

Unified Fire Authority

Community Risk Assessment



Part 2 – UFA Community Risk Assessments

Unified Fire Authority

UFA has twenty-four fire operational stations—with two of them being utilized for different UFA divisions, a headquarters building, training grounds with a training tower and classrooms, and a building housing our Special Enforcement Division—within the 651 square miles serving a population of 451,035 and responded to 31,226 calls for service in 2020.

Planning Zone	Population	Square Miles	Population Density per Sq Mile
UFA	451,035	651	693

Unified Fire Authority’s response area has increased its residents served from 358,057 in 2010 to 451,035 in 2020, showing an increase of 20.61% over a ten-year timeframe. This includes the additions of Midvale City in 2011, Eagle Mountain City in 2013, and Draper City leaving in 2017. Providing an exponential growth pattern and if all things remain equal, chart 9 demonstrates that UFA’s residents served could grow to 648,540 by the year 2040.

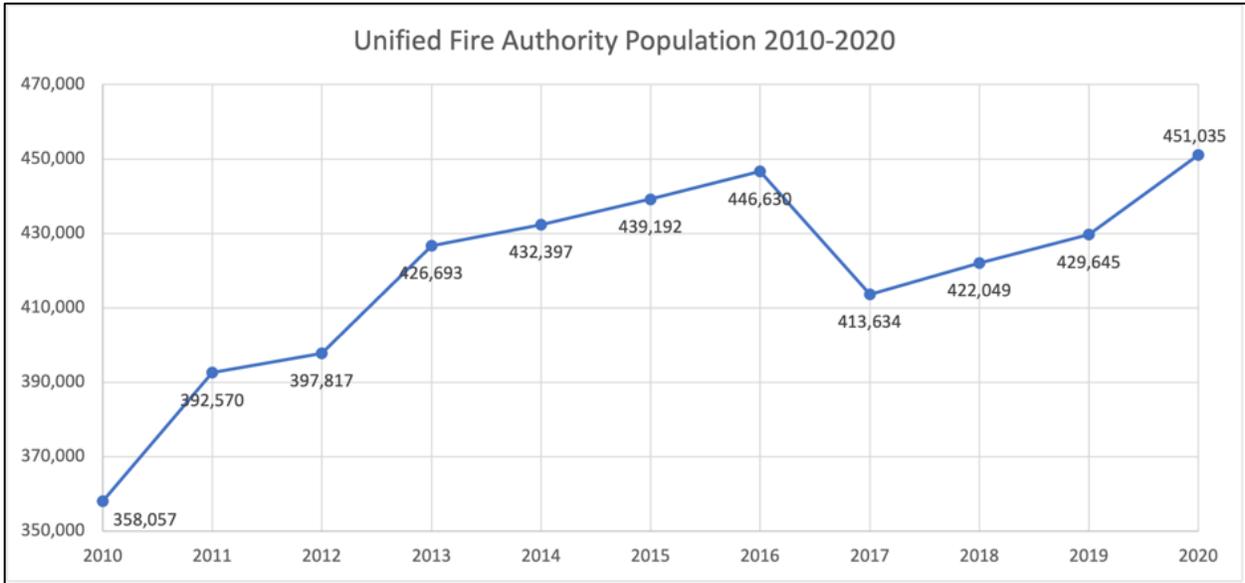


Chart 8 - UFA Residents Served 2010-2020

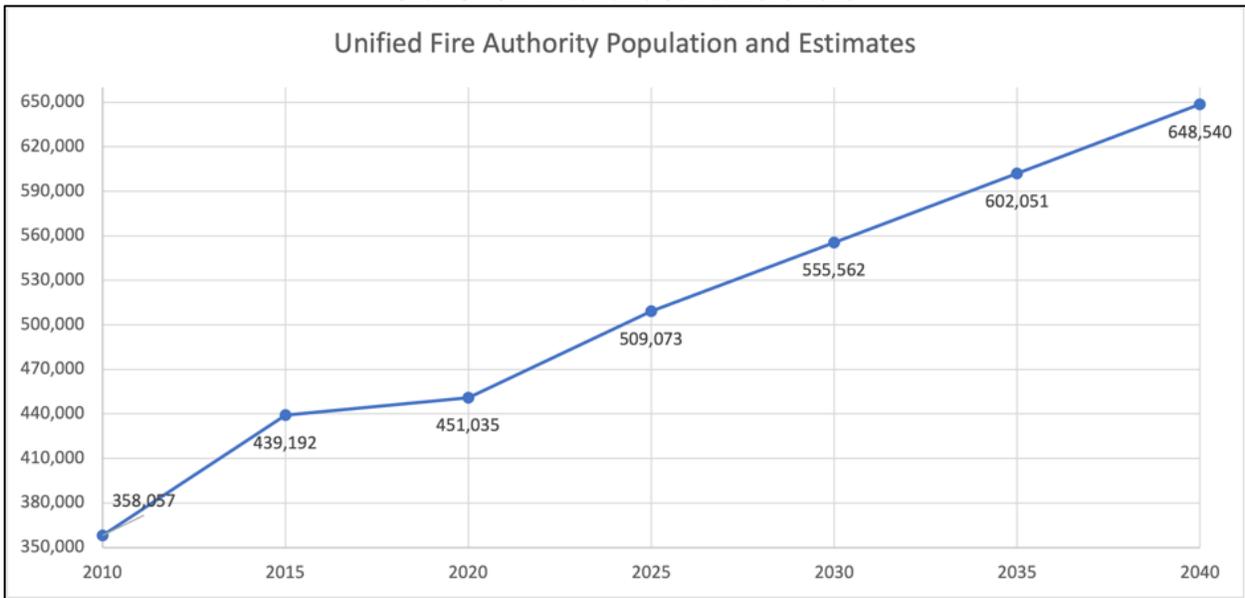


Chart 9 – Unified Fire Authority Population and Estimates 2010-2040

Unified Fire Authority Station Information

Station	Apparatus	Minimum Staffing	Address	Specialty
Town of Alta				
Station 113	Medic Engine 113 (Type 1/3) Medic Ambulance 113	3 Cross-Staffed	9523 Bypass Road, Snowbird	
Town of Brighton				
Station 108	Medic Engine 108 (Type 1/3) Medic Ambulance 108 Engine 6108	3 Cross-Staffed Cross-Staffed	8036 Old Prospect Ave, Brighton	WUI Response
Copperton Metro Township				
Station 115	Medic Engine 115 (Type 1) Engine 6115 (Type 6) Air & Light 115	3 Cross-Staffed Cross-Staffed	8495 W State Highway, Copperton	WUI Response Air & Light
City of Cottonwood Heights				
Station 110	Medic Ladder 110 (Type 1) Medic Ambulance 110	4 2	1790 Fort Union Blvd, Cottonwood Heights	
Station 116	Medic Engine 116 (Type 1) Medic Ambulance 116 Engine 6116 (Type 6)	4 Cross-Staffed Cross-Staffed	8303 Wasatch Blvd, Cottonwood Heights	WUI Response
Eagle Mountain City				
Station 251	Medic Engine 251 (Type 1/3) Medic Ambulance 251	4 Cross-Staffed	1680 Heritage Drive, Eagle Mountain	WUI Response
Station 252	Medic Ladder 252 (Type 1) Medic Ambulance 253 Engine 6252 (Type 6)	4 2 (Peak Load) Cross-Staffed	3785 Pony Express Parkway, Eagle Mountain	WUI Response
Emigration Township				
Station 119	Medic Engine 119 (Type 1/3) Engine 6119 (Type 6)	3 Cross-Staffed	5025 Emigration Canyon Rd, Salt Lake City	WUI Response
Herriman City				
Station 103	Medic Engine 103 (Type 1/3) WLDO Supervisor Truck Event Ambulance	4 Cross-Staffed 2 - Events Only	5916 W 13100 S, Herriman	Wildland Duty Officer & WUI
Station 123	Medic Engine 123 (Type 1) Medic Ambulance 223 Engine 6123 (Type 6) WTT 123 (Type 1) Water Rescue 123	4 2 (Peak Load) Cross-Staffed Cross-Staffed Cross-Staffed	4850 Patriot Ridge Drive, Herriman	Water Rescue WUI Response
City of Holladay				
Station 104	Medic Engine 104 (Type 1) Medic Ambulance	4 2 (Peak Load)	2210 E Murray- Holladay Road, Holladay	
Kearns Metro Township				
Station 109	Medic Ladder 109 (Type 1) Medic Ambulance 109	4 2	4444 W 5415 S, Kearns	

Magna Metro Township				
Station 102	Medic Engine 102 (Type 1) Engine 6102 (Type 6)	4 Cross-Staffed	8609 W Magna Main Street, Magna	WUI Response
Station 111	Medic Ladder 111 (Type 1) Medic Ambulance 211 WTT 111 (Type 1) Engine 6111 (Type 6)	4 2 Cross-Staffed Cross-Staffed	8215 W 3500 S, Magna	WUI Response
Midvale City				
Station 125	Medic Engine 125 (Type 1)	4	7683 Holden Street, Midvale	
Station 126	Medic Engine 126 (Type 1) Medic Ambulance 126 Medic Ambulance 225 HazMat 126 Operations Chief	4 2 2 (Peak Load) Cross-Staffed 1	607 E 7200 S, Midvale	HazMat
Millcreek City				
Station 101	Medic Engine 101 (Type 1) Medic Ambulance 101 Battalion Chief 11	4 2 1	790 E 3900 S, Millcreek	
Station 106	Medic Ladder 106 (Type 1) Medic Ambulance 206 WTT 106 (Type 1) Engine 6106 (Type 6)	4 2 Cross-Staffed Cross-Staffed	1911 E 3300 S, Millcreek	WUI Response
Station 112	Medic Engine 112 (Type 1) Engine 6112	4 Cross-Staffed	3612 Jupiter Drive, Millcreek	WUI Response
Riverton City				
Station 120	Medic Ambulance 120 Wildland 1 WL Sup Truck 1 WL Sup Truck 2 WL Chase Truck 1 WL Chase Truck 2 SL1 (Type 6) Fuels Crew 1 (Type 6) Fuels Crew Carrier Crew Carrier 1 Crew Carrier 2 Engine 301 (Type 3) Engine 302 (Type 3)	2 1 1 (Seasonal) 1 (Seasonal) 2 (Seasonal) 2 (Seasonal) 4 (Seasonal) 4 (Seasonal) 8 (Seasonal) 10 (Seasonal) 10 (Seasonal) 4 (Seasonal) 4 (Seasonal)	13000 S 2700 W, Riverton	Wildland Wildland Division Headquarters
Station 121	Medic Ladder 121 (Type 1) Medic Ambulance 221 Heavy Rescue 121 Battalion Chief 12	4 2 Cross-Staffed 1	4146 W 12600 S, Riverton	Heavy Rescue
Station 124	Medic Engine 124 (Type 1) HazMat 124	4 Cross-Staffed	12662 S 1300 W, Riverton	HazMat
Taylorville City				
Station 117	Medic Ladder 117 (Type 1) Medic Engine 117 (Type 1) Medic Ambulance 117 Heavy Rescue 117	4 4 2 (Peak Load) Cross-Staffed	4965 S Redwood Road, Taylorville	Heavy Rescue
Station 118	Medic Engine 118 (Type 1) Medic Ambulance 118	4 2	5317 S 2700 W, Taylorville	WUI Response

	Engine 6118 (Type 6) Battalion Chief 13	Cross-Staffed 1		
Contract, Division Headquarters or Administrative Buildings				
Station 107			6305 S 5600 W, West Jordan	Special Enforcement Division
Station 127	Wildland 2 Initial Attack Handcrew	1 10 (Seasonal)	17800 Camp Williams Road, Camp Williams	Wildland (Camp Williams)
Fire Training			3950 S 8000 W, Magna	Fire Training Division
Headquarters			3380 S 900 W, South Salt Lake	Headquarters
Logistics			6276 S Navigator Drive, West Jordan	Logistics Division
DAILY TOTALS	Full Time Personnel		108 (Hard Floor)	
	Part Time Personnel (24 Hour)		3	
	Part Time Personnel (Peak Load)		10 (Peak Load)	
	Medic Engines, Type 1		12	
	Medic Engines, Type 1/3		5	
	Engines, Type 6 (Cross-Staffed)		9	
	Medic Ladders, Quint		2	
	Medic Ladders TDA, Type 1		5	
	Medic Ambulances, Full Time		10	
	Medic Ambulances, Peak Load		5	

Surrounding UFA and Automatic/Mutual Aid Response Departments

UFA has contiguous borders, as well as mutual and automatic aid agreements with the following fire departments in the Salt Lake Valley:

- Bluffdale Fire Department
- Draper City Fire Department
- Murray City Fire Department
- Salt Lake City Fire Department
- Sandy City Fire Department
- South Jordan Fire Department
- South Salt Lake Fire Department
- West Jordan Fire Department
- West Valley Fire Department

UFA has contiguous borders, as well as mutual and automatic aid agreements with the following fire departments in Utah County:

- City of Saratoga Springs Fire Department

Unified Fire Authority – Incidents by Dispatch Type

	CY 2020	CY 2019	CY 2018
Fire Suppression	995	745	850
EMS	20,293	18,942	19,558
Hazardous Materials	787	619	541
Service Calls	1,328	1,512	1,226
Good Intent	2,034	1,713	919
False Calls	1,596	1,723	1,535
Other (Misc., Flood, Overpressure)	77	57	66
Total	27,110	25,311	24,695

Table 37 – UFA Call Type

NFPA 1710

The National Fire Protection Association is an international nonprofit organization that is devoted to eliminating death, injury, property, and economic loss due to fire, electrical and related hazards. The NFPA makes recommendations on over 300 codes and standards. NFPA 1710 recommendations are based off 90th percentile times.

– In Other Words...

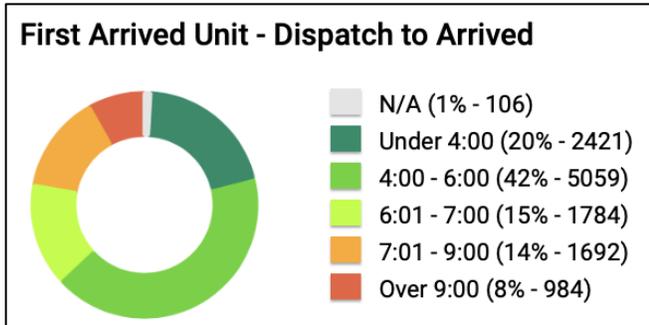
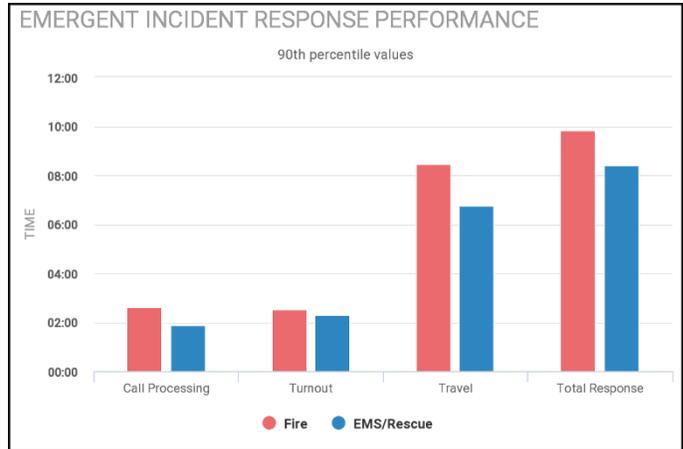
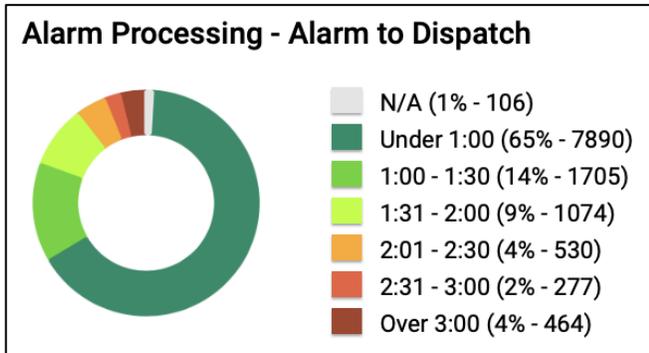
If a value is in the 90th percentile, it means the value is better than 90% of all other values in the dataset. In other words, it is within the top 10% of the values.

NFPA 1710 encompasses suggested standards for full-time fire departments and recommends the following times (all of which are at the 90th percentile): alarm processing – 64 seconds; turnout time for EMS responses – 60 seconds; turnout time for fire responses – 80 seconds; first arriver apparatus – 240 seconds (4 minutes); initial full-alarm assignment for low and medium hazard responses – 480 seconds (8 minutes); or initial full-alarm assignment for high hazard/high-rise responses – 610 seconds (10 minutes 10 seconds). The total response times are the cumulative totals of call processing time, turnout time, and travel time. NFPA 1710 recommends a total response time of 6:24 for the first arriving apparatus for fire and 6:00 for the first arriving apparatus for EMS.

📌 – Of Note...

NFPA 1710 response times have not been adopted by the UFA Board. One of the important elements of the community risk assessment and standards of cover is to identify current 90th percentile times (current baselines) within UFA and to identify realistic benchmarks for the UFA Board to consider for adoption.

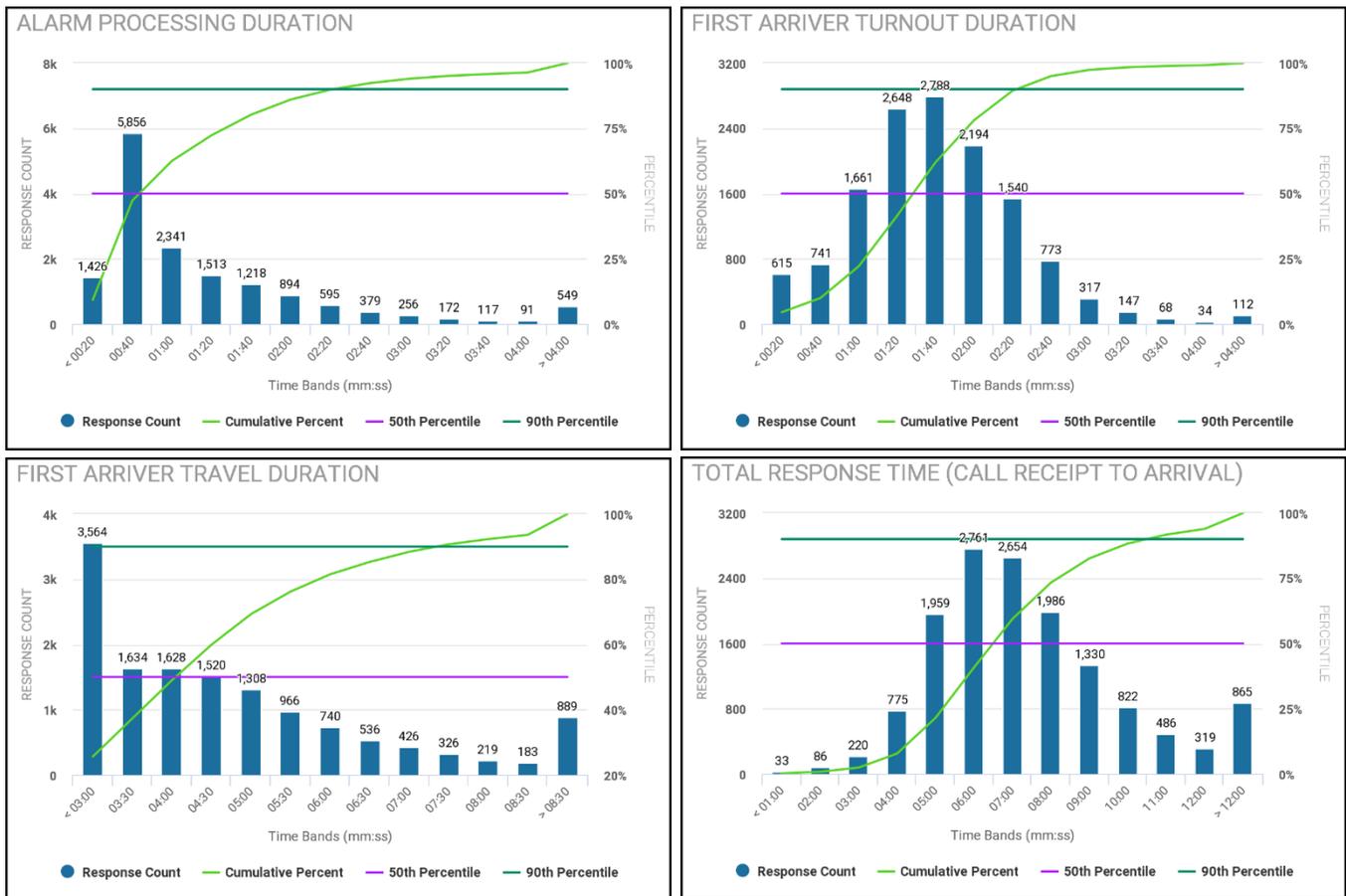
Unified Fire Authority – 2020 Dispatch and Response Times



Urban	Call Processing: Fire	Turnout Time: Fire	Travel Time: Fire	Total Response: Fire	Call Processing: EMS	Turnout Time: EMS	Travel Time: EMS	Total Response: EMS
UFA Urban 2018-2020	2:16	2:39	7:36	10:34	1:47	2:32	6:29	9:18
UFA Rural 2018-2020	2:32	3:05	15:08	19:09	1:56	2:50	14:45	17:45
NFPA 1710	1:04	1:20	4:00	6:24	1:00	1:00	4:00	6:00

Table 38 – UFA 2018-2020 Response Times, 90th percentile values

Unified Fire Authority – 2020 Turnout and Travel Times



The charts above illustrate the alarm processing, turnout and travel times for all units responding to service calls within UFA's response area. The 90th percentile for alarm processing was 1:54. The 90th percentile turnout time was 2:34. The 90th percentile travel time was 7:02. The 90th percentile total response time was 9:55. This is further separated into fire and EMS response, as well as urban and rural response. For urban fire data, the 90th percentile for alarm processing was 2:16. The 90th percentile turnout time was 2:39. The 90th percentile travel time was 7:36. The 90th percentile total response time was 10:34. For rural fire data, the 90th percentile for alarm processing was 2:32. The 90th percentile turnout time was 3:05. The 90th percentile travel time was 15:08. The 90th percentile total response time was 19:09. For urban EMS data, the 90th percentile for alarm processing was 1:47. The 90th percentile turnout time was 2:32. The 90th percentile travel time was 6:29. The 90th percentile total response time was 9:18. For rural EMS data, the 90th percentile for alarm processing was 1:56. The 90th

percentile turnout time was 2:50. The 90th percentile travel time was 14:45. The 90th percentile total response time was 17:45. For the charts above, they show both fire and EMS response times together.

📌 – Of Note...

One item to note is that if you were to add the processing time, the turnout time, and the travel time, it will not necessarily (and often doesn't), sum the total response time. This is due to some of the limitations within the datasets and gaps within timestamps. Where there are missing timestamps, those particular key performance indicators (KPI) are excluded as they cannot accurately be calculated out.

UFA – 2020 Incidents by Time of Day

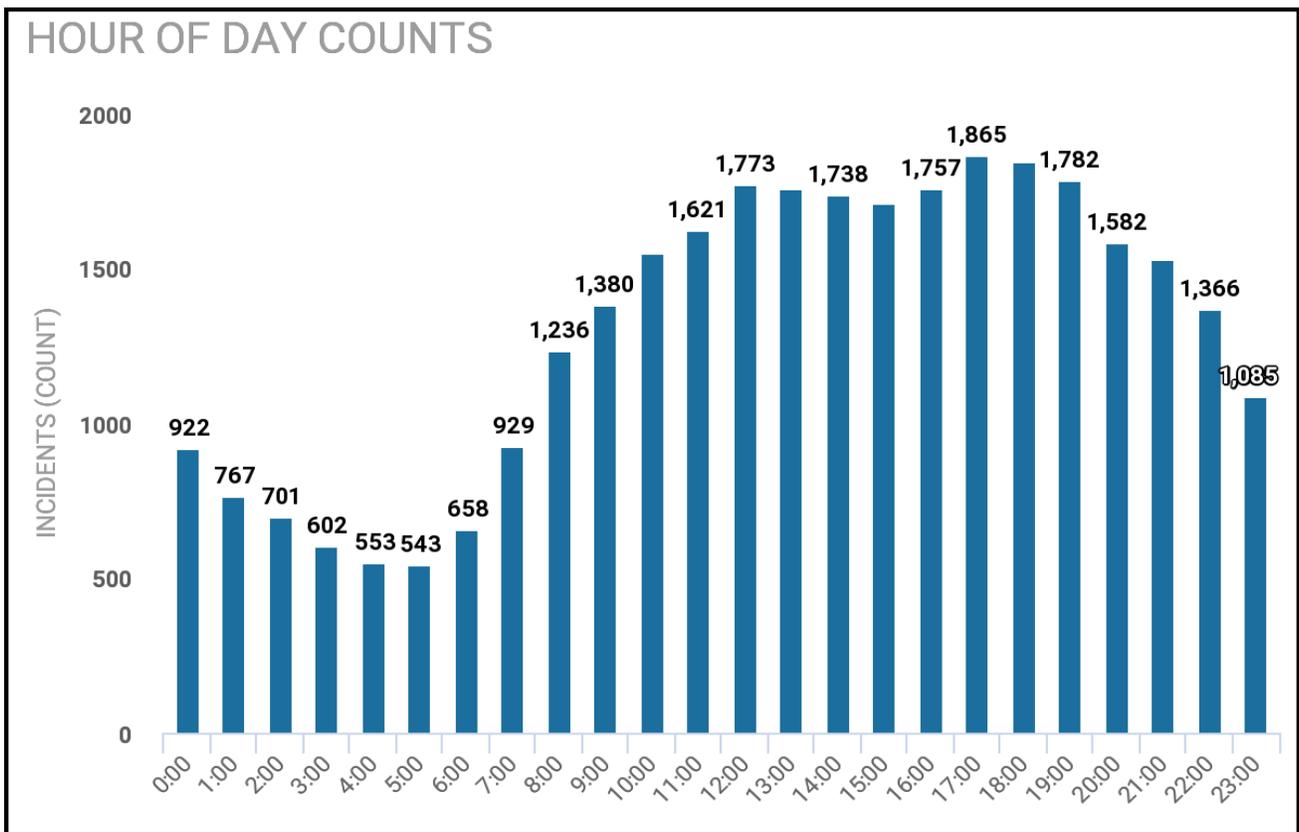


Chart 10 – UFA 2020 Incidents by Time of Day

The above table demonstrates the incidents by time of day and the time of greatest demand within UFA's response area for all service calls. This chart illustrates that the greatest demand for service delivery begins to increase at 6:00 AM and starts to decrease at 6:00 PM.

Unified Fire Authority – 2020 Incidents by Day of Week

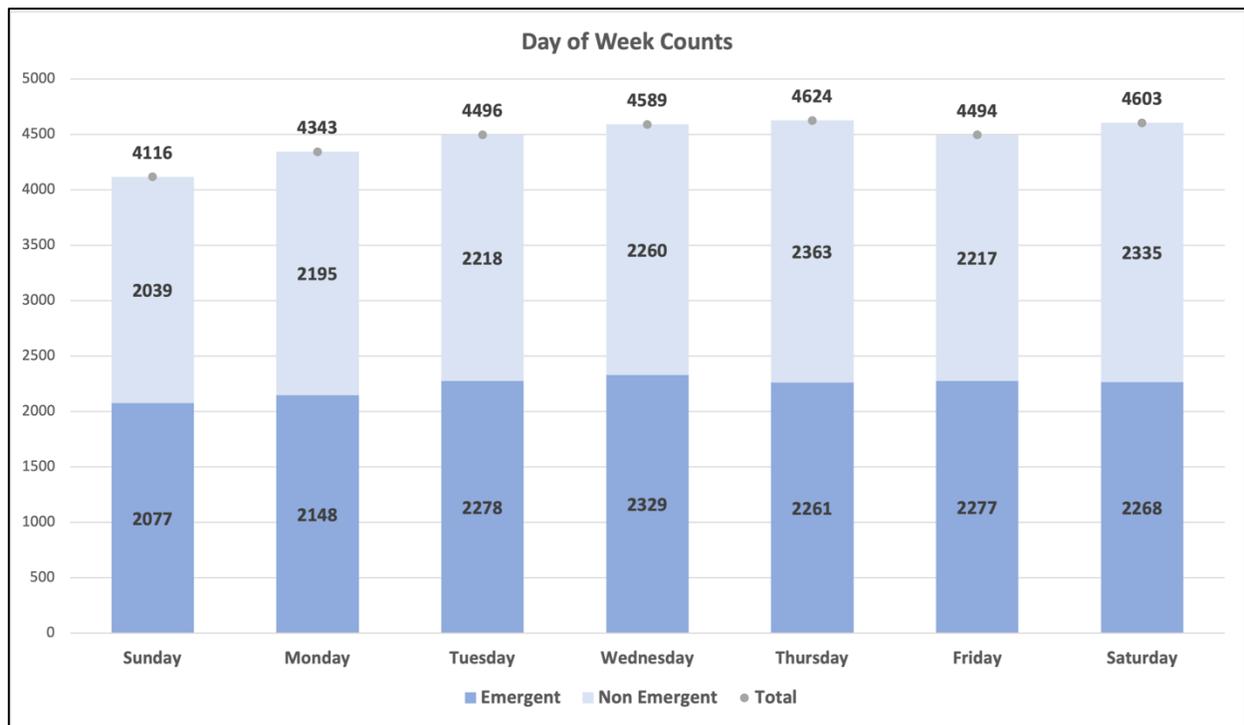


Chart 11 - UFA Incidents by Day of Week

This chart demonstrates the call volume based on the day of the week, with an increase in all calls beginning Monday. The peak volume for all calls in UFA’s response areas occurs on Thursday.

Unified Fire Authority – EMS Calls

	CY 2020	CY 2019	CY 2018
ALS Transports	7,763	8,065	7,842
BLS Transports	11,496	10,087	9,687
Scene Release	1,314	1,271	3,666
Public Assistance	189	155	163
EMS Total Calls	20,573	19,423	21,195

Note: There may be a slight difference if you were to add all calls. Public assistance calls will sometimes get duplicated with a scene release, depending on dispatch code, but those duplicates do not carry across to the total calls.

Table 39 - EMS Call Volume

Unified Fire Authority – 2020 Fire Incidents by Dispatch Type

NFIRS Description	Incident Count	% of Incidents	NFIRS Description	Incident Count	% of Incidents
Structure Fire	454	45.6%	Special Outside Fire	39	3.92%
Natural Vegetation Fire	195	19.6%	Fire, Other	37	3.72%
Outside Rubbish Fire	155	15.6%	Mobile Property Fire	20	2.01%
Vehicle Fire	93	9.35%	Cultivated Vegetation Fire	2	0.002%
			Total	995	100%

Table 40 – UFA 2020 Incidents by Dispatch Type

Unified Fire Authority – Building Occupancy Classification and Risk Categories

Occupancy Classification	Low	Moderate	High	Maximum	Total
Assembly	236	20	98	25	379
Commercial/Industrial	93	81	163	37	374
Educational	90	3	43	13	149
Government	51	2	6	1	60
Healthcare	6	5	14	1	26
Hazardous	Unknown	Unknown	Unknown	Unknown	561*
Storage	5	3	11	1	20
Residential – Single Family	27,045	46,201	17,011	2,448	92,705
Residential – Multi Unit	1,524	1,672	567	78	3,841
High Rise	0	10	6	17	33
Total	29,050	47,997	17,919	2,621	98,148

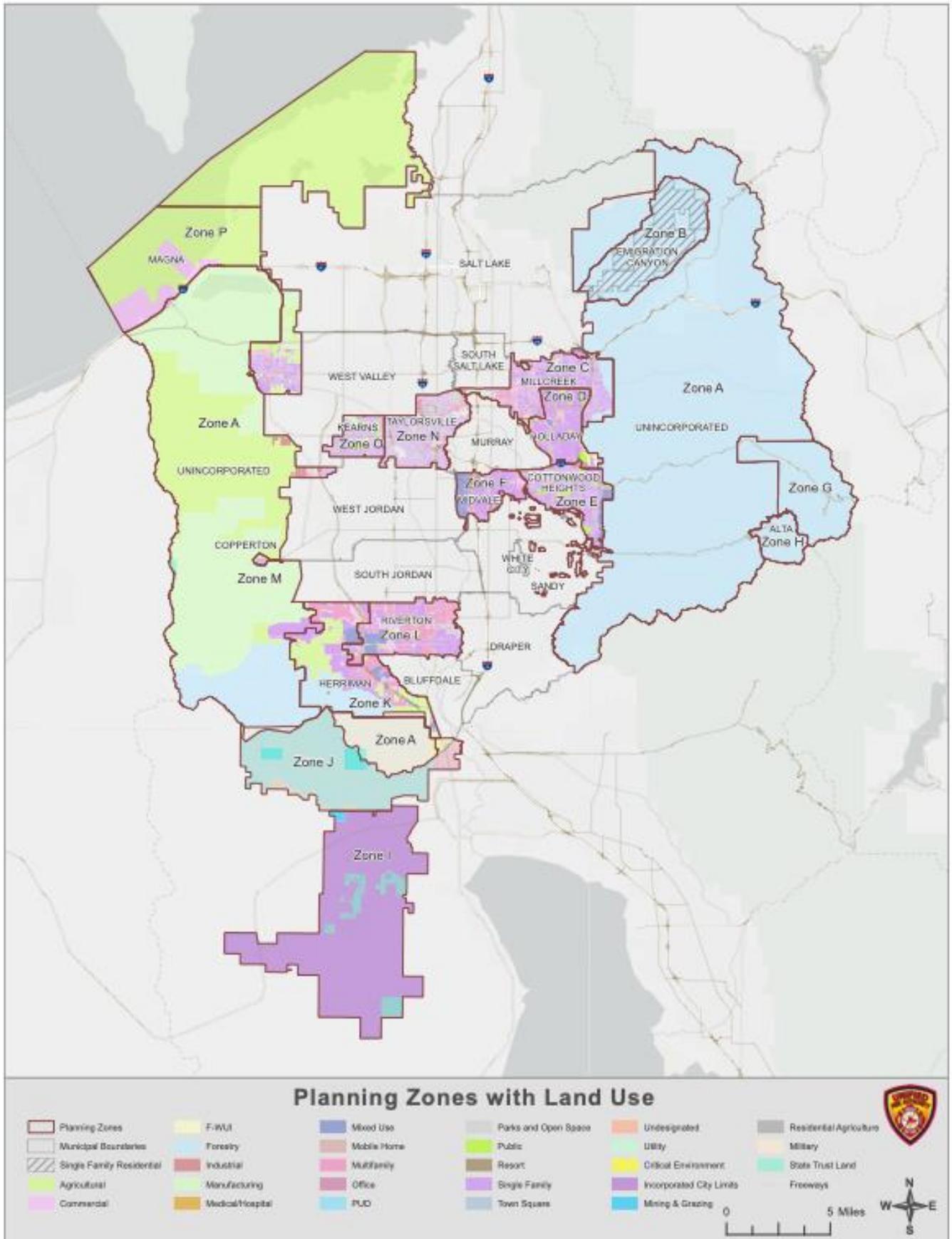
*There is currently a gap within the identification of building size regarding hazardous materials sites. This is a gap that is being closed over the next several years as we collect the data and information.

Table 41 – UFA Building Occupancy and Risk Categories

Building Size / Considerations

For purposes of risk classification, UFA has outlined the following risk classifications for building size, regardless of occupancy type (except residential). Low risk = 1-4,999 square feet. Moderate risk = 5,000-9,999 square feet. High risk = 10,000-99,999 square feet. Maximum risk = >100,000 square feet.

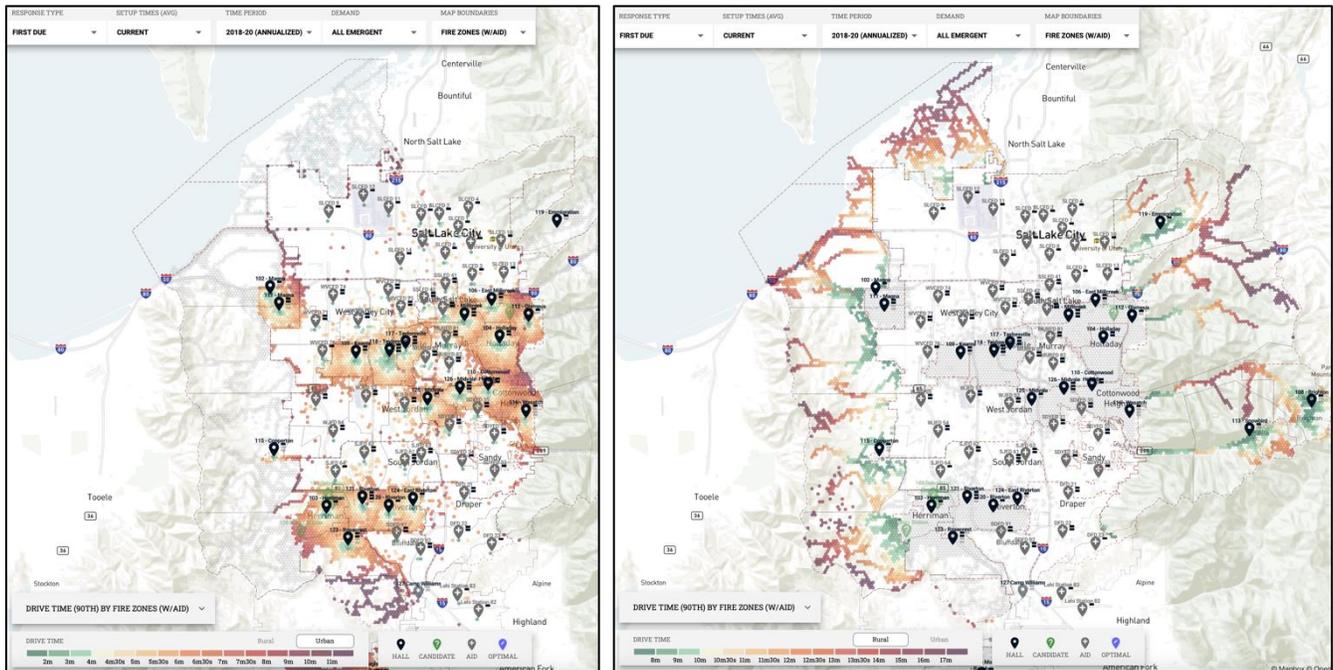
For residential occupancies, the following classifications apply. Low risk = 1-1,999 square feet. Moderate risk = 2,000-3,999 square feet. High risk = 4,000-9,999 square feet. Maximum risk = $\geq 10,000$ square feet.



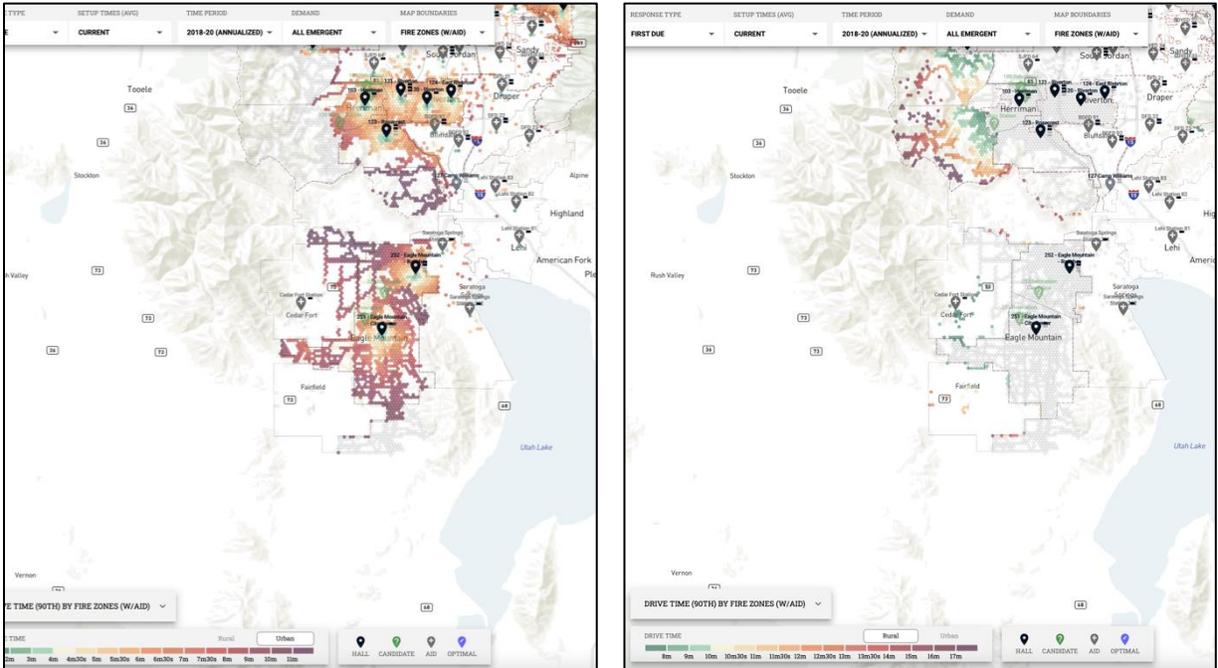
Map 44 – UFA Areas with Land Use

Unified Fire Authority – First Arriver Travel Times

The following maps demonstrate the 90th percentile of travel times based off the last three years of historical data (2018-2020). The darker the color is, the more delayed the response, with the green and light colors demonstrating below or near target times, with darker colors on the bar within the key demonstrating longer travel times by apparatus. This map's drive times (or travel times) are based off the current NFPA 1710 standard of four minutes (90th percentile) from notification of the alarm to the arrival of the first arriving apparatus — not an adopted standard by UFA. UFA is currently in process of identifying benchmark and target standards to be adopted by the UFA Board of Directors. Currently, within UFA as a whole, the 90th percentile drive time is 8:31 (both urban and rural responses). There is a difference between travel times in urban areas and rural areas. In urban areas, the 90th percentile drive time for fire responses was 7:45 and 5:45 for EMS. In rural areas, the 90th percentile drive time for fire responses was 12:30 for fire responses and 10:30 for EMS responses.



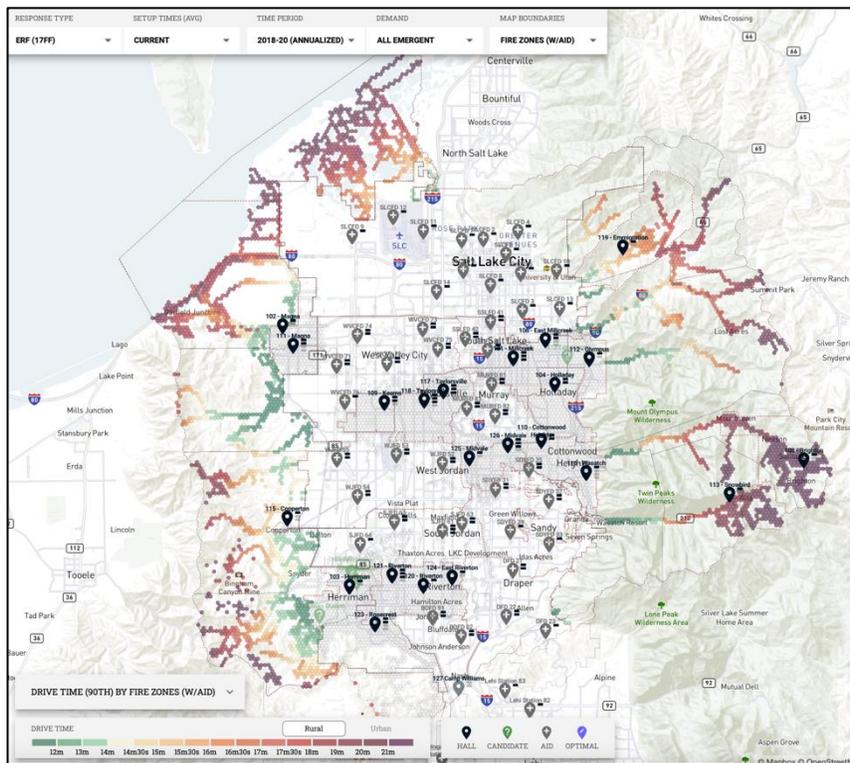
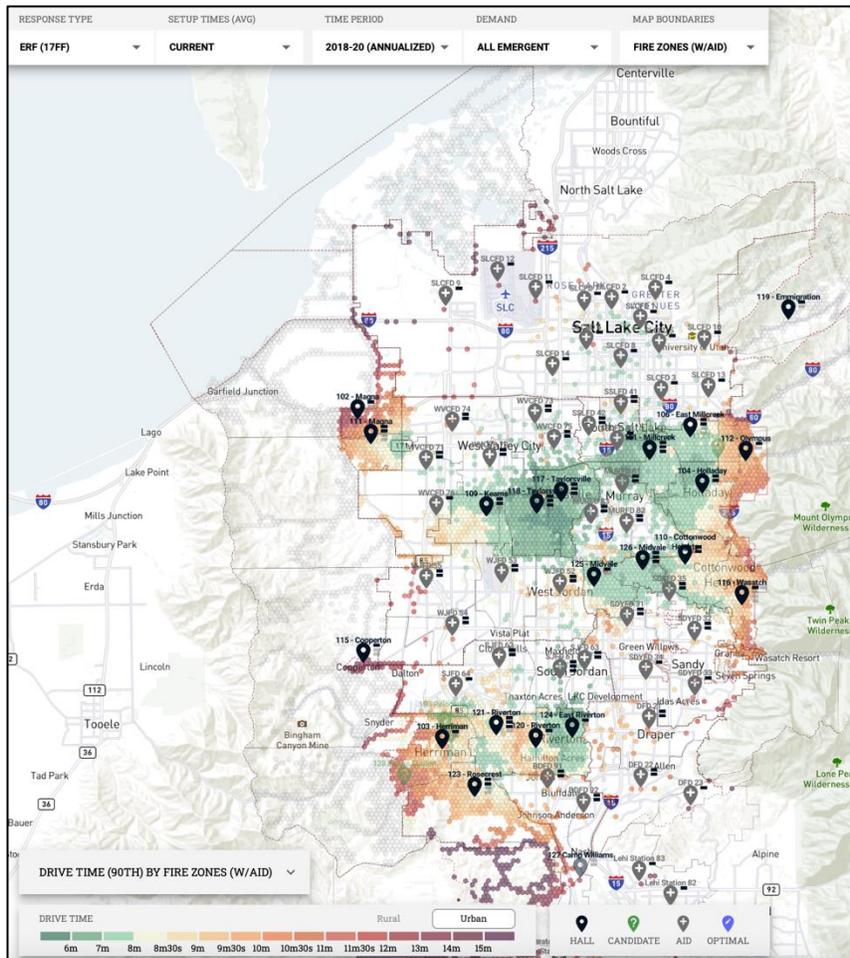
Map 45 – UFA Salt Lake County Urban (Left) and Rural (Right) Response Times – All Aid



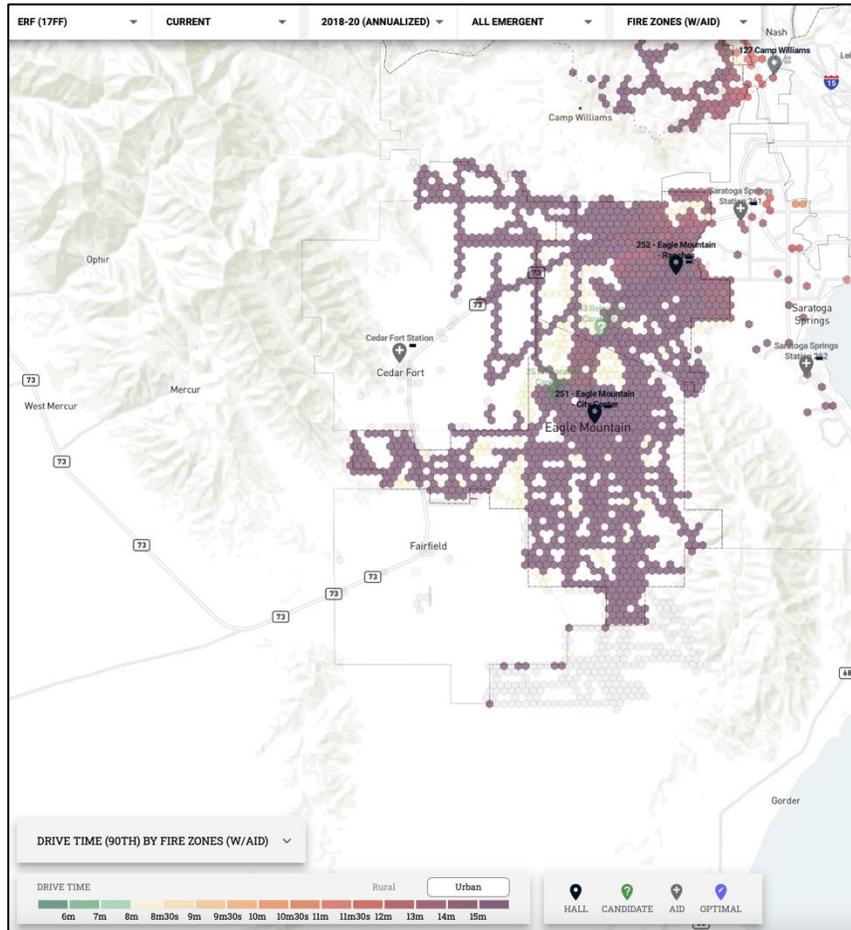
Map 46 – UFA Utah County Urban (Left) and Rural (Right) Response Times – All Aid

Unified Fire Authority – Residential Fire Effective Response Force (17 FF)

The following maps demonstrate the coverage of a multi-unit response to a residential fire based off all apparatus being within their station. The green to light yellow demonstrates the ability to have seventeen firefighters (a residential fire effective response force) on scene based off a residential urban fire force response. This map's drive times (or travel times) are based off the current NFPA 1710 standard of eight minutes (90th percentile) from notification of the alarm to the arrival of the initial full alarm assignment (a minimum of 17 firefighters) for a residential, low, or medium hazard assembly — not an adopted standard by UFA. UFA is currently in process of identifying benchmark and target standards to be adopted by the UFA Board of Directors. This is one of the gaps that is currently identified as there is no effective mechanism to capture units beyond the first arriving unit.



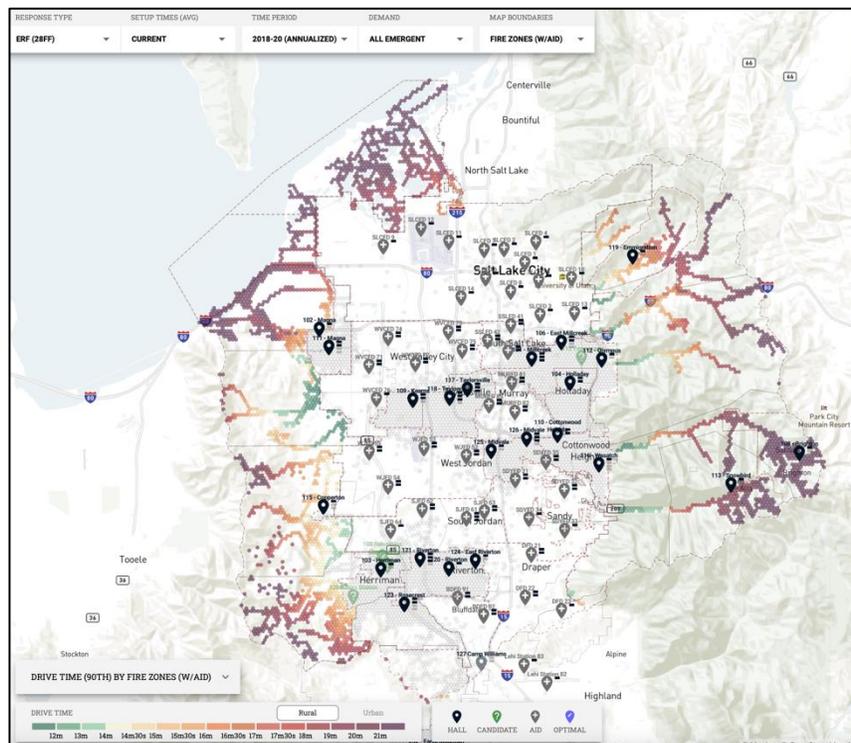
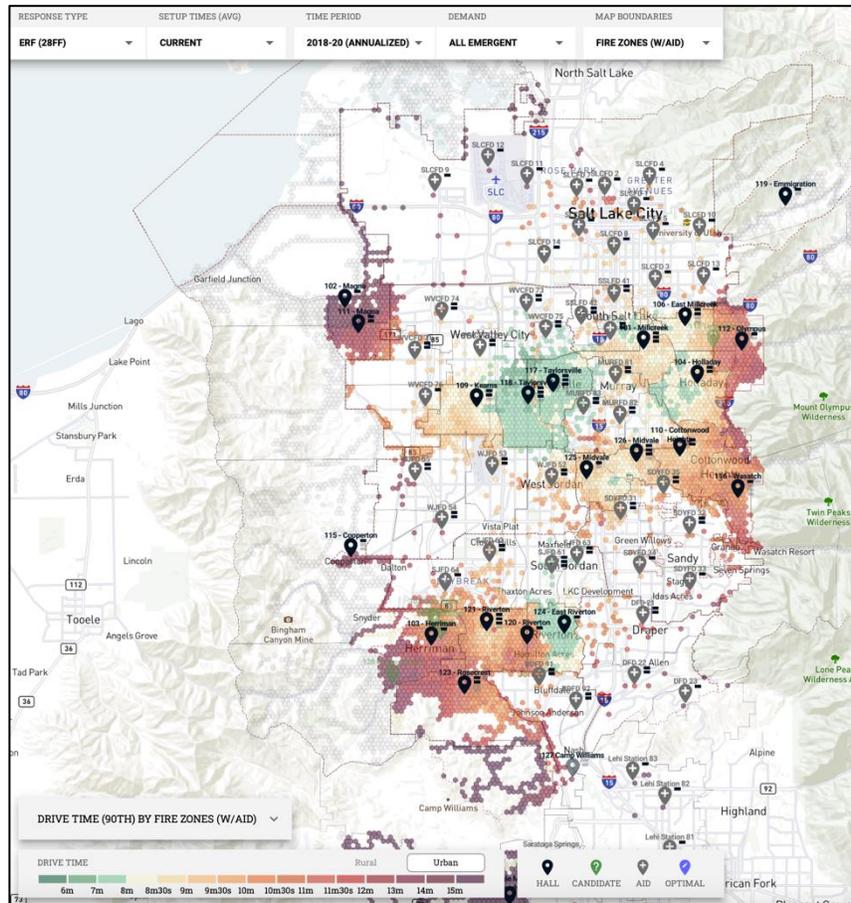
Map 47 – UFA Salt Lake County Response Times Urban (Top) and Rural (Bottom) – Residential Fire Effective Response Force (17 ERF)



*Map 48 – UFA Utah County Response Times Rural
– Residential Fire Effective Response Force (17 ERF)*

Unified Fire Authority – Commercial Fire Effective Response Force (28 FF)

These maps demonstrate the coverage of a multi-unit response to a commercial fire based off all apparatus being within their station. The green to light yellow demonstrates the ability to have twenty-eight firefighters (a commercial fire effective response force) on scene based off a residential urban fire force response. This map's drive times (or travel times) are based off the current NFPA 1710 standard of ten minutes and 10 seconds (90th percentile) from notification of the alarm to the arrival of the initial full alarm assignment (a minimum of 28 firefighters) for a commercial, high hazard or high-rise assembly — not an adopted standard by UFA. UFA is currently in process of identifying benchmark and target standards to be adopted by the UFA Board of Directors. This is one of the gaps that is currently identified as there is no effective mechanism to capture units beyond the first arriving unit.



Map 49 – UFA Salt Lake County Response Times Urban (Top) and Rural (Bottom) – Commercial Fire Effective Response Force (28 ERF)

Unified Fire Authority Risk Assessments

	Infrastructure – Transportation	Infrastructure – Dams	Earthquake Liquefaction	Earthquake Faults	Avalanche	Unreinforced Masonry	Wildland Urban Interface	Tier II Sites	Hospitals	Schools	≥100,000 sq ft Structures	Residential Population
Town of Alta	Low	Low	Low	Low	High	Mod	High	Low	Low	Low	Low	Low
Town of Brighton	Low	Low	Low	Low	High	Mod	High	Low	Low	Low	Low	Low
Camp Williams	Low	Low	Low	Low	Low	Low	High	Low	Low	Low	Low	Low
Copperton Township	Low	Low	Low	Low	Low	Mod	Mod	Low	Low	Low	Low	Low
City of Cottonwood Heights	Mod	Mod	Mod	High	Low	High	Mod	Mod	Low	Mod	High	Mod
Eagle Mountain City	High	Mod	Low	Low	Low	Mod	High	Mod	Low	Mod	Low	Mod
Emigration Township	Low	Low	Low	Low	Low	Mod	High	Low	Low	Low	Low	Low
Herriman City	High	High	Low	Low	Low	Mod	Mod	Low	Low	High	Mod	High
Holladay City	Mod	Low	Mod	Mod	Low	High	Low	Low	Low	High	Mod	Mod
Kearns Township	Mod	Low	Low	Low	Low	Mod	Low	Low	Low	High	Low	Mod
Magna Township	Mod	High	High	High	Low	Mod	High	Low	Low	Mod	Mod	Mod
Midvale City	Mod	Low	High	Low	Low	Mod	Low	Mod	Low	Mod	High	Mod
Millcreek City	High	Mod	Mod	Mod	Low	High	Mod	Mod	Mod	High	High	High
Riverton City	Mod	Mod	Low	Low	Low	Mod	Low	Mod	Mod	High	Mod	High
City of Taylorsville	High	Mod	High	Low	Low	Mod	Low	Mod	Mod	High	High	High
Unincorporated Salt Lake County	High	High	Low	High	Mod	Mod (West) High (East)	High	Mod	Low	Low	Mod	Low

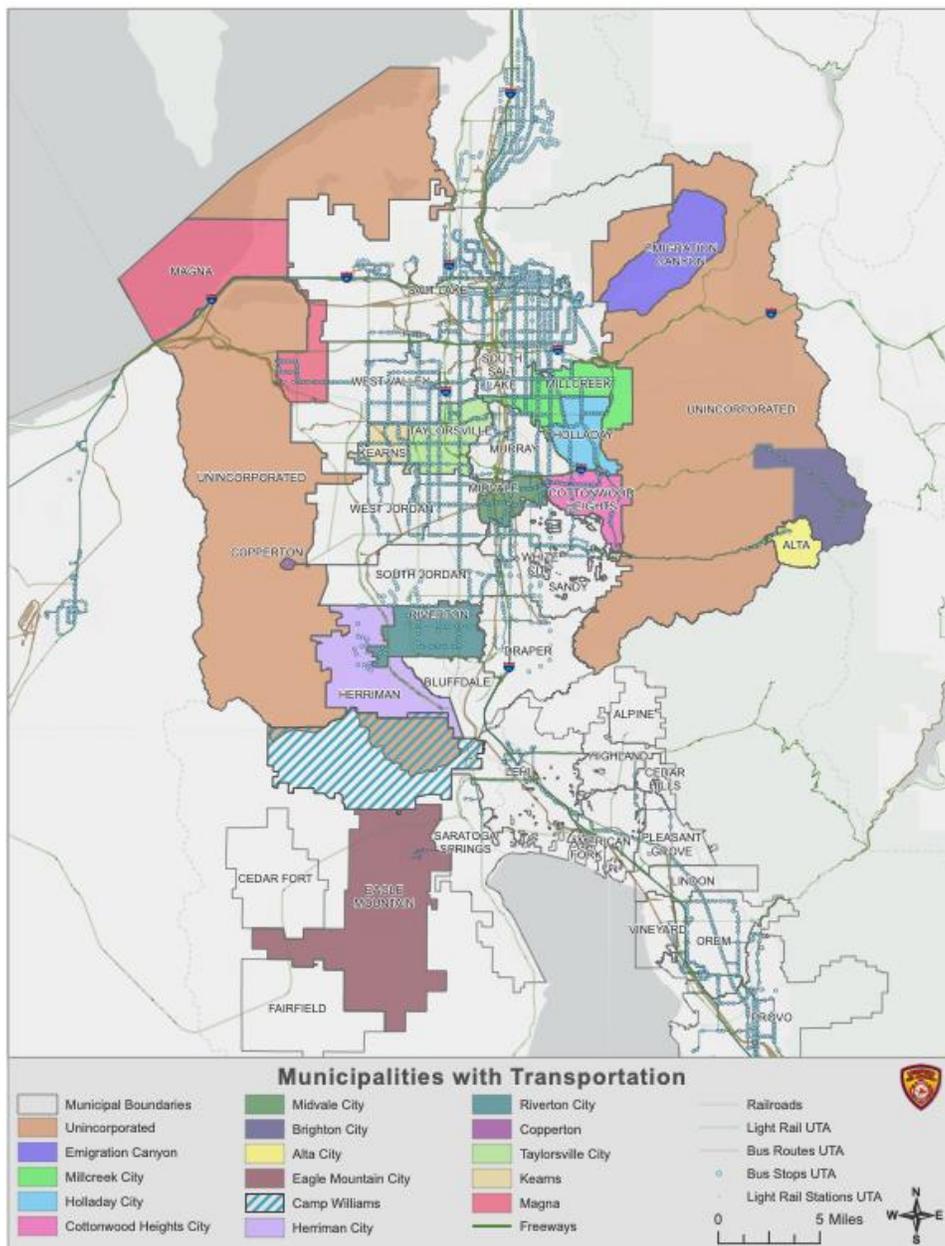
Transportation: Low Risk = 0-99 Linear Miles; Moderate Risk = 100-199 Linear Miles; High Risk = >200 Linear Miles
Dams: Low Risk = 0-3; Moderate Risk = 4-6; High Risk = ≥7
Liquefaction: The areas of liquefaction vary throughout the valley, with areas of high susceptibility running South and East from the Great Salt Lake
Earthquake Faults: Low Risk = 0-30,000 LF of fault line; Moderate Risk = 30,001-60,000 LF of fault line; High Risk = ≥60,001 LF of fault line
Unreinforced Masonry: Low Risk = 0-100; Moderate Risk = 101-1,000; High Risk = ≥1,001
Wildland Urban Interface: Low Risk = 0-25% WUI; Moderate Risk = 26-50% WUI; High Risk = ≥51% WUI
Tier II Sites: Low Risk = 1-5; Moderate Risk = 6-10; High Risk = ≥11
Hospitals: Low Risk = 0; Moderate Risk = 1; High Risk = ≥2
Schools: Low Risk = 0-5; Moderate Risk = 6-10; High Risk ≥11
100,000 sq ft Buildings: Low Risk = 0-5; Moderate Risk = 6-14; High Risk = ≥15
Population: Low Risk = 1-19,999; Moderate Risk = 20,000-39,999; High Risk = ≥40,000

Chart 12 - UFA Risk Assessments

Critical Infrastructure

Infrastructure – Transportation

The Utah Transit Authority (UTA) is the primary provider of mass transit within the State of Utah and Salt Lake County. UTA provides commuter rail (FrontRunner), light rail (Transit Express or TRAX), and bus systems. There are also multiple freeways and highways that run through the Salt Lake Valley, and the State of Utah, providing critical transportation corridors with both a primary East/West Interstate (I-80) and a North/South Interstate (I-15).

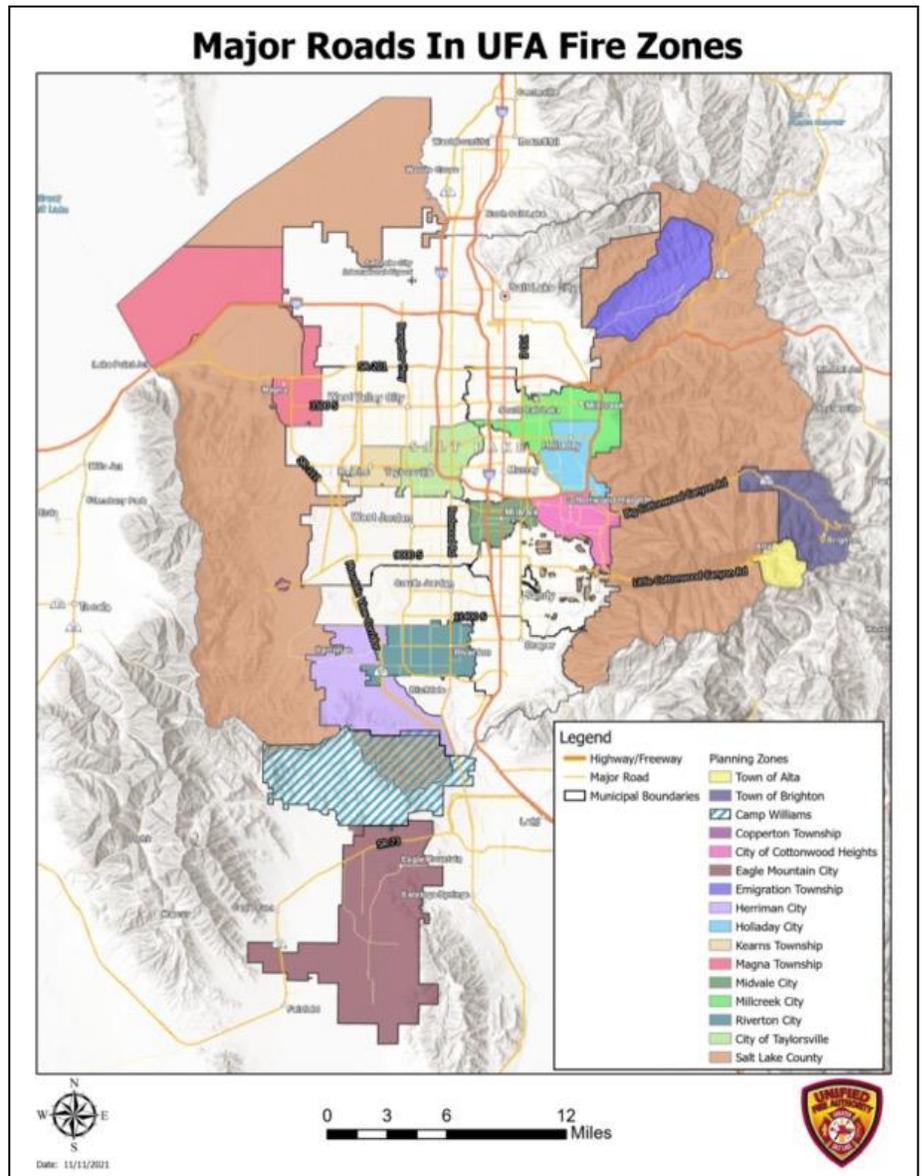


Map 50 - Municipalities with Transport Corridors

Highways and Roads

The highways and roads within the Service Area are what provide the necessary access and egress for the Authority. These transportation corridors are intertwined and are a mix of surface streets, intersected highways and freeways all within the jurisdiction. Surface streets are most common.

These provide the main travel routes to emergency incidents. Bangerter Highway and Mountain View Corridor are intersected highways that are main routes north and south through the Service Area. The main interstate is I-15, which divides much of the area from east to west, and I-215 which is a belt route that provides access to interior areas of the jurisdiction.



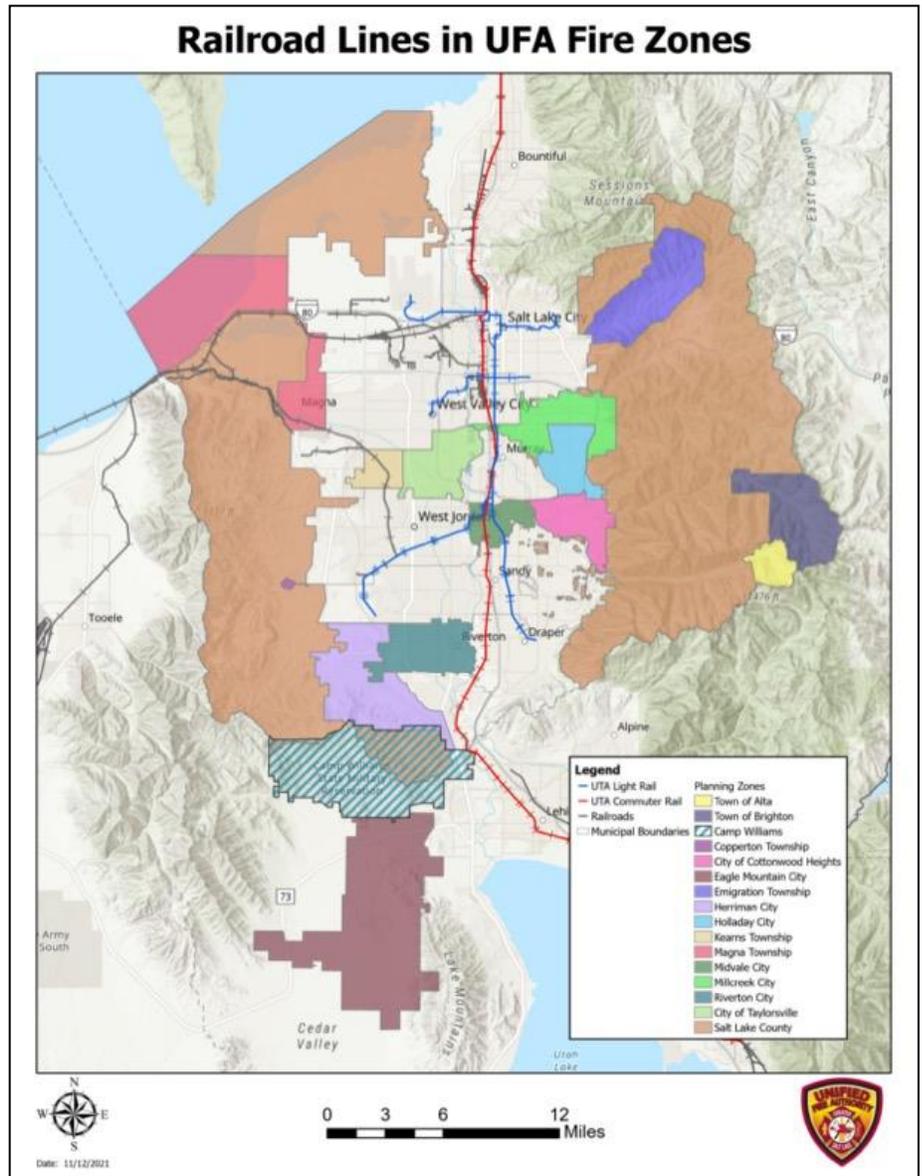
Map 51 - Location of Major Freeways/Highways Within the Service Area

Railroad Lines

Several railroad lines traverse through Salt Lake County and the lines run through portions of the Unified Fire Authority service area.

The major rail lines carry various commodities which include hazardous materials and other dangerous cargo. One major rail yard operated by Union Pacific (Roper Yard) is located in Salt Lake County, just outside of the service area. Passenger rail which includes Amtrak and commuter rail from UTA also runs through the jurisdiction.

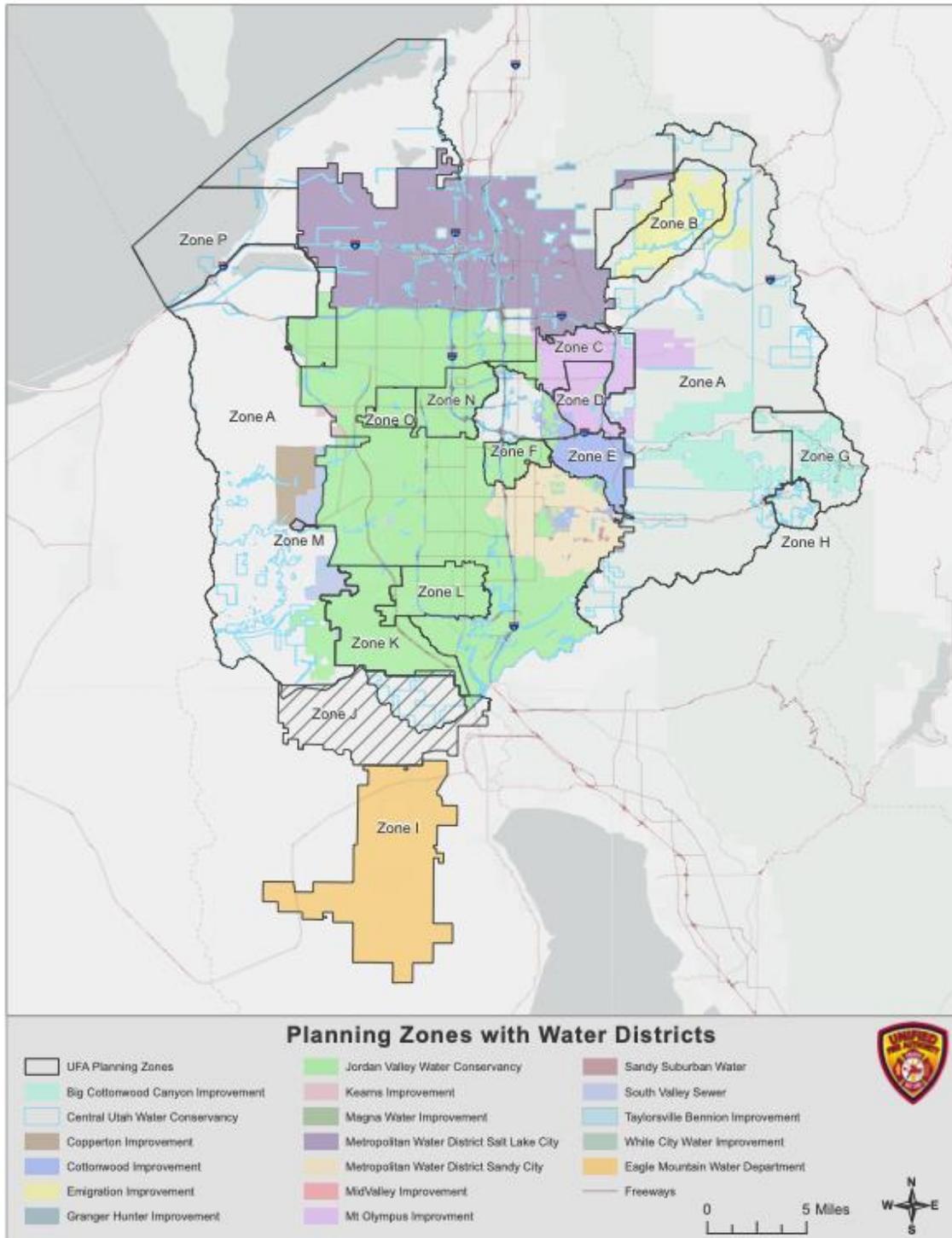
Several spur lines operated solely for industrial use are operated in the western section of the service area by the Bingham Canyon Mine (Rio Tinto).



Map 52 - Location of All Rail Lines Within the Service Area

Infrastructure – Water Supply

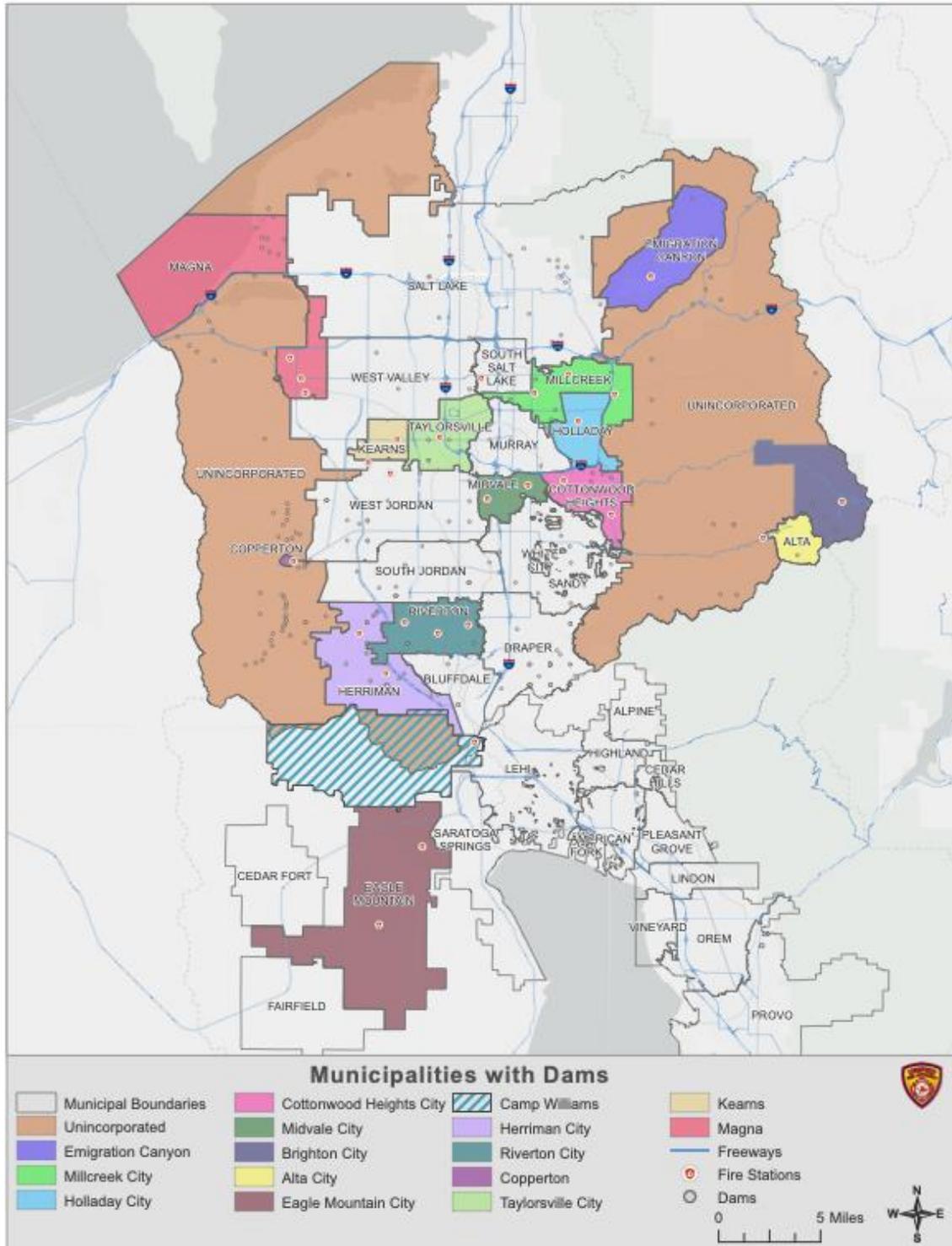
Within the Salt Lake Valley, there are twenty-nine water districts, all either special service districts or municipally based water districts. Within UFA’s planning zones, there are eighteen water districts.



Map 53 – UFA Planning Zones with Water Districts

Infrastructure – Dams

Within the Salt Lake Valley, there are 290 dams. Within UFA’s Planning Zones, there are 144 of those dams.

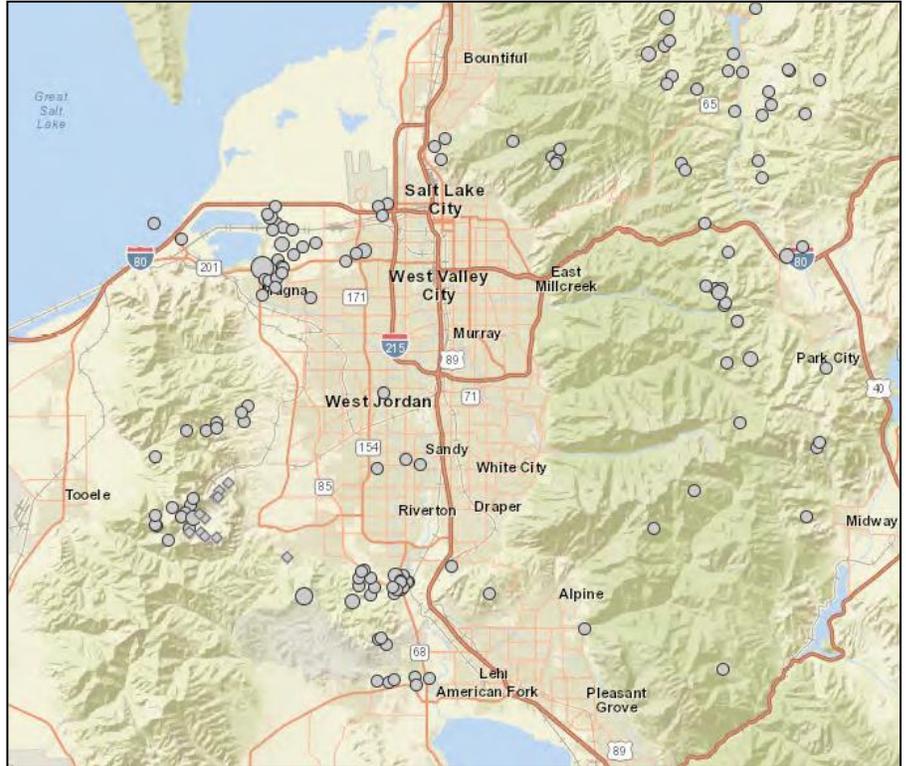


Map 54 - Dam locations within the Salt Lake Valley

Salt Lake County Natural Hazards Risks

Earthquake

Utah's earthquake hazard is greatest within the Intermountain Seismic Belt (ISB), which extends 800 miles from Montana to Nevada and Arizona, and trends from North to South through the center of Utah (The Wasatch Fault, UGS PIS 40). The Wasatch Fault traces along the base of the Wasatch Mountain Range. It is made up of 10 segments that act independently, meaning that a part of the fault ruptures separately as a unit during an earthquake.

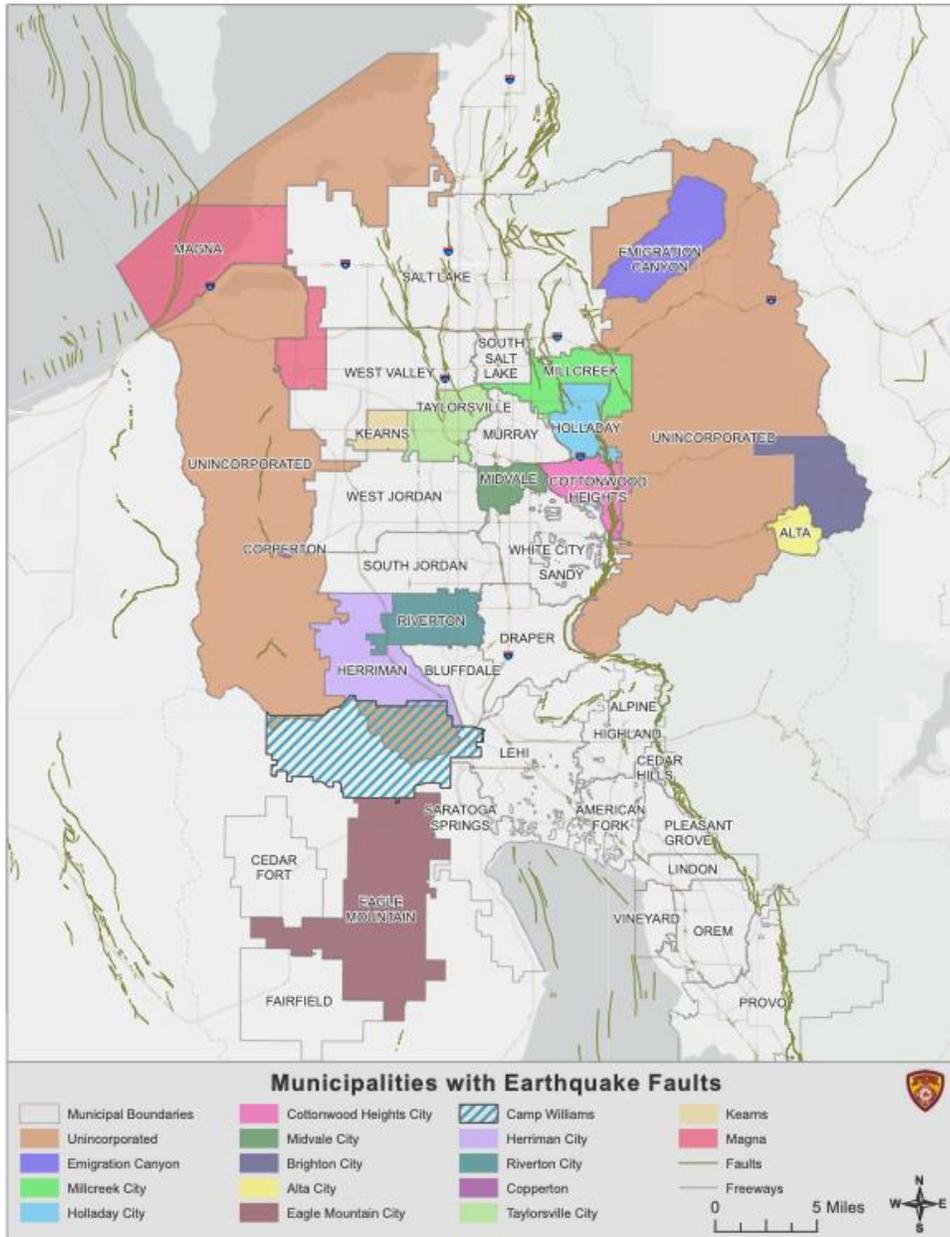


Map 55 - Earthquakes in Salt Lake County >2.0, 1962-July, 2019:
Source: www.earthquake.usgs.gov

According to USGS records, there have been 152 recorded earthquakes of 2.0 magnitude or greater that occurred in or immediately around Salt Lake County from 1962 through July 2019.

Significant earthquakes have occurred in Salt Lake County within the last 50 years.

In 2020, a 5.7 earthquake occurred in Magna. In 1962, a 5.2 Richter magnitude quake also jolted the Magna area. In 1992, a magnitude 4.2 quake shook the southern portion of the County.

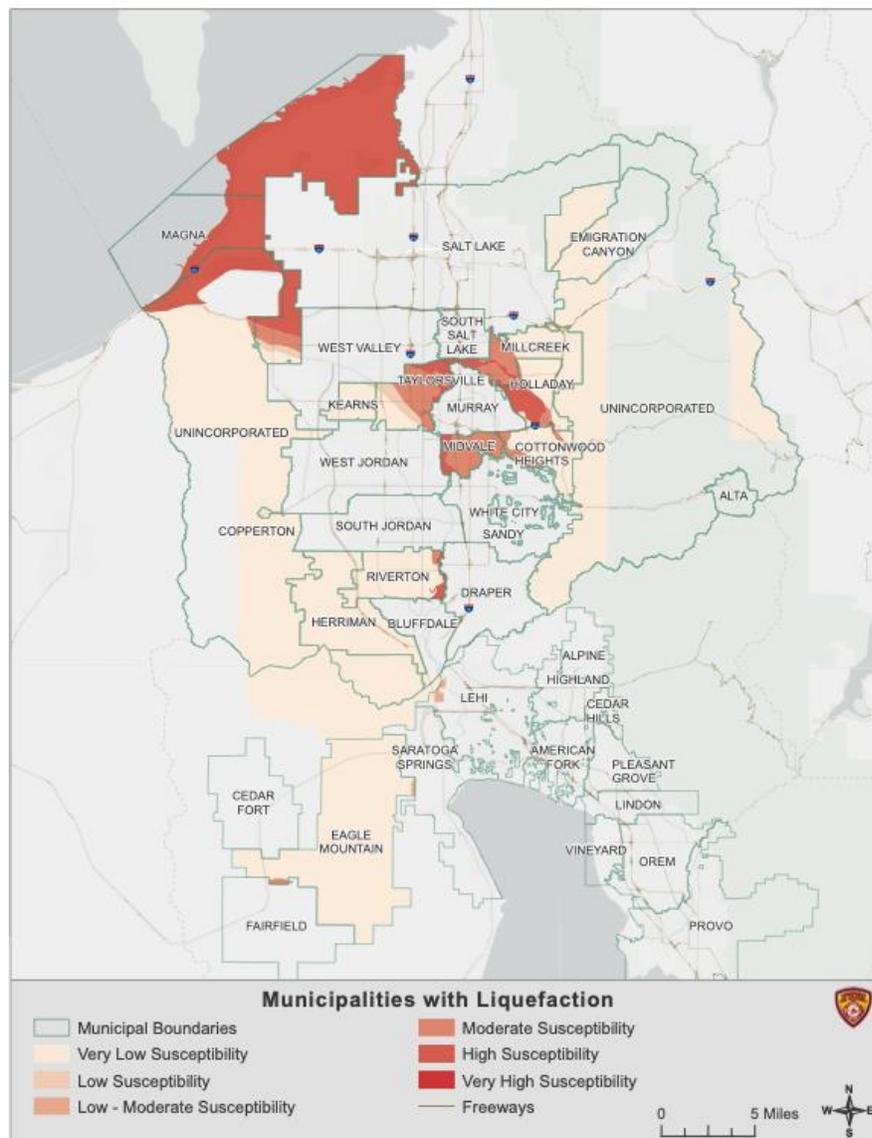


Map 56 - Earthquake Faults in the Salt Lake Valley

The faults illustrated in the above map include the following (see table below).

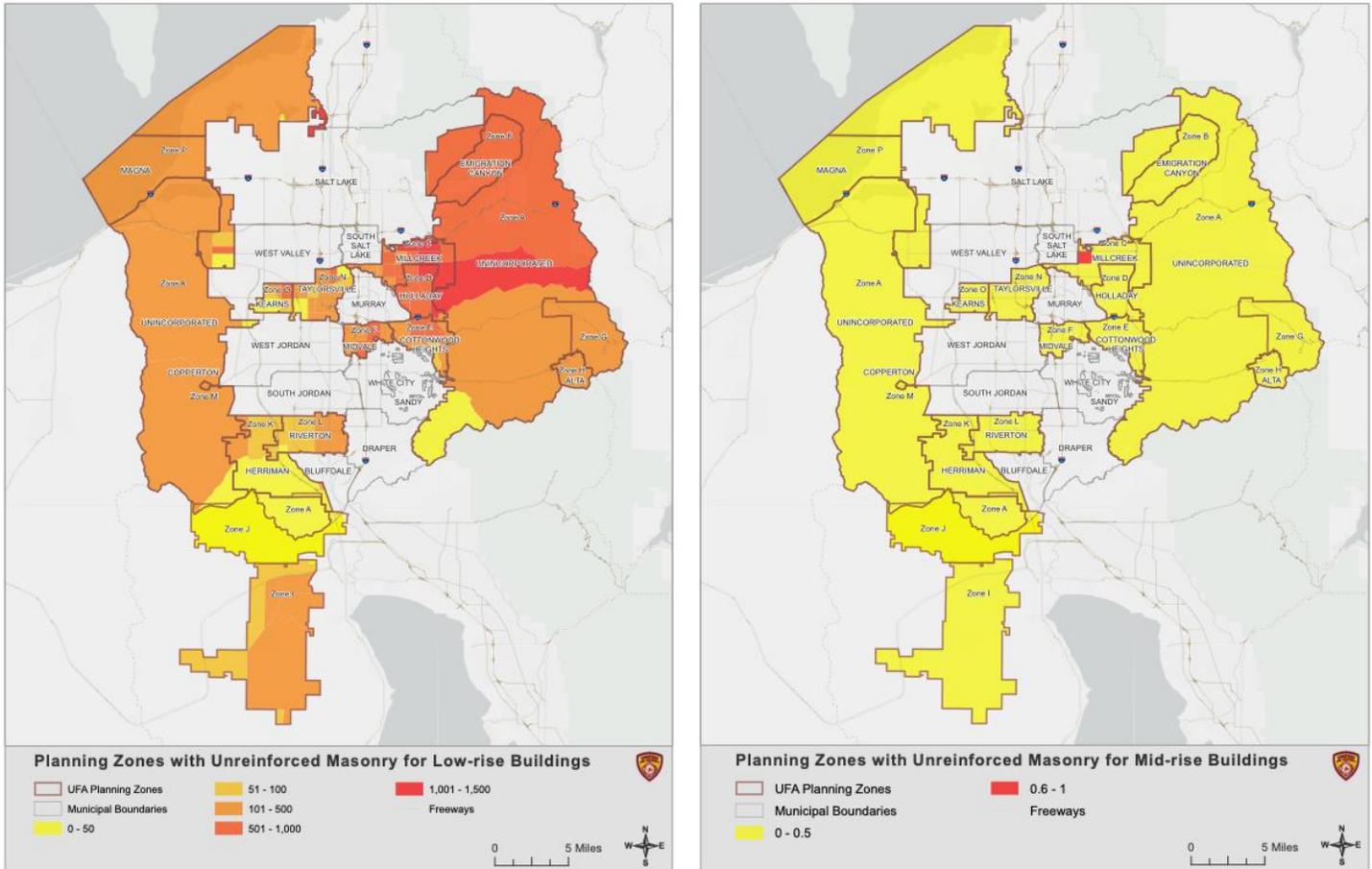
Name	Fault Type	Length (km)	Time of Most Recent Deformation	Recurrence Interval
East Great Salt Lake fault zone, Antelope Island section	Normal	35	586 201/-241 cal yr B.P.	4,200 years
Wasatch fault zone, Salt Lake segment	Normal	43	1,300 ± 650 cal yr B.P.	1,300 years
West Valley fault zone, Granger segment	Normal	16	1,500 ± 200 cal yr B.P.	2,600-6,500 years
West Valley fault zone, Taylorsville segment	Normal	15	2,200 ± 200 cal yr B.P.	6,000-12,000 years

Table 42 - Quaternary Faults, Salt Lake County
Source: USGS Earthquake Catalogue



Map 57 - Liquefaction Areas

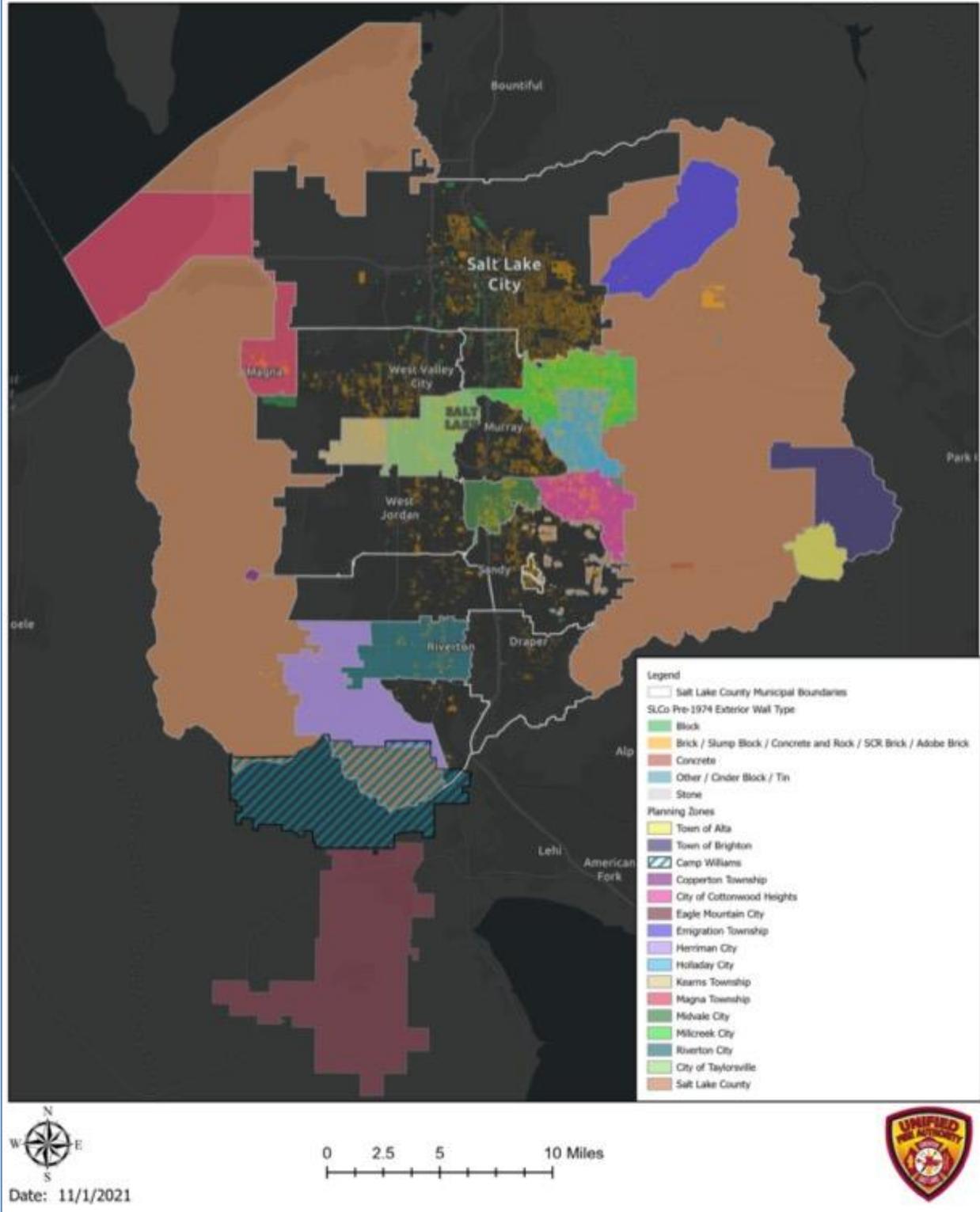
One of the primary risks that is inherent with any earthquake is the amount of unreinforced masonry (URM) structures in a given area. The associated maps show the primary locations of URM's in UFA's areas for both low and mid-rise buildings. This is based off of FEMA Hazus data and only shows areas by census tracts.



Map 58 – Unreinforced Masonry Building Locations

The map below shows structures within the municipalities that are most likely URM's based off of FEMA data.

Potential URM Buildings in Salt Lake County



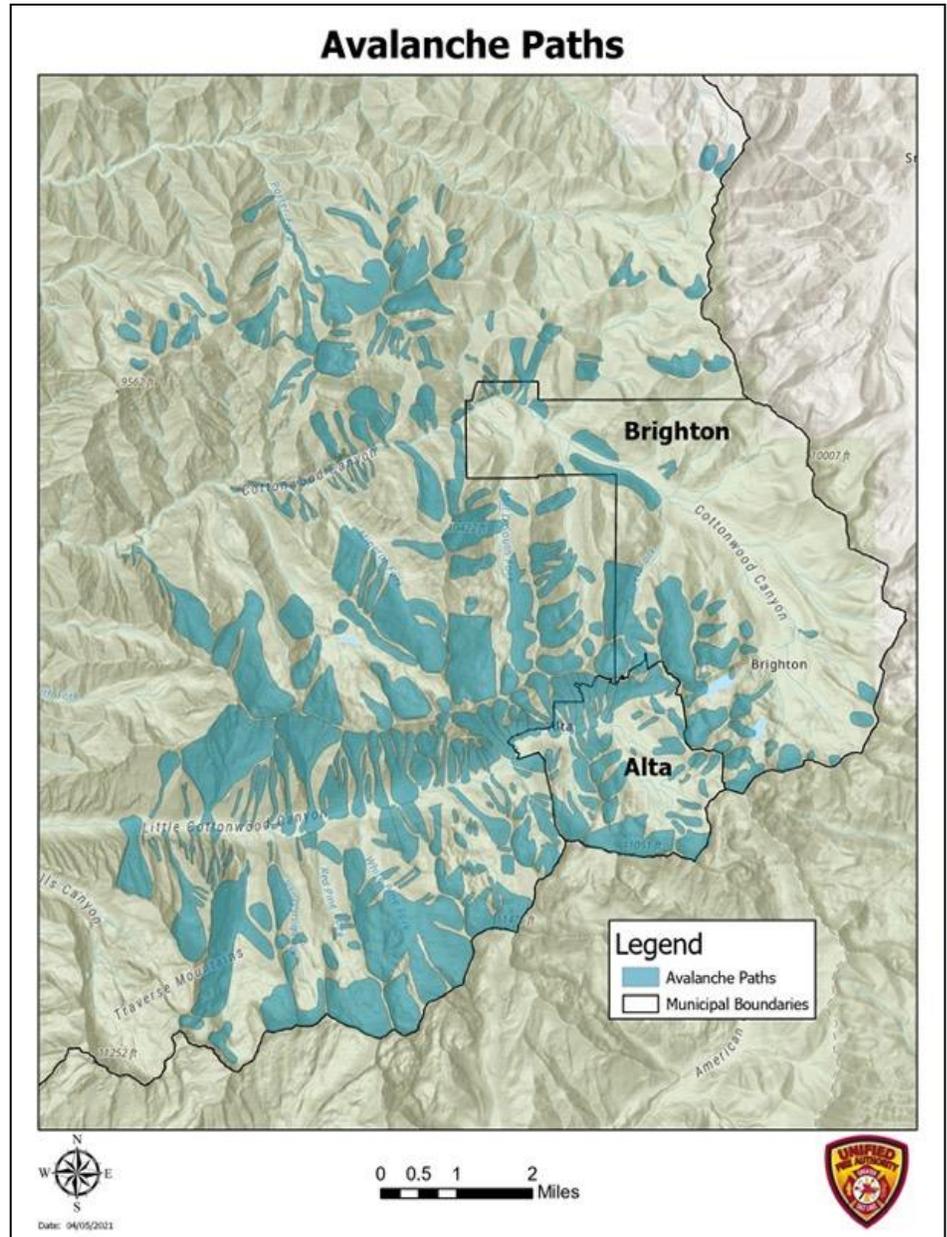
Map 59 - Potential URM Buildings in Salt Lake County

Weather – Avalanche

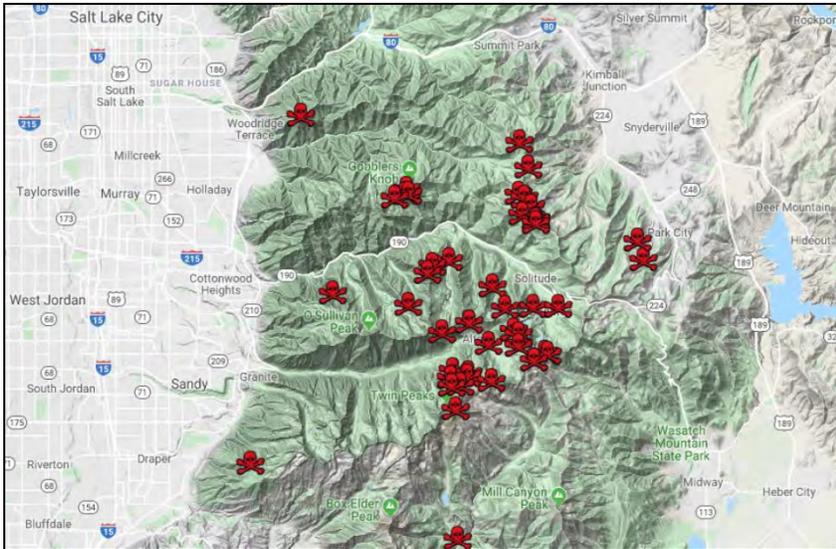
The risk for avalanches exists primarily in the Wasatch Range — due to the high recreation use and increasing development — although they do occur throughout Utah’s mountainous areas. Avalanche paths may not have a serious avalanche for years or even decades, but the potential is there especially during above average snowfall years (UNHH 2008).

In Utah, 100 avalanche deaths have occurred from 1958-2010. Avalanche risk is particularly centered around the Big and Little Cottonwood Canyons. The Town of Alta is especially at risk to the impacts of avalanches.

The following maps from the Utah Avalanche Center shows the locations of all reported avalanche events from 2015 to 2019, as well as the locations of all reported avalanche fatalities in the Salt Lake County Region.



Map 60 - Salt Lake County Region Avalanche Locations
Source: <https://utahavalanchecenter.org/avalanches>



Map 61 - Salt Lake County Region Avalanche Fatality Locations:
 Source: <https://utahavalanchecenter.org/avalanches>

Highway 210 (Little Cottonwood Canyon) also has the highest avalanche hazard-rating index of any major roadway in the country. At times when UDOT and Alta agree that conditions are unsafe, the town goes into an Interlodge Alert, meaning all occupants of the town (including both visitors and residents) must

remain indoors until conditions are deemed safe. At times, Interlodge can last days until the storm cycle is over and proper avalanche control work has been performed.

The Town’s General Plan (dated November 2005, Updated 2013) covers Highway 210 access and possible mitigation activities to keep this critical road open. It also provides background on the Little Cottonwood Canyon Road Committee, a group consisting of representatives from Alta, Snowbird, Salt Lake County, Unified Fire Authority, UDOT, UTA, and USFS, that meet monthly to discuss access, usage, and safety and security issues related to the canyon road. (SLCoHMP)

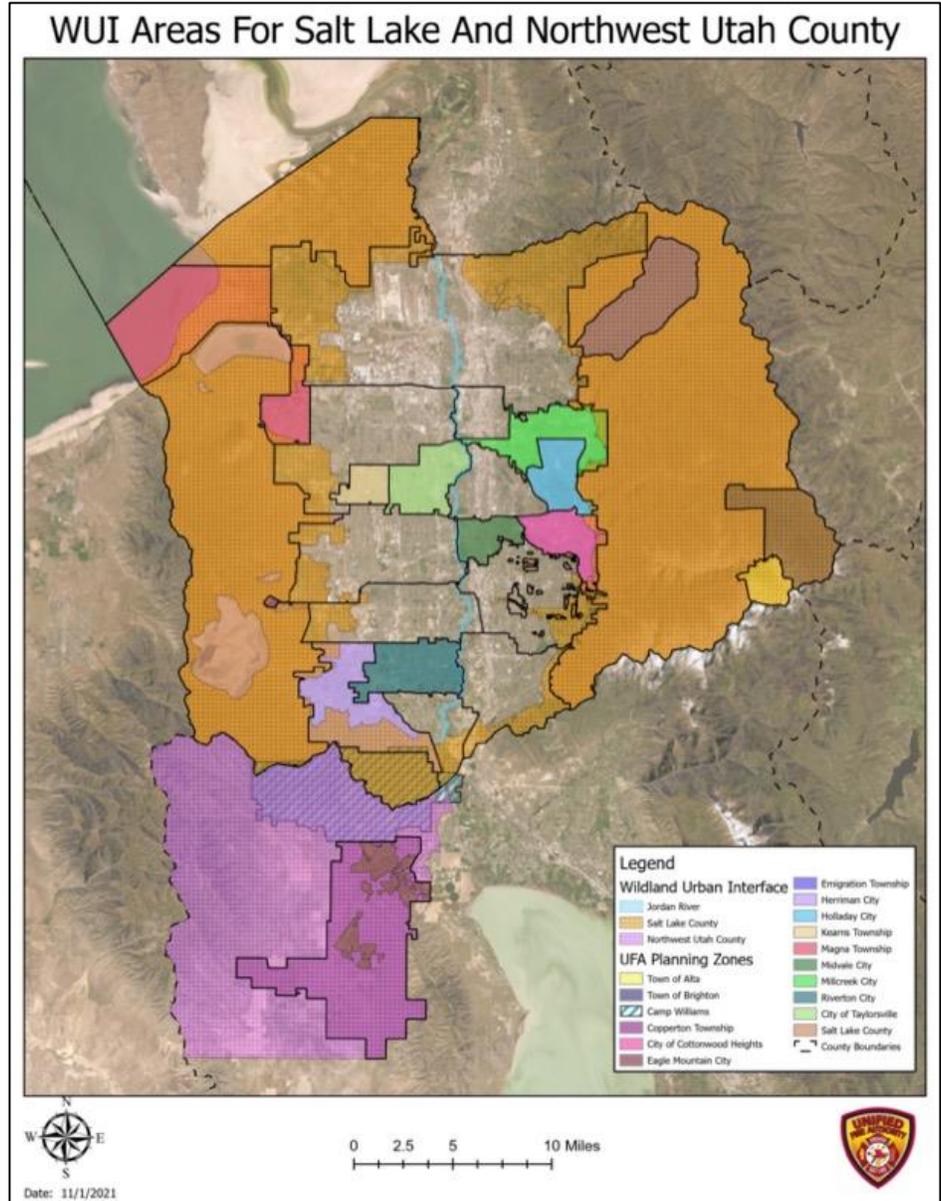
Wildland Urban Interface (WUI)

Portions of Salt Lake County could experience a significant amount of destruction due to a wildland fire include the foothills and the bench areas on or near the Wasatch Range, Traverse Mountain and the Oquirrhs.

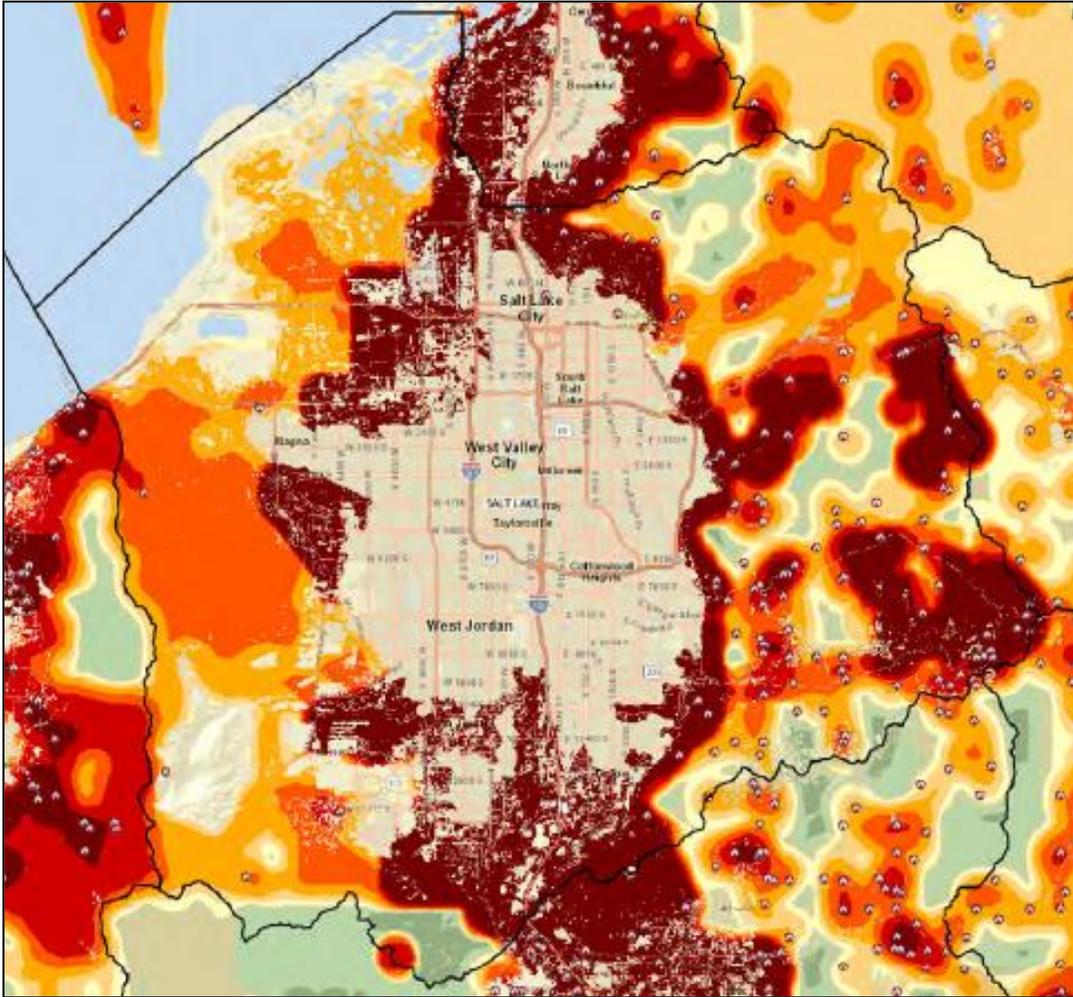
These WUI areas are threatened most because of the number of forested lands and the increasing population growth spreading into the foothills. Another concern is vegetation type in these areas such as sagebrush, mountain scrub oak, cheat grass, piñon and juniper trees, and rural and riparian vegetation.

Sagebrush and mountain shrub burn hot and fast, spreads easily and is found throughout the county. During prime burning conditions (hot, dry and windy) the piñon juniper class will burn. As can be seen in the map below, historical wildfire ignition points have been marked, and

areas most likely to be the source of ignition based on historical patterns are darkly shaded. (2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan)



Map 62 - Wildland Urban Interface Areas in Salt Lake County



Map 63 - Historical Wildfire Ignition Points, SLCo

As population growth continues, pressure to develop in WUI areas is likely to increase the threats associated with fire. Mitigation measures will need to be recognized and enforced to reduce these threats. Part of these mitigation efforts are the creation and implementation of Community Wildfire Protection Plans (CWPP) that is a local, community-level approach to code, development review, ordinances, and local authorities, enabling communities to address community risk of wildfire with respect to values at risk. Within Salt Lake County, the following communities have current or in-progress CWPPs.

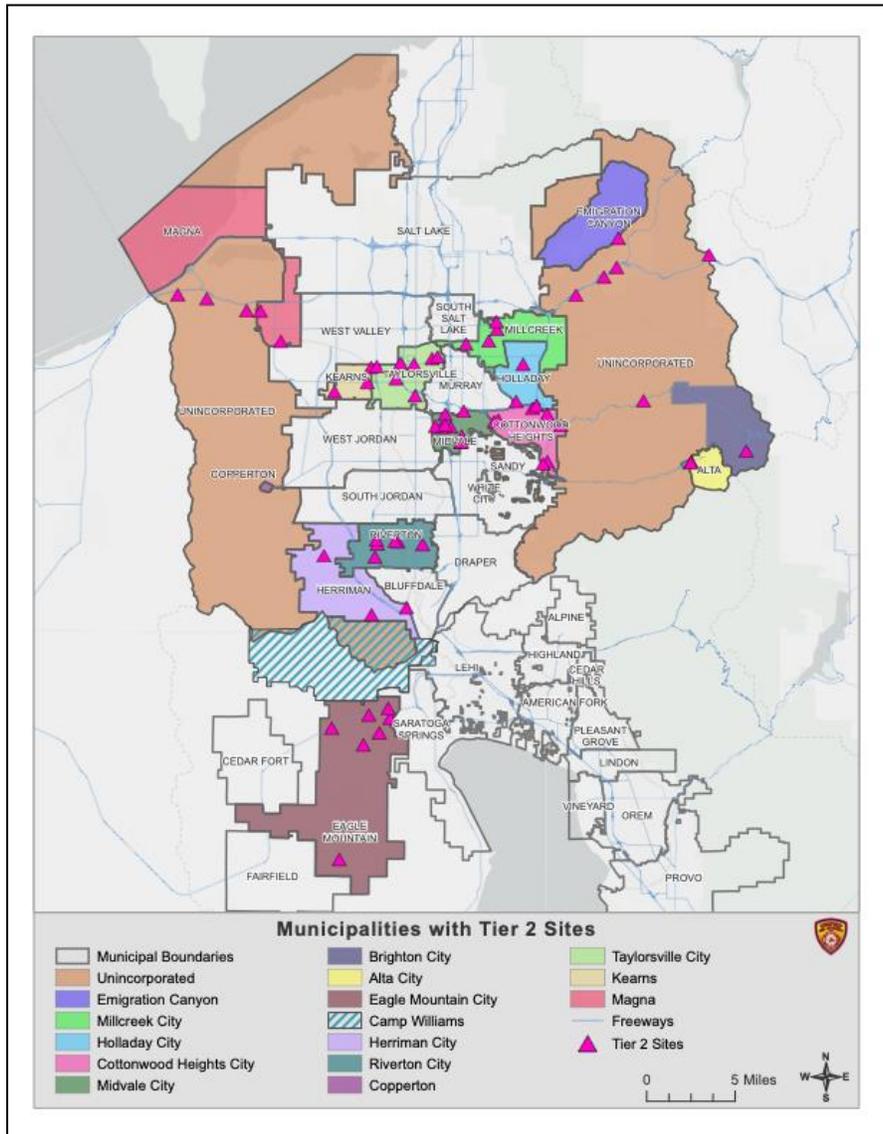
Community	In Progress/Completed	Expiration	Firewise Community?
Alta	Completed	2025	No
Big Cottonwood Canyon / Brighton	Completed	2025	No
Copperton	In Progress		No
Cottonwood Heights	Completed	2025	No
Eagle Mountain	In Progress		No
Emigration Canyon	Completed	2026	Yes
Hi-Country 1 (Unincorporated SLCo)	Completed	2025	Yes
Hi-Country 2 (Unincorporated SLCo)	In Progress		No
Herriman	Completed	2025	No
Holladay	In Progress		No
Lamb's Canyon / Forest Home	Completed	2025	Yes
Magna	In Progress		No
Millcreek Canyon	In Progress		No
Mt. Aire	Completed	2026	No
Olympus Cove	In Progress		No
Salt Lake County	Completed	2024	No
White City	In Progress		No

Table 43 - Community Wildfire Protection Plans and Communities

Hazardous Materials

Occupancies which contain hazardous materials potentially pose a risk to the community and can create dangerous environments for firefighters when responding to a spill or fire. Specialized equipment, protective clothing and additional training is required to mitigate a hazmat incident.

Unified Fire Authority's Prevention Division conducts over 700 hazmat inspections each year. The associated map shows the location of Tier II sites within the service area.

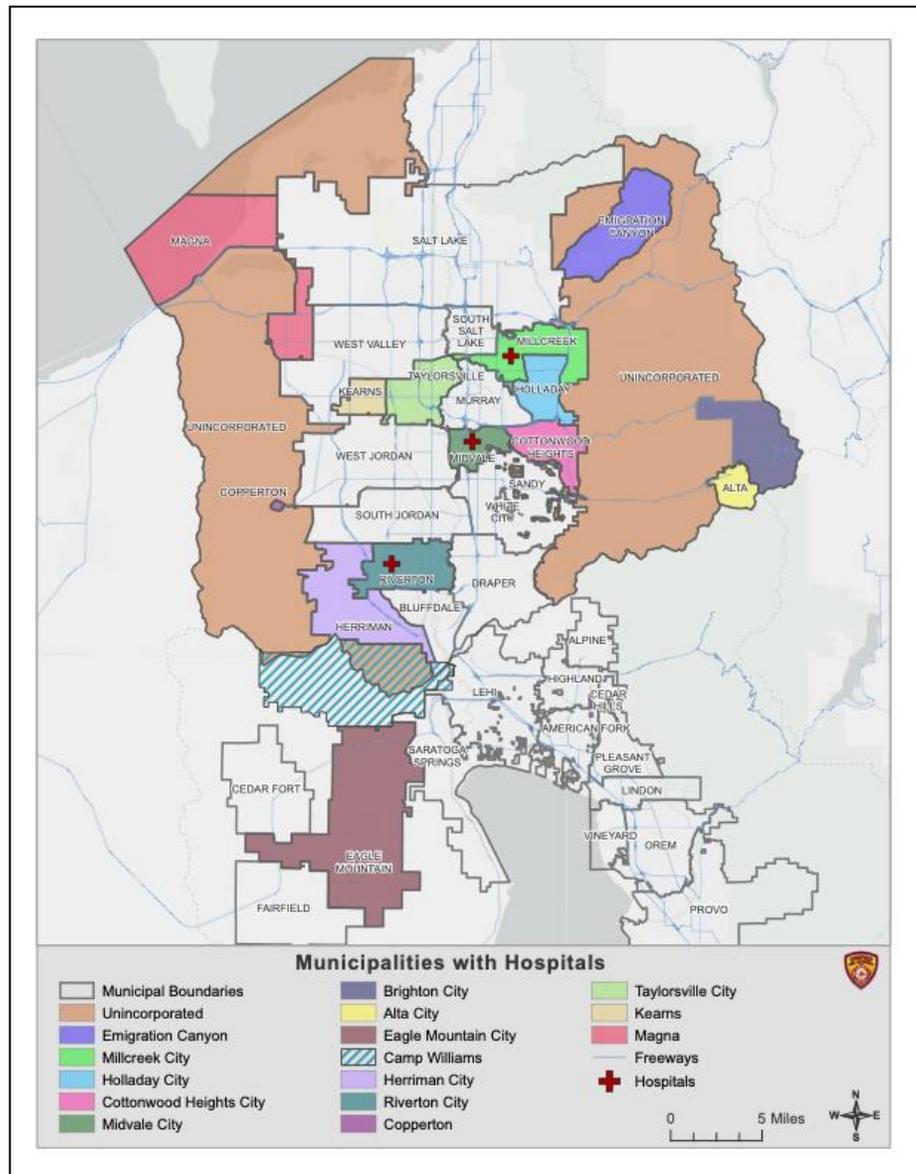


Map 64 - Tier II Sites in Salt Lake County

Hospitals

Hospitals provide a critical service to injured, sick and vulnerable populations. These facilities are usually constructed of highly fire resistive construction with built in fire protection.

Emergencies which include but are not limited to fire incidents, may require emergency personnel to facilitate the rapid movement of patients away from the hazard.

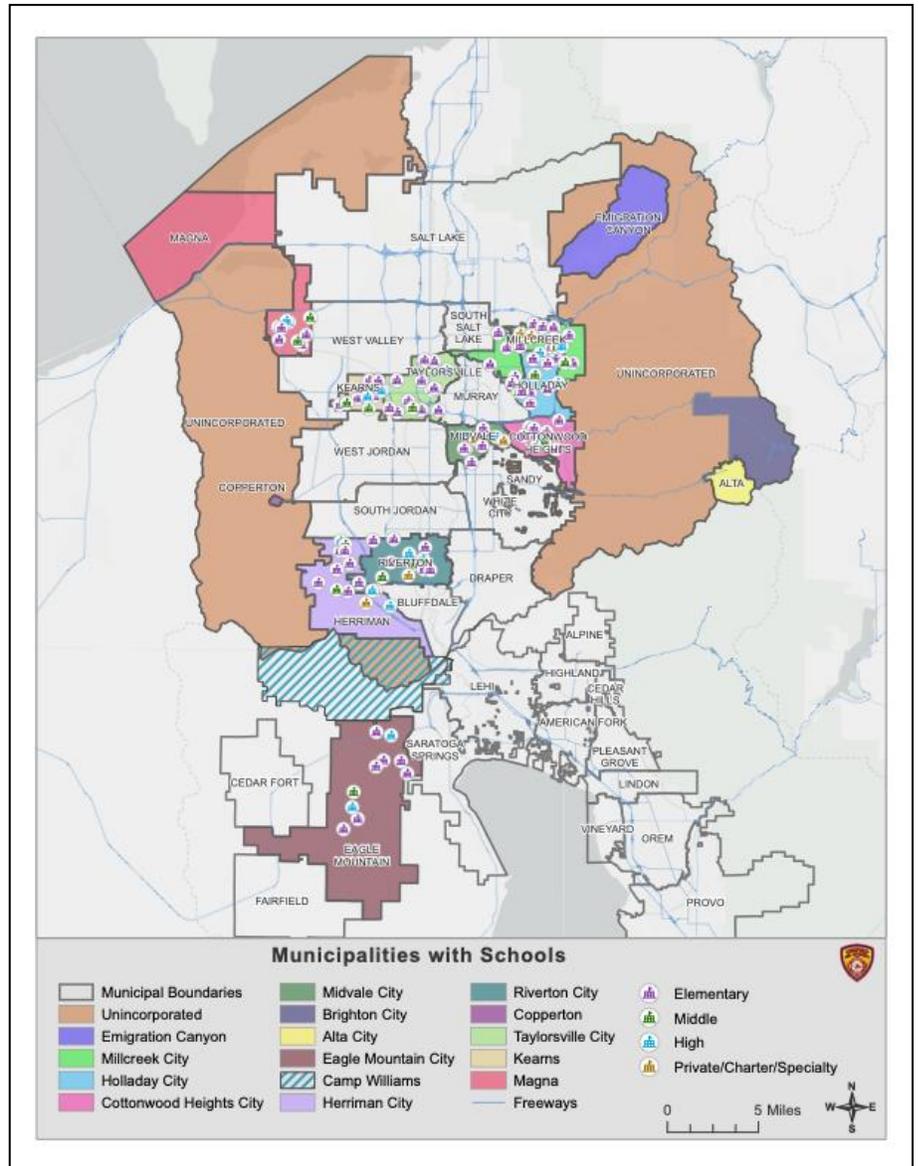


Map 65 - Location of All Hospitals Within the Service Area

Schools (Public/Private)

Multiple school districts and private educational institutions operate within the service area. Unified Fire Authority provides protection to 62 elementary schools, 17 middle/junior high schools and 12 high schools. There are also 25 charter/private schools within the jurisdiction. This does not include the multitude of private and public pre-schools and day cares.

The number of school aged children protected is over 84,000.



Map 66 - Location of All Schools Within the Service Area

Large Square Footage Buildings

Larger buildings such as warehouses, mall, big box stores present several risks to response. These buildings which are over 100,000 square feet of space will require more water, apparatus and personnel to effectively control fires.

Within Unified Fire Authority there are 169 buildings which meet the definition of a large square footage building.

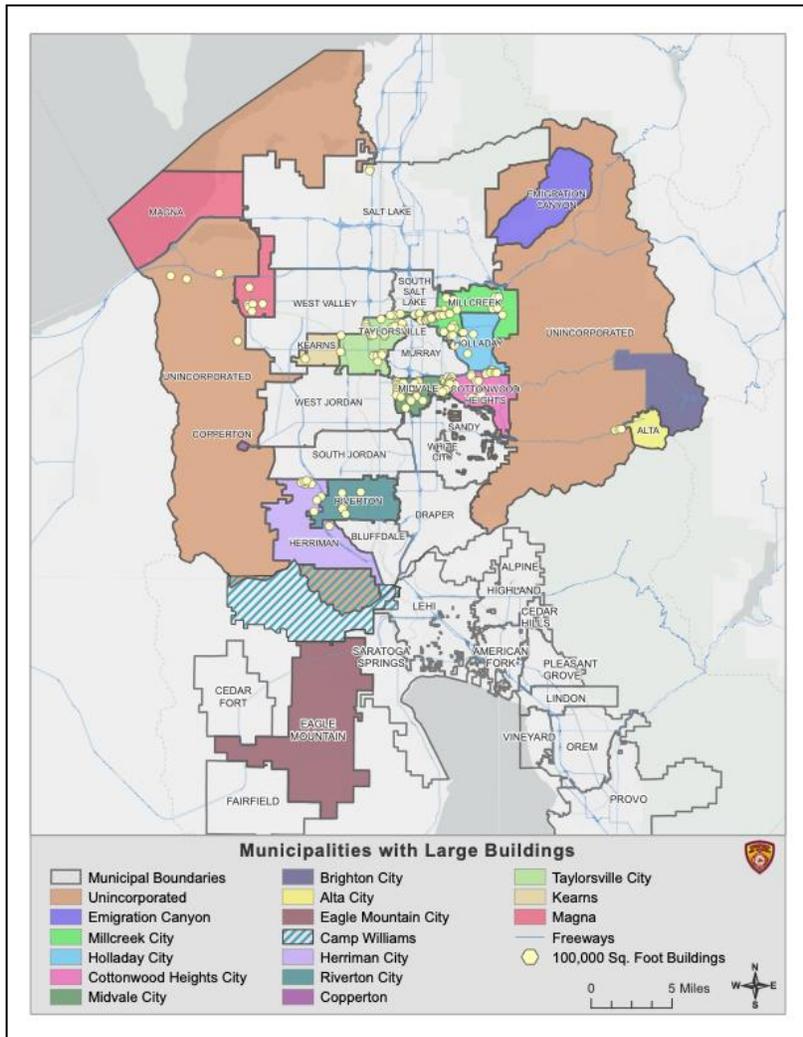
Mid-Rise Buildings

Buildings which are three or more stories in height are often classified as mid-rise buildings.

These buildings have specific hazards which include building heights that will typically require the use of an aerial apparatus to access the upper floors and the roof.

The number and placement of aerial apparatus assists in response to mid-rise buildings and also accomplishes the desired requirement of the ISO which is that an aerial apparatus is within two and a half miles from buildings that are three or more stories in height.

UFA protects approximately 1544 mid-rise buildings.



Map 67 - Location of All Large Buildings Within the Service Area

Life and Property Loss

From 2015-2020, there have been six fatalities attributed to fire (one of those occurred in Draper in 2016, which is no longer within UFA's service area). There has been a total estimate of \$5,032,132 of property loss and a total estimate of \$2,398,031 of content loss due to fire in 2020.

Unified Fire Authority Shared Services

With a regional-response model, the Unified Fire Authority brings special services to bear when the situation calls for it, not relying on automatic or mutual aid which provides a quicker and more effective delivery of service to its residents.

Battalion Chiefs

Unified Fire Authority staffs three operational battalion chiefs (BCs) daily, in addition to a 40-hour Operations Chief (OC). These BCs and OC respond to large, complex, or expanding incidents — providing incident command, safety, and operational direction. Each BC covers an area of UFA’s service area and respond to calls for service in any jurisdiction. Battalion 11 is housed out of Station 101 in Millcreek, Battalion 12 is housed out of Station 121 in Riverton, and Battalion 13 is housed out of Station 118 in Taylorsville.

Community	2018-2020 Battalion Chief or Operations Chief Responses
Alta	19
Brighton	64
Camp Williams	22
Copperton	19
Cottonwood Heights	267
Eagle Mountain	201
Emigration Canyon	36
Herriman	248
Holladay	254
Kearns	321
Magna	289
Midvale	416
Millcreek	632
Riverton	252
Taylorsville	698
Salt Lake County - Unincorporated	474
Unknown Location	1,233
Total BC/OC Responses	5,445

Table 44 - Total Battalion Chief / Operations Chief Responses 2018-2020

Heavy Rescue Companies

Heavy Rescue specializes in structural collapse, confined space rescue, trench collapse rescue, vehicle extrication, machinery disentanglement, rope rescue (high angle, low angle, rigging) and rapid intervention (Firefighter Rescue). The UFA Heavy Rescue Program consists of two independent rescue companies strategically placed in UFA’s jurisdiction. Station 117 in Taylorsville, and Station 121 in Riverton house our Heavy Rescue Teams.

Community	2018-2020 Heavy Rescue Company Responses
Alta	6
Brighton	7
Camp Williams	Unknown
Copperton	7
Cottonwood Heights	76
Eagle Mountain	6
Emigration Canyon	5
Herriman	88
Holladay	73
Kearns	104
Magna	79
Midvale	112
Millcreek	146
Riverton	81
Taylorsville	240
Salt Lake County - Unincorporated	81
Unknown Location	96

Total Heavy Rescue Company Responses	1,207
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Table 45 - Heavy Rescue Company Responses 2018-2020

Hazardous Materials (HazMat) Companies

The Hazardous Materials Teams provide an efficient, effective, and professional Hazardous Material Mitigation response. HazMat Companies respond to hazardous material releases/spills for the purpose of mitigating the release/spill. They select and use proper specialized chemical personal protective equipment dependent on the nature of the incident. The HazMat Program consists of two independent HazMat companies strategically placed in UFA's jurisdiction. Station 124 in Riverton, and Station 126 in Midvale house our HazMat Teams.

Community	2018-2020 HazMat Company Responses
Alta	3
Brighton	3
Camp Williams	0
Copperton	0
Cottonwood Heights	16
Eagle Mountain	56
Emigration Canyon	2
Herriman	16
Holladay	9
Kearns	15
Magna	13
Midvale	36
Millcreek	34
Riverton	18
Taylorsville	48
Salt Lake County - Unincorporated	21
Unknown Location	87
Total HazMat Team Responses	377

Table 46 - Hazardous Materials Company Responses 2018-2020

Water Rescue Teams

UFA has standing water, swift water and ice rescue capabilities. These companies respond to victims recreating in our swift canyon rivers and our lakes and reservoirs. Station 116 in Cottonwood Heights, Station 117 in Taylorsville, Station 121 in Riverton, and Station 123 in Herriman house companies with water rescue capabilities.

Community	2018-2020 Water Rescue Responses
Salt Lake County - Unincorporated	2
Total Water Rescue Responses	2

Table 47 - Water Rescue Responses 2018-2020

📌 – Of Note...

Water Rescues are often times dispatched as a medical call, a call for help, or a motor vehicle accident. UFA is aware there are more water rescue calls than what is captured within the data, and this is one of the gaps that has been identified throughout this process

Wildland Division

UFA’s Wildland Division provides highly trained and experienced wildland fire and all-risk response resources to local, state and federal incidents. The Wildland Division oversees the training and certification of UFA personnel for response to wildland fires and all-hazard incidents. We also work with UFA Communities to educate residents on wildfire preparedness and provide mitigation services to reduce the risks of wildfire. UFA has a special capability where a Duty Officer is able to act as the Fire Warden within UFA’s jurisdictions, allowing the ordering of resources much more quickly than having to rely on a Fire Warden that may or may not be readily accessible. Station 103 in Herriman currently houses the Duty Officer.

Community	2018-2020 Wildland Responses From 103
Alta	0
Brighton	2
Camp Williams	12
Copperton	6
Cottonwood Heights	20
Eagle Mountain	41
Emigration Canyon	11
Herriman	20
Holladay	21
Kearns	17
Magna	61
Midvale	0
Millcreek	62
Riverton	13
Taylorsville	38
Salt Lake County - Unincorporated	65
Unknown Location	126

Total Wildland Responses – From 103	515
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Table 48 - Wildland Responses from Station 103, 2018-2020

Investigations Division

Arson and Explosive related incidents are considered two of the most dangerous criminal activities that threaten our citizens. The need exists to protect the citizens of our jurisdiction from loss of life and property by reducing the crime of arson, arson-related crimes, improvised explosive devices (IEDS) and the prevention of future violent crimes.

The Investigations Division addresses this need by establishing a sound foundation of effective enforcement, focusing on the apprehension of the offender, while in partnership with other local, state, and federal law enforcement agencies. The team utilizes highly-trained Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) certified K-9's that assist with accelerant and explosives detection.

Community	2018-2020 Investigations Responses
Alta	2
Brighton	1
Camp Williams	1
Copperton	3
Cottonwood Heights	31
Eagle Mountain	10
Emigration Canyon	2
Herriman	22
Holladay	31
Kearns	42
Magna	42
Midvale	35
Millcreek	47
Riverton	46
Taylorsville	63
Salt Lake County - Unincorporated	17
Unknown Location	468
Total Investigations Responses	863

Urban Search & Rescue

A FEMA Urban Search and Rescue Task Force is a team of individuals which serve as a resource for disaster response at local, state, and federal levels. It is comprised mainly of firefighters but includes structural engineers, medical professionals, canine/handler teams and emergency managers with highly specialized training in urban search and rescue environments.

Utah Task Force 1 (UT-TF1) is one of 28 Type I, Federal Urban Search & Rescue (US&R) Task Forces in the United States. This program brings a highly trained, multi-hazard Task Force that is especially designed to respond to a variety of emergencies/disasters including earthquakes, hurricanes, tornadoes, floods, terrorist acts and hazardous material releases. Fire department personnel that are task force

members receive specialized training and skills that directly benefit Unified Fire Authority.

Salt Lake County Emergency Management

The Salt Lake County Division of Emergency Management serves our citizens by directing and coordinating resources for disasters and emergencies through preparation, planning, mitigation, response, and recovery. The Salt Lake County Emergency Coordination Center is activated and manned during any event—from small-scale to large-scale occurrences—to disasters both natural and man-made that can or have exceeded the resources of any particular jurisdiction. Currently, the Salt Lake County ECC assists and obtains resources for the 22 jurisdictions located within the Salt Lake Valley. Salt Lake County EM assists these jurisdictions through the activation of 15 Emergency Support Functions (ESFs) filled by employees from a multitude of backgrounds. The ESF employees have authority throughout Salt Lake County to fill and order additional support for the operations occurring in the field until the impacted jurisdiction can return to their normal operations and functions. The Emergency Management Division is committed to keeping the public safe through community outreach, training, dissemination of important public information, training of staff and the creation of a more resilient community through mitigation, preparation, response, and recovery. The ECC has been activated for many events such as Child Abduction Response Team (CART) Deployments, wildland fires such as the Rosecrest and Machine Gun fires, flooding, severe weather events, earthquakes, civil unrest, the COVID-19 pandemic, Line of Duty Deaths (LODD), and many other events.



Unified Fire Authority

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