCTION

This is the first edition of the Golder Ranch Fire District (GRFD) Community Risk Assessment-Standards of Cover (CRA-SOC). The development of a CRA-SOC represents the next step in GRFD's continuing efforts to become a more methodical, systematic and data-driven organization. This document is part of accreditation that GRFD is pursuing through the Commission on Fire Accreditation International.

The two core elements of this document may be defined in the following ways:

- **Community Risk Assessment** is a comprehensive evaluation that identifies, prioritizes and defines the risks that pertain to the overall community.[1]

- **Standards of Cover** consists of a systematic approach to determine the distribution and concentration of fixed and mobile GRFD resources that is based on community risk and the community's performance expectations.

A CRA-SOC accomplishes the following elements for GRFD:

[1]National Fire Protection Association. (2020). NFPA 1300 Standard on Community Risk Reduction and Community Risk Reduction Plan Development.

The development of the CRA-SOC generally followed the process as outlined by the Commission on Fire Accreditation International.[2] NFPA 1201, Standard for Providing Fire and Emergency Services to the Public was referenced as a check and balance to compare GRFD's current service delivery organization structure against a national consensus standard. A table illustrating GRFD's fire and emergency service delivery to its community – compared to NFPA 1201 standard elements is in **Appendix A.1.**

GRFD utilized a consultant to facilitate the process. It also utilized district resources for various elements of the document. GRFD and City of Tucson Public Safety Communications databases were used to analyze response time data. Internal and external resources were used to develop relevant GIS maps. In addition, public and third-party resources were consulted for demographic and other relevant information.

As part of the CRA-SOC development process, gaining external and internal stakeholder input was a high priority for GRFD. Information and survey results from two external stakeholder meetings held in February 2022 were incorporated into this process.

This CRA-SOC document supports the following goal of the GRFD 2021-2024 Strategic Plan:

- Goal 4 – Develop a formal, sustainable community risk reduction plan (CRR) that is reviewed and measured on an annual basis.

[2]Center for Public Safety Excellence. (2020). Quality Improvement for the Fire and Emergency Services. Chantilly, VA.

The report is organized into seven sections.

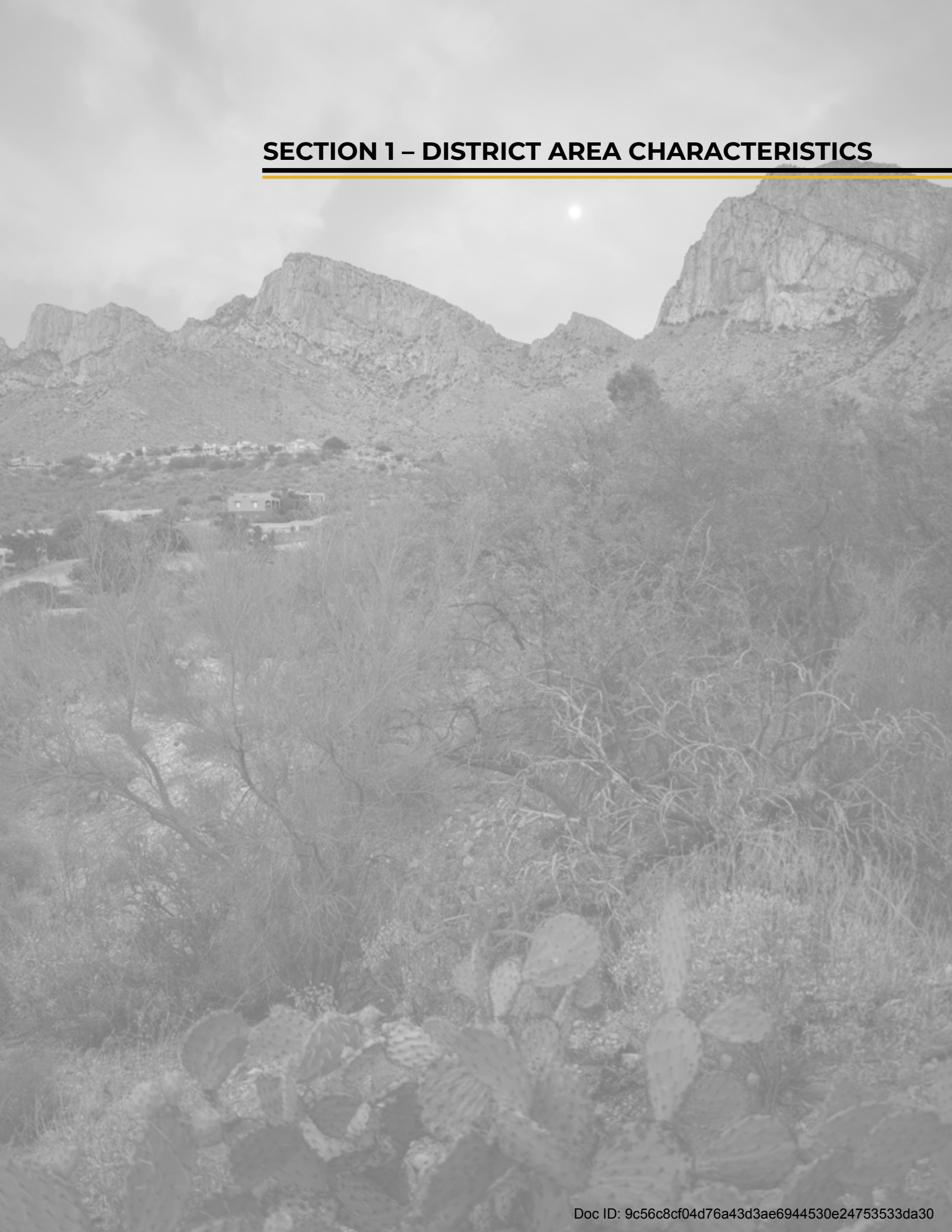
- **Section 1** provides an overview of the structure and management of GRFD and community characteristics.
- **Section 2** includes an overview of the service programs currently delivered, both nonemergency and emergency.
- **Section 3** represents the community risk assessment portion of the document. It includes assessment of large-scale, potentially districtwide risks as well as fire, EMS, hazmat, technical rescue and wildland fire risks in the community. The risk assessment process also includes the development of critical tasks that in turn determine the associated effective response forces to respond to and mitigate different levels and categories of risk.
- **Section 4** describes the current deployment of fixed and mobile resources and the performance of emergency services provided with an emphasis on response time elements.
- **Section 5** provides an evaluation of the current deployment and performance goals and objectives for future performance – based on community expectations and GRFD performance goals.
- **Section 6** presents the district's six-step plan for maintaining and improving response capabilities.
- **Section 7** outlines key findings and associated recommendations resulting from development of the CRA-SOC.

Along with the CRA-SOC, a current strategic plan and a response to approximately 250 performance indicators are required documents for accreditation status. A reference table of CRA-SOC-related performance indicators is located in **Appendix A.2.**

The command staff and representatives from IAFF Local 3832 have reviewed the data collected and performance objectives developed during the many months of the CRA-SOC preparation and are committed to maintaining and improving service delivery performance.

The CRA-SOC is designed to be a living, dynamic document that will be reviewed and updated on a yearly basis by a standing district committee to ensure that the most effective and efficient fire and emergency services are delivered to GRFD residents, business owners and visitors.

SECTION 1 – DISTRICT AREA CHARACTERISTICS



Golder Ranch Fire District (GRFD) is located in southeast Arizona. It is approximately 12 miles north of the center of Tucson and serves the Town of Oro Valley, portions of unincorporated Pima and Pinal Counties and a small section of the Town of Marana. GRFD's service area includes 244 square miles and a population of 99,238.[3] The Town of Oro Valley has 47,979 residents[4] which represents 48% of the district's total population.

LEGAL BASIS FOR EXISTENCE AND DESCRIPTION OF GOVERNANCE MODEL

Golder Ranch Fire District GRFD was formed in 1977 by residents living in the unincorporated Golder Ranch area of Pima County. The Pima County Board of Supervisors officially approved the formation of GRFD on November 8th, 1977, under Resolution 1977-186. The district operates under the requirements of Arizona Revised Statues (ARS) §48-803, §48-804 and §48-805.

GRFD is administrated and directed by a governing board that consists of five elected board members who serve staggered four-year terms. The governing board approves an annual budget, reviews and approves policies and reviews and approves services provided by the district. Arizona Revised Statute 48-804 requires that the governing board meet monthly. The GRFD governing board meets the second Tuesday of each month. Meetings are open to the public.

GRFD operates under the guidance of mission, vision and value statements as outlined earlier in this document.

Golder Ranch Fire District Governing Board


Steve Brady
Vice Chair


Sandra Outlaw
Member


Vicki Cox-Golder
Chair


Richard Hudgins
Member


Wally Vette
Clerk

[3]Source – Pima Association of Governments
[4]U.S. Census Bureau. 2021 population estimate. https://www.census.gov/quickfacts/orovalley-townarizona

DISTRICT HISTORY

The Golder Ranch Fire District (GRFD) began as a volunteer fire district in November 1977, with one fire station in the unincorporated area of Catalina, Arizona. In 1980, the district signed a contract to provide fire coverage for the Catalina Fire District in the northern part of the Catalina area. In 1981, GRFD was granted membership in the regional MEDS dispatching system, and as the district grew, it changed from volunteer to paid on call – to career with reserves to supplement the career staff.

Golder Ranch Fire District Fleet – Late 1980's

In 1989, GRFD joined the Public Safety Personnel Retirement System for its career staff. The complete transition to a career-only agency was in August of 2001.

The district's boundaries grew through a 1996 consolidation of the Catalina Fire District and the Oracle Junction Fire District, and in 1999 GRFD joined a communications consortium that contracted for dispatching by the City of Tucson Public Safety Communications.

GRFD began ambulance service in 1980 with one ambulance. The district currently holds a Certificate of Necessity (CON #56) from the State of Arizona, allowing ambulance transport services within district boundaries and an additional area of 145 square miles in unincorporated southern Pinal County.

Throughout the years, multiple additional annexations led to the growth of the district, and a 2017 consolidation of the Mountain Vista Fire District added 19 square miles to the boundaries.

GRFD is an all-career agency serving 99,238 people within its approximately 244-square-mile boundary and 389-square-mile ambulance service area, including the communities of Saddlebrooke, Saddlebrooke Ranch, Catalina and the Town of Oro Valley.

Engine 370 – C Shift Crew

Coverage is maintained out of ten strategically placed fire stations with a full-time staff of 275 employees. Since the inception of the fire district, there have been four fire chiefs including current fire chief, Randy Karrer.

In 2017, the Golder Ranch Fire District signed an automatic aid agreement with the Northwest Fire District. This agreement was the first automatic aid agreement in the Tucson area, and in 2020, the City of Tucson Fire Department joined GRFD and NWFD in the automatic aid agreement.

1977 The district was founded as a volunteer fire district with one fire station on November 15, 1977. Bob Murray was GRFD's first fire chief. The first fire station was located at 15780 N. Oracle Road at Chief Murray's house.

1979 The fire station moves to 3535 E. Hawser on land donated by Lloyd Golder. First ISO Classification of 8 awarded.

1980 First ambulance placed in service. Contracted fire service for the Catalina Fire District.

1989 Golder Ranch joined the PSPRS for uniformed members.

1996 Consolidated with Oracle Junction Fire District and Catalina Fire District.

1999 October – Dispatch service with City of Tucson. Joins consortium with Avra Valley and Northwest.

2001 August – Last reserve firefighter shift.

2002 October – CON expands to new boundaries.

2003 November – Copper Creek annexation.

2004 August – GRFD enters IGA with Town of Oro Valley for Fire Marshal services.

2006 May – Station 370 and new campus opens on 3885 E. Golder Ranch Dr. Hawser location shut down as a station. December– Palisades annexation.

2007 May – Villages of La Canada annexation.

2009 Meet and Confer agreement signed with IAFF Local 3832. La Reserve and Town of Oro Valley Annexations.

2011 January – Gabby Giffords mass shooting at Ina and Oracle on the 8th. May– La Cholla AirPark annexation.

2014 GRFD awarded Premier EMS Provider designation from AZDHS.

2016 CIHP program recognized as a Treat and Refer EMS agency. GRFD receives a Class 2 ISO rating.

2017 May – GRFD, MVFD, NWFD begin auto aid. July – Mountain Vista Fire District and Golder Ranch Fire District consolidate (CON and district expanded to encompass remaining area of TOV).

2019 Premier EMS Provider designation renewed.

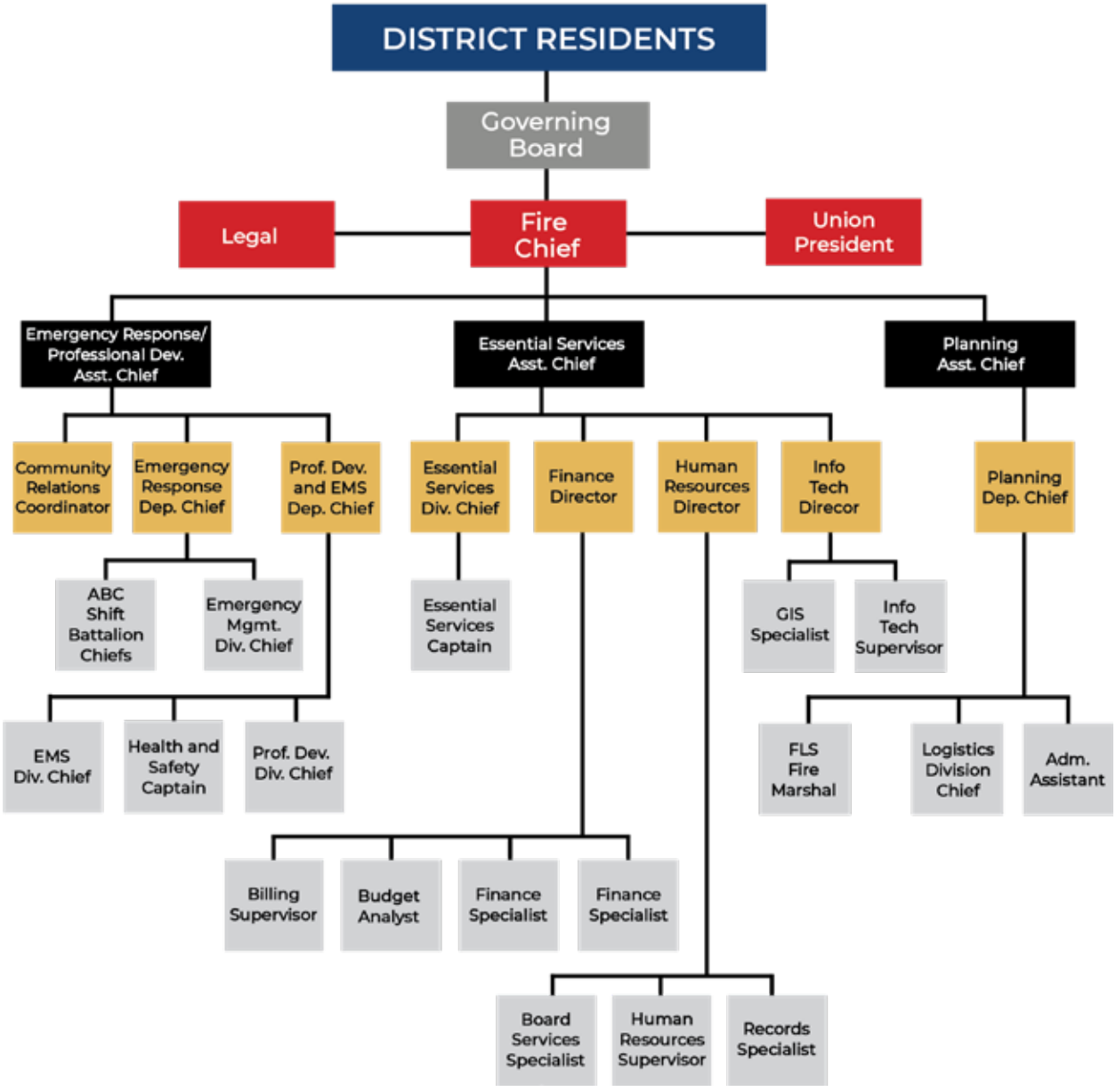
2020 March – The district addresses the COVID 19 pandemic. Tucson Fire joins the automatic aid agreement. June – GRFD was the initial attack on what eventually became the Bighorn Fire.

2021 On November 29, Jennifer Akins was appointed GRFD Fire Marshal. She is the first female to become fire marshal at GRFD and the first female chief officer at GRFD. Commission on Accreditation of Ambulance Services (CAAS). GRFD is the fourth agency accredited in Arizona and the only fire district accredited.

2022 The building was purchased at 1600 E. Hanley, and work began to transform it into a new fire administration center.

Golder Ranch Fire District has a fire chief who serves the governing board on a contractual basis. **Figure 1.1** represents the organizational structure for GRFD.

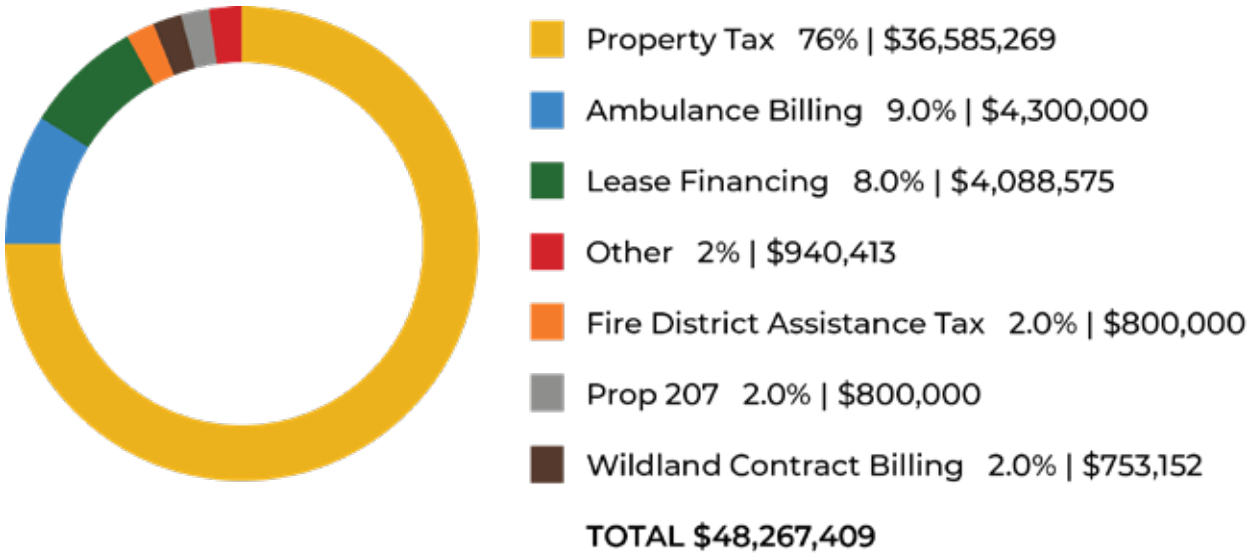
Figure 1.1 Organizational Structure



FUNDING SOURCES

GRFD is considered a political subdivision of the State of Arizona. It is authorized to levy a property tax within the geographical boundaries of the district. The tax serves as the district's primary funding source. The following figure presents all funding sources for GRFD.

Figure 1.2 FY22/23 Budgeted Revenue



Note: Percentages are rounded to the nearest whole number.

As indicated in **Figure 1.3**, GRFD receives most of its funding from property taxes that are derived from total assessed valuation of property within the district. The following figures show GRFD's 10-year history of assessed value and tax rate. Total assessed value has increased 51.5% the past ten years.[5]

Figure 1.3

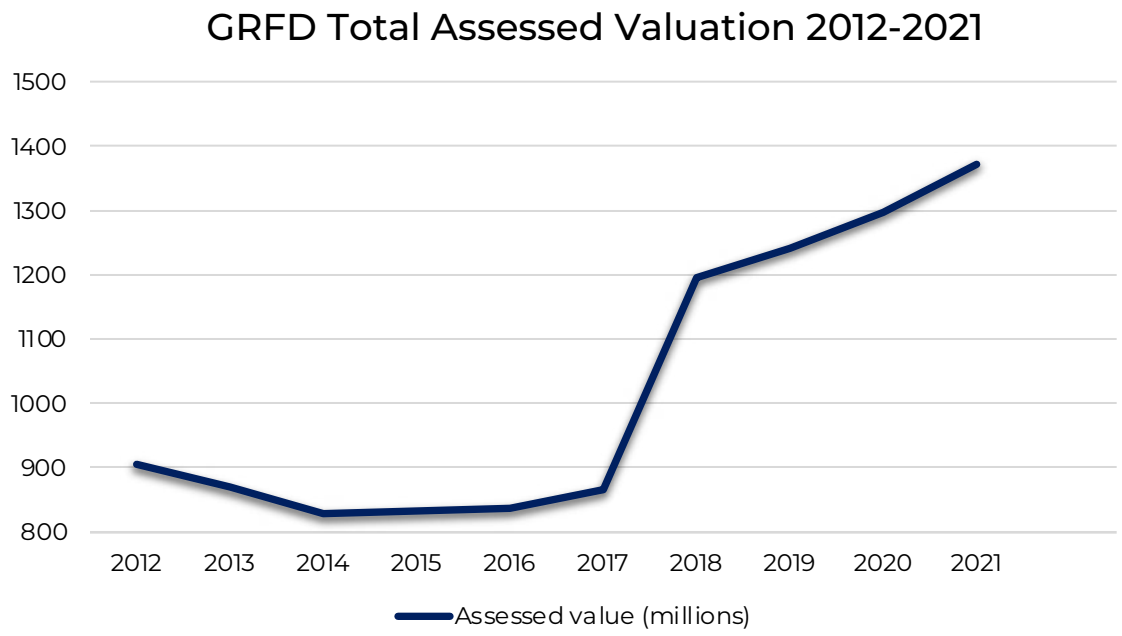
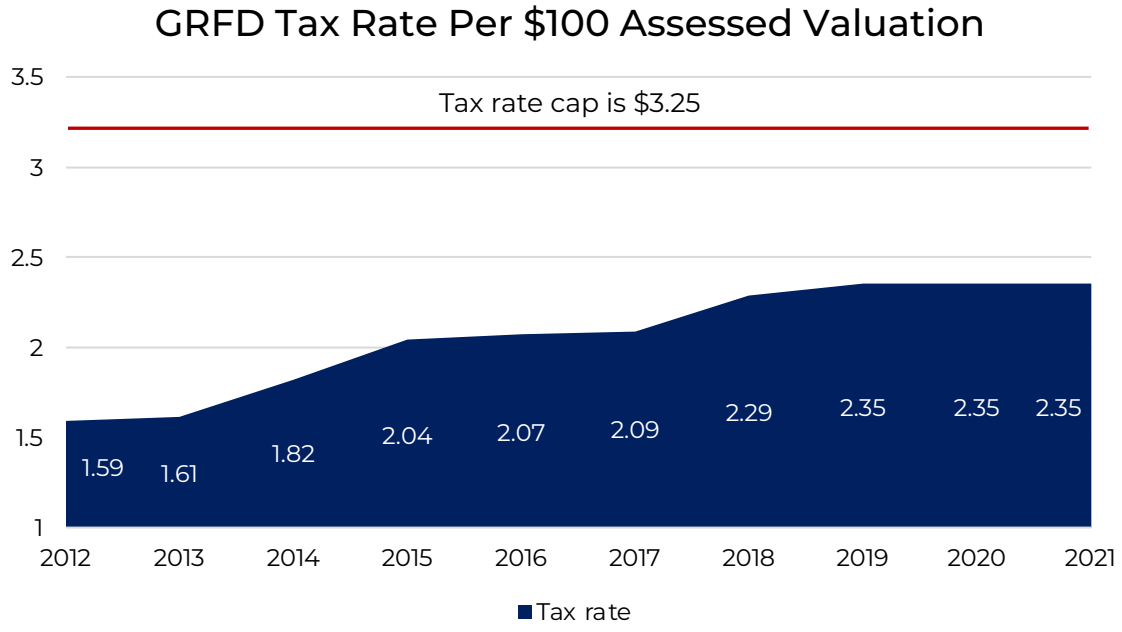


Figure 1.4



[5]Source – Pima County Assessor's Office

CLIMATE

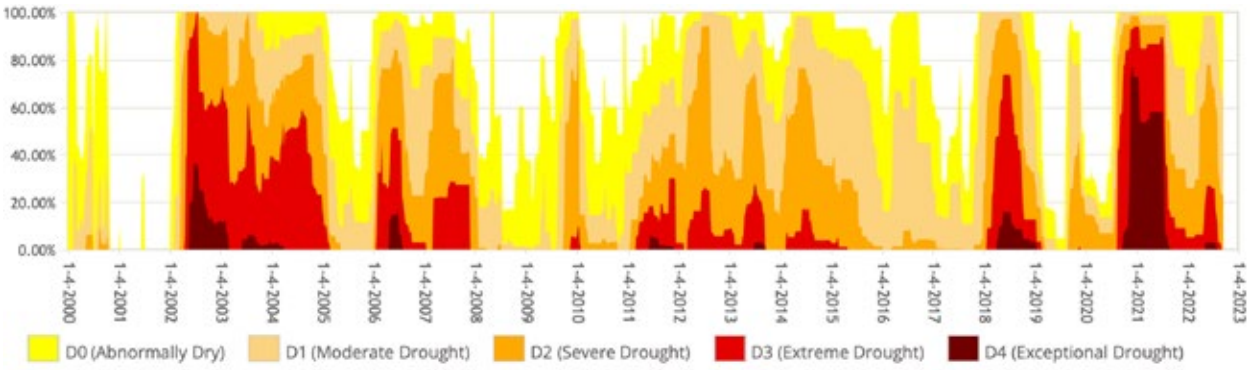
According to the Köppen Climate Classification,[6] the area that GRFD serves is classified as a hot semi-arid climate. The area receives approximately 12 inches of rain annually, with slightly more precipitation in the Santa Catalina foothills. August is the wettest month. The driest month is May. Late June to early September is when the area receives well over half of its annual rainfall. This period is known as the monsoon.

The GRFD service area rarely receives snowfall during the winter months. When it does snow, it is often limited to the Santa Catalina foothills but can occur in the valley areas as well. Snowfall accumulation is generally only a few inches and usually dissipates within a day or two.

According to the Arizona State Climate Office, Arizona is currently in the 27th year of a long-term drought. "Drought in the West is a long-term concept, which means that a single dry year does not constitute a drought in Arizona. Since Arizona has an arid and semi-arid climate, extremely variable precipitation is normal. Drought is instead characterized by a string of dry years, occasionally interrupted by a wet year or two."[7]

The graph below shows the Arizona percent area in U.S. Drought Monitor categories since the year 2000.

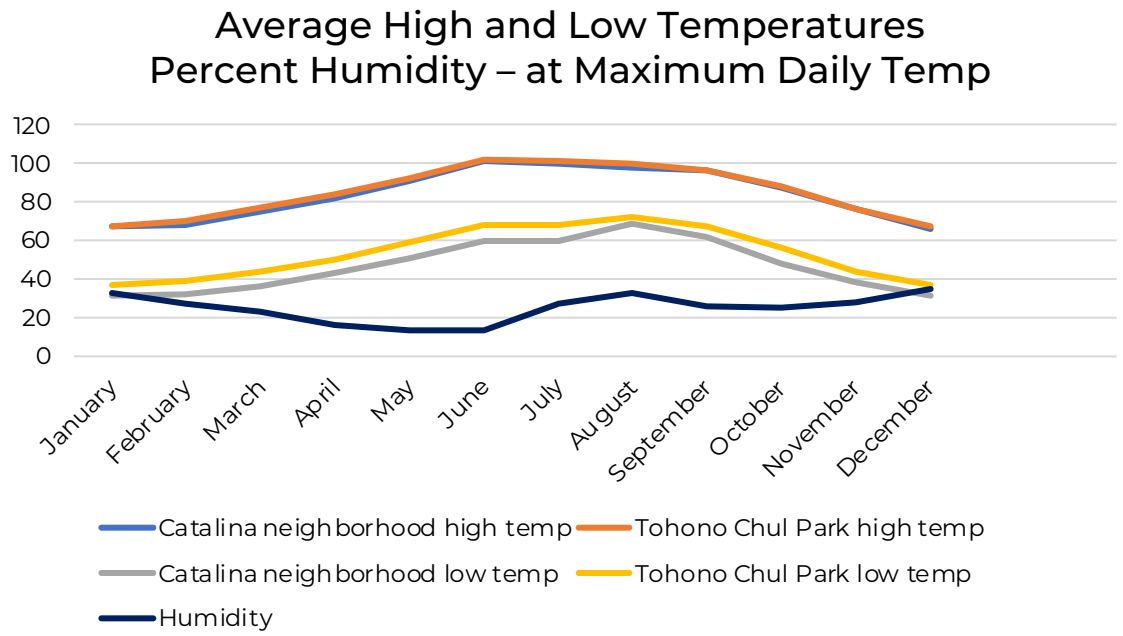
Figure 1.5 Historic Arizona Drought



Source: U.S. Drought Monitor

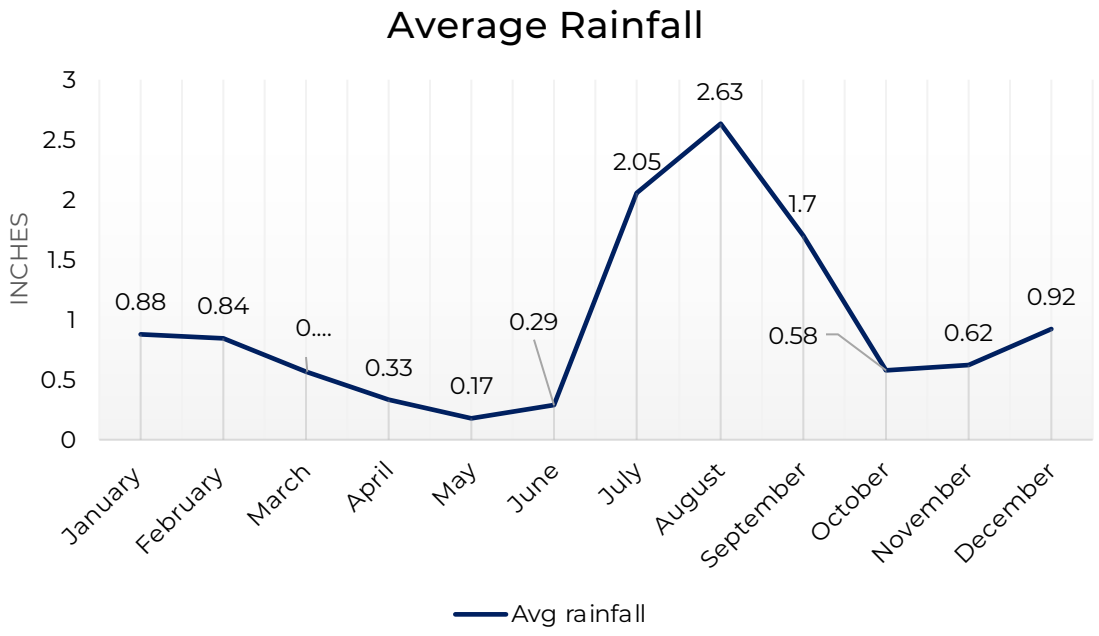
[6]The Köppen climate classification is the most widely used system to catalog climate types. It has five climate types – tropical, arid, temperate, continental and polar. These are further categorized into finer units – primarily on temperature and to a lesser degree – rainfall.
[7]https://azclimate.asu.edu/drought/

Figure 1.6



Source – National Weather Service

Figure 1.7



Source – National Weather Service, University of Arizona campus

TOPOGRAPHICAL DESCRIPTION AND FEATURES

A wide range of topographical features exist in Golder Ranch Fire District. Elevations within the district range from approximately 2250 to 3500 feet above sea level. Elevation gradients vary from gentle hills to nearly vertical rock faces in the Tortolita and Santa Catalina Mountains within the district.

The major drainage feature is the Cañada del Oro (CDO) Wash that transects the district from near the northeast corner to the southwest corner of the service area. The majority of the year the CDO Wash is dry but can produce heavy volume flows with high velocity after heavy rains, particularly during the summer monsoon months. There are many drainage washes that are dry most of the year. However, larger washes including the CDO that cross unbridged roadways can cause significant swift water rescue risks during heavy periods of rain, as further described in Section 3.

Cañada del Oro Wash at First Avenue

GEOLOGY

Much like the topography, Golder Ranch Fire District has a broad spectrum of geology. GRFD includes part of the Tortolita Mountains and foothills that primarily consist of diorite and medium-to-fine-grain granite. The eastern boundary area of GRFD includes the western edge of the Catalina Mountains that consist primarily of granite with areas of schist and quartzite near the Cañada del Oro Wash in various stages of weathering.[8]

Moving from east to west in GRFD, granite and closely-related geology give way toward more weathered features such as conglomerate and the much more predominant alluvial fan features.[9] These fans are dissected by drainage features that are deeper cut in areas of more prominent elevation gradients. The alluvial fans become finer grained with a higher percentage of silt and clay as the elevation gradient decreases in a general northeast to southwest direction.

The Federal Emergency Management Agency (FEMA) classifies the seismic design category for the GRFD service area as B, the second lowest risk category; A being the lowest, E being the highest. There are no active faults within GRFD. However the Santa Rita Fault located approximately 45 miles to the south is categorized by the United States Geological Survey as an active Late Quaternary fault capable of producing an earthquake of a magnitude six or seven.[10, 11] **Appendix 1.1** is a map of the FEMA seismic hazards that includes the GRFD service area.

The closest earthquake of significant magnitude to occur in the relatively recent past was the 1887 Sonoran earthquake in Sonora, Mexico that was approximated as a magnitude 7.6 It resulted in some structural damage to buildings in Tucson and caused many residents to flee into the streets.

[8]Arizona Geological Survey, University of Arizona. https://geomapaz.azgs.arizona.edu/
[9]Alluvial fans are fan-shaped deposits of water-transported material. They typically form at the base of topographic features such as mountain ranges where there is a marked break in slope. Consequently, alluvial fans tend to be coarse-grained soils at their bases, becoming finer grained at their edges.
[10]United States Geological Survey. U.S. Quaternary Faults. https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=5a6038b3a1684561a9b0aadf88412fcf
[11]Arizona Geological Survey video. (2015). https://www.youtube.com/watch?v=_K_irMbt6HQ&t=11s

VEGETATION

Much of GRFD's service area contains native vegetation on larger residential lots and undeveloped land. The lower elevations are typical of Sonoran Desert vegetation that includes mesquite, ironwood and palo verde trees, triangle leaf sagebrush, brittlebush, annual and perennial grasses, and cactus of various types including saguaro, prickly pear and barrel cactus. The annual and perennial grasses are very moisture dependent and have a much greater presence during a wet winter or summer rainy season. The natural drainages generally contain a higher concentration of vegetation and often contain high densities of invasive species such as salt cedar and buffelgrass that have a high combustible potential.

The upper elevations on the eastern edge of GRFD have a transitional vegetative type that includes scrub oak, manzanita and alligator juniper along with annual and perennial grasses.

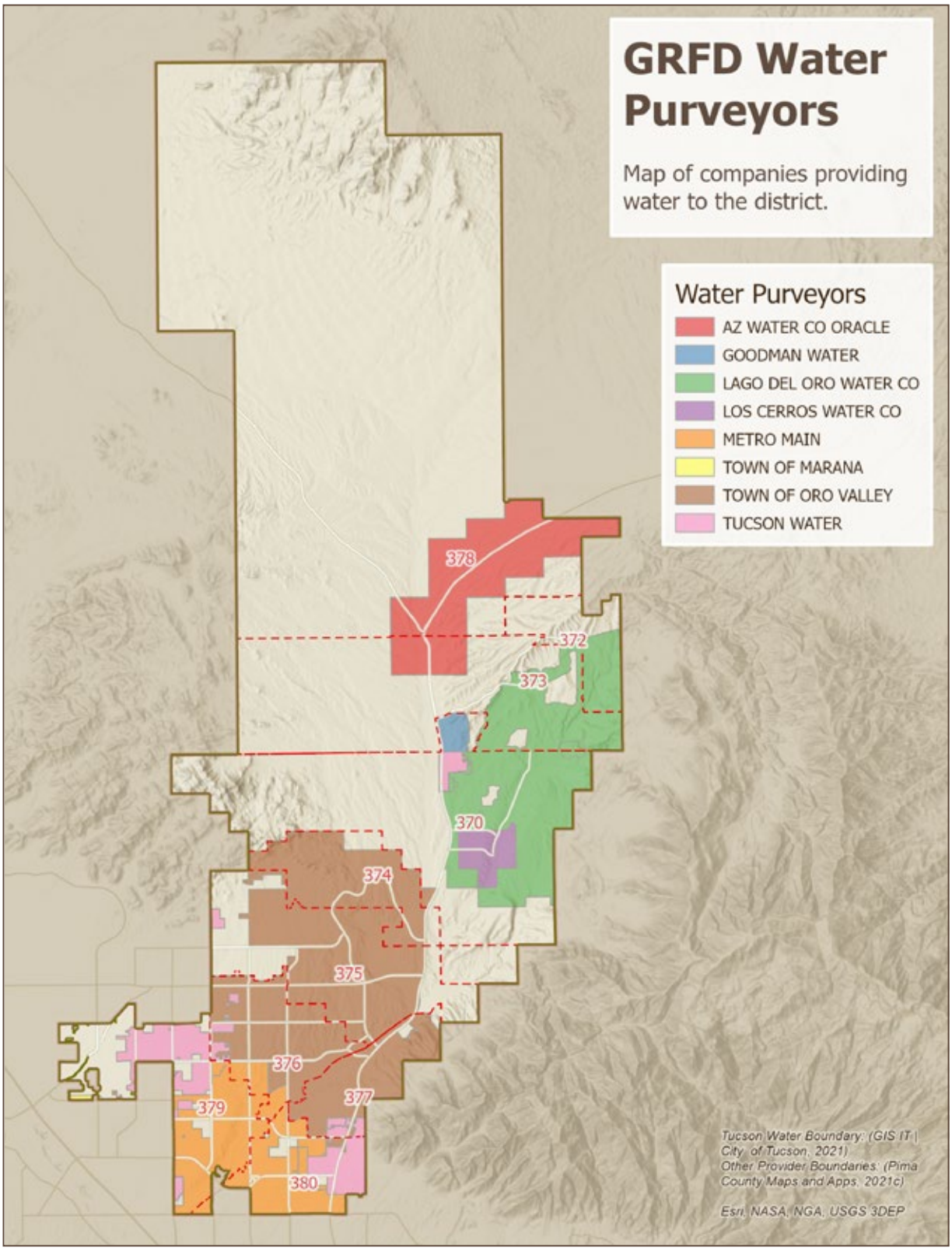
Near Tangerine Rd. and La Cholla Blvd.

WATER RESOURCES

GRFD receives its water supply from eight water purveyors (public and private) within its boundaries. Most of these providers depend on groundwater for their source, however Tucson Water, Oro Valley Water, Marana Water and Metro Water supplement their groundwater supply with Central Arizona Project water whose primary source is the Colorado River.[12] **Figure 1.8** shows areas served by the various water purveyors.

[12]https://www.cap-az.com/

Figure 1.8 Water Purveyors Within Golder Ranch Service Area



There are 4,509 hydrants in Golder Ranch Fire District. Hydrant maps specific to the ten geographic planning zones (first due areas) are located in **Appendix 1.2.**

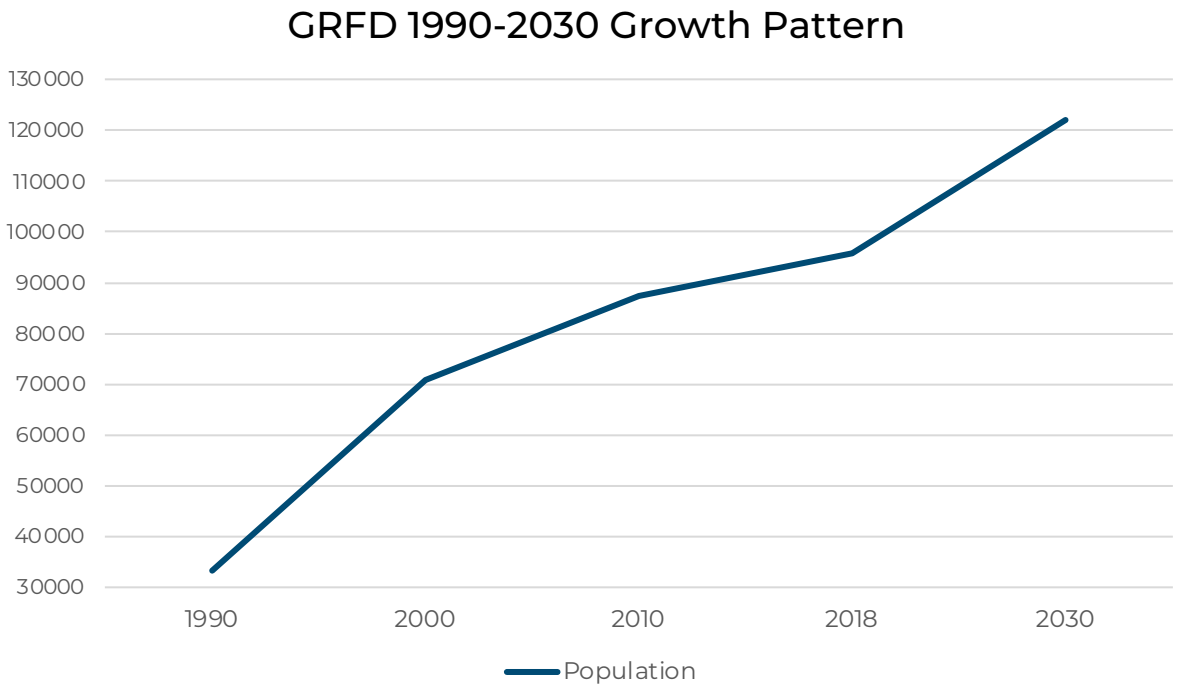
GRFD scored 34.6 out of a possible 40 points in the most recent Insurance Services Organization (ISO) water supply section rating (2018), equating to a water resources percentage score of 86.5%. GRFD's ISO rating is further discussed in Section 4.

POPULATION, DEMOGRAPHICS AND HOUSING DATA

As noted in the beginning of this section the population within the GRFD boundaries is 99,238 with 47,979 residing within Oro Valley town limits. The population in Oro Valley increased 17% from 2010 to 2021. The annual growth rate during the last five years of that time period was approximately 1.5%. Similar increases occurred in the unincorporated areas that GRFD serves.

Figure 1.9 illustrates the population growth trend throughout the service area since 1990 and projects continued growth through 2030.

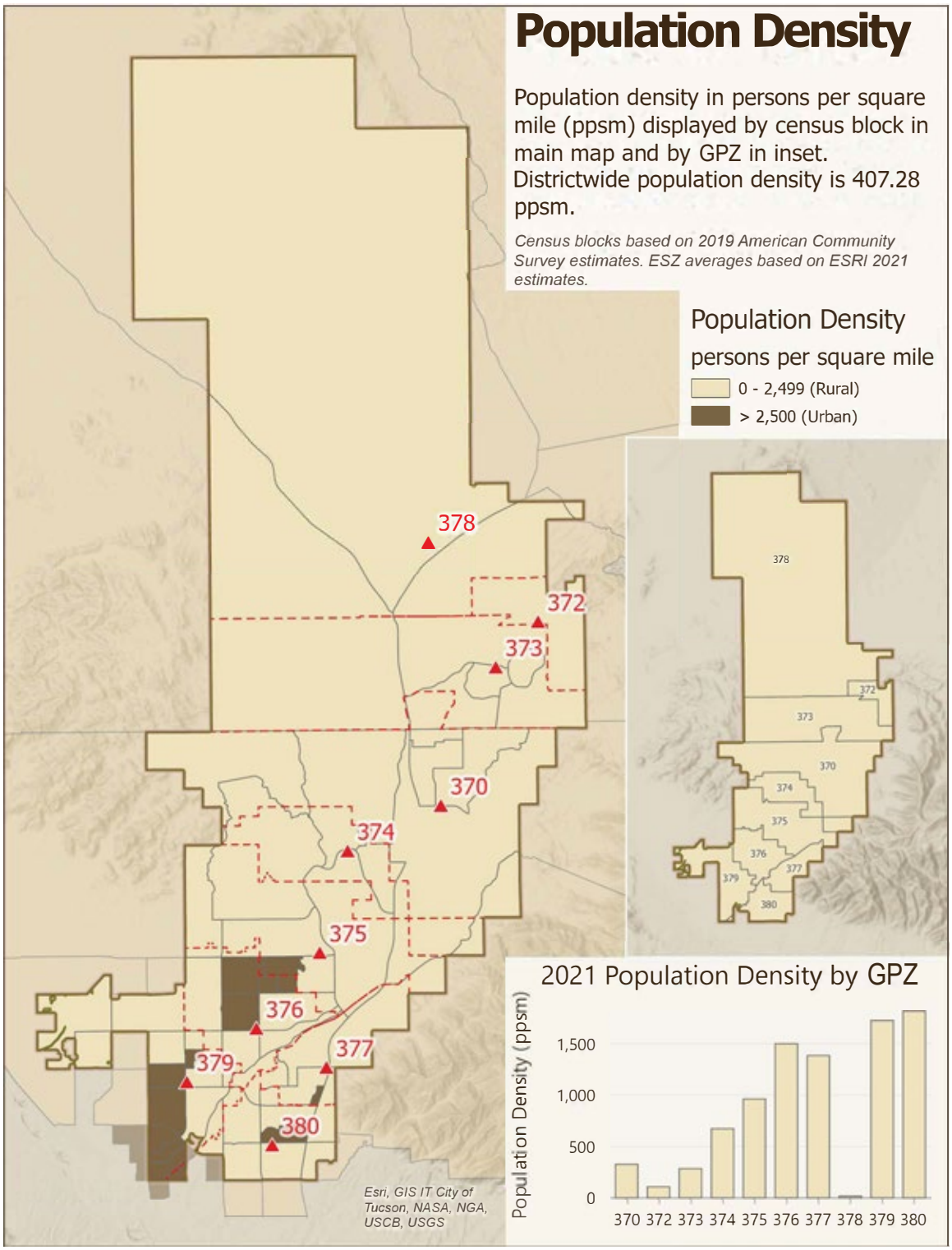
Figure 1.9



Source – 2010 U.S. Census and 2017-2021 five-year ACS.

District population density based on urban and rural densities is shown in **Figure 1.10.**

Figure 1.10



The table below represents present and anticipated population as well as housing data by geographic planning zone (GPZ). GPZs are the same as station first due areas. Individual GPZ maps that indicate urban and rural population densities[13] are presented in Section 3.

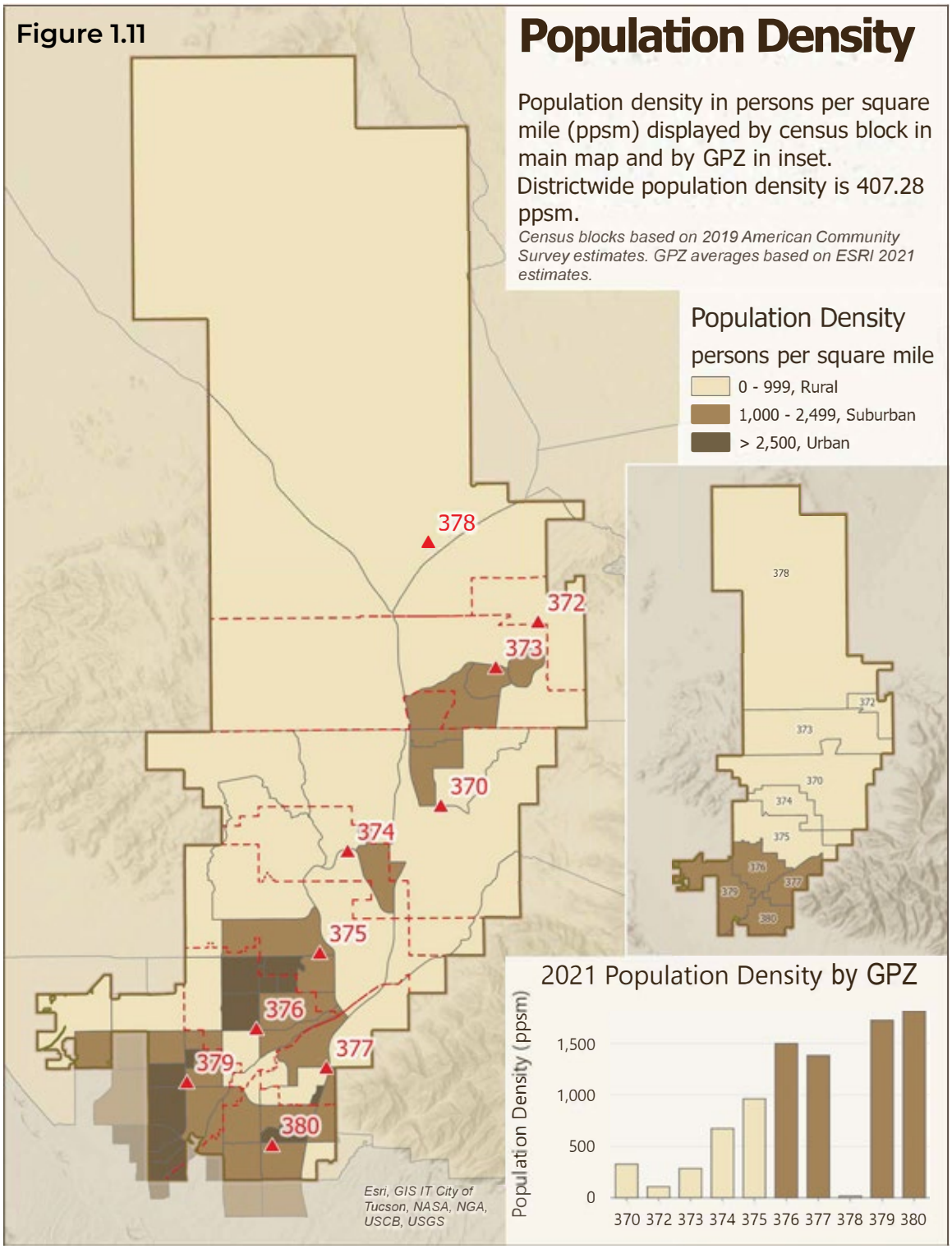
GPZ Population and Residential Occupancy Statistics				
GPZ	Population	Housing units	Percentage of total housing units in GRFD	Median Home Value
370	10,705	4,690	9.8%	$311,724
372	543	307	0.6%	$399,724
373	7,617	4,715	9.9%	$408,153
374	6,771	4,132	8.7%	$363,410
375	16,346	7,117	14.9%	$401,227
376	13,121	5,519	11.6%	$370,680
377	8,399	5,026	10.5%	$427,994
378	2,134	1,184	2.5%	$352,679
379	21,266	8,926	18.7%	$248,364
380	12,336	6,108	12.8%	$341,107

Looking west – N. Paseo del Norte & W. Chapala Dr.

[13]Urban and rural densities are defined as per the U.S. census definition. Urban density = >2500 population per square mile; rural density = <2500 population per square mile.

To further analyze the population density, GRFD has chosen to create a third population density classification; suburban. This involved redefining the characteristics of rural and urban densities. A breakdown of the three population density classifications is shown in the map below.

Figure 1.11



Additional demographic and other pertinent data relating to the fire district service area are listed below. Information is compiled from U.S. census data.

Description	GRFD Service Area
Population	99,238
Population per square mile	407.7
Percent female	52%
Percent male	48%
Median resident age	54
Persons under 5 years	3,694
Persons under 18 years	14,796
Persons 65 years and older	31,414 (2019)
With a disability	11,765
Education – bachelor's degree or above	20,255
Home ownership percentage	82%
Percentage living in poverty	5%

Ethnicity percentages in GRFD and the Town of Oro Valley are presented in **Figure 1.12.**

Figure 1.12

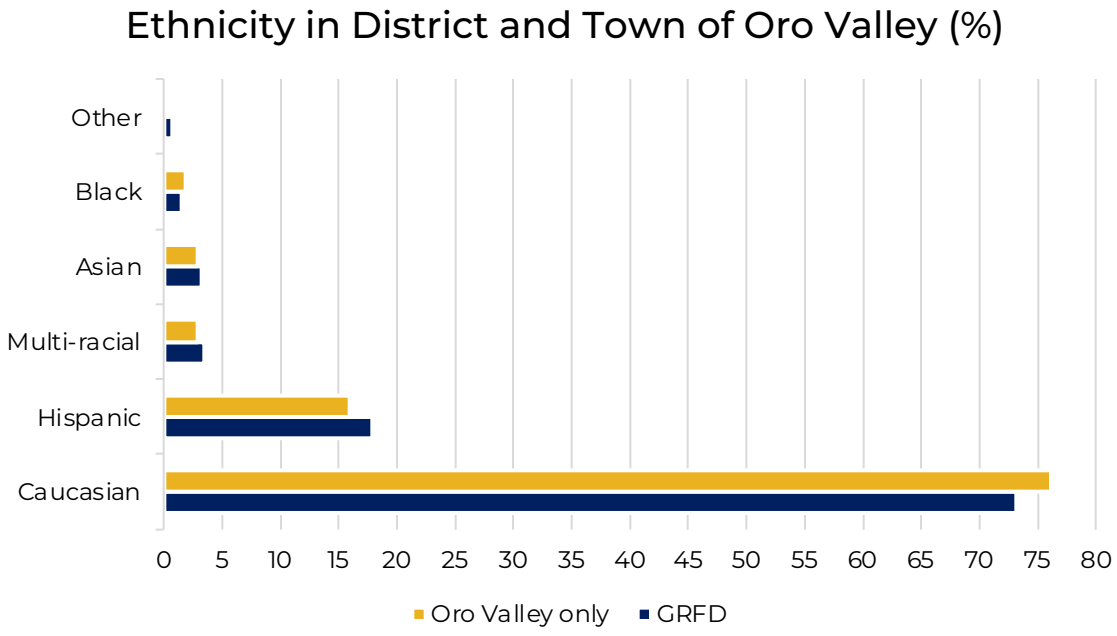
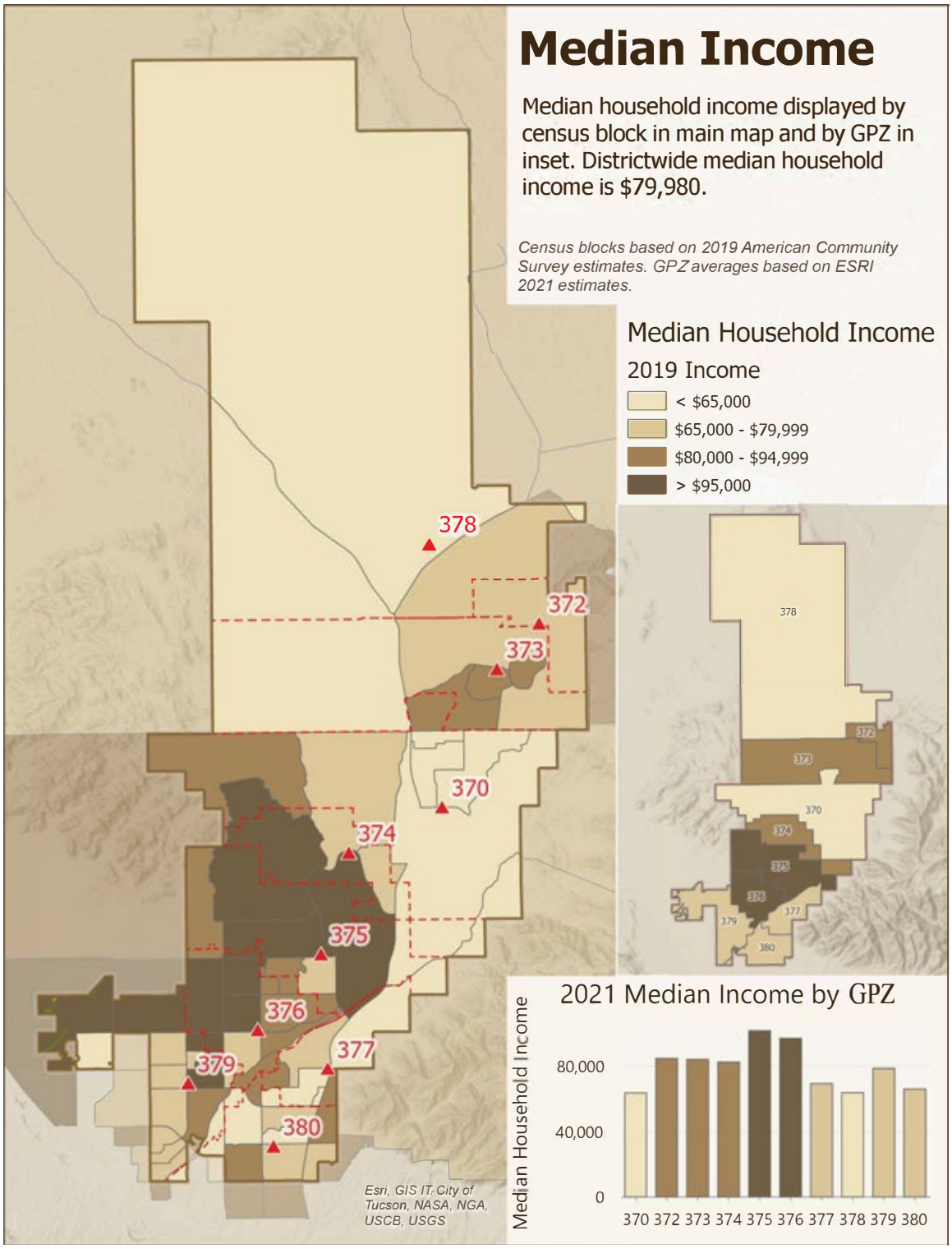


Figure 1.13



AREA ECONOMICS

The largest employment categories in GRFD are technology, health care, education, local government, tourism and retail. The largest employers within the district are listed in the table below.

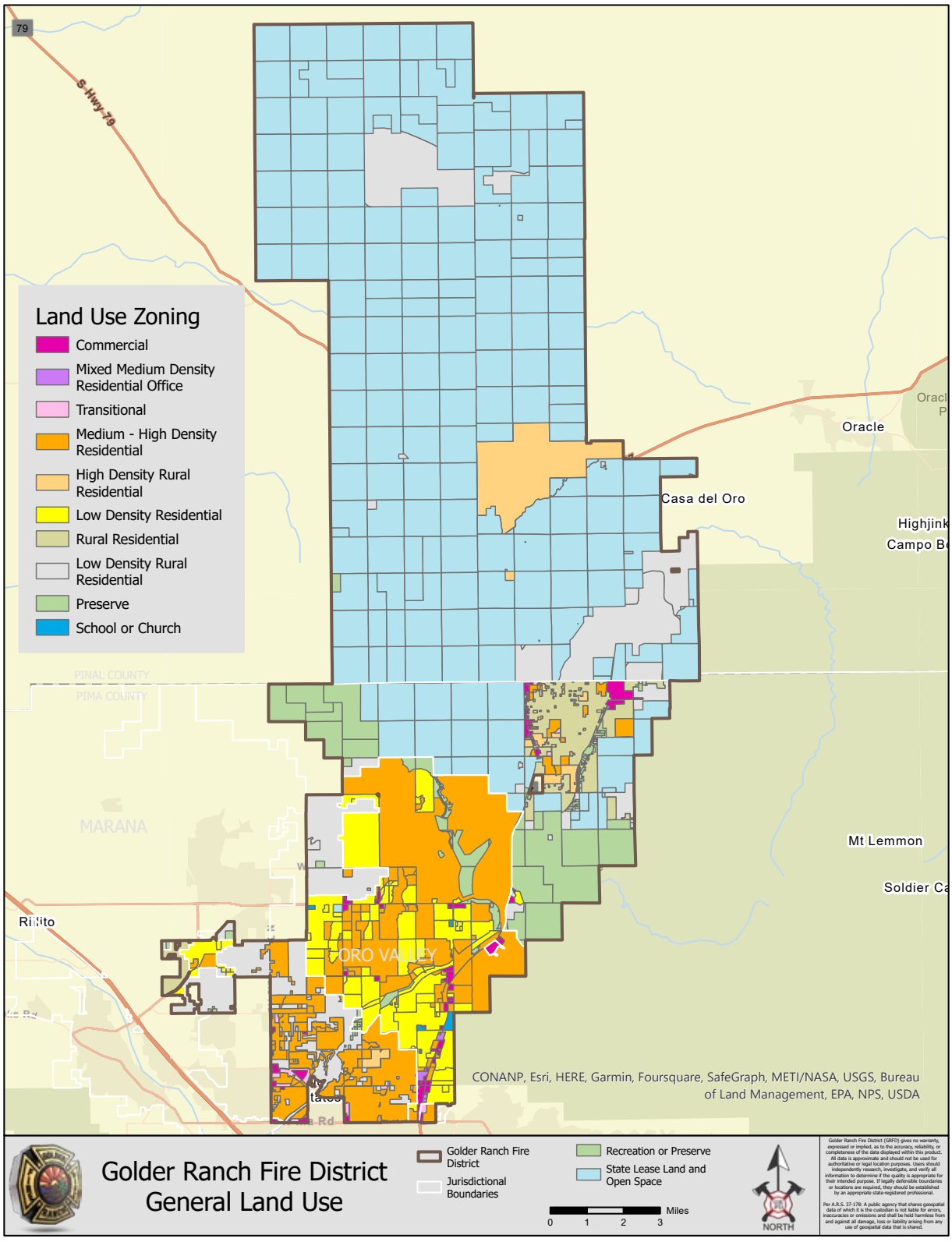
Employer	Employees who work within the district
Roche Tissue Diagnostics	1,710
Oro Valley Hospital	700
Honeywell Aerospace	631
Amphitheater School District	600
Town of Oro Valley	590
Miraval Arizona	374
El Conquistador Tucson	340
Walmart	330
Fry's Food Stores	300
Golder Ranch Fire District	275
Casa de la Luz Hospice	260

Sources – OroValleyAZ.gov., Pima Association of Governments, Miraval Arizona, Arizona Daily Star.

Roche Tissue Diagnostics – The largest employer in Golder Ranch Fire District.

LAND USE

Figure 1.14



GENERAL DESCRIPTION OF OCCUPANCIES

GRFD serves a primarily residential community along with industrial and commercial occupancies. The age range of residences in the district vary from newly-constructed homes to homes that are 50 to 60 years old. The majority of residences within GRFD are under 30 years old. There are very large homes, typically on several acres of land located in the Tortolita Foothills in the northwest area of the district. Many of these are occupied seasonally. There are numerous retail occupancies within GRFD. Many of the larger retail occupancies are adjacent to Oracle Road. While there are several big box stores, the majority of retail occupancies are in single-story strip malls.

There are several large industrial occupancies in GRFD including Honeywell Aerospace, Roche Tissue Diagnostics and Meggitt Securaplane. The majority of industrial occupancies are also adjacent or near the Oracle Road corridor. There are two-to-four-story large garden-style apartment complexes located throughout the district.

There is one hospital within GRFD. Oro Valley Hospital is a 146-bed, all private room acute care hospital located in the NE quadrant of GRFD. In addition to smaller extended care facilities scattered throughout the district, there are several large extended care facilities offering various levels of care. There are four public elementary schools, three public middle schools and two public high schools within GRFD. There are also several private and charter schools.

There are many faith-based occupancies throughout the district, varying in size from small to very large – able to accommodate over 1000 attendees.

SERVICE TYPE INFRASTRUCTURE

There are several high-voltage transmission lines that run through GRFD. Associated with these transmission lines are supporting substations. There are high-pressure, large-diameter natural gas transmission lines present in the far northern unpopulated area of the district and two major arterial gas lines. Location maps of the arterial lines are located in **Appendix 1.3.** The district maintains a list of other critical service and building infrastructure that is guided by the Federal Emergency Management Agency (FEMA) critical infrastructure definition.[14] There are no major wastewater treatment plants in GRFD.

TRANSPORTATION INFRASTRUCTURE

There are no railways or interstate highways within GRFD. State Route 77, also known as Oracle Road is a six-lane major highway that traverses GRFD's service area north to south along the east side of the district. It has the highest traffic volume of roadways within GRFD. There are other major arterial roadways that provide the basic vehicle transportation infrastructure for the area. Traffic volumes for some of the major arterials in GRFD are presented in Section 3. There are no new major roadways planned within the district in the near future.

State Route 77 – Oracle Rd.

Many of the arterial roadways have designated bike lanes or separated shared-use paths. A premier bike and pedestrian path follows the Cañada del Oro Wash through much of GRFD. The Regional Transportation Authority (RTA) provides public bus service utilizing several different routes in Oro Valley and unincorporated areas of GRFD.

[14]FEMA defines critical infrastructure as those assets, systems, networks and functions – physical or virtual – so vital to the United States that their incapacitation or destruction would have a debilitating impact on security, national economic security, public health or safety or any combination of those matters.

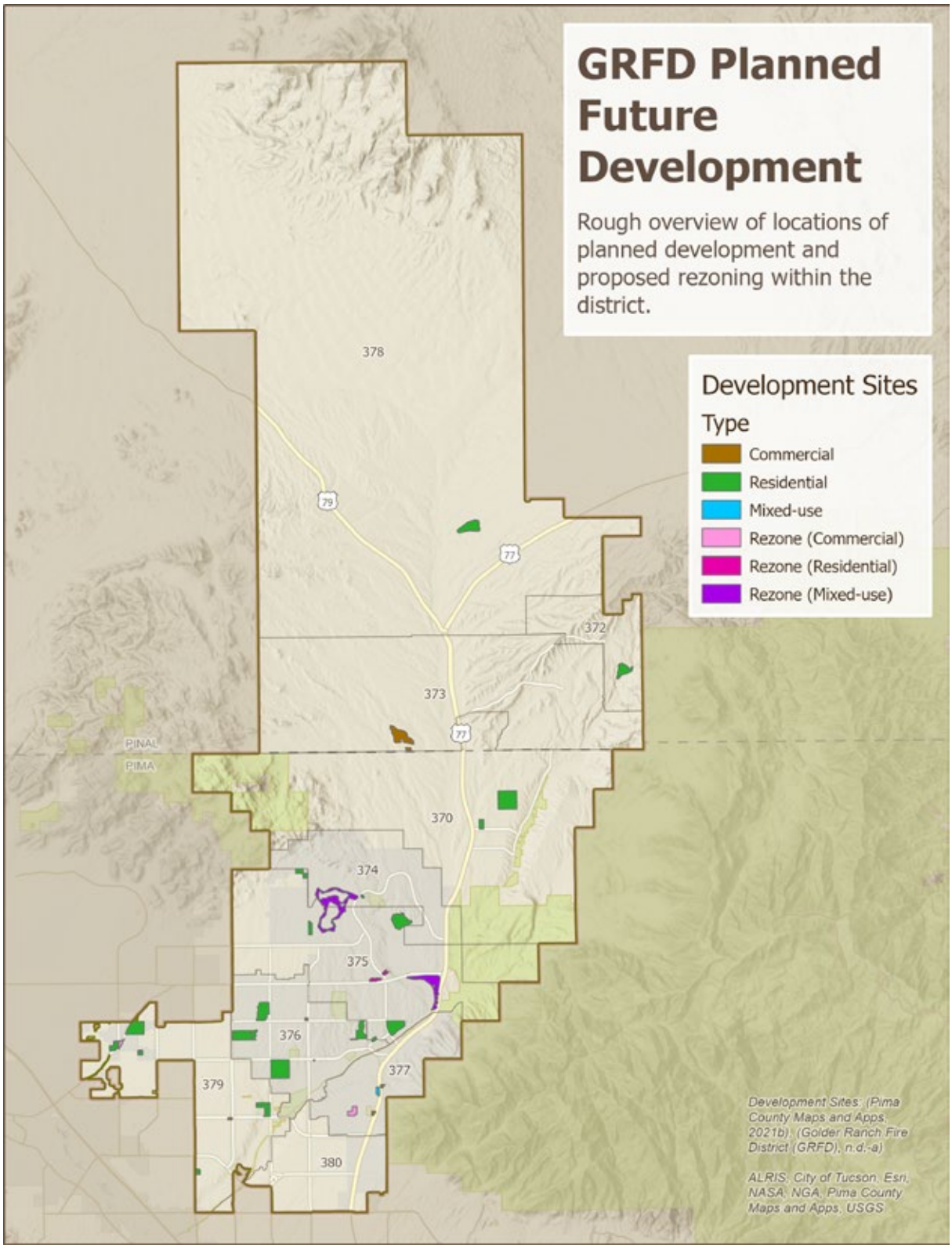
There is a single private airport within GRFD's service area. La Cholla Airpark is located in the northwest area of the district. It has a 4670-foot runway and is unique in that many of the residents of the airpark development have direct aircraft access to the runway from their homes. One and two engine privately owned aircraft fly in and out of the airport.

GROWTH

As noted earlier in this section, growth continues at a rapid pace in GRFD. The Town of Oro Valley anticipates 1,025 single family resident (SFR) permits in already-approved subdivisions in the next five years. This represents a strong indicator that growth likely will continue at or above the current growth rate. Similar growth rates are forecast for the unincorporated areas of GRFD. Areas of future development are identified in **Figure 1.15** on the following page.

New development adjacent to La Cholla Blvd. & Naranja Dr.

Figure 1.15



SECTION 2 – DISTRICT PROGRAMS & SERVICES

Fire departments are the most common local-level disaster management resource in the world.

–Damon P. Coppola in Introduction to International Disaster Management (Third Edition), 2015

FIRE AND LIFE SAFETY DIVISION

The Fire and Life Safety Division provides proactive service delivery, including fire inspections, building plan reviews and fire investigations. Periodic inspections on selected commercial occupancies are performed to check for compliance with fire prevention codes. Maintenance inspections ensure that exits, exit sign lighting, fire sprinklers and fire alarm systems are maintained and in good working order. Certified fire investigators perform an investigation of fires to determine origin and cause. Findings are utilized to prioritize fire inspections and develop focused public education programs to help minimize fire loss in the community.

PUBLIC EDUCATION

Public education is a vital part of how GRFD best serves the community. The goal of the GRFD's public education program is to provide every citizen within GRFD with the highest level of safety awareness training available. Public education programs currently being delivered include CPR training, child car seat safety, smoke alarm education and assistance, hazard safety inspections and elementary school fire prevention education.

NONEMERGENCY SERVICES PROVIDED BY SHIFT PERSONNEL

On-duty shift personnel provide several nonemergency services to the community. These include station tours, presence at community functions, smoke detector battery replacement and desert reptile removal.

FIRE SUPPRESSION

GRFD provides emergency response to a wide range of fire suppression-related incidents from small grass and dumpster fires to residential, commercial and industrial occupancy fires. The National Fire Protection Association (NFPA) Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments is utilized as a guide and planning resource.

The district maintains constant staffing of 53 firefighters who staff eight engine companies, two truck companies, six ambulances and one air/light/power apparatus. When staffing allows, the district will staff a seventh day ambulance, as well as two utility trucks and a hazmat technical rescue apparatus. Two shift battalion chiefs oversee daily operations and provide incident command on multi-company incidents, as well as one emergency medical captain who functions as a safety officer on emergency incidents. Additionally, three water tenders and seven brush trucks are cross staffed. All fire apparatus at the time of their manufacture date meet the requirements of NFPA 1901, Standard for Automotive Fire Apparatus.

EMERGENCY MEDICAL SERVICES

Emergency medical services make up 89% of GRFD's emergent call volume. GRFD provides all patient transports within the district with seven advanced life support (ALS) level ambulances. The district maintains an Arizona Department of Health Services Certificate of Necessity (CON) that permits transportation and cost recovery for both basic and advanced life support patients. See **Appendix 2.1.** In addition, all first-due companies are staffed to provide ALS-level services. GRFD firefighters are certified EMTs at minimum, and 48% percent of shift personnel are certified as paramedics.[15]

The Emergency Medical Services division chief is responsible for the overall supervision, operational readiness and effectiveness of medical operations and administration. The EMS Division chief also has regional responsibilities that include participation in pre-hospital care committees and liaison responsibilities with the district's medical director.

In addition to emergency medical response, the GRFD offers a Community Integrated Healthcare Program (CIHP) to reduce hospital readmission for patients discharged with diagnoses of congestive heart failure, chronic obstructive pulmonary disease, diabetes mellitus, myocardial infarction and pneumonia. Through partnerships with hospitals, primary care physicians and specialists, patients who live in the district are identified and offered enrollment when discharged. Community paramedics then work with the patient to assist them in understanding and managing their health conditions. Community paramedics have received 60 hours of additional training in nutrition, pharmacology, lab value interpretation, smoking cessation and disease-specific processes. GRFD has three CIHP certified paramedics.

[15]As defined by the Arizona Department of Health Services, Title 9 – Health Services, Chapter 25.

HAZARDOUS MATERIALS

GRFD maintains response capability for hazardous materials (hazmat) emergencies within the district. All GRFD firefighters are trained at the operations level per NFPA 472 Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents and can mitigate basic hazardous materials emergencies such as small flammable liquid spills, carbon monoxide alarms, small to moderate diameter natural gas line breaks and small pressurized vessel leaks. The district also maintains hazmat apparatus and a hazmat team consisting of 29 personnel trained to the technician level as defined in NFPA 472. For hazmat emergencies that extend beyond the capabilities of the GRFD Hazmat Team, Northwest Fire District and Tucson Fire Department are available to respond with additional technician-level personnel and equipment.

TECHNICAL RESCUE

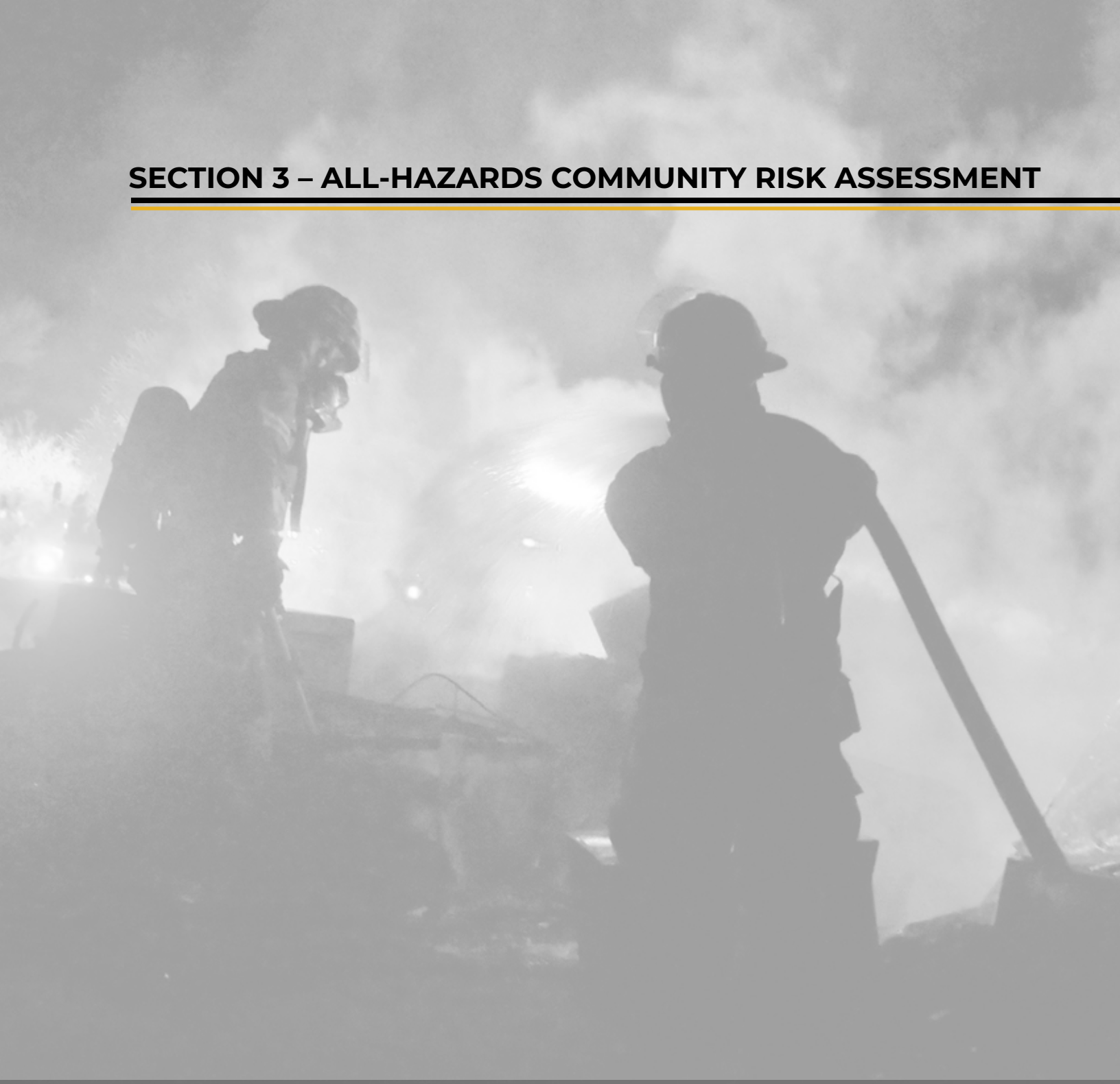
GRFD responds to various types of technical rescue incidents in the community, including high and low angle, confined space, swift water, structural collapse and machinery extrication. All GRFD firefighters have awareness-level training per NFPA 1670, Standard on Operations and Training for Technical Search and Rescue Incidents, and there are 27 firefighters trained to the technician level as defined in NFPA 1670. The district also maintains a TRT apparatus and equipment trailers. GRFD can request assistance from Northwest Fire District and Tucson Fire Department for additional technician-level personnel and equipment.

WILDLAND FIRE

GRFD responds to wildland fires inside and outside district boundaries in cooperation with the State Department of Forestry and Fire Management. All GRFD firefighters are trained to the level of type 2 wildland firefighter. Members of the 40-person wildland team are trained to that minimum and are red carded through the National Wildland Coordinating Group (NWCG).

Many wildland team members also have more advanced certifications through the NWCG, such as engine and crew boss. The GRFD maintains a total of seven brush trucks, four type 6 and three type 3 engines as described by the NWCG. All wildland fire apparatus at the time of their manufacture date meet the requirements of NFPA 1906, Standard for Wildland Fire Apparatus.

SECTION 3 – ALL-HAZARDS COMMUNITY RISK ASSESSMENT



The essence of risk management lies in maximizing the areas where we have some control over the outcome while minimizing the areas where we have absolutely no control over the outcome.

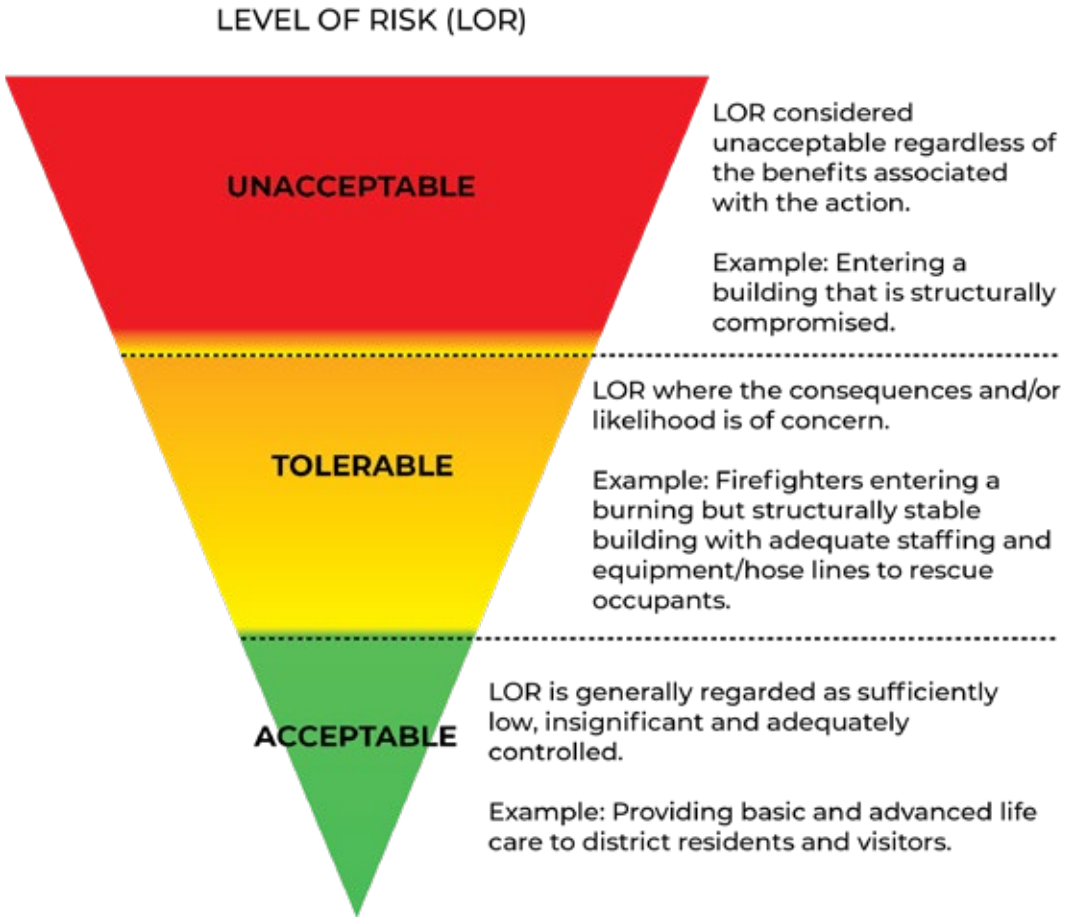
–Peter L. Bernstein

Hazards, in the context of this document, are any dangerous conditions with the potential to cause harm to people and loss to property, including fires, medical emergencies, the release of hazardous materials, entrapments and other hazards. Risk can be defined as an estimate of the probability of a hazard-related incident occurring and the severity, harm or damage that could result.[16]

It is important to note that there is always residual risk. It is not possible to eliminate all risk. The public's tolerance of risk as represented through the elected governing fire board and the fire chief's perspective of risk determine the allocation of risk and the acceptable level of residual risk to the community.

This generally follows the As Low as Reasonably Possible (ALARP) risk management concept – illustrated below.

Figure 3.1



[16]Manuele, Fred A. (2008). Advanced Safety Management, Hoboken NJ: John Wiley & Sons, p.113.

A comprehensive community risk assessment provides a focused and systematic approach for the district to develop risk management/reduction strategies and tactics. Vision 20/20 Community Risk Assessment: A Guide for Conducting Community Risk Assessment defines community risk assessment as "basically the identification of potential and likely risks within a particular community, and the process of prioritizing those risks. It is the critical initial step in emergency preparedness, which enables organizations to eventually mitigate (if possible), plan, prepare and deploy appropriate resources to attain a desired outcome."[17]

Risk management can be defined as the identification and evaluation of risks, and the development, selection and implementation of control measures up front to lessen the probability of a harmful consequence.[18]

Quoting again from the Vision 20/20 document, community risk reduction (CRR), is a "desired outcome of a community risk assessment (CRA), and can be defined as a process to identify and prioritize local risks, followed by the integrated and strategic investment of resources (emergency response and prevention) to reduce their occurrence and impact."[19]

Both the National Fire Protection Association (NFPA) 1300 standard and Vision 20/20 document recommend that following the development of the CRA, a community risk reduction plan be constructed based on the findings of the CRA.

The GRFD community risk assessment process incorporated procedures from three best practice documents 1) The Vision 20/20 guide 2) Center for Public Safety Excellence (CPSE) Quality Improvement for the Fire and Emergency Services Model and 3) the NFPA 1300 Standard on Community Risk Assessment and Community Risk Reduction Plan Development (2020 Edition).

Figure 3.2 Vision 20/20 Model

[17]Stouffer, John A. Vision 20/20. Community Risk Reduction: A Guide for Conducting a Community Risk Assessment. Version 1.5 Rev. 02/16.
[18]Graham, Gordon. www.firenuggets.com.
[19]Stouffer, John A. Vision 20/20. Community Risk Reduction: A Guide for Conducting a Community Risk Assessment. Version 1.5 Rev. 02/16.

Figure 3.3 CPSE Quality Improvement for the Fire and Emergency Services Model

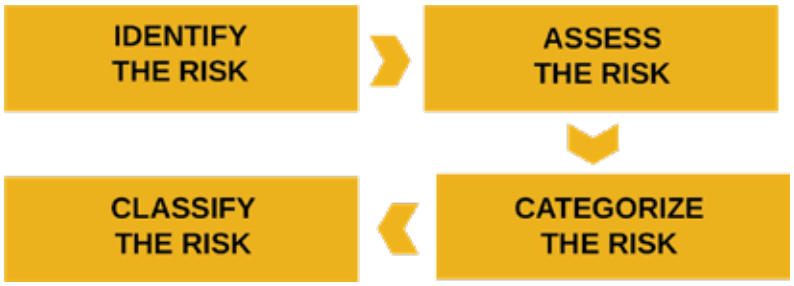


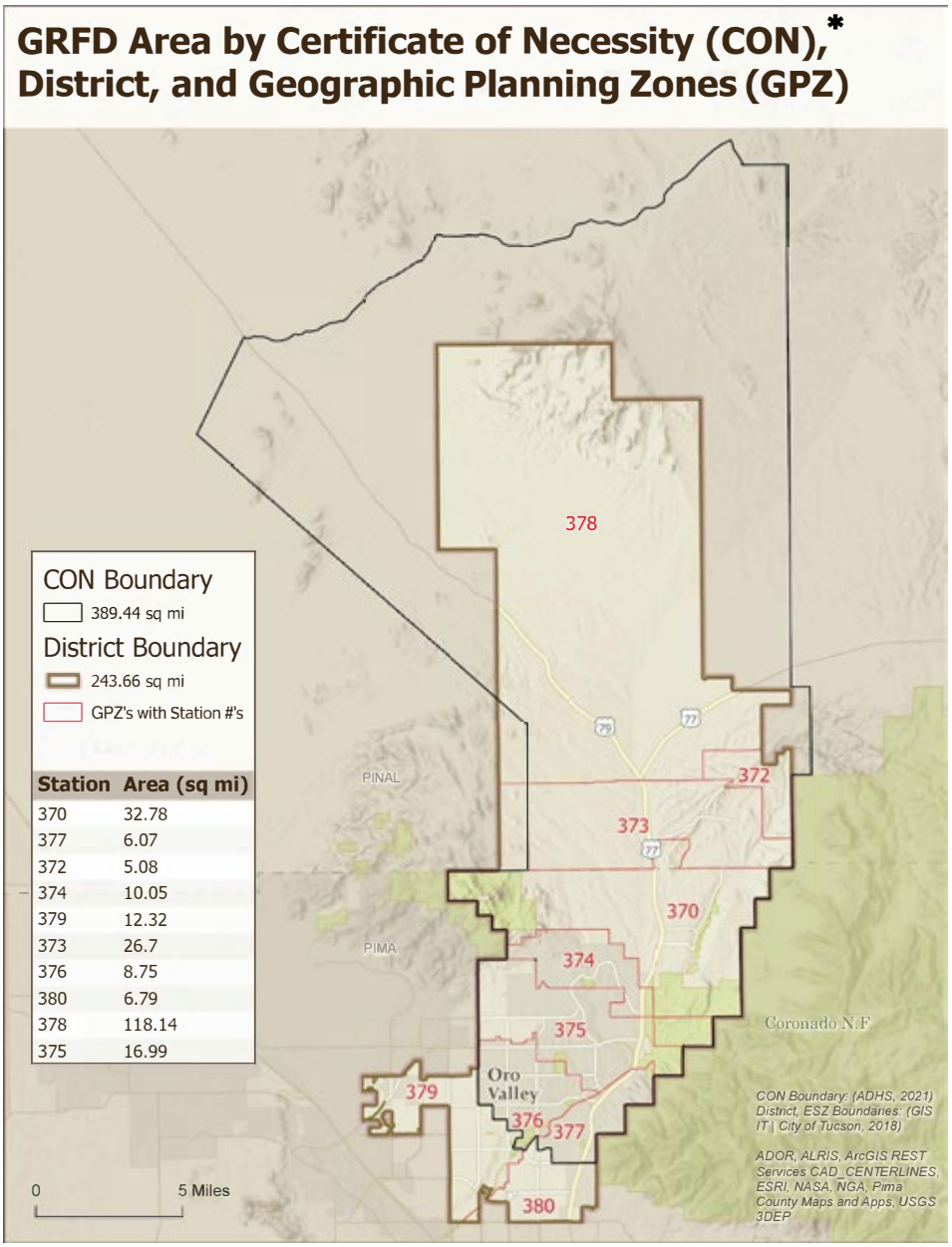
Figure 3.4 NFPA 1300 Standard on Community Risk Assessment and Community Risk Reduction Plan Development (2020 Edition)

STEP 1	Recognize the need to conduct a community risk assessment (CRA), and develop a community risk reduction plan (CRR) based on the CRA.
STEP 2	Define the problem by identifying the potential risks and their root causes, and develop programs that are appropriate to mitigate the identified risks that exist within the available categories.
STEP 3	Collect empirical data (verifiable and validated) regarding the community's demographics, building stock profile, geography, past loss history and potential likelihood or anticipated future events.
STEP 4	Analyze the data.
STEP 5	Identify gaps; areas where actual conditions vary from desired outcomes.
STEP 6	Validate the CRA by comparing the findings of the CRA with the available data, to ensure they are consistent with the community's level of acceptable risk, capabilities and resources. All risks considered in the CRA might not be addressed in the CRR plan.

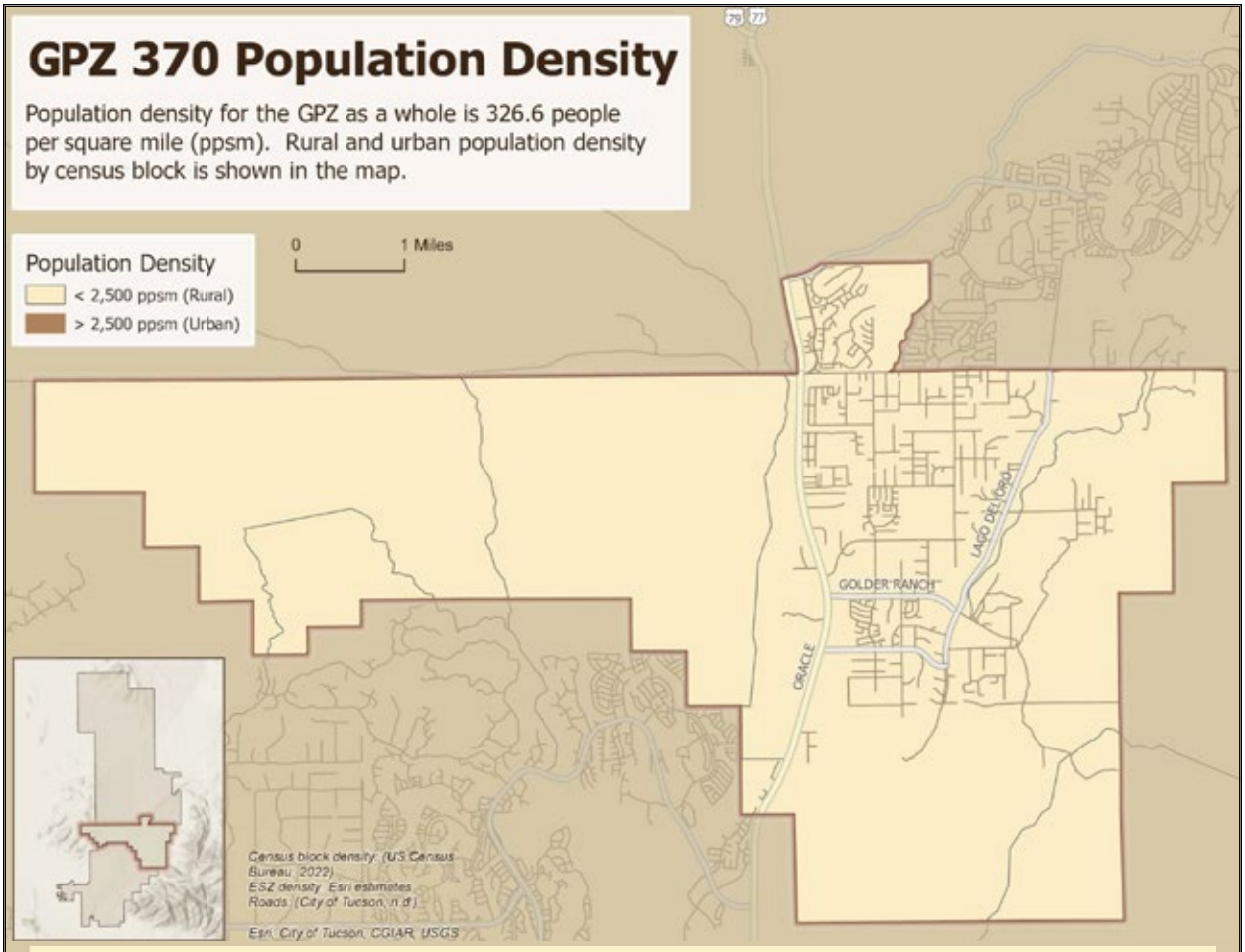
GEOGRAPHIC PLANNING ZONES

As part of the community risk assessment process, GRFD created ten geographic planning zones (GPZs) that align with current station first due areas. These zones were assessed to determine various risk factors in each zone such as population density, occupancies, incident history, travel time and other relevant risk factors.

Figure 3.5



*The CON boundary includes GPZs 379 and 380, however, updated GIS data from the state is not yet available. GRFD is working with the state to ensure the new map reflects the actual CON boundary which includes all GPZs within the district.



General Description

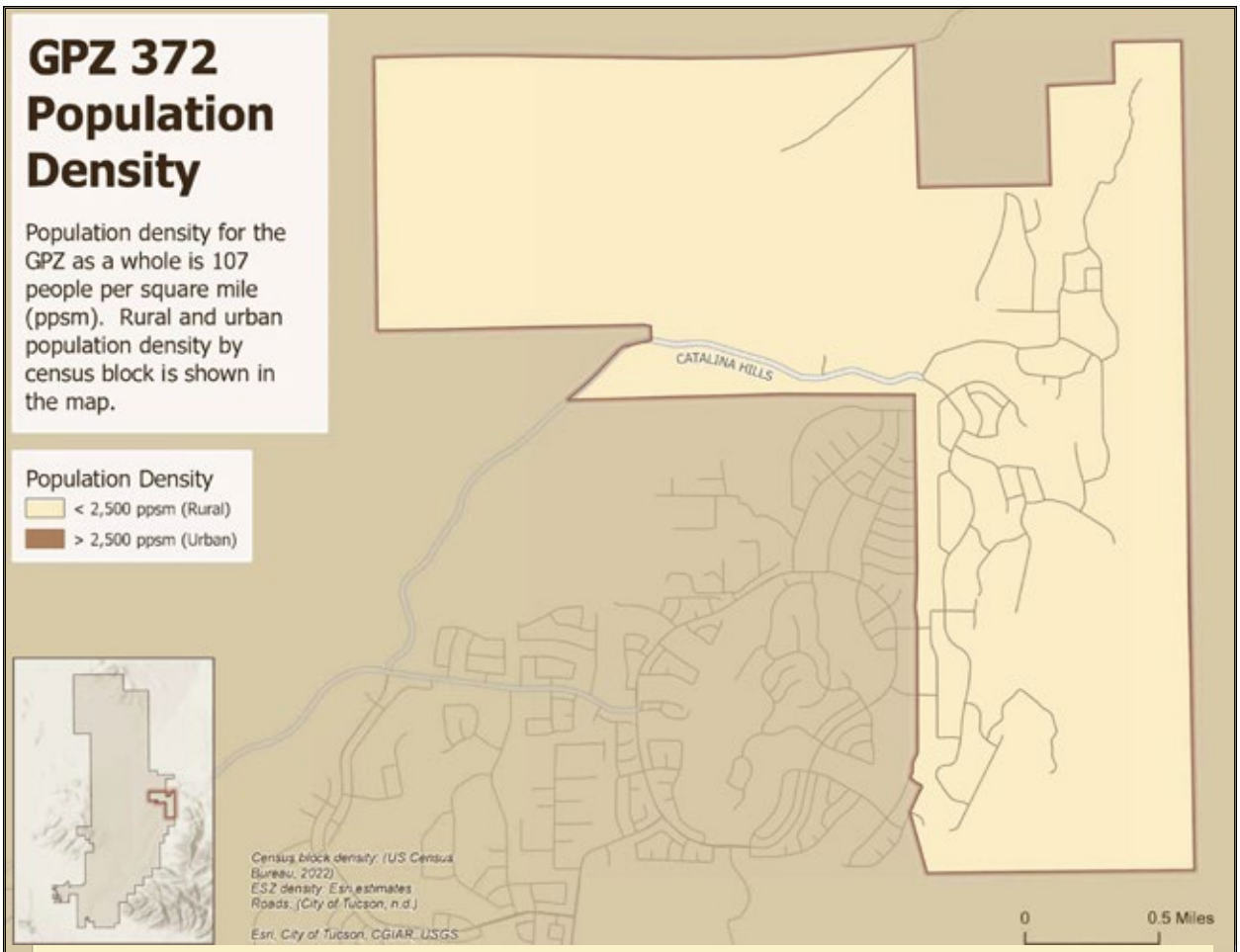
GPZ 370 covers the area where the GRFD was initially founded. The western half of the GPZ consists of open land and desert, while the unincorporated residential area of Catalina encompasses the majority of the eastern half of the GPZ. Catalina is a community characterized by large lots of one acre or more. The construction types vary widely due to the unincorporated nature of the area, ranging from aging modular homes to custom construction.

Critical Infrastructure and Significant Features

State Route 77 (Oracle Road) traverses this GPZ in a north-south direction. The eastern edge of this GPZ borders the Coronado National Forest in the foothills of the Santa Catalina Mountains and represents a significant wildland-urban interface risk.

Square Miles	32.8	% Total Coverage Area	13%
Total Call Volume – 2019-2021	4,427	% Total Call Volume – 2019-2021	9%
Population	10,705	Population Density	326

Service Program	EMS	Fire	Hazmat	TRT	Wildland
Risk Category	Moderate	High	Moderate	High	High



General Description

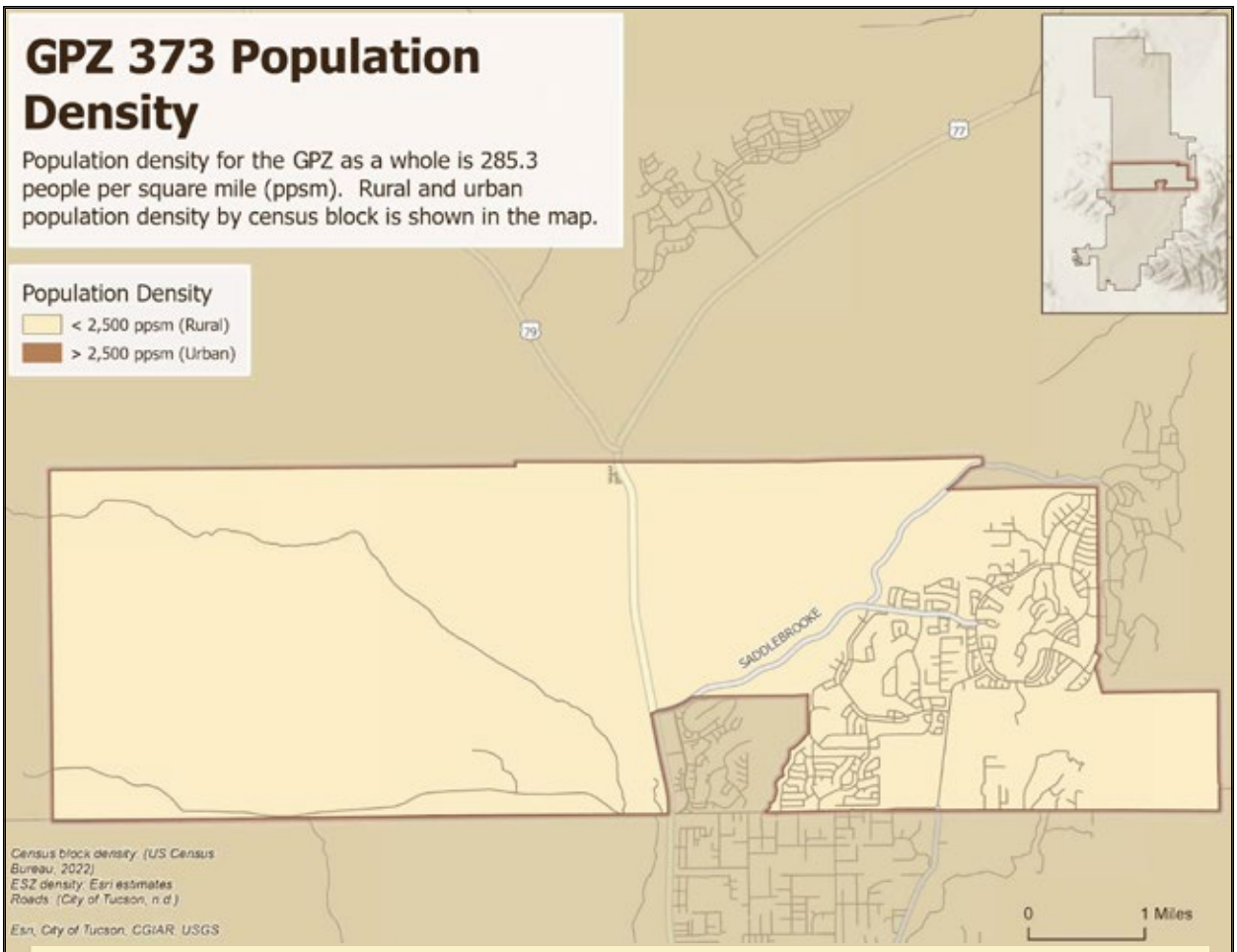
GPZ 372 includes the northeastern portion of the Saddlebrooke retirement community. This encompasses approximately the entire eastern half of this GPZ. Saddlebrooke is a master-planned retirement community with construction typified by lightweight wood frame and stucco housing. This community is built around several golf courses and there is very little commercial in this GPZ. What is present consists of a golf club and clubhouse.

Critical Infrastructure and Significant Features

The eastern edge of the GPZ borders the Coronado National Forest in the foothills of the Santa Catalina Mountains and represents a significant wildland-urban interface risk.

Square Miles	5.1	% Total Coverage Area	2%
Total Call Volume – 2019-2021	1,016	% Total Call Volume – 2019-2021	2%
Population	543	Population Density	106

Service Program	EMS	Fire	Hazmat	TRT	Wildland
Risk Category	Low	Low	Low	Low	High



General Description

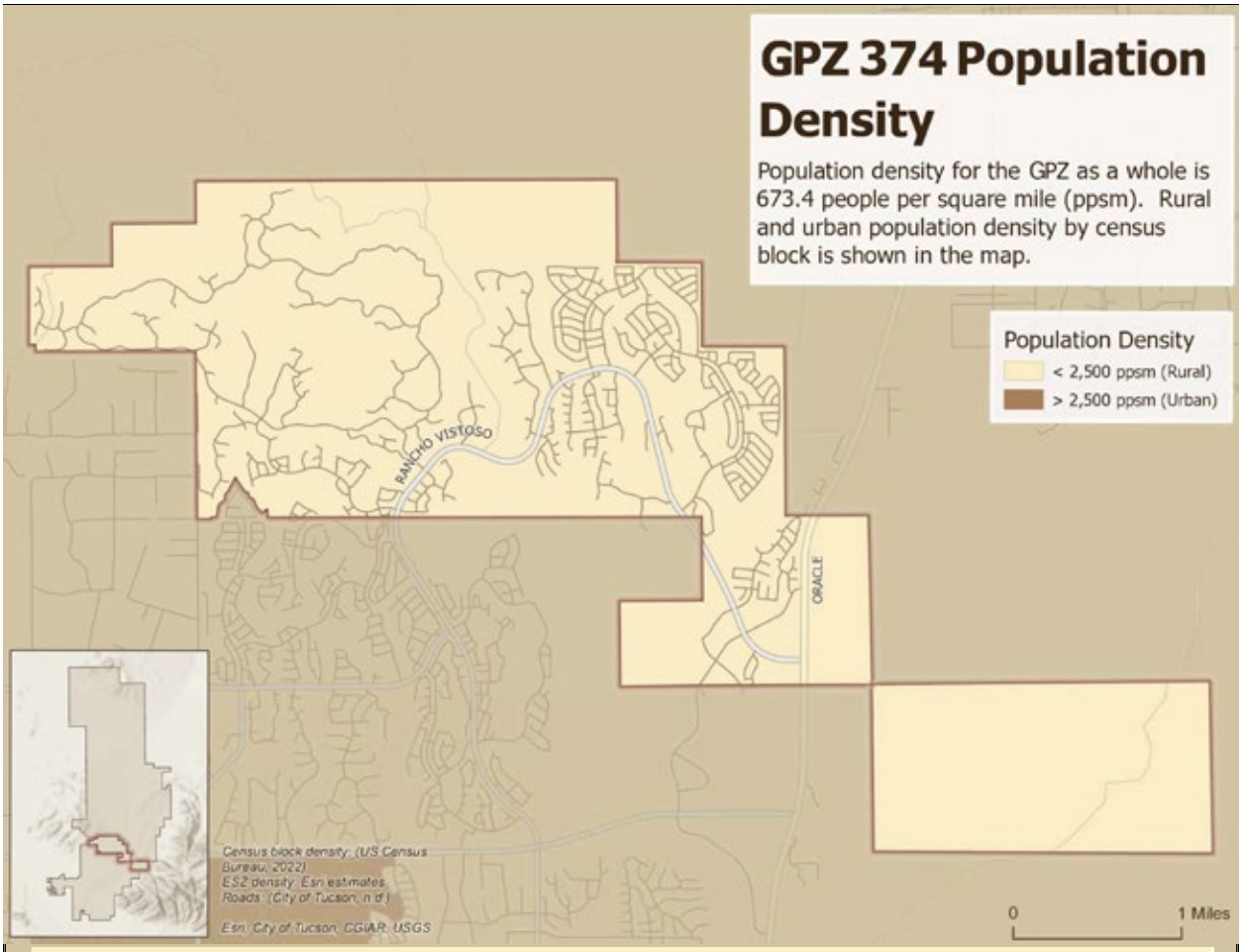
GPZ 373 covers most of the Saddlebrooke retirement community except the northeastern third. Saddlebrooke is a master-planned community with construction typified by lightweight wood frame and stucco housing. This community is built around several golf courses. There is very little commercial in this GPZ. What is present consists of a golf club and clubhouse. Saddlebrooke encompasses the eastern third of this GPZ. The remainder to the west is open state and private land. The southeastern corner of this GPZ abuts the Coronado National Forest boundary for approximately two miles.

Critical Infrastructure and Significant Features

State Route 77 (Oracle Road) traverses the western edge of the GPZ in a north-south direction.

Square Miles	26.7	% Total Coverage Area	10.9%
Total Call Volume – 2019-2021	8,728	% Total Call Volume – 2019-2021	17%
Population	7,617	Population Density	285

Service Program	EMS	Fire	Hazmat	TRT	Wildland
Risk Category	High	Moderate	High	Low	High



General Description

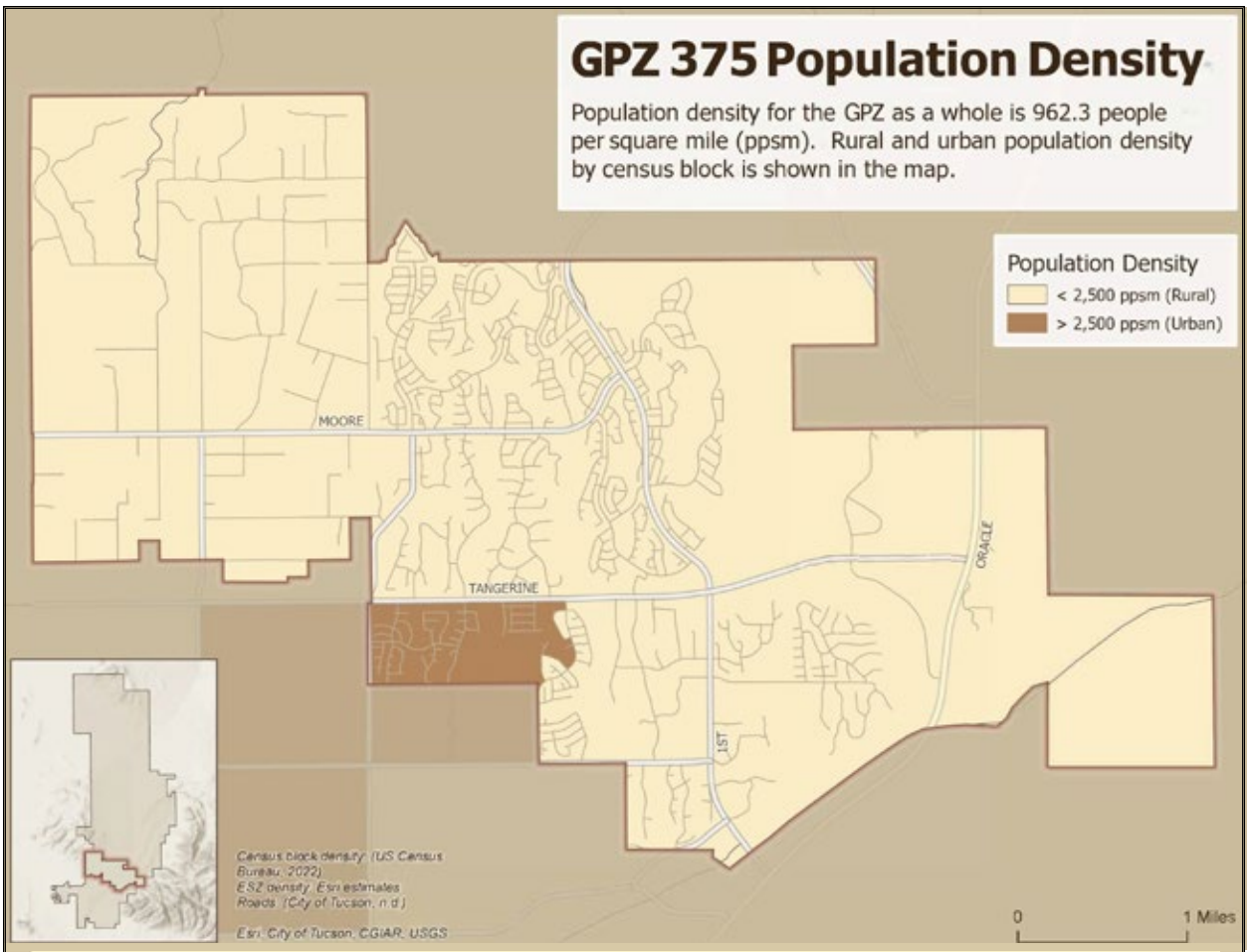
GPZ 374 encompasses Sun City and Honeybee Canyon Estates neighborhoods and a portion of Innovation Park, which contains most of the commercial occupancies. Sun City is a typical adult-living neighborhood characterized by 2000-square-foot homes of lightweight wood frame and stucco on small lots. Honeybee Canyon Estates is a gated community of approximately 50 large luxury homes on one acre plus lots in the Tortolita Foothills. These neighborhoods are part of the master-planned Rancho Vistoso community surrounded by open land preserved for recreational activities. The western side of this GPZ includes Stone Canyon; another gated and master-planned community.

Critical Infrastructure and Significant Features

State Route 77 (Oracle Road) traverses the eastern edge of the GPZ in a north-south direction. There is a significant wildland/urban interface risk for homes located in the foothills of the Tortolita Mountains.

Square Miles	10.0	% Total Coverage Area	4.1%
Total Call Volume – 2019-2021	4,301	% Total Call Volume – 2019-2021	8%
Population	6,771	Population Density	673

Service Program	EMS	Fire	Hazmat	TRT	Wildland
Risk Category	Moderate	Moderate	Moderate	Low	Low



General Description

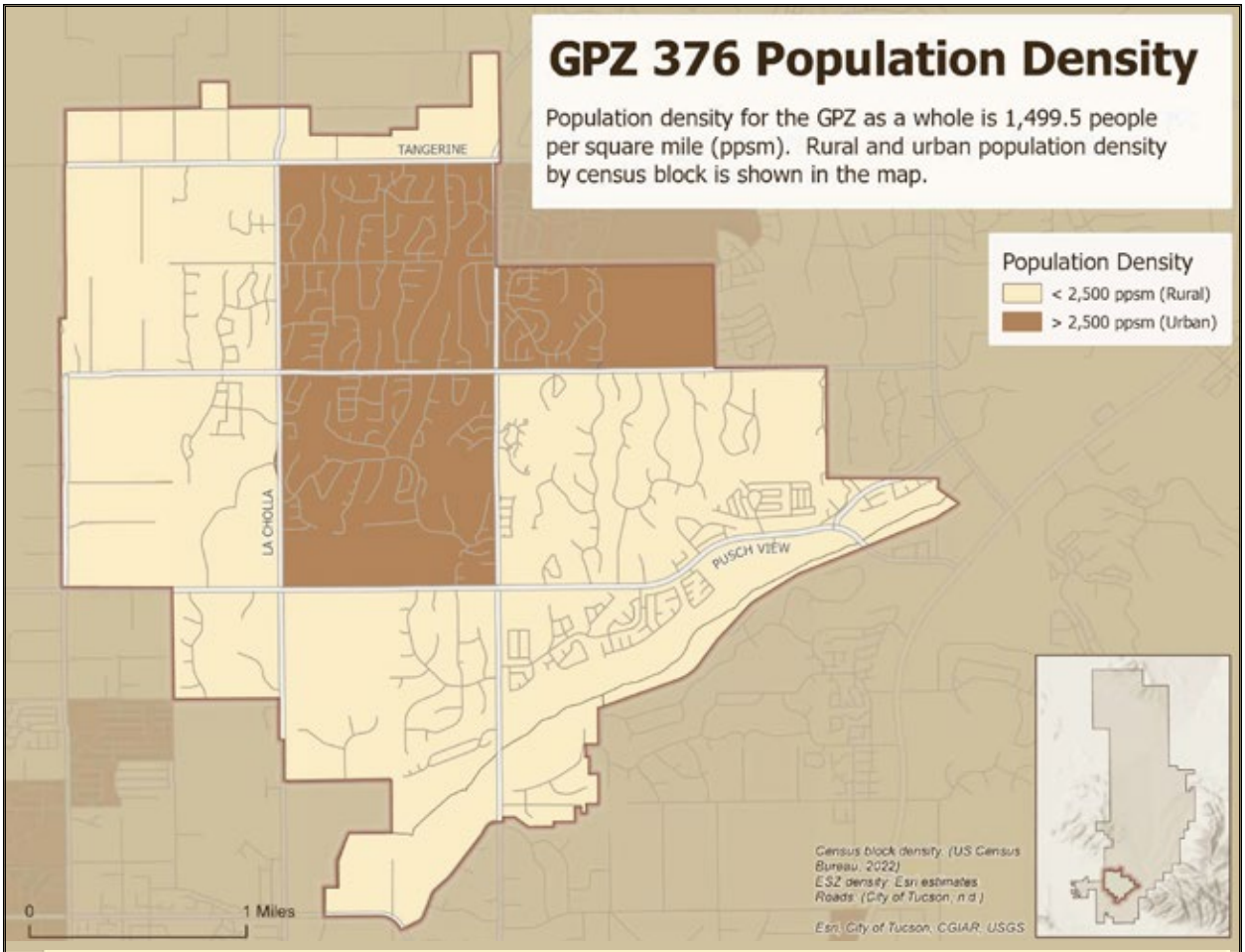
This GPZ covers the western portion of the Rancho Vistoso master-planned community. Commercial occupancies in this GPZ are mainly concentrated along Oracle and Tangerine roads, as well as in Innovation Park. This GPZ includes the Oro Valley Hospital and Roche Diagnostics, two of the larger employers in the Golder Ranch Fire District. Most of this GPZ is typical family or adult suburban neighborhoods of lightweight wood frame and stucco houses. The western side of the GPZ consists of La Cholla Airpark, a 1000-acre private residential airpark.

Critical Infrastructure and Significant Features

Oro Valley Hospital, the only hospital within GRFD and Roche Diagnostics, the largest employer in GRFD are located in this GPZ.

Square Miles	17.0	% Total Coverage Area	7.0%
Total Call Volume – 2019-2021	7,498	% Total Call Volume – 2019-2021	14%
Population	16,346	Population Density	962

Service Program	EMS	Fire	Hazmat	TRT	Wildland
Risk Category	Moderate	High	High	High	Moderate



General Description

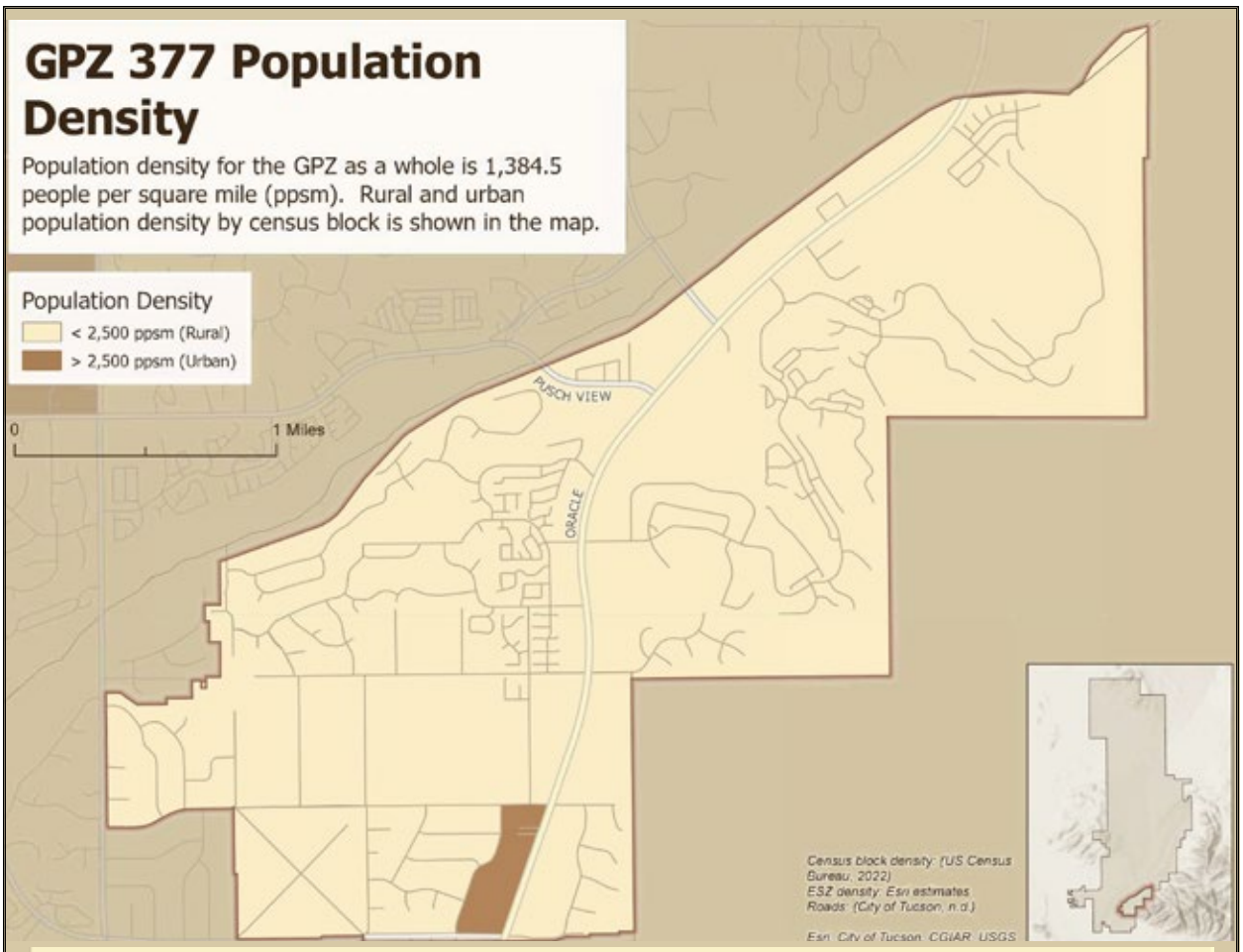
The central portion of GPZ 376 is one of the few areas of the district that rises to the level of urban population density, though much of the area consists of suburban neighborhoods with some commercial including an anchor store strip retail center. Housing construction ranges from block to wood frame, and stucco and lots vary in size. Some neighborhoods on the western and the southern end of the GPZ feature larger one-acre plus lots though the neighborhoods in the central portion typically consist of smaller lots.

Critical Infrastructure and Significant Features

There is a large high school located in this GPZ. One of the largest faith-based occupancies (1000+ capacity) is also located in this GPZ.

Square Miles	8.7	% Total Coverage Area	3.6%
Total Call Volume – 2019-2021	4,877	% Total Call Volume – 2019-2021	9%
Population	13,121	Population Density	1500

Service Program	EMS	Fire	Hazmat	TRT	Wildland
Risk Category	Moderate	Moderate	High	Low	Low



General Description

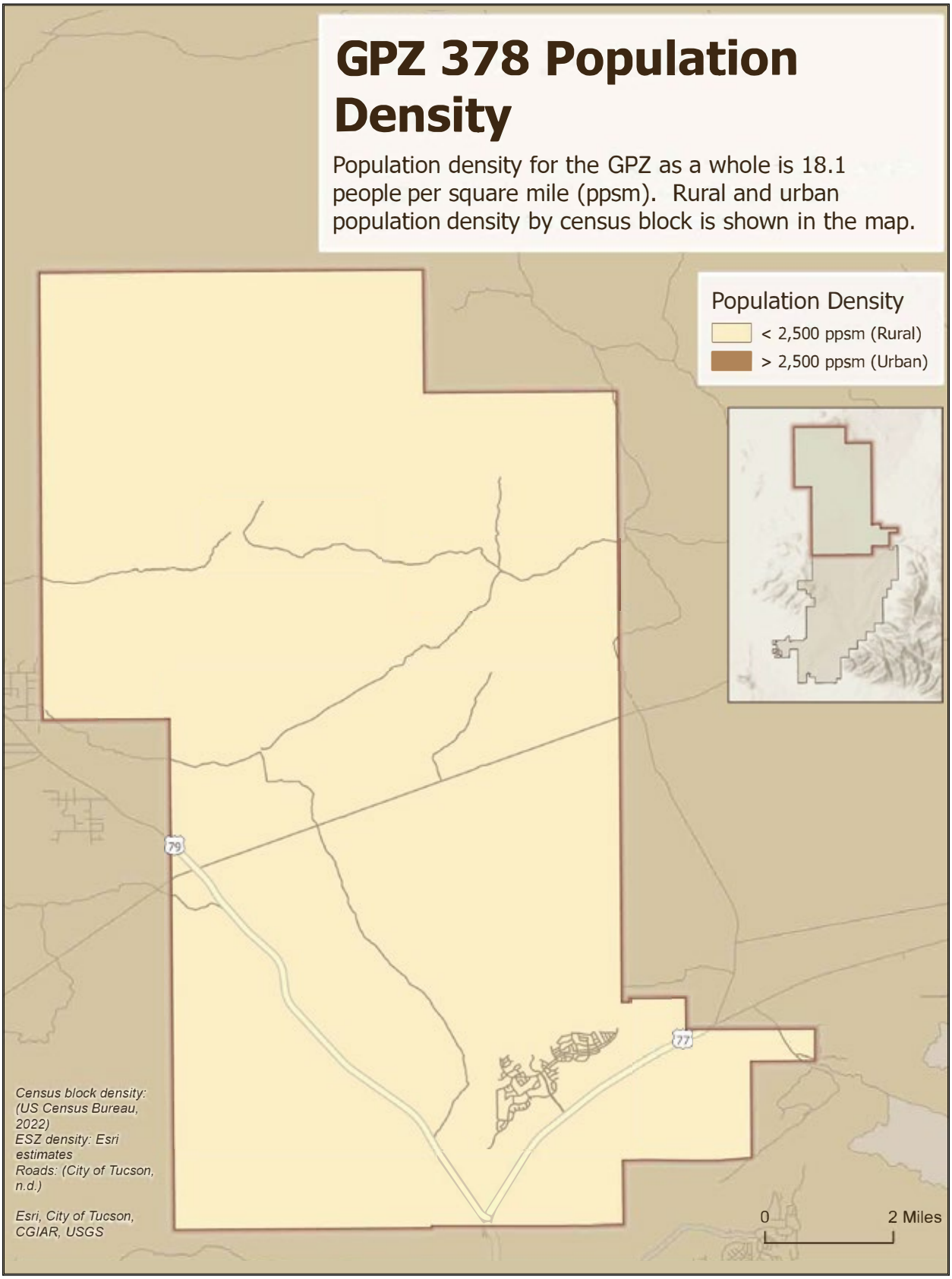
GPZ 377 straddles Oracle Road, along which are most of the commercial structures. These commercial areas are typically strip malls anchored by larger big box occupancies. There are a few light manufacturing facilities along Oracle Road in the northeastern part of the GPZ. This GPZ consists of residential neighborhoods interspersed with open land. Along the eastern edge is the El Conquistador Resort, surrounded by neighborhoods of patio-type homes, and La Reserve, a private gated community of high-end homes and condominiums. Residential construction throughout this GPZ varies between block and wood frame and stucco.

Critical Infrastructure and Significant Features

One of the largest faith-based occupancies (1000+ capacity) is located in this GPZ. The entire eastern edge of the GPZ abuts the Coronado National Forest and larger lot homes in this area have wildland-urban interface risk. This GPZ serves one the busier parts of State Route 77 (Oracle Road).

Square Miles	6.1	% Total Coverage Area	2.5%
Total Call Volume – 2019-2021	5,702	% Total Call Volume – 2019-2021	11%
Population	8,399	Population Density	1385

Service Program	EMS	Fire	Hazmat	TRT	Wildland
Risk Category	Moderate	Moderate	Moderate	Low	Low



GPZ 378 General Description

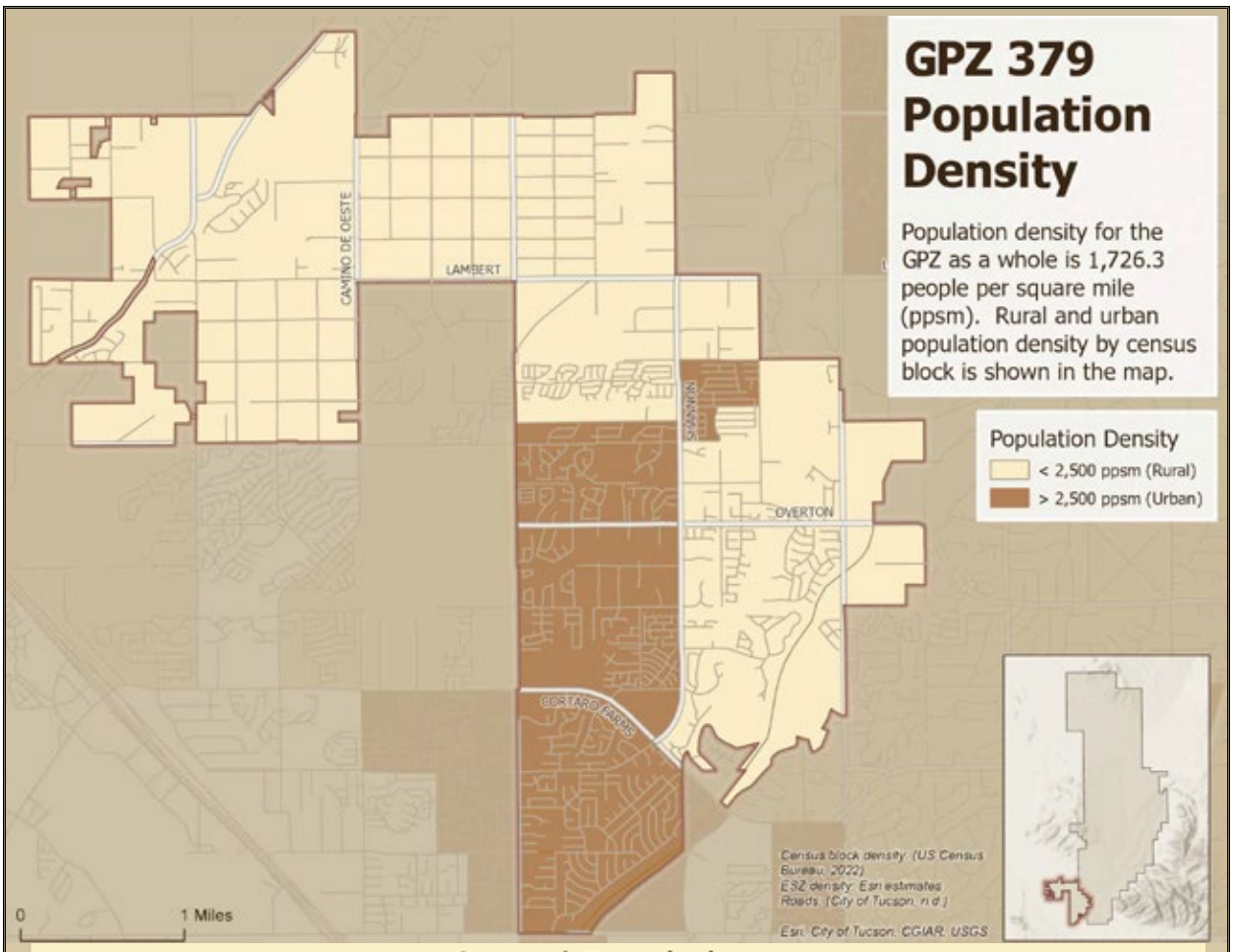
GPZ 378 is the largest of the district at 118.14 square miles but also the most sparsely populated. The only concentrated area of population is the Saddlebrooke Ranch Community. This community is a roughly two-square-mile 55+ active adult retirement community located in the southern portion of the GPZ off Highway 77, several miles north of the junction of Highways 77 and 79. The remainder of this GPZ consists of open desert, most of which is state trust land.

Critical Infrastructure and Significant Features

State Highway 79 traverses in a southeast to northwest direction in the southwest quadrant of the GPZ.

Square Miles	118.1	% Total Coverage Area	48.8%
Total Call Volume – 2019-2021	1,647	% Total Call Volume – 2019-2021	3%
Population	2,134	Population Density	18

Service Program	EMS	Fire	Hazmat	TRT	Wildland
Risk Category	Low	Low	Low	Low	Moderate



General Description

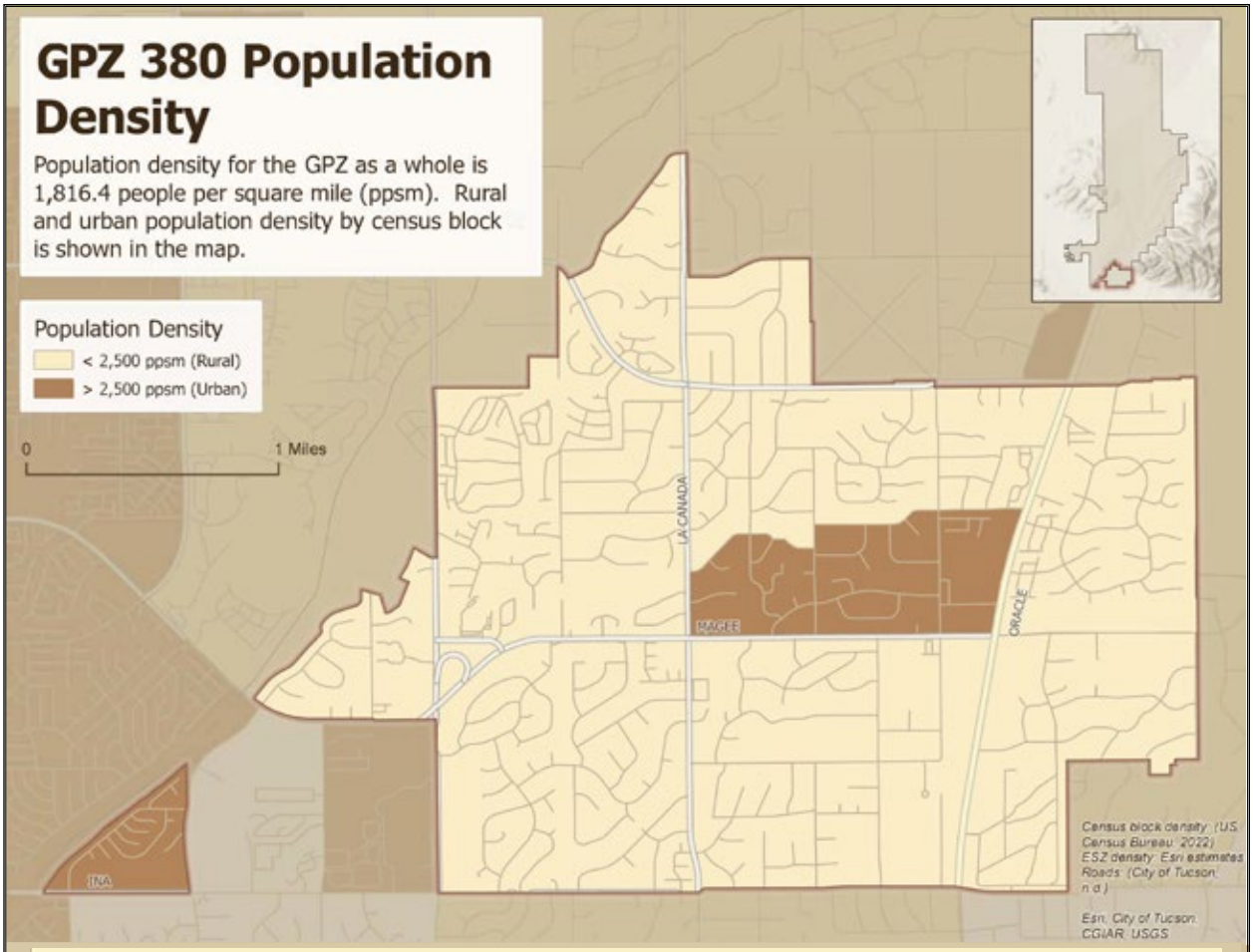
GPZ 379 is the farthest southeast GPZ and is almost surrounded by the Northwest Fire District with the exception of its eastern border. The southern portion of this GPZ comprises older neighborhoods with population densities that rise to the urban threshold of greater than 2500 people per square mile. These homes consist of wood frame and siding, with a minority being block construction. The northern portion is suburban neighborhoods with larger lots and residential construction ranging from block to wood frame and stucco. The western side of this GPZ consists of one-acre lots and tends to have more custom homes. There are also several large apartment complexes in this GPZ.

Critical Infrastructure and Significant Features

Other than several water reservoirs, there is no substantial critical infrastructure. The Cañada del Oro (CDO) wash flows in a northeast to southwest direction in the southeast quadrant of the GPZ and an unbridged crossing of the CDO represents a significant swift-water risk during high flows.

Square Miles	12.3	% Total Coverage Area	5%
Total Call Volume – 2019-2021	5,915	% Total Call Volume – 2019-2021	11%
Population	21,266	Population Density	1726

Service Program	EMS	Fire	Hazmat	TRT	Wildland
Risk Category	Moderate	High	High	Low	Moderate



General Description

This GPZ is consistent with mainly block-constructed suburban homes on half-acre or larger lots. Approximately one square mile in the center of this GPZ is above the urban threshold, but the remainder is under that threshold. Commercial construction is concentrated along Oracle, Magee and Ina roads and consists of strip malls, office complexes and grocery stores. In addition, this GPZ contains a few extensive assisted and independent living facilities. The Northwest Fire District borders the southern edge of this GPZ.

Critical Infrastructure and Significant Features

State Route 77 (Oracle Road) traverses the GPZ in a north-south direction near the eastern edge. There is a large water reservoir also located near the eastern edge of the GPZ.

Square Miles	6.8	% Total Coverage Area	2.8%
Total Call Volume – 2019-2021	8,035	% Total Call Volume – 2019-2021	16%
Population	12,336	Population Density	1816

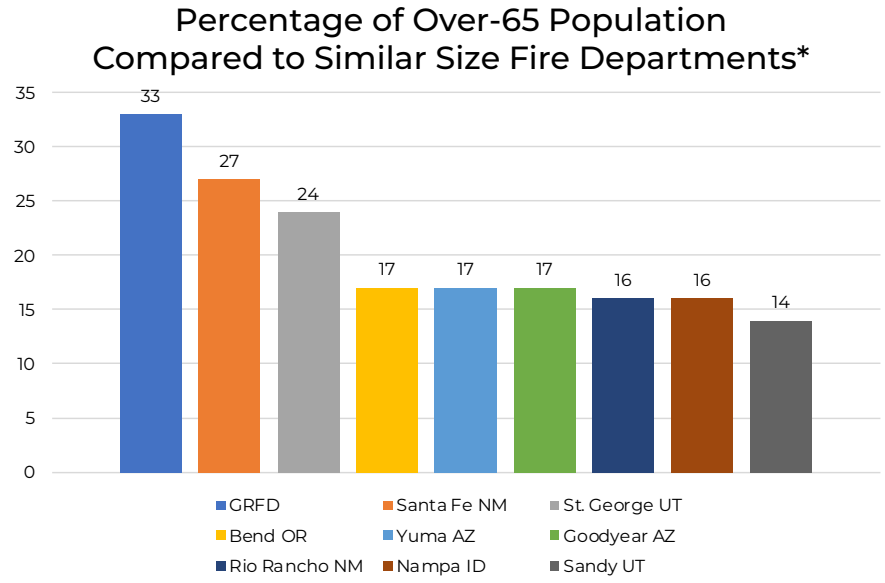
Service Program	EMS	Fire	Hazmat	TRT	Wildland
Risk Category	High	High	Moderate	Low	Low

UNIQUE RISK FACTORS IN GOLDER RANCH FIRE DISTRICT

Senior Population Risk

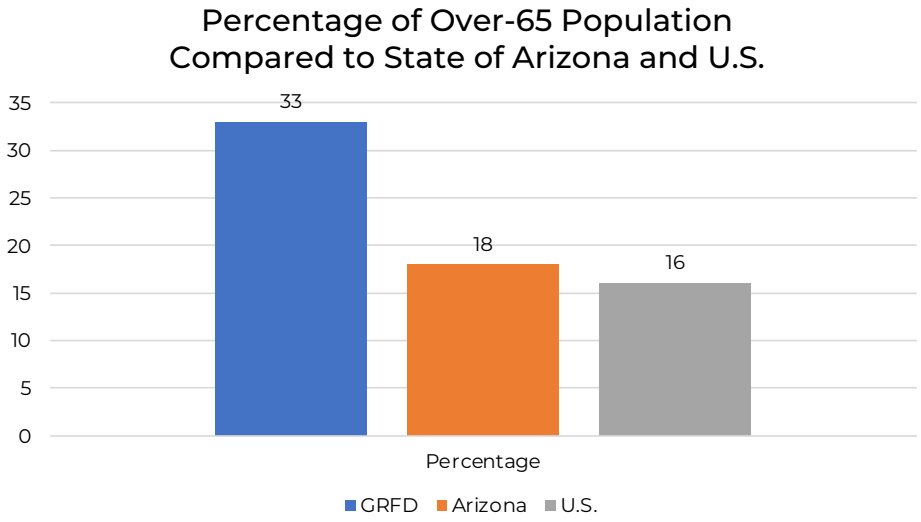
The over-65 population percentage in GRFD is 33%, a full third of the total residential population GRFD serves. This percentage is substantially higher than similar sized fire agency demographics. The influx of winter visitors each year raises this percentage even higher. **Figures 3.6 and 3.7** show the population percentage of over-65 residents in comparison to other similar sized regional fire/EMS agencies, as well as the State of Arizona and the U.S.

Figure 3.6



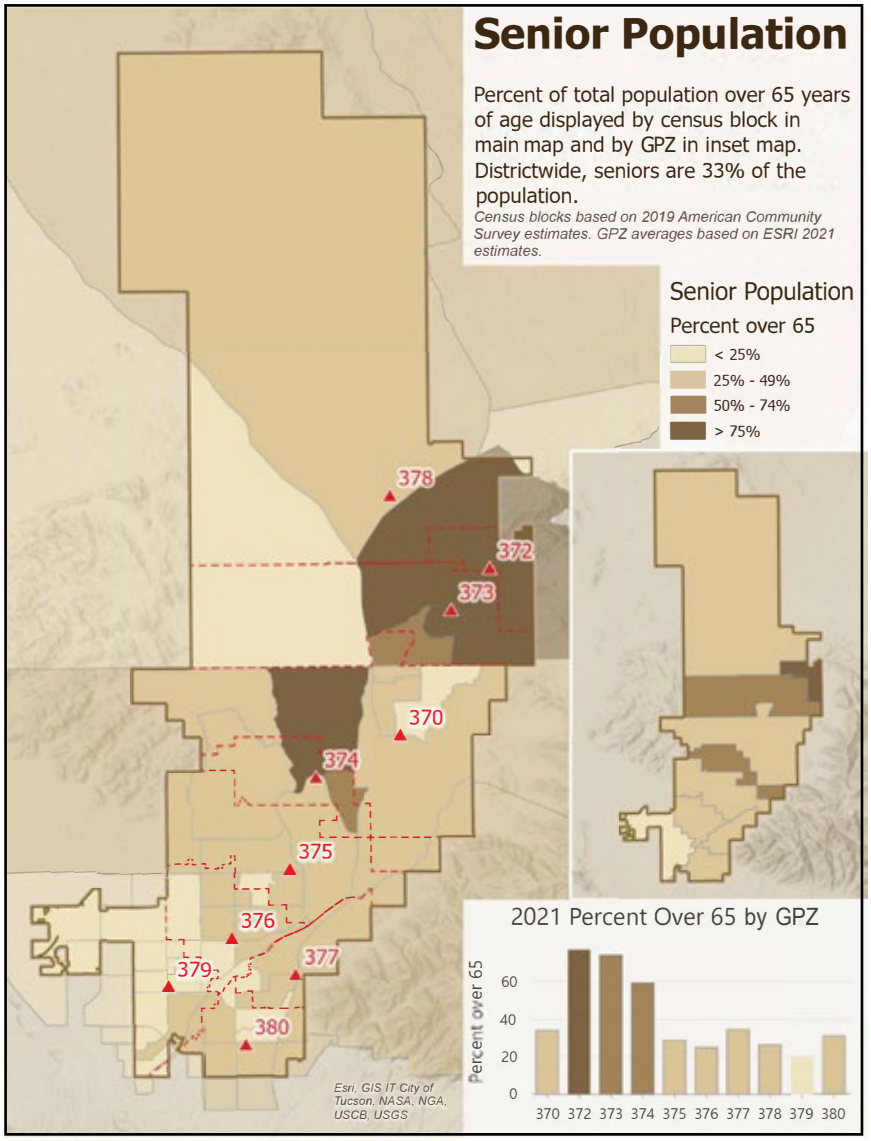
*Population range of selected fire departments was 95,814 (Yuma) to 154,853 (Santa Fe).

Figure 3.7



According to the United States Fire Administration,[20] older adults (65 years and older) experience a fire death risk 2.5 times higher than the general population. The National Fire Protection Agency (NFPA)[21] reports that physical disabilities are a contributing factor in 15% of home fires. Of persons over the age of 65, 35% have a disability,[22] thus further increasing the risk of injury or death in this age group.

Figure 3.8



[20]USFA . (October 2021). Volume 21, Issue 8. Fire Risk in 2019. https://www.usfa.fema.gov/downloads/pdf/statistics/v21i8.pdf

[21]NFPA – Fire Analysis & Research. Physical Disability as a Factor in Home Fire Deaths Fact Sheet. https://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Fact-sheets/disabilityfactsheet.ashx#:~:text=NFPA%20estimates%20that%20physical%20disability,home%20fire%20deaths%20per%20year.

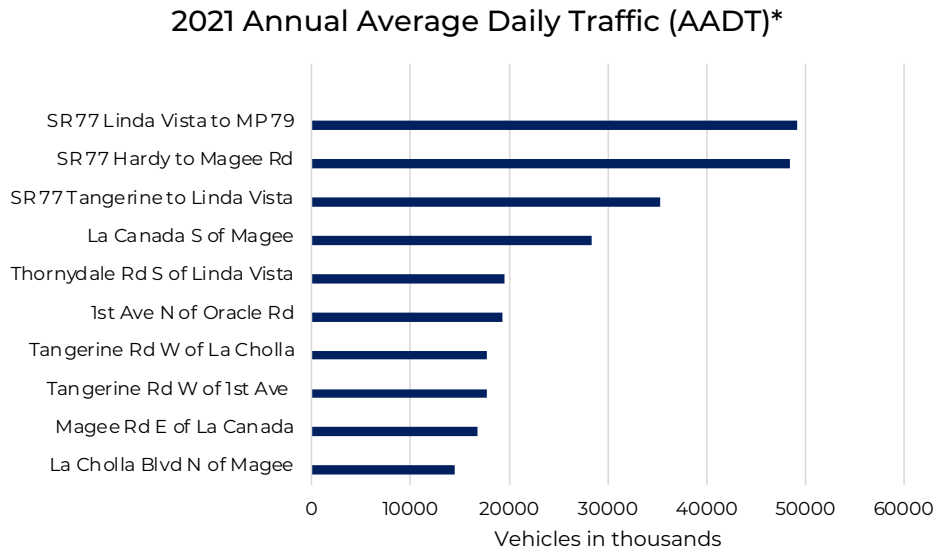
[22]Rehabilitation Research and Training Center on Disability Statistics and Demographics. (2017).

Vehicle Traffic

Growth within the Golder Ranch Fire District service area is contributing to more congested roadways and resulting accidents. This negatively impacts GRFD in several ways. As traffic on the roadways increases, GRFD's travel response times increase. This is evident in the response time data in Section 4 of this document. GRFD has responded to an average of 315 motor vehicle collisions (MVCs) annually in the past five years. This call type volume contributes to longer response times for all call types. MVCs also present a significant risk to GRFD and all first responders due to the fact that these incidents require operating on an active roadway.

Below is a chart that illustrates the 2021 annual average daily traffic of some of the major arterial roadways and State Route 77 (Oracle Road). The data is reflective of the high volume of traffic that occurs in GRFD.

Figure 3.9



*Source – Pima Association of Governments and Arizona Department of Transportation. (SR 77 data.)

With projected population growth rates of nearly 2% per year expected in the next five years and with no significant mass transit projects planned in the foreseeable future, this particular risk for GRFD is expected to continue to increase.

Wildland Urban Interface

GRFD includes a significant percentage of area that has a high degree of wildland urban interface (WUI) risk. In its history the district has experienced several serious wildland fires that resulted in structures being lost or severely threatened. The most recent example is the sentinel Bighorn Fire that occurred June 5 to July 23, 2020. It consumed 119,978 acres, mostly outside of the district boundaries but threatened many homes along GRFD's eastern border. The extent of the fire and its proximity to GRFD is found in **Appendix 3.1.**

Bighorn Fire – Summer 2020

GRFD's wildland risk assessment team developed a WUI risk map that along with other analytical work is outlined later in this section. This risk is further addressed under the subsection titled Large Scale-Potentially Districtwide Event Risk Assessment.

Severe Thunderstorms And Microbursts

Southern Arizona experiences a seasonal change in the direction of the prevailing winds known as the monsoon. The season runs from mid-June to mid-September. The monsoon produces a pattern of intense thunderstorms and microbursts that can bring heavy amounts of rain and trigger flash flooding. Strong monsoon storms can lead to a multitude of swift-water rescues; a high-risk incident for victims and GRFD personnel.

Africanized Bees

Africanized bees have been in Arizona since 1993 and have become the dominant bee species in the state. They attack with much less provocation and in greater numbers than do the more docile European honeybees. They are especially sensitive to loud noises and vibrations that will often trigger an attack to the source of their detection and they will pursue a victim as far as a quarter mile. The life risk is from a victim receiving hundreds of stings that can result in death.

EMS RISK ASSESSMENT

EMS incidents are the most common emergency GRFD responds to – representing 89% of the total emergent call volume in 2021. Medical emergencies pose a risk to every resident and visitor in the district, from low acuity, non-life-threatening events to true life-threatening cardiac or traumatic injury events. Out of all the district's emergency service delivery programs, emergency medical services represent the greatest opportunity to save lives in the community.

As with any of the emergency services GRFD provides, time is of the essence. Two categories of EMS incidents are especially time sensitive; 1) traumatic injury resulting from penetrating or blunt trauma and 2) cardiac arrest. Early BLS and ALS treatment for trauma patients is essential for increasing the chances of survival. **Figure 3.10** illustrates American Heart Association's Chain of Survival for cardiac arrest.

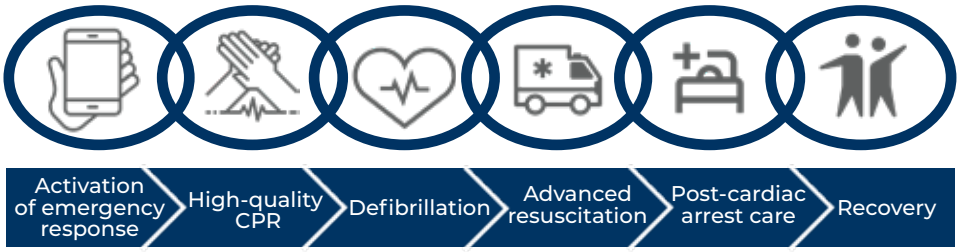


Figure 3.10 Information Source: American Heart Association

GRFD has influence over four of the six critical links of this chain that include providing education about the importance of early activation of emergency response, high-quality CPR, defibrillation and advanced resuscitation. The first three links are associated with response times, necessitating the need not only for required resources for these emergencies, but for prompt response times to initiate care. Early initiation of defibrillation is essential in the chain of survival as indicated in **Figure 3.11.** EMS response time performance is discussed in Sections 4 and 5.

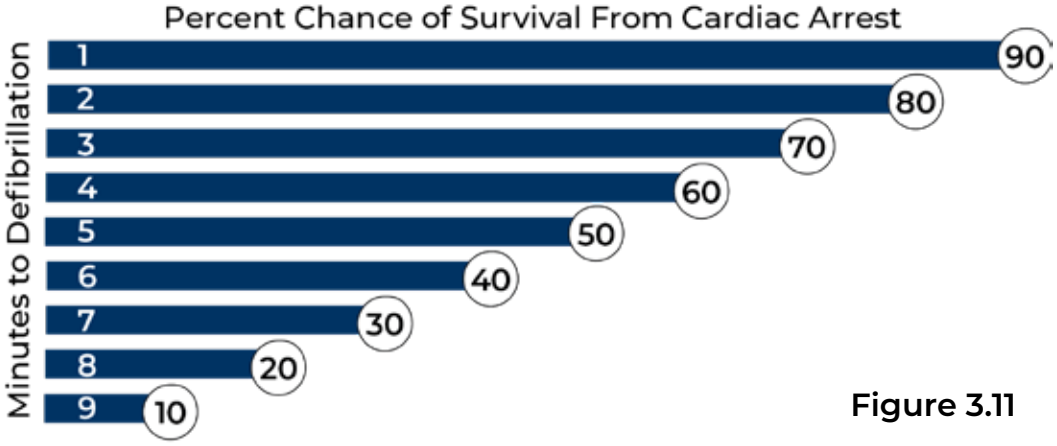
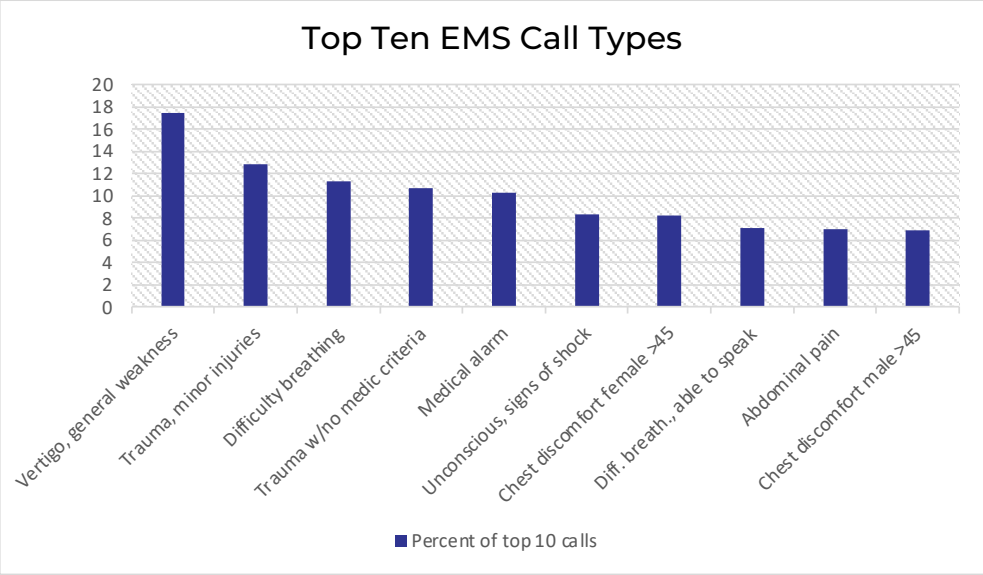


Figure 3.11

To better understand the EMS risk, GRFD determined the top 10 EMS call types for the period of 2019-2021.

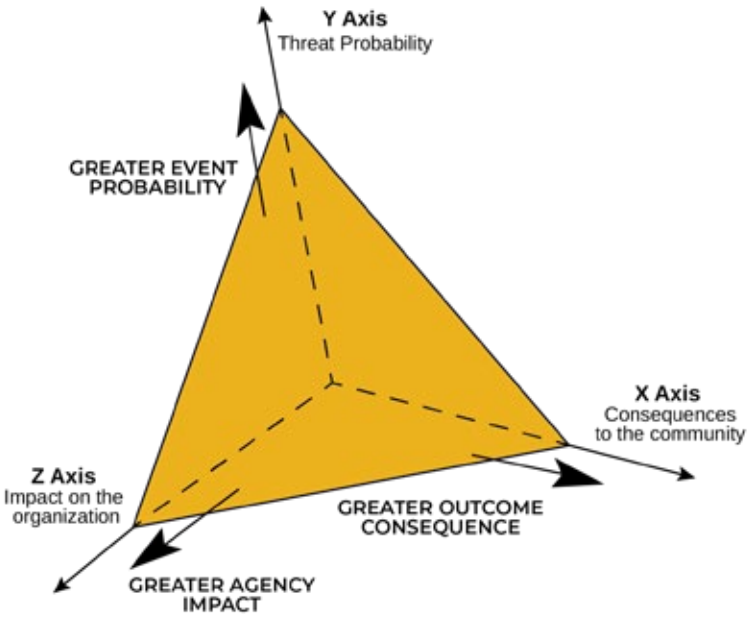
Figure 3.12



GRFD chose to use a three-dimensional risk model for EMS as well as for hazmat, technical rescue and wildland fire risk assessment scoring. This risk assessment model consists of frequency, severity and impact. These three factors are defined as follows:

- **Frequency** (also known as probability) is the chance or likelihood of a risk occurring.
- **Severity** (also known as consequence) is the effect of an incident has on the community and individuals. It also takes into account firefighter safety for the particular risk.
- **Impact** is the effect an incident has on GRFD as it pertains to the resources required to mitigate the emergency and the duration to do so.

Figure 3.13 Three-Dimensional Risk Model



Using the three-dimensional risk model each axis variable was scored on scale of 1 to 10 – one being the lowest risk – ten being the maximum possible risk. GRFD staff assigned a score to each axis; the X axis was based on subjective opinion and experience of senior GRFD staff; the Y and Z axis were based on incident history and the amount of GRFD resources and time needed to mitigate a particular risk.

Using Heron's formula, scores were calculated and a visualization of the resulting risk score was generated. The risk scores were used to develop risk categories; low, moderate, high and maximum.

Figure 3.14 Heron's Formula

$$\sqrt{\frac{(PC)^2}{2} + \frac{(CI)^2}{2} + \frac{(IP)^2}{2}}$$

EMS Risk Level Categories	
Low	One patient emergent BLS and possible ALS level calls such as panic attacks, sick person, back pain, minor cuts and burns, pregnancy problems. This risk level is without airway, breathing or circulation complications. Transport needs determined on scene.
Moderate	One patient ALS level calls with possible life threat such as respiratory distress, overdose with conscious patient, active seizures, strokes and others.
High	One patient ALS level calls with imminent life threat such as code arrest, unconscious not responsive, drowning or near drowning, major traumatic injury such as GSW or stabbing.
Maximum	Multi-casualty incidents such as an active shooter, multi-patient traumas with imminent life threats. This does not include traffic accidents with multiple patients.

For each risk category critical tasks were identified to accomplish the desired performance goal.[23] This same methodology was applied to the other service classifications – fire, hazmat, technical rescue and wildland. The process allows the district to determine the resources required to ensure a positive outcome for a particular risk. Critical tasks and effective response force are defined as follows:

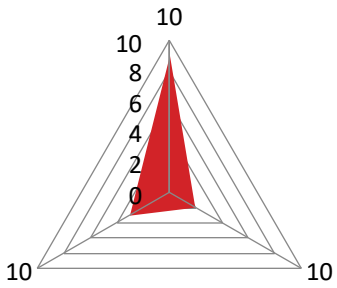
- Critical task: A time-sensitive work function that in conjunction with other work functions is essential to ensuring that an incident is stabilized to the performance level desired by the community.

- Effective response force: The number of personnel and type of apparatus necessary to complete all the identified critical tasks.

[23]Performance goals for each risk category for all service classifications are defined in Section 5.

EMS – Low Risk BLS	
Critical Task	Personnel Required
Command/safety	1
Patient assessment/treatment	3
TOTAL	**4**
Effective Response Force = 1 engine company	

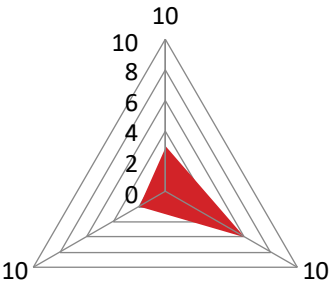
RISK SCORE = 23



EMS – Moderate Risk ALS	
Critical Task	Personnel Required
Command/safety	1
ALS treatment/documentation	3
Transport	2*
TOTAL	**6**
Effective Response Force = 1 engine company, 1 ambulance	

*Can assist with patient care as needed prior to transport.

RISK SCORE = 16

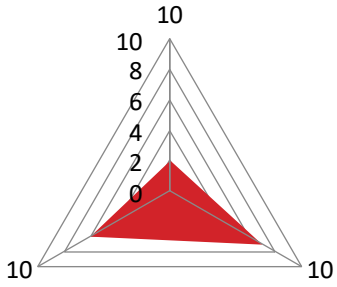


It is noted that the low EMS risk score (23) is higher than the EMS moderate risk score (16). This is due to the high numerical values that were given to the frequency and the impact dimensions of the risk model.

EMS – High Risk ALS	
Critical Task	Personnel Required
Command/safety	1
EMS supervision	1
Initial treatment to include chest compressions, airway, IV monitor, cardiac monitor, holding pressure, etc.	4
Transport	2*
TOTAL	**8**
Effective Response Force = 1 BC, 1 EC, 1 engine company, 1 ambulance	

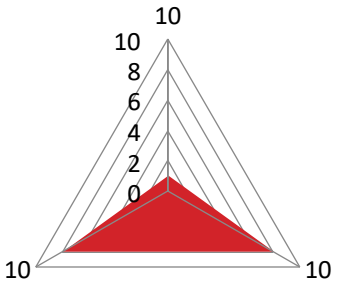
*Can assist with patient care as needed prior to transport.

RISK SCORE = 32



EMS – Maximum Risk, ≥ 2 Patients*	
Critical Task	Personnel Required
Command	1
Safety	1
Accountability	1
EMS triage supervisor	1**
Triage	3**
Treatment supervisor	1
BLS/ALS treatment/movement	9
EMS transport supervisor	1
EMS communications	1
Transport	6***
TOTAL	**21**
Effective Response Force = 2 BCs, 1 EMS captain, 3 engine companies, 3 ambulances	

RISK SCORE = 46



*Initial ERF can be augmented by responding battalion chief based on specific number of patients reported and upon on-scene assessment.
**Can transition to other critical tasks following completion of triage.
***Can assist with patient care as needed prior to transport.

FIRE RISK ASSESSMENT

Nationwide, there continues to be a downward trend in reported home fires. The National Fire Protection Association (NFPA) reports an over 50% decrease in these fires since 1980.[24] While the GRFD service area generally follows the nationwide trend of structure fires, these fires remain a substantial risk to the community in terms of potential life and property loss. Section 4 of this document presents a three-year history of fire loss data.

The majority of residence occupancies in the district are of newer construction – often described as modern or lightweight construction. This contrasts with houses built several decades ago – often described as legacy or traditional construction. The lightweight construction as well as several other current trends in residential structures have increased the risk for a severe outcome of a structure fire.

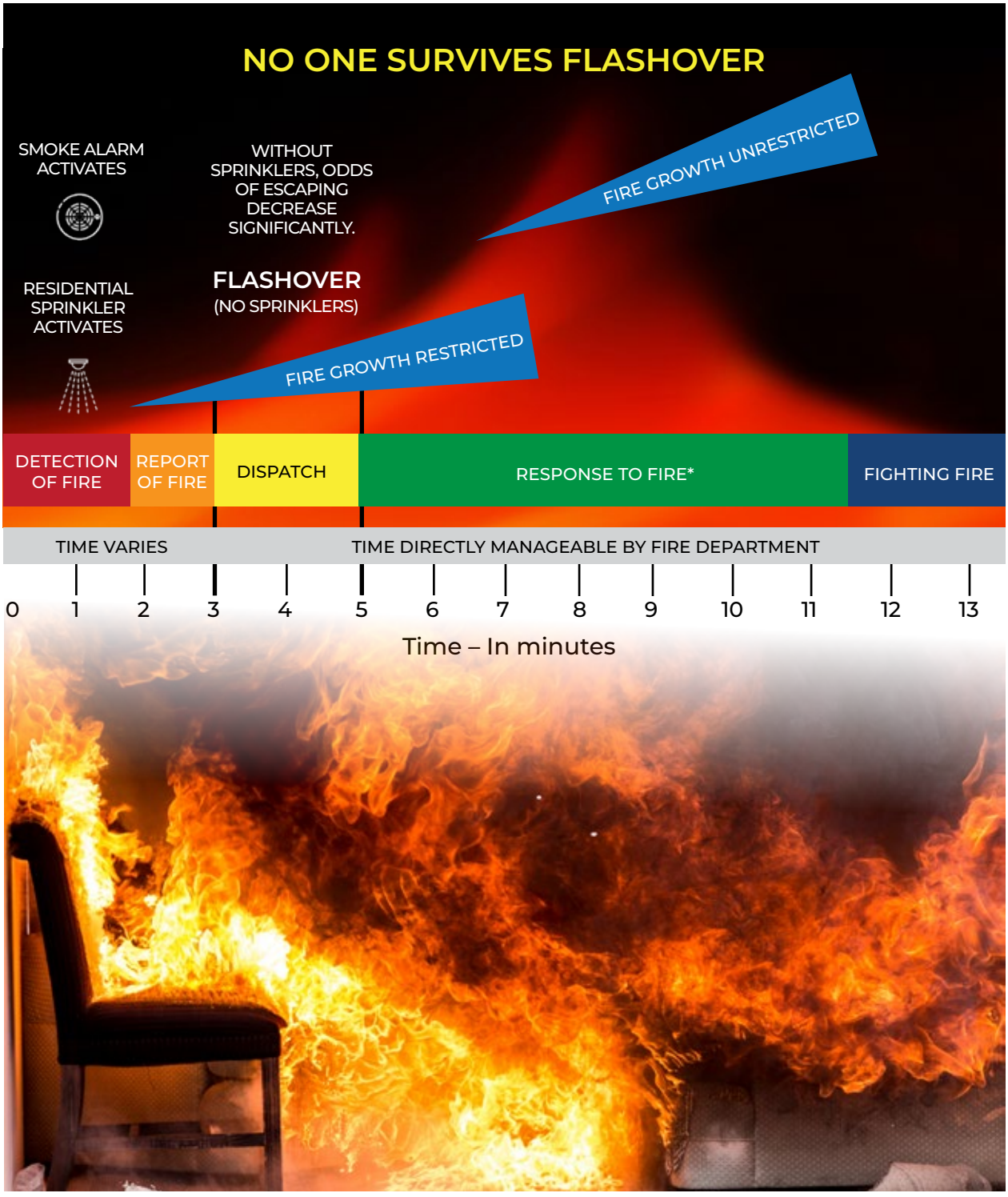
Underwriters Laboratory has considered four specific factors that collectively are called the UL Modern Fire Formula.[25]

These factors result in the following negative impacts regarding house fires:

- Faster fire spread
- Shorter time to flashover[26]
- Rapid changes in fire behavior
- Shorter escape times
- Shorter time to structural collapse
- Greater exposure of carcinogens resulting from smoke to firefighters

[24]Aherns, M. and Haheshwari, R. Home Structure Fires. October 2021. NFPA Research.
[25]Analysis of Changing Residential Fire Dynamics and Its Implications on Firefighter Operational Time Frames. Underwriters Laboratories, https://newscience.ul.com.
[26]Flashover is when all surfaces and contents of a space (room) reach their ignition temperature nearly simultaneously resulting in full room fire involvement. Flashover is generally not a survivable event for either occupants or firefighters.

Figure 3.15 Fire Progression to Flashover



Flashover is generally not a survivable event for either occupants or firefighters.

Sprinkler Discussion

The National Fire Protection Association (NFPA) in its Home Structure Fires 2021 research report demonstrates the compelling case for home sprinkler systems.[27]

Statistic Category	Statistic
Percentage of fires with operating sprinklers in which sprinklers were effective in controlling the fire	**97%**
Civilian deaths per 1,000 reported fires	
Without sprinkler system	8.1
With sprinkler system	1.0
Percent reduction with sprinklers	**88%**
Civilian injuries per 1,000 reported fires	
Without sprinkler system	33
With sprinkler system	23
Percent reduction with sprinklers	**28%**
Firefighter injuries per 1,000 reported fires	
Without sprinkler system	51
With sprinkler system present	11
Percent reduction with sprinklers	**78%**
Average loss per fire	
Without sprinkler system	$21,700
With sprinkler system	$8,200
Percent reduction with sprinklers	**62%**

Related to home sprinklers, the following is a position statement from the United States Fire Administration (USFA).

> It is the position of the USFA that all citizens should be protected against death, injury and property loss resulting from fire in their homes. All homes should be equipped with both smoke alarms and residential fire sprinklers, and all families should have and practice an escape plan. The USFA fully supports all efforts to reduce the tragic toll of fire losses in this nation, including the current International Residential Code that requires residential fire sprinklers in all new residential construction. [28]

[27]NFPA, Home Structure Fires. December 2017. https://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Building-and-life-safety/oshomes.pdf

[28]United States Fire Administration. https://www.usfa.fema.gov/about/sprinklers_position.html#:~:text=It%20is%20the%20position%20of,practice%20an%20emergency%20escape%20plan.

There is overwhelming evidence that a fire agency's ability to keep a fire to room of origin is a critical element in preventing fire deaths. Statistics in the table below show that when a fire is confined to the room of origin, versus extending beyond the room of origin, the rate of deaths and property loss is nine times less.[29] NFPA also reports that three-quarters of residential fire deaths occur when the fire extends beyond the three most common rooms of origin – living room, bedroom and kitchen.[30]

Flame Spread	Rate Per 1,000 Fires		
	Civilian Deaths	Civilian Injuries	Avg. Dollar Loss/Fire
Confined fires or contained fire identified by incident type	0	8.7	$200
Confined fire or fire spread confined to object of origin	0.4	11.1	$1,200
Confined to room of origin, including confined fires and confined to object	1.8	23.8	$4,000
Spread beyond the room of origin but confined to floor of origin	16.2	76.3	$35,000
Spread beyond floor of origin	24.6	55.0	$65,900

GRFD advocates fire sprinklers in new construction homes to reduce property damage and prevent both civilian and firefighter injuries and deaths. This is in line with #15 of the National Fallen Firefighters Foundation 16 Firefighter Safety Initiatives – "Advocacy must be strengthened for the enforcement of codes and the installation of home fire sprinklers."[31]

For homeowners of sprinklered homes, the likelihood of being saved by a sprinkler in a fire is greater than being saved by an air bag in a vehicle crash.[32]

[29]NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments, 2020 Edition, Annex A.
[30]NFPA, Home Structure Fires. December 2017. https://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Building-and-life-safety/oshomes.pdf
[31]Everyone Goes Home 16 Firefighter Safety Initiatives. https://www.everyonegoeshome.com/16-initiatives/
[32]https://www.nist.gov/publications/comparing-performance-residential-fire-sprinklers-other-life-safety-technologies

Hoarding Discussion

An increase in hoarding has contributed to a higher risk to occupants and firefighters in structural fires. Hoarding disorder is described as people who have persistent difficulty getting rid of or parting with possessions due to a perceived need to save the items.[33]

Research indicates that two to five percent of the population has some form of hoarding. Adults between the ages of 55 and 94 are three times more likely to have a diagnosable hoarding disorder than adults between 34 and 44 years old.[34] The resulting clutter not only disrupts the ability to use living spaces but significantly contributes to fire load and resulting increase in fire and smoke conditions that inhibit an occupant's ability to escape during a fire.

According to the National Fire Protection Association, hoarding puts firefighters at an increased risk in several ways:[35]

- Firefighters' movement in a hoarder's home during search/rescue and fire attack efforts is difficult.
- Falling objects from stacked hoarding materials can injure or trap firefighters.
- Firefighters can be become trapped when exits are blocked.
- Fire load is heavier in a hoarder's home making for an increase in fire behavior and resulting higher temperatures and reduced visibility.
- The excessive fire load when becoming saturated with water can lead to floor collapse in multi-story homes or those with basements.

[33]American Psychiatric Association. Retrieved on 07/24/22 from https://www.psychiatry.org/patients-families/hoarding-disorder/what-is-hoarding-disorder.
[34]The Recovery Village. Retrieved on -7/24/22 from https://www.therecoveryvillage.com/mental-health/hoarding/hoarding-statistics/.
[35]National Fire Protection Agency. Retrieved on 07/24/22 from https://www.nfpa.org/~/media/files/public-education/by-topic/hoarding/hoarding.pdf?la=en

Fire Risk Assessment Methodology

GRFD chose to use a fire risk assessment model that included eight fire risk elements. The model utilized was a modified version of the Risk Assessment Form – Emergency Response (RAFER) 2.0 model. The exception to the use of this model was the **Low Fire Risk** category where the three-dimensional risk model was utilized since the RAFER model is designed only for structure risks.

An internal fire risk assessment team used the modified RAFER model to score representative occupancy types in GRFD. A summary of these scores is presented in the table below. The worksheets that were utilized for this process are included in **Appendices 3.2 and 3.3.** The resulting risk score for an occupancy was categorized as a moderate, high or maximum. In addition, station crews scored 170 occupancies in the district. Results of the field risk assessments are found in **Appendix 3.4.** The risk scale* is the same for residential and commercial, and can be seen below.

Occupancy Type	Score	Risk Category
Convenience store with gasoline pumps	12	Moderate
Fast food restaurant	13	Moderate
One to two-story office building	14	Moderate
Free-standing conventional restaurant	14	Moderate
Retail strip center	15	High
Large office building – up to four stories	17	High
Big box retail	20	Maximum
Large industrial occupancy	20	Maximum
Large office building or other over four stories	20	Maximum
Mobile home	12	Moderate
One to two-story single family home	12	Moderate
>One to two-story 5,000-square-foot single-family home	13	Moderate
Townhouse/condominium with common structural walls	15	High
<10 occupancy extended care facility	16	High
Large garden-style apartment	17	High
One to four-story hotel	19	High
Large resort occupancy	20	Maximum
>10 extended care facility/hospital	20	Maximum

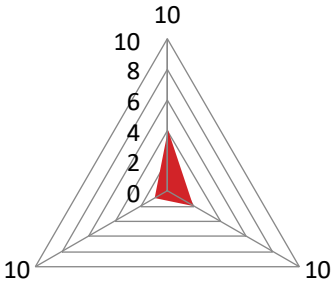
*Risk scale: 10-14 Moderate; 15-19 High; ≥ 20 Maximum

Following the scoring of a variety of occupancy types, the team developed critical tasks and effective response forces to manage each of the category risks.

Fire Risk Level Categories	
Low	Dumpster fires, car/small truck fires, nuisance fires, outbuilding fires and automatic alarms.
Moderate	Mobile homes, typical one or two-story single-family residences, duplexes and small apartment complexes, small retail, gas stations, small office buildings, restaurants.
High	Apartment complexes, hotels, strip malls, large office buildings up to four stories, extended care facilities with fewer than 10 patients.
Maximum	Large resort-style occupancies, hospitals or long term care facilities for greater than 10 patients, big box stores, large commercial or industrial facilities.

Fire – Low Risk	
Critical Task	Personnel Required
Command/safety	1*
Pump operation	1
Fire attack	2
TOTAL	**4**
Effective Response Force = 1 engine company	

RISK SCORE = 6



*Can assist with fire attack if necessary.

Fire – Moderate Risk	
Critical Task	Personnel Required
Command	1
Safety	1
Accountability	1
Water supply	1*
Secure utilities	1*
Pump operator	1
Initial attack line/primary search	3
2nd attack line/secondary search	4
Ventilation	4
Rapid intervention crew/on deck	4
Medical	2
TOTAL	**21**
Effective Response Force = 2 BC, 1 EC, 4 engine companies, 1 ambulance	

*Personnel can assist with other critical tasks following completion of this critical task.

Fire – High Risk	
Critical Task	Personnel Required
Command	1
Safety	1
Accountability	1
Water supply	2*
Secure utilities	1*
Fire sprinkler connection	1*
Pump operator	2
Initial attack/primary search	3
2nd attack line/secondary search	4
Ventilation	4
Various tasks above fire floor	3
Rapid intervention crew/on deck	4
Medical	2
TOTAL	**25**
Effective Response Force = 2 BC, 1 EC, 4 engine companies, 1 ladder company, 1 ambulance	

Fire – Maximum Risk	
Critical Task	Personnel Required
Command	1
Safety	1
Accountability	1
Division supervisor/forward operating ofc.	1
Water supply	2*
Secure utilities	1*
Fire sprinkler connection	1*
Pump operator	2
Fire attack/initial attack/primary search	3
2nd attack line/secondary search	4
Ventilation	8
Various tasks above fire floor	3
Rapid intervention crew/on deck	4
Medical	4
TOTAL	**32**
Effective Response Force = 3 BC, 1 EC, 4 engine companies, 2 ladder companies, 2 ambulances	

*Personnel can assist with other critical tasks following completion of this critical task.

HAZMAT RISK ASSESSMENT

GRFD has a wide range of hazmat risks ranging from carbon monoxide (CO) alarms to potential large-scale hazmat events on State Route 77 and other major arterial roadways. All GRFD firefighters are trained to the operations level of NFPA 472. In addition, there are 29 firefighters trained to the technician level of NFPA 472.

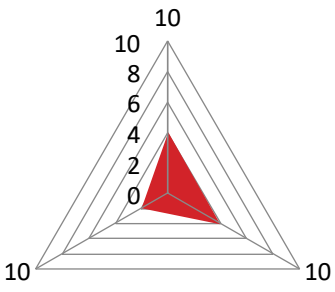
The GRFD hazmat risk team utilized the three-dimensional risk scoring tool to score each hazmat risk category. This was followed by the development of critical tasks and effective response forces for each of the risk categories.

Hazmat Risk Level Categories	
Low	CO alarms, small flammable liquid spills, small pressurized flammable or nonflammable gas container leaks. Incident can be stabilized at hazmat operations training level.
Moderate	Small diameter gas line breaks up to 2", larger flammable liquid spills, larger propane tank leaks up to approximately 500-gallon tanks.
High	Greater than 2" natural gas line breaks, over-the-road hazmat freight/liquid or gas releases, public and club pool chlorine gas leaks/spills, auto repair, pool supply and hardware store hazmat spills, maintenance yard hazmat spills, larger stationary propane tank leaks, pesticide truck – large spills and large hazmat releases adjacent to buildings with high occupancy.

Hazmat – Low Risk	
Critical Task	Personnel Required
Command/safety	1
Size up/recon/air monitoring as needed/spill mitigation	2*
Patient assessment as needed	1*
TOTAL	**4**
Effective Response Force = 1 engine company	

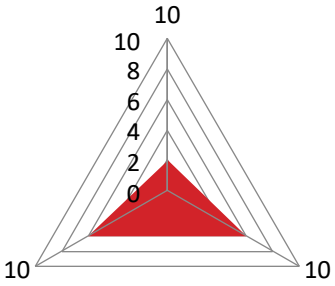
*Personnel can rotate between these critical tasks as needed.

RISK SCORE = 14



Hazmat – Moderate Risk	
Critical Task	Personnel Required
Command	1
Safety	1 haztech
Hazmat supervisor	1 haztech
Pump operator	1
Establishment of zones, spill mitigation if liquid	3 haztech*
Air monitoring	2
Protection line	2
Medical	2
TOTAL	**8 FRO**** **5 haztech**
Effective Response Force = 1 BC, 1 engine company, 1 hazmat engine/squad, 1 hazmat ambulance, 1 ambulance	

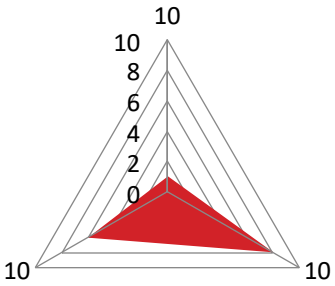
RISK SCORE = 28



*Can assist with other critical tasks as necessary.
**First responder operations level per NFPA 472.

Hazmat – High Risk	
Critical Task	Personnel Required
Command	1
Safety – incident and hazmat	1 FRO, 1 haztech
Hazmat division supervisor	1 haztech
Pump operator	2 FRO
ID/recon	2 haztech
Air monitoring	2 haztech
Protection/decon line	2 FRO
Entry supervisor	1 haztech
Entry team	2 haztech
Backup team	2 haztech
Decon	3 FRO, 1 haztech
Medical	2 FRO, 2 haztech
TOTAL	**11 FRO** **14 haztech**
Effective Response Force = 2 BC, 1 EC, 2 engine companies, 3 hazmat engines, 3 squads, 1 hazmat ambulance, 1 ambulance	

RISK SCORE = 35



TECHNICAL RESCUE TEAM RISK ASSESSMENT

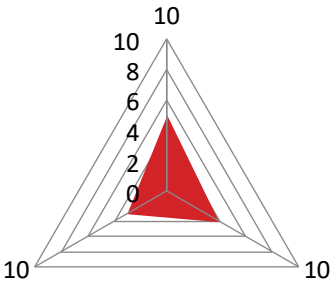
GRFD has technical rescue risks that include routine to complex extrications, trench rescue, confined space, swift-water rescue, high-angle rescue and building collapse.[36] Extrication incidents are the most common form of technical rescue GRFD responds to – primarily consisting of vehicle extrication calls. All GRFD personnel are trained minimally to the first responder awareness (FRA) level of NFPA 1670. There are 27 GRFD personnel trained to the technician level of NFPA 1670.

The GRFD TRT risk team utilized the three-dimensional risk scoring tool to score each TRT risk category.

Extrication Risk Level Categories	
Low	Two car MVC with possible entrapment, patients reported conscious.
Moderate	Multiple car MVC with likely entrapment, multiple patients, possible ejections and unconscious patients.
High	Complex, technical extrication requiring specialized extrication equipment and technician level personnel.

Extrication – Low Risk	
Critical Task	Personnel Required
Command	1
Safety	1
Vehicle stabilization	2*
Extrication/patient communication	4**
Treatment/transport if necessary	2
TOTAL	**8 FRA**
Effective Response Force = 1 BC, 1 EC, 1 engine company, 1 ambulance	

RISK SCORE = 20

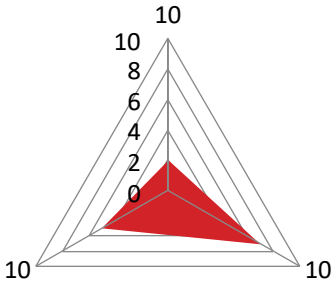


*Can transition to extrication following completion of critical task.
**Can transition to treatment and transport if necessary.

[36]Building collapse risk is primarily in the form of partial building collapse due to impact from a vehicle.

Extrication – Moderate Risk	
Critical Task	Personnel Required
Command	1
Safety	1
Triage	4*
Protection line	1
Pump operator	1
Vehicle stabilization	10**
Extrication/patient communication	10***
Treatment/transport	6
TOTAL	**20 FRA**
Effective Response Force = 1 BC, 1 EC, 3 engine companies, 3 ambulances	

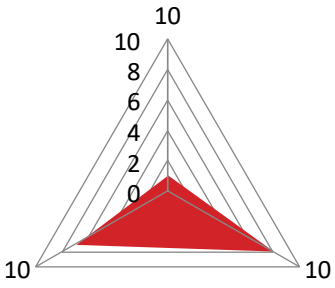
RISK SCORE = 28



*Can move to other critical tasks when triage is completed.
**Can move to extrication when vehicle stabilization tasks are completed.
*** Can assist with patient movement and transport as needed when treatment tasks are completed.

Extrication – High Risk	
Critical Task	Personnel Required
Command	1
Accountability	1
Safety – scene and TRT	1 FRA, 1 tech
Extrication supervisor	1 tech
Triage	4*
Protection line	1
Pump operator	1
Extrication/stabilization/patient communication	11 FRA 3 tech**
Treatment/transport as needed	6
TOTAL	**22 FRA** **5 tech**
Effective Response Force = 2 BC, 1 EC, 3 engine companies, 1 tech rescue engine/squad, 1 tech rescue ambulance, 3 ambulances	

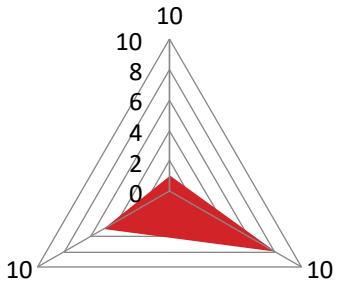
RISK SCORE = 40



*Can move to other critical tasks when triage is completed.
**Can move to treatment when extrication tasks are completed.

Trench Rescue – High Risk	
Critical Task	Personnel Required
Command	1
Accountability	1
Safety – scene and TRT	1 FRA, 1 tech
Rescue supervisor	1 tech
Equipment shutdown and lockout	1 FRA, 1 tech*
Hazard zone ID/access control	2 FRA, 1 tech*
Stabilization/shoring	4 FRA* 4 tech
Rescue team	3 tech
Support team	5 FRA, 1 tech*
Treatment/transport as needed	2
TOTAL	**12 FRA** **10 tech**
Effective Response Force = 2 BC, 1 EC, 2 engine companies, 2 tech rescue engines/squads, 1 tech rescue ambulance	

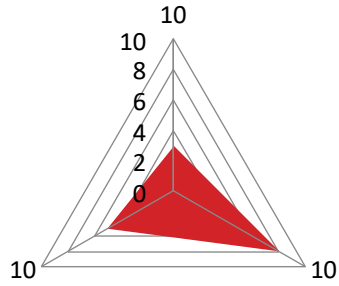
RISK SCORE = 29



*Can move to other critical tasks when task is completed.

Swift-Water Rescue – High Risk	
Critical Task	Personnel Required
Command	1
Accountability	1
Safety – scene and TRT	1 FRA, 1 tech
Rescue supervisor	1 tech
Locate victim/size up	4 FRA* 2 tech*
Upstream spotter	4 FRA
Downstream spotter	4 FRA
Rescuers/retrievers	4 FRA, 6 tech
Decon	2 FRA
Patient treatment/transport as needed	2
TOTAL	**16 FRA** **10 tech**
Effective Response Force = 2 BC, 1 EC, 2 engine companies, 1 ladder company, 2 tech rescue engines/squads, 1 tech rescue ambulance	

RISK SCORE = 35

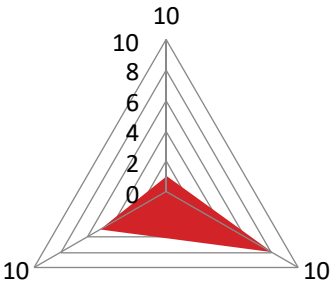


*Can move to other critical tasks when task is completed.

Confined Space Rescue – High Risk	
Critical Task	Personnel Required
Command	1
Accountability	1
Safety – scene and TRT	1 FRA, 1 tech
Air monitoring	2 tech
Size up	1 FRA*, 1 tech*
Rescue supervisor	1 tech
Entry team	2 tech
Entry team support	7 FRA, 2 tech
Backup team	2 tech*
Treatment/transport as needed	2
TOTAL	**12 FRA 10 tech**
Effective Response Force = 2 BC, 1 EC, 2 engine companies, 2 tech rescue engines/squads, 1 tech rescue ambulance	

*Can move to other critical tasks when task is completed.

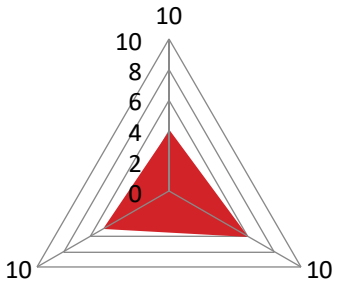
RISK SCORE = 29



Low-Angle Rescue – High Risk	
Critical Task	Personnel Required
Command	1
Safety	1 tech
Technical rescue supervisor	1 tech
Advance team/size up	2 FRA* 2 tech*
Rigging/rescue/hauling	5 FRA* 8 tech
Treatment/transport as needed	2
TOTAL	**6 FRA 10 tech**
Effective Response Force = 1 BC, 1 engine company, 2 tech rescue engines/squads, 1 tech rescue ambulance	

*Can move to other critical tasks when task is completed.

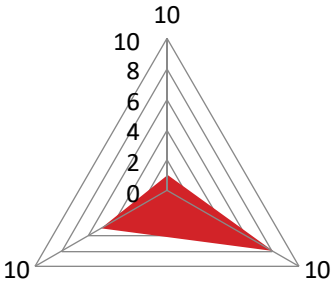
RISK SCORE = 31



High-Angle Rescue – High Risk	
Critical Task	Personnel Required
Command	1
Safety	1 tech
Technical rescue supervisor	1 tech
Advance team/size up	2 FRA* 2 tech*
Rigging/rescue/hauling	7 FRA, 8 tech
Treatment/transport as needed	2
TOTAL	**10 FRA 10 tech**
Effective Response Force = 1 BC, 2 engine companies, 2 tech rescue engines/squads, 1 tech rescue ambulance	

*Can move to other critical tasks when task is completed.

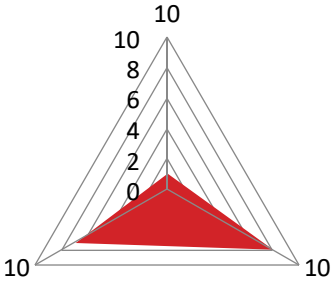
RISK SCORE = 29



Partial Building Collapse – High Risk	
Critical Task	Personnel Required
Command	1
Accountability	1
Safety – scene and TRT	1 FRA 1 tech
Technical rescue supervisor	1 tech
Size up	1 FRA* 1 tech*
Stabilization/rescue	4 FRA 4 tech
Back up crew/external support	8 FRA* 4 tech
Treatment/transport as needed	2
TOTAL	**16 FRA 10 tech**
Effective Response Force = 2 BC, 1 EC, 2 engine companies, 1 ladder company, 2 tech rescue engines/squads, 1 tech rescue ambulance	

*Can move to other critical tasks when task is completed.

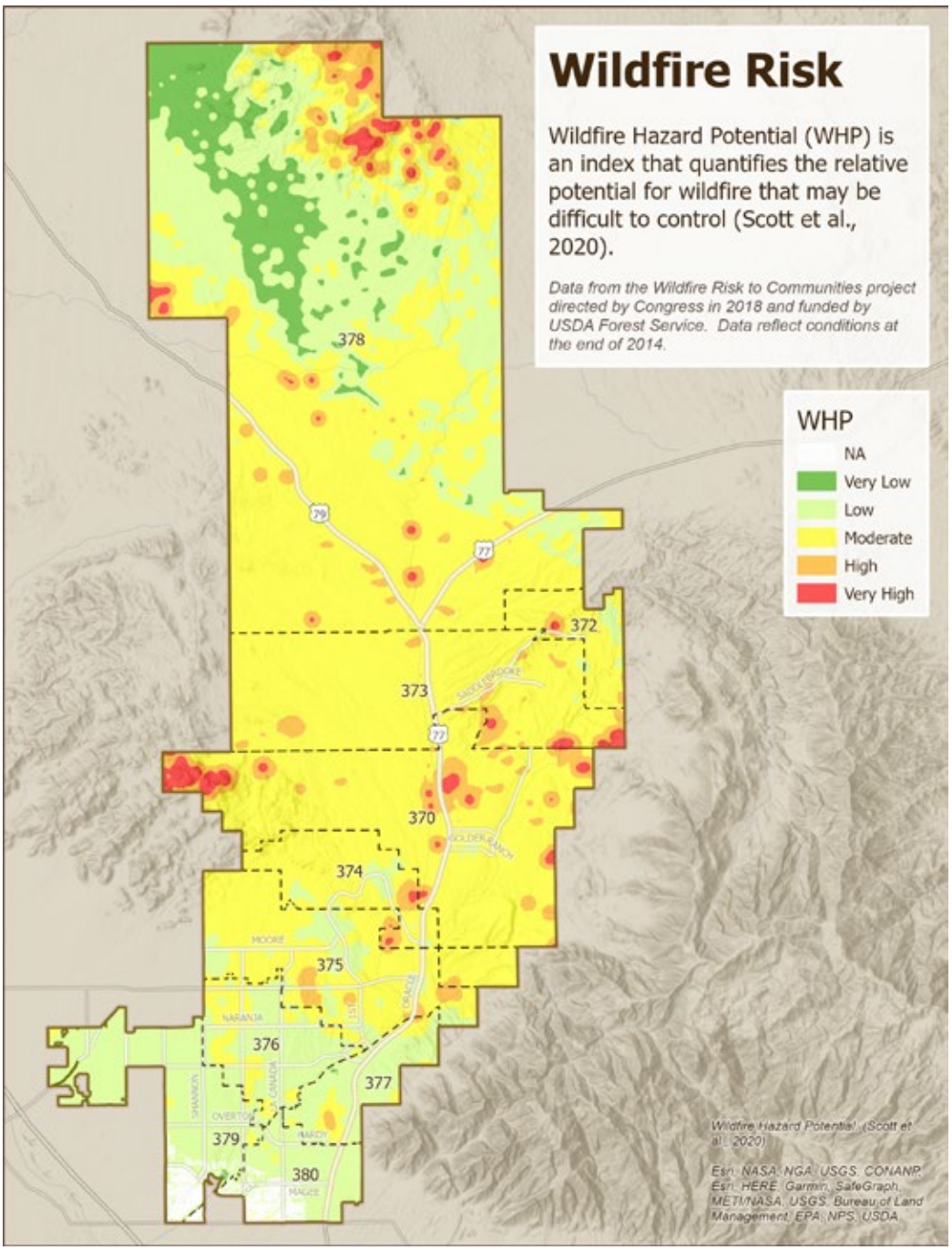
RISK SCORE = 40



WILDLAND FIRE RISK ASSESSMENT

Wildland fire risk exists in a significant portion of Golder Ranch Fire District. The risk is especially high as the region continues to be under the condition of a long-term drought. The wildfire risk is further described in the Large-Scale Potentially Districtwide Event Risk Assessment discussion in this section.

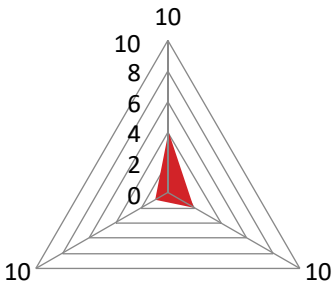
Figure 3.16



Wildland Fire Risk Level Categories	
Low	Small isolated or roadside fire, with little spread rate.
Moderate	One to approximately five acres in size, with low to moderate spread.
High	Any size fire that is threatening structures.

Wildland Fire – Low Risk	
Critical Task	Personnel Required
Command/safety	1*
Pump operation	1
Fire attack	2
TOTAL	**4**
Effective Response Force = 1 engine company	

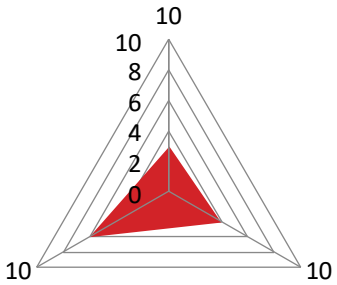
RISK SCORE = 6



*Can assist with fire attack if necessary.

Wildland Fire – Moderate Risk	
Critical Task	Personnel Required
Command	1
Safety (wildland team)	1
Water supply – tender	1
Pump operator – engine	1
Pump operator – brush engine	1
Fire attack – two lines + hand tool work	4
TOTAL	**9**
Effective Response Force = 1 BC, 1 engine company, 1 brush engine, 1 tender	

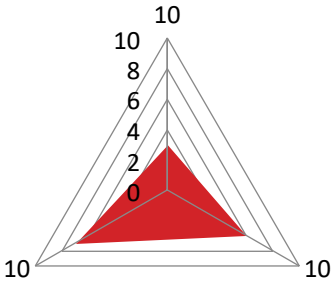
RISK SCORE = 23



*Can perform other tasks upon completion of critical task.

Wildland Fire – High Risk	
Critical Task	Personnel Required
Command	1
Operations	1 WLT
Safety	2 WLT
Accountability	1
Size up/resource needs	1*
Water supply	2
Water supply site manager	1
Pump operator – engine	4
Pump operator – brush	2
Fire attack/structure protection	8
Medical	2
TOTAL	**24**
Effective Response Force = 2 BC, 3 engine companies, 2 brush engines, 2 tenders, 1 ambulance	

RISK SCORE = 36



*Can perform other tasks upon completion of these critical tasks.

Photo courtesy: P. Oglesby

Summer 2020 – Bighorn Fire

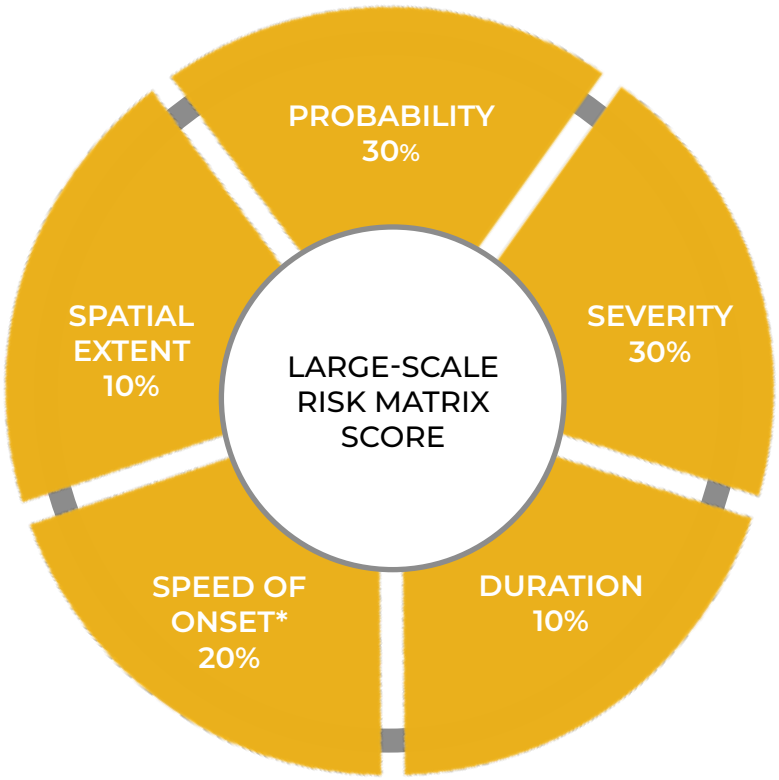
LARGE-SCALE POTENTIALLY DISTRICTWIDE EVENT RISK ASSESSMENT

In addition to the five classifications of risk previously discussed (fire, EMS, hazmat, technical rescue and wildland), GRFD has also assessed large-scale, potentially districtwide risks. These risks would likely require additional resources beyond GRFD's capability and have extended incident time periods.

A five-dimensional profile risk index (PRI) was utilized by GRFD's senior staff resulting in the identification and ranking of six large-scale risks. The PRI process consisted of rating five risk factors with an associated weighted value.[37] Each of the risk factors were scored on a 1-10 scale, 1 being the lowest, 10 being the highest.

The elements and their associated weighted values are illustrated in **Figure 3.17.**

Figure 3.17 Profile Risk Index (PRI)



*Refers to advance warning time of event

[37]Beyond the Basics, Best Practices in Local Mitigation Planning, www.mitigationguide.org, and National Fire Academy On-campus Executive Fire Officer Community Risk Reduction course curriculum.

The complete profile risk index scoring matrix is found in **Appendix 3.5.** Discussion of each large-scale risk and the associated category rating/PRI score follows – listed in order of the highest associated PRI score.

DISTRICTWIDE EXTENDED BLACKOUT/CELLULAR OR INTERNET PARTIAL OR FULL OUTAGE EVENT	PRI SCORE – 7.2

The GRFD community depends on a patent source of electricity and cellular/internet connectivity for safe and effective day-to-day living. Critical infrastructure, including GRFD fire stations have backup sources of power, however, the majority of the general population and businesses do not. GRFD has identified a widespread electrical grid power failure (roughly defined as an outage that goes beyond eight hours, and possibly lasts for days) and/or an extended cellular or internet outage of similar duration as the as the top-rated large-scale risk. The scope of this risk also includes district-targeted cyberattacks.

WILDLAND/URBAN INTERFACE (WUI) FIRE	PRI SCORE – 6.7

NFPA 1710, Organization and Deployment of Fire Suppression Operations Career Fire Departments defines wildland/urban interface as the following:

The line or zone where structures and other development meet or intermingle with undeveloped wildland or vegetative fuels and the area within or adjacent to private and public property where mitigation actions can prevent damage or loss from wildfire.

The combined factors of history of wildfires threatening structures within the district, areas of high potential of WUI fires and the expected continuation of a 20-year or longer drought combined with higher temperatures placed this risk as the second highest in the district.

FLOOD EVENT (LARGE AREA AND/OR BRIDGE LOSS – ISOLATING FAR EAST SIDE OF DISTRICT)	PRI SCORE – 6.4

The Cañada del Oro (CDO) Wash in the far eastern area of the district has the potential for flooding residential occupancies. A map of the potential areas that could be affected by this section of the CDO is in **Appendix 3.6.** The Town of Oro Valley floodplain map can be found in **Appendix 3.7.** Beyond the flooding threat of occupancies, a high rate of flow in the CDO effectively cuts off any ground access to residents on the east side of the CDO – further increasing the risk to them. The 2020 Bighorn Fire also has contributed to the flood risk, as the burned area on the northern face of the Catalina Mountains does not have the rainwater holding capacity it did prior to the fire due to the loss of vegetation.

TERRORISM EVENT	PRI SCORE – 6.1

In the context of this risk, a terrorism event is an intentional act that results in many victims, and may occur in the form of a conventional explosive or a chemical, biological, radioactive nuclear or conventional weaponized device. The potential for a large number of victims, the potential for use of a device designed to create harm and the risk posed to first responders all contributed to a risk score classification of high.

ACTIVE SHOOTER EVENT	PRI SCORE – 5.8

An active shooter event is an event involving one or more suspects who participate in an ongoing, random, or systematic shooting spree, demonstrating the intent to harm others with the objective of mass murder.[38] This risk is an example of the ever-changing, all-hazards nature of the fire service.

Active shooter events have increased in frequency across the country in recent years, thereby increasing the probability of such an event. In addition to the initial severity of the event to the public and first responders, long-term effects on GRFD personnel are significant and were a contributing factor to the severity score.

[38]International Association of Fire Chiefs Position Statement: Active Shooter and Mass Casualty Terrorist Events. https://www.iafc.org/topics-and-tools/resources/resource/iafc-position-active-shooter-and-mass-casualty-terrorist-events

LARGE-SCALE HAZMAT INCIDENT	PRI SCORE – 2.8

As described earlier in Section 3, a large-scale maximum-risk hazmat event has the potential for GRFD to require additional regional as well as state-level resources. Such an event could pose a serious risk to nearby residential populations. Effects from such an incident could pose both acute and long-term effects for people and the environment.

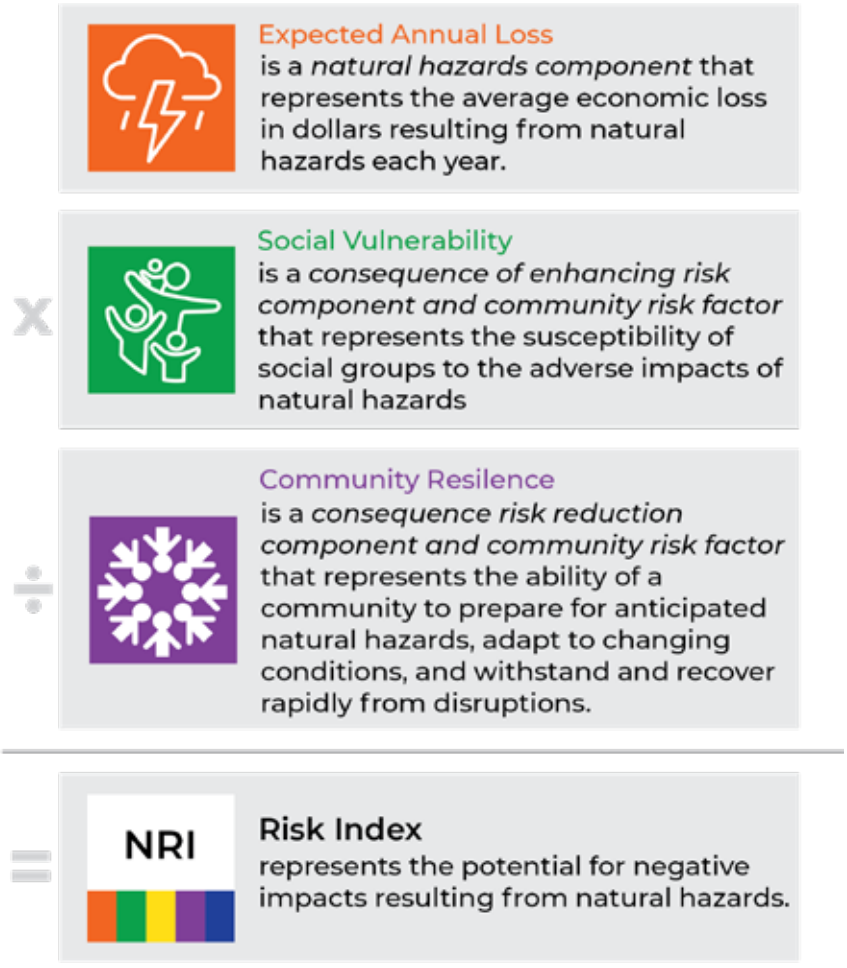
Identifying the scope of a large-scale hazmat incident early in its development by qualified personnel is critical to initiating the response of appropriate resources to help ensure stabilization in an expeditious manner. Factors contributing to a moderate-risk rating included the daily volume of over-the-road hazmat transportation vehicles within the district – primarily in the form of tanker trucks – and the proximity of major roadways to residential developments used by these trucks.

DOT MC-312 tankers transport sulfuric acid through Golder Ranch Fire District every day for Southern Arizona copper mining operations.

FEMA NATIONAL RISK INDEX DISCUSSION

Supplementing GRFD's assessment of large-scale risks is the Federal Emergency Management Agency (FEMA) National Risk Index[39] assessment of census tracks within the district. The National Risk Index (NRI) is a dataset and online tool that assesses risk for 18 natural hazards. The NRI leverages available source data for natural and community risk factors to develop a baseline relative risk measurement for each U.S. county and census track. The scoring system incorporates a broader, longer timeline consideration for a community, but is useful to align some of the hazards NRI measures to those that GRFD examined. The following graphic illustrates the basic risk scoring equation utilized by NRI.

Figure 3.18 Risk Scoring Equation



NRI risk assessment scores for GRFD census tracks are listed in **Appendix 3.8**. The dominant risk factors for the GRFD NRI risk assessment scores were 1) wildland fire 2) lightning and 3) heat wave.

[39]https://hazards.fema.gov/nri/

SECTION 4 – CURRENT DEPLOYMENT AND PERFORMANCE

If you can’t measure it, you can’t improve it.

–Peter Drucker

STAFFING

Golder Ranch Fire District is a career agency that has ten stations, each staffed with 24-hour shift personnel. A districtwide staffing level policy ensures adequate personnel are on duty each shift. GRFD operates on a three shift, 3-4 schedule that consists of three 24-hour shifts with 24 hours off in between work shifts followed by a four day off period. Daily staffing levels are included in the station profiles later in this section.

MOBILE RESOURCES/APPARATUS

Engine

GRFD has eight engine companies staffed with four personnel. Engine companies are dispatched to all call types and are the primary unit to initiate service. All GRFD engines have 1,250 to 1,500 gallons per minute pumping capacity, 750 gallons of water and 600 to 800 feet of supply hose. Each engine has an equipment inventory that meets NFPA 1901 Standard for Automotive Fire Apparatus and ISO equipment requirements. This equipment includes ground ladders, saws, a variety of forcible entry tools, fans, attack lines and an assortment of other equipment and supplies. In addition, all GRFD engines carry a basic set of hydraulic power extrication tools. The majority of these vehicles are 2-wheel drive. GRFD does have one front-line 4-wheel drive engine at Station 370 due to the special needs of its first due.

Ladder Truck

GRFD staffs two 75' quint ladder trucks with four personnel. These ladder trucks carry all equipment as listed in NFPA 1901 Standard for Automotive Fire Apparatus and the Insurance Services Office Fire Suppression Rating Schedule, including a 35' and 24' extension ladder, 14 and 16' roof ladders and a 12' attic ladder. In addition, these trucks carry basic hydraulic extrication tools, pike poles, built-in generators, portable lights, both chain and circular saws, positive pressure ventilation fans, various size air bags and a multitude of additional rescue and forcible entry tools. These these trucks have a pumping capacity of 1,500 gallons per minute, 500 gallons of water and 500 to 600 feet of supply hose.

Tender

GRFD has a varied complement of water tenders and each of them is cross staffed at their assigned stations. Station 370 has a Type 1 water tender with a 750 gallon per minute (GPM) pump and 3,500-gallon capacity, and a Type 2 water tender with a 500 GPM pump capability and 1800 gallons of water. Station 376 has a 2,000-gallon Type 1 water tender with a 500 GPM pump. Station 379 has a Type 1 water tender with a 1,000 GPM pump capability, and 2,000 gallons of water. In reserve at the fleet facility, GRFD has an additional 4,000 gallon Type 1 water tender with a 500 GPM pump. Each of these water tenders is equipped with portable tanks as well – for sustained tender shuttle operations.

Brush Truck

GRFD cross staffs three 4x4 Type 6 brush trucks and three 4x4 Type 3 brush trucks. Each truck has a small water tank and pump, as well as small diameter attack lines, power saws and hand tools appropriate for their purpose.

Command Vehicle

GRFD command vehicles are half-ton pickup trucks with a shell on the bed. GRFD staffs two command trucks at all times with the shift battalion chiefs. These vehicles carry necessary communication, accountability and other command-related equipment for the incident commander of larger incident types.

Squad

The GRFD squad vehicle is staffed at the special operations station, Station 377. It is staffed with one personnel and carries equipment necessary to mitigate technical rescue and hazardous materials release type of incidents. This equipment consists of damming and diking materials, specialty cameras and communication systems confined space rescue, special extrication equipment such as hydraulic shoring and lifting equipment, hazmat research equipment, hazmat advanced personnel protective equipment, rope rescue equipment, advanced swift water rescue equipment such as an inflatable boat, and more.

Air Power and Light Vehicle

The air power and light vehicle is a constant-staffed apparatus that carries equipment for lighting scenes, providing power with an on-board generator, and refilling air bottles with an on-board compressor. This truck is also equipped with basic medical equipment, chairs, shade awnings, coolers with water and other equipment to conduct rehabilitation operations on large scenes.

Ambulance

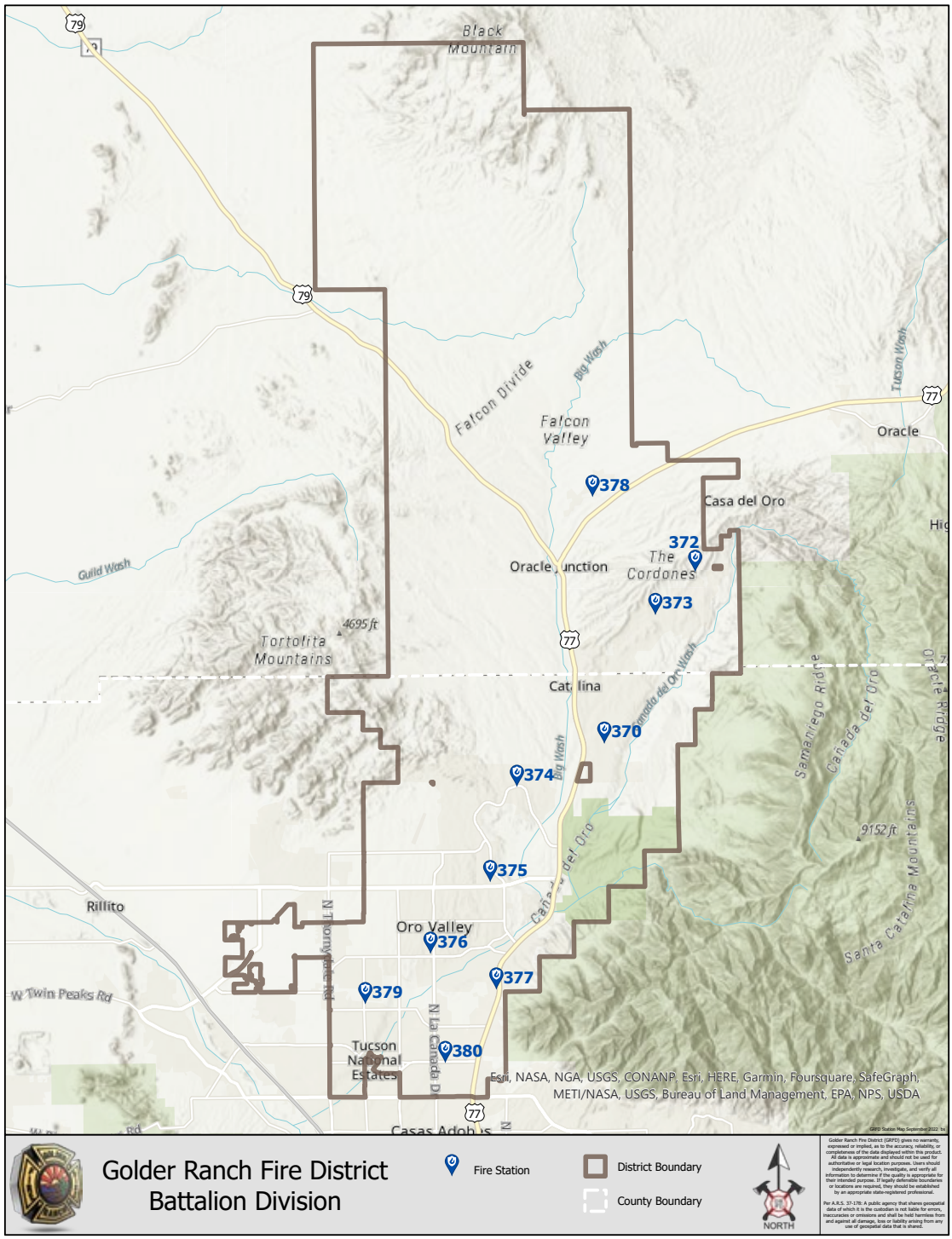
GRFD staffs seven Advanced Life Support ambulances; six are 24-hour vehicles and one is a day truck that operates Monday through Thursday from 0800 until 1800 to serve peak service demands. Each ambulance consists of a 1.5-ton chassis with a patient compartment on the back. In addition to the front-line ambulances, there are a total of two reserve ambulances. The majority of these vehicles are two-wheel drive, but GRFD does have one front-line four-wheel drive ambulance at Station 370 due to the special needs of its first due. One out-of-service engine is committed to the training division.

Station	Front-Line Apparatus Assigned	Cross-Staffed Apparatus	Reserve Apparatus
370	Engine, ambulance, command vehicle	Tender, Type 6 wildland truck, utility truck, wildland chase truck, wildland UTV	--
372	Engine	Type 3 wildland truck	Ambulance
373	Engine, ambulance	--	--
374	Engine	--	--
375	Ladder (quint), ambulance	Utility truck	--
376	Engine, ambulance	Tender, Type 6 wildland truck	--
377	Engine, ambulance, EMS captain response vehicle	Squad, TRT chase vehicle	--
378	Engine	--	--
379	Engine, day ambulance	Tender, Type 3 wildland truck, air power truck	--
380	Ladder (quint), ambulance, command vehicle	Type 6 wildland truck, wildland chase truck	--

FIXED RESOURCES/STATIONS AND OTHER FACILITIES

GRFD currently staffs 10 stations. Station locations are shown in **Figure 4.1**

Figure 4.1 Station Locations



Station 370

3835 E. Golder Ranch Drive

Year built – 2006
Square footage – 11,724

Personnel capacity per shift – 10
Personnel assigned per shift – 9

Sprinklered – Yes

Five-year capital needs:
Flooring and kitchen remodel, budgeted F/Y 2022-2023

Apparatus assigned – BC command vehicle, engine, ambulance, tender, Type 3 brush truck, Type 6 brush truck, utility truck, wildland chase truck, wildland UTV

Station 372

65462 E. Catalina Hill Drive

Year built – 2009
Square footage – 7,187

Personnel capacity per shift – 10
Personnel assigned per shift – 4

Sprinklered – Yes

Five-year capital needs:
Security gate

Apparatus assigned – Engine, reserve ambulance, Type 3 brush truck

Station 373

63725 E. Saddlebrooke Blvd.

Year built – 1990
Square footage – 3,944

Personnel capacity per shift – 6
Personnel assigned per shift – 6

Sprinklered – Yes

Five-year capital needs:
Day room, kitchen, office space expansion

Apparatus assigned – Engine, ambulance

Station 374

1130 W. Rancho Vistoso Blvd.

Year built – 1991
Square footage – 5,102

Personnel capacity per shift – 6
Personnel assigned per shift – 4

Sprinklered – Yes

Five-year capital needs:
Day room and kitchen expansion

Apparatus assigned – Engine, AMR ALS ambulance

Station 375

12125 N. Woodburne Avenue

Year built – 2001
Square footage – 9,932

Personnel capacity per shift – 8
Personnel assigned per shift – 8

Sprinklered – Yes

Five-year capital needs:
None

Apparatus assigned – Ladder (quint), ambulance, utility truck

Station 376

10475 N. La Canada Drive

Year built – 2008
Square footage – 7,200

Personnel capacity per shift – 6
Personnel assigned per shift – 6

Sprinklered – Yes

Five-year capital needs:
Weight room and storage expansion

Apparatus assigned – Engine, ambulance, tender, type 6 brush truck

Station 377

355 E. Linda Vista Blvd.

Year built – 2010
Square footage – 11,731

Personnel capacity per shift – 9
Personnel assigned per shift – 8

Sprinklered – Yes

Five-year capital needs:
Weight room expansion, turn out room, storage space (budgeted F/Y 2022-2023)

Apparatus assigned – Engine, ambulance, squad, TRT chase truck, EC vehicle

Station 378

60891 E. Arroyo Vista Drive

Year built – 2010
Square footage – 2,764

Personnel capacity per shift – 4
Personnel assigned per shift – 4

Sprinklered – Yes

Five-year capital needs:
New station, scheduled for December 2023.

Apparatus assigned – Engine

Station 379

9310 N. Shannon Road

Year built – 2010
Square footage – 11,496

Personnel capacity per shift – 11
Personnel assigned per shift – 7

Sprinklered – Yes

Five-year capital needs:
None

Apparatus assigned – Engine, ambulance, tender, type 3 brush truck, air-power truck

Station 380

1175 W. Magee Road

Year built – 2013
Square footage – 14,336

Personnel capacity per shift – 13
Personnel assigned per shift – 7

Sprinklered – Yes

Five-year capital needs:
None

Apparatus assigned – Ladder (quint), ambulance, type 6 brush truck, wildland chase truck

Admin North

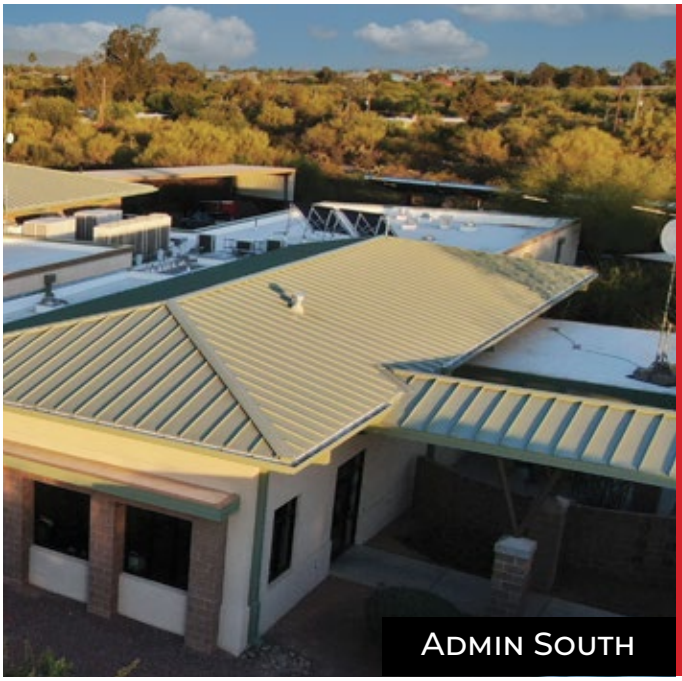
3885 E. Golder Ranch Drive

Year built – 2006
Square footage – 9,543

Personnel capacity per shift – 25
Personnel assigned per shift – 25

Sprinklered – Yes

Five-year capital needs:
Minor to Moderate remodel/
improvements – Fall 2023



Admin South

1175 W. Magee Road

Year built – 2013
Square footage – 5,599

Personnel capacity per shift – 13
Personnel assigned per shift – 12

Sprinklered – Yes

Five-year capital needs:
None

Hanley

1600 E. Hanley Blvd.

Renovated – 2022-2023
Square footage – 15,800

New headquarters building to consolidate most administrative staff under one roof

Personnel capacity per shift – 35
Personnel assigned per shift – 31

Sprinklered – Yes

Current Tenant Improvement (TI) Underway-Completion expected March/2023

Fleet Maintenance

3895 E. Golder Ranch Drive

Year built – 2006
Square footage – 8,944

Personnel capacity per shift – 9
Personnel assigned per shift – 9

Sprinklered – Yes

Five-year capital needs:
Bond Funding available for Tenant Improvement (TI) – 2024

Professional Development

3845 E. Golder Ranch Drive

Year built – 2006
Square footage – 8,625

Personnel capacity per shift – 14
Personnel assigned per shift – 14

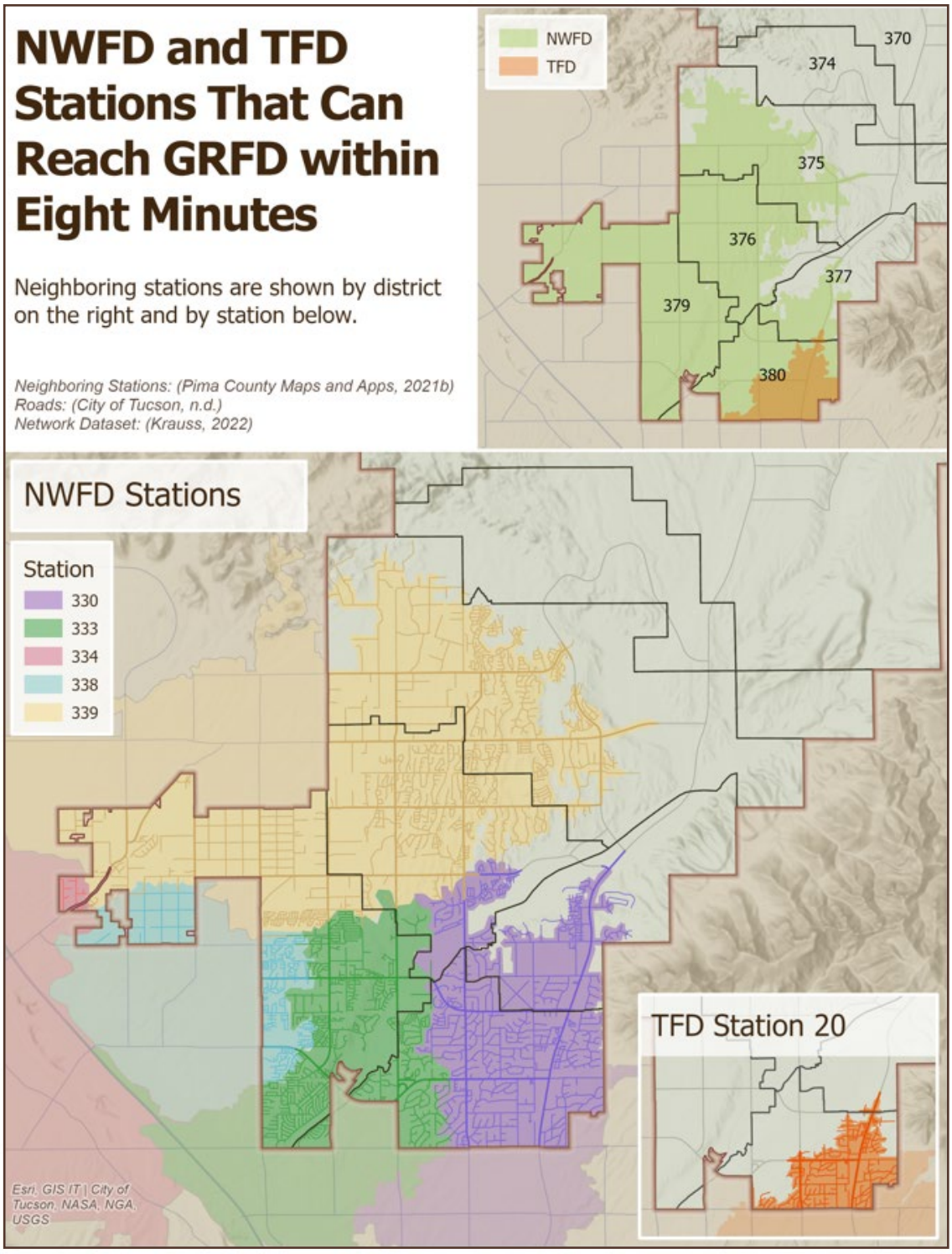
Sprinklered – Yes

Five-year capital needs:
Bond Funding available for
Tenant Improvement (TI)-2024

Automatic Aid

GRFD has automatic aid agreements with Northwest Fire District and Tucson Fire Department. The map below shows NWFD and TFD stations that are in close proximity to GRFD boundaries.

Figure 4.2



PERFORMANCE

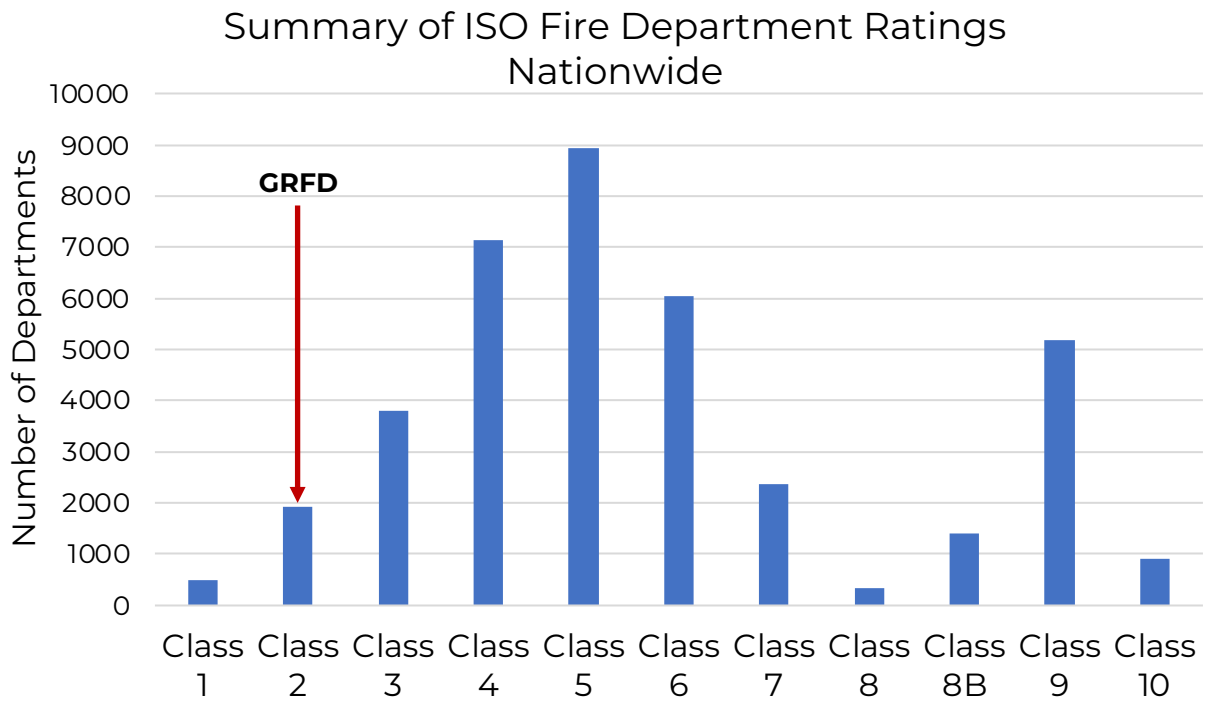
Insurance Services Office

The Insurance Services Office (ISO) evaluates and rates fire departments in the state. ISO rates a fire department on a scale of 1 to 10; one being the highest/best rating, ten being the lowest/worst rating.

Components of the rating include receiving and handling of alarms, fire department prevention and suppression and water supply capabilities. The most recent rating ISO performed for Golder Ranch Fire District was in 2018. The district received a rating of 2. A copy of the ISO Public Protection Classification letter is located in **Appendix 4.1.**

As **Figure 4.3** illustrates, GRFD's ISO Class 2 rating is in the top five percent in the country, and in the top 11 percent in Arizona. The scoring breakdown of the rating is summarized below.

Figure 4.3



Rating Metric	Score	Total Points Possible	% of Total Possible
Receiving and handling of alarms	8.85	10.0	88%
Fire department	38.32	50.0	77%
Water supply	34.63	40.0	69%

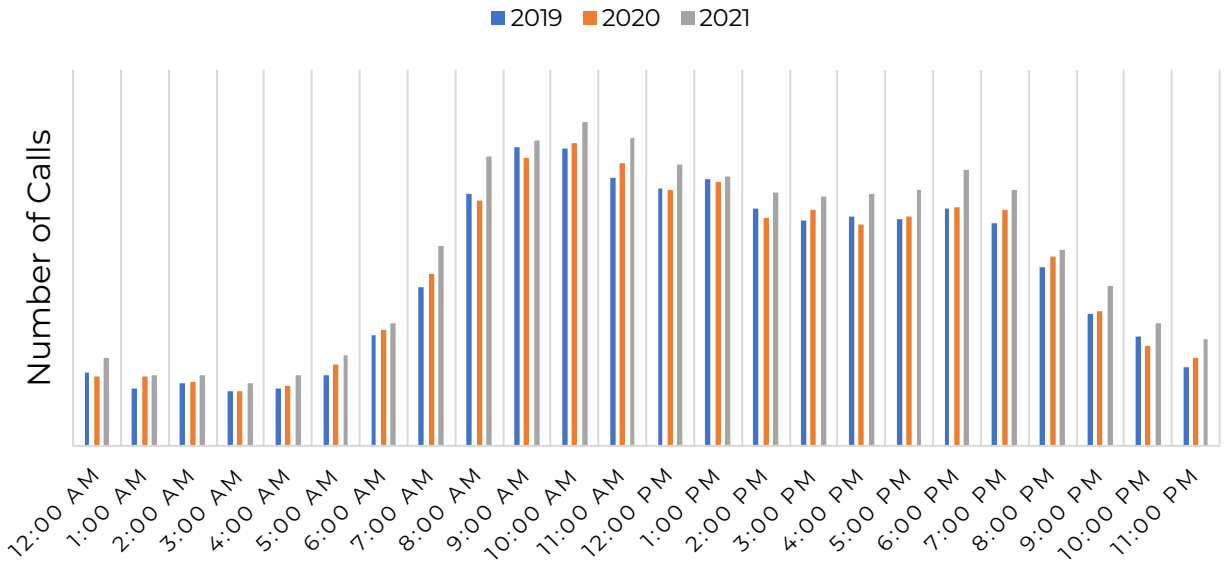
Fire Property Loss and Fire-Related Injuries and Deaths

Figure 4.4

	Year		
	2019	2020	2021
Civilian Injuries	0	0	0
Firefighter Injuries	0	1	0
Civilian Deaths	0	1	1
Firefighter Deaths	0	0	0

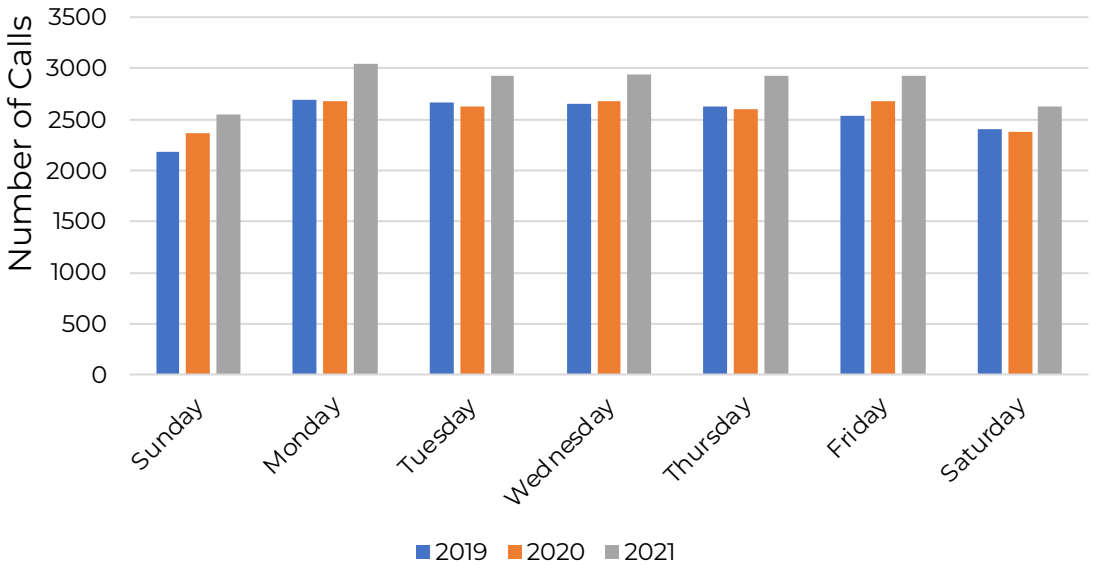
Temporal Analysis

Figure 4.5 Incidents by Time of Day



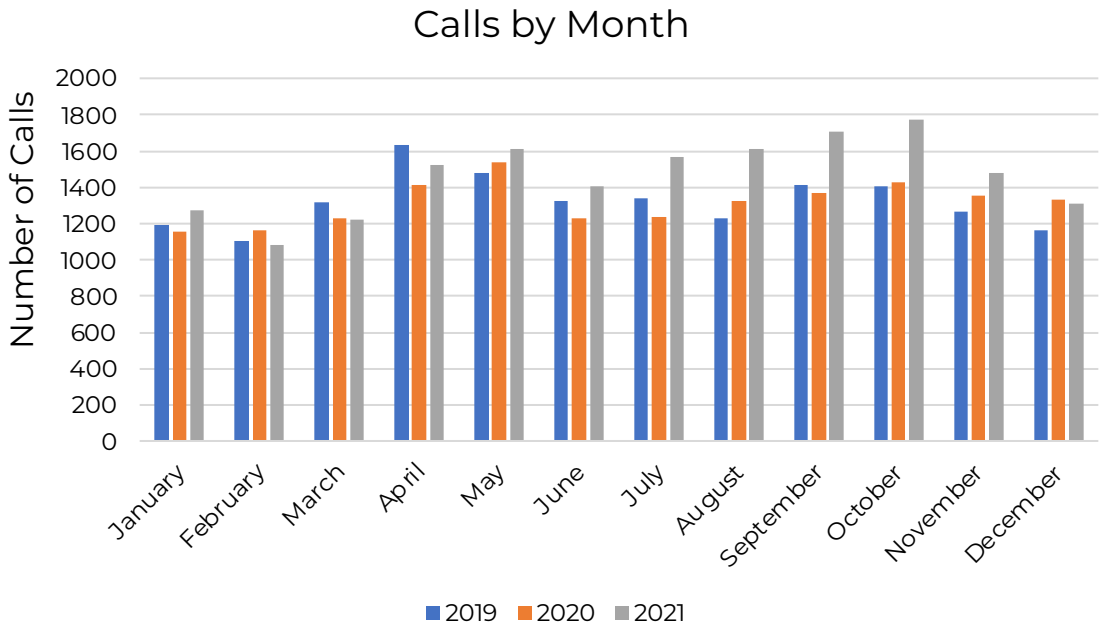
Not unexpectedly, the chart illustrates the lowest call volume occurs between the hours of 12 a.m. and 4 a.m. with volume increasing after 4 a.m. and peaking at roughly 10 a.m. Call volume shows a steady decrease after 10 a.m. with an uptick occurring between the hours of 6 and 8 p.m. before volume decreases again.

Figure 4.6 Calls – Day of Week



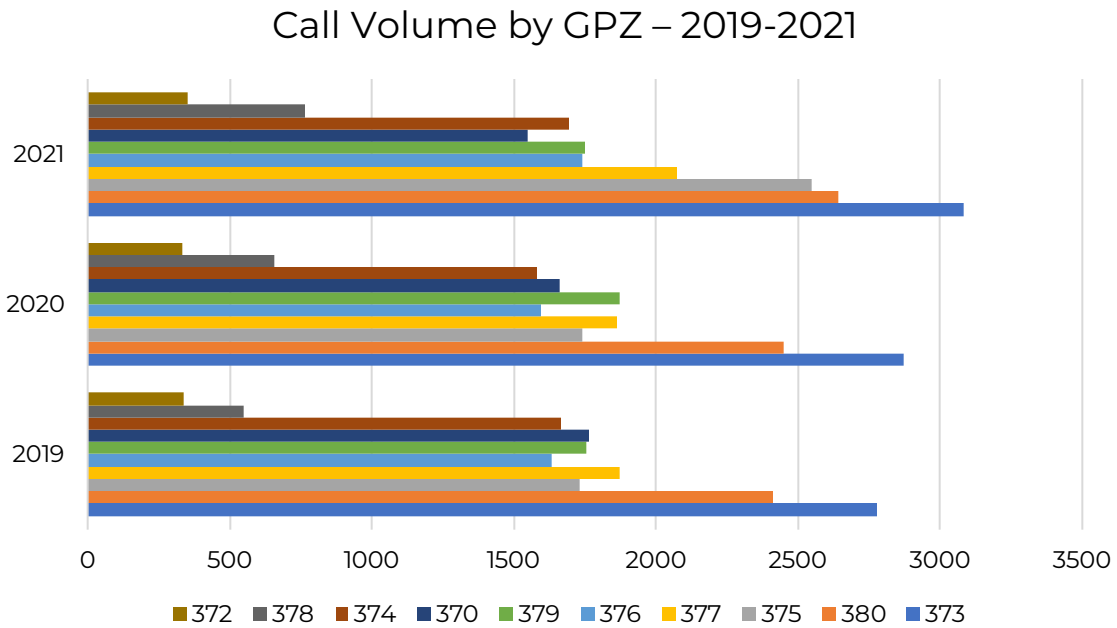
Call volume Monday through Friday is relatively steady, with a slight decrease on the weekends and Sundays having the lowest call volume.

Figure 4.7



Other than a downturn in call volume in the winter months, there is relative consistency during the balance of the other months with increasing call volume June through October in 2021.

Figure 4.8

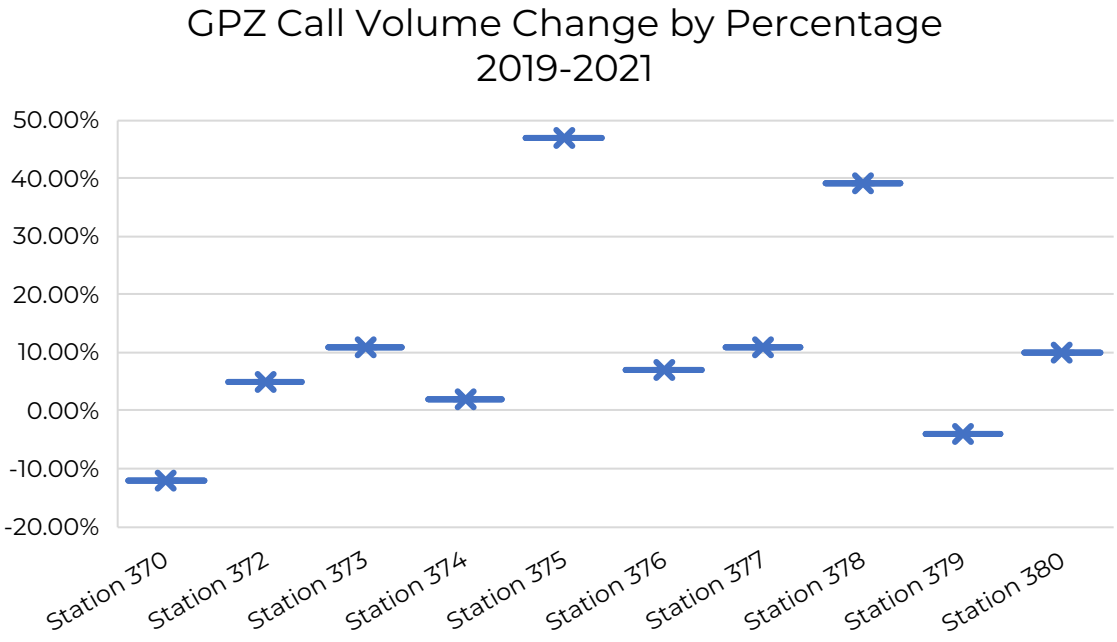


2021 GPZ Call Volume Ranking

GPZ	Number of Calls	Percentage of Total District Calls	Rank by Call Volume
370	4,427	8.5%	7
372	1,016	2.0%	10
373	8,728	16.7%	1
374	4,301	8.2%	8
375	7,498	14.4%	3
376	4,877	9.4%	6
377	5,702	10.9%	5
378	1,647	3.2%	9
379	5,915	11.3%	4
380	8,035	15.4%	2

Call distribution is overall fairly evenly distributed with eight of the stations running 94% of the calls, four stations running 57% of the calls, and two stations with low call volumes totaling 6% of the total calls.

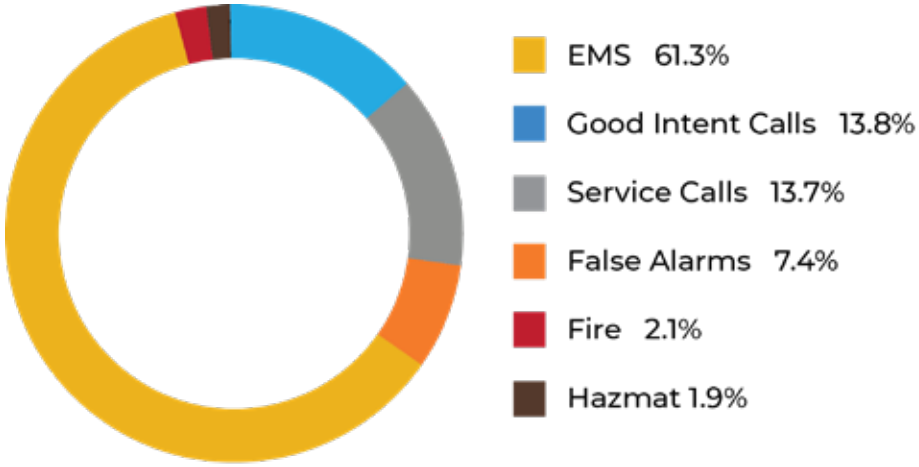
Figure 4.9



Station 375 experienced the largest call volume change during 2019-2021; a 41% increase followed by Station 378 with a 39% increase. Two stations experienced call volume decreases; Stations 370 and 379.

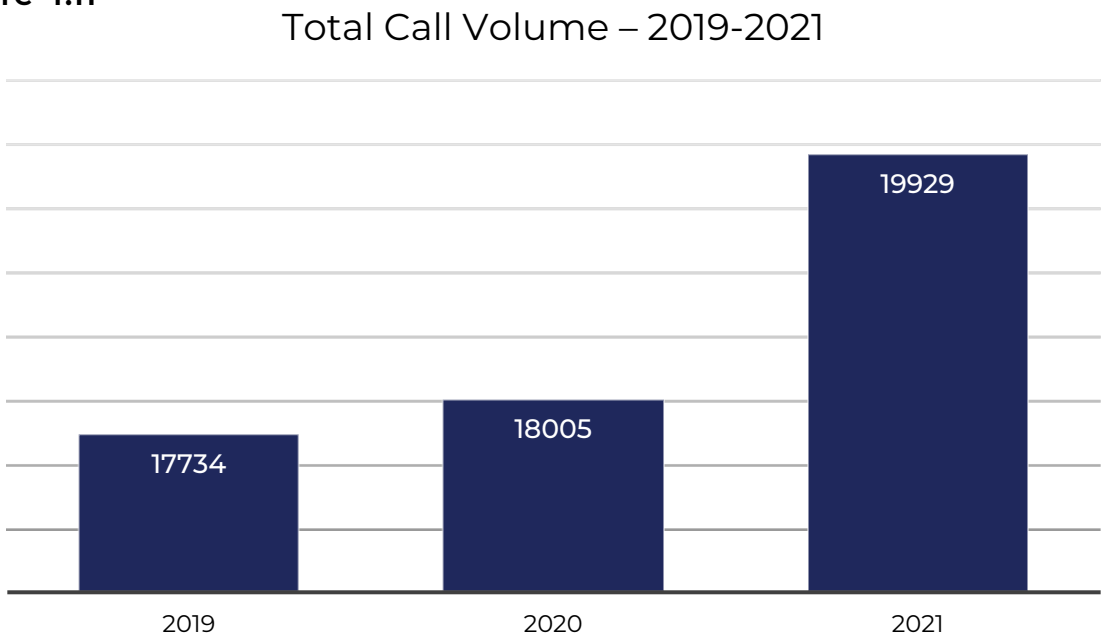
Call Types and Volume

Figure 4.10 Call Types – 2019-2021



Coding classifications are based on the National Fire Incident Reporting System.[40] See **Appendix 4.2.** for coding classifications.

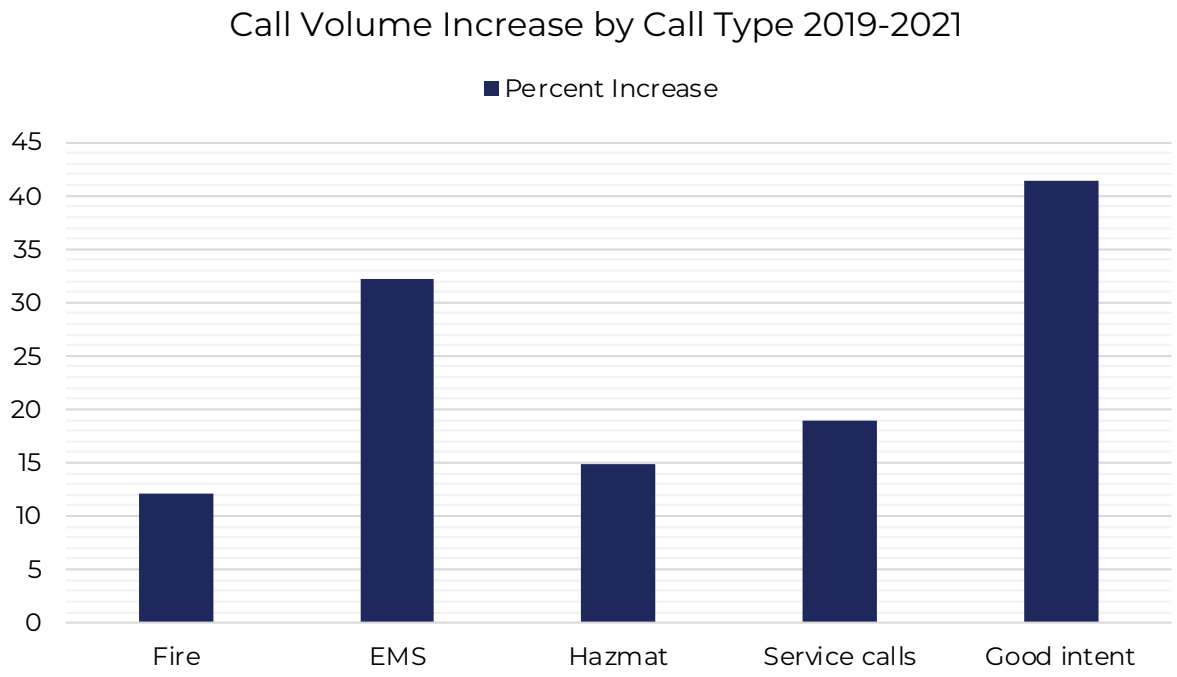
Figure 4.11



GRFD experienced a nearly 10% call volume increase from 2020 to 2021.

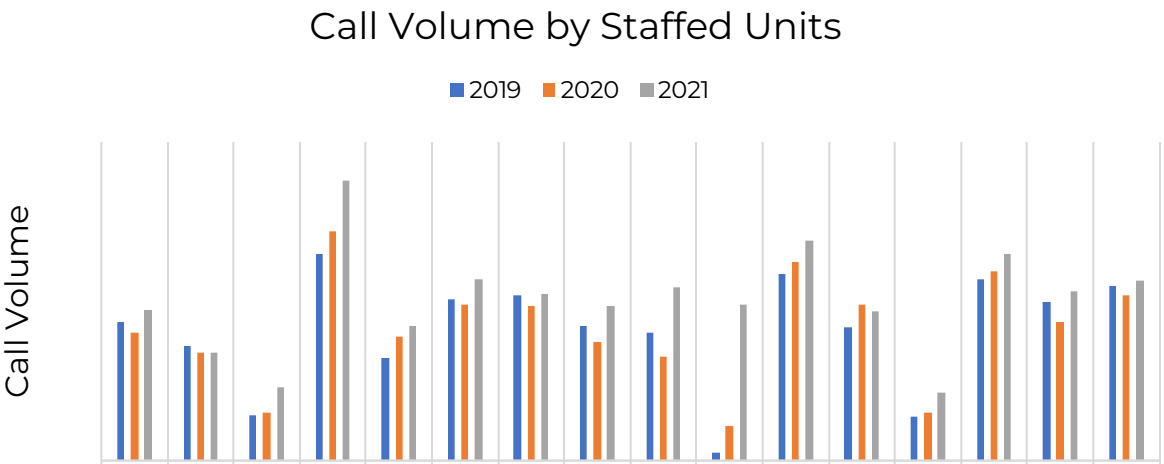
[40]U.S. Fire Administration National Fire Data Center. National Fire Incident Reporting System. 2015.

Figure 4.12



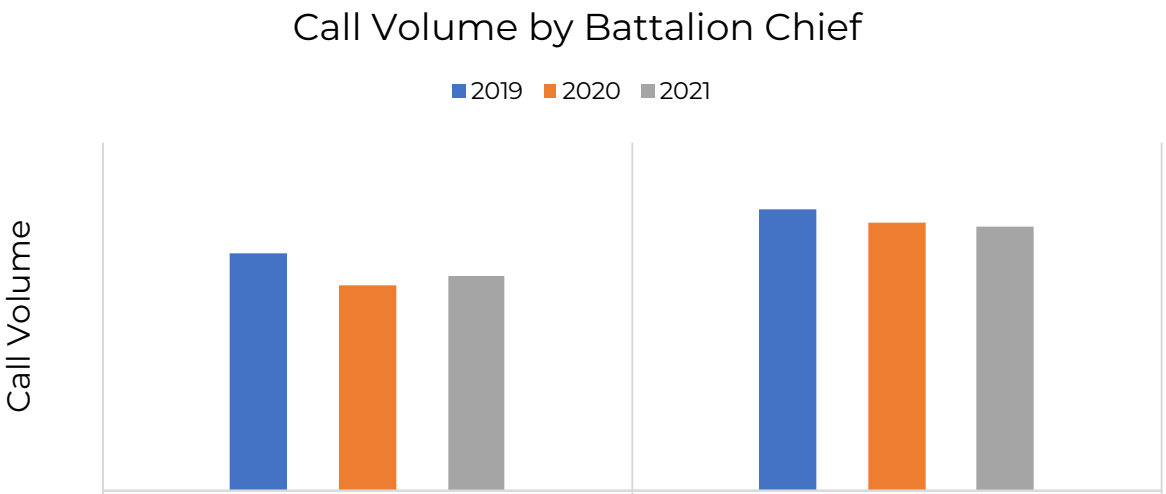
Good intent calls showed the highest percentage increase from 2019 to 2021; a 41% increase.

Figure 4.13



	EN 370	PM 370	EN 372	EN 373	PM 373	EN 374	LD 375	PM 375	EN 376	PM 376	EN 377	PM 377	EN 378	EN 379	LD 380	PM 380
2019	1302	1081	422	1944	965	1517	1551	1264	1204	74	1750	1255	414	1712	1495	1637
2020	1201	1010	449	2160	1164	1473	1460	1113	980	332	1875	1464	453	1777	1302	1560
2021	1413	1021	686	2631	1272	1703	1569	1459	1630	1468	2069	1403	641	1940	1594	1699

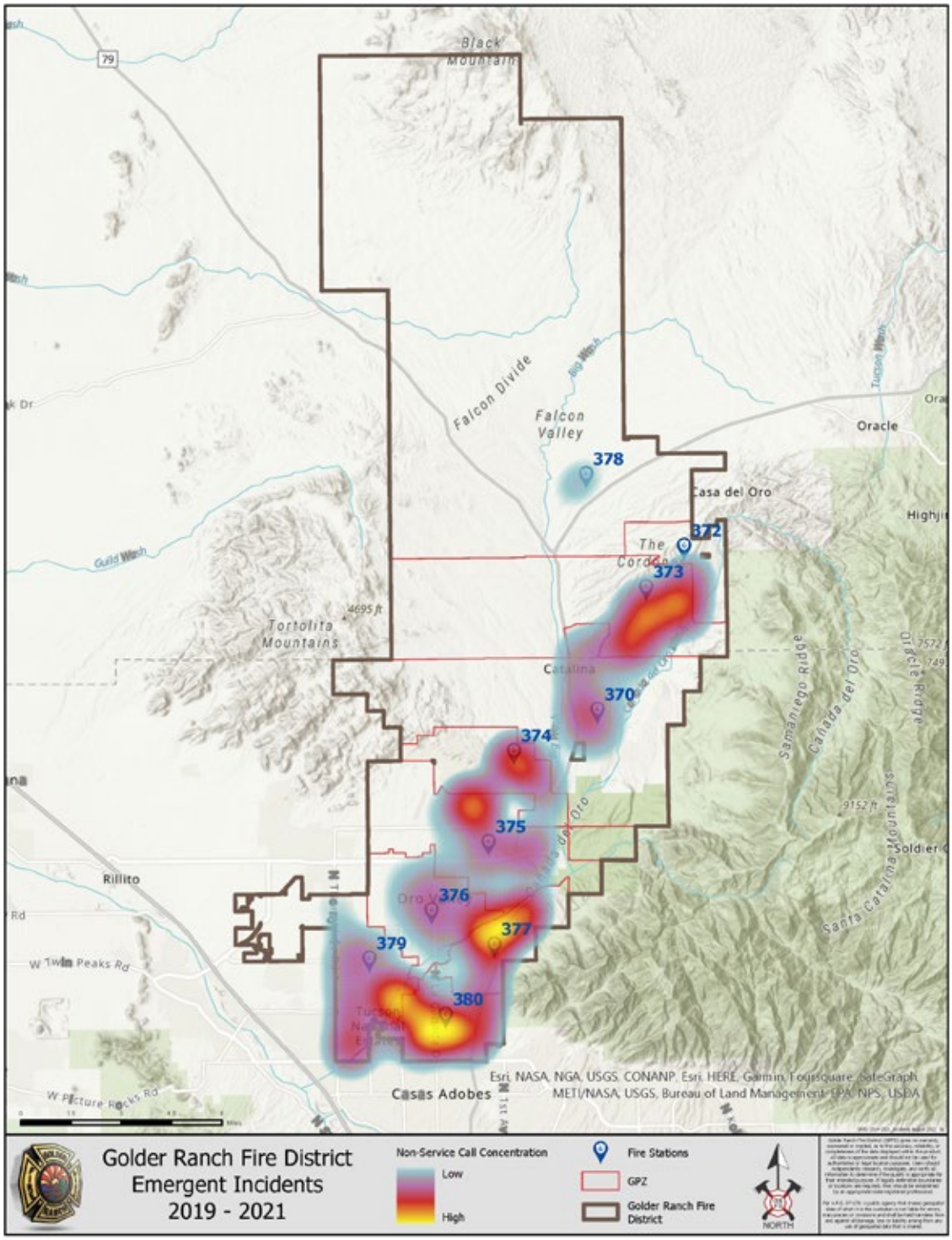
Figure 4.14



	BC 370	BC 380
2019	204	242
2020	177	231
2021	185	227

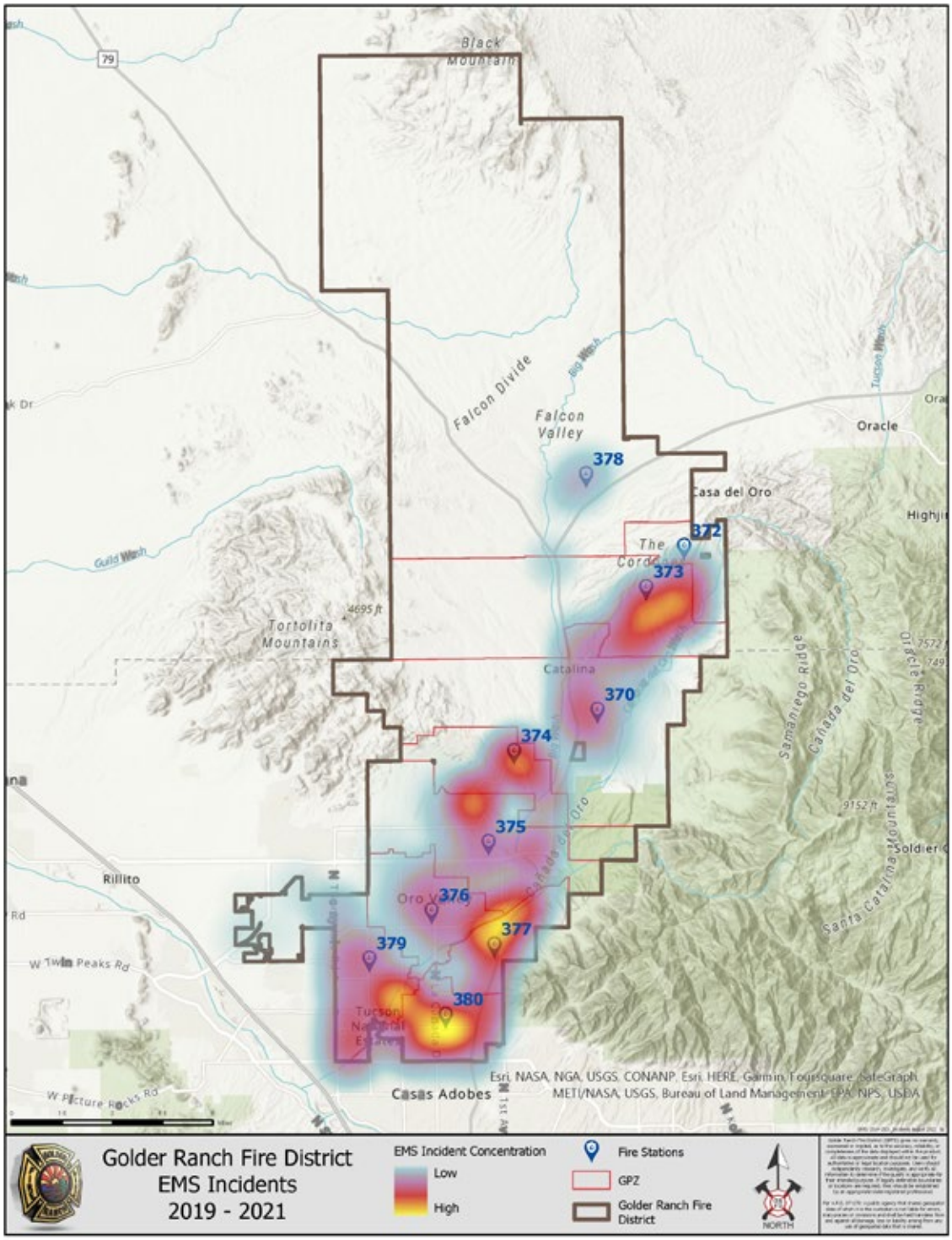
The following heat map depicts emergent call concentration in the service area for 2019 through 2021. Total call volume maps for specific geographic planning zones may be found in the **Appendices** section.

Figure 4.15 Emergent Incidents Heat Map – All GPZs



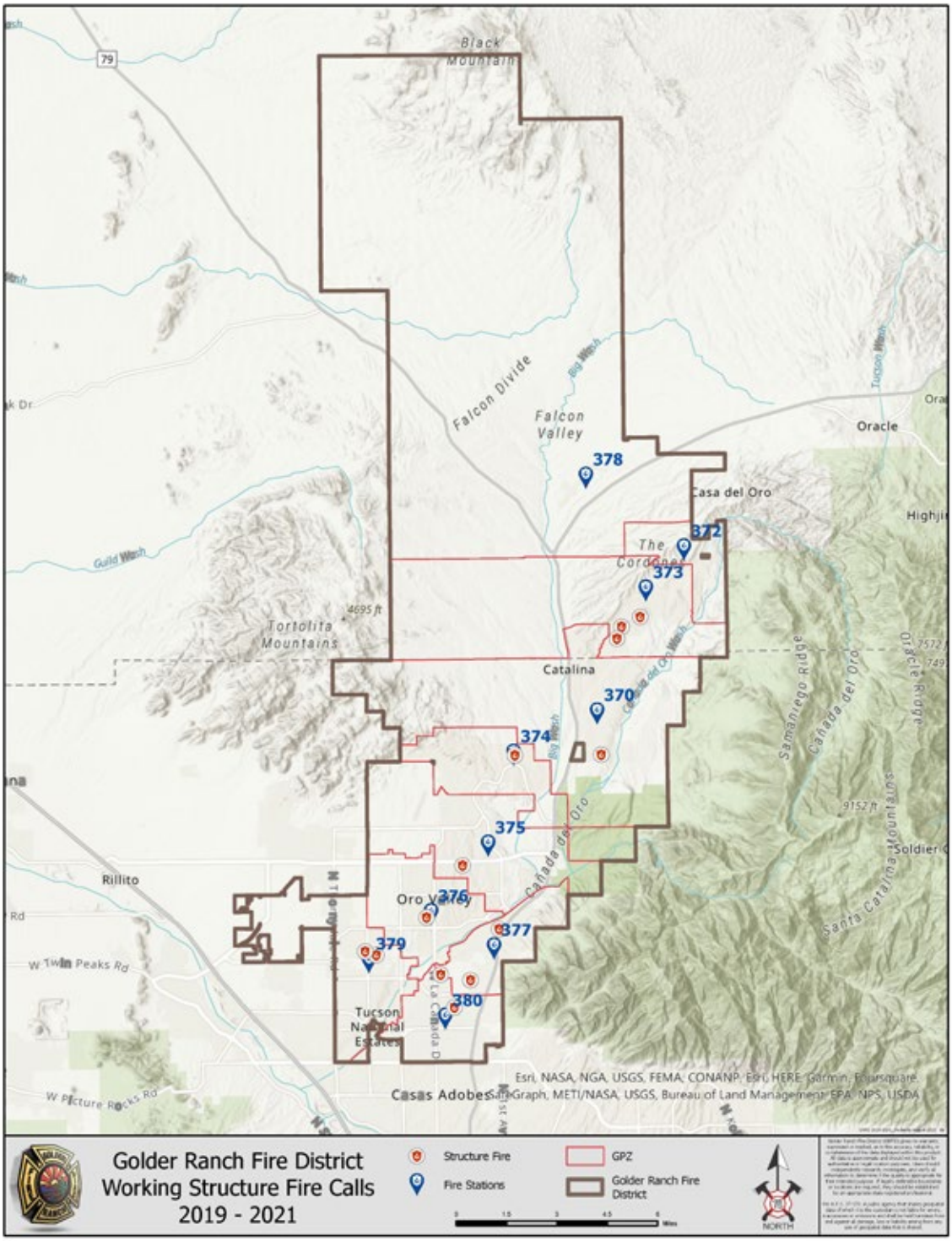
The following heat map depicts EMS call concentration in the service area for 2019 through 2021. Total call volume maps for specific geographic planning zones may be found in the **Appendices** section.

Figure 4.16 EMS Incidents Heat Map – All GPZs



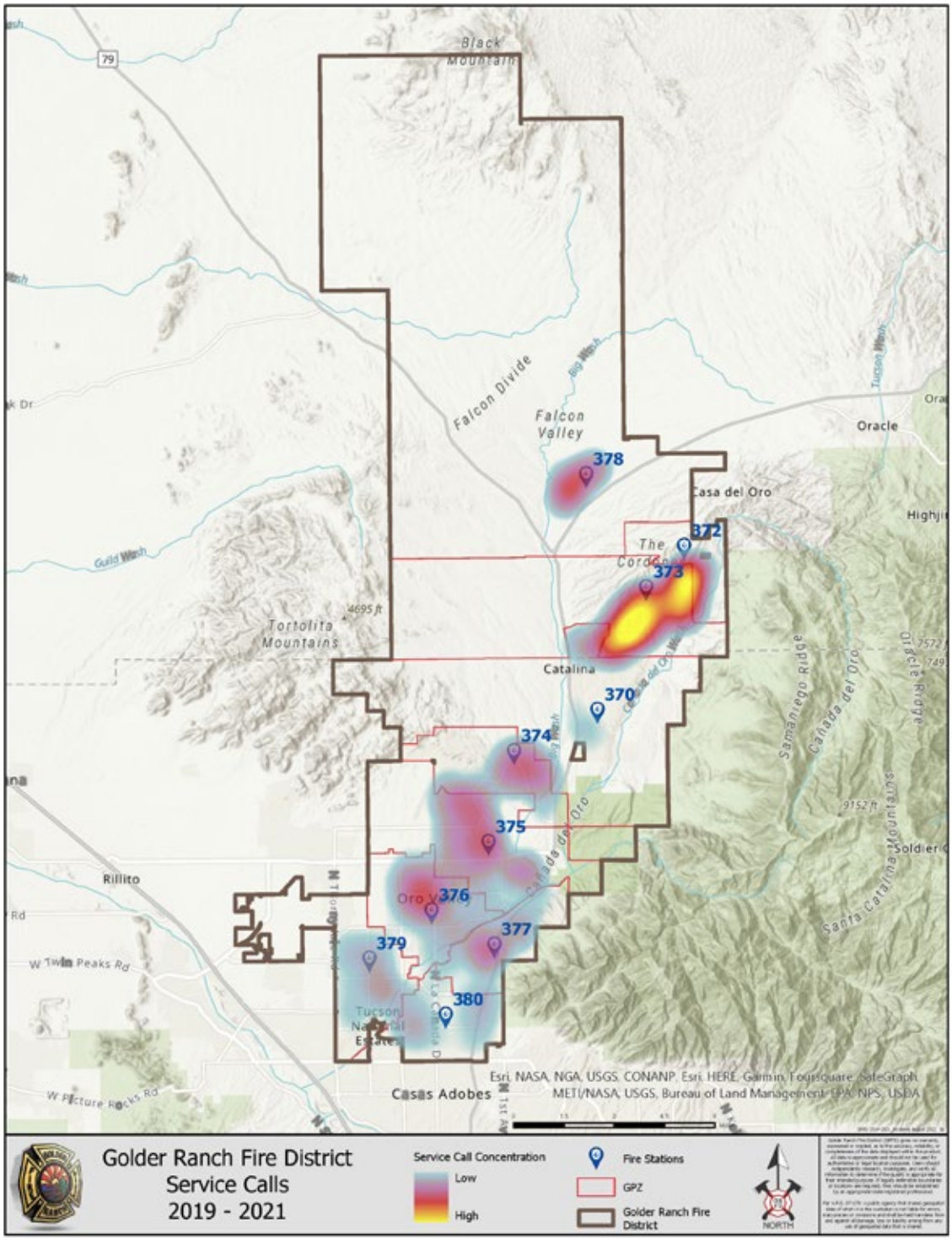
The following map depicts fire call volume in the service area for 2019 through 2021. Total call volume maps for specific geographic planning zones may be found in the **Appendices** section.

Figure 4.17 Structure Fire Incidents Map – All GPZs



The following heat map depicts the concentration of service calls within the district for 2019 through 2021.

Figure 4.18 Service Call Concentration Map – All GPZs



CASCADE OF EVENTS

For every emergency that Golder Ranch Fire District Responds to there is a sequence of steps known as the cascade of events. These steps are illustrated in **Figure 4.19.**

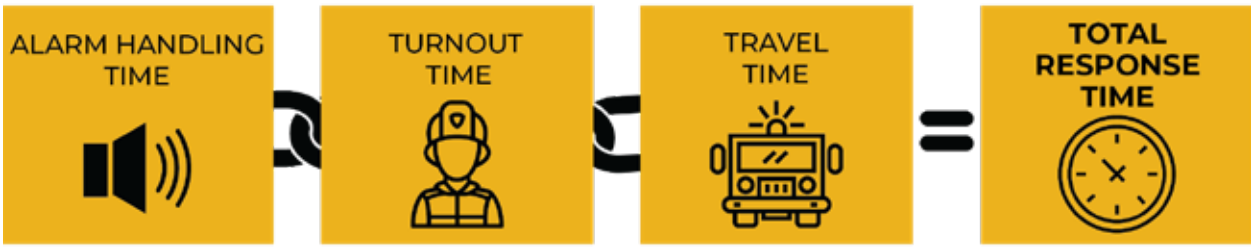
Figure 4.19

COMPONENTS AND STATISTICAL METHODS USED FOR REPORTING RESPONSE TIMES

Golder Ranch Fire District has chosen to report its response time performance to the 90th percentile versus the traditional average response time reporting method. Averages are an arithmetic mean; the sum of all response – divided by their count. However, particularly with response time data, the data can contain heavy outliers and thus averages can be skewed – giving a misleading picture.

Percentiles are a value on a scale of 100 that indicates the percent of a distribution that is equal to or below it. The 90th percentile is representative of what the performance level is 90% of the time, or better. It is a much more effective way of measuring performance. GRFD uses three variables to measure total response time as shown below.

Figure 4.20



- Alarm handling time, also known as call processing time is defined as the time interval from when the alarm is acknowledged at the communications center until response information begins to be transmitted via voice or electronic means to the station(s) and/or units in the field. GRFD receives dispatch services from the City of Tucson Public Safety Communications.

- Turnout time is defined as the time interval that begins when the station(s) and/or units in the field notification process commences by either an audible alarm or visual annunciation, or both – and ends at the initiation of travel. (Wheels turning.)

- Travel time is defined as the time interval that begins when a unit is in route to the emergency incident and ends when the unit arrives at the scene. (Wheels stopped.)

- Total response time makes up all three of these measurable variables.

The following figures represent GRFD's current response time performance at the 90th percentile. The outlier process applied to the reported data is described in **Appendix 4.13** – Standards of Cover and Response Time Standard Analysis. The response times represent two population densities:

- Rural – less than 2500 people per square mile
- Urban – greater than 2500 people per square mile

Low-Risk EMS 90th Percentile Times Baseline Performance Single Engine Company Response			2019-2021	2021	2020	2019	Target
Alarm Handling	Pick-up to Dispatch	Urban	1:58	1:55	2:03	1:53	1:15
		Rural	2:02	1:56	2:05	2:21	1:15
Turnout Time	Turnout Time 1st unit	Urban	1:45	1:43	1:45	1:46	1:15
		Rural	1:43	1:43	1:43	1:42	1:15
Travel Time	Travel Time 1st Unit Distribution	Urban	7:29	7:57	7:20	6:40	6:00
		Rural	9:55	9:56	9:17	10:02	9:00
Total Response Time	Total Response Time 1st Unit on Scene Distribution	Urban	10:09	10:30	10:03	9:13	8:30
			n=9,780	n=3,993	n=3,873	n=1,914	
		Rural	12:36	12:37	12:13	12:37	11:30
			n=955	n=483	n=285	n=187	

Moderate-Risk EMS 90th Percentile Times Baseline Performance Engine and Ambulance Response			2019-2021	2021	2020	2019	Target
Alarm Handling	Pick-up to Dispatch	Urban	1:58	1:55	2:03	1:52	1:15
		Rural	2:10	2:13	2:16	1:59	1:15
Turnout Time	Turnout Time 1st unit	Urban	1:36	1:33	1:35	1:38	1:15
		Rural	1:34	1:36	1:30	1:34	1:15
Travel Time	Travel Time 1st Unit Distribution	Urban	6:32	6:52	6:26	6:09	9:00
		Rural	9:27	10:05	9:26	8:21	9:00
	Travel Time ERF Concentration	Urban	9:23	9:33	9:19	9:15	12:30
		Rural	15:28	15:40	17:28	14:21	15:00
Total Response Time	Total Response Time 1st Unit on Scene Distribution	Urban	8:49	9:02	8:53	8:34	8:30
			n=18,092	n=6,142	n=5,684	n=6,266	
		Rural	12:14	12:58	12:16	10:46	11:30
			n=2,045	n=817	n=587	n=641	
	Total Response Time ERF Concentration	Urban	11:46	11:57	11:48	11:34	11:30
			n=16,007	n=5,487	n=5,100	n=5,420	
		Rural	17:46	18:03	20:29	16:35	17:30
			n=1,442	n=552	n=410	n=480	

High-Risk EMS 90th Percentile Times Baseline Performance Engine, Ambulance, EMS Supervisor Response			2019-2021	2021	2020	2019	Target
Alarm Handling	Pick-up to Dispatch	Urban	2:05	1:32	2:08	1:46	1:15
		Rural	2:10	2:14	1:23	1:16	1:15
Turnout Time	Turnout Time 1st unit	Urban	1:16	1:11	0:53	1:34	1:15
		Rural	1:18	1:25	0:56	1:18	1:15
Travel Time	Travel Time 1st Unit Distribution	Urban	6:01	6:01	5:13	5:28	6:00
		Rural	11:22	12:20	10:57	6:16	9:00
	Travel Time ERF Concentration	Urban	9:54	9:41	9:09	14:44	9:30
		Rural	*	*	*	*	15:30
Total Response Time	Total Response Time 1st Unit on Scene Distribution	Urban	8:42	8:02	9:05	8:23	8:30
			N=65	N=24	N=20	N=21	
		Rural	*	*	*	*	11:30
			*	*	*	*	
	Total Response Time ERF Concentration	Urban	11:54	11:41	10:57	18:30	12:00
			n=49	n=19	n=16	n=14	
		Rural	*	*	*	*	18:00
			*	*	*	*	

*There was insufficient data to report at the 90th percentile with any statistical reliability.

There were only seven calls in the EMS maximum-risk category. This is not enough data to report at the 90th percentile with any statistical reliability.

Low-Risk Fire Suppression 90th Percentile Times Baseline Performance Single Engine Company Response			2019-2021	2021	2020	2019	Target
Alarm Handling	Pick-up to Dispatch	Urban	2:20	2:17	2:27	2:15	1:15
		Rural	2:19	2:20	2:09	2:26	1:15
Turnout Time	Turnout Time 1st Unit	Urban	1:44	1:39	1:47	1:48	1:30
		Rural	1:46	1:46	1:46	1:45	1:30
Travel Time	Travel Time 1st Unit Distribution	Urban	8:48	9:11	8:56	8:02	6:00
		Rural	10:49	12:59	10:02	9:45	9:00
Total Response Time	Total Response Time 1st Unit on Scene Distribution	Urban	11:26	11:53	11:41	10:37	8:45
			n=1,470	n=508	n=514	n=448	
		Rural	13:43	16:20	13:18	11:51	11:45
			n=298	n=95	n=102	n=101	

Moderate-Risk Fire Suppression 90th Percentile Times Baseline Performance 4 Engine Companies, 1 Ambulance, 2 BCs, 1 EC			2019-2021	2021	2020	2019	Target
Alarm Handling	Pick-up to Dispatch	Urban	1:52	1:52	1:52	1:46	1:15
		Rural	1:15	1:10	1:12	1:44	1:15
Turnout Time	Turnout Time 1st Unit	Urban	1:27	1:04	1:27	1:30	1:30
		Rural	1:38	:52	1:57	1:25	1:30
Travel Time	Travel Time 1st Unit **Distribution**	Urban	6:47	7:20	6:47	6:43	6:00
		Rural	8:37	8:30	12:21	7:59	9:00
	Travel Time ERF **Concentration**	Urban	23:38	16:18	19:24	24:19	15:00
		Rural	26:38	26:38	*	*	20:00
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	9:03	9:03	8:41	9:13	8:45
			n= 149	n=51	n=54	n=44	
		Rural	9:56	9:37	*	*	11:45
			n=25	n=16	*	*	
	Total Response Time ERF **Concentration**	Urban	25:00	17:26	20:59	25:29	17:45
			n=37	n=14	n=13	n=10	
		Rural	*	*	*	*	22:45
			*	*	*	*	

*There was insufficient data to report at the 90th percentile with any statistical reliability.

There was only one call in the fire suppression high-risk category. This is not enough data to report at the 90th percentile with any statistical reliability.

Low-Risk Hazmat 90th Percentile Times Baseline Performance Single Engine Company Response			2019-2021	2021	2020	2019	Target
Alarm Handling	Pick-up to Dispatch	Urban	1:56	1:58	1:54	1:53	1:15
		Rural	1:33	1:22	1:47	1:26	1:15
Turnout Time	Turnout Time 1st Unit	Urban	1:48	1:28	1:42	1:57	1:30
		Rural	1:42	1:47	1:35	1:31	1:30
Travel Time	Travel Time 1st Unit Distribution	Urban	8:49	9:09	8:35	8:43	6:00
		Rural	9:07	7:24	9:54	8:47	9:00
Total Response Time	Total Response Time 1st Unit on Scene Distribution	Urban	11:15	11:15	11:16	11:03	8:45
			n=496	n=163	n=175	n=154	
		Rural	11:12	9:59	11:56	12:00	11:45
			n=86	n=34	n=31	n=21	

The moderate hazmat risk effective response force listed in Section 3 is new – a result of the CRA-SOC process. Therefore, there is not currently any data for this risk category.

There were only four calls in the high-risk hazmat category and zero calls in the maximum-risk category. This is not enough data to report at the 90th percentile with any statistical reliability.

Technical Rescue Response Times

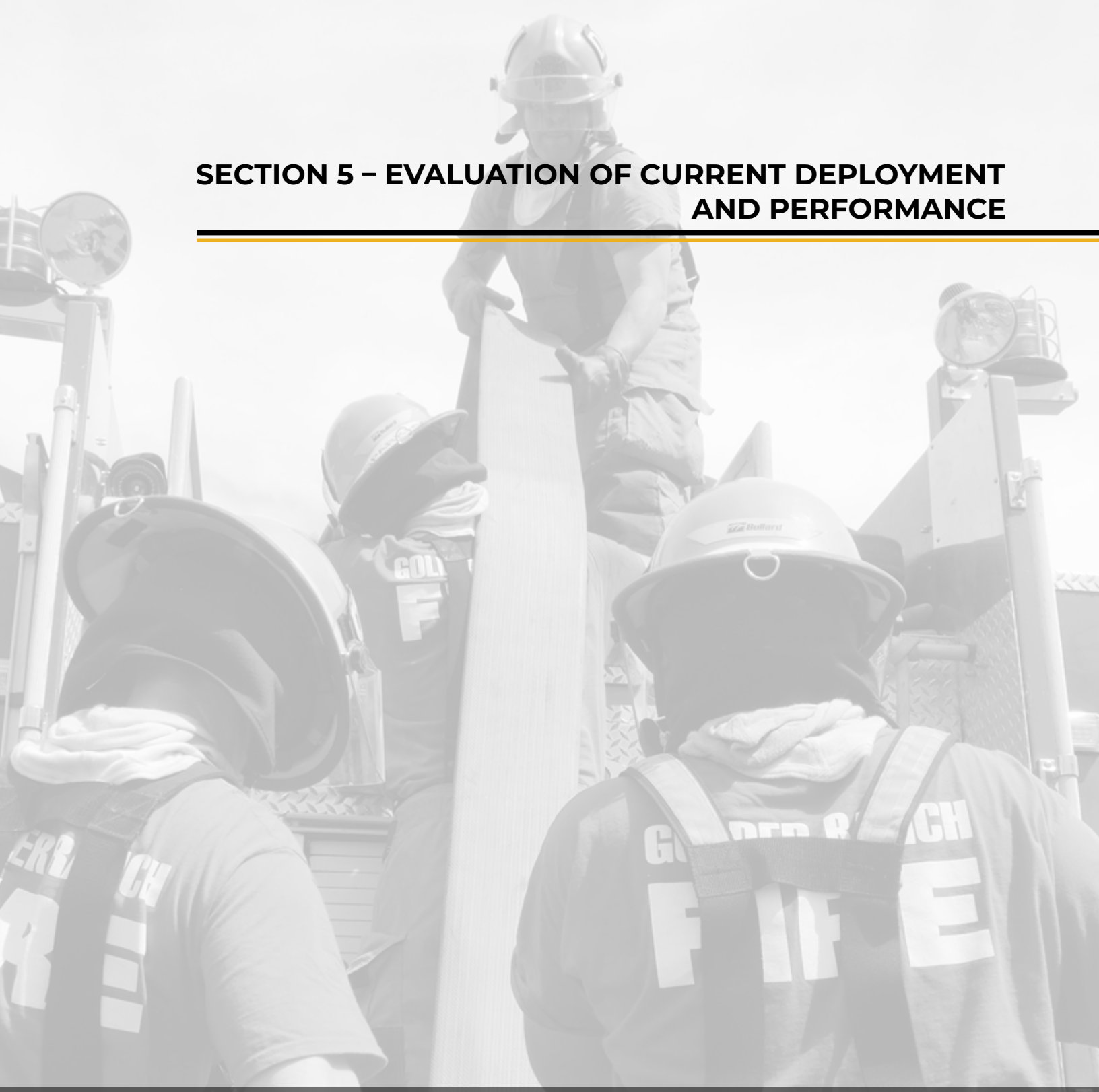
The extrication risk categories and associated effective response forces listed in Section 3 are new – a result of the CRA-SOC process. Therefore, there is not currently any response time data available. Vehicle extrication type calls are currently included in the EMS response time statistic.

GRFD identified only a high-risk category for other technical rescue disciplines. For the period of 2019-2021, there were only four calls at this level. This is not enough data to report at the 90th percentile with any statistical relevance.

Low-Risk Wildland Fire 90th Percentile Times Baseline Performance Single Engine Company Response			2019-2021	2021	2020	2019	Target
Alarm Handling	Pick-up to Dispatch	Urban	1:52	1:53	1:48	1:44	1:15
		Rural	2:30	3:34	1:52	1:53	1:15
Turnout Time	Turnout Time 1st Unit	Urban	1:54	1:32	1:54	1:55	1:30
		Rural	1:49	1:32	1:57	1:49	1:30
Travel Time	Travel Time 1st Unit Distribution	Urban	10:33	10:29	9:32	10:33	6:00
		Rural	15:49	9:43	12:2	18:11	9:00
Total Response Time	Total Response Time 1st Unit on Scene Distribution	Urban	12:43	12:06	12:43	12:42	8:45
			n=108	n=25	n=46	n=37	
		Rural	17:52	13:56	13:43	19:58	11:45
			n=40	n=10	n=17	n=13	

There was only one call in the wildland high-risk category. This is not enough data to report at the 90th percentile with any statistical relevance.

SECTION 5 – EVALUATION OF CURRENT DEPLOYMENT AND PERFORMANCE



Continuous improvement is better than delayed perfection.

–Mark Twain

COMMUNITY EXPECTATIONS OF GRFD SERVICES

As part of the CRA-SOC development process, GRFD held two external stakeholder workshops in February 2022 to gain input from a cross section of the community. Attendees included staff from the Town of Oro Valley, district residents and business owners. After receiving information about the district's services, stakeholders completed a survey to measure their expectations and rank GRFD programs. Survey results are below.

Rank	Expectation	Score	Value
1	Maintaining adequate staffing, apparatus and equipment for emergency response.	3.90	Essential
2	Ensuring maximum safety of firefighters.	3.85	Essential
3	Ensuring GRFD provides the most effective, evidence-based emergency medical services.	3.80	Essential
Tie 4	Expedient response times to emergencies.	3.75	Essential
	Ensuring a high level of competency/training of personnel.	3.75	Essential
5	Ensuring that firefighters are adequately compensated to maintain retention/experience.	3.65	Essential
6	Professionalism of GRFD personnel.	3.60	Essential
7	Maintaining a high level of fiscal responsibility and transparency.	3.50	Essential
8	Providing a high level of community risk reduction for the community by enforcing fire codes and providing public education/ community-involved prevention programs.	3.40	High
9	Providing community involvement and presence at schools, community events, neighborhood activities, etc.	3.20	High
10	Providing nonemergency services such as smoke detector battery change and reptile removal.	2.95	High

Scale: 0-1.4 Low, 1.5-2.4 Medium, 2.5-3.4 High, 3.5-4.0 Essential

Rank	Program	Score	Value
1	Emergency Medical Services	3.95	Essential
2	Fire Suppression	3.80	Essential
Tie 3	Special Operations – Hazardous Materials Emergencies and Technical Rescue	3.55	Essential
	Fire Investigation	3.55	Essential
	Domestic Preparedness and Planning – Large-scale natural and man-made disasters	3.55	Essential
4	Wildland Fire Prevention and Mitigation	3.50	Essential
5	Public Education – CPR and in-school fire prevention classes	3.25	Very Important
6	Community Involvement – Presence at community events, neighborhood activities, etc.	3.10	Very Important

Scale: 0-1.4 Somewhat Important, 1.5-2.4 Important, 2.5-3.4 Very Important, 3.5-4.0 Essential

The external stakeholders also were surveyed regarding total response time. The attendees were given an overview of total response time components prior to completing the survey. The total response time questions included expectations for urban/suburban and rural areas of the district. The results of these survey questions are in **Figures 5.1 and 5.2.**

Figure 5.1

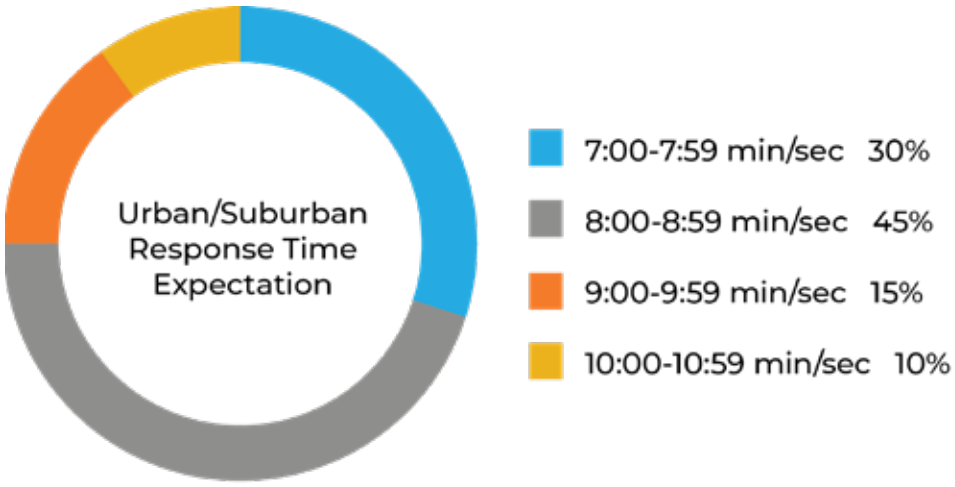
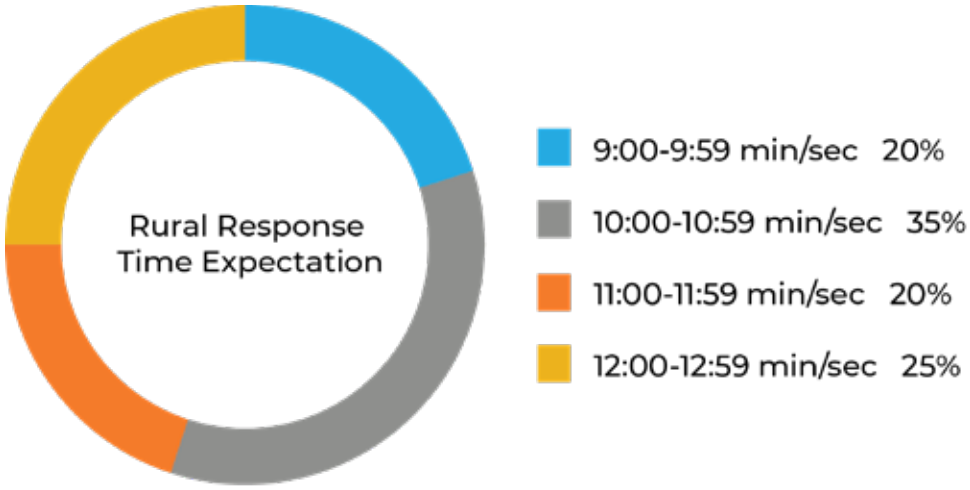


Figure 5.2



PERFORMANCE COMPARISON WITH SIMILAR SIZE FIRE AGENCIES

Golder Ranch Fire District chose to examine six similar sized accredited fire agencies serving growth-oriented communities to use as a measuring stick of current performance. The comparisons are summarized in the table below. The total response times listed are for first due EMS calls only.

Agency	Population Served	Number of Stations	Alarm Handling Time	Turnout Time	Travel Time	Total Response Time
GRFD (2021)	**99,238**	**10**	**1:58**	**1:36**	**6:32**	**8:49**
Northwest FD Arizona	130,000	11	1:49	1:30	6:07	7:16
Olathe FD Kansas	143,000	8	2:17	1:15	5:47	6:44
College Station FD Texas	126,000	6	1:31	2:00	5:02	7:38
Spokane Valley FD Washington	136,000	10	1:02	1:59	5:11	6:43
Surprise FD Arizona	153,000	7	1:32	1:16	6:41	7:30
Arvada FD Colorado	133,000	8	1:51	1:27	5:25	7:47

SERVICE LEVEL PERFORMANCE GOALS AND OBJECTIVES FOR EMERGENCY SERVICE PROGRAMS

GRFD has established performance objectives and associated response time benchmarks (targets) for all emergency service classifications.

Emergency Medical Services (EMS) Benchmark Performance Objectives

Low-Risk EMS Benchmark Performance Objective (Distribution)

For 90% of all low-risk medical incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters shall be 8 minutes and 30 seconds in urban GPZs and 11 minutes and 30 seconds in rural GPZs. The first arriving apparatus shall be capable of establishing incident command, providing advanced life support (ALS) care to include the use of cardiac monitoring, ALS medication administration and completion of patient care report documentation.

Moderate-Risk EMS Benchmark Performance Objective (Distribution)

For 90% of all moderate-risk medical incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters shall be 8 minutes and 30 seconds in urban GPZs and 11 minutes and 30 seconds in rural GPZs. The first arriving apparatus shall be capable of establishing incident command, providing advanced life support (ALS) care to include the use of cardiac monitoring, ALS medication administration and completion of patient care report documentation.

Moderate-Risk EMS Benchmark Performance Objective (Concentration)

For 90% of all moderate-risk medical incidents, the benchmark total response time for the effective response force (ERF), staffed with a minimum of six firefighters shall be 11 minutes and 30 seconds in urban GPZs and 17 minutes and 30 seconds in rural GPZs. The ERF shall be capable of establishing incident command, providing advanced life support (ALS) care to include the use of cardiac monitoring, ALS medication administration, completion of patient care report documentation and ALS transportation to the appropriate medical facility.

High-Risk EMS Benchmark Performance Objective (Distribution)

For 90% of all high-risk medical incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters shall be 8 minutes and 30 seconds in urban GPZs and 11 minutes and 30 seconds in rural GPZs. The first arriving apparatus shall be capable of establishing incident command, providing advanced life support (ALS) care to include the use of cardiac monitoring, ALS medication administration and completion of patient care report documentation.

High-Risk EMS Benchmark Performance Objective (Concentration)

For 90% of all high-risk medical incidents, the benchmark total response time for the effective response force (ERF), staffed with a minimum of eight firefighters shall be 12 minutes and 0 seconds in urban GPZs and 18 minutes and 0 seconds in rural GPZs. The ERF shall be capable of establishing incident command, providing advanced life support (ALS) care to include the use of cardiac monitoring, ALS medication administration, completion of patient care report documentation and ALS transportation to the appropriate medical facility.

Maximum-Risk EMS Benchmark Performance Objective (Distribution)

For 90% of all maximum-risk medical incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters shall be 8 minutes and 30 seconds in urban GPZs and 11 minutes and 30 seconds in rural GPZs. The first arriving apparatus shall be capable

of establishing incident command, providing multi-patient triage and beginning BLS level treatment of critical patients.

Maximum-Risk EMS Benchmark Performance Objective (Concentration)

For 90% of all maximum-risk medical incidents, the benchmark total response time for the effective response force (ERF), staffed with a minimum of 21 firefighters shall be 17 minutes and 30 seconds in urban GPZs and 24 minutes and 0 seconds in rural GPZs. The ERF shall be capable of establishing incident command, providing multi-patient triage, BLS level treatment of multiple patients and transport to the most appropriate medical facility.

Fire Suppression Benchmark Performance Objectives

Low-Risk Fire Suppression Benchmark Performance Objective (Distribution)

For 90% of all low-risk fire suppression incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters shall be 8 minutes and 45 seconds in urban GPZs and 11 minutes and 45 seconds in rural GPZs. The first arriving apparatus shall be capable of providing a minimum of 750 gallons of water with a pumping capability of 1,250 gallons per minute; establishing incident command procedures, providing the initial size-up report, requesting additional resources if needed, initiating fire attack and performing any needed rescues.

Moderate-Risk Fire Suppression Benchmark Performance Objective (Distribution)

For 90% of all moderate-risk fire suppression incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters shall be 8 minutes and 45 seconds in urban GPZs and 11 minutes and 45 seconds in rural GPZs. The first arriving apparatus shall be capable of providing a minimum of 750 gallons of water with a pumping capability of 1,250 gallons per minute; establishing incident command procedures, providing the initial size-up report, requesting additional resources if needed, initiating fire attack and performing any needed rescues.

Moderate-Risk Fire Suppression Benchmark Performance Objective (Concentration)

For 90% of all moderate-risk fire suppression incidents, the benchmark total response time for the effective response force (ERF), staffed with a minimum of 21 firefighters shall be 17 minutes and 45 seconds in urban GPZs and 22 minutes and 45 seconds in rural GPZs. The effective response force shall be capable of establishing a command post, establishing personnel accountability, establishing a safety officer, securing a continuous water supply, operating multiple hose lines, establishing a rapid intervention crew, performing search and rescue operations, completing forcible entry,

providing ventilation and utility control and performing any needed salvage and overhaul operations.

High-Risk Fire Suppression Benchmark Performance Objective (Distribution)

For 90% of all high-risk fire suppression incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters shall be 8 minutes and 45 seconds in urban GPZs and 11 minutes and 45 seconds in rural GPZs. The first arriving apparatus shall be capable of providing a minimum of 750 gallons of water with a pumping capability of 1,250 gallons per minute; establishing incident command procedures, providing the initial size-up report, requesting additional resources if needed, initiating fire attack and performing any needed rescues.

High-Risk Fire Suppression Benchmark Performance Objective (Concentration)

For 90% of all high-risk fire suppression incidents, the benchmark total response time for the effective response force (ERF), staffed with a minimum of 25 firefighters shall be 19 minutes and 45 seconds in urban GPZs and 24 minutes and 45 seconds in rural GPZs. The effective response force shall be capable of establishing a command post, establishing personnel accountability, establishing a safety officer, securing a continuous water supply, operating multiple hose lines, establishing a rapid intervention crew, performing search and rescue operations, completing forcible entry, providing ventilation and utility control and performing any needed salvage and overhaul operations.

Maximum-Risk Fire Suppression Benchmark Performance Objective (Distribution)

For 90% of all maximum-risk fire suppression incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters shall be 8 minutes and 45 seconds in urban GPZs and 11 minutes and 45 seconds in rural GPZs. The first arriving apparatus shall be capable of providing a minimum of 750 gallons of water with a pumping capability of 1,250 gallons per minute; establishing incident command procedures, providing the initial size-up report, requesting additional resources if needed, initiating fire attack and performing any needed rescues.

Maximum-Risk Fire Suppression Benchmark Performance Objective (Concentration)

For 90% of all maximum-risk fire suppression incidents, the benchmark total response time for the effective response force (ERF), staffed with a minimum of 32 firefighters shall be 25 minutes and 0 seconds in urban GPZs and 30 minutes and 0 seconds in rural GPZs. The effective response force shall be

capable of establishing a command post, establishing personnel accountability, establishing a safety officer, securing a continuous water supply, operating multiple hose lines, establishing a rapid intervention crew, performing search and rescue operations, completing forcible entry, providing ventilation and utility control and performing any needed salvage and overhaul operations.

Wildland Urban Interface (WUI) Benchmark Performance Objectives

Low-Risk WUI Benchmark Performance Objective (Distribution)

For 90% of all low-risk WUI incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters shall be 8 minutes and 45 seconds in urban GPZs and 11 minutes and 45 seconds in rural GPZs. The first arriving apparatus shall be capable of providing a minimum of 750 gallons of water with a pumping capability of 1,250 gallons per minute; establishing incident command procedures, providing the initial size-up report, requesting additional resources if needed and completing fire suppression activities.

Moderate-Risk WUI Benchmark Performance Objective (Distribution)

For 90% of all moderate-risk WUI incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters shall be 8 minutes and 45 seconds in urban GPZs and 11 minutes and 45 seconds in rural GPZs. The first arriving apparatus shall be capable of providing a minimum of 750 gallons of water with a pumping capability of 1,250 gallons per minute; establishing incident command procedures, providing the initial size-up report, requesting additional resources if needed and completing fire suppression activities.

Moderate-Risk WUI Benchmark Performance Objective (Concentration)

For 90% of all moderate-risk WUI incidents, the benchmark total response time for the effective response force (ERF), staffed with a minimum of nine firefighters shall be 15 minutes and 0 seconds in urban GPZs and 18 minutes and 0 seconds in rural GPZs. The effective response force shall be capable of establishing a command post, establishing personnel accountability, establishing safety officers, securing a continuous water supply when appropriate, operating multiple hose lines or establishing control lines and completing fire suppression activities.

High-Risk WUI Benchmark Performance Objective (Distribution)

For 90% of all high-risk WUI incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters shall be 8 minutes and 45 seconds in urban GPZs and 11 minutes and 45 seconds in rural GPZs. The first arriving apparatus shall be capable of providing a

minimum of 750 gallons of water with a pumping capability of 1,250 gallons per minute; establishing incident command procedures, providing the initial size-up report, requesting additional resources if needed and initiating fire attack and structure protection activities.

High-Risk WUI Benchmark Performance Objective (Concentration)

For 90% of all high-risk WUI incidents, the benchmark total response time for the effective response force (ERF), staffed with a minimum of 24 firefighters shall be 17 minutes and 30 seconds in urban GPZs and 24 minutes and 0 seconds in rural GPZs. The effective response force shall be capable of establishing a command post, establishing personnel accountability, establishing safety officers, securing a continuous water supply when appropriate, operating multiple hose lines or establishing control lines, maintaining structure protection and completing fire suppression activities.

Hazardous Materials Benchmark Performance Objectives

Low-Risk Hazardous Materials Benchmark Performance Objective (Distribution)

For 90% of all low-risk hazardous materials incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters, shall be 8 minutes and 45 seconds in urban GPZs and 11 minutes and 45 seconds in rural GPZs. The first arriving apparatus shall be capable of providing a minimum of 750 gallons of water with a pumping capability of 1,250 gallons per minute; establishing incident command procedures, completing an initial size-up, completing necessary evacuations, requesting additional resources if needed and completing mitigation activities if possible.

Moderate-Risk Hazardous Materials Benchmark Performance Objective (Distribution)

For 90% of all moderate-risk hazardous materials incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters, shall be 8 minutes and 45 seconds in urban GPZs and 11 minutes and 45 seconds in rural GPZs. The first arriving apparatus shall be capable of providing 750 gallons of water with a pumping capability of 1,250 gallons per minute; establishing incident command procedures, providing an initial size-up report, requesting additional resources as needed and starting initial evacuations.

Moderate-Risk Hazardous Materials Benchmark Performance Objective (Concentration)

For 90% of all moderate-risk hazardous materials incidents, the benchmark total response time for the effective response force (ERF), staffed with a

minimum of eight first responder operations (FRO) and five hazardous materials technician-trained firefighters, shall be 11 minutes and 45 seconds in urban GPZs and 17 minutes and 45 seconds in rural GPZs. The effective response force (ERF) shall be capable of identifying, mitigating or containing, establishing hot/warm/cold zones, perimeter isolation and control, decontamination and evacuations.

High-Risk Hazardous Materials Benchmark Performance Objective (Distribution)

For 90% of all high-risk hazardous materials incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters shall be 8 minutes and 45 seconds in urban GPZs and 11 minutes and 45 seconds in rural GPZs. The first arriving apparatus shall be capable of providing 750 gallons of water with a pumping capability of 1,250 gallons per minute; establishing incident command procedures, providing an initial size-up report, requesting additional resources as needed and starting initial evacuations.

High-Risk Hazardous Materials Benchmark Performance Objective (Concentration)

For 90% of all high-risk hazardous materials incidents, the benchmark total response time for the effective response force (ERF), staffed with a minimum of 11 first responder operations (FRO) and 14 hazardous materials technician trained firefighters, shall be 17 minutes and 45 seconds in urban GPZs and 24 minutes and 45 seconds in rural GPZs. The effective response force shall be capable of identifying, mitigating or containing, establishing hot/warm/cold zones, perimeter isolation and control, decontamination and evacuations.

Technical Rescue (TRT) Benchmark Performance Objectives

Low-Risk Extrication Benchmark Performance Objective (Distribution)

For 90% of all low-risk extrication incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters, shall be 8 minutes and 45 seconds in urban GPZs and 11 minutes and 45 seconds in rural GPZs. The first arriving apparatus shall be capable of establishing incident command procedures, providing an initial size-up report, requesting additional resources if needed, and initiating stabilization, triage and rescue activities.

Low-Risk Extrication Benchmark Performance Objective (Concentration)

For 90% of low-risk extrication incidents, the benchmark total response time for the effective response force (ERF), staffed with a minimum of eight firefighters, shall be 11 minutes and 30 seconds in urban GPZs and 17 minutes

and 30 seconds in rural GPZs. The effective response force shall be capable of incident command, stabilization, triage and rescue activities.

Moderate-Risk Extrication Benchmark Performance Objective (Distribution)

For 90% of all moderate-risk extrication incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters, shall be 8 minutes and 45 seconds in urban GPZs and 11 minutes and 45 seconds in rural GPZs. The first arriving apparatus shall be capable of establishing incident command procedures, providing an initial size-up report, requesting additional resources if needed, and initiating stabilization, triage and rescue activities.

Moderate-Risk Extrication Benchmark Performance Objective (Concentration)

For 90% of all moderate-risk extrication incidents, the benchmark total response time for the effective response force (ERF), staffed with a minimum of 20 firefighters, shall be 16 minutes and 45 seconds in urban GPZs and 22 minutes and 45 seconds in rural GPZs. The effective response force shall be capable of incident command, stabilization, triage and rescue activities.

High-Risk Extrication Benchmark Performance Objective (Distribution)

For 90% of all high-risk extrication incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters shall be 8 minutes and 45 seconds in urban GPZs and 11 minutes and 45 seconds in rural GPZs. The first arriving apparatus shall be capable of establishing incident command procedures, providing an initial size-up report, requesting additional resources if needed, and initiating stabilization, triage and rescue activities.

High-Risk Extrication Benchmark Performance Objective (Concentration)

For 90% of all high-risk extrication incidents, the benchmark total response time for the effective response force (ERF), staffed with a minimum of 22 first responder operations (FRO) and 5 NFPA 1670 technician-trained firefighters, shall be 17 minutes and 30 seconds in urban GPZs and 24 minutes and 0 seconds in rural GPZs. The effective response force shall be capable of incident command, stabilization, triage and rescue activities.

High-Risk Trench Rescue Benchmark Performance Objective (Distribution)

For 90% of all high-risk trench rescue incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters shall be 8 minutes and 45 seconds in urban GPZs and 11 minutes and 45 seconds in rural GPZs. The first arriving apparatus shall be capable of establishing incident command procedures, providing an initial size-up

report, requesting additional resources if needed, and initiating stabilization, triage and rescue activities.

High-Risk Trench Rescue Benchmark Performance Objective (Concentration)

For 90% of all high-risk trench rescue incidents, the benchmark total response time for the effective response force (ERF), staffed with a minimum of 12 first responder operations (FRO) and 10 NFPA 1670 technician-trained firefighters, shall be 30 minutes and 0 seconds in urban GPZs and 35 minutes and 0 seconds in rural GPZs. The effective response force shall be capable of incident command, stabilization, triage and rescue activities.

High-Risk Swift-Water Rescue Benchmark Performance Objective (Distribution)

For 90% of all high-risk swift water rescue incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters shall be 8 minutes and 45 seconds in urban GPZs and 11 minutes and 45 seconds in rural GPZs. The first arriving apparatus shall be capable of establishing incident command procedures, providing an initial size-up report, requesting additional resources if needed, and initiating stabilization, triage and rescue activities.

High-Risk Swift-Water Rescue Benchmark Performance Objective (Concentration)

For 90% of all high-risk swift water rescue incidents, the benchmark total response time for the effective response force (ERF), staffed with a minimum of 16 first responder operations (FRO) and 10 NFPA 1670 technician-trained firefighters, shall be 30 minutes and 0 seconds in urban GPZs and 35 minutes and 0 seconds in rural GPZs. The effective response force shall be capable of incident command, stabilization, triage and rescue activities.

High-Risk Confined Space Rescue Benchmark Performance Objective (Distribution)

For 90% of all high-risk confined space rescue incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters shall be 8 minutes and 45 seconds in urban GPZs and 11 minutes and 45 seconds in rural GPZs. The first arriving apparatus shall be capable of establishing incident command procedures, providing an initial size-up report, requesting additional resources if needed, and initiating stabilization, triage and rescue activities.

High-Risk Confined Space Rescue Benchmark Performance Objective (Concentration)

For 90% of all high-risk confined space rescue incidents, the benchmark total response time for the effective response force (ERF), staffed with a minimum of 12 first responder operations (FRO) and 10 NFPA 1670 technician-trained firefighters, shall be 30 minutes and 0 seconds in urban GPZs and 35 minutes and 0 seconds in rural GPZs. The effective response force (ERF) shall be capable of incident command, stabilization, triage and rescue activities.

High-Risk Low Angle Rescue Benchmark Performance Objective (Distribution)

For 90% of all high-risk low angle rescue incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters shall be 8 minutes and 45 seconds in urban GPZs and 11 minutes and 45 seconds in rural GPZs. The first arriving apparatus shall be capable of establishing incident command procedures, providing an initial size-up report, requesting additional resources if needed, and initiating stabilization, triage and rescue activities.

High-Risk Low Angle Rescue Benchmark Performance Objective (Concentration)

For 90% of all high-risk low angle rescue incidents, the benchmark total response time for the effective response force (ERF), staffed with a minimum of 6 first responder operations (FRO) and 10 NFPA 1670 technician-trained firefighters, shall be 30 minutes and 0 seconds in urban GPZs and 35 minutes and 0 seconds in rural GPZs. The effective response force (ERF) shall be capable of incident command, stabilization, triage and rescue activities.

High-Risk High Angle Rescue Benchmark Performance Objective (Distribution)

For 90% of all high-risk high angle rescue incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters shall be 8 minutes and 45 seconds in urban GPZs and 11 minutes and 45 seconds in rural GPZs. The first arriving apparatus shall be capable of establishing incident command procedures, providing an initial size-up report, requesting additional resources if needed, and initiating stabilization, triage and rescue activities.

High-Risk High Angle Rescue Benchmark Performance Objective (Concentration)

For 90% of all high-risk high angle rescue incidents, the benchmark total response time for the effective response force (ERF), staffed with a minimum

of 10 first responder operations (FRO) and 10 NFPA 1670 technician-trained firefighters, shall be 30 minutes and 0 seconds in urban GPZs and 35 minutes and 0 seconds in rural GPZs. The effective response force shall be capable of incident command, stabilization, triage and rescue activities.

High-Risk Partial Building Collapse Benchmark Performance Objective (Distribution)

For 90% of all high-risk partial building collapse incidents, the benchmark total response time for the first arriving unit, staffed with a minimum of four firefighters shall be 8 minutes and 45 seconds in urban GPZs and 11 minutes and 45 seconds in rural GPZs. The first arriving apparatus shall be capable of establishing incident command procedures, providing an initial size-up report, requesting additional resources if needed, and initiating stabilization, triage and rescue activities.

High-Risk Partial Building Collapse Benchmark Performance Objective (Concentration)

For 90% of all high-risk partial building collapse incidents, the benchmark total response time for the effective response force (ERF), staffed with a minimum of 15 first responder operations (FRO) and 10 NFPA 1670 technician-trained firefighters, shall be 30 minutes and 0 seconds in urban GPZs and 35 minutes and 0 seconds in rural GPZs. The effective response force shall be capable of incident command, stabilization, triage and rescue activities.

PERFORMANCE DISCUSSION

Alarm handling times in 2021 at the 90th percentile is 53% (EMS) and 83% (fire) above the GRFD target time. A 30-second improvement in alarm handling time can be thought of as moving a first due station nearly one-third mile closer to the call location.

Turnout times – while generally good – offer some opportunity for improvement. Turnout time improvements of 10% are realistic goals for GRFD without compromising firefighters donning their personal protective gear adequately prior to leaving the station.

Travel time performance is the most difficult element of total response time to significantly improve. The 2021 baseline travel times are approximately one minute above the target times. With increasing traffic volume combined with an increasing call volume, travel times are likely to increase in the coming years.

The following charts illustrate trending performance versus GRFD target (benchmark) times. The risk categories were chosen based on categories that represented the largest call volumes.

Figure 5.3 EMS (Moderate Risk) Alarm Handling Time – Trending

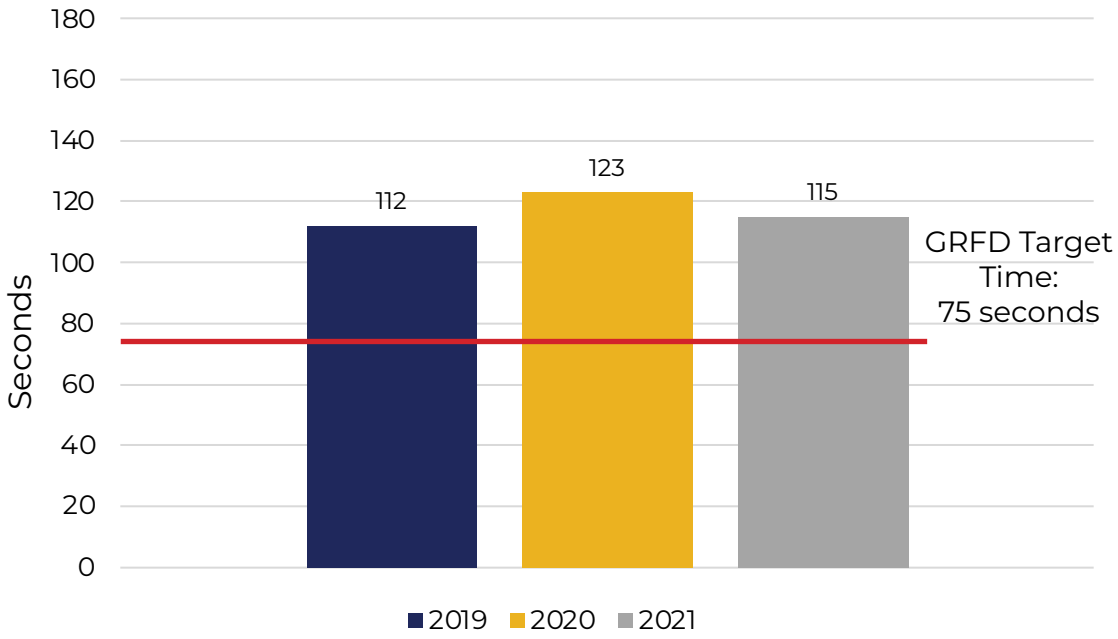


Figure 5.4 Fire (Low Risk) Alarm Handling Time – Trending

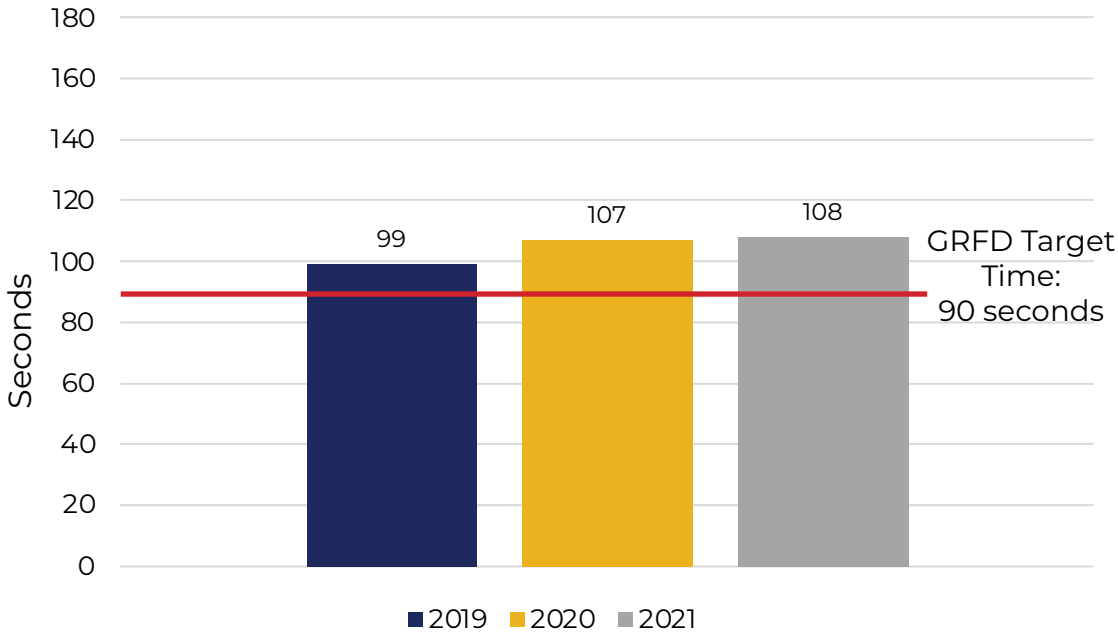


Figure 5.5 EMS (Moderate Risk) Turnout Time – Trending

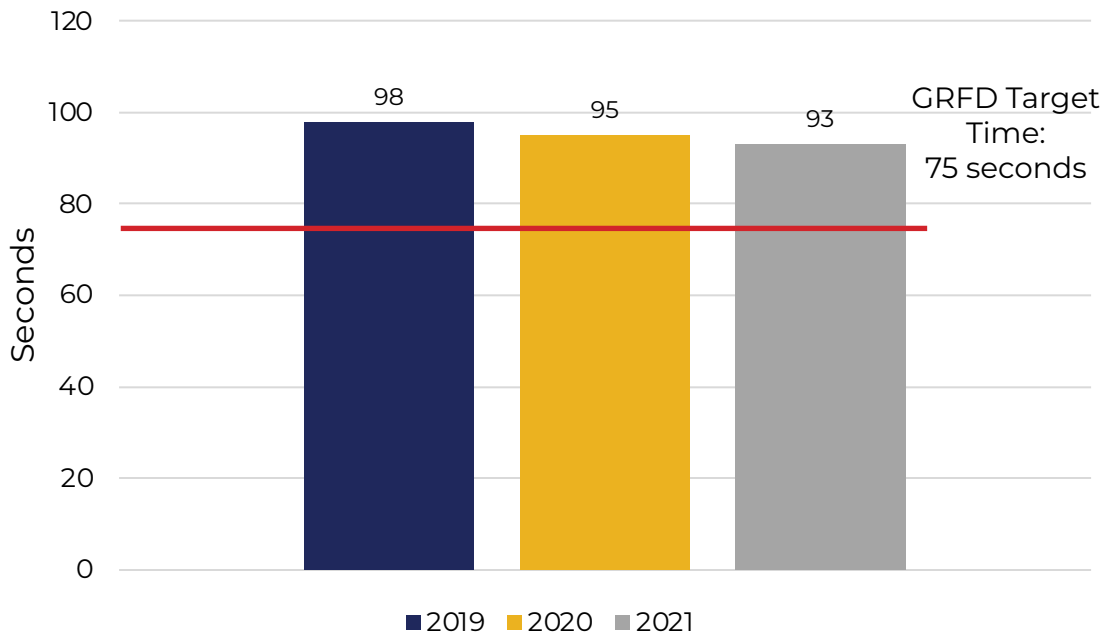


Figure 5.6 Fire (Low Risk) Turnout Time – Trending

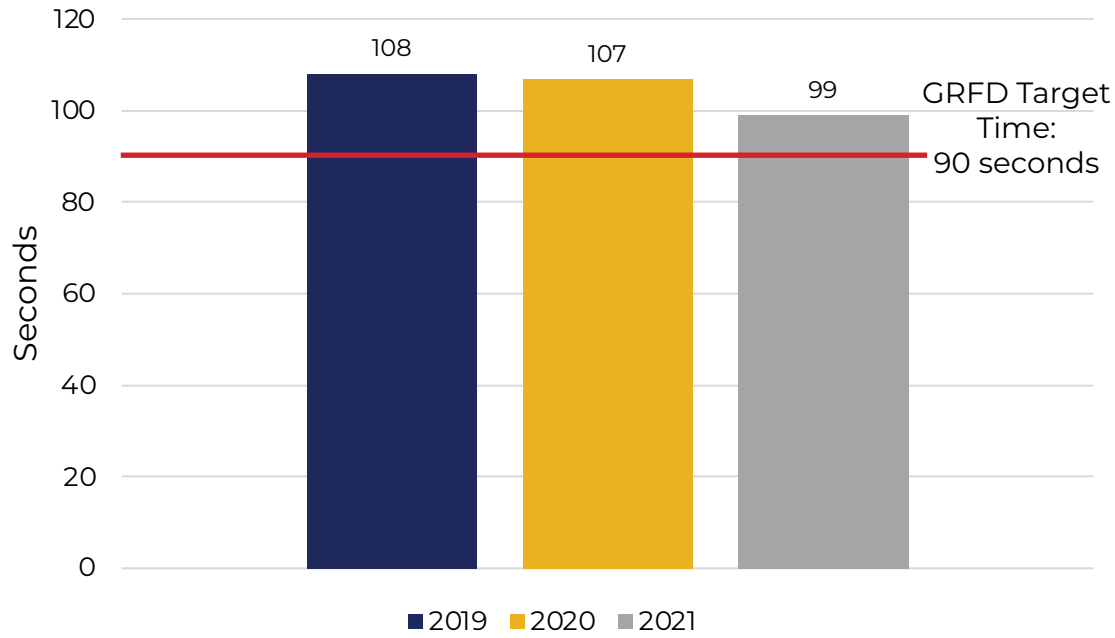


Figure 5.7 EMS (Moderate Risk, Urban/First Due) Travel Time – Trending

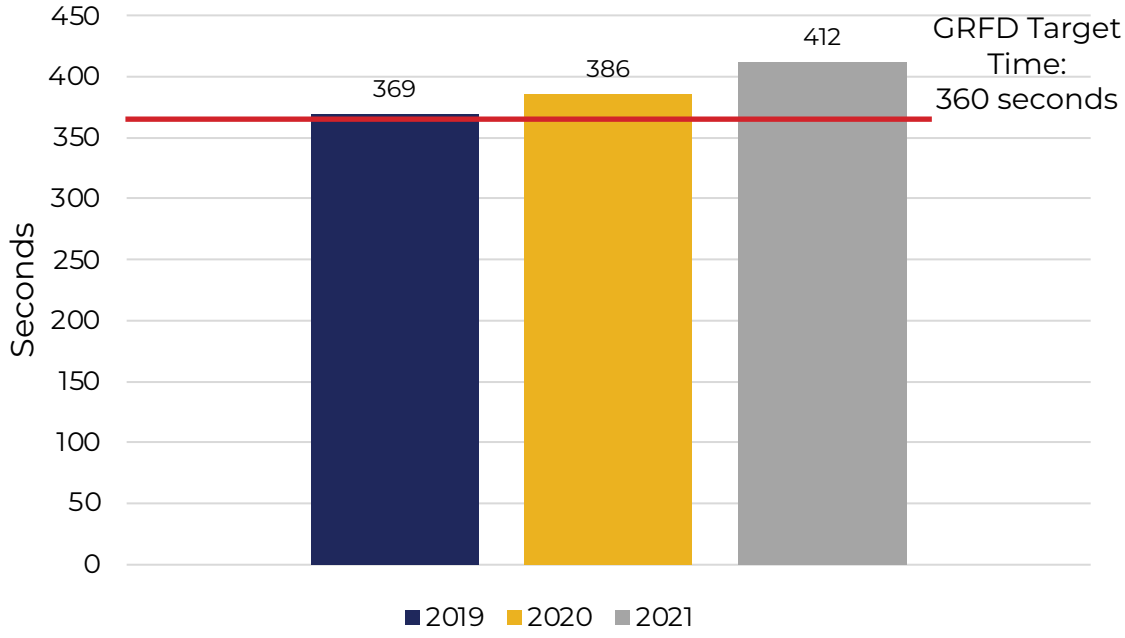


Figure 5.8 Fire (Low Risk, Urban/First Due) Travel Time – Trending

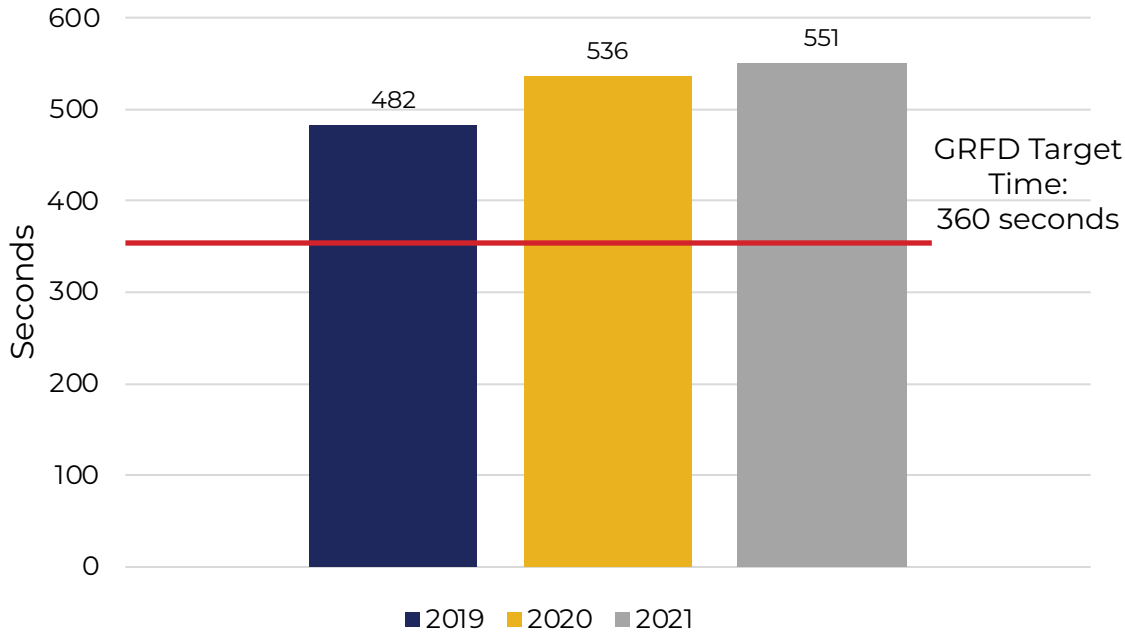


Figure 5.9 EMS (Moderate Risk, Urban/First Due) Total Response Time – Trending

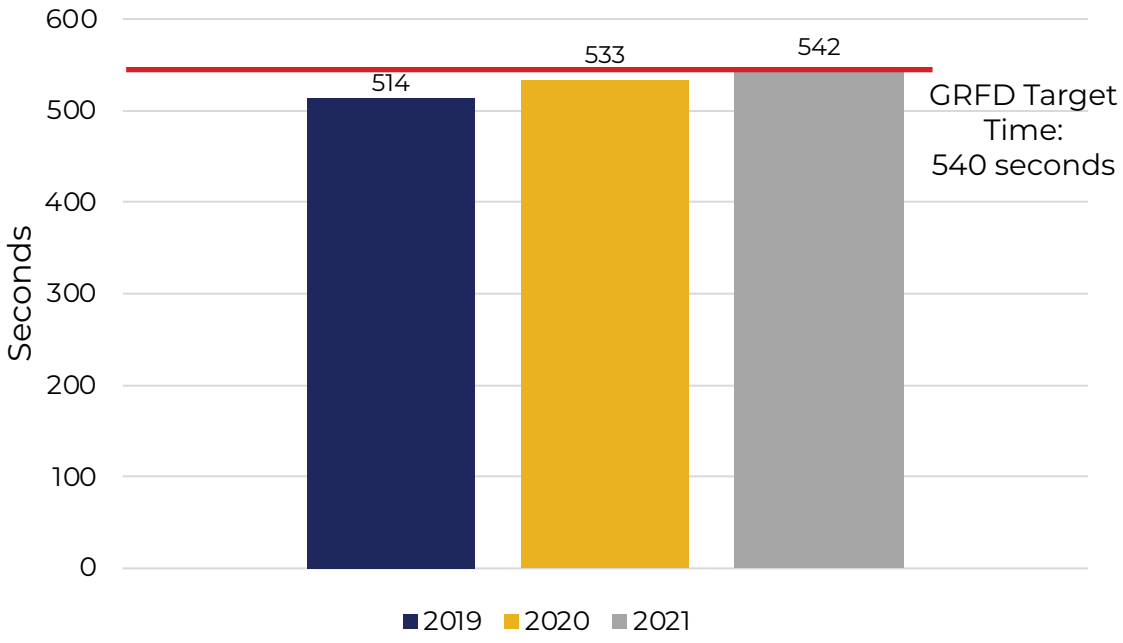
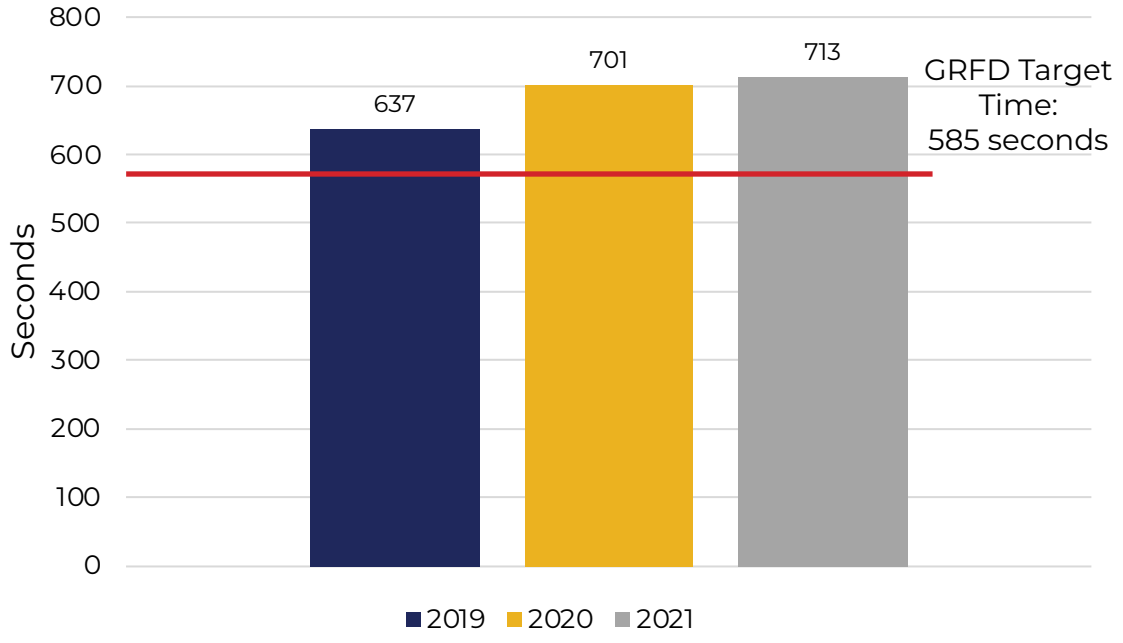
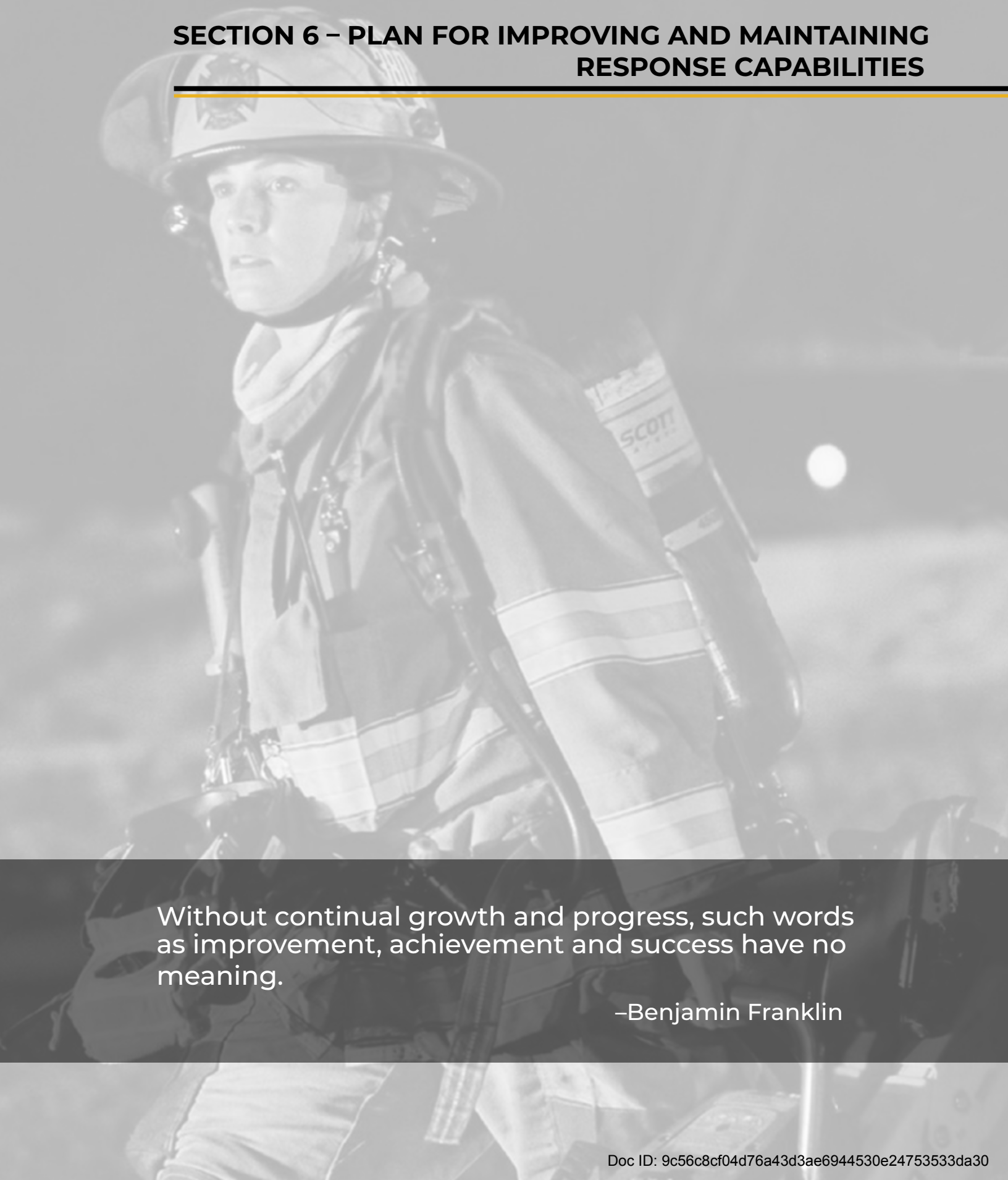


Figure 5.10 Fire (Low Risk, Urban/First Due) Total Response Time – Trending



SECTION 6 – PLAN FOR IMPROVING AND MAINTAINING RESPONSE CAPABILITIES



Without continual growth and progress, such words as improvement, achievement and success have no meaning.

–Benjamin Franklin

The development of the Community Risk Assessment – Standards of Cover (CRA-SOC) is a significant component of GRFD's commitment to providing the highest level of service possible to the district. A key element of that commitment is ensuring there is a plan moving forward to maintain and improve community risk reduction and emergency response capabilities as described in the CRA-SOC. Components of the plan are illustrated in **Figure 6.1**, followed by a more detailed discussion.

Further supporting the performance improvement plan is the Standards of Cover and Response Time Standard Analysis that is located in the **Appendices** section.

Figure 6.1

Step 1 – Establish and Review Performance Objectives

To establish performance objectives, Golder Ranch Fire District has completed the following:

- Identified services provided
- Completed a risk assessment
- Defined the levels of service
- Identified and categorized levels of risk
- Developed performance distribution/concentration measures and associated objectives

Updating and establishing any new performance measures should occur when:

- There is a change in the type(s) of services delivered by GRFD
- New mandated laws or regulations require a change in the method of service delivery by GRFD
- Significant change occurs in GRFD boundaries (growth or contraction)
- The district governing board or fire chief feel there is a need to adjust performance service delivery and associated performance objectives

Step 2 – Evaluate Performance

GRFD evaluates performance at several levels:

- Districtwide level
- Geographic planning zone level
- Unit level (first due)
- Effective response force level

Step 3 – Develop Compliance and Improvement Strategies

The SOC team will develop compliance and improvement strategies that will include developing a performance improvement plan by spring 2023 that considers the following elements:

- Maximization of existing resources including recommendations for new response models as needed
- Evaluation of partnering opportunities (additional or enhanced mutual or auto aid agreements)
- Consideration of alternate means of service delivery
- Recommendations for additional mobile and fixed resources as needed to improve or maintain service delivery
- Individual or group actions that can improve service delivery
- Full implementation of the NFORS[41] response performance reporting system

Step 4 – Communicate Expectations

The CRA-SOC clearly outlines service level response performance objectives. These performance objectives need to be clearly communicated to the GRFD personnel responsible for service delivery, as well as support service personnel. The methods for communicating performance objective expectations may include, but are not limited to:

[41]National Fire Operations Reporting System. https://i-psdi.org/nfors-overview.html.

- Direct communication with crews by the battalion chiefs
- Review of expectations and performance objective statistics at fire officer staff meetings
- Posting of the CRA-SOC on the district's website and intranet

Using these and potentially other methods of communication, the SOC team will develop a plan to communicate expectations by May 2023. The plan will include an element by which members can give feedback regarding the expectations.

Step 5 – Validate Compliance

- Monthly performance reports that include performance data by unit, station and shift battalion will be developed and distributed to all fire officers
- Quarterly performance reports will be developed, delivered and reviewed at the SOC team quarterly meetings
- A comprehensive annual performance report will be developed by the SOC team. The annual report will include all aspects of:

    - Performance compliance for the previous calendar year
    - Significant trends that were identified as a result of analyzing performance
    - New external influences or altered conditions; new growth and development trends and new or changing risks

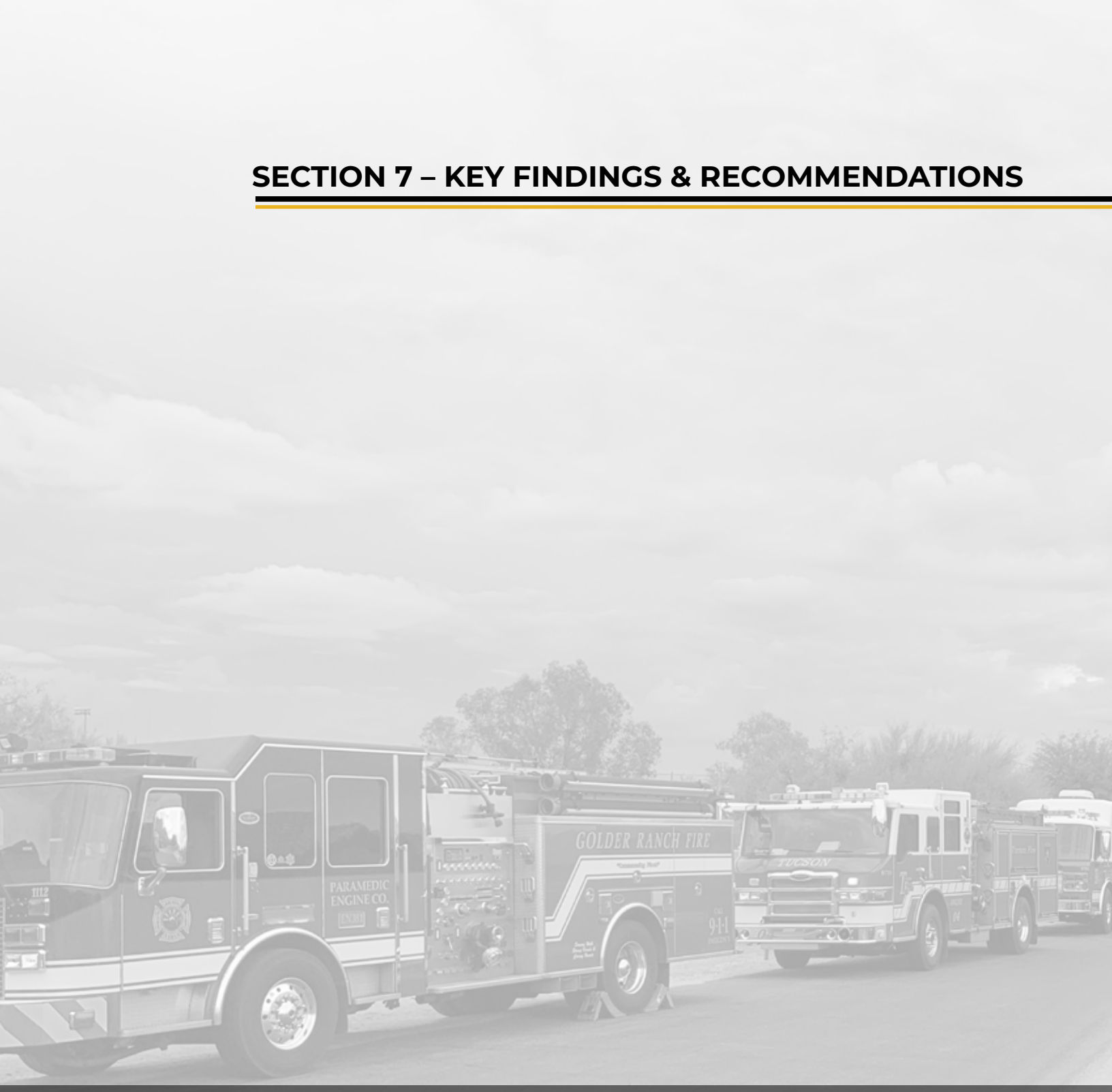
The annual report shall be submitted to the governing board for review and comment.

Step 6 – Make Necessary Adjustments

By reviewing the information developed for the validation of compliance, any performance gaps can be identified – and a plan formulated for improvement developed by the operations division in partnership with the SOC team.

In addition to developing an annual performance report as outlined in Step 5, the SOC team will review the entire CRA-SOC annually, and make any necessary adjustments. Following the SOC team annual review, the CRA-SOC will be submitted to the district governing board for adoption.

SECTION 7 – KEY FINDINGS & RECOMMENDATIONS



Action is the foundational key to all success.

–Pablo Picasso

Golder Ranch Fire District senior staff and the CRA-SOC facilitator developed the key findings and recommendations found in this section.

KEY FINDING #1

One-third of the population that GRFD serves is over 65 years of age. This percentage of the population GRFD serves is expected to grow, as will the associated service demand for this age group.

Recommendation

Research further what impact this demographic segment currently has, and will have in the future on GRFD services.

KEY FINDING #2

Swift water events are occurring with more frequency in GRFD and there are not enough personnel trained at the swift water technician level to adequately support more than a single swift water rescue event at any one time.

Recommendations

1) In an effort to reduce swift water rescue responses, develop a comprehensive, multi-media public education program to enhance the public's awareness of not driving into flooded roadways.

2) Develop a phased plan to train all GRFD firefighters at the swift water technician level that includes providing additional swift water rescue equipment.

KEY FINDING #3

Call volume is increasing at a significant rate. The increases are likely to occur at the rate of 3 to 5% per year during the period of this CRA-SOC. Using the current annual call volume growth statistic of 4.8%, this results in a slightly over 15% increase in the next three years. This will present a substantial challenge to maintaining current service performance levels and an even stronger challenge to improving them.

Recommendation

Initiate a comprehensive study on how the anticipated increase in call volume will impact service level performance for the period of the CRA-SOC.

KEY FINDING #4

Service calls currently represent 37% of GRFD's total call volume. Additionally, "good intent" calls as defined by the National Fire Incident Reporting System have increased 41% during the period of 2019 through 2021.

Recommendation

Initiate a comprehensive study to 1) determine the impact of nonemergent calls on the service delivery of emergent calls 2) determine the value to district residents of all service type calls that includes a cost measurement component 3) evaluate the current service delivery method 4) determine recommendations for the types of service/good-intent calls and methods of delivery for the upcoming period of the CRA-SOC.

KEY FINDING #5

Response plans for large-scale risks need enhancement or development.

Recommendation

Develop response plans for each of the large-scale risks identified in Section 3 in order of the priority index scores.

KEY FINDING #6

There is no long-term master plan. A master plan generally has a longer time period than a strategic plan and includes capital asset needs and other significant financial impact aspects that can be expected in a 10 to 20-year time frame.

Recommendation

Determine if there is value in developing a master plan for GRFD and if so, create an action plan for developing one.

KEY FINDING #7

During the risk assessment process, effective response forces (ERFs) based on critical tasks were developed for the five service classifications (EMS, fire suppression, hazmat, technical rescue and wildland fire). While some of the developed ERFs mirror current dispatch ERFs, some vary from those of automatic aid partners. There is a need to attempt to align the ERFs with automatic aid partners' ERFs.

Recommendation

Meet with the automatic aid partners and attempt to align ERFs – using the accreditation model of determining ERFs by identifying critical tasks, staffing, equipment and apparatus needed to achieve the performance objective.

KEY FINDING #8

The battalion chiefs do not all have consistent training in incident command for a wildland fire within district boundaries.

Recommendation

Develop a plan to train all battalion chiefs to the level of DIVS, etc. Alternatively, develop a dispatch and staffing protocol to ensure wildland personnel trained to this level are able to respond and assume command.

KEY FINDING #9

The technical rescue critical task/effective response force development process identified the need for an increase in minimum technical rescue technician staffing.

Recommendation

Initiate a study to determine how this gap will be filled.

KEY FINDING #10

There is no formal community risk reduction plan.

Recommendation

The United States Fire Administration, the NFPA 1300 Standard on Community Risk Assessment and Community Risk Reduction Plan Development (2020 Edition) and the Vision 20/20 Project all recommend that a community risk reduction plan be developed following a community risk assessment. It is recommended that a team be formed to develop a formal community risk assessment based on national consensus best practice.

KEY FINDING #11

Alarm handling times exceeded GRFD target times in 2021 at the 90th percentile by 53% (EMS) and 83% (fire).

Recommendation

Continue efforts as listed in the strategic plan to improve functional relationships with the contracted dispatch agency.

KEY FINDING #12

Travel times are likely to continue on an upward trend as traffic and call volumes increase.

Recommendation

Analyze by geographical planning zone to determine forecasted impacts of increased traffic and call volumes in the next two years on service delivery of the various call classifications identified in this CRA-SOC.

GLOSSARY

Adequate: Providing what is needed to meet a given objective without being in excess.

Advanced Life Support (ALS): Emergency medical treatment beyond basic life support level as defined by the medical authority having jurisdiction.

Alarm: A signal or message from a person or device indicating the existence of a fire, medical emergency or other situation that requires fire district action.

Alarm Answering Time: The time interval that begins when the alarm is received at the communications center and ends when the alarm is acknowledged at the communications center.

Alarm Handling Time: The time interval from the receipt of the alarm at the primary public safety answering point (PSAP) until the beginning of the transmittal of the response information via voice or electronic means to emergency response facilities (ERFs) or the emergency response units (ERUs) in the field.

Alarm Processing Time: The time interval from when the alarm is acknowledged at the communications center until response information begins to be transmitted via voice or electronic means to emergency response facilities (ERFs) and emergency response units (ERUs).

Alarm Transfer Time: The time interval from the receipt of the emergency alarm at the public safety answering point (PSAP) until the alarm is first received at the communications center.

Automatic Aid: A plan developed between two or more fire districts/ departments for immediate joint response on first alarms.

Baseline Performance: Current level of performance.

Benchmark Performance: Level of performance the district is trying to achieve long term.

Community Risk Assessment (Analysis): The evaluation of a community's fire and nonfire hazards and threats, considering all pertinent facts that increase or decrease risk in order to define standards of cover.

GLOSSARY

Company: A group of GRFD members:

- Under the direct supervision of an officer
- Trained and equipped to perform assigned tasks
- Usually organized and identified as engine companies, ladder companies, rescue companies, squad companies or multi-functional companies
- Operating with one piece of fire apparatus (engine, ladder truck, rescue, squad) except where multiple apparatus are assigned that are dispatched and arrive together; continuously operate together and are managed by a single company officer
- Arriving at the scene on fire apparatus

Concentration: Spacing of multiple resources arranged so that an initial effective response force can arrive on scene within the time frames outlined in the on-scene performance objectives.

Credible: Capable of being believed; believable as verified and/or validated.

Critical Task: A time-sensitive work function that is essential, along with other work functions to ensure a positive outcome for a performance objective.

Deployment: The strategic assignment and placement of fire agency resources such as fire companies, fire stations and specific staffing levels for those companies required to mitigate community emergency events.

Distribution: Geographic location of all first-due resources for initial intervention. Generally measured from fixed response points, such as fire stations, and expressed as a measure of time.

Effective Response Force (ERF): The minimum amount of staffing and equipment that must reach a specific emergency zone location within a maximum prescribed total response time and is capable of initial fire suppression, EMS and/or mitigation. The ERF is the result of the critical tasking analysis conducted as part of a community risk assessment.

Fire Protection System: The regular interaction of dependent and independent sources of fire protection services, and includes both public and private organizations, apparatus, equipment, fixed and mobile, facilities, methods, human resources and policies by the authority having jurisdiction.

GLOSSARY

Risk: A measure of the probability and severity of adverse effects that result from an exposure to a hazard.

Standards of Cover: Those written policies and procedures that establish the distribution and concentration of fixed and mobile resources of an organization.

Total Response Time: The sum of alarm handling (call processing), turnout and travel times.

Travel Time: The time interval that begins when a unit is in route to the emergency incident and ends when the unit arrives at the scene.

Turnout Time: The time interval that begins when the emergency response facilities (ERFs) and emergency response units (ERUs) notification process begins by either an audible alarm or visual annunciation or both, and end at the beginning point of travel time.

Working Fire: Any fire within a structure or building fire causing significant damage to the building and its contents. Generally requires commitment of all initial effective response force (ERF).

Appendix A.1 NFPA 1201 Compliance Table

Reference Element		Compliance Status
4.1.1	Fire-emergency service organization (FESO) has adopted statement of purpose including general services provided, area served and delegation of authority.	YES☒ NO☐
4.1.2	Levels of services determined by FESO or by AHJ.	YES☒ NO☐
4.1.3	Resources/personnel are determined by FESO or AHJ.	YES☒ NO☐
4.2.1	AHJ responsible for FESO-established legal authority for operation of FESO.	YES☒ NO☐
4.2.2	FESO operates within and complies with existing laws within its jurisdiction and responsibilities.	YES☒ NO☐
4.3.1	FESO delivers program to develop public awareness and cooperation in management of risk-based analysis of relevant data in a community risk assessment.	YES☒ NO☐
4.3.2	Level of service provided, and degree of risk is by local determination.	YES☒ NO☐
4.3.3.1	FESO has programs developed to regularly evaluate all parts of service area in which hazardous situations could develop.	YES☒ NO☐
4.3.3.2	Examinations concentrate on locations identified with high levels of hazards.	YES☒ NO☐
4.3.4	FESO assists in reducing risk to persons/ organizations in service area.	YES☒ NO☐
4.3.5	FESO provides customer service-oriented programs as listed in 4.3.5	YES☒ NO☐
4.3.6.1	FESO communicates closely with government authority, chief executive and governing body.	YES☒ NO☐
4.3.6.2	FESO keeps members of AHJ informed of department's achievements, operations and challenges.	YES☒ NO☐
4.3.6.3	FESO seeks input from public regarding expectations and satisfaction with services provided.	YES☒ NO☐
4.4.1	There is a master plan.	YES☐ NO☒
4.4.2	Master plan provides for service area wide management strategy and includes existing and anticipated growth.	YES☐ NO☒
4.4.3	Master plan includes evaluation of specific types and levels of risk in a service area.	YES☐ NO☒

Appendix A.1 NFPA 1201 Compliance Table

Reference Element		Compliance Status
4.4.4	Master plan is directly related to improving and maintaining effectiveness and efficiency of FESO.	YES☐ NO☒
4.4.5	Master plan takes a proactive approach to the community's changing need for service.	YES☐ NO☒
4.4.6	FESO includes research and development component that encompasses all aspects of fire/ emergency services provided.	YES☒ NO☐
4.4.7	Research and planning includes ongoing relationships with other agencies involved in service area.	YES☒ NO☐
4.4.8	FESO leaders kept informed of development plans, projected service demands, operational plans, alternative approaches and problems that could develop as change occurs.	YES☒ NO☐
4.4.9	Master planning process includes attempt at future emergency needs of a service area for a minimum of ten years.	YES☐ NO☒
4.4.10	Master planning is used to develop and maintain fire/emergency services resources to manage levels of risk that will prevail in the service area.	YES☐ NO☒
4.4.11	Master planning process includes consideration of alternative approaches to risk management.	YES☐ NO☒
4.4.12	Master planning process includes the FESO preparing contingency plans for implementation in the event of curtailed availability of local government.	YES☐ NO☒
4.5.1	FESO has a fire chief and organizational structure that facilitates effective and efficient management of its resources to carry out mandate as in 4.1.2	YES☒ NO☐
4.5.2	FESO has an organizational structure adequate to accomplish its mission.	YES☒ NO☐
4.5.3.1	Fire department has developed and adopted formal policy statement that includes types and levels of services to be provided by the department, the service area and delegation of authority to management personnel.	YES☒ NO☐
4.5.3.2	Policy statement is reviewed periodically and updated to reflect current conditions.	YES☒ NO☐
4.5.3.3	Fire department in conjunction with AHJ determines the organization, number and distribution of operating line units of the department.	YES☒ NO☐

Appendix A.1 NFPA 1201 Compliance Table

Reference Element		Compliance Status
4.5.3.4	Fire department has organizational plan that illustrates the relationship of individual operating divisions to the organization.	YES☒ NO☐
4.6.1	Automatic and mutual aid arrangements have formal written agreements in place.	YES☒ NO☐
4.6.2	All personnel have training to ensure compatible operations.	YES☒ NO☐
4.6.3	Company staffing models are defined between departments included in the agreements.	YES☒ NO☐
4.6.4	Operational methods are as uniform as practical.	YES☒ NO☐
4.7	Finance – Not evaluated as part of the CRA-SOC development process.	N/A
4.8	Asset Control – Not evaluated as part of the CRA-SOC development process.	N/A
4.9	Audit – Not evaluated as part of the CRA-SOC development process.	N/A
4.10	Risk Management Plan – Not evaluated as part of the CRA-SOC development process.	N/A
4.11	Professional Development – Not evaluated as part of the CRA-SOC development process.	N/A
4.12	Emergency Management Program – Not evaluated as part of the CRA-SOC development process.	N/A
4.13	Management Information Systems (MIS) – Not evaluated as part of the CRA-SOC development process.	N/A
4.14.1	FESO ensures provision of reliable communication systems to facilitate prompt delivery of services.	N/A
4.14.2.1	All emergency communications facilities and equipment comply with NFPA 1221 – Not evaluated as part of the CRA-SOC development process.	N/A
4.14.3	Nonemergency Communications – Not evaluated as part of the CRA-SOC development process.	N/A
4.15	Annual Report – Not evaluated as part of the CRA-SOC development process.	N/A
5.1.1.1	FESO has a defined process for addressing factors in the community that affect risk for fire and other emergencies.	YES☒ NO☐
5.1.1.2	The process includes relevant engineering challenges and potential solutions with respect to 1) community risk assessment 2) water supply 3) planning 4) resource deployment.	YES☒ NO☐

Appendix A.1 NFPA 1201 Compliance Table

Reference Element		Compliance Status
5.1.2	FESO is responsible for identifying and addressing these factors in the community that affect risk for fires and other emergencies.	YES☒ NO☐
5.2.1	Research and planning function encompasses examination of all aspects that relate to current demands and future needs of the community.	YES☒ NO☐
5.2.2	Research and planning is directed toward improving and maintaining responsive approach to the community's changing needs.	YES☒ NO☐
5.3.2	FESO ensures the availability of sufficient water supplies for firefighting throughout the community.	YES☒ NO☐
5.3.3.1	FESO has written policies/procedures for utilization of piped and static water supplies that account for weaknesses or deficiencies and provide for contingency plans in the event of service outages.	YES☒ NO☐
5.3.3.2	Written agreements are in place with entities that have available water sources that are privately owned or under the control of a separate public authority.	N/A
8.1	FESO provides resources, planning and training that are consistent with the level of service identified in the scope of authority and responsibilities for emergency operations.	YES☒ NO☐
8.2	FESO utilizes NFPA 1561 as the incident management system for all emergency operations.	YES☒ NO☐
8.3	Results are used from the community risk assessment to prepare a plan for the timely and sufficient coverage of incidents that could occur.	YES☒ NO☐
8.4	FESO has developed the deployment of resources implementation plan in accordance with NFPA 1710.	YES☒ NO☐
8.5	Safety, Health and Risk Management – Not evaluated as part of the CRA-SOC development process.	N/A
8.6	Incident Reporting – Not evaluated as part of the CRA-SOC development process.	N/A
8.7	FESO provides emergency medical service that maintains a close working relationship with medical authority to provide applicable level of medical supervision for service level which the FESO is authorized to deliver.	YES☒ NO☐

Appendix A.2 GRFD CRA-SOC Correlation to CFAI Accreditation Model

CRA-SOC correlation to accreditation model to be completed in Second Edition.

PI/C		GRFD CRA/SOC Accreditation Model Correlation Matrix	CRA/SOC Page
Category I – Governance & Administration			
Criterion 1A		**Governing Body**	
CC	**1A.1**	**The agency is legally established.**	
CC	**1A.2**	**The agency has a methodology in place for recognizing and reacting to changes in legal requirements of local, state/provincial and federal governments (i.e., inspection reports, regulatory references, meeting minutes and legal opinions).**	
	1A.3	The governing body of the agency periodically reviews and approves services and programs.	
	1A.4	The role and composition of various policymaking, planning and special purpose bodies are defined by the governing body in an organizational chart.	
	1A.5	The governing body or designated authority approves the organizational structure that carries out the agency's mission.	
	1A.6	The governing body adheres to an approved conflict of interest policy that is applicable to the governing board members and staff.	
	1A.7	A communication process is in place between the governing body and the administrative structure of the agency.	
Criterion 1B		**Agency Administration**	
CC	**1B.1**	**The administrative structure and allocation of financial, equipment and personnel resources reflect the agency's mission, goals, objectives, size and complexity.**	
	1B.2	Personnel functions, roles, and responsibilities are defined in writing and a current organization chart exists that includes the agency's relationship to the governing body.	
Category II - Assessment & Planning			
Criterion 2A		**Documentation of Area Characteristics**	
	2A.1	Service area boundaries for the agency are identified, documented, and legally adopted by the authority having jurisdiction.	
	2A.2	Boundaries for other service responsibility areas, such as automatic aid, mutual aid, and contract areas, are identified, documented, and appropriately approved by the authority having jurisdiction.	

CC	**2A.3**	**The agency has a documented and adopted methodology for organizing the response area(s) into geographical planning zones.**	
CC	**2A.4**	**The agency assesses the community by planning zone and considers the population density within planning zones and population areas, as applicable, for the purpose of developing total response time standards.**	
	2A.5	Data that include property, life, injury, environmental, and other associated losses, as well as the human and physical assets preserved and/or saved, are recorded for a minimum of three (initial accreditation agencies) to five (currently accredited agencies) immediately previous years.	
	2A.6	The agency utilizes its adopted planning zone methodology to identify response area characteristics such as population, transportation systems, area land use, topography, geography, geology, physiography, climate, hazards, risks, and service provision capability demands.	
	2A.7	Significant socioeconomic and demographic characteristics for the response area are identified, such as key employment types and centers, assessed values, blighted areas, and population earning characteristics.	
	2A.8	The agency identifies and documents all safety and remediation programs, such as fire prevention, public education, injury prevention, public health, and other similar programs, currently active within the response area.	
	2A.9	The agency defines and identifies infrastructure that is considered critical within each planning zone.	
Criterion 2B		**All-Hazard Risk Assessment and Response Strategies**	
CC	**2B.1**	**The agency has a documented and adopted methodology for identifying, assessing, categorizing and classifying all risks (fire and non-fire) throughout the community or area of responsibility.**	
	2B.2	The historical emergency and nonemergency service demands frequency for a minimum of three immediately previous years and the future probability of emergency and non-emergency service demands, by service type, have been identified and documented by planning zone.	
	2B.3	Event outputs and outcomes are assessed for three (initial accrediting agencies) to five (currently accredited agencies) immediately previous years.	
CC	**2B.4**	**The agency's risk identification, analysis, categorization, and classification methodology has been utilized to determine and document the different categories and classes of risks within each planning zone.**	
	2B.5	Fire protection and detection systems are incorporated into the risk analysis.	
	2B.6	The agency assesses critical infrastructure within the planning zones for capabilities and capacities to meet the demands posed by the risks.	
	2B.7	The agency engages other disciplines or groups within its community to compare and contrast risk assessments in order to identify gaps or future threats and risks.	
Criterion 2C		**Current Deployment and Performance**	

CC	**2C.1**	**Given the levels of risks, area of responsibility, demographics, and socio-economic factors, the agency has determined, documented, and adopted a methodology for the consistent provision of service levels in all service program areas through response coverage strategies.**	
CC	**2C.2**	**The agency has a documented and adopted methodology for monitoring its quality of emergency response performance for each service type within each planning zone and the total response area.**	
	2C.3	Fire protection systems and detection systems are identified and considered in the development of appropriate response strategies.	
CC	**2C.4**	**A critical task analysis of each risk category and risk class has been conducted to determine the first due and effective response force capabilities, and a process is in place to validate and document the results.**	
CC	**2C.5**	**The agency has identified the total response time components for delivery of services in each service program area and found those services consistent and reliable within the entire response area.**	
	2C.6	The agency identifies outcomes for its programs and ties them to the community risk assessment during updates and adjustments of its programs, as needed.	
	2C.7	The agency has identified the total response time components for delivery of services in each service program area and assessed those services in each planning zone.	
CC	**2C.8**	**The agency has identified efforts to maintain and improve its performance in the delivery of its emergency services for the past three (initial accreditation agencies) to five (currently accredited agencies) immediately previous years.**	
	2C.9	The agency's resiliency has been assessed through its deployment policies, procedures, and practices.	
Criterion 2D		**Plan for Maintaining and Improving Response Capabilities**	
CC	**2D.1**	**The agency has a documented and adopted methodology for assessing performance adequacies, consistency, reliability, resiliency, and opportunities for improvement for the total response area.**	
	2D.2	The agency continuously monitors, assesses, and internally reports, at least quarterly, on the ability of the existing delivery system to meet expected outcomes and identifies and prioritizes remedial actions.	
CC	**2D.3**	**The performance monitoring methodology identifies, at least annually, future external influences, altering conditions, growth and development trends, and new or evolving risks, for purposes of analyzing the balance of service capabilities with new conditions or demands.**	
	2D.4	The performance monitoring methodology supports the assessment of the efficiency and effectiveness of each service program at least annually in relation to industry research.	

	2D.5	Impacts of incident mitigation program efforts, such as community risk reduction, public education, and community service programs, are considered and assessed in the monitoring process.	
CC	**2D.6**	**Performance gaps for the total response area, such as inadequacies, inconsistencies, and negative trends, are determined at least annually.**	
CC	**2D.7**	**The agency has systematically developed a continuous improvement plan that details actions to be taken within an identified timeframe to address existing gaps and variations.**	
	2D.8	The agency seeks approval of its standards of cover by the authority having jurisdiction (AHJ).	
CC	**2D.9**	**On at least an annual basis, the agency formally notifies the AHJ of any gaps in current capabilities, capacity, and the level of service provided within its delivery system to mitigate the identified risks within its service area, as identified in its community risk assessment/standards of cover.**	
	2D.10	The agency interacts with external stakeholders and the AHJ at least once every three years, to determine the stakeholders' and AHJ's expectations for types and levels of services provided by the agency.	
Category III - Goals & Objectives			
Criterion 3A		**Strategic Planning**	
CC	**3A.1**	**The agency has a current and published strategic plan that has been submitted to the authority having jurisdiction.**	
	3A.2	The agency coordinates with the jurisdiction's planning component to ensure the strategic plan is consistent with the community master plan.	
Criterion 3B		**Goals and Objectives**	
CC	**3B.1**	**The agency publishes current, general organizational goals and S.M.A.R.T. objectives, which use measurable elements of time, quantity and quality. These goals and objectives directly correlate to the agency's mission, vision and values and are stated in the strategic plan.**	
	3B.2	The agency conducts an environmental scan when establishing its goals and objectives.	
CC	3B.3	**The agency solicits feedback and direct participation from internal and external stakeholders in the development, implementation and evaluation of the agency's goals and objectives.**	
	3B.4	The agency uses internal input to implement and evaluate its goals and objectives and to measure progress in achieving the strategic plan.	
	3B.5	The governing body reviews the agency's goals and objectives and considers all budgetary and operational proposals in order to ensure success.	
	3B.6	When developing organizational values, the agency seeks input from its members and is in alignment with its community.	
Criterion 3C		**Implementation of Goals and Objectives**	

CC	**3C.1**	**The agency identifies personnel to manage its goals and objectives and uses a defined organizational management process to track progress and results.**	
CC	**3C.2**	**The agency's personnel receive information explaining its goals and objectives.**	
	3C.3	The agency, when necessary, identifies and engages appropriate external resources to help accomplish its goals and objectives.	
Criterion 3D		**Measurement of Organizational Progress**	
CC	**3D.1**	**The agency reviews its goals and objectives at least annually and modifies as needed to ensure they are relevant and contemporary.**	
CC	**3D.2**	**The agency reviews, at least annually, its overall system performance and identifies areas in need of improvement, which should be considered for inclusion in the organizational goals and objectives.**	
	3D.3	The agency provides progress updates, at least annually, on its goals and objectives to the AHJ, its members and the community it serves.	
Category IV - Financial Resources			
Criterion 4A		**Financial Planning**	
	4A.1	The governing body and regulatory agencies give the agency appropriate direction in budget and planning matters within the agency's scope of services.	
	4A.2	The agency has formally adopted financial policies that address: general fund reserves, reserves in other funds, fund balances, grants, debt, investment, accounting and financial reporting, risk management and internal controls, procurement, long-term financial planning, structurally balanced budgets, capital, revenues, expenditures, operating budgets and charges/fees. The agency reviews financial policies at least every three years and updates as needed.	
CC	**4A.3**	**Guidelines and processes for developing the operating and capital budgets are defined and followed.**	
	4A.4	The financial planning/budget adoption process provides internal and external transparency for all expenditures and revenues for the agency.	
	4A.5	The agency's operating and capital budgets serve as policy documents, operations guides, financial plans and communication devices.	
	4A.6	The agency considers internal and external stakeholders' input in the budget process.	
	4A.7	The agency's budget, short and long-range financial planning, and capital project plans are consistent with the agency's strategic plan and support achievement of identified goals and objectives.	

	4A.8	The agency maintains a long-term financial operating and capital plan, inclusive of all appropriated funds, for a five- to 10-year period. The agency should analyze the financial environment, revenue and expenditure forecasts, debt position and affordability analysis, and strategies for achieving and maintaining financial balance to include plan monitoring mechanisms.	
	4A.9	For each budget cycle, the agency prepares balanced operational and capital budgets.	
Criterion 4B		**Financial Practices**	
	4B.1	Financial resources management adheres to generally accepted accounting practices as used by Government Finance Officers Association of the United States and Canada, National Advisory Council on State and Local Budgeting Practices, or authority having jurisdiction (AHJ), and all financial management including budgeting, accounting and reporting. Appropriate safeguards are in place for expenditures, fiscal reports are provided for administrative decision-making with sufficient flexibility to meet contingencies.	
	4B.2	The agency has established and implemented a comprehensive internal control framework that includes the control environment, risk assessment, control activities, information and communication, monitoring, and reporting.	
	4B.3	The agency explains projected operating deficit (expenditures exceeding revenues in a budget year) and develops a plan to rectify the deficit.	
	4B.4	The agency reviews its financial position including actual and budgeted expenditures on a monthly basis and reviews overall financial performance with the authority having jurisdiction on an annual basis.	
CC	**4B.5**	**Qualified auditors conduct annual independent financial audits for the prior fiscal year. If deficiencies exist, the agency prepares a plan to resolve audit exceptions for approval by the AHJ.**	
	4B.6	The agency and any subsidiary entities or auxiliaries have financial risk management policies and programs that identify and evaluate risks, establish risk management strategies and evaluate the risk management program to protect the agency, its assets and employees.	
	4B.7	Programs designed to solicit financial support from external sources are aligned with the objectives of the agency. Agency policies govern all fundraising activities, comply with generally accepted accounting practices and other recognized financial principles and are subject to public disclosure and periodic independent financial audits.	
	4B.8	Any revenue-producing organizations authorized to use the agency's name and/or reputation comply with agency principles of financial operation.	
	4B.9	The agency is in compliance with all granting agency requirements.	
Criterion 4C		**Resource Allocation**	
CC	**4C.1**	**Given current and forecasted revenues, the agency sustains the level of service adopted by the AHJ.**	

	4C.2	Adequate resources are budgeted for the payment of long-term liabilities and debts.	
	4C.3	The agency budgets future asset maintenance and repair costs are projected with related funding plans.	
	4C.4	Budgets avoid the use of one-time funding sources for recurring standard annual operating expenses.	
CC	**4C.5**	**The agency maintains contingency funds in accordance with generally accepted accounting practice recommendations and anticipates budgetary restrictions and/or shortfalls.**	
Category V - Community Risk Reduction			
Criterion 5A		**Prevention Program**	
CC	**5A.2**	**The code enforcement program ensures compliance with applicable fire protection law(s), local jurisdiction, hazard abatement, and agency objectives as defined in the community risk assessment/standards of cover.**	
CC	**5A.3**	**The prevention program has adequate staff with specific expertise to meet the goals, objectives and identified community risks.**	
	5A.4	A plan review process ensures that adopted codes and ordinances determine the construction of buildings and infrastructure (such as hydrants, access, and street width).	
	5A.5	The prevention program identifies the frequency that occupancies are inspected.	
	5A.6	The agency sets specific, targeted, and achievable annual loss reduction benchmarks for fire incidents and fire casualties based upon the community risk assessment and baseline performance.	
CC	**5A.7**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the program's impacts and outcomes, and to measure performance and progress in reducing risk based on the community risk assessment/standards of cover.**	
Criterion 5B		**Public Education Program**	
CC	**5B.1**	**The public education program targets specific risks, behaviors and audiences identified through incident, demographic and program data analysis and the community risk assessment/standards of cover.**	
CC	**5B.2**	**The program has adequate staff with specific expertise to address identified risks and meet the public education program goals, objectives.**	
	5B.3	Programs are in place to identify large loss potential or high-risk audiences (such as low socio-economic status, age and cultural/ethnic differences, where appropriate), forge partnerships with those who serve those constituencies, and enable specified programs to mitigate fires and other emergency incidents (such as home safety visits, smoke alarm installations, free bicycle helmet programs, fall prevention programs, etc.).	

CC	**5B.4**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the program's impacts and outcomes, and to measure performance and progress in reducing.**	
Criterion 5C		**Fire Investigation, Origin and Cause Program**	
CC	**5C.1**	**The agency's fire investigation, origin, and cause program is authorized by adopted statute, code, or ordinance.**	
CC	**5C.2**	**The agency uses a systematic approach based on the scientific method to investigate all fire and explosion incidents. The investigation should determine or render an opinion as to the incident's origin, cause, responsibility and/or prevention to include the damage and injuries that arise from such incidents.**	
CC	**5C.3**	**The program has adequate staff with specific expertise to meet the fire investigation, origin, and cause program goals, objectives, and identified community risks.**	
CC	**5C.4**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the program's impacts and outcomes, and to measure performance and progress in reducing risk.**	
Criterion 5D		**Domestic Preparedness, Planning and Response**	
CC	**5D.1**	**The agency maintains a local emergency operations/all-hazards plan that defines roles and responsibilities of all participating departments and/or external agencies. The agency participates in maintaining and revising the plan with the AHJ.**	
	5D.2	The agency complies with the National Incident Management System, or other appropriate incident management system, and its operational methods are compatible with all external response agencies.	
	5D.3	The agency has a process in place for requesting additional resources not readily available in the community served.	
	5D.4	The agency has processes to record information and provide data on needed resources, the scope and nature of the event, and field resources deployed to local, state/provincial, and federal agencies.	
	5D.5	The agency conducts and documents a vulnerability assessment and has operational plans to protect the agency's specific critical infrastructure, including but not limited to materials, supplies, apparatus, facilities security, fuel, and information systems.	
	5D.6	The agency has a documented continuity of operations plan, that is reviewed annually and updated at least every five years, to ensure essential operations are maintained.	
	5D.7	The agency has processes in place for intelligence sharing with other public safety agencies.	
	5D.8	The agency has a crisis communications or public information plan.	
CC	**5D.9**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the program's impacts and outcomes, and to measure performance and progress in reducing risk.**	

Criterion 5E		**Fire Suppression**	
CC	**5E.1**	**Given the agency's community risk assessment/standards of cover and emergency performance statements, the agency meets its staffing, response time, station(s), pumping capacity, apparatus and equipment deployment objectives for each type and magnitude of fire suppression incident(s).**	
CC	**5E.2**	**The agency uses a standardized incident command/management system, which is supported by agency policy and training programs.**	
CC	**5E.3**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the impacts, outcomes, and effectiveness of the program, and to measure its performance towards meeting the agency's goals and objectives.**	
Criterion 5F		**Emergency Medical Services (EMS)**	
CC	**5F.1**	**Given the agency's community risk assessment/standards of cover and emergency performance statements, the agency meets its staffing, response time, station(s), apparatus, and equipment deployment objectives for each type and magnitude of emergency medical incident(s).**	
CC	**5F.2**	**The agency has standing orders/protocols in place to direct EMS response activities to meet the stated level of EMS response including determination criteria for specialty transport and receiving facility destination.**	
	5F.3	The agency annually reviews and updates, as needed, orders/protocols and engages external stakeholders in the process.	
CC	**5F.4**	**The agency has online and offline medical control.**	
CC	**5F.5**	**The agency creates and maintains a patient care record, hard copy or electronic, for each patient encountered. This report records a provider impression, patient history, data regarding treatment rendered, and the patient disposition. The agency must make reasonable efforts to protect reports from public access and maintain them as per local, state/provincial, and federal records retention requirements.**	
CC	**5F.6**	**The agency has a program to maintain compliance with privacy laws such as the Health Insurance Portability and Accountability Act (HIPAA) or equivalent (e.g., Canada's Freedom of Information and Protection of Privacy) that meets federal and state/provincial guidelines. All personnel are trained in HIPAA/FOIP regulations and procedures.**	
	5F.7	The agency has a quality improvement/quality assurance (QI/QA) program in place to improve system performance and patient outcomes including provisions for the exchange of patient outcome data between the agency and receiving facilities.	
	5F.8	The agency has implemented or developed a plan a cardiopulmonary resuscitation (CPR) and public access defibrillation program for the community.	

CC	**5F.9**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the impact, outcomes and effectiveness of the program and to measure its performance toward meeting the agency's goals and objectives.**	
Criterion 5G		**Technical Rescue**	
CC	**5G.1**	**Given the agency's community risk assessment/standards of cover and emergency performance statements, the agency meets its staffing, response time, station(s), apparatus, and equipment deployment objectives for each type and level of risk of a technical rescue incident(s).**	
CC	**5G.2**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the impact, outcomes and effectiveness of the program and to measure its performance toward meeting the agency's goals and objectives.**	
Criterion 5H		**Hazardous Materials (Hazmat)**	
CC	**5H.1**	**Given the agency's community risk assessment/standards of cover and emergency performance statements, the agency meets its staffing, response time, station(s), apparatus and equipment deployment objectives for each type and magnitude of hazardous materials incident(s).**	
	5H.2	The agency complies with all aspects of applicable hazardous material regulations such as annual refresher training, medical monitoring of response personnel, annual physical examinations as applicable per standards, and exposure record retention.	
CC	**5H.3**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the impacts, outcomes, and effectiveness of the program, and to measure its performance toward meeting the agency's goals and objectives.**	
Criterion 5I		**Aviation Rescue and Fire Fighting Services**	
CC	**5I.1**	**Given the agency's community risk assessment/standards of cover and emergency performance statements, the agency meets its staffing, response time, station(s), extinguishing agent requirements, apparatus and equipment deployment objectives for each type and magnitude of aviation incident.**	
CC	**5I.2**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the impacts, outcomes and effectiveness of the program, and to measure its performance toward meeting the agency's goals and objectives.**	
Criterion 5J		**Marine and Shipboard Rescue and Fire Fighting Services**	
CC	**5J.1**	**Given the agency's community risk assessment/standards of cover and emergency performance statements, the agency meets its staffing, response time, station(s), extinguishing agency requirements, apparatus and equipment deployment objectives for each type and magnitude of marine and shipboard incident.**	

CC	**5J.2**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the impacts, outcomes and effectiveness of the program, and to measure its performance toward meeting the agency's goals and objectives.**	
Criterion 5K		**Wildland Fire Services**	
CC	**5K.1**	**Given the agency's community risk assessment/standards of cover and emergency performance statements, the agency meets its staffing, response time, station(s), apparatus and equipment deployment objectives for each type and magnitude of wildland fire services incident.**	
	5K.2	The agency has developed a wildland risk assessment including: a fuel management plan, a fire adapted communities plan, and an inspection and code enforcement program.	
CC	**5K.3**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the impact, outcomes and effectiveness of the program, and to measure its performance toward meeting the agency's goals and objectives.**	
Category VI – Physical Resources			
Criterion 6A		**Physical Resources**	
	6A.1	The development, construction or purchase of physical resources is consistent with the agency's goals and strategic plan.	
CC	**6A.2**	**The governing body, administration, and staff are involved in the planning for physical facilities.**	
Criterion 6B		**Fixed Facilities**	
	6B.1	Each function or program has adequate facilities and storage space. (e.g., operations, prevention, training, support services, and administration).	
	6B.2	Buildings and outbuildings are clean and in good repair, and the surrounding grounds are well kept. Maintenance is conducted in a systematic and planned manner.	
CC	**6B.3**	**Facilities comply with federal, state/provincial and local codes and regulations at the time of construction; required upgrades for safety are identified and, where resources allow, addressed. For those items that warrant further attention, a plan for implementation is identified in the agency's long-term capital improvement plan (i.e. fire alarm systems, sprinkler system, seismic, vehicle exhaust system, asbestos abatement, etc.).**	
Criterion 6C		**Apparatus, Vehicles, and Maintenance**	
CC	**6C.1**	**Apparatus and vehicle types are appropriate for the functions served (e.g., operations, staff support services, specialized services and administration).**	
	6C.2	A current replacement schedule exists for all apparatus and support vehicles based on current federal and state/provincial standards, vehicle condition, department needs and requirements.	
	6C.3	A process exists for writing apparatus and vehicle replacement specifications with employee input.	

Criterion 6D		**Apparatus Maintenance**	
CC	**6D.1**	**An apparatus maintenance program is established.**	
	6D.2	The maintenance and repair facility has adequate space and is equipped with appropriate tools.	
	6D.3	The program is adequately staffed, supervised, trained and certified to meet the agency's needs.	
	6D.4	The reserve vehicle fleet is adequate, or a documented contingency plan is in place for when an apparatus must be taken out of service.	
CC	**6D.5**	**The inspection, testing, preventive maintenance, replacement schedule, and emergency repair of all apparatus are well established and meets the needs of the agency.**	
Criterion 6E		**Tools, Supplies, and Small Equipment**	
	6E.1	Tools and equipment are distributed appropriately, are in adequate quantities and meet the operational needs of the specific functional area or program (e.g., fire suppression, prevention, investigations, hazmat, etc.).	
	6E.2	Tool and equipment replacement is scheduled, budgeted and implemented, and is adequate to meet the agency's needs.	
CC	**6E.3**	**Equipment maintenance, testing and inspections are conducted by qualified personnel, following manufacturer's recommended schedules.**	
	6E.4	Inventory control and maintenance tracking systems are in place and current.	
	6E.5	Supplies and materials allocation is based on established objectives and appropriate to meet the operational needs of the specific functional area or program (e.g., fire suppression, prevention, investigations, hazmat, etc.), and is compliant with local, state/provincial, and national standards.	
Criterion 6F		**Safety Equipment**	
CC	**6F.1**	**Safety equipment is identified and distributed to appropriate personnel.**	
	6F.2	Distributed safety equipment is adequate for the functions performed.	
	6F.3	Safety equipment replacement is scheduled, budgeted and implemented, and adequate to meet the agency's needs.	
	6F.4	Safety equipment maintenance, testing and inspections are conducted by trained and qualified personnel, and appropriate records are kept.	
	6F.5	Safety equipment inventory control and maintenance tracking system are in place and current.	
Category VII – Human Resources			
Criterion 7A		**Human Resources Administration**	
CC	**7A.1**	**A human resources manager is designated.**	
	7A.2	The human resources program has adequate staffing to accomplish the human resources administrative functions.	

	7A.3	Policies are established to direct the human resources administrative practices in accordance with local, state/provincial and federal requirements. The policies are reviewed annually and updated as needed.	
Criterion 7B		**Recruitment, Selection, Retention and Promotion**	
	7B.1	A mechanism is in place to identify and announce potential entry-level, lateral, and promotional positions	
	7B.2	The agency's administration and its members are part of the recruiting process.	
CC	**7B.3**	**Processes and screening/qualifying devices used for recruitment and selection of initial, lateral, and promotional candidates are job-related and comply with all local, state/provincial, and federal requirements, including equal opportunity and discrimination statutes.**	
	7B.4	The agency's workforce composition is reflective of the service area demographics, or the agency has put forth a reasonable effort by instituting an effective recruitment plan to achieve the desired workforce composition.	
	7B.5	A new-member orientation program is in place.	
CC	**7B.6**	**A supervised probationary process is used by the agency to evaluate new and promoted members based on the candidates' demonstrated knowledge, skills and abilities.**	
	7B.7	The agency has an employee/member recognition program.	
	7B.8	The agency's working conditions and environment accommodate diverse and qualified applicants and retains a tenured workforce that is reflective of the community.	
	7B.9	The agency conducts exit interviews, periodic employee surveys or other mechanisms to acquire feedback for improving policies and procedures.	
	7B.10	The agency conducts workforce assessments and has a plan to address projected personnel resource needs, including retention and attrition of tenured and experienced employees/members.	
Criterion 7C		**Personnel Policies and Procedures**	
CC	**7C.1**	**Personnel policies, procedures, and rules are current, documented and communicated to all personnel.**	
CC	**7C.2**	**The agency has a policy that defines and prohibits harassment, bias and unlawful discrimination of employees/members based on sex, race, disability or other legally protected characteristics, and describes the related reporting procedures. The policy and organizational expectations specific to employee behavior are communicated formally to all members/employees and are enforced.**	
	7C.3	A corrective actions system, which ensures accountability, is in place.	
CC	**7C.4**	**An internal ethics and conflict of interest policy is published and communicated to employees/members.**	
	7C.5	An employee/member grievance/complaint process is published and communicated to employees/members.	

Criterion 7D		**Use of Human Resources**	
CC	**7D.1**	**A position classification system and a process by which jobs are audited and modified are in place.**	
	7D.2	Current documented job descriptions exist for all positions, and incumbent personnel have input into revisions.	
	7D.3	A personnel appraisal system is in place.	
	7D.4	The agency has a policy or program for receiving employee/member input or suggestions.	
	7D.5	Career and professional development programs are in place for all members and encourage the pursuit of professional credentialing.	
	7D.6	The agency has a succession plan that incorporates mentoring.	
Criterion 7E		**Personnel Compensation**	
CC	**7E.1**	**Rates of pay and compensation are published and available to all employees/members.**	
	7E.2	Member benefits are defined, published, and communicated to all employees/members.	
Category VIII - Training & Competency			
Criterion 8A		**Training and Education Program Requirements**	
CC	**8A.1**	**The organization has a process in place to identify training needs, including tasks, activities, knowledge, skills and abilities.**	
	8A.2	The agency's training program is consistent with the mission statement, goals and objectives, and helps the agency meets those goals and objectives.	
	8A.3	The training program is consistent with legal requirements for mandatory training.	
	8A.4	The agency identifies minimum levels of training and education required for all positions in the organization.	
Criterion 8B		**Training and Education Program Performance**	
	8B.1	A process is in place to ensure that personnel are appropriately trained.	
	8B.2	The agency provides a training schedule that meets the organization's needs.	
CC	**8B.3**	**The agency evaluates individual and crew performance through validated and documented performance-based measurements.**	
	8B.4	The agency analyzes student evaluations to determine reliability of training conducted.	
	8B.5	The agency maintains a training records management system that meets its needs.	
CC	8B.6	**The agency conducts a formal and documented program appraisal, at least annually, to determine the program's effectiveness and compliance with meeting the needs of the organization.**	

Criterion 8C		Training and Education Resources	
CC	**8C.1**	**Facilities and apparatus are provided to support the agency's all-hazards training needs. The agency has plans addressing any facilities and apparatus not available internally to complete training activities.**	
CC	**8C.2**	**The agency has access to instructional personnel, within the organization or from identified external resources, with teaching qualifications and expertise to meet its needs.**	
	8C.3	Instructional materials are current, easily accessible, and support the training program's stated objectives.	
	8C.4	The agency has a process for purchasing, developing or modifying existing curriculum to meet its needs.	
	8C.5	Equipment utilized for training is adequately maintained in accordance with the agency's operational procedures. The agency makes training equipment readily accessible to instructional personnel.	
	8C.6	The agency maintains a current inventory of all training equipment and resources.	
	8C.7	A selection process is in place for training and educational resource materials.	
CC	**8C.8**	**Training materials are evaluated, at least annually, to reflect current practices and meet the needs of the agency.**	
Category IX - Essential Resources			
Criterion 9A		**Water Supply**	
CC	**9A.1**	**The agency establishes minimum fire flow requirements for new development in accordance with nationally and/or internationally recognized standards and includes this information in the fire risk evaluation and pre-incident planning process.**	
CC	**9A.2**	**An adequate and reliable water supply is available for firefighting purposes for identified risks. The identified water supply sources are adequate in volume and pressure, based on nationally and/or internationally recognized standards, to control and extinguish fires.**	
	9A.3	The agency has a contact list on file and maintains regular contact with the managers of public and private water systems to stay informed about available water supplies.	
	9A.4	The agency maintains copies of current water supply sources and annually reviews fire hydrant maps for its service area to ensure they are accurate.	
	9A.5	Fire hydrant adequacy and placement are based on nationally and/or internationally recognized standards and reflect the hazards of the response area.	
	9A.6	Public fire hydrants are inspected, tested, maintained, visible and accessible in accordance with nationally and/or internationally recognized standards. The agency's fire protection-related processes are evaluated, at least annually, to ensure adequate and readily available public or private water.	

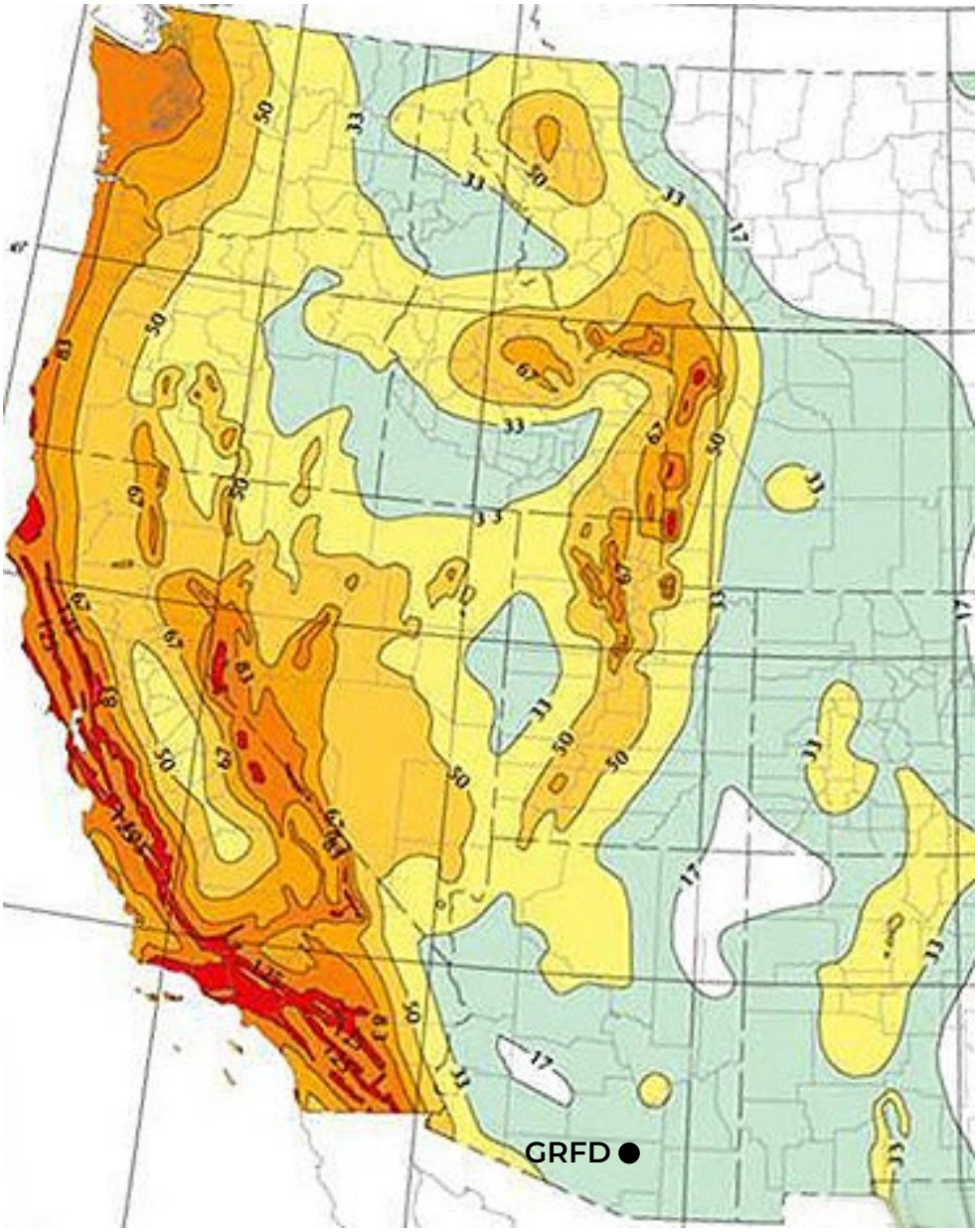
	9A.7	The agency identifies, plans and trains for the possibility of a water supply system failure, including fire hydrants with insufficient capacity and areas where fire hydrants are unavailable or inaccessible	
	9A.8	The agency has operational procedures in place outlining the available water supply and reviews those procedures as part of their documented review policy.	
Criterion 9B		**Communication Systems**	
CC	**9B.1**	**A system is in place to ensure communications with portable, mobile, and fixed communications systems in the field. When an area is identified as not being capable of adequate emergency scene communications, such as inside buildings or below grade level, an operational plan is written.**	
	9B.2	The emergency communications system is capable of receiving automatic and/or manual early warning and other emergency reporting signals.	
	9B.3	The agency's communications center(s) is/are adequately equipped and designed (e.g., security, telephones, radios, equipment status, alarm devices, computers, address files, dispatching circuits, playback devices, recording systems, printers, consoles, desks, chairs, lighting, and map displays).	
	9B.4	The uninterrupted electrical power supply for the primary communications equipment in the communications center is reliable and tested and has automatic backup capability.	
	9B.5	Adequate numbers of fire or emergency telecommunicators, supervisors and management personnel are on duty to handle the anticipated call volume.	
	9B.6	A maintenance program is in place with regularly scheduled and documented system tests.	
	9B.7	The agency has established time-based performance objectives for alarm handling. These objectives are formally communicated to communications center managers through direct report, contracts, service level agreements and/or memorandums of agreement and are reviewed at least annually to ensure time-based performance objectives are met.	
	9B.8	Communications training programs for emergency telecommunicators and emergency response personnel ensure adequate, timely, and reliable agency emergency response.	
	9B.9	The interoperability of the communications system is documented, tested and evaluated. The agency has processes in place to provide for interoperability with other public safety agencies in the field including portable, mobile and fixed communications systems, tools and equipment.	
	9B.10	The dispatch process utilizes a formal and recognized emergency medical dispatch (EMD) system that allows for pre-arrival instructions and adequate triaging of medical calls for service.	
	9B.11	The agency has a documented and tested system in place for the notification and recall of off-duty agency personnel and telecommunicators for unplanned, large-scale incidents.	
	9B.12	The agency has a documented plan, which is reviewed and tested annually, to ensure continuity in communicating during any partial or total disruption or failure of a communications system or facility.	

CC	**9B.13**	**A formal and documented appraisal is conducted, at least annually, to determine the effectiveness of the emergency communications systems and their impact of meeting the agency's goals and objectives.**	
Criterion 9C		**Administrative Support Services and Office Systems**	
CC	**9C.1**	**The administrative support services are appropriate for the agency's size, function, complexity, and mission, and are adequately managed.**	
	9C.2	Public reception, public information, and electronic communications components support the customer service needs of the agency.	
CC	**9C.3**	**Organizational documents, forms, standard operating procedures or general guidelines, and manuals are reviewed at least every three years and updated as needed for all agency programs.**	
	9C.4	Public records are maintained, available and disposed of in accordance with local, state/provincial and federal legal mandates. Record retention and destruction are documented in accordance with an adopted procedure.	
Criterion 9D		**Information Technology**	
CC	**9D.1**	**Hardware, software and IT personnel are appropriate for the agency's size, function, complexity and mission.**	
	9D.2	Software systems are integrated, and policies are in place addressing data governance, data accuracy and data analysis.	
	9D.3	A comprehensive technology plan is in place to update, evaluate and procure hardware and software.	
	9D.4	A cybersecurity policy is in place to protect the integrity of the infrastructure, including networks, programs and devices, from unauthorized access that could disrupt essential services.	
Category X - External Systems Relationships			
Criterion 10A		**External Agency Relationships**	
CC	**10A.1**	**The agency develops and maintains external relationships that support its mission, operations, and/or cost-effectiveness.**	
	10A.2	The agency's strategic plan identifies relationships with external agencies/systems and outlines a process to identify any impact or benefit to the agency's mission, operations or cost-effectiveness.	
	10A.3	The agency researches, evaluates and considers all types of functional relationships that may aid in the achievement of its goals and objectives.	
	10A.4	A conflict resolution process exists between all external organizations with whom the agency has a defined relationship.	
Criterion 10B		**External Agency Agreements**	
CC	**10B.1**	External agency agreements are reviewed every three years and revised as necessary to meet objectives.	
	10B.2	The agency has a process to manage, review and, if needed, revise agreements.	

	10B.3	The agency evaluates external agency performance annually to ensure that external agencies are capable and effective in supporting the agency's goals and objectives.	
Category XI - Health & Safety			
Criterion 11A		**Occupational Health, Safety and Risk Management**	
	11A.1	A specific person or persons are assigned responsibility for implementing the occupational health, safety and risk management programs.	
	11A.2	The agency has policies and procedures for reporting, evaluating, addressing and communicating workplace hazards as well as unsafe/unhealthy conditions and work practices.	
	11A.3	The agency documents steps taken to implement risk reduction and address identified workplace hazards.	
	11A.4	The agency has established and communicated procedures and guidelines for preventing the transmission of blood-borne pathogens and other infectious diseases and reducing exposure to harmful chemicals. Guidelines should include an improvement of practices process.	
CC	**11A.5**	**The agency's occupational health and safety training program instruct the workforce in general safe work practices, from point of initial employment through each job assignment and/or whenever new substances, processes, procedures or equipment are introduced. It provides instructions on operations and hazards specific to the agency.**	
	11A.6	The agency uses near miss-reporting to elevate the level of situational awareness in an effort to teach and share lessons learned from events that, could have resulted in a fatality, injury, or property damage.	
	11A.7	The agency has a process in place to investigate and document accidents, injuries, legal actions, etc., to determine root cause. The agency's information management system supports this process.	
	11A.8	The agency incorporates risk management practices to increase the level of decision making and the ability to identify unsafe conditions and practices during emergency operations.	
	11A.9	The agency has adopted a comprehensive program to address direct- and cross-contamination of clothing, personal protective equipment, other equipment, apparatus and fixed facilities.	
	11A.10	The agency collects and maintains exposure records in accordance with local laws, regulations and/or current research.	
	11A.11	The agency has established procedures to ensure effective and qualified deployment of an Incident Safety Officer to all risk events.	
	11A.12	The agency establishes and consistently follows procedures for maintaining accountability of all personnel operating at all risk events.	
Criterion 11B		**Wellness/Fitness Programs**	
CC	**11B.1**	**The agency provides for initial, regular, and rehabilitative medical, and fitness evaluations.**	
	11B.2	The agency provides personnel with access to fitness facilities and equipment.	

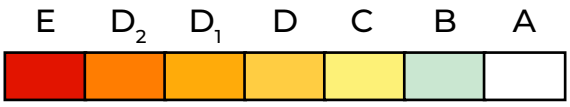
	11B.3	The agency makes available wellness/fitness training to all employees/members.	
	11B.4	The agency provides an employee/member assistance program with timely access to critical incident stress debriefing, peer support and counseling, and other behavioral health resources.	
	11B.5	The agency provides for cancer and behavioral health screenings and a cardiac assessment.	
CC	**11B.6**	**A formal and documented appraisal is conducted, at least annually, to determine the effectiveness of the wellness/fitness programs and its impact on meeting the agency's goals and objectives.**	

Appendix 1.1 Seismic Hazard Map

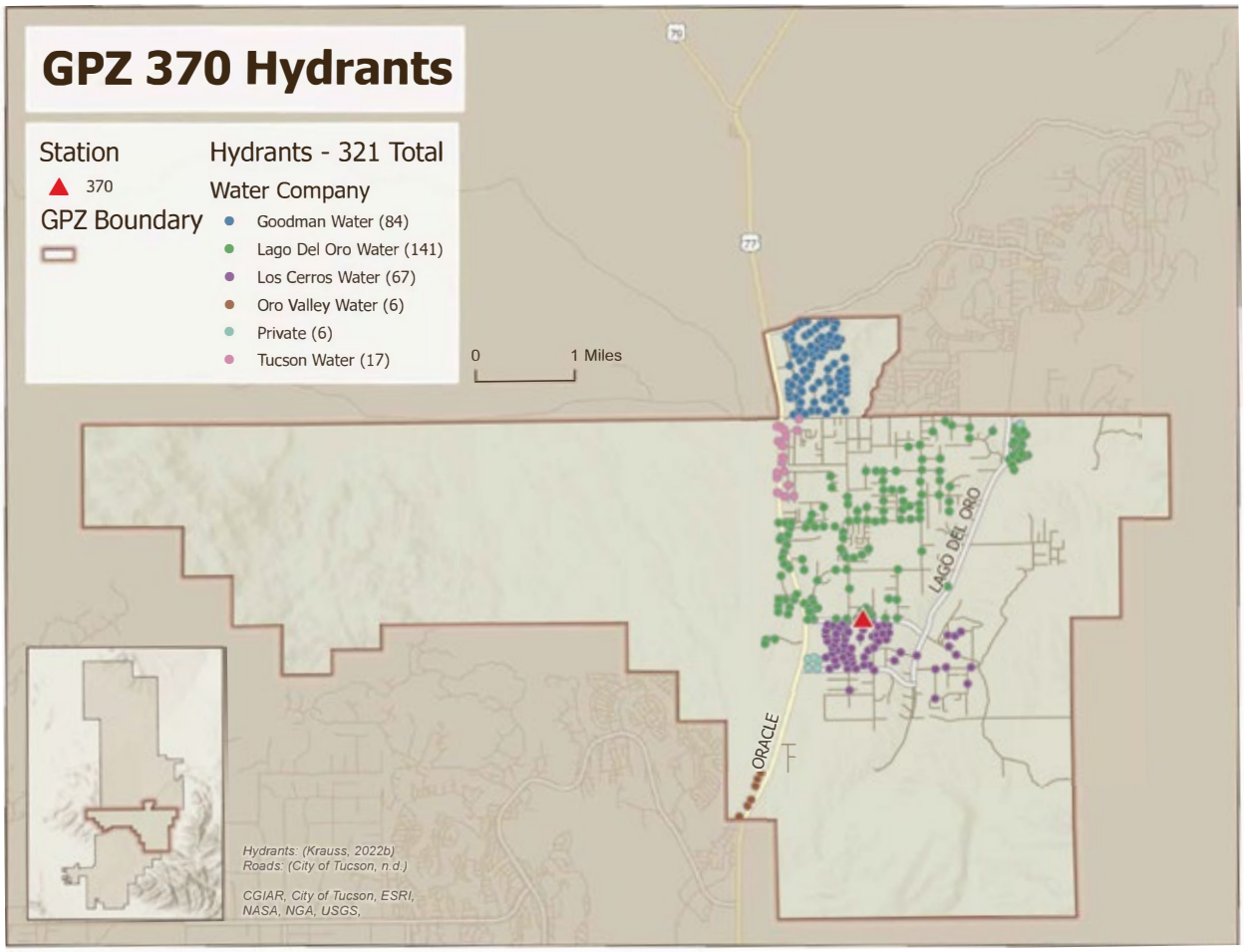


Source: U.S. Geological Survey

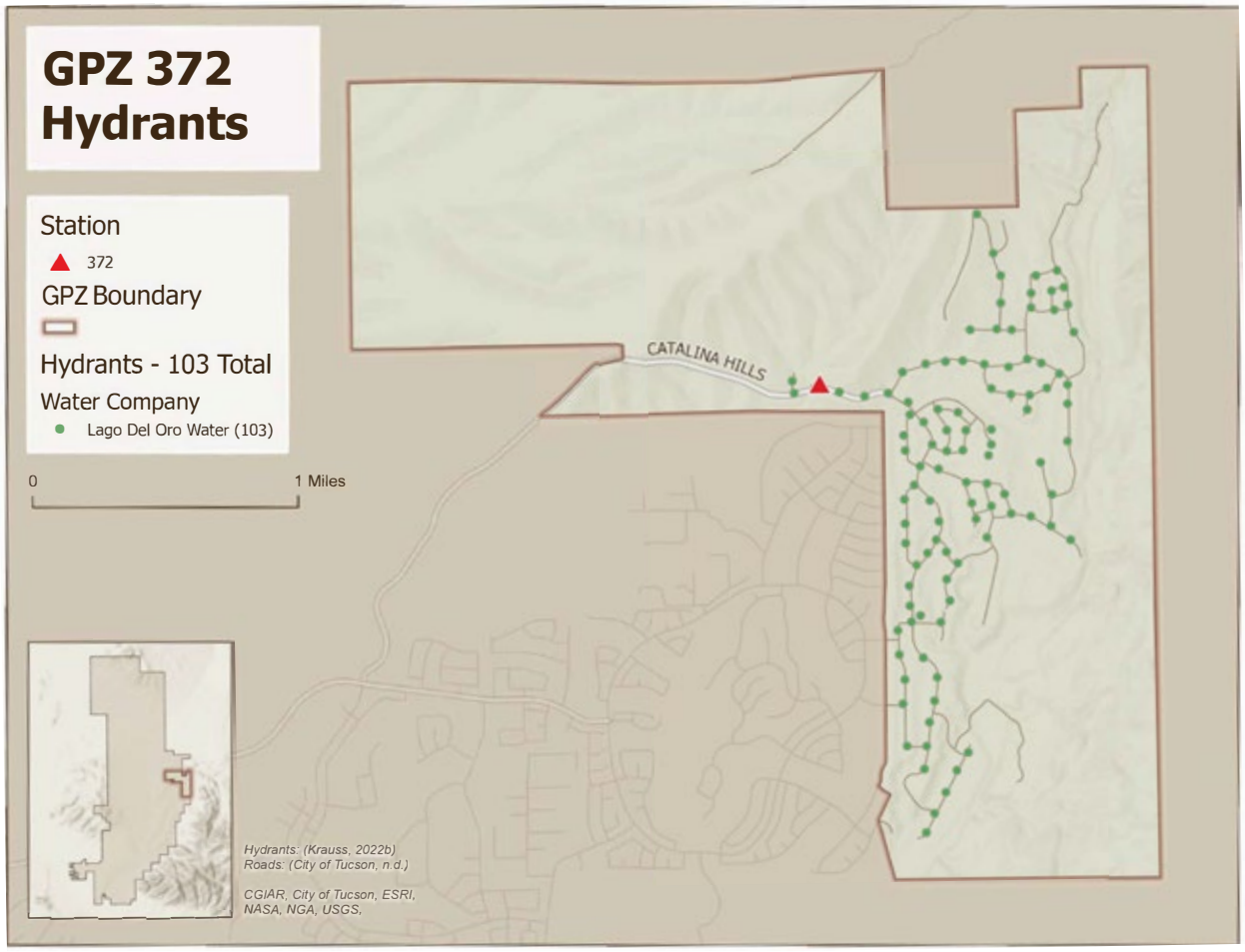
Seismic Design Categories



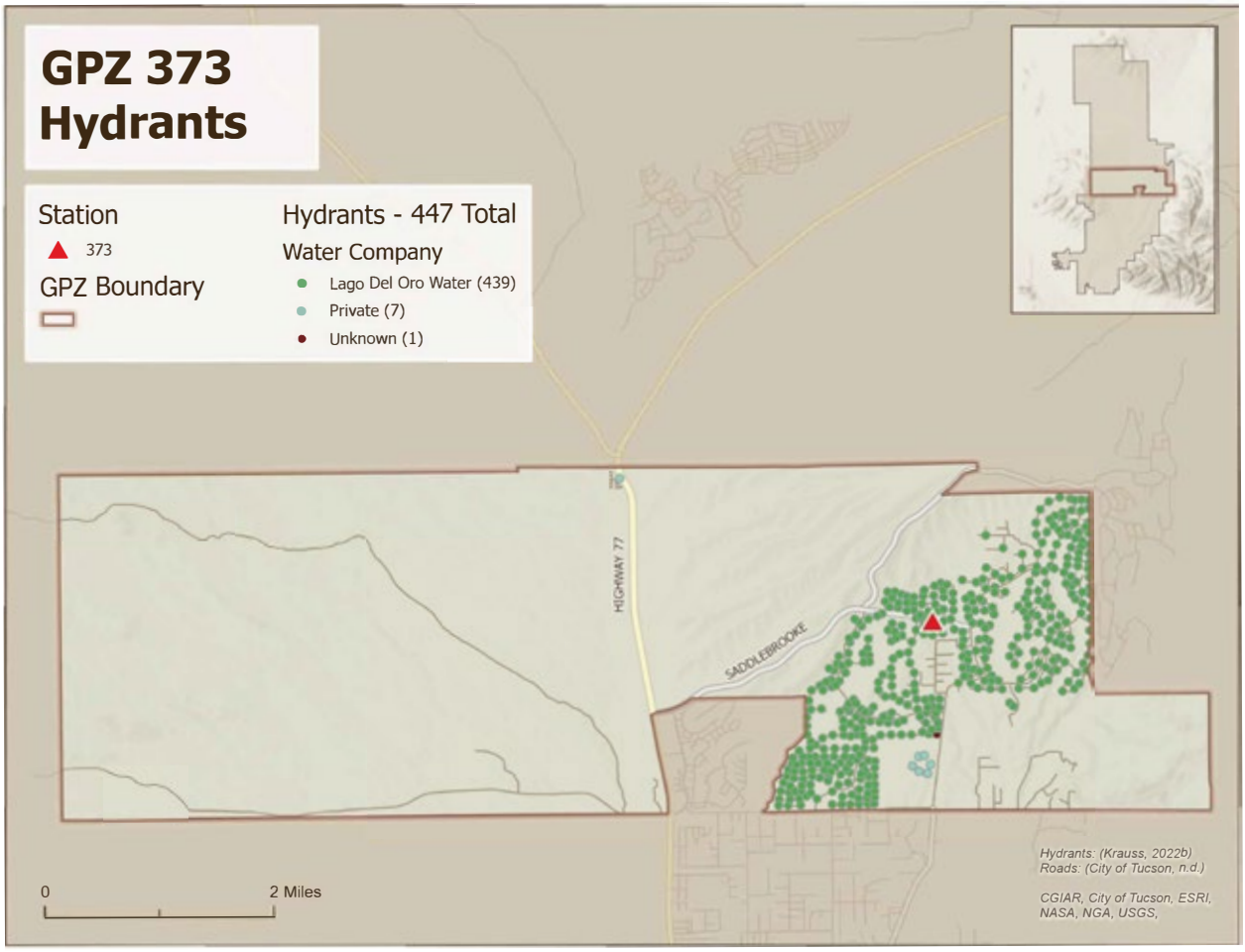
Appendix 1.2 Hydrant Maps



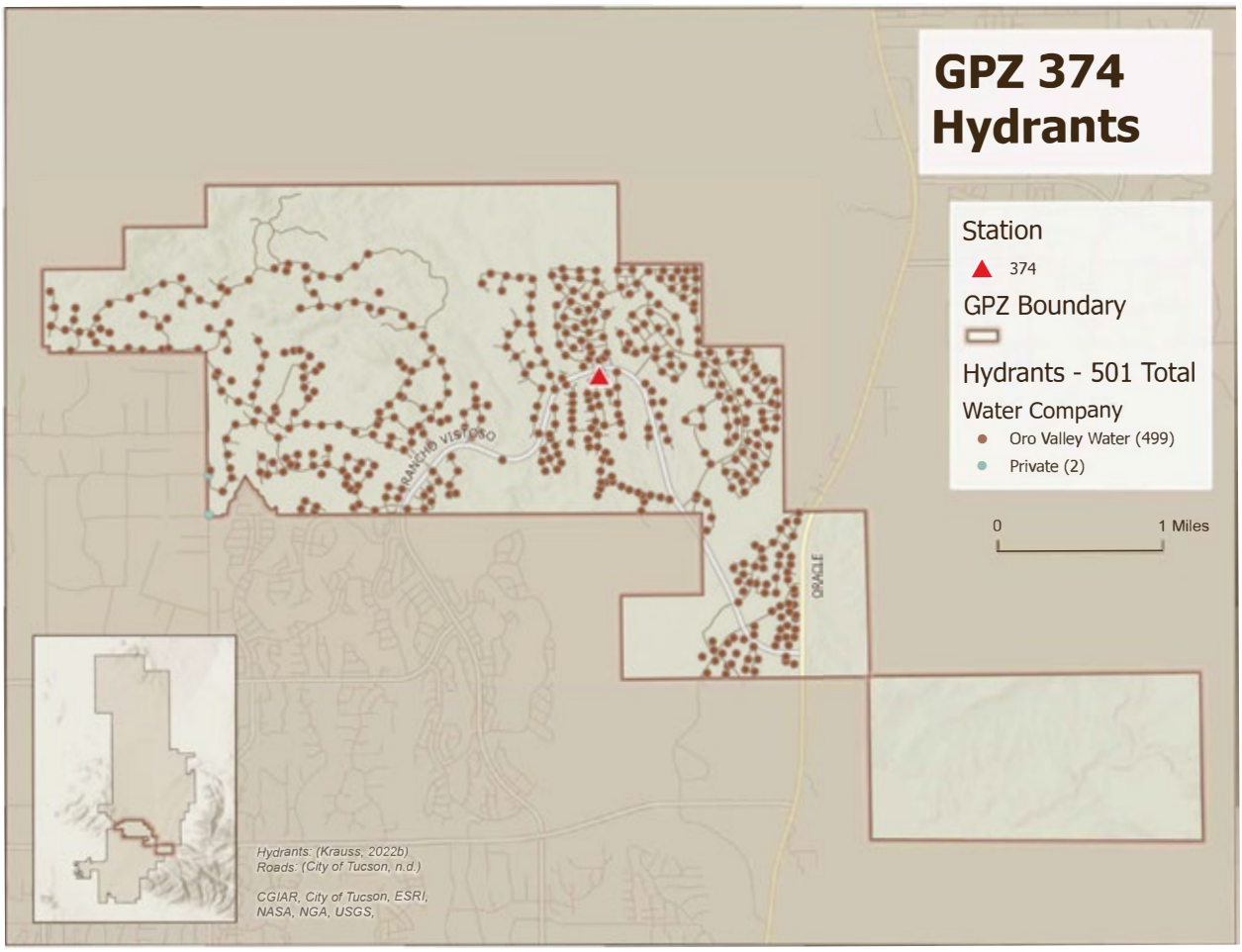
Appendix 1.2 Hydrant Maps



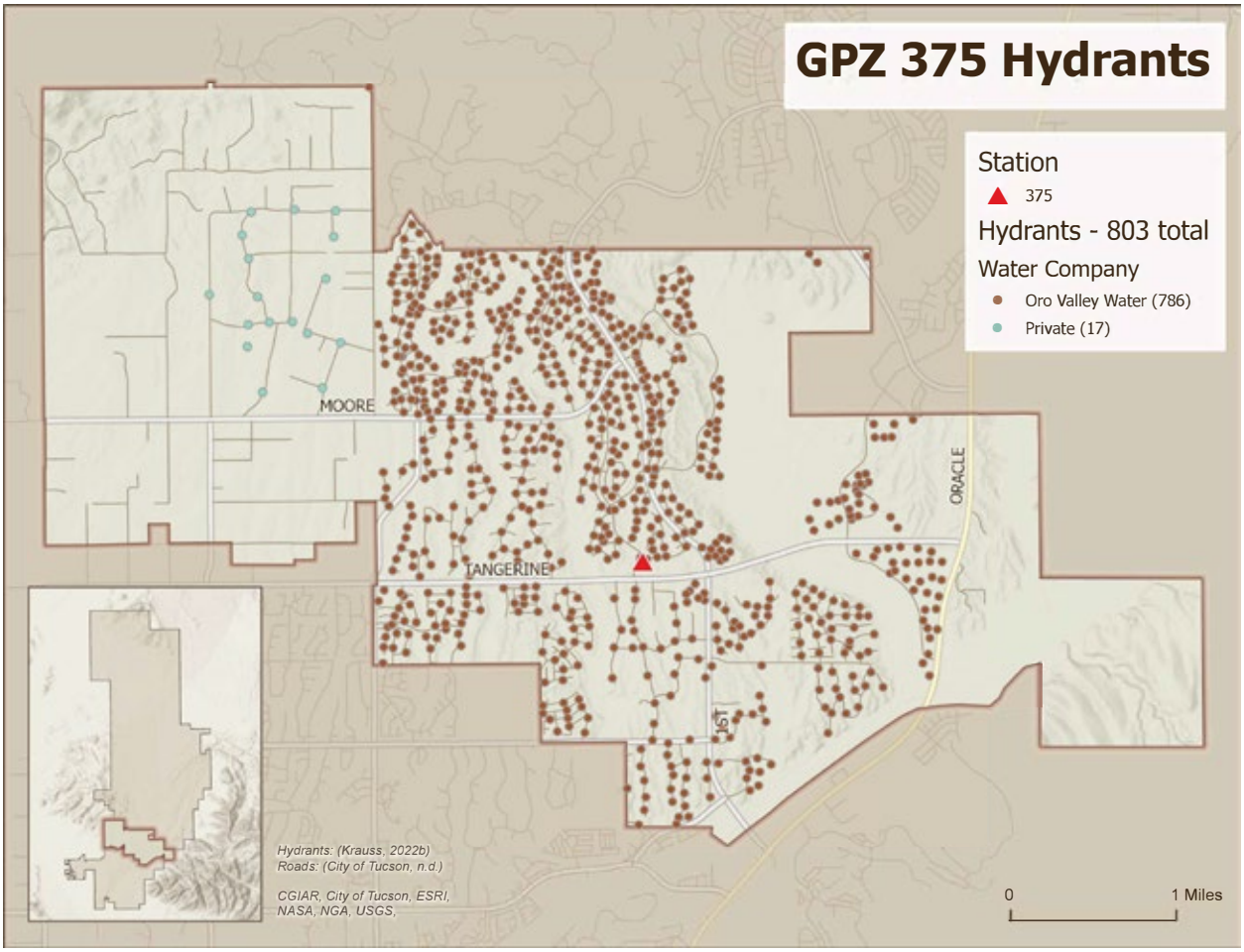
Appendix 1.2 Hydrant Maps



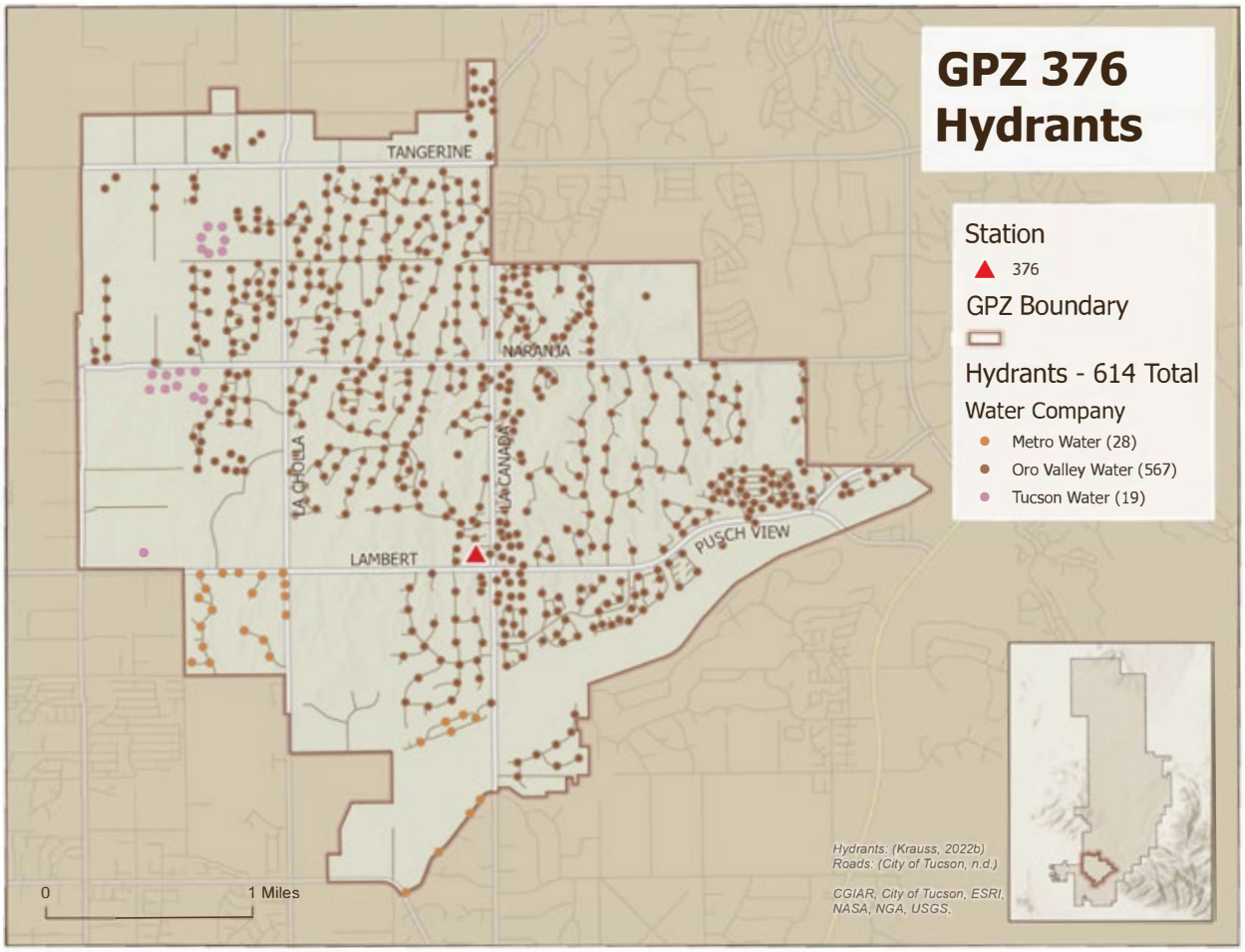
Appendix 1.2 Hydrant Maps



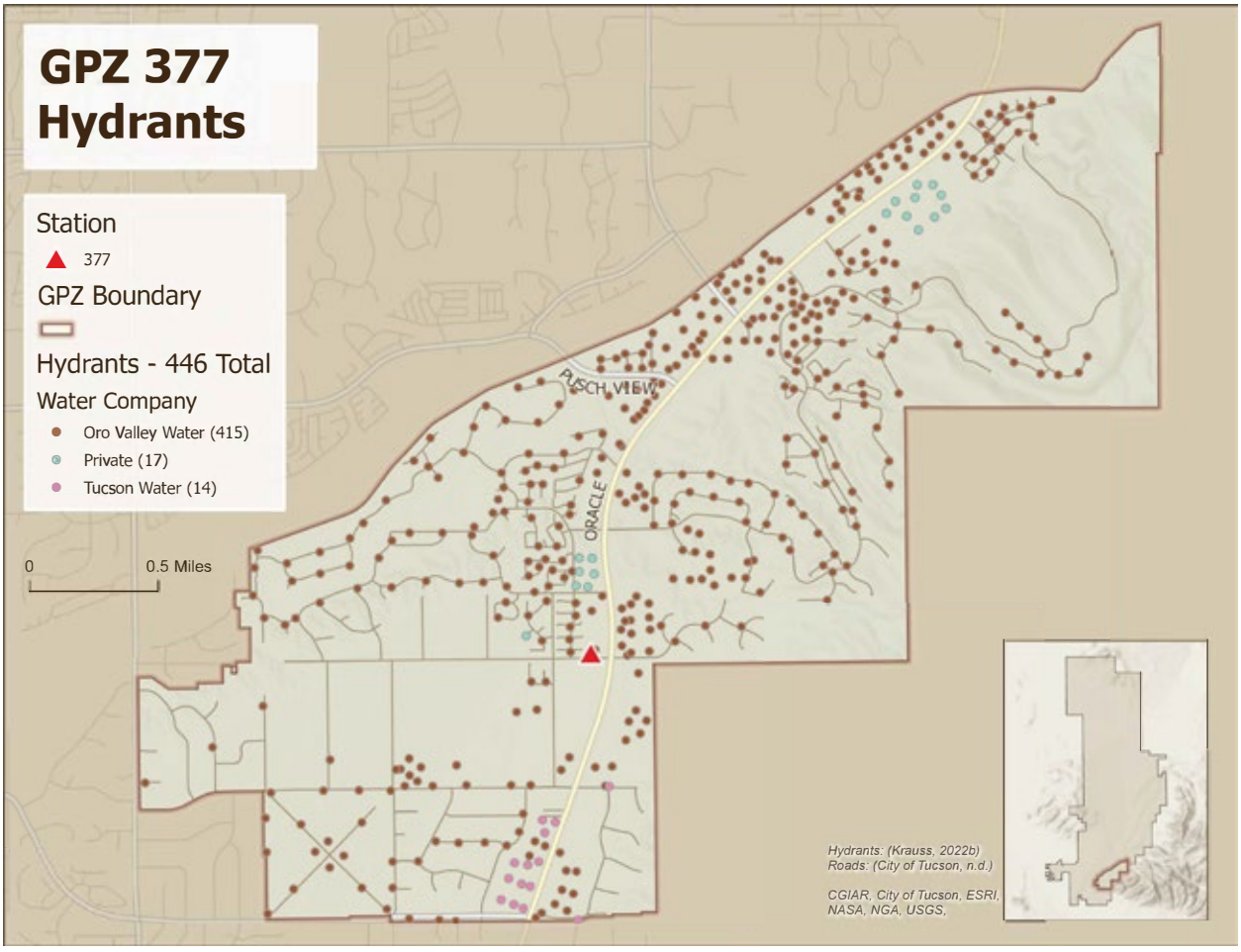
Appendix 1.2 Hydrant Maps



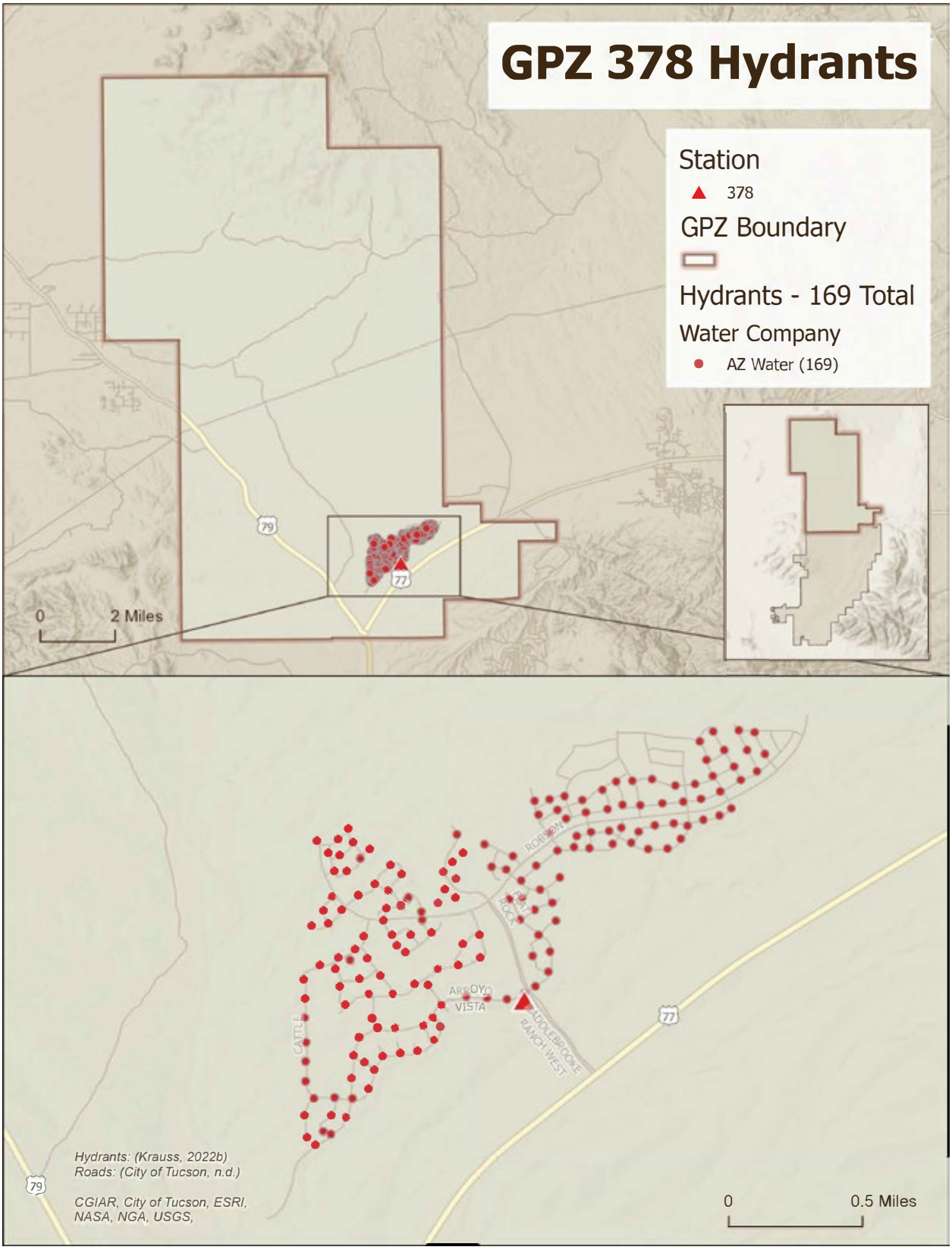
Appendix 1.2 Hydrant Maps



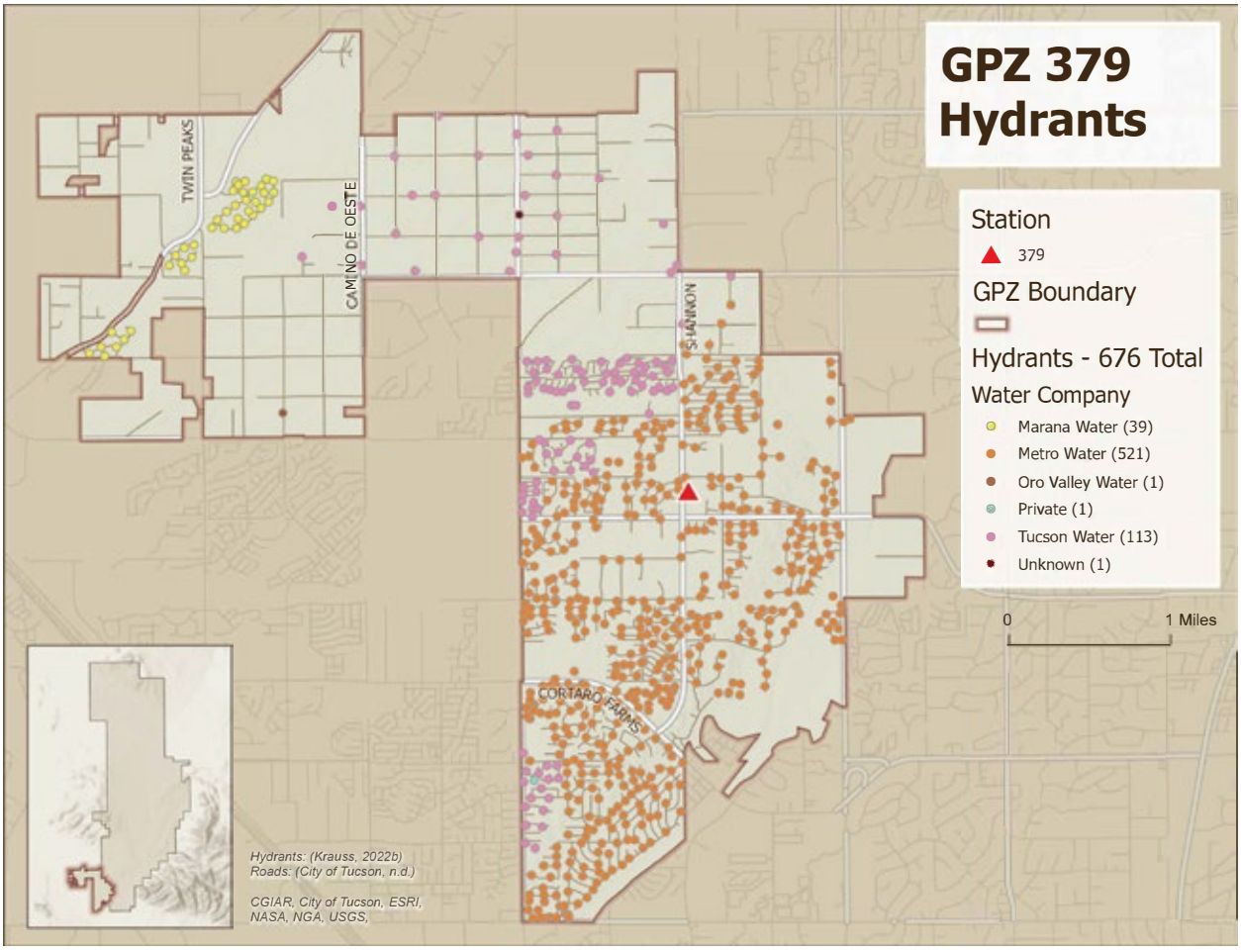
Appendix 1.2 Hydrant Maps



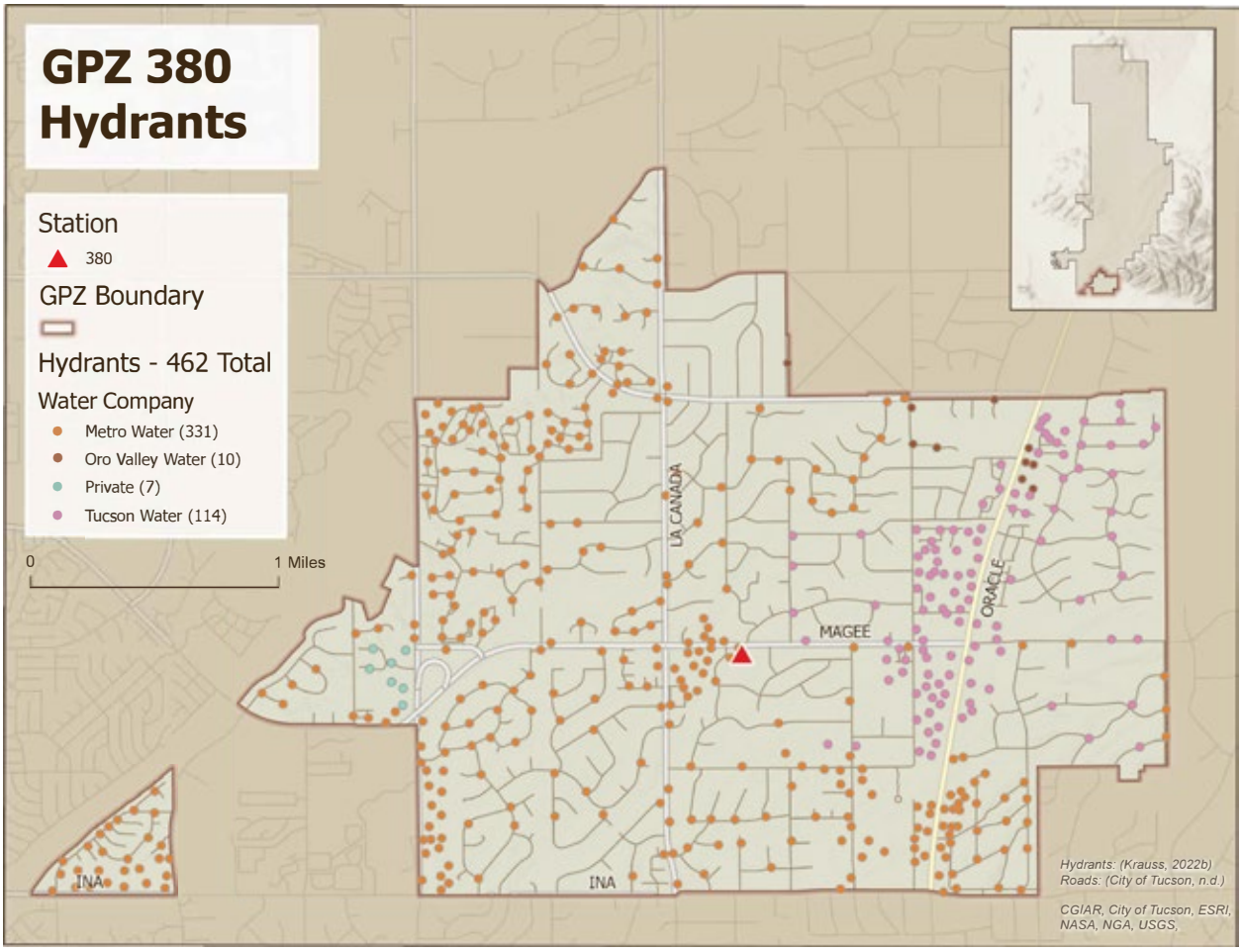
Appendix 1.2 Hydrant Maps



Appendix 1.2 Hydrant Maps

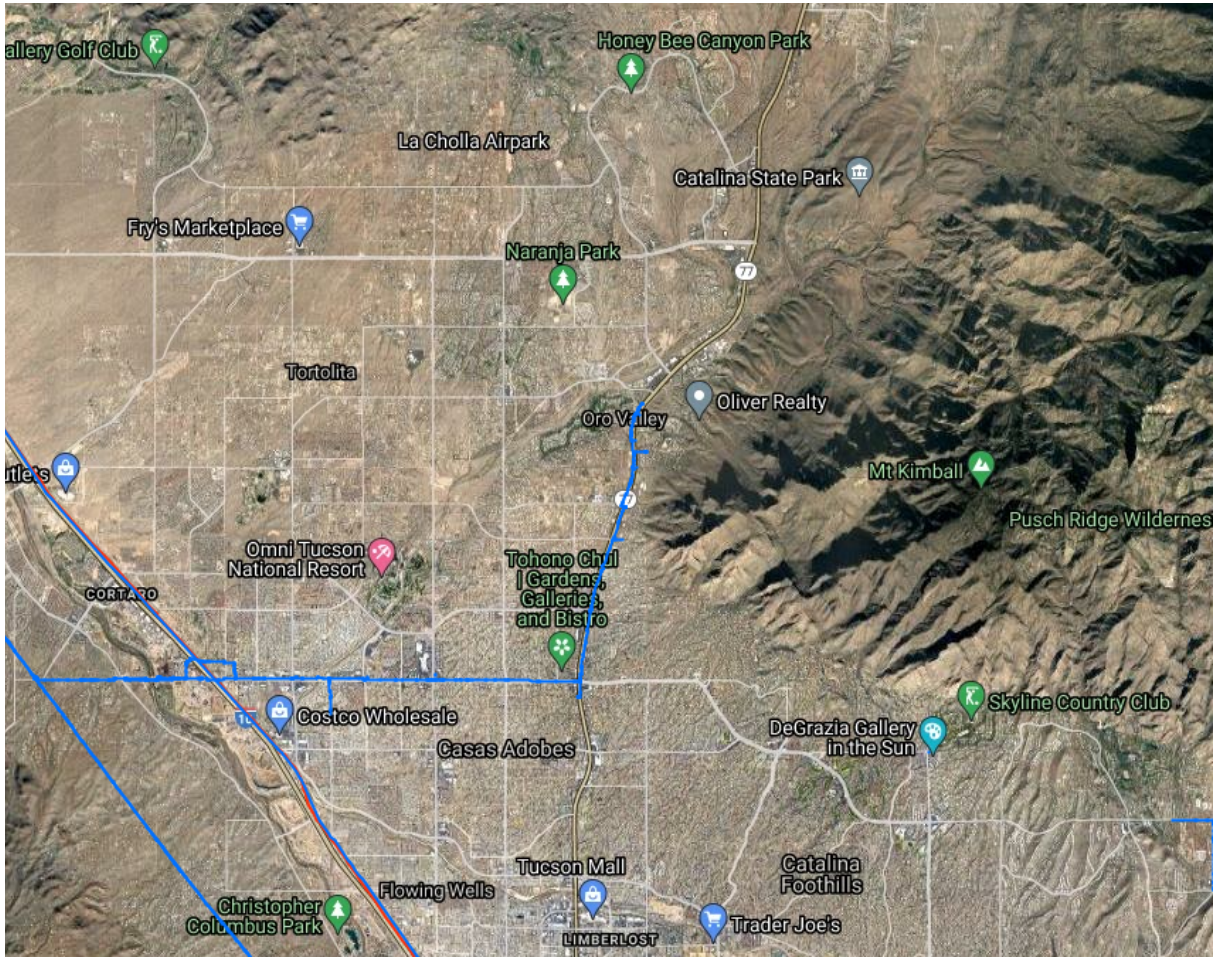


Appendix 1.2 Hydrant Maps



Pipeline and Hazardous Materials Safety Administration

NATIONAL PIPELINE MAPPING SYSTEM



Legend

- Gas Transmission Pipelines
- Hazardous Liquid Pipelines

2 km
1 mi

Pipelines depicted on this map represent gas transmission and hazardous liquid lines only. Gas gathering and gas distribution systems are not represented.

This map should never be used as a substitute for contacting a one-call center prior to excavation activities. Please call 811 before any digging occurs.

Questions regarding this map or its contents can be directed to npms@dot.gov.

Projection: Geographic

Datum: NAD83

Map produced by the Public Viewer application at www.npms.phmsa.dot.gov

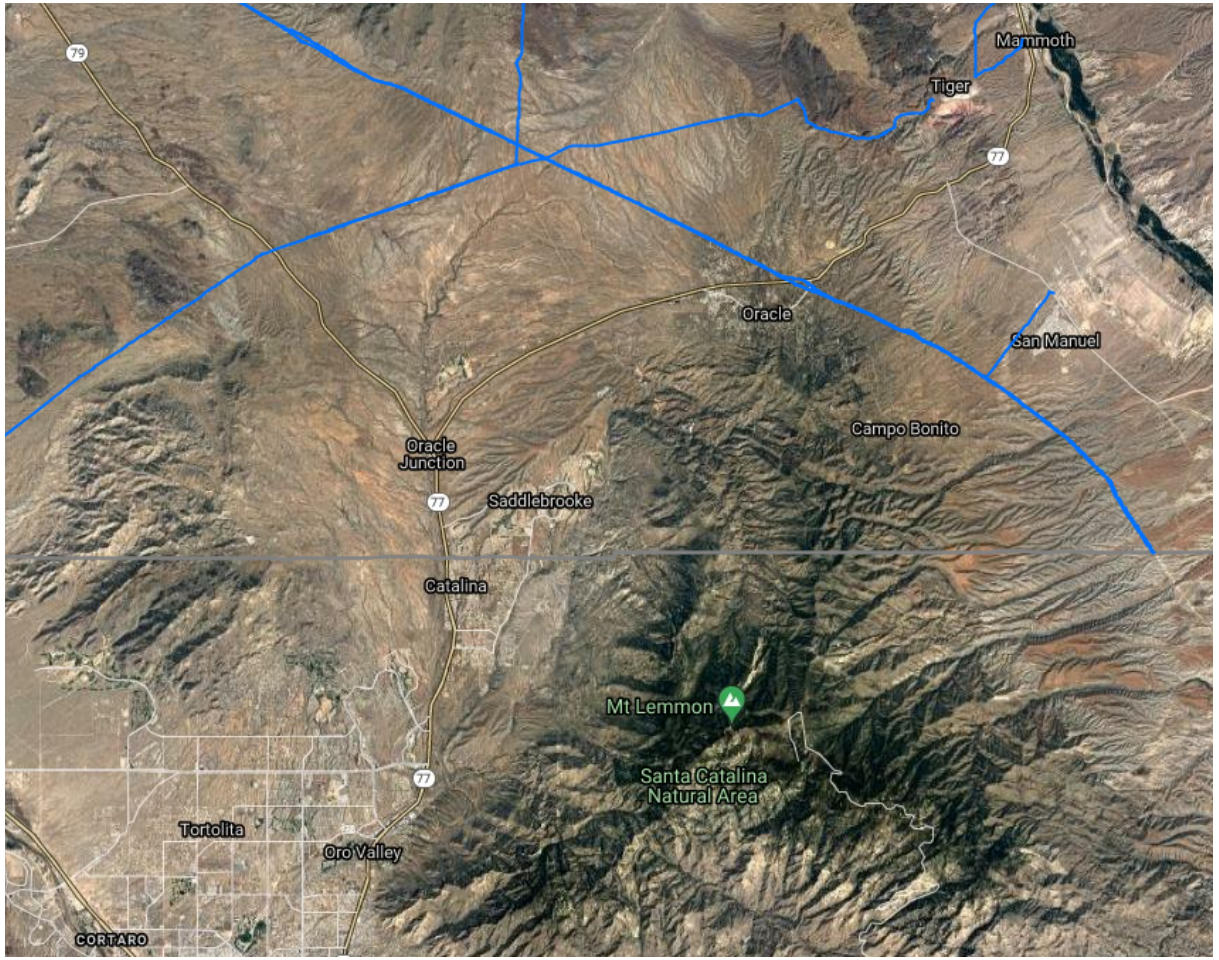
Date Printed: Jan 13, 2022

811 Know what's below. Call before you dig.

Appendix 1.3 Arterial Line Locations – North Battalion

Pipeline and Hazardous Materials Safety Administration

NATIONAL PIPELINE MAPPING SYSTEM



Legend

- Gas Transmission Pipelines
- Hazardous Liquid Pipelines
- County Boundaries

5 km
2 mi

Pipelines depicted on this map represent gas transmission and hazardous liquid lines only. Gas gathering and gas distribution systems are not represented.

This map should never be used as a substitute for contacting a one-call center prior to excavation activities. Please call 811 before any digging occurs.

Questions regarding this map or its contents can be directed to npms@dot.gov.

Projection: Geographic

Datum: NAD83

Map produced by the Public Viewer application at www.npms.phmsa.dot.gov

Date Printed: Jan 13, 2022

811 Know what's below. Call before you dig.

Appendix 2.1 Certificate of Necessity

ARIZONA DEPARTMENT OF HEALTH SERVICES

STATE OF ARIZONA
} ss
County of Maricopa

CERTIFICATE NO. - 56 -

DOCKET NO. EMS 00538

THE ARIZONA DEPARTMENT OF HEALTH SERVICES has found, under the authority of A.R.S. § 36-2232 et seq and Pursuant to Department of Health Services rules, that public necessity requires the operation of

GOLDER RANCH FIRE DISTRICT

as a ground ALS and BLS ambulance service in the State of Arizona for the transportation of individuals who are sick, injured, wounded or otherwise incapacitated or helpless within the following service area, with the following central operations station and response times:

1. **Service Area:**

The Golder Ranch Fire District and

T12S, R14E, Section 4 and 5. T11S, R14E, Section 1 thru 11, Western half of Section 12, Section 14 thru 23, Section 26 thru 34. T11S, R13E, Section 1, 2, 11 thru 14, Southern half of Section 15, Section 23 thru 25, Section 26 with the exception of the Southeast Quarter Section, the Southern half of Section 35 and Section 36. T10S, R14E, Section 1 thru 36. T10S, R15E, Section 6, Western half of Section 5, Section 7, Western half of Section 8, Section 18, Western Half of Section 17. T10S, R13E, Section 1 thru 3, Section 10 thru 15, Section 22 thru 27, Section 34 thru 36. The Northwestern boundary would then extend Northwest in a straight line from the intersection of T10S, R13E, Sections 3, 4, 9, and 10, to the intersection of T8S, R11E, Sections 14, 15, 23, and 24. The Northern boundary would extend in a straight line from the intersection of T8S, R11E, Sections 14, 15, 23 and 24 to the intersection of SR 79 and Freeman Road (Mile Post 111.7). The Northern Boundary would continue Easterly along the Southern half of Freeman Road approximately 20 miles to the intersection of Freeman Road and White Head Well Road. The Northern boundary would then continue South along White Head Well Road to the midpoint

Now, therefore, by virtue of the authority vested in the Arizona department of Health Services, under the constitution and laws of the State of Arizona, does hereby grant this

RENEWAL

CERTIFICATE OF NECESSITY

authorizing the operation of the aforesaid ambulance service for a period ending July 31, 2025 unless for cause sooner amended, suspended, revoked or terminated subject to the decisions and orders, and rules of the Department.

PROVIDED, that this certificate shall not be assigned nor transferred unless authorized by the Arizona Department of Health Services.

BY THE ORDER OF THE ARIZONA DEPARTMENT OF HEALTH SERVICES, IN WITNESS WHEREOF, I DON HERRINGTON. the Interim Director of the Arizona Department of Health Services, have hereunto set my hand and caused the official seal of the Arizona Department of Health Services to be affixed at Phoenix, Arizona on June 7, 2022.

DIRECTOR'S DESIGNEE

ARIZONA DEPARTMENT OF HEALTH SERVICES

STATE OF ARIZONA
} ss
County of Maricopa

CERTIFICATE NO. - 56 -

DOCKET NO. EMS 00538

Service Area Continued:

of the Northern Section line of T7S, R14E, Section 2, then continue East along the Northern Boundary of Section 2 and 1 of the T7S, R14E. The Eastern boundary would continue in a straight line South from the Northeast corner of T7S, R14E, Section 1 to the Southeast corner of T9S, R14E, Section 36, crossing SR77 at Mile Post 97.

2. **Legal Address:** *Tucson, Arizona (3885 E. Golder Ranch Drive).*

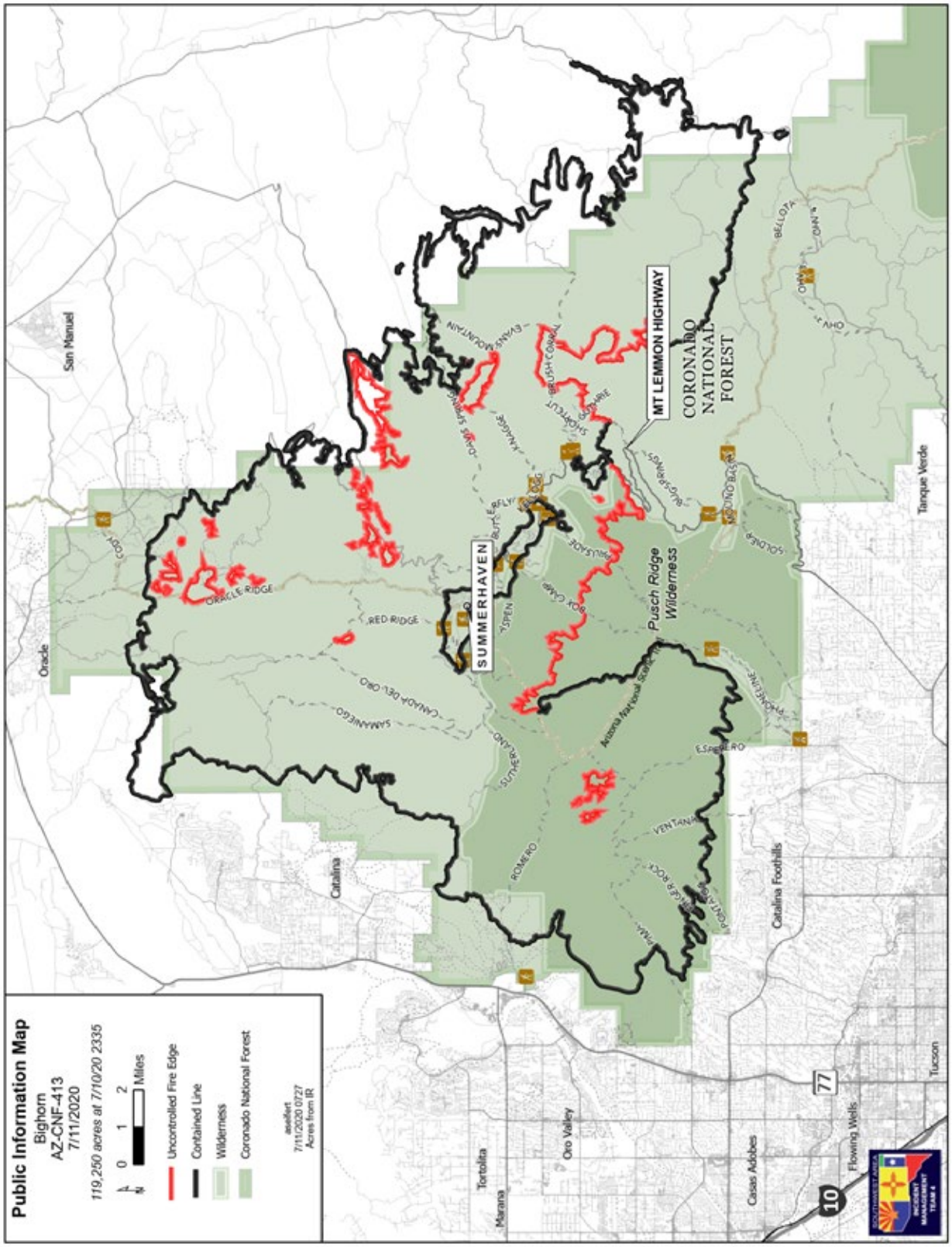
3. **Response Times:**
   a. *Ten (10) minutes on Seventy-Five (75) percent of all emergency ambulance responses.*
   b. *Fifteen (15) minutes on Eighty-Five (85) percent of all emergency ambulance responses.*
   c. *Twenty (20) minutes on Ninety (90) percent of all emergency ambulance responses.*
   d. *Thirty (30) minutes on Ninety-Five (95) percent of all emergency ambulance responses.*
   e. *Sixty (60) minutes on Ninety-Nine (99) percent of all emergency ambulance responses.*

CERTIFICATE OF NECESSITY

(CONTINUATION PAGE ONE)

EXPIRES July 31, 2025

Appendix 3.1 Bighorn Fire Map



Appendix 3.2 RAFER Risk Calculator – Commercial Occupancies

Directions: This is only a calculator. Do not save. Just write down scores on your hard-copy sheet and close this without saving. Transfer all scoring to the survey provided for each building. Only enter x's in the boxes for scoring. You will not be able to enter any other information.

RAFER Score			
RAFER Risk Factor			
Inspection Cycle			

Life Hazard	
	High Life Hazard (>100 occupants, >10 people unable to evacuate due to illness or disability, other high life hazard situations)
	Medium Life Hazard (25-99 occupants or <10 occupants unable to evacuate due to illness or disability)
	Low Life Hazard (Less than 25 occupants)

Building Usage	
	Industrial – commercial
	Large businesses – large offices
	Office – small business – retail

Community Impact	
	Severe Impact (irreplaceable - historical - hospital)
	Moderate Impact (high casualty - job losses - tax losses)
	Minor Impact (minor casualty - family loss)

Building Construction	
	Type 5 construction – combustible
	Type 3 & 4 construction – limited combustible
	Type 1 & 2 construction – non-combustible

Content/Fire Load	
	Hazmat or explosives - rack storage - flammables
	Small quantities hazmat or explosives, moderate fire loading
	No special hazards or fireloading

Number of Stories	
	3 or more stories (or 40 feet high or more)
	2 story building
	Single story building

Water Supply (within 800 feet) 2 Closest Hydrants #s	
	0 or 1 hydrant (with less that 1000 GPM)
	1 at 1000 GPM or over, and less than 1000 GPM
	2 hydrants at 1000 GPM or over

Square Footage	
	15,000 square feet or more
	7,501 to 14,999 square feet
	7,500 square feet or less

Building Area Calculator _____ 150 _____ width x _____ # stories _____ square footage

Closest 2 Fire Hydrant #s: Hydrant #1 _____ Hydrant #2 _____

Appendix 3.3 RAFER Risk Calculator – Residential Occupancies

Directions: This is only a calculator. Do not save. Just write down scores on your hard-copy sheet and close this without saving. Transfer all scoring to the survey provided for each building. Only enter x's in the boxes for scoring. You will not be able to enter any other information.

RAFER Score			
RAFER Risk Factor			
Inspection Cycle			

Life Hazard	
	High Life Hazard (>100 occupants, >10 people unable to evacuate due to illness or disability, other high life hazard situations)
	Medium Life Hazard (25-99 occupants or <10 occupants unable to evacuate due to illness or disability)
	Low Life Hazard (Less than 25 occupants)

Building Usage	
	Large residential facility (Nursing home, center corridor apartments, etc)
	Medium residential facility (Garden-style apartments/hotels, residential care homes, duplexes, triplexes)
	Single-family homes

Exposure Problems	
	Severe Exposure Problems (multiple surrounding exposures closer than 10 feet, highly flammable exposures/materials)
	Moderate Exposure Problems (one building closer than 10 feet, multiple buildings 10-30 feet, etc.)
	Minor Exposure Problems (Exposures greater than 30 feet, no exposures)

Building Construction	
	Type 5 construction – combustible
	Type 3 & 4 construction – limited combustible
	Type 1 & 2 construction – non-combustible

Special Issues	
	Hoarding situation, large-scale unpermitted additions, major code violations, large scale oxygen distribution, major access problems, etc.
	Unpermitted additions, moderate code violations like blocked exits, blocked windows, minor access problems, long hose lays, etc.
	No special issues

Number of Stories	
	3 or more stories (or 4o feet high or more)
	2 story building
	Single story building

Water Supply (within 800 feet) 2 Closest Hydrants #s	
	0 or 1 hydrant (with less that 1000 GPM)
	1 at 1000 GPM or over, and less than 1000 GPM
	2 hydrants at 1000 GPM or over

Square Footage	
	5,000 square feet or more
	2,500 to 4,999 square feet
	2,499 square feet or less

Building Area Calculator _____ 150 _____ width x _____ # stories _____ square footage

Closest 2 Fire Hydrant #s: Hydrant #1 _____ Hydrant #2 _____

Appendix 3.4 Target Hazard and Typical Occupancy Risk Surveys

Occupancy	Street Address	Risk Score	Category
Goyita's	10420 N La Canada Drive	11.00	Moderate Risk
SBR Pro Shop	31280 S Amenity Drive, Oracle AZ 85623	11.00	Moderate Risk
SaddleBrooke Sales Center	60840 E Robson Circle	11.00	Moderate Risk
Coyote Golf Carts	63675 E Saddlebrooke Blvd. Suite Q	11.00	Moderate Risk
SaddleBrooke HOA #1	64335 E Saddlebrooke Blvd.	11.00	Moderate Risk
Circle K	15935 N Oracle Road	11.00	Moderate Risk
State Farm	16514 N Oracle Road	11.00	Moderate Risk
Chevron	3780 W Magee Road	11.00	Moderate Risk
Panda Express	7848 N Oracle Road	11.00	Moderate Risk
HOA 2 Admin Building	38735 S Mountain View Blvd.	11.00	Moderate Risk
Shell Gas Station	12995 N Oracle Road, Tucson, AZ 85739	11.00	Moderate Risk
Speedway Gas Station	10505 N Oracle Road, Tucson, AZ 85704	11.00	Moderate Risk
SBR Arts & Tech	31083 S Amenity Drive, Oracle, AZ 85623	11.00	Moderate Risk
La Hacienda Club	31390 S Amenity Drive, Oracle, AZ 85623	11.00	Moderate Risk
Quik Trip	11045 N Oracle Road	11.00	Moderate Risk
Vistoso Funeral home	2285 E Rancho Vistoso Blvd., Oro Valley, AZ 85755	11.00	Moderate Risk
Quik Mart	3250 W Cortaro Farms Road	11.00	Moderate Risk
Barber Shop	16065 N Oracle Road	11.00	Moderate Risk
Oro Valley Police Headquarters	11000 N La Canada Drive	12.00	Moderate Risk
Chase Bank	15314 N Oracle Road	12.00	Moderate Risk
Dentistry by Design/ Desert Life Pharmacy/Hair Salon/Coyote Golf Carts	63675 E Saddlebrooke Blvd. Suite M	12.00	Moderate Risk
SBR ED's Dogs	31510 S Amenity Drive, Oracle, AZ	12.00	Moderate Risk

Appendix 3.4 Target Hazard and Typical Occupancy Risk Surveys

Occupancy	Street Address	Risk Score	Category
Ridgeview Physical Therapy	63717 E Saddlebrooke Blvd.	12.00	Moderate Risk
Sgt. Kernel's Popcorn & Cafe	1530 N Oracle Road #148	12.00	Moderate Risk
Vantage West Credit Union	550 W Magee Road	12.00	Moderate Risk
Desert Springs Baptist Church	10425 N Thornydale Road, Tucson, AZ 85742	12.00	Moderate Risk
Kindercare	10455 N La Canada Drive	12.00	Moderate Risk
Fry's Fuel	10510 N La Canada Drive	12.00	Moderate Risk
Jerry Bobs	10550 N La Canada Drive	12.00	Moderate Risk
Sun Cleaners	12995 N Oracle Road #171	12.00	Moderate Risk
Hughes Federal Credit Union	7970 N Thornydale Road, Tucson, AZ 85741	12.00	Moderate Risk
McDonald's	15895 N Oracle Road	12.00	Moderate Risk
Arby's	16338 N Oracle Road	12.00	Moderate Risk
Jerry Bobs	16639 N Oracle Road	12.00	Moderate Risk
SaddleBrooke HOA #2 Golf Maintenance Yard	38752 S Sandcrest Drive	12.00	Moderate Risk
Sonic	7940 N Thornydale Road	12.00	Moderate Risk
The Persian Room	9290 N Thornydale Road #100, Marana, AZ 85745	12.00	Moderate Risk
Goodwill	10540 N La Canada Drive	12.00	Moderate Risk
Vistoso Automotive	12945 N Oracle Road	12.00	Moderate Risk
Grace Community Church	9755 N La Cholla Blvd., Tucson, AZ 85742	12.00	Moderate Risk
Minit Market/Gas Station	63715 E Saddlebrooke Blvd.	12.00	Moderate Risk
Vistoso Community Church	1200 E Rancho Vistoso Blvd.	12.00	Moderate Risk
Alive Church	9662 N La Cholla Blvd., Tucson, AZ 85742	12.00	Moderate Risk
Michelangelo’s Bottega	420 W Magee Road	12.00	Moderate Risk
Adair Funeral Home	8090 N Northern Ave.	12.00	Moderate Risk
U.S. Post Office	16141 N Oracle Road	12.00	Moderate Risk

Appendix 3.4 Target Hazard and Typical Occupancy Risk Surveys

Occupancy	Street Address	Risk Score	Category
Pottery Fiesta	16181 N Oracle Road	12.00	Moderate Risk
Sammy's Mexican Grill	16502 N Oracle Road	12.00	Moderate Risk
Lupe's	35480 Highway 77	12.00	Moderate Risk
SaddleBrooke HOA2 Golf Maintenance	38752 S Sandcrest Drive	12.00	Moderate Risk
Community Church of Saddle Brooke	36768 S Aaron Lane	12.00	Moderate Risk
Mountain Shadow Presbyterian Church	3201 E Mountain Shadow Drive	12.00	Moderate Risk
Vista de la Montana Church	3001 E Mira Vista Lane	12.00	Moderate Risk
Gaslight Music Hall	13005 N Oracle Road	12.00	Moderate Risk
Mi Tierra	16238 N Oracle Road	12.00	Moderate Risk
Canyon Del Oro Assembly of God - Church	2950 W Lambert Lane	12.00	Moderate Risk
Latter Day Saints Church	55 W Woodburne Ave.	12.00	Moderate Risk
St. Andrew's Presbyterian Church	7575 N Paseo del Norte	12.00	Moderate Risk
St. Elizabeth Ann Seton	8650 N Shannon Road, Tucson, AZ 85742	12.00	Moderate Risk
Mountain View Plaza	1171 E Rancho Vistoso Blvd.	13.00	High Risk
Sunny Side Up Cafe	15800 N Oracle Road	13.00	High Risk
Impact	15920 N Oracle Road	13.00	High Risk
Sonoran ENT	2506 E Vistoso Commerce Loop, Oro Valley, AZ 85737	13.00	High Risk
Radiology Ltd	2551 E Vistoso Commerce Loop, Oro Valley, AZ 85755	13.00	High Risk
Brake MAX	10529 N Oracle Road	13.00	High Risk
Ace Hardware	10560 N La Canada Drive	13.00	High Risk
Arbico	10831 N Mavinee, Tucson, AZ 85737	13.00	High Risk
Merles	10861 N Mavinee, Tucson, AZ 85737	13.00	High Risk
Mend Therapeutic Massage Strip Mall	15930 N Oracle Road	13.00	High Risk

Appendix 3.4 Target Hazard and Typical Occupancy Risk Surveys

Occupancy	Street Address	Risk Score	Category
Hardin Brothers Automotive	16255 N Oracle Road	13.00	High Risk
Miles Label Company	2300 E Vistoso Commerce Loop, Oro Valley, AZ 85755	13.00	High Risk
Dunn Edwards	9610 N Oracle Road	13.00	High Risk
O'Reilly Auto Parts	16329 N Oracle Road	13.00	High Risk
Ranchers supply	15771 N Oracle Road	13.00	High Risk
SBR Clubhouse	31143 S Amenity Drive, Oracle AZ 85623	13.00	High Risk
First Inspection Services	35481 Highway 77, Saddlebrooke, AZ 85739	13.00	High Risk
SBR Golf Maintenance Shop	61877 E Robson Circle, Oracle AZ 85623	13.00	High Risk
Saddlebrooke Preserve Golf Course Maint.	66130 E Peregrine Place, Tucson, AZ 85739	13.00	High Risk
Painted Sky Elementary School	12620 N Woodburne Ave.	13.00	High Risk
Basis Oro Valley K-5	11129 N Oracle Road	13.00	High Risk
Basis High School Oro Valley	11155 N Oracle Road	13.00	High Risk
Oro Valley Church of the Nazarene	500 W Calle Concordia	13.00	High Risk
Saint Odelia Church	7570 N Paseo Del Norte	13.00	High Risk
Harelson Elementary School	826 W Chapala Drive, Tucson, AZ 85704	13.00	High Risk
Cross Middle School	1000 W Chapala Drive, Tucson, AZ 85704	13.00	High Risk
Church of Jesus Christ Latter Day Saints	939 W Chapala Drive, Tucson, AZ 85704	13.00	High Risk
Walgreen's	10405 N La Canada Drive	14.00	High Risk
Valero	15240 N Oracle Road	14.00	High Risk
Sun City Cart Barn	1565 E Rancho Vistoso Blvd.	14.00	High Risk
Bashas'	15310 N Oracle Road	14.00	High Risk
Omni Legends	2727 W Club Drive, Tucson, AZ 85742	14.00	High Risk

Appendix 3.4 Target Hazard and Typical Occupancy Risk Surveys

Occupancy	Street Address	Risk Score	Category
Bashas'	8360 N Thornydale Road, Tucson, AZ 85741	14.00	High Risk
Safeway	12122 N Rancho Vistoso Blvd.	14.00	High Risk
Century Theater	12155 N Oracle Road	14.00	High Risk
Oracle Junction Mobile Park	35590 S Highway 77, Oracle Junction, AZ 85739	15.00	High Risk
Brookdale Oro Valley	10175 N Oracle Road	15.00	High Risk
Fry's	10450 N La Canada Drive	15.00	High Risk
Tractor Supply Co.	15884 N Oracle Road	16.00	High Risk
Dollar General (Catalina)	16355 N Oracle Road	16.00	High Risk
Saddlebrooke Ranch Clubhouse	31143 S Amenity Drive, Oracle, AZ 85623	16.00	High Risk
SBHOA2 Preserve Clubhouse	66567 E Catalina Hills Drive, Tucson, AZ 85739	16.00	High Risk
Catalina Inn	15691 N Oracle Road	17.00	High Risk
Canyons at Linda Vista Trail	9750 N Oracle Road, Tucson, AZ 85704	17.00	High Risk
Encantada Apartments at Steam Pump	11177 N Oracle Road, Tucson, AZ 85737	17.00	High Risk
Rock Ridge Apartments	10333 N Oracle Road, Tucson, AZ 85737	17.00	High Risk
Fairfield Inn Suites	10150 N Oracle Road, Tucson, AZ 85737	17.00	High Risk
Holiday Inn Express	11075 N Oracle Road	17.00	High Risk
Overlook Apartments	8851 N Oracle Road, Tucson, AZ 85704	17.00	High Risk
Home Depot	10855 N Oracle Road, Tucson, AZ 85737	17.00	High Risk
Sigma Technologies	10960 N Stallard Place, Tucson, AZ 85737	17.00	High Risk
Honeywell	11100 N Oracle Road, Tucson, AZ, 85737	19.00	Maximum Risk
Sierra Tucson	39580 S Lago Del Oro Pkwy., Tucson, AZ 85739	20.00	Maximum Risk
El Conquistador	10000 N Oracle Road, Tucson, AZ	20.00	Maximum Risk

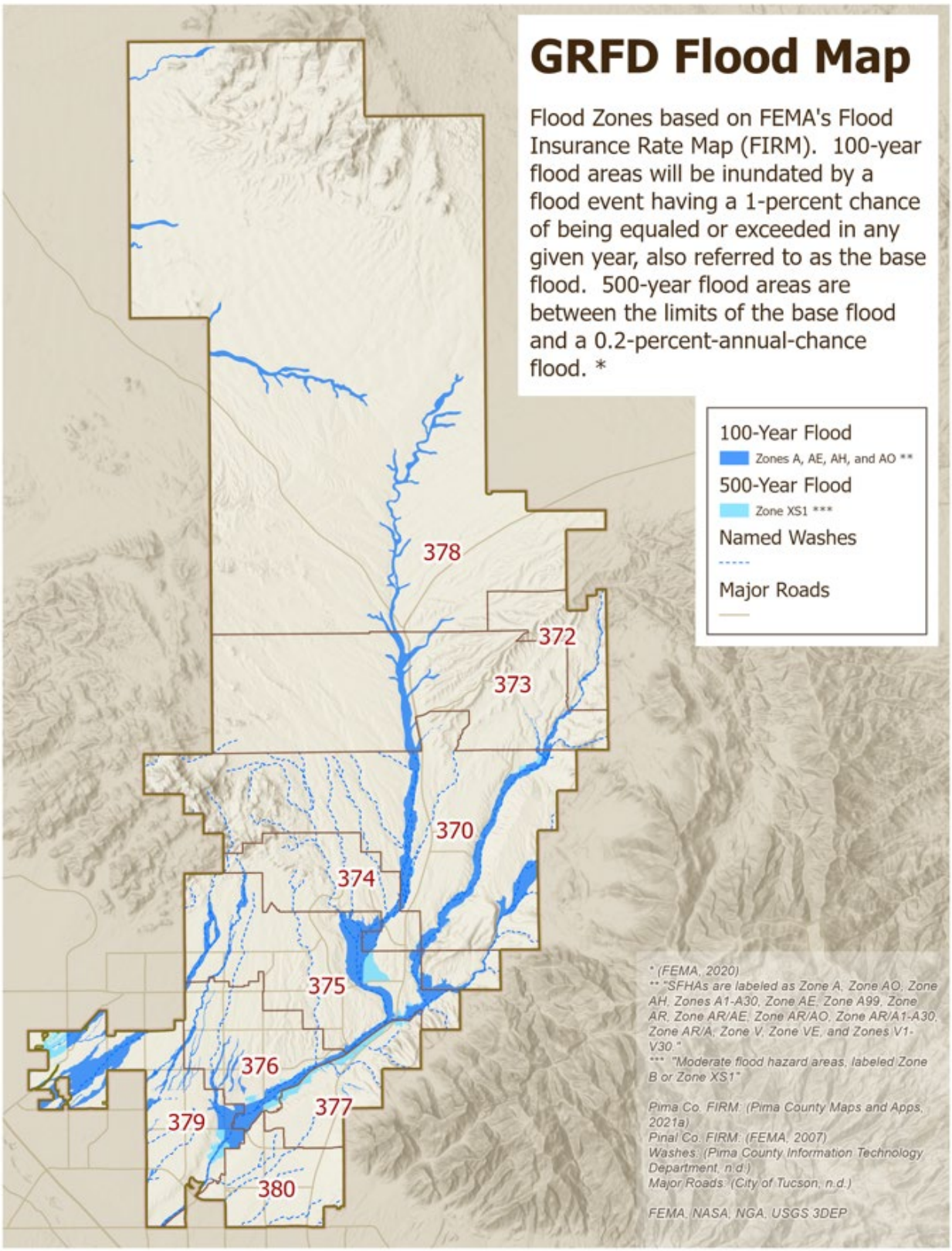
Appendix 3.4 Target Hazard and Typical Occupancy Risk Surveys

Occupancy	Street Address	Risk Score	Category
Copper Health	1119 E Rancho Vistoso Blvd., Oro Valley, AZ 85755	20.00	Maximum Risk
Oro Valley Hospital	1551 E Tangerine Road	20.00	Maximum Risk
Desert Fairwinds	10701 N La Reserve	21.00	Maximum Risk
Quail Park	9005 N Oracle Road, Tucson, AZ 85704	21.00	Maximum Risk
Catalina Springs Memory Care	9685 N Oracle Road, Tucson, AZ 85704	21.00	Maximum Risk
Splendido	13500 N Ranch Vistoso Blvd., Oro Valley, AZ 85755	21.00	Maximum Risk
Mountain View Retirement	7900 N La Canada Drive	21.00	Maximum Risk
Mountain View Care Center	1313 W Magee Road	21.00	Maximum Risk
La Canada Care Center	7970 N La Canada Drive	22.00	Maximum Risk

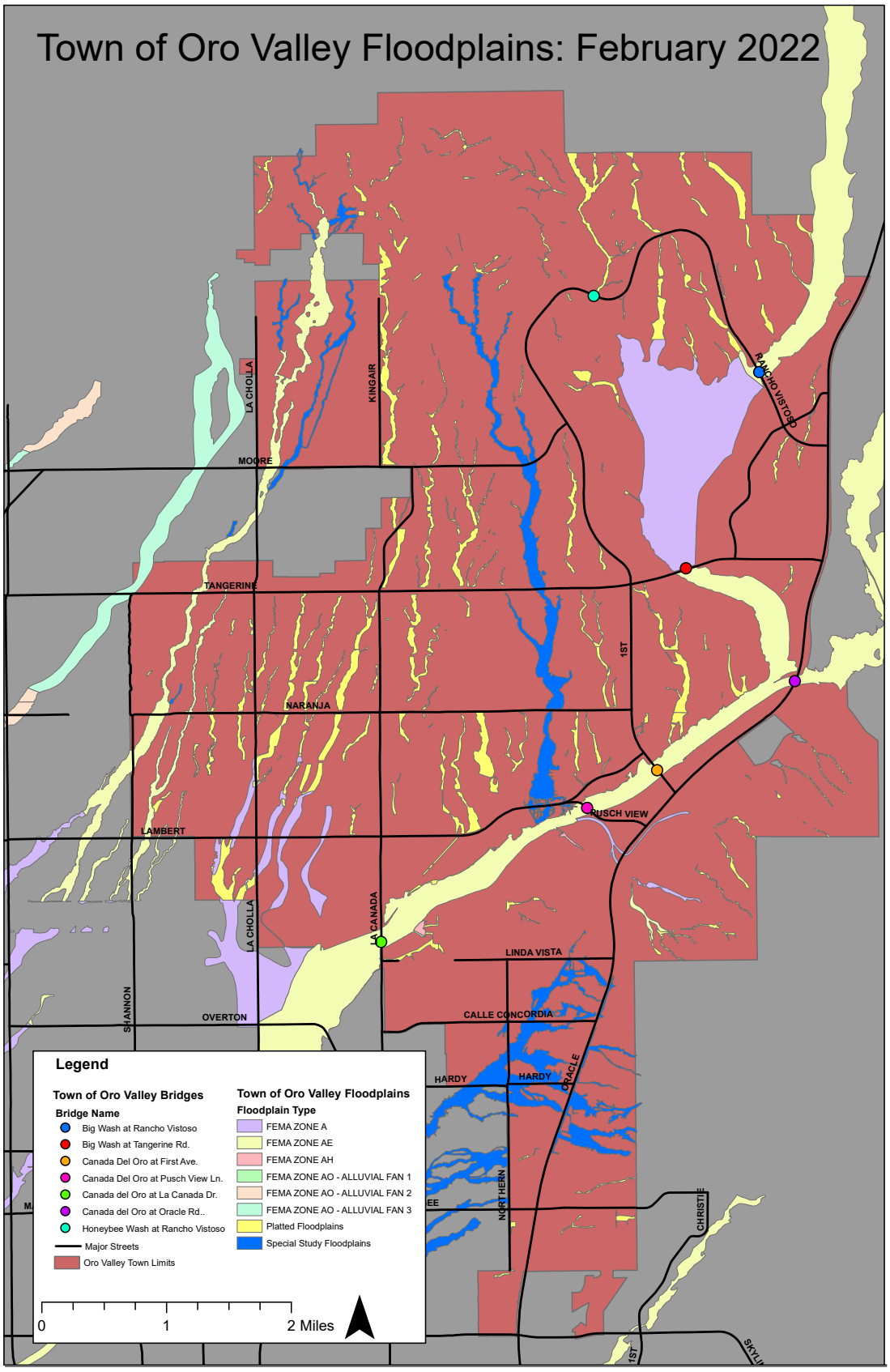
Appendix 3.5 Profile Risk Index Scoring Matrix

	Probability 30%	Severity 30%	Speed of Onset 20%	Spatial Extent 10%	Duration 10%	TOTAL SCORE
Wildland/Urban Interface Fire						
Score 1-10	6	8	6	7	6	
Weighted Score	1.8	2.4	1.2	0.7	0.6	6.7
Flood Event (large area and/or bridge loss splitting district)						
Score 1-10	5	9	3	8	8	
Weighted Score	1.5	2.7	0.6	0.8	0.8	6.4
Terrorism Event						
Score 1-10	1	10	10	3	5	
Weighted Score	0.3	3	2	0.3	0.5	6.1
Active Shooter						
Score 1-10	2	8	10	3	5	
Weighted Score	0.6	2.4	2	0.3	0.5	5.8
Districtwide Extended Blackout/Internet Outage						
Score 1-10	2	9	10	10	9	
Weighted Score	0.6	2.7	2	1	0.9	7.2
Large-Scale Hazmat Incident						
Score 1-10	3	4	10	3	4	
Weighted Score	0.9	1.2	2	0.3	0.4	4.8

Appendix 3.6 District Flood Map



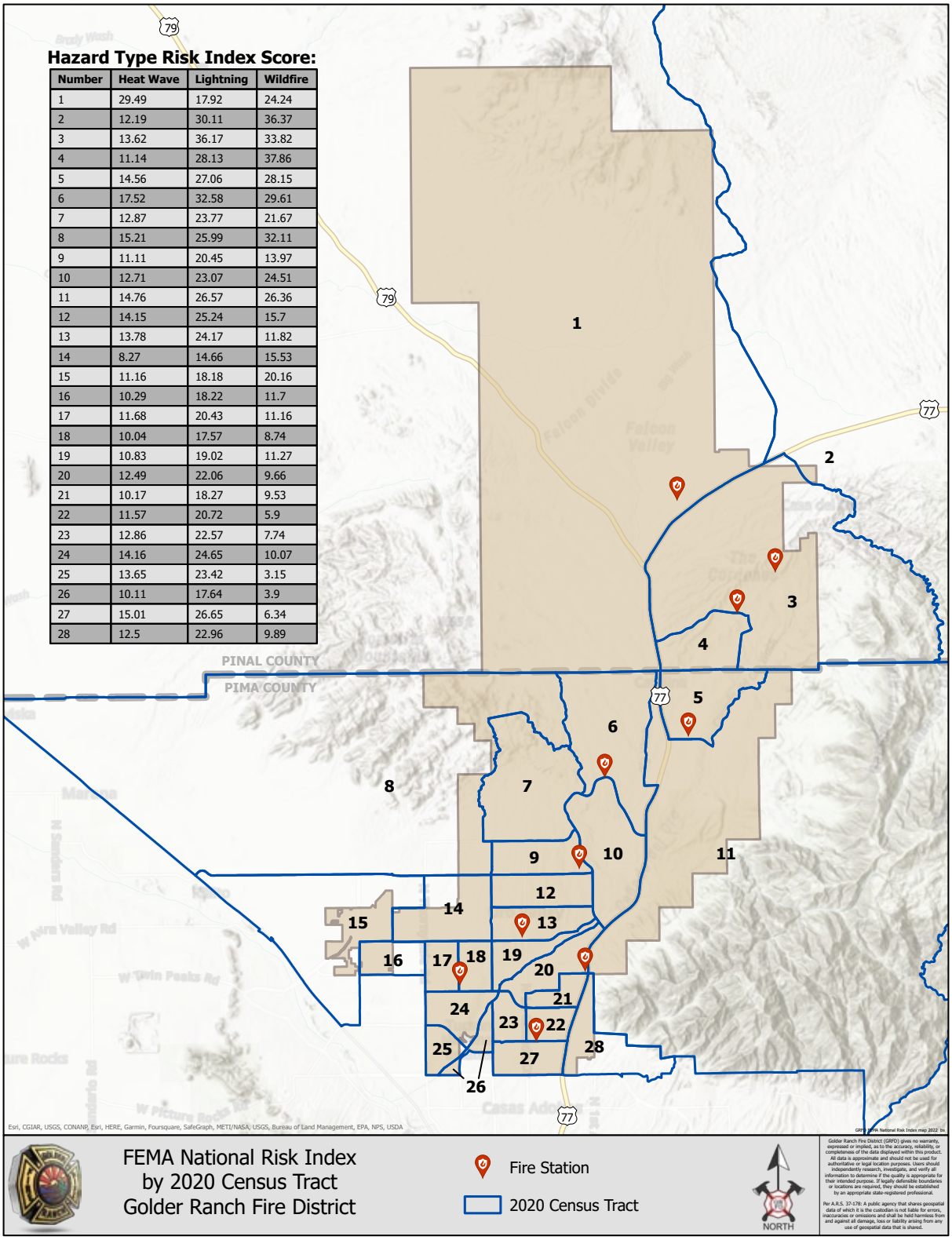
Appendix 3.7 Oro Valley Floodplain Map



Appendix 3.8 GRFD Census Tracks

Hazard Type Risk Index Score:

Number	Heat Wave	Lightning	Wildfire
1	29.49	17.92	24.24
2	12.19	30.11	36.37
3	13.62	36.17	33.82
4	11.14	28.13	37.86
5	14.56	27.06	28.15
6	17.52	32.58	29.61
7	12.87	23.77	21.67
8	15.21	25.99	32.11
9	11.11	20.45	13.97
10	12.71	23.07	24.51
11	14.76	26.57	26.36
12	14.15	25.24	15.7
13	13.78	24.17	11.82
14	8.27	14.66	15.53
15	11.16	18.18	20.16
16	10.29	18.22	11.7
17	11.68	20.43	11.16
18	10.04	17.57	8.74
19	10.83	19.02	11.27
20	12.49	22.06	9.66
21	10.17	18.27	9.53
22	11.57	20.72	5.9
23	12.86	22.57	7.74
24	14.16	24.65	10.07
25	13.65	23.42	3.15
26	10.11	17.64	3.9
27	15.01	26.65	6.34
28	12.5	22.96	9.89



Appendix 4.1 ISO Public Protection Classification Letter

1000 Bishops Gate Blvd. Ste 300
Mt. Laurel, NJ 08054-5404

t1.800.444.4554 Opt.2
f1.800.777.3929

March 26, 2018

Mr. Satish Hiremath, City Manager
Golder Ranch FPSA
11000 N. La Canada Drive
Oro Valley, Arizona, 85737

RE: Golder Ranch Fpsa, Pima, Pinal Counties, Arizona
Public Protection Classification: 02/10
Effective Date: July 01, 2018

Dear Mr. Satish Hiremath,

We wish to thank you and Chief Randy Karrer for your cooperation during our recent Public Protection Classification (PPC) survey. ISO has completed its analysis of the structural fire suppression delivery system provided in your community. The resulting classification is indicated above.

If you would like to know more about your community's PPC classification, or if you would like to learn about the potential effect of proposed changes to your fire suppression delivery system, please call us at the phone number listed below.

ISO's Public Protection Classification Program (PPC) plays an important role in the underwriting process at insurance companies. In fact, most U.S. insurers – including the largest ones – use PPC information as part of their decision- making when deciding what business to write, coverage's to offer or prices to charge for personal or commercial property insurance.

Each insurance company independently determines the premiums it charges its policyholders. The way an insurer uses ISO's information on public fire protection may depend on several things – the company's fire-loss experience, ratemaking methodology, underwriting guidelines, and its marketing strategy.

Through ongoing research and loss experience analysis, we identified additional differentiation in fire loss experience within our PPC program, which resulted in the revised classifications. We based the differing fire loss experience on the fire suppression capabilities of each community. The new classifications will improve the predictive value for insurers while benefiting both commercial and residential property owners. We've published the new classifications as "X" and "Y" — formerly the "9" and "8B" portion of the split classification, respectively. For example:

- A community currently graded as a split 6/9 classification will now be a split 6/6X classification; with the "6X" denoting what was formerly classified as "9."
- Similarly, a community currently graded as a split 6/8B classification will now be a split 6/6Y classification, the "6Y" denoting what was formerly classified as "8B."

- Communities graded with single “9” or “8B” classifications will remain intact.
- Properties over 5 road miles from a recognized fire station would receive a class 10.

PPC is important to communities and fire departments as well. Communities whose PPC improves may get lower insurance prices. PPC also provides fire departments with a valuable benchmark, and is used by many departments as a valuable tool when planning, budgeting and justifying fire protection improvements.

ISO appreciates the high level of cooperation extended by local officials during the entire PPC survey process. The community protection baseline information gathered by ISO is an essential foundation upon which determination of the relative level of fire protection is made using the Fire Suppression Rating Schedule.

The classification is a direct result of the information gathered, and is dependent on the resource levels devoted to fire protection in existence at the time of survey. Material changes in those resources that occur after the survey is completed may affect the classification. Although ISO maintains a pro-active process to keep baseline information as current as possible, in the event of changes please call us at 1-800-444-4554, option 2 to expedite the update activity.

ISO is the leading supplier of data and analytics for the property/casualty insurance industry. Most insurers use PPC classifications for underwriting and calculating premiums for residential, commercial and industrial properties. The PPC program is not intended to analyze all aspects of a comprehensive structural fire suppression delivery system program. It is not for purposes of determining compliance with any state or local law, nor is it for making loss prevention or life safety recommendations.

If you have any questions about your classification, please let us know.

Sincerely,

Alex Shubert

Alex Shubert
Manager -National Processing Center

cc: Mr. Chuck Huckleberry, County Executive, GOLDER RANCH FD, PIMA
Mr. Leonard Garcia, Superintendent, Arizona Water Company
Ms. Denise Gonzales, Manager, Bashas Water System
Mr. Steve Carlson, Superintendent, Los Cerros Water Company
Mr. Charlie Maish, Engineer, Metropolitan Water District
Mr. Paul Juhl, Superintendent, Goodman Water Company
Mr. Ed McMeans, Water Superintendent, Lago Del Oro Water
Mr. David Ruiz, Water Supervisor, Oro Valley Water Utility
Ms. Sandy Elder, Director, Tucson Water Department
Chief Randy Karrer, Chief, Golder Ranch Fire Department
Chief Mike Garcia, Deputy Director, Tucson Fire Regional PSAP Dispatch

Appendix 4.2 National Fire Incident Reporting System Coding Classifications

Fire

- Structure fire
- Fire in mobile property used as a fixed structure, such as mobile homes, manufactured homes and portable buildings
- Mobile property – passenger vehicles, trucks, RVs and aircraft
- Natural vegetation fire – wildland, grass fires
- Outside rubbish fire – trash and rubbish fires, landfill fires and compacted trash fires
- Special outside fire – outside storage fires, outside equipment fires and outside vapor or gas combustion explosion without sustained fires
- Other various types of fire

EMS

- Medical assists
- EMS calls
- Motor vehicle accidents with injuries
- Motor vehicle/pedestrian accidents
- Motor vehicle with no injuries found
- Lock ins
- Search for lost persons
- Extrication rescues

Hazardous Materials Condition (no fire)

- Combustible/flammable liquid or gas spills, leaks and releases
- Chemical release, reaction or toxic condition – chemical hazard with no leak or spill, chemical spill or leak, refrigeration leak, carbon monoxide incident and toxic chemical condition
- Radioactive condition
- Electrical wiring/equipment problem – powerline down, arcing, light ballast problem and overheating motor or wiring

- Biological hazard
- Explosive

Service Call

- Person in distress – lock outs, ring removal, etc.
- Water problem – removal of excessive water, significant waterline break, broken/damaged hydrants
- Smoke or odor problem
- Animal problem – snake and other desert animal removals, animal rescues
- Public service assistance – law enforcement assist, other public government assists, invalid assists
- Unauthorized burns
- Cover assignments

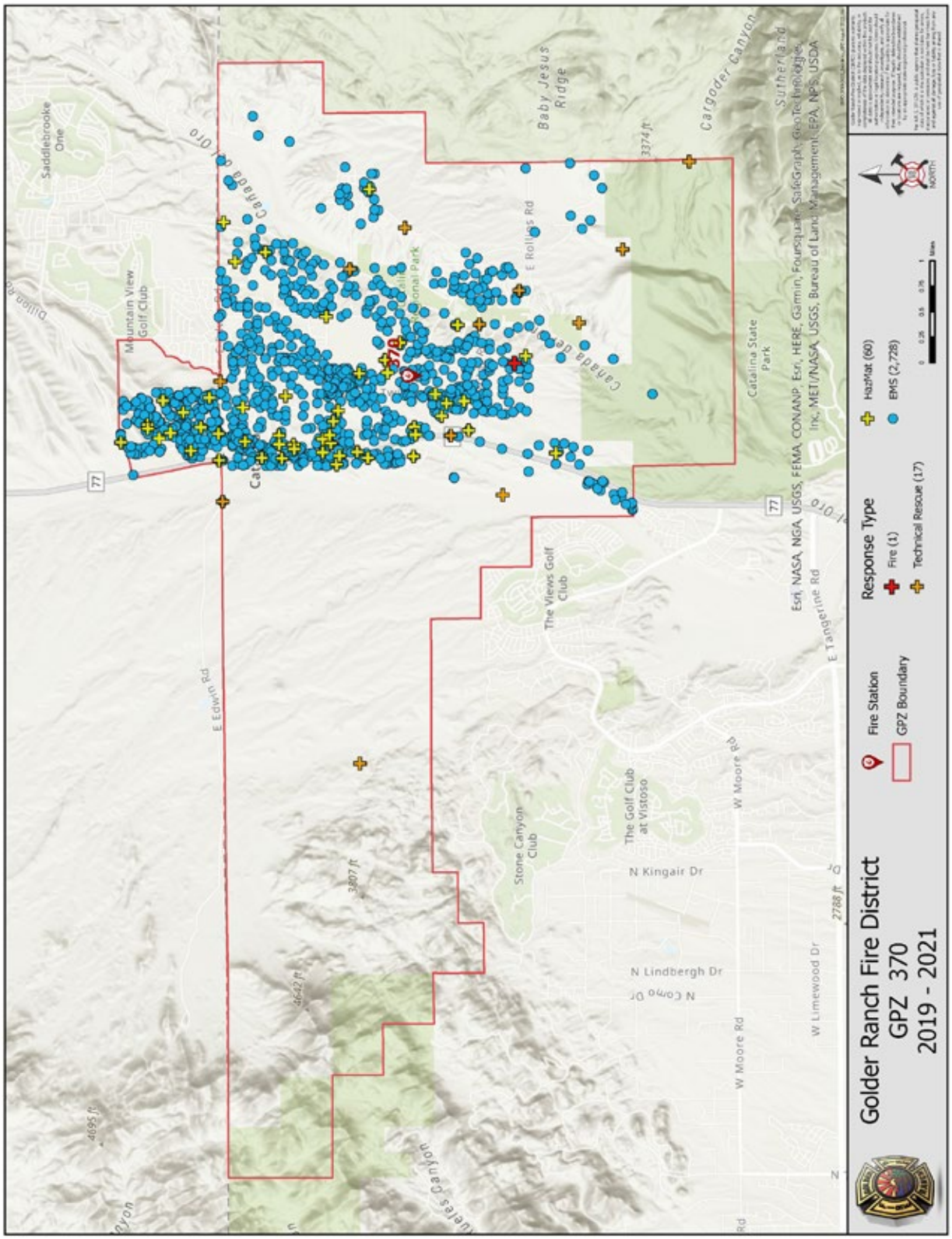
Good Intent Call

- Dispatched and canceled en route
- Wrong location, no emergency found
- Controlled burning

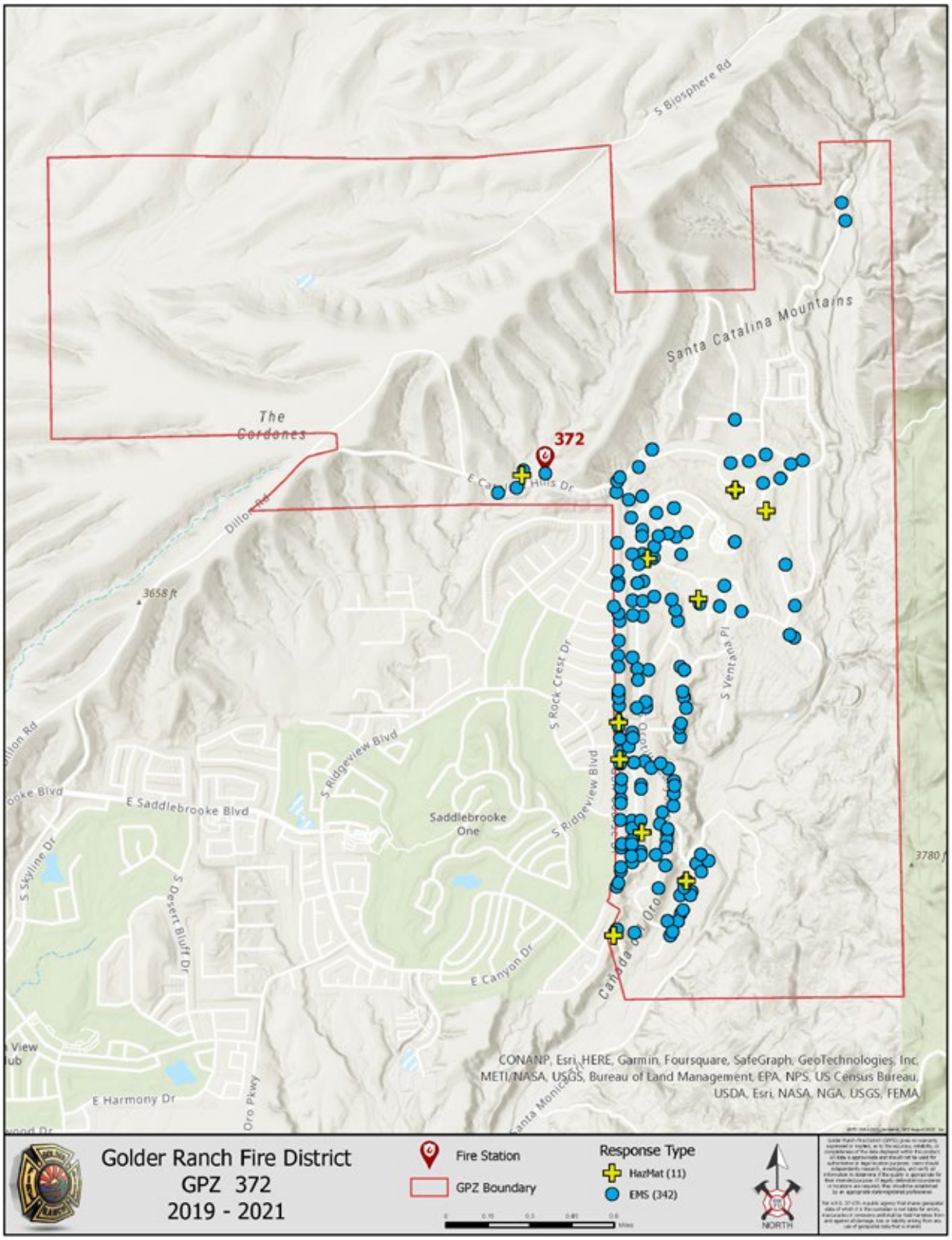
False Alarm and False Call

- False alarms and false calls

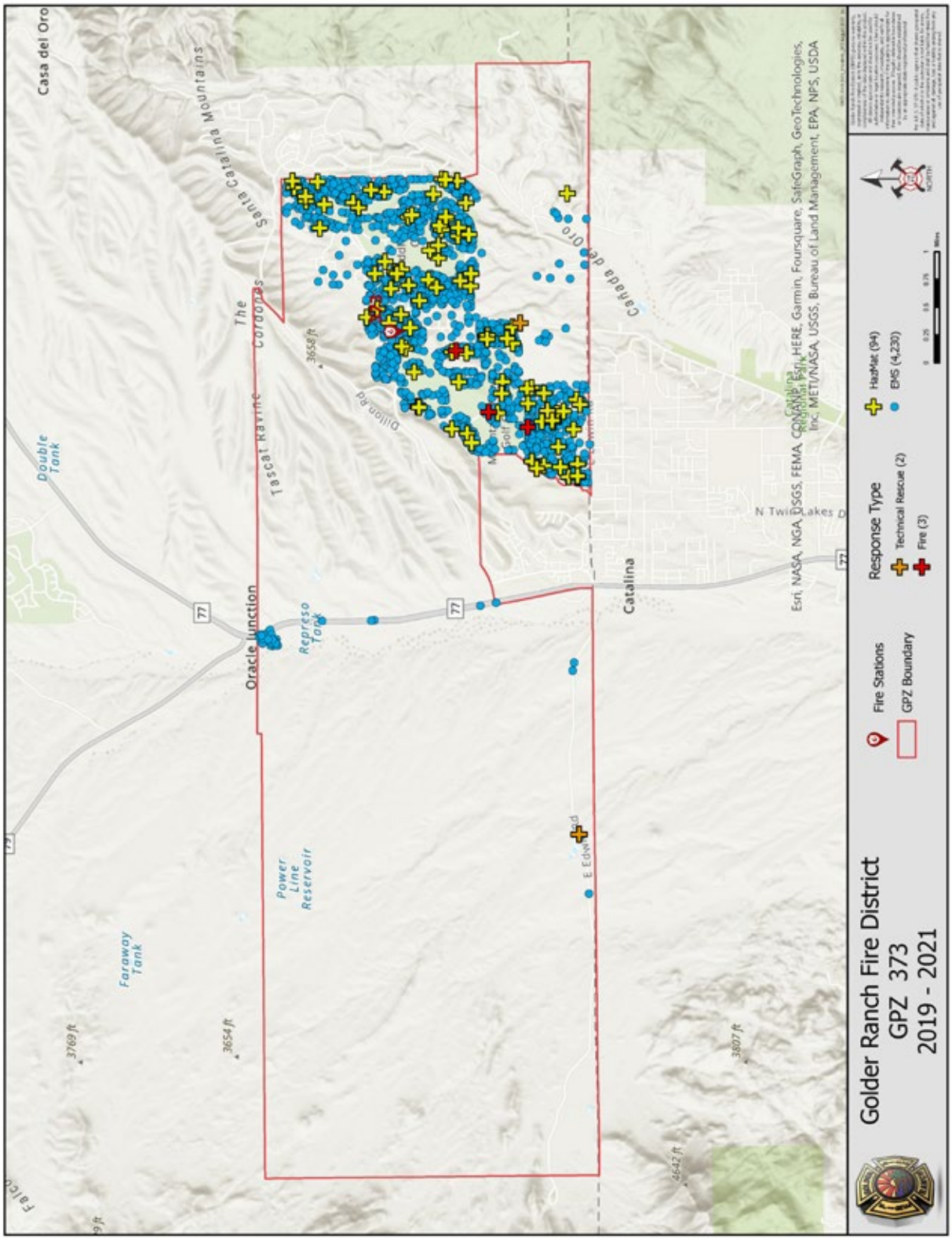
Appendix 4.3 All-Incident Call Distribution Map – GPZ 370



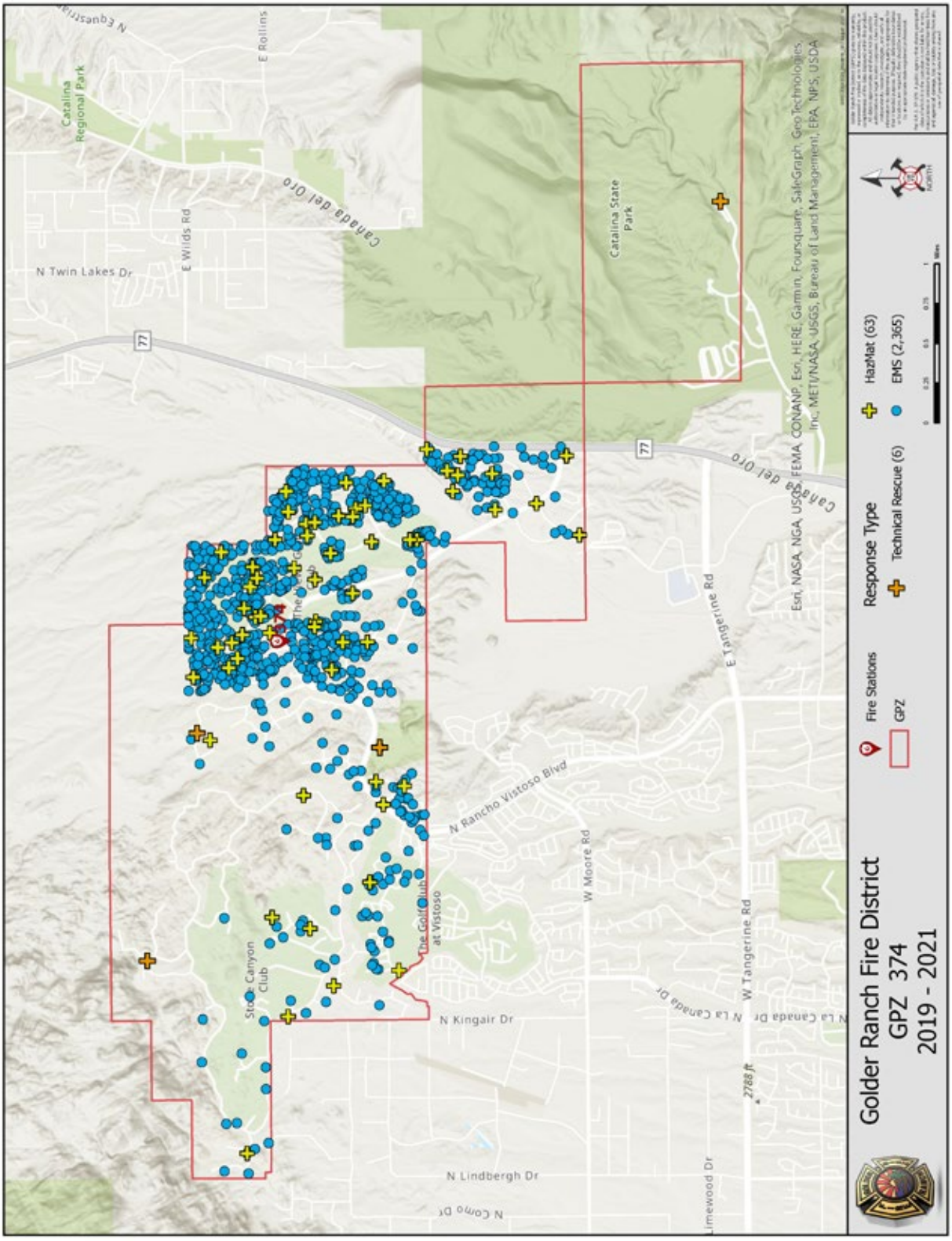
Appendix 4.4 All-Incident Call Distribution Map – GPZ 372



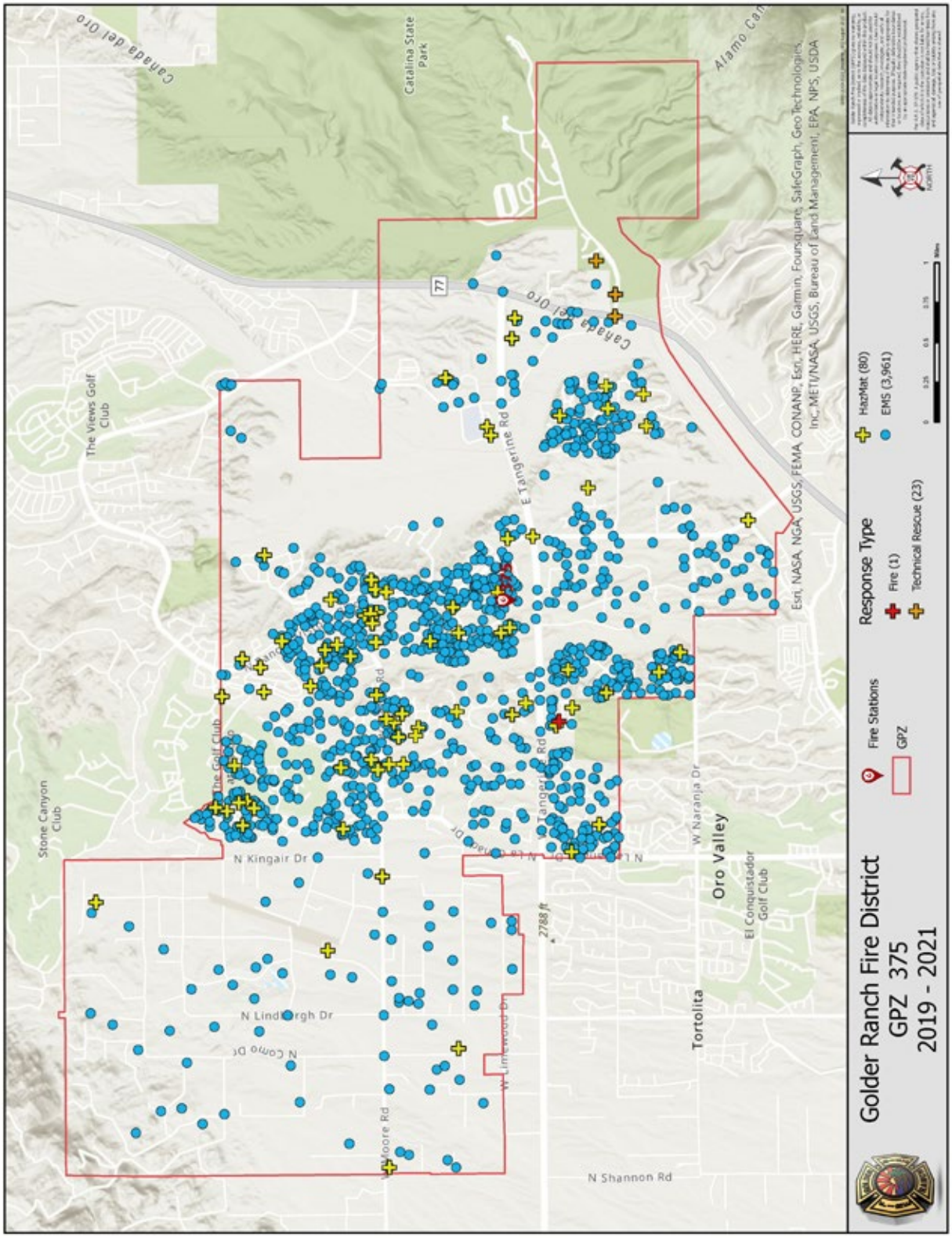
Appendix 4.5 All-Incident Call Distribution Map – GPZ 373



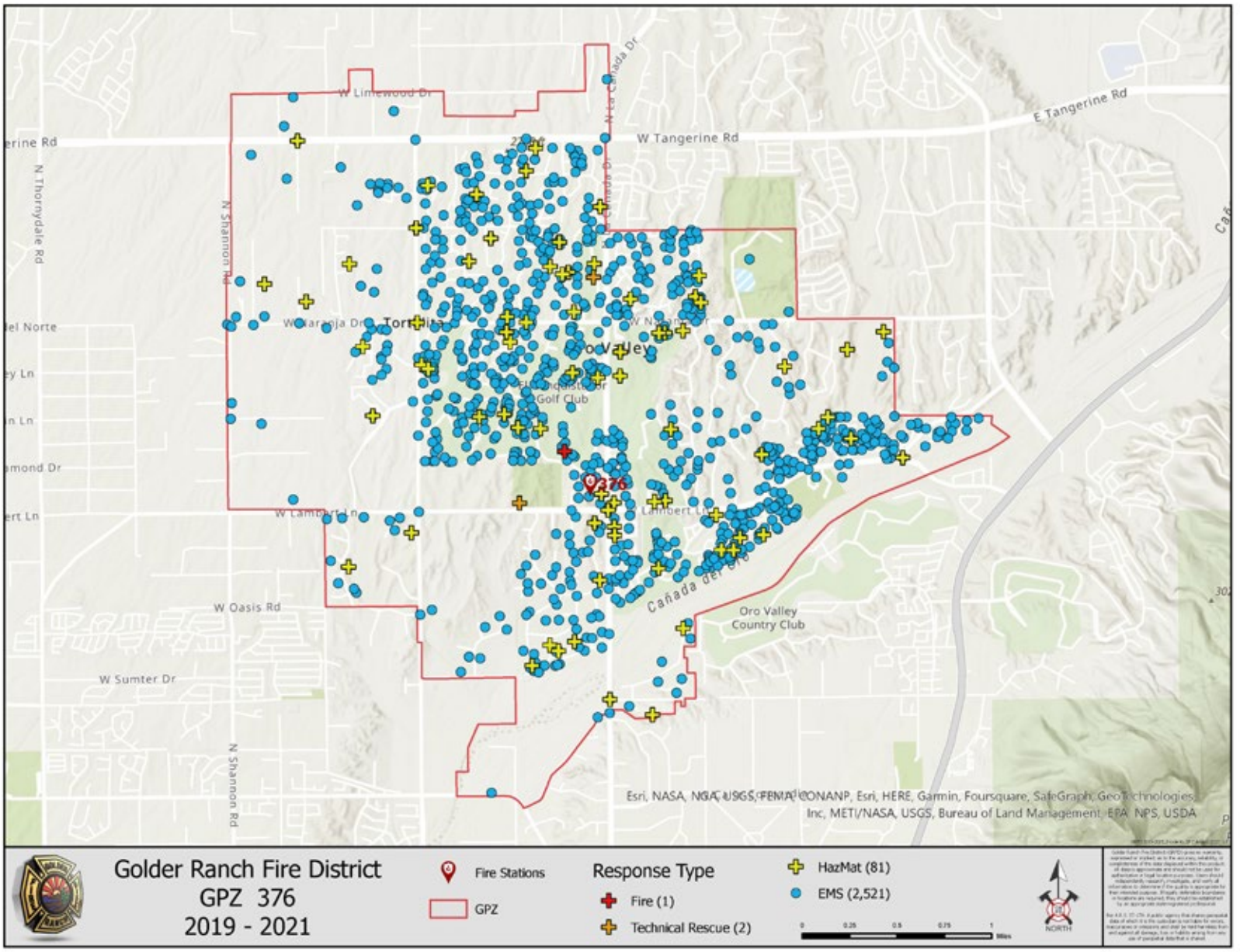
Appendix 4.6 All-Incident Call Distribution Map – GPZ 374



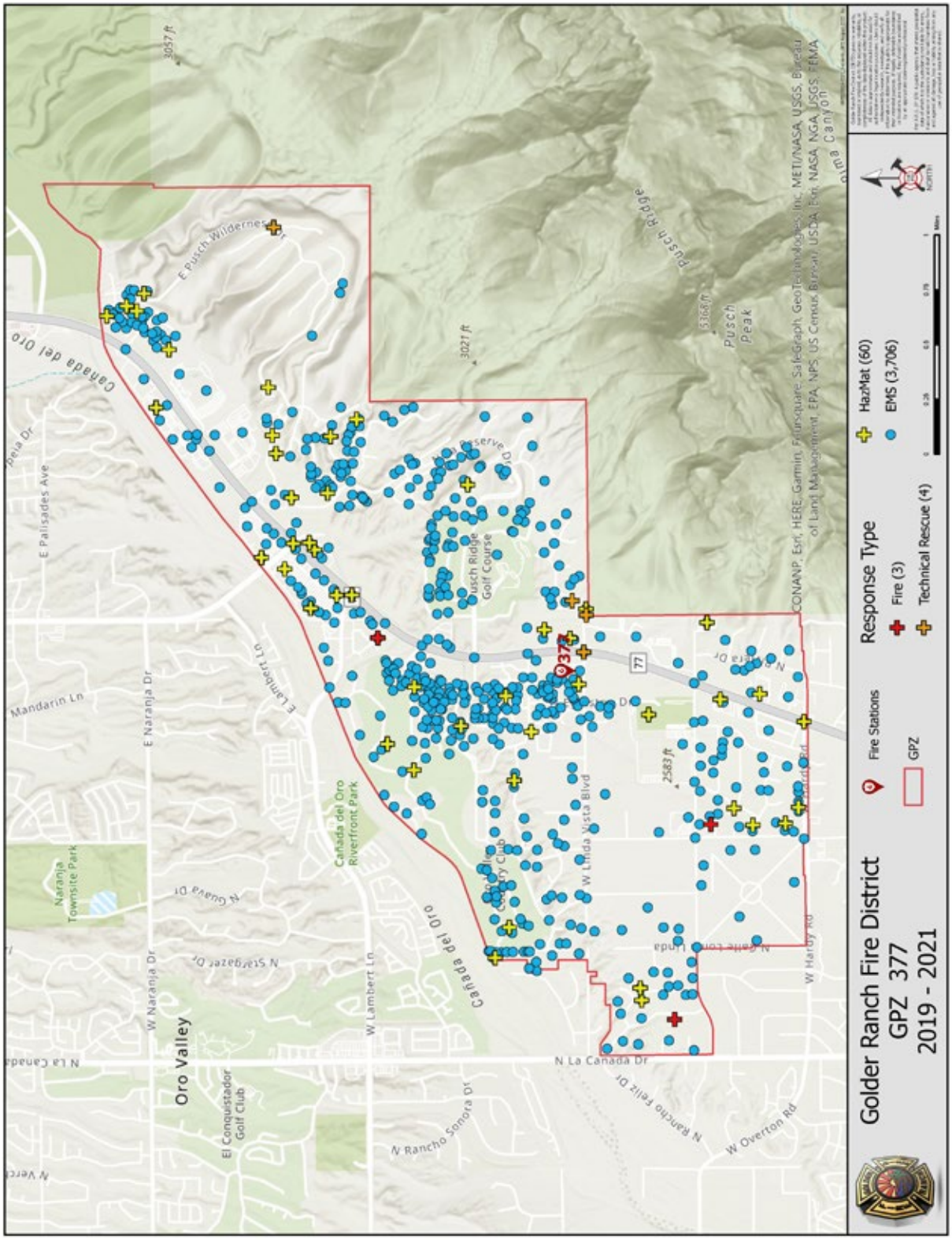
Appendix 4.7 All-Incident Call Distribution Map – GPZ 375



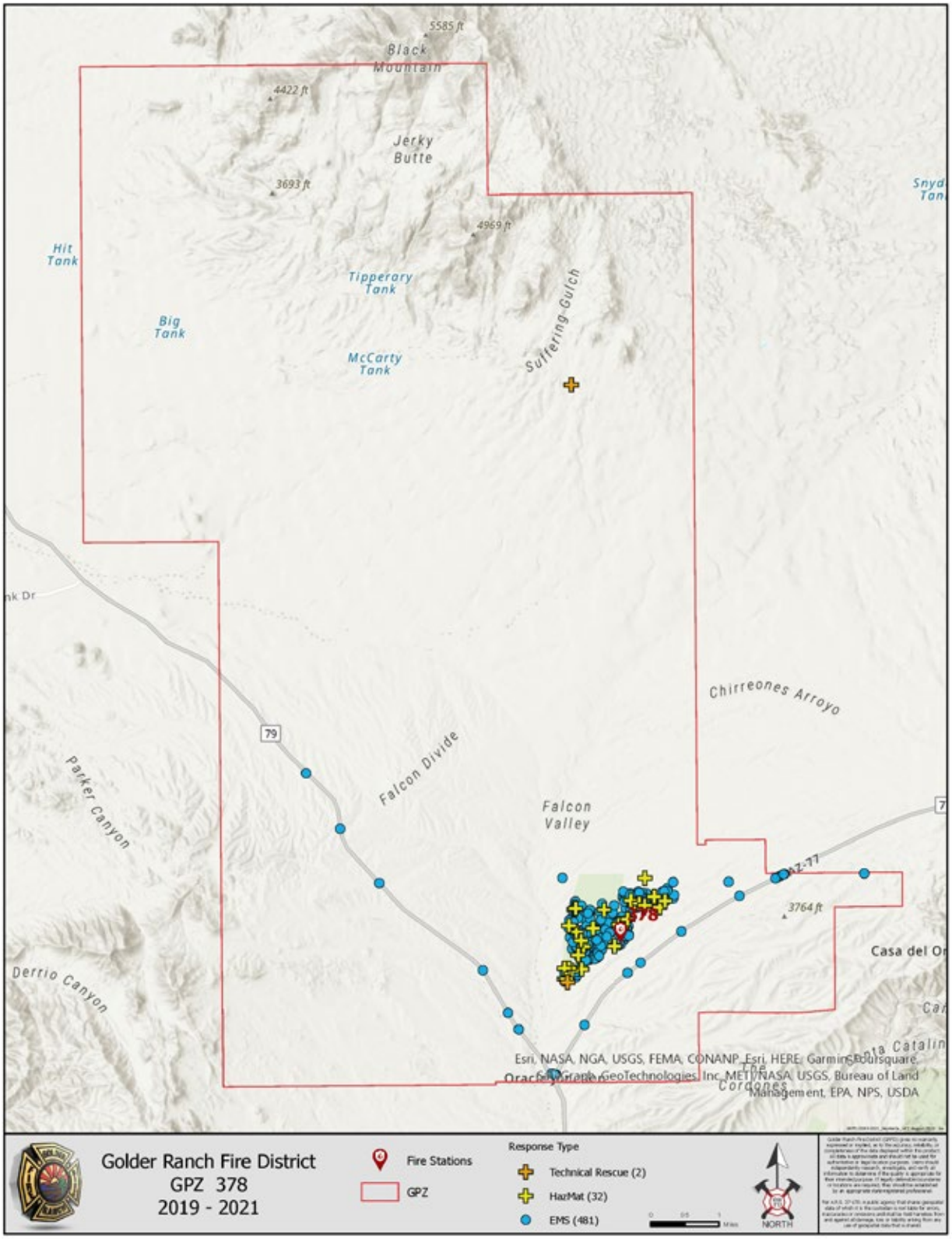
Appendix 4.8 All-Incident Call Distribution Map – GPZ 376



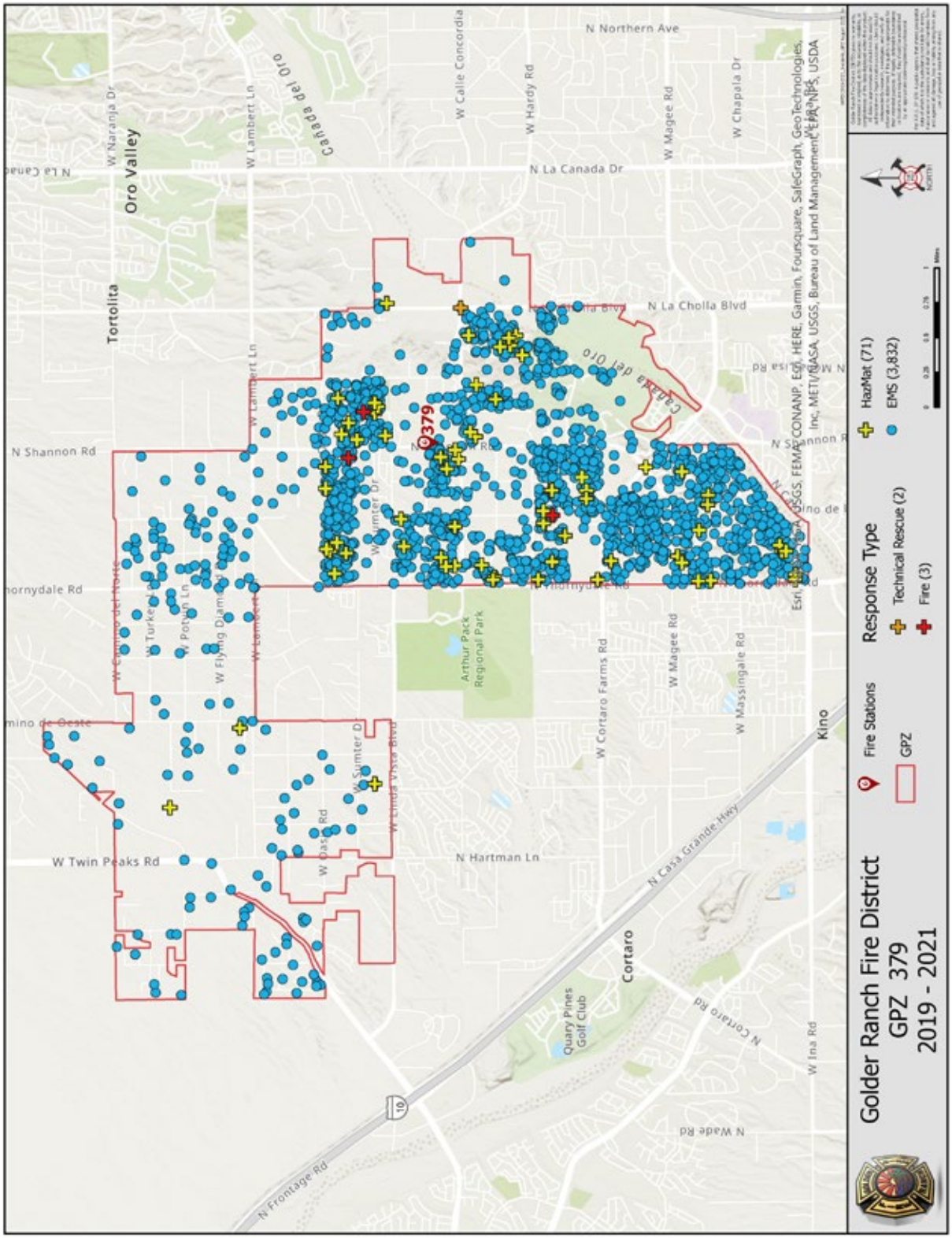
Appendix 4.9 All-Incident Call Distribution Map – GPZ 377



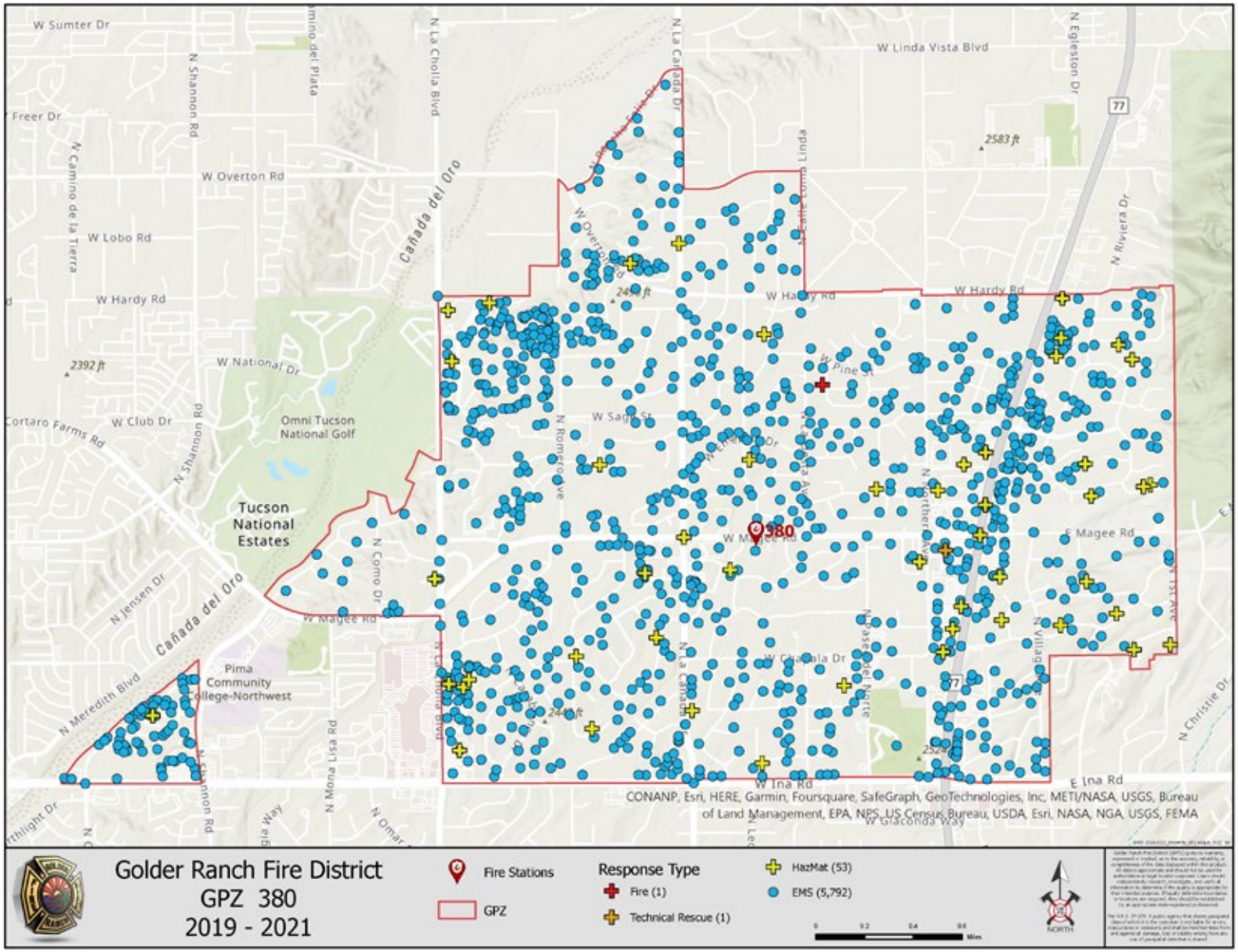
Appendix 4.10 All-Incident Call Distribution Map – GPZ 378



Appendix 4.11 All-Incident Call Distribution Map – GPZ 379



Appendix 4.12 All-Incident Call Distribution Map – GPZ 380



Policy
306

Standards of Cover and Response Time Standard Analysis

306.1
PURPOSE AND SCOPE

Best Practice
MODIFIED

This policy aims to establish guidelines and thresholds for analyzing turnout, travel, and response time goals and objectives for emergency incidents. Actual response time standards are found in the current Standards of Cover document for the Golder Ranch Fire District. In addition, this policy establishes the guidelines for the upkeep of the Standards of Cover document by a standing committee.

306.1.1
DEFINITIONS

Best Practice
MODIFIED

Definitions related to this policy include:

Alarm Handling Time - The time elapsed between receipt of the alarm or telephone call and the dispatch of emergency response units.

Total Response time - The time elapsed between the dispatch center receiving the first notification of the alarm and the arrival of the first emergency response unit. Response time combines dispatch processing, turnout and travel times.

Travel time - The time elapsed between the emergency response unit beginning travel to the emergency and when the emergency response unit arrives.

Turnout time - The time elapsed between Dispatch Center notifying firefighters of the emergency and when the emergency response unit begins travel.

Effective Response Force (ERF) - The number of personnel and apparatus necessary for the mitigation of an incident of a given type and risk profile, based on the Critical Task Analysis documented in the Standards of Cover document.

306.2
POLICY

Best Practice
MODIFIED

It is the policy of the Golder Ranch Fire District to document all district response times to emergency incidents and establish response time baselines and performance objectives in the published Standards of Cover Document.

306.3
PERFORMANCE OBJECTIVES

Best Practice
MODIFIED

Response times are measured at the 90th percentile and reported against the established district Standards of Cover document. In order to analyze and report on the GRFD response time standards, the following guidelines will be utilized:

a. Outgoing mutual or automatic aid incidents are excluded
b. Law Enforcement or DPS dispatch types are excluded
c. Only response units (Including automatic aid received) described in the published ERF will be included
d. All non-emergent incidents are excluded
e. All responses canceled prior to the arrival of a unit on the scene are excluded

In addition to the guidelines above, the thresholds shown in the most current version of the standards of cover document are utilized to ensure outliers do not skew the dataset. Establishing thresholds for turnout, travel, and response times is a matter of deciding which data are to be included in an analysis and which are to be excluded. It is not an exact science but rather an estimation that limits the inclusion of outliers that may inaccurately skew the analysis.

In order to utilize a standard statistical measure to establish these thresholds, and since the time measurements follow a normal distribution, an interval of three standard deviations from the mean was used to decide the upper threshold. This measurement allows the capture of 99.7% of the data, while removing outliers that skew the data set unrealistically. The upper threshold is the highest value included, and all values above the established upper threshold are excluded from the analysis.

In contrast, the lower threshold is the lowest value in the analysis, and all values below this threshold are also excluded. These thresholds are established on an ongoing 5-year basis based on a review of the data from the prior 5-year period in conjunction with the renewal of the Standards of Cover. The initial thresholds were established based on a review of the data from the prior three years from the initial publication date of the 1st edition of the standards of cover document.

The following performance time measurements will be evaluated and reported on in the current standards of cover document based on the above analysis guidelines:

- Alarm Handling Times
- Turnout Times
- First Unit Travel Times
- Effective Response Force Travel Times
- First Unit Total Response Times
- Effective Response Force Total Response Times

The Standards of Cover Document shall report current benchmark time standards that the GRFD aspires to, as well as baseline times of current performance based on the

most current requirements of the Center for Public Safety Excellence Accreditation Model.

306.4
STANDARDS OF COVER MAINTENANCE AND REPORTING
Agency Content

The GRFD Standards of Cover document is a living document. Adherence to the Standards of Cover shall be evaluated and reported annually, and the Standards of Cover shall be reviewed on a 5-year basis. The Standards of Cover document is the responsibility of the Operations Deputy Chief, with the assistance of the Standards of Cover Committee. The Operations Deputy Chief shall serve as the committee chair and is responsible for ensuring that all meeting minutes, annual reports, and upkeep of the Standards of Cover Document are communicated to the Accreditation Manager.

Standards of Cover Committee:

The Standards of Cover Committee is a standing committee consisting of Operations and Community Risk Reduction personnel of all ranks and experience levels. The makeup of this committee should, at a minimum, consist of the following:

a. Operations Deputy Chief
b. Accreditation Manager or Assistant Manager
c. Alarm Room Captain
d. Fire Marshal or Deputy Fire Marshal
e. Operations Captain
f. Paramedic
g. Engineer
h. Firefighter
i. Community Risk Reduction Manager
j. Union representative

The Standards of Cover Committee should meet quarterly to evaluate the adherence to the performance standards within the Standards of Cover Document. Adhoc subcommittees may be utilized from time to time to supplement the work of the Standards of Cover Committee if needed.

REFERENCES

Center for Public Safety Excellence. Chantilly VA. *Quality Improvement for the Fire and Emergency Services* (2020).

National Fire Protection Association (2020). *NFPA 1201 Standard for Providing Fire and Emergency Services to the Public*.

National Fire Protection Association (2020). *NFPA 1300 Standard on Community Risk Assessment and Community Risk Reduction Plan Development*.

National Fire Protection Association (2020). *NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*.

National Fire Protection Association (2019). *NFPA 1221 Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*.

Vision 20/20 c/o International Code Council. *Model Performance Criteria Template & Guidance*. Retrieved 01/28/22 from https://strategicfire.org/model-performance/template-and-guidance.