



2020 FIRE MASTER PLAN
UPDATE

GROVELAND COMMUNITY
SERVICES DISTRICT

APRIL 30, 2020

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EXECUTIVE SUMMARY

The Groveland Community Services District (District) retained Citygate Associates, LLC (Citygate) to prepare an update to its 2007 Fire Master Plan as a foundation for future fire service planning.

This 2020 Fire Master Plan Update is presented in several parts, including this Executive Summary outlining key challenges, findings, and recommendations; an Introduction and Background section; and the Fire Master Plan Update supported by maps and response performance statistics. Overall, this update includes 26 findings and 6 actionable recommendations.

POLICY CHOICES FRAMEWORK

There are no mandatory federal or state regulations directing the level of fire service staffing, response times, or outcomes. Thus, the level of fire protection services provided is a *local policy decision* and communities have the level of fire services they can afford, which may not always be the level desired. However, if services are provided, all local, state, and federal regulations relating to firefighter and citizen safety must be followed.

OVERALL SUMMARY OF DISTRICT FIRE DEPARTMENT DEPLOYMENT

Pursuant to the comprehensive assessment conducted for this Fire Master Plan Update, Citygate finds that the Groveland Community Services District Fire Department (Department) is well organized to accomplish its mission to serve a rural population across a varied land-use pattern with a minimal career staff and no volunteer firefighters. The Department is using best practices, is data driven, as necessary, and receives good value and benefit from its CAL FIRE Schedule A contract and Amador Plan Agreement, including mutual aid as needed from the CAL FIRE Groveland Station when staffed during the summer fire season.

Simply stated, fire service deployment is about the *speed* and *weight* of the response. *Speed* refers to initial response (first-due) of all-risk intervention resources (e.g., engines, quints, rescues, and/or ambulances) strategically deployed across a jurisdiction for response to emergencies within a time interval to achieve desired outcomes. *Weight* refers to multiple-unit responses (Effective Response Force (ERF) also commonly called a First Alarm) for more serious emergencies such as building fires, multiple-patient medical emergencies, vehicle collisions with extrication required, and technical rescue incidents. In these situations, enough firefighters must be assembled within a reasonable time interval to safely control the emergency and prevent it from escalating into a more serious event.

Desired outcomes are the primary factor in determining needed staffing levels and station locations. For example, in urban/suburban areas, if desired outcomes include limiting building fire

damage to only part of the inside of an affected building and/or minimizing permanent impairment resulting from a medical emergency, then the first-due unit should arrive within a recommended 7:30 minutes from 9-1-1 notification, and a multiple-unit ERF response should arrive within 11:30 minutes of 9-1-1 notification at the fire dispatch center, all at 90 percent or better reliability. For rural population density areas such as Groveland, desired outcomes typically include confining a building fire to the building or parcel of origin and keeping it from spreading into the wildland, preventing significant building damage from a vegetation/wildland fire, and preventing serious impairment or death from a medical emergency to the extent possible. In such cases Citygate recommends a first-due response performance goal of 14:00 minutes or less and an ERF goal of 19:30 minutes or less at 90 percent or better reliability.

Response time includes three distinct components: (1) 9-1-1 call processing/dispatch time; (2) crew turnout time; and (3) travel time. Recommended best practices for these response components for urban population density areas are 1:30 minutes, 2:00 minutes, and 4:00/8:00 minutes respectively for first-due and multiple-unit ERF responses. For rural response areas, they equate to 1:30 minutes, 2:00 minutes, and 10:30/16:00 minutes, respectively. As will be discussed in this report, this slower response performance goal also generally results in less-desirable outcomes including total building fire loss, lower serious emergency medical services (EMS) survivability, and larger wildland fires. Table 1 summarizes the Department’s 90th percentile operational response performance over the previous three years.

Table 1—90th Percentile Response Performance (From Table 35)

Response Performance Component	Best Practice Goal	Groveland CSD
Call Processing/Dispatch	1:30	00:46
Crew Turnout	2:00	4:25
First-Due Travel	10:30	9:51
First-Due Call-to-Arrival	14:00	13:42

Highlights from Table 1 include:

- ◆ Call processing/dispatch performance is *significantly faster* than best practice standards.
- ◆ Crew turnout performance is *more than double* the recommended best practice goal.
- ◆ First-due travel time is *faster* than the recommended 10:30-minute goal for rural areas.

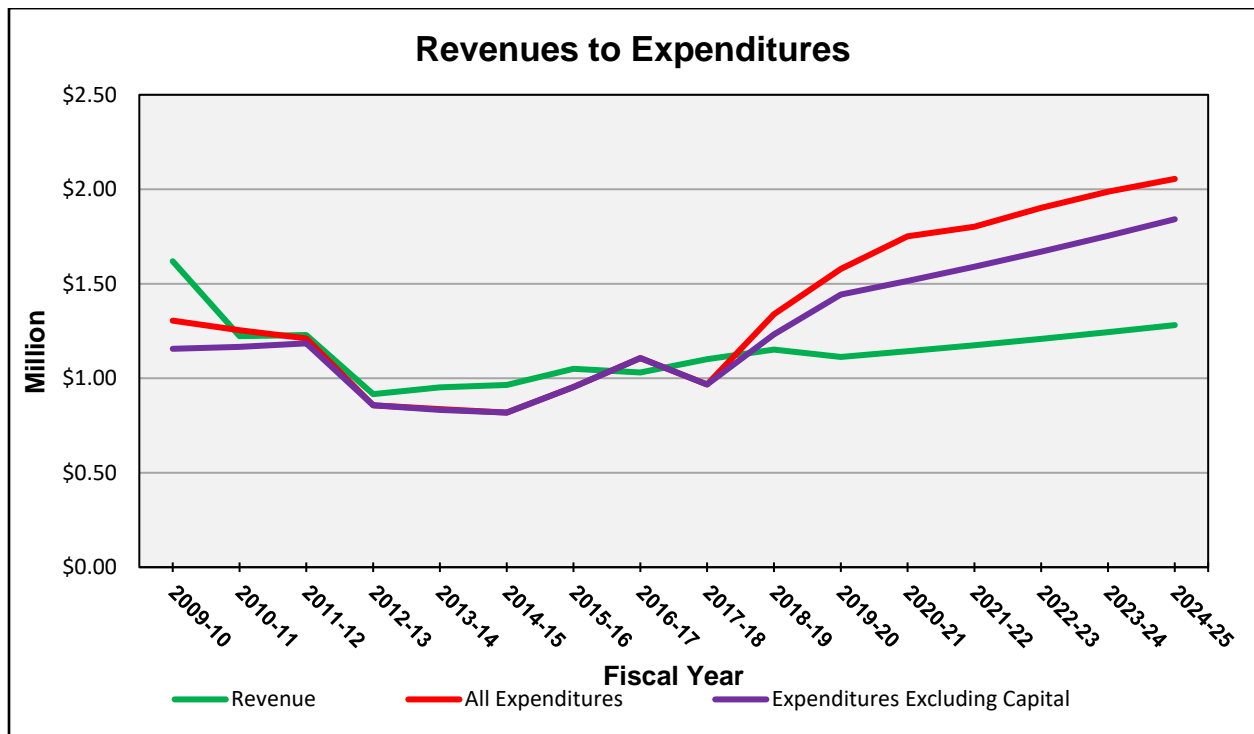
- ◆ Overall first-due call-to-arrival performance is *slightly better* than the recommended 14:00-minute best practice goal for rural areas to keep small fires small and to provide first responder emergency medical care.

Overall, Citygate finds that the District is providing the best quality fire services it can afford and is facing two primary challenges in its efforts to continue to maintain adequate fire services: (1) long-term fiscal sustainability, and (2) daily staffing capacity.

CHALLENGE #1—FISCAL SUSTAINABILITY

Beginning in Fiscal Year (FY) 2016–17, and continuing again since FY 2018–19, the District has spent more on fire services than it received in revenue. This is the result of several factors including voter defeat of the District’s former parcel tax in 2012, minimal growth in the District’s property tax base, an increase in revenues of 19 percent from FY 2014–15 to FY 2018–19 compared to an increase in expenditures of 63 percent over the same time, and a 50 percent increase in the District’s CAL FIRE Schedule A contract cost over the same time.

Figure 1—Revenues Compared to Expenditures (From Figure 21)



Given this widening structural deficit, the District’s Fire Fund is projected to be *exhausted* within the next two fiscal years absent additional revenue and/or significant reductions in expenditures as illustrated in Figure 2.

Figure 2—Fire Fund Balance (From Figure 22)

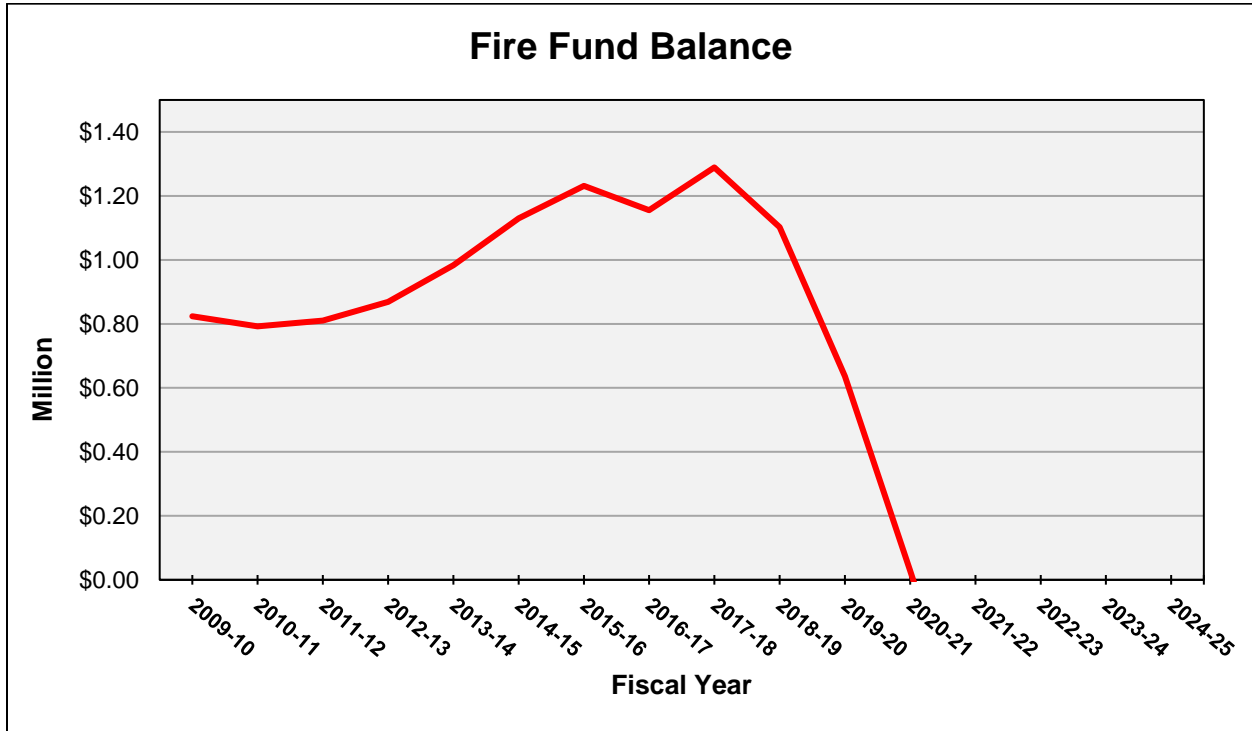


Table 2 and Table 3 summarize projected Fire Fund expenditures and revenues through FY 2029–30.

Table 2—Projected Fire Service Costs – FY 2020–21 through FY 2024–25 (From Table 46)

Cost Category	Annual Change Factor	Projected Costs				
		FY 2020–21	FY 2021–22	FY 2022–23	FY 2023–24	FY 2024–25
CAL FIRE Schedule A Contract	5.00%	1,131,604	1,188,184	1,247,593	1,309,973	1,375,472
CAL FIRE Amador Plan Agreement	5.00%	286,138	300,444	315,467	331,240	347,802
Operations/Maintenance	5.00%	76,124	79,930	83,927	88,123	92,529
District Administration	5.00%	21,007	22,058	23,161	24,319	25,535
Fire Fund Reserve	0.00%	26,500	26,500	26,500	26,500	26,500
Capital Replacement/Renewal ¹		236,500	211,500	231,500	233,500	213,500
Total Projected Expenditures		1,777,873	1,828,616	1,928,147	2,013,655	2,081,337
Projected Revenue		1,142,871	1,174,452	1,208,541	1,244,167	1,280,862
Gap		-635,002	-654,164	-719,607	-769,488	-800,475

¹ As identified in the District Fire Capital Replacement Plan

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Table 3—Projected Fire Service Costs – FY 2025–26 through FY 2029–30 (From Table 47)

Cost Category	Annual Change Factor	Projected Costs				
		FY 2025–26	FY 2026–27	FY 2027–28	FY 2028–29	FY 2029–30
CAL FIRE Schedule A Contract	5.00%	1,444,245	1,516,457	1,592,280	1,671,894	1,755,489
CAL FIRE Amador Plan Agreement	5.00%	365,192	383,452	402,624	422,756	443,893
Operations/Maintenance	5.00%	97,156	102,013	107,114	112,470	118,093
District Administration	5.00%	26,811	28,152	29,559	31,037	32,589
Fire Fund Reserve	0.00%	26,500	26,500	26,500	26,500	26,500
Capital Replacement/Renewal ¹		236,500	236,500	242,500	239,500	218,500
Total Projected Expenditures		2,196,404	2,299,074	2,397,578	2,483,157	2,645,065
Projected Revenue		1,318,658	1,357,588	1,397,685	1,438,986	1,481,525
Gap		-877,746	-941,487	-999,893	-1,044,171	-1,163,540

¹ As identified in the District Fire Capital Replacement Plan

As Table 2 and Table 3 illustrate, even elimination of the District’s CAL FIRE Amador Plan Agreement would not close this budget gap, and the District will require an additional estimated \$0.635 million in revenue next fiscal year to close the projected gap to maintain current fire services, increasing approximately five percent each subsequent year to an estimated \$1.164 million in FY 2029–30. Multiple funding strategies are available for the District’s consideration to close this revenue gap, including:

1. An annual parcel assessment.
2. A special tax.
3. Non-resident service fees.
4. A cost recovery/reimbursement agreement with Tuolumne County.

As with the District’s previous parcel assessment, any new assessment will require a weighted majority approval of the District’s property owners under Proposition 218 (California Government Code Section 53750 et seq.), as well as a detailed engineer’s report.

Some local jurisdictions have adopted ordinances charging non-residents for services funded by resident-paid taxes and fees as authorized under California law. For most agencies charging non-resident service fees, most of the revenue is generated by traffic-related incidents where the jurisdiction bills the responsible party’s automobile insurance provider. While many insurance companies do pay these invoices, some do not, and some local agencies have adopted policies or procedures waiving the non-resident fee if the insurance carrier refuses to pay the invoice rather

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than pursue payment from the individual or their family. For traffic-related incidents, the investigating law enforcement agency is responsible for collecting the involved parties’ personal information, including insurance information as required by the California Vehicle Code.

Until recently, most law enforcement agencies shared insurance carrier information with responding fire agencies; however, some, including the California Highway Patrol, have adopted policies precluding the sharing of involved parties’ personal information. As a result, local fire agencies with non-resident fee ordinances are finding it increasingly difficult to obtain the information needed to bill a responsible party’s insurance provider. In some cases, including the Ebbetts Pass Fire Protection District, the local jurisdiction has discontinued enforcement of its non-resident fee ordinance for this reason. While this funding strategy may have merit based on the number of non-residents who receive services from the Groveland Community Services District Fire Department, Citygate recommends that the District thoroughly investigate and evaluate the potential revenue likely to be generated from this source versus the capacity and costs required to administer and enforce such a program.

The District provides automatic and mutual aid response to emergency vegetation and vehicle fires and EMS incidents between Moccasin and Yosemite National Park along Highway 120 pursuant to the Tuolumne County Automatic and Mutual Aid Agreements as the only staffed response agency in that unincorporated area of the County except for the CAL FIRE Groveland Station when staffed and available. As shown in Table 4, and as further discussed in Section 2.7.2, out-of-District responses accounted for nearly 12 percent of total service demand and slightly more than 37 percent of total time committed to incident responses over the three-year study period.

Table 4—Incident Response Summary – 2016–2018 (From Table 34)

Incident Location	3-Year Total			
	Number of Responses	Percentage of Responses	Total Time Committed	Percentage of Total Time Committed
Groveland CSD	1,361	88.20%	169:59:37	62.86%
Out-of-District	182	11.80%	100:25:39	37.14%
Total	1,543	100.00%	270:25:16	100.00%

Source: Groveland CSD Fire Department incident data

While the County funds the volunteer County Fire Department stations, it also provides the following services within the District at no direct District cost:

- ◆ Dispatch services
- ◆ New development site plan review

- ◆ New construction fire inspections
- ◆ State-mandated fire safety inspections for specified occupancies
- ◆ Administration of District fire services (Division Chief)
- ◆ Training of District fire personnel
- ◆ Safety Officer response to emergency incidents as required.

The Terra Vi Resort Project Summary (September 25, 2019) reviewed for this report does not address which agency will provide first responder fire services at the proposed resort, although the County Fire Department Smith Station and U.S. Forest Service (USFS) Buck Meadows stations are closest. If no full-time staffing is provided at either of these stations, it is reasonable to assume that Groveland will continue to be the closest staffed response agency. If this appears likely as the development continues through the environmental review and approval process, the District should negotiate a cost recovery agreement with the County for responses outside of the District. Where there are no other response forces, the automatic mutual aid zone area is not reciprocal and, as such, a District response capacity standby fee is appropriate. A per-incident reimbursement for actual costs does not, at the frequency of use, appropriately compensate the District for all its direct and overhead expenses in operating fire services. Thus, a more stable annual fee is needed to offset a percentage of the District's annual fire service provided outside of the District.

CHALLENGE #2—DAILY STAFFING CAPACITY

Citygate finds that the Department's physical resources are appropriate to protect against the hazards likely to impact the District; however, the daily staffing of two to five career response personnel¹ and no volunteers is *barely adequate* to safely perform the critical tasks associated with small, emerging fires and routine single-patient EMS incidents as described in Section 2.5. Even a best-case staffing level of nine career personnel (two District personnel and seven CAL FIRE Groveland Station personnel including a Chief Officer) is *insufficient* to safely and effectively perform the critical firefighting/rescue tasks at a confined building fire, moderate vegetation/wildland fire, serious multiple-patient EMS incident, or complex rescue incident in a timely manner without additional assistance. In addition, the District is not geographically located for timely mutual aid, thus a worst-case District staffing of two personnel reflects a likely outcome of not even being able to confine building fires to the building or parcel of origin, an inability to confine a rapidly developing vegetation/wildland fire, and the non-survival of some EMS patients.

¹ Depending on time of year (i.e., the District's CAL FIRE Amador Plan Agreement only provides additional daily District staffing during the winter non-fire season months)

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Recognizing that the District is currently providing the best fire services it can afford, in Citygate’s opinion, optimal daily operational response staffing for the District is six personnel given the values to be protected and the risks as outlined in Section 2.2. This could be achieved incrementally as funding permits by adding one full-time equivalent (FTE) on the District engine, and one Amador Plan firefighter during the winter months, with associated estimated annual costs as summarized in Table 4 and Table 5. To help ease the fiscal transition associated with adding daily on-duty staffing, the District could seek a Federal Emergency Management Agency (FEMA) Staffing for Adequate Fire and Emergency Response (SAFER) grant that reimburses 75 percent of first- and second-year costs, and 35 percent of third-year costs.

Table 5—Estimated Optimal Staffing Level Costs (FY 2020–21 through FY 2024–25)
(From Table 36)

Expenditure Category	Annual Change Factor	FY 2020–21	FY 2021–22	FY 2022–23	FY 2023–24	FY 2024–25
CAL FIRE Schedule A Contract	5.00%	1,131,604	1,188,184	1,247,593	1,309,973	1,375,472
3.0 Additional Engineer FTEs	5.00%	616,497	647,322	679,688	713,673	749,356
Schedule A Contract Total		1,748,101	1,835,506	1,927,281	2,023,646	2,124,828
CAL FIRE Amador Plan Agreement	5.00%	286,138	300,444	315,467	331,240	347,802
1.5 Additional FF-I FTEs	5.00%	227,798	239,188	251,148	263,705	276,890
Amador Plan Total		513,936	539,633	566,615	594,945	624,693
Total Annual District Fire Personnel Costs		2,262,037	2,375,139	2,493,896	2,618,591	2,749,520

Table 6—Estimated Optimal Staffing Level Costs (FY 2025–26 through FY 2029–30)
(From Table 37)

Expenditure Category	Annual Change Factor	FY 2025–26	FY 2026–27	FY 2027–28	FY 2028–29	FY 2029–30
CAL FIRE Schedule A Contract	5.00%	1,444,245	1,516,457	1,592,280	1,671,894	1,755,489
3.0 Additional Engineer FTEs	5.00%	786,824	826,165	867,473	910,847	956,389
Schedule A Contract Total		2,231,069	2,342,623	2,459,754	2,582,741	2,711,879
CAL FIRE Amador Plan Agreement	5.00%	365,192	383,452	402,624	422,756	443,893
1.5 Additional FF-I FTEs	5.00%	290,735	305,272	320,535	336,562	353,390
Amador Plan Total		655,927	688,723	723,160	759,318	797,284
Total Annual District Fire Personnel Costs		2,886,996	3,031,346	3,182,913	3,342,059	3,509,162

FINDINGS AND RECOMMENDATIONS

Following are Citygate's findings and actionable recommendations from this Fire Master Plan Update.

Finding #1: The District has made significant progress on the recommendations contained in the 2007 Fire Master Plan.

Finding #2: Citygate estimates that the District will experience little full-time resident population growth and additional new development through 2029.

Finding #3: The District Fire Department and CAL FIRE Emergency Command Center utilize a standard response plan that considers risk and establishes an appropriate initial response for each incident type. Each call for service receives the combination of engines, specialty units, and command officers customarily needed to effectively control that type of incident based on each agency's experience.

Finding #4: The District has not adopted fire response performance objectives meeting best practice elements for time and desired outcomes.

Finding #5: The area of the District generally east of the mid-point of the Pine Mountain Lake Airport is beyond the 10:30-minute first-due travel time goal and related 14:00-minute first-due arrival goal.

Finding #6: Simultaneous incidents minimally impact first-due response performance, occurring on average approximately once every 21 days.

Finding #7: Out-of-District responses account for 37 percent of the total time District resources were committed to emergency responses over the three-year study period.

Finding #8: The District provides significant mutual and automatic aid to the unincorporated areas of the County outside of the District.

Finding #9: The CAL FIRE Schedule A contract and Amador Plan Agreement provide good value and benefit to the District and also provide direct benefits to the unincorporated areas of the County surrounding the District.

Finding #10: Call processing/dispatch performance is well within the recommended best practice goal of 90 seconds or less.

Finding #11: Crew turnout performance cannot be accurately measured given current CAL FIRE Tuolumne-Calaveras Unit Emergency Command Center procedures.

- Finding #12:** First-due travel performance is more than six percent *faster* than the Citygate-recommended 10:30-minute goal for *rural* areas.
- Finding #13:** First-due call-to-arrival performance *is meeting* the Citygate-recommended 14:00-minute goal for *rural* areas.
- Finding #14:** The District’s minimum daily staffing level is *barely sufficient* to safely perform the critical tasks associated with small, emerging fires and routine single-patient medical emergencies in a timely manner.
- Finding #15:** The District’s best-case Effective Response Force of nine personnel is *insufficient* to safely perform the critical tasks associated with a confined building fire, moderate to significant vegetation/wildland fire, serious multiple-patient emergency medical services incident, or complex rescue incident in a timely manner without additional assistance.
- Finding #16:** The District is not geographically located to receive prompt mutual aid and increases in mutual aid calls outside the District could impact service levels including response times.
- Finding #17:** The District is the primary provider of mutual aid and is the first-in responder to the unincorporated areas of the County east of the District along the Highway 120 corridor except for the CAL FIRE Groveland Station when staffed and available.
- Finding #18:** District Fire Station #78 and the CAL FIRE Groveland Station can be expected to provide desired first-due response times to approximately 90 percent of the District.
- Finding #19:** It would be cost-prohibitive to consider relocating District Fire Station #78 to provide desired first-due response times to the remaining 10 percent.
- Finding #20:** Fire Fund revenues exceeded expenditures in seven of the last ten fiscal years.
- Finding #21:** Since Fiscal Year 2017–18, the District has experienced a structural fire services budget deficit where expenditures exceed revenues, requiring augmentation from Fire Fund reserves to achieve a balanced budget. Without significant new revenues and/or a significant reduction in expenditures, this structural budget deficit is projected to increase annually.
- Finding #22:** Given projected revenues and expenditures, the District’s Fire Fund is projected to be *exhausted* within the next two fiscal years.

Finding #23: The District will require an *additional* estimated \$0.635 million in revenue in Fiscal Year 2020–21 to maintain current fire services, increasing approximately five percent each subsequent year to an estimated \$1.164 million in Fiscal Year 2029–30.

Finding #24: The District has multiple supplemental funding strategy options available for consideration, with an annual parcel assessment and cost recovery/reimbursement agreement with Tuolumne County considered most viable.

Finding #25: Absent significant additional annual revenues, the District is facing *severe* fire service reductions, including elimination of its CAL FIRE Amador Plan Agreement as well as potential loss of its CAL FIRE Schedule A contract.

Finding #26: Absent significant additional annual revenues, the District could potentially be faced with eliminating fire protection services through a Local Agency Formation Commission latent power abandonment process.

Recommendation #1: **Adopt Deployment Policies:** The District Board of Directors should adopt the following fire deployment goals to deliver outcomes that will save medical patients when possible upon arrival and to keep small but serious fires from becoming more serious:

1.1 Distribution of Fire Stations: First-due response units should arrive within 14:00 minutes, 90 percent of the time from the receipt of the 9-1-1 call at the fire dispatch center, which equates to a 90-second dispatch time, 2:00-minute crew turnout time, and 10:30-minute travel time.

1.2 Multiple-Unit Effective Response Force (ERF) for Serious Emergencies: A multiple-unit ERF, including at least one Chief Officer, should arrive within 19:30 minutes from the time of 9-1-1 call receipt at fire dispatch 90 percent of the time. This equates to a 90-second dispatch time, 2:00-minute company turnout time, and 16:00-minute travel time.

1.3 Hazardous Materials Response: To provide hazardous materials response designed to protect the community from the hazards associated with uncontrolled release of hazardous and toxic materials, a first-due response unit should arrive within 14:00 minutes, 90 percent of the time from the receipt of the 9-1-1 call at the fire dispatch center to isolate the hazard, deny entry into the hazard zone, and notify appropriate officials/resources to

minimize impacts on the community. Following initial hazard evaluation and/or mitigation actions, a determination can be made whether to request additional resources from a regional hazardous materials team.

- 1.4** Technical Rescue: To respond to technical rescue emergencies as efficiently and effectively as possible with enough trained personnel to facilitate a successful rescue, a first-due response unit should arrive within 14:00 minutes, 90 percent of the time from the receipt of the 9-1-1 call at the fire dispatch center to evaluate the situation and/or initiate rescue actions. Following the initial evaluation, assemble additional resources as needed within a total response time of 19:30 minutes to safely complete rescue/extrication and delivery of the victim to the appropriate emergency medical care facility.

Recommendation #2: The Department should work with the CAL FIRE Tuolumne-Calaveras Unit Emergency Command Center to modify its procedures to accurately track crew turnout time.

Recommendation #3: The District should consider augmenting daily on-duty staffing as funding permits.

Recommendation #4: The District's staffing would be much safer and more effective if a total of six firefighters were always stationed in Groveland between the District and CAL FIRE.

Given six personnel, under the safety laws, there could be three teams of two: one command and pump operator team and two 2-firefighter teams for simultaneous fire attack and occupant rescue duties.

Recommendation #5: The District should consider seeking voter approval of an annual parcel assessment or special tax to provide necessary supplemental funding to, at a minimum, maintain current fire protection services.

Recommendation #6: The District should consider seeking a cost recovery/reimbursement agreement with Tuolumne County for the District's percentage of total responses outside of the automatic mutual aid zone.

RECOMMENDED NEXT STEPS

Citygate's recommends the following next steps for the District to consider:

1. Review and absorb the content, findings, and recommendations of this Fire Master Plan Update.
2. Prepare a staff report and draft resolution for consideration by the District Board of Directors adopting the included recommended response performance goals.
3. Aggressively pursue one or more of the suggested funding strategies to ensure long-term fiscal sustainability.
4. Provide additional daily staffing if/when funding becomes available; consider seeking a Federal Emergency Management Agency (FEMA) Staffing for Adequate Fire and Emergency Response (SAFER) grant to provide partial reimbursement of those costs over the first three years.

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SECTION 1—INTRODUCTION AND BACKGROUND

The Groveland Community Services District (District) retained Citygate Associates, LLC (Citygate) to prepare an update to its 2007 Fire Master Plan to provide a foundation for future fire service planning.

1.1 REPORT ORGANIZATION

This report is organized into the following sections. **Appendix A** (Map Atlas) includes all the maps referenced throughout this report.

Executive Summary: Summary of significant fire service challenges, key findings and recommendations, and next steps.

Section 1 Introduction and Background: An introduction to the 2020 Fire Master Plan Update goals and limitations and overview of Citygate’s approach and methodology.

Section 2 2020 Fire Master Plan Update: An overview of the Groveland Community Services District Fire Department (Department) as well as the detailed analysis of the Department’s ability to deploy and mitigate emergency risks within its service area, including analysis of future growth, community risk, operational deployment capabilities and performance, and potential future service needs.

Section 3 Next Steps: Citygate’s recommended next steps for the District.

1.2 GOALS OF THE FIRE MASTER PLAN UPDATE

This Fire Master Plan Update cites findings and makes recommendations, as appropriate, related to each finding. Findings and recommendations throughout this report are sequentially numbered. A complete list of all findings and recommendations is provided in the Executive Summary.

This document provides technical information about how fire services are provided and legally regulated, and how the District currently deploys and operates its fire resources. This information is presented in the form of recommendations and policy choices for consideration by the District.

The result is a solid technical foundation upon which to understand the advantages and disadvantages of the choices facing the District regarding future fire services and, more specifically, at what level of desired outcome and expense.

1.3 LIMITATIONS OF THE UPDATE

In the United States, there are no federal or state regulations requiring a specific minimum level of fire services. Each community, through the public policy process, is expected to understand the

local fire and non-fire risks and its ability to pay, and then choose its level of fire services. *If* fire services are provided at all, federal and state regulations specify how to do so safely for the public and for the personnel providing the services.

While this Fire Master Plan Update and technical explanation can provide a framework for the discussion of future fire services within the District, neither this report nor the Citygate team can make the final decisions. Once final strategic choices receive policy approval, District staff can conduct any cost and fiscal analysis required as part of its normal operating and capital budget cycle.

1.4 FIRE MASTER PLAN UPDATE APPROACH AND METHODOLOGY

1.4.1 Fire Master Plan Update Approach and Research Methods

Citygate utilized multiple sources to gather, understand, and model information about the District and its fire services. Citygate started by requesting a large amount of background data and information to better understand current costs, service levels, history of service level decisions, and other prior studies.

Citygate subsequently conducted focused interviews of the District’s project team members and reviewed demographic information about the District’s service area and the potential for future growth and development. Citygate further obtained map and response data from which to model fire service deployment.

Once Citygate understood the District’s service area and its fire and non-fire risks, the Citygate team developed a model of fire services that was tested against prior response data to ensure an appropriate fit. Citygate also evaluated future service area growth and service demand by risk types. This resulted in Citygate proposing an approach to address current needs with the effective and efficient use of existing resources, as well as address long-range needs. The result is a framework for enhancing District services while meeting reasonable community expectations and fiscal realities.

1.4.2 Project Scope of Work

Citygate’s approach to this Fire Master Plan Update involved:

- ◆ Requesting and reviewing relevant project background data and information as well as conducting listening sessions with project stakeholders.
- ◆ Identifying projected future District population and related development growth.
- ◆ Identifying the level and types of services currently provided under the CAL FIRE Schedule A contract and supplemental Amador Plan Agreement.

- ◆ Utilizing the Commission on Fire Accreditation International (CFAI) self-assessment criteria and National Fire Protection Association (NFPA) standards as the basis for evaluating the deployment services provided.
- ◆ Identifying the natural and human-caused hazards likely to impact the District, and evaluating and quantifying the risk associated with each hazard
- ◆ Utilizing geographic mapping to model fire station travel coverage.
- ◆ Using an incident response time analysis program called StatsFD™ to review the statistics of prior incident performance, then plotting the results on graphs and geographic mapping exhibits.
- ◆ Recommending appropriate risk-specific response performance goals.
- ◆ Making recommendations to meet current and future fire protection and EMS risks and governmental regulations for such services.
- ◆ Determining the necessary long-term Department budget and best-fit funding strategy or strategies.

1.5 2007 FIRE MASTER PLAN REVIEW AND STATUS

The District previously commissioned Citygate in 2007 to prepare a Fire Master Plan to evaluate the capacity of its Fire Department to respond to emergency fire, rescue, and medical incidents within the District, and to review other related operational and support functions. The goal of the 2007 Fire Master Plan was to facilitate the District's ability to make informed policy decisions regarding the level of fire, rescue, and emergency medical services desired and the best method to deliver and fund them.

The resultant 2007 Fire Master Plan acknowledged: (1) the District's challenge to provide an adequate level of fire services within available fiscal resources; (2) Groveland community demographics and the increasingly smaller pool of very few potential volunteer firefighters; (3) the community's geographic isolation making fast mutual aid assistance all but impossible; and (4) the District's efforts to improve fire services by:

- ◆ Adding a small number of career staff.
- ◆ Attempting to develop other types of volunteer recruitment programs.
- ◆ Strengthening regional partnerships and mutual aid agreements.
- ◆ Focusing on safety and training.
- ◆ Performing additional services with the small career staff, including fire inspections, public education, and outdoor vegetation abatement.

- ◆ Improving fire apparatus maintenance.
- ◆ Acknowledging that changes in community demographics and legal mandates will require adaptation by the District in how it provides fire services.

The 2007 Fire Master Plan focused on deployment, administrative, and fiscal elements. Findings and recommendations for each element of the plan were as follows, with the current status of each recommendation shown in blue italics.

1.5.1 Deployment

2007 Findings

- Finding #1:** The response times in the District for a first-due unit are long, reflective of a rural level of effort and the fact that the District is too geographically large to serve from one station and still have a significant number of incidents in the more distant areas result in a positive outcome.
- Finding #2:** There is not a sufficiently large and dependable volunteer force to supply an adequate number of volunteer firefighters. If all the volunteers responded with the on-duty career personnel, there would be a structure fire staffing of 14–15. The likelihood of this occurring, as we can see from the historical record, is virtually impossible, so an inadequate response force to a significant building fire still exists.
- Finding #3:** Based on its small size and with continued fire prevention and public education, an adequate level of service for a rural community such as Groveland would be a small, phased increase in staffing. The problem is that an increase in staffing for the Long Gulch Ranch Development needs to precede the development of the tax base to support it.
- Finding #4:** The Groveland Fire Department cannot effectively serve the areas northeast of the lake from only one staffed fire station. The travel times to this area are beyond desirable outcomes for serious fires, cardiac arrest or major trauma patients.
- Finding #5:** The surrounding rural area in the Fire District will never develop into a densely populated area and will remain mostly light-density residential building types. As such, given the current planning approvals, it will not be cost-effective for the Groveland District area to have three or more fire stations.
- Finding #6:** The current level of Firefighter-EMT and private ambulance paramedic care is well designed and appropriate to risks in the community, except for the distant response of a second or back-up ambulance.

The 2007 Fire Master Plan identified several levels of potential response deployment with likely resultant outcomes. Desired Outcome B (confine building fires to building of origin; EMS patients receive paramedic care, but some critical patients may not survive; wildland fires contained to eight acres or less with modest building damage) was identified as the best choice for the District.

2007 Recommendations and Current Status (Shown in Blue Text)

Recommendation #1: The District should strive to deliver first-due unit total response time of 10:00–12:00 minutes with two to three personnel, and all units total response time of 15:00–20:00 minutes with nine to ten personnel, at 90 percent or better reliability (Desired Outcome B for emerging suburban areas).

Over the past three years, 90th percentile first-due response performance is 13:42 minutes (see Table 35).

Recommendation #2: Increase daily career staffing from two to three firefighters.

Minimum daily staffing is two career personnel.

Recommendation #3: Contract with CAL FIRE for an Amador Plan engine crew over the winter months.

The District implemented an Amador Plan Agreement with the Tuolumne-Calaveras CAL FIRE Unit beginning in FY 2009–10.

Recommendation #4: Add a second fire station staffed with two career firefighters.

No action taken to date.

Recommendation #5: Consider a part-time firefighter program to supplement daily career staffing.

The District adopted a resolution in January 2020, authorizing a Volunteer Resident Firefighter Program to supplement daily career staffing.

1.5.2 Administrative

2007 Findings

Finding #7: The fire apparatus are older than in typical suburban service and will continue to present challenges for cost-effective repair and “up time” given their age.

Finding #8: The Department does not have an adequate wildland fire type apparatus. The current, older Type IV units carry too little water for sustained fire attack in more than a small residential lot size grass fire situation. While CAL FIRE and the Forest Service are responsible for wildland fire fighting, the homes in Groveland would be better served if Groveland also operated a more capable Type III wildland fire apparatus that carried a crew of three to four in an enclosed cab and carried 500 gallons of water and at least a 500-gallon per minute pump.

2007 Recommendations and Current Status (Shown in Blue Text)

Recommendation #6: A computer-based management information system software program would greatly enhance the Department's record management and add considerable efficiency to its leanly staffed administrative functions.

The District utilizes the CAL FIRE records management system under its Schedule A Cooperative Fire Protection Agreement.

Recommendation #7: Fire Apparatus

7.1 A one-station fire department should operate the following minimum fire apparatus:

- One front-line pumper (two with a second station)
- One reserve pumper
- One Type III wildland pumper
- One small rescue/utility apparatus

The Department's current apparatus inventory reflects this recommendation.

7.2 The Department should obtain the funding to reduce its fleet to operational necessity and at that time remove any pre-1974 apparatus from service.

The Department's oldest apparatus (reserve engine) was placed in service in 1984.

7.3 The District should send one of its mechanics to the State Fire Training Mechanics Academy leading to eventual certification. This would improve repair turnaround times by having repairs performed locally instead of contracted out to a fire equipment repair facility in the Central Valley.

Unknown status.

Recommendation #8: Citygate recommends the Department continue its relationship with the Tuolumne County dispatch center. Even with the \$15,000 annual cost,

the District is receiving services at a cost lower than it could provide them on their own.

Dispatch services are provided by CAL FIRE at no cost to the District.

Recommendation #9: Volunteer Firefighter Program

- 9.1** The Department should continue its efforts to recruit, train, and retain volunteers. The National Volunteer Fire Council, www.nvfc.org, maintains a website that supports volunteer fire recruiting, training, and retention efforts.

Minimal success, given the District's demographics; no volunteers since implementation of the CAL FIRE Schedule A Cooperative Fire Protection Agreement in 2013.

- 9.2** The Department should consider a Part-Time Firefighter (PTF) Program that would provide non-career staff to supplement but not replace the need for a minimum of two career firefighters at each station. These PTF staff would be very useful at an emergency incident when more than the minimum career staff is needed.

The District Board of Directors adopted a resolution in January 2020, authorizing implementation of a Volunteer Resident Firefighter Program.

- 9.3** A PTF Program would be valuable as a supplement to a volunteer program because it is not realistic to expect that there are substantially more people interested in being a volunteer firefighter in Groveland than there are currently. A 20-member volunteer program cannot reliably provide one firefighter position 24/7/365. With two-person daily staffing considered the bare minimum necessary to provide even a rudimentary emergency response, using volunteers and part-time firefighters when they are available to increase the on-duty staffing to three or more personnel will make a significant improvement in emergency response.

The District Board of Directors adopted a Resolution in January 2020, authorizing implementation of a Volunteer Resident Firefighter Program.

- 9.4** The Department should try to recruit new volunteer firefighters from other District divisions.

Implemented with limited success prior to the current CAL FIRE Schedule A Cooperative Fire Protection Agreement. A non-Fire Department District employee terminated their volunteer firefighter status when it was discovered that federal labor law prohibits an employee from providing unpaid (volunteer) services to the employing agency.

Recommendation #10: Fire Prevention Systems

- 10.1** The Department needs to complete the fire prevention training for the assigned employee as soon as possible. This is another example of the small fire department circumstance. Groveland Fire Department has all the same responsibilities of a larger organization without the training or staff to properly carry out those responsibilities. The Fire Code requires maintenance inspections of commercial buildings over their life span.

Fire prevention and code enforcement within the District is provided by County Fire Prevention staff at no cost to the District.

- 10.2** Once a second manager is hired and the Fire Chief has help in operating the Department's many programs, the Department should utilize the talents of the population to assist with its inspection program. A "Volunteers in Prevention" (VIP) program would be most beneficial. These volunteers, drawn from the large retiree population, could conduct defensible space/hazard reduction inspections. This training is fairly simple and straightforward. Properly trained, they could assist with other Fire Code inspections, freeing the career staff to conduct the more complex inspections that require a significant training investment.

Fire prevention and code enforcement within the District is provided by County Fire Prevention staff at no cost to the District. In addition, CAL FIRE provides annual defensible space fire inspections within the District at no cost. The Pine Mountain Lake Association also has adopted fire safety policies and procedures and inspects properties within the Association annually for compliance. In addition, the District received grant funding for a temporary fire code inspection program in 2019 and a fuel break to be constructed in 2020.

Recommendation #11: Public Education

The Department should initiate two public education programs:

- 11.1** In the fall, during fire prevention week, the Department should host an open house with a structure fire or other community risk reduction focus timed for the winter as its theme.

Implemented.

- 11.2** In the spring, in cooperation with CAL FIRE, the Forest Service and Yosemite National Park, the Department should conduct a prevention program that emphasizes outdoor hazard reduction, evacuations and defensible space.

Implemented.

Recommendation #12: Risk Management and Safety

The District should use the primary elements of NFPA Standard 1500, Standard on Fire Department Occupational Safety and Health Program, 2007 Edition as a best practice model for the Fire Department risk management plan components.

Implemented to the extent used by CAL FIRE.

Recommendation #13: Facility Maintenance

- 13.1** Once the staffing elements of this Master Plan are decided upon by the CSD Board of Directors, develop a comprehensive plan to remodel the headquarters station to meet the current and future needs of the Department.

The fire station facility has received routine planned maintenance, including driveway resurfacing, additional lighting, and siding replacement and painting. The District has also developed a capital replacement schedule which includes facility renovation and upgrades.

- 13.2** Due to their small size, age and cost of keeping repaired and safe, close the satellite facilities at the Airport and Big Oak Flat.

The Big Oak Flat Station has been closed; the Pine Mountain Airport Station is utilized for storage.

Recommendation #14: General Fire Administration

Given the recent quantity and quality of retired Fire Chiefs and Training Officers, the Department should hire a recently retired administratively experienced chief officer consultant/contractor on a limited hourly basis to assist the Fire Chief in completing the building of the administrative foundation of a career Department. The California Fire Chiefs Association system could help advertise for such a temporary position.

Fire administration and training are provided by CAL FIRE under the District's Schedule A Cooperative Fire Protection Agreement.

1.5.3 Fiscal

2007 Findings

Continuing to support the present fire service level or any further improvements in the fire service and the ability to provide service to newly developing areas will be dependent upon establishing benefit assessment districts or some similar form of revenue program. Even with the expected addition of new homes in the Groveland community, both within the present developed area as well as potentially in the Long Gulch Ranch development, the current property tax and assessment

rates will not return sufficient revenue to add to or improve the present level of fire and EMS service.

2007 Recommendations and Current Status (Shown in Blue Text)

Recommendation #15: CAL FIRE Services

Ask CAL FIRE for a formal operational and cost proposal to provide both full Schedule A (Full Contract Services) Fire and EMS response services and the more modest winter season Amador Plan. During the ensuing public policy discussion, a final decision on how to operate and fund the Department can be made. If necessary, an appropriate fiscal measure can be put before the residents knowing that both Groveland independent and state contract services have been thoroughly reviewed.

The District executed a Schedule A Cooperative Fire Protection Agreement with CAL FIRE beginning in 2013 and has also continued its CAL FIRE Amador Plan Agreement to date.

Finding #1: The District has made significant progress on the recommendations contained in the 2007 Fire Master Plan.

SECTION 2—FIRE MASTER PLAN UPDATE

This section provides a detailed, in-depth analysis of the District’s current ability to deploy and mitigate emergency risks within its service area. The response analysis uses prior response statistics and geographic mapping to help the District and the community visualize the current response system’s capabilities.

2.1 GROVELAND COMMUNITY SERVICES DISTRICT

2.1.1 Description

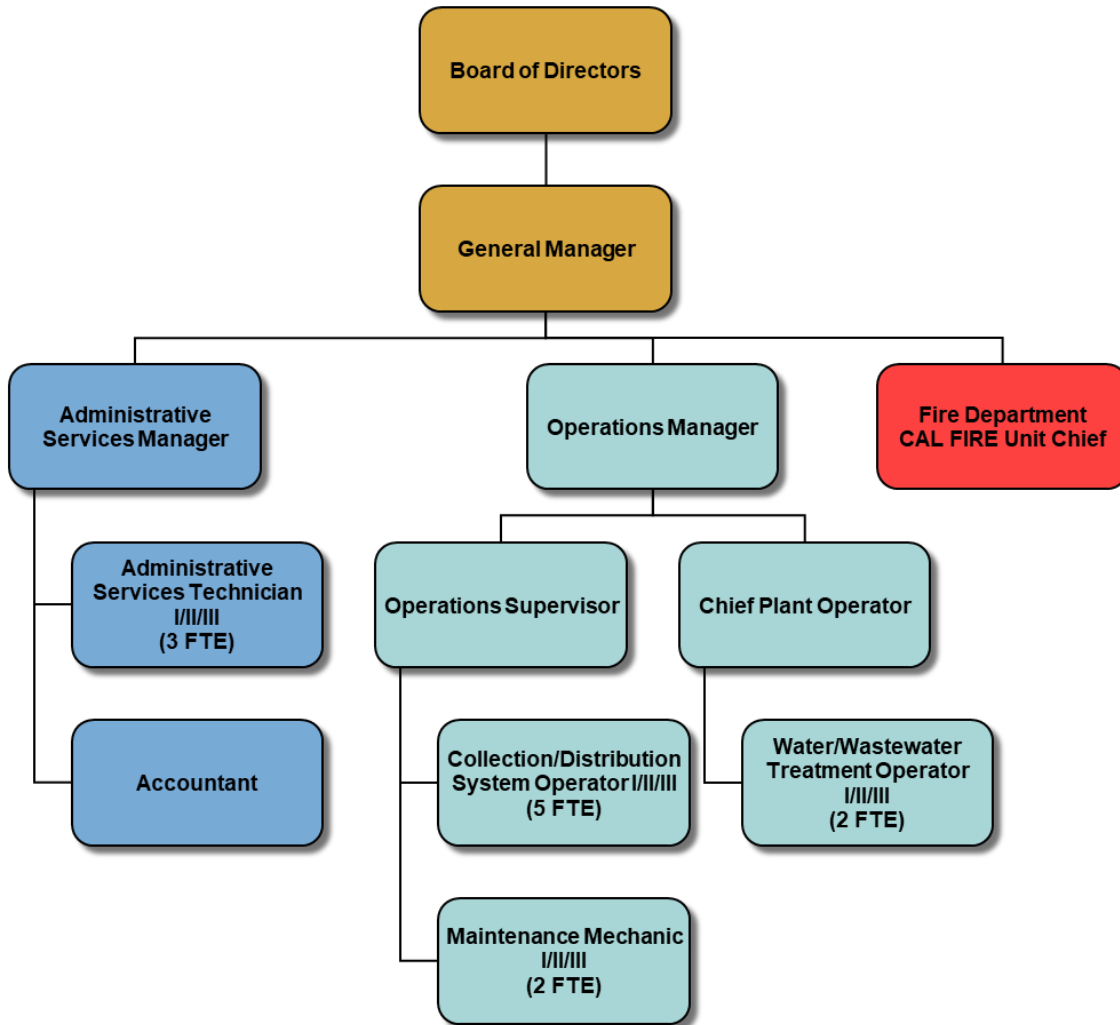
The Groveland Community Services District (District), located approximately 25 miles southeast of Sonora on State Highway 120 at the top of 1,450-foot Priest Grade in unincorporated southwest Tuolumne County, was formed in 1953 as the successor to the Groveland Sewerage and Water District. The District provides potable water delivery, wastewater collection, parks, and fire protection services to a 14.9 square-mile service area that includes the communities of Groveland, Big Oak Flat, and Pine Mountain Lake with a population of approximately 4,500 residents.² In addition to this resident population, the Tuolumne County Visitor’s Bureau estimates upwards of 400,000 vehicles access Yosemite National Park annually by way of Highway 120 through Groveland. At approximately 2,800 feet in elevation, the Groveland/Big Oak Flat area is a popular summer/fall recreation area, with many part-time residents and short-term residential rental units. The District also has some commercial businesses to support the resident and tourist population.

2.1.2 Authority, Governance, and Organization

The District provides services under authority of California Government Code Section 61000 et. seq., commonly known as the Community Services District Law, and is governed by a five-member Board of Directors elected by District voters to four-year staggered terms to establish policy direction, values, and service levels. The Board appoints the General Manager, who is responsible for implementing Board policies and managing the daily operations of the District with a staff of 17 employees organized into three departments as shown in Figure 3.

² Reference: 2013 Tuolumne County Local Agency Formation Commission (LAFCo) Municipal Service Review

Figure 3—District Organization Chart

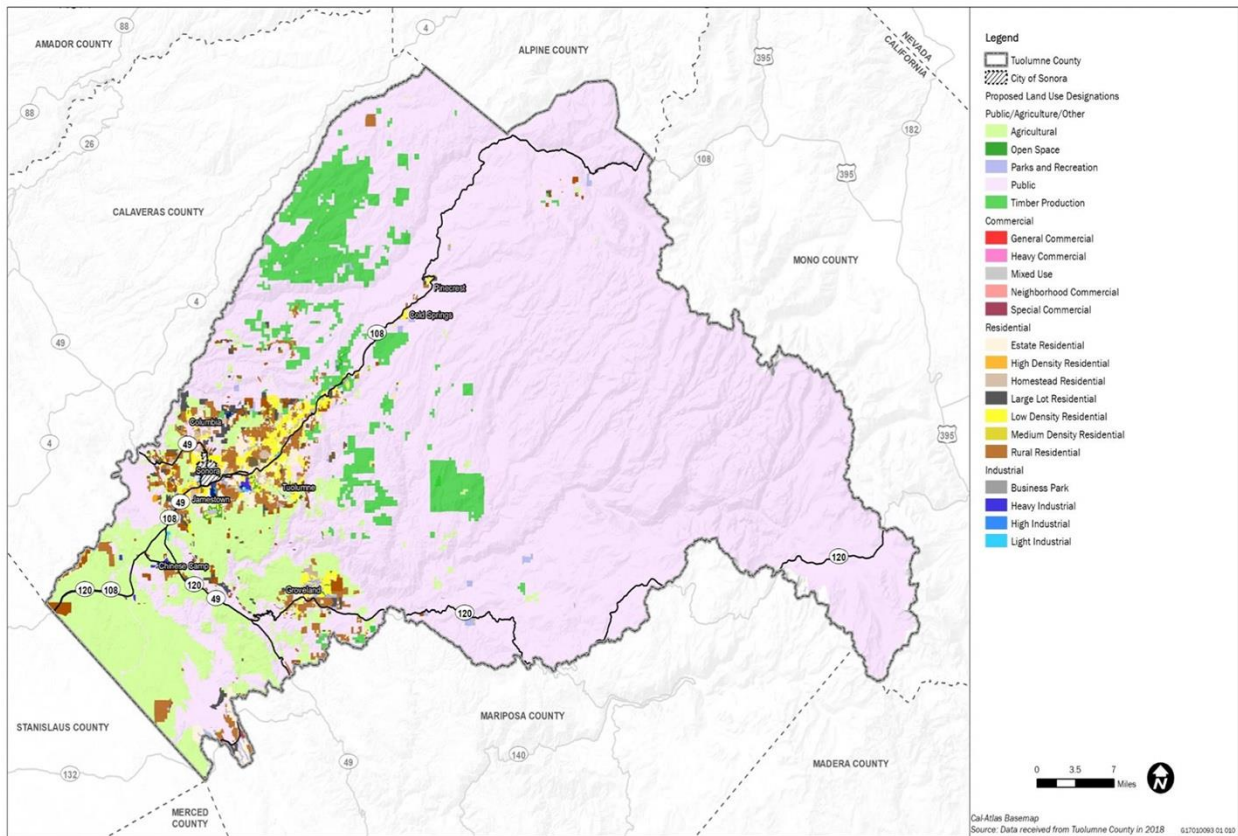


2.1.3 Future Growth

The 2018 Tuolumne County General Plan identifies Groveland/Pine Mountain Lake as an “identified community” where current development exists, and where future growth is anticipated and directed. As Figure 4 illustrates, land use in the District is predominantly agricultural and low density/rural residential. The District’s population has grown by approximately 1,000 people (32 percent) over the past 19 years from 3,388 in 2000, for an average annual growth rate of approximately 1.7 percent. Given the County’s General Plan policy to focus growth in identified communities emphasizing infill development and intensified use of existing development, it is reasonable to anticipate limited future full-time resident population growth and additional development within the District over the next decade.

Groveland Community Services District
2020 Fire Master Plan Update

Figure 4—2018 General Plan Land Use Map



Finding #2: Citygate estimates that the District will experience little full-time resident population growth and additional new development through 2029.

The District has identified a significant increase in the use of existing second homes as vacation rental lodging units; a trend expected to increase in future years and the impact of which has yet to be identified or analyzed in the District Fire Department response data. Current and planned future growth outside the District includes higher-density lodging/resort facilities, including the currently proposed 64-acre Terra Vi Lodge Yosemite resort with 126 guestrooms and other uses near the Highway 120 Big Oak Flat entrance to Yosemite National Park. Although this project will meet all fire and life safety codes at the time of construction, the District Fire Department will be the closest year-round staffed fire agency and will likely be the first responder to most emergencies at this facility.

2.2 RISK ASSESSMENT

The objectives of a community risk assessment include:

- ◆ Identifying the values at risk to be protected within the community or service area.
- ◆ Identifying the specific hazards with the potential to adversely impact the community or service area.
- ◆ Quantifying the overall risk associated with each hazard.
- ◆ Establishing a foundation for current/future deployment decisions and risk-reduction/hazard mitigation planning and evaluation.

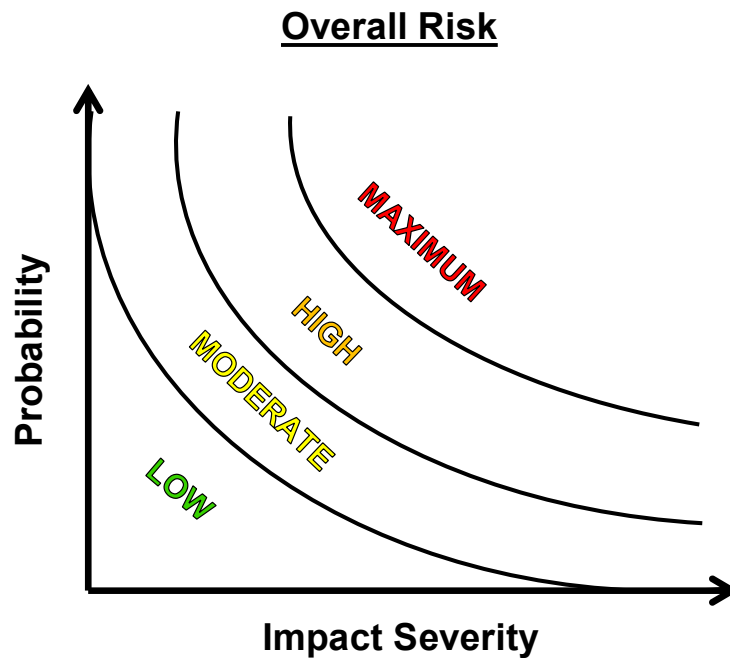
A *hazard* is broadly defined as a situation or condition that can cause or contribute to harm. Examples include fire, medical emergency, vehicle collision, earthquake, flood, etc. *Risk* is broadly defined as the probability of hazard occurrence in combination with the likely severity of resultant impacts to people, property, and the community as a whole.

2.2.1 Risk Assessment Methodology

The methodology used to assess community risk for this Fire Master Plan Update incorporates the following elements:

- ◆ Identification and quantification (to the extent data is available) of the specific values at risk to various hazards within the community or service area.
- ◆ Identification of the fire and non-fire hazards to be evaluated.
- ◆ Determination of the probability of occurrence for each hazard.
- ◆ Identification and evaluation of multiple, relevant impact severity factors for each hazard by planning zone using agency/jurisdiction-specific data and information.
- ◆ Quantification of overall risk for each hazard, based on probability of occurrence in combination with probable impact severity, as shown in Figure 5.

Figure 5—Overall Risk



2.2.2 Risk Assessment Summary

Citygate’s evaluation of the values at risk and hazards likely to impact the District yields the following:

- ◆ Based on available population data, the District serves a rural full-time resident population of less than 500 people per square mile.
- ◆ Transient tourism and weekend and vacationing population, coupled with the full-time resident population, likely exceeds 500 people per square mile in areas such as Pine Mountain Lake and resort destinations located outside the District boundaries.
- ◆ The District has a mix of residential, office, commercial, and other non-residential building occupancies.
- ◆ The District has natural resource values to be protected, as identified in this assessment.

There are varying probabilities of occurrence and probable resultant impact severity associated with the following five hazards relating to services provided by the Department:

1. Building Fire
2. Vegetation/Wildland Fire

3. Medical Emergency
4. Hazardous Materials Release/Spill
5. Technical Rescue

Overall risk for the five hazards ranges from *Low* to *High*, as summarized in Table 6.

Table 7—Overall Risk by Hazard

Hazard	Groveland CSD
Building Fire	Low
Vegetation/Wildland Fire	High
Medical Emergency	High
Hazardous Material	Low
Technical Rescue	Low

2.2.3 Values to be Protected

Broadly defined, *values* are tangibles of significant importance or value to the community or jurisdiction potentially at risk of harm or damage from a hazard occurrence. Values at risk typically include people, critical facilities/infrastructure, buildings, and key economic, cultural, historic, and/or natural resources.

People

Residents, employees, visitors, and travelers through a community or jurisdiction are vulnerable to harm from a hazard occurrence. Particularly vulnerable are specific at-risk populations, including those unable to care for themselves or to self-evacuate in the event of an emergency. At-risk populations typically include children younger than 10 years of age, the elderly, and people housed in institutional settings. Table 8 summarizes key District demographic data.

Groveland Community Services District
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Table 8—Key Demographic Data – Groveland/Big Oak Flat

Demographic	2017 ¹	Percentage ²
Population	4,500	
Under 10 Years	434	9.65%
10–19 Years	419	9.30%
20–64 Years	2,563	56.95%
65–74 Years	635	14.10%
75 Years and Older	450	10.00%
Median Age	48.6	N/A
Housing Units	3,000	
Owner-Occupied	2,082	69.40%
Renter-Occupied	918	30.60%
Average Household Size	2.27	N/A
Ethnicity		
White	4,095	91.00%
Hispanic (counted as White)	531	11.80%
Native American	180	4.00%
Black / African American	113	2.50%
Asian	90	2.00%
Other	23	0.50%
Education (Population over 24 Years of Age)	3,418	75.95%
High School Graduate	3,103	90.80%
Undergraduate Degree	704	20.60%
Graduate/Professional Degree	256	7.50%
Employment (Population over 15 Years of Age)	3,844	85.42%
In Labor Force	1,849	48.10%
Unemployed	70	3.80%
Population below Poverty Level	612	13.60%
Population without Health Insurance Coverage	297	6.60%

¹ Estimated based on 2013 Tuolumne County LAFCo Municipal Service Review

² Estimated based on U.S. Census Bureau County-wide data (2017)

Of note from Table 8 is:

- ◆ More than 33 percent of the District’s population is under 10 or over 65 years of age.
- ◆ The District’s population is predominantly White (91 percent), followed by Native American (4 percent), Black/African American (2.5 percent), Asian (2 percent), and other ethnic origin (0.5 percent).
- ◆ Of the District population over 24 years of age, more than 90 percent has completed high school or higher.
- ◆ Of the population over 24 years of age, slightly more than 28 percent has an undergraduate, graduate, or professional degree.
- ◆ Nearly half of the population 16 years of age or older is in the workforce; of those, just under 4 percent are unemployed.
- ◆ More than 13.5 percent of the population is below the federal poverty level.
- ◆ Slightly more than 6.5 percent of the population does not have health insurance coverage.

While the District’s population includes both full-time and part-time/vacation residents, the Tuolumne County Visitor’s Bureau estimates that upward of 400,000 vehicles access Yosemite National Park annually by way of Highway 120 through Groveland.

Buildings

The District has an estimated 3,000 housing units,³ as well as a modest inventory of non-residential occupancies including offices, professional services, retail, restaurants/bars, hotels/motels, churches, schools, government facilities, healthcare facilities, and other non-residential uses.

Critical Facilities

Critical facilities typically include structures or other improvements, both public and private, that, due to function, size, service area, or uniqueness, have the potential to cause serious bodily harm, extensive property damage, or disruption of vital socioeconomic activities if damaged or destroyed, or if their functionality is significantly impaired. Critical facilities may include, but are not limited to, health and public safety facilities, utilities, government facilities, hazardous materials sites, or vital community economic facilities.

³ Reference: U.S. Census Bureau data for the Groveland/Big Oak Flat Census Designated Place (CDP)

Groveland Community Services District

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The 2018 Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) and the Department identify a total of 13 critical facilities within the District as summarized in Table 9. A hazard occurrence with significant impact severity affecting one or more of these facilities would likely adversely impact critical public or community services.

Table 9—Critical Facilities – Groveland Community Services District

Critical Facility Category	Number of Facilities
Economic	0
Education	2
Emergency Services	4
Government	2
Hazardous Materials	0
Health and Medical Services	0
Transportation Infrastructure	1
Utilities	2
Other	2
Total	13

Reference: 2018 Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan, Section VI-D; and District Fire Department

Natural Resources

Natural resources at risk include the Tuolumne River watershed. Although not within the District, any wildland fire also has the potential to impact the adjacent Stanislaus National Forest.

2.2.4 Hazard Identification

The 2018 Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) identifies the following seven hazards, including probability of occurrence and severity.

Table 10—2018 Tuolumne County MJHMP Hazard Probability and Severity

	Hazard	Probability	Severity
1	Earthquake	Low	High
2	Flooding	Medium	Low
3	Landslide / Sinkholes	Low	Low
4	Volcano	Medium	Low
5	Wildfire	High	High
6	Extreme Weather	Medium	Medium
7	Hazardous Materials	Low	Medium

Reference: 2018 Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan, Section V Risk Assessment

Although the District has no legal authority or responsibility to mitigate any of these hazards other than perhaps wildfire, the Department provides services related to each of these hazards, including fire suppression, emergency medical services, and initial hazardous materials and technical rescue response.

The Commission on Fire Accreditation International (CFAI) groups hazards into fire and non-fire categories, as shown in Figure 6. Identification, qualification, and quantification of the various fire and non-fire hazards are important factors in evaluating how resources are or can be deployed to mitigate those risks.

Figure 6—CFAI Hazard Categories

Fire	EMS	Hazardous Materials	Technical Rescue	Disasters
One and Two Family Residential Structures	Medical Emergencies	Transportation	Confined Space	Natural
Multi-Family Structures	Motor Vehicle Accidents		Water Rescue	
Commercial Structures		Other	High and Low Angle	Man Made
Mobile Property	Fixed Facilities		Structural Collapse and Trench Rescue	
Wildland				

Source: CFAI *Standards of Cover* (Fifth Edition)

Subsequent to evaluation of the hazards identified in the 2018 Tuolumne County MJHMP, and the fire and non-fire hazards as identified by the CFAI as they relate to services provided by the Department, Citygate evaluated the following five hazards for this risk assessment:

1. Building Fire
2. Vegetation/Wildland Fire
3. Medical Emergency
4. Hazardous Materials Release/Spill
5. Technical Rescue

2.2.5 Probability of Occurrence

Probability of occurrence refers to the likelihood of a future hazard occurrence during a specific period. Because the CFAI agency accreditation process requires annual review of an agency's risk assessment and baseline performance measures, Citygate recommends using the 12 months following completion of an SOC study as an appropriate period for the probability of occurrence

evaluation. Table 10 describes the five probability of occurrence categories and related scoring criteria used for this analysis.

Table 11—Probability of Occurrence Scoring Criteria

Score	Probable Occurrence	Description	General Criteria	Average Frequency
0–1.0	Very Low	Improbable	Hazard occurrence is <i>unlikely</i>	Annually or less
1.1–2.0	Low	Rare	Hazard <i>could occur</i>	1–4 times per year
2.1–3.0	Moderate	Infrequent	Hazard <i>should occur</i> infrequently	Bi-monthly to monthly
3.1–4.0	High	Likely	Hazard is <i>likely to occur</i> regularly	Bi-weekly to weekly
4.1–5.0	Very High	Frequent	Hazard is <i>expected</i> to occur frequently	Several times per week or more

Citygate’s risk assessments use recent multiple-year hazard response data to determine the probability of hazard occurrence for the ensuing 12-month period.

2.2.6 Impact Severity

Impact severity refers to the extent a hazard occurrence impacts people, buildings, lifeline services, the environment, and the community as a whole. Table 12 describes the five impact severity categories and related scoring criteria used for this analysis.

Table 12—Impact Severity Scoring Criteria

Score	Impact Severity	General Criteria
0–1.0	Insignificant	<ul style="list-style-type: none"> • No serious injuries or fatalities • Few persons displaced for only a short duration • No or inconsequential damage • No or very minimal disruption to community • No measurable environmental impacts • Little or no financial loss
1.25–2.0	Minor	<ul style="list-style-type: none"> • Some minor injuries; no fatalities expected • Some persons displaced for less than 24 hours • Some minor damage • Minor community disruption; no loss of lifeline services • Minimal environmental impacts with no lasting effects • Minor financial loss
2.25–3.0	Moderate	<ul style="list-style-type: none"> • Some hospitalizations/fatalities possible • Localized displacement of persons for up to 24 hours • Localized damage • Normal community functioning with some inconvenience • Minor loss of lifeline services • Some environmental impacts with no lasting effects, or small environmental impact with long-term effect • Moderate financial loss
3.25–4.0	Major	<ul style="list-style-type: none"> • Multiple hospitalization/fatalities possible • Displacement of multiple people for more than 24 hours likely • Significant damage requiring external resources • Community services disrupted; some lifeline services potentially unavailable • Some environmental impacts with long-term effects • Significant financial loss
4.25–5.0	Catastrophic	<ul style="list-style-type: none"> • Large number of severe injuries and fatalities expected • Local/regional hospitals impacted • Large number of persons displaced for an extended duration • Extensive damage • Widespread loss of critical lifeline services • Community unable to function without significant support • Significant environmental impacts and/or permanent environmental damage • Catastrophic financial loss

2.2.7 Overall Risk

Overall hazard risk is determined by multiplying the *probability of occurrence score* by the *impact severity score*. The resultant total score determines the overall *risk ranking*, as described in Table 13.

Table 13—Overall Risk Score and Rating

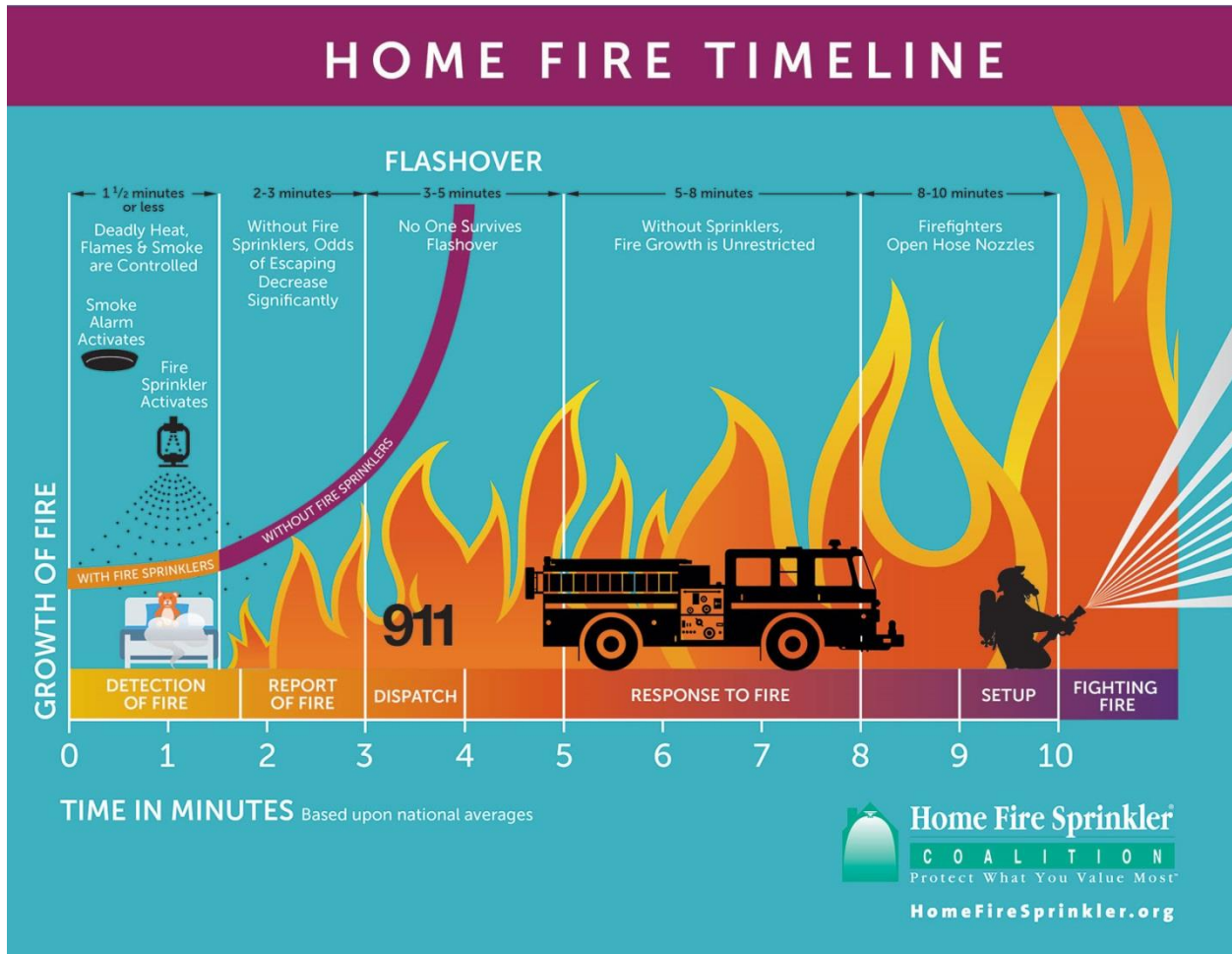
Overall Risk Score	Overall Risk Rating
0–5.99	LOW
6.0–11.99	MODERATE
12.0–19.99	HIGH
20.0–25	MAXIMUM

2.2.8 Building Fire Risk

One of the primary hazards in any community is building fire. Building fire risk factors include building density, size, age, occupancy, and construction materials and methods, as well as the number of stories, the required fire flow, the proximity to other buildings, built-in fire protection/alarm systems, an available fire suppression water supply, building fire service capacity, fire suppression resource deployment (distribution/concentration), staffing, and response time.

Figure 7 illustrates the building fire progression timeline and shows that flashover, which is the point at which the entire room erupts into fire after all the combustible objects in that room reach their ignition temperature, can occur as early as 3:00 to 5:00 minutes from the initial ignition. Human survival in a room after flashover is extremely improbable.

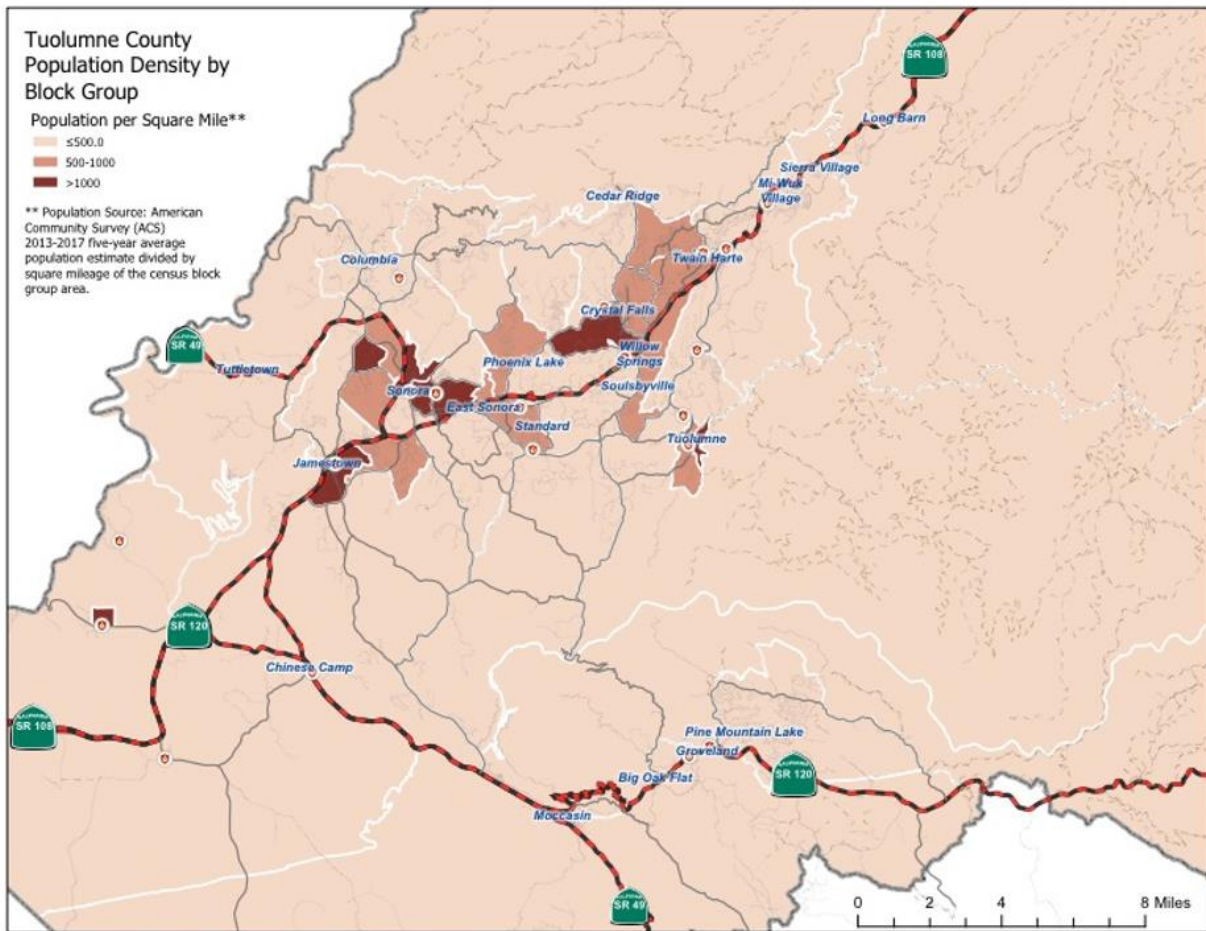
Figure 7—Building Fire Progression Timeline



Population Density

Population density within the District is less than 500 people per square mile, as illustrated in Figure 8. Population density in the current and likely future proposed resort facilities outside the District could exceed 500 per square mile. Although risk analysis across a wide spectrum of other Citygate clients shows no direct correlation between population density and building fire occurrence, it is reasonable to conclude that building fire risk relative to potential impact on human life is greater as population density increases, particularly in areas with high density, multiple-story buildings.

Figure 8—Population Density



Water Supply

A reliable public water system providing adequate volume, pressure, and flow duration in close proximity to all buildings is a critical factor in mitigating the potential impact severity of a community’s building fire risk. Potable water service is provided by the District, and according to Department staff, available fire flow is adequate in the areas with fire hydrants. No public water supply or fire hydrant systems are currently available or planned for the Evergreen, Rush Creek, Terra Vi, and Yosemite Under Glass resort areas east of the District along the Highway 120 corridor.

Building Fire Service Demand

Table 14 summarizes building fire service demand over the three-year study period from January 1, 2016 through December 31, 2018.

Table 14—Building Fire Service Demand

Risk	Year	Groveland CSD	Percent of Total Service Demand
Building Fire	2016	3	0.45%
	2017	3	0.51%
	2018	3	0.52%
Total		9	0.49%

Source: District Fire Department incident data

As Table 13 shows, building fire service demand has been consistent and very low over the three-year study period, which is typical of other Citygate client jurisdictions of similar size and demographics.

Building Fire Risk Evaluation

Table 14 summarizes Citygate’s scoring of building fire probability based on recent historic building fire service demand from Table 13, probable impact severity, and overall risk.

Table 15—Building Fire Risk Scoring

Building Fire	Groveland CSD
Probability Score	1.0
Impact Severity Score	3.0
Overall Risk Score	3.0
Overall Risk Rating	Low

2.2.9 Vegetation/Wildland Fire Risk

Factors influencing vegetation/wildland fire risk include vegetative fuel features, weather, topography, fire history, service capacity, water supply, wildland risk mitigation measures, and vegetation/wildland fire service demand.

Vegetative Fuels

Vegetative fuel factors influencing fire intensity and spread include fuel type (vegetation species), height, arrangement, density, and moisture. Vegetative fuels within the District consist of a mix of annual grasses and weeds, brush, and deciduous and conifer tree species. Once ignited, vegetation/wildland fires can burn intensely and contribute to rapid fire spread under the right fuel, weather, and topographic conditions.

Weather

Weather elements, including temperature, relative humidity, wind, and lightning, also affect vegetation/wildland fire potential and behavior. High temperatures and low relative humidity dry out vegetative fuels, creating a situation where fuels will ignite more readily and burn more intensely. Wind is the most significant weather factor influencing vegetation/wildland fire behavior. Summer weather in Tuolumne County includes temperatures averaging in the 90°s with northwesterly winds that can significantly influence wildland fire behavior and spread.

Topography

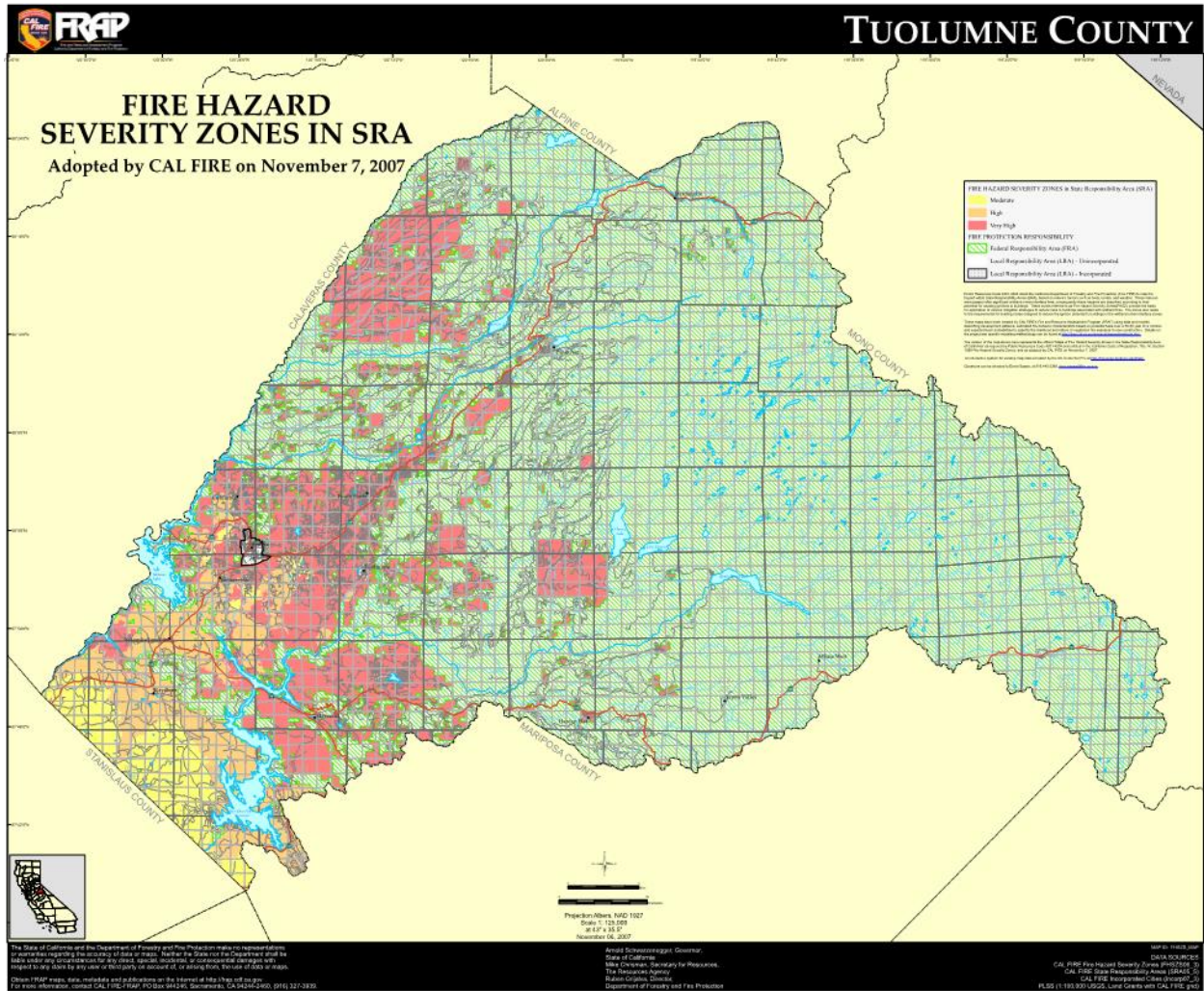
The District's topography can significantly influence vegetation/wildland fire behavior and spread, as fires tend to burn more intensely and spread faster when burning uphill and up-canyon, except for a wind-driven downhill or down-canyon fire.

Wildland Fire Hazard Severity Zones

The California Department of Forestry and Fire Protection (CAL FIRE) designates wildland Fire Hazard Severity Zones (FHSZ) throughout the state based on analysis of multiple wildland fire hazard factors and modeling of potential wildland fire behavior. For State Responsibility Areas (SRAs) where CAL FIRE has fiscal responsibility for wildland fire protection, CAL FIRE designates Moderate, High, and Very High FHSZs by county, as shown in Figure 9 for Tuolumne County. Note that the *entire District* is within a *Very High* FHSZ.

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Figure 9—SRA Fire Hazard Severity Zones – Tuolumne County



Wildland Fire History⁴

Tuolumne County has a history of significant wildland fires as summarized in Table 16.

Table 16—Significant Wildland Fires in Tuolumne County

Fire Name	Year	Acres Burned	Buildings Damaged or Destroyed
Stanislaus Complex	1987	145,950	28
Old Gulch	1992	18,000	54
Keystone	1996	7,000	20
Darby	2001	14,280	0
Copperopolis	2004	3,444	1
Pattison	2004	2,676	17
Tuolumne	2004	750	0
Pedro	2006	1,997	0
LaGrange	2008	3,445	0
Vernon	2010	909	0
Pinecrest	2010	799	0
Seven	2012	840	0
Power	2013	1,070	0
Rim	2013	257,314	112
Marshes	2016	1,080	0

Source: 2018 Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan Update, Section 5

Water Supply

Another vegetation/wildland fire impact severity factor is water supply immediately available for fire suppression in areas where vegetation/wildland fires are likely to occur. According to Department staff, adequate fire flow is generally available throughout the inhabited areas of the District, and water tenders are dispatched to provide additional water supply for vegetation/wildland fires.

Wildland Risk Mitigation

The District regularly utilizes CAL FIRE crews for wildland fuel reduction projects, including construction of a 111-acre shaded fuel break to be constructed in 2020. In addition, the Pine

⁴ Reference: 2018 Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan Update

Mountain Lake Association (PMLA) has adopted wildland fire safety policies and procedures under the Pine Mountain Lake Fire Safety Plan that includes minimum wildland fire safety clearances around structures as identified in California Public Resources Code Sections 4291 et seq. and California Code of Regulations Section 1299.01 et seq. The PMLA inspects all properties annually or upon receipt of a fire safety complaint and has enforcement policies/procedures in place to ensure abatement.

Vegetation/Wildland Fire Service Demand

Table 16 summarizes the District’s vegetation/wildland fire service demand over the three-year study period.

Table 17—Vegetation/Wildland Fire Service Demand

Risk	Year	Groveland CSD	Percent of Total Service Demand
Vegetation/Wildland Fire	2016	11	1.64%
	2017	5	0.85%
	2018	4	0.70%
Total		20	1.10%

Source: District Fire Department incident data

As Table 16 illustrates, vegetation/wildland fire service demand has been very low over the three-year study period, with 20 incidents comprising 1.1 percent of total service demand. Although recent service demand has been very low, the probability of a vegetation/wildland fire remains high within the District as evidenced by the recent fire history in Table 16.

Vegetation/Wildland Fire Risk Evaluation

Table 17 summarizes Citygate’s scoring of vegetation/wildland fire probability based on historic service demand from Table 16 and recent regional wildland fire history, probable impact severity, and overall risk.

Table 18—Vegetation/Wildland Fire Risk Scoring

Vegetation/Wildland Fire	Groveland CSD
Probability Score	3.0
Impact Severity Score	4.0
Overall Risk Score	12.0
Overall Risk Rating	High

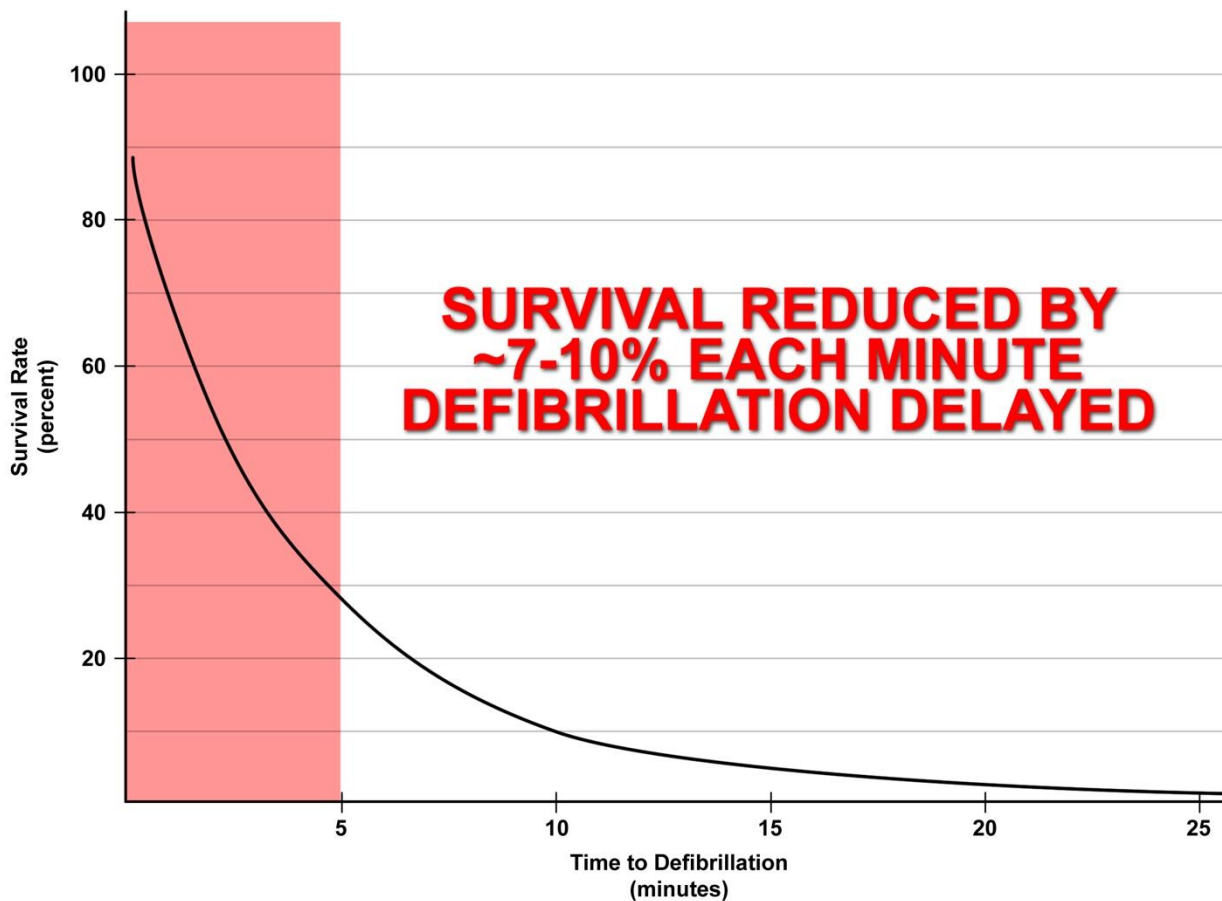
2.2.10 Medical Emergency Risk

Medical emergency risk in most communities is predominantly a function of population density, demographics, violence, health insurance coverage, and vehicle traffic.

Medical emergency risk can also be categorized either as a medical emergency resulting from a health-related condition or event or as a traumatic injury. One serious medical emergency is cardiac arrest or some other event where there is an interruption or blockage of oxygen to the brain.

Figure 10 illustrates the reduced survivability of a cardiac arrest victim as time to defibrillation increases. While early defibrillation is one factor in cardiac arrest survivability, other factors can influence survivability as well, such as early CPR and pre-hospital advanced life support interventions.

Figure 10—Survival Rate versus Time to Defibrillation



Source: www.suddencardiacarrest.com

Population Density

Because medical emergencies involve people, it seems logical that higher population densities generate higher medical emergency service demand than lower population densities. In Citygate’s experience, this is particularly true for urban population densities. As illustrated in Figure 8, population density in the study area is fewer than 500 people per square mile; however, according to District staff, more than 50 percent of the Pine Mountain Lake subdivision units are second homes and/or vacation rentals, resulting in a higher population density in that area during summer months and other weekends and holidays.

Demographics

Medical emergency risk tends to be higher among older, poorer, less educated, and uninsured populations. According to the U.S. Census Bureau, slightly more than 24 percent of the population is 65 and older; 13.6 percent is at or below poverty level; slightly more than 9 percent over 24 years of age have less than a high school diploma or equivalent; and 6.6 percent do not have health insurance coverage.⁵

Vehicle Traffic

Medical emergency risk tends to be higher in those areas of a community with high daily vehicle traffic volume, particularly those areas with high traffic volume traveling at high speeds. The transportation network within the District includes State Route 120, which carries an aggregate annual average daily traffic volume of 8,600 vehicles, with more than 1,000 at peak-hour traffic.⁶

Medical Emergency Service Demand

Table 18 summarizes the District’s medical emergency service demand for the three-year study period.

Table 19—Medical Emergency Service Demand

Risk	Year	Groveland CSD	Percent of Total Service Demand
Medical Emergency	2016	320	47.76%
	2017	369	62.86%
	2018	362	63.18%
Total		1,051	57.43%

Source: District Fire Department incident data

⁵ Source: U.S. Census Bureau (2016) data for Tuolumne County

⁶ Source: California Department of Transportation (2017 data)

As Table 19 shows, medical emergency service demand has been consistent over the past three calendar years, representing more than half of all calls for service, which is typical of other California jurisdictions of similar size and demographics.

Medical Emergency Risk Evaluation

Table 19 summarizes Citygate’s scoring of medical emergency probability based on recent historic service demand from Table 19, probable impact severity, and overall risk.

Table 20—Medical Emergency Risk Scoring

Medical Emergency	Groveland CSD
Probability Score	4.25
Impact Severity Score	3.0
Overall Risk Score	12.75
Overall Risk Rating	High

2.2.11 Hazardous Material Risk

Hazardous material risk factors include fixed facilities that store, use, or produce hazardous chemicals or waste; underground pipelines conveying hazardous materials; aviation, railroad, maritime, and vehicle transportation of hazardous materials into or through a jurisdiction; vulnerable populations; emergency evacuation planning and related training; and specialized hazardous material service capacity.

The District has a small number of facilities requiring a state or county hazardous material operating permit or Hazardous Materials Business Plan, including the Community Services District, Pine Mountain Lake Airport, and a few other small businesses or facilities.

Transportation-related hazardous material risk includes vehicles transporting hazardous materials into, from, or through a jurisdiction. State Highway 120 carries more than 200 trucks daily⁷ into or through the District, some of which transport hazardous materials.

Population Density

Because hazardous material emergencies have the potential to adversely impact human health, it is logical that the higher the population density, the greater the potential population exposed to a hazardous material release or spill. As illustrated in Figure 8, population density throughout the

⁷ Reference: U.S. Department of Transportation, Federal Railroad Administration (2017 data)

District is less than 500 people per square mile. Population density in the current and likely future proposed resort facilities outside the District could exceed 500 per square mile.

Vulnerable Populations

Persons vulnerable to a hazardous material release/spill include those individuals or groups unable to self-evacuate, generally including children under the age of 10, the elderly, and persons confined to an institution or other setting where they are either physically unable to or otherwise prevented from self-evacuating, and those with special access or functional needs. As Table 8 shows, one-third of the District’s population is under age 10 or is 65 years of age and older.

Emergency Evacuation Planning, Training, Implementation, and Effectiveness

Another significant hazardous material impact severity factor is a jurisdiction’s shelter-in-place / emergency evacuation planning and training. In the event of a hazardous material release or spill, time can be a critical factor in notifying potentially affected persons, particularly at-risk populations, to either shelter-in-place or evacuate to a safe location. Essential to this process is an effective emergency plan that incorporates one or more mass emergency notification capabilities, as well as pre-established evacuation procedures. It is also essential to conduct regular, periodic exercises involving these two emergency plan elements to evaluate readiness and to identify and remediate any planning and/or training gaps to ensure ongoing emergency incident readiness and effectiveness.

The Tuolumne County Citizen Alert Notification System is a free, subscription-based, mass emergency notification system operated by the Tuolumne County Sheriff’s Office that can provide emergency alerts, notifications, and other emergency information to email accounts, cell phones, tablets, and landline telephones.

Hazardous Material Service Demand

Table 21 summarizes the District’s hazardous material service demand over the three-year study period.

Table 21—Hazardous Material Service Demand

Risk	Year	Groveland CSD	Percent of Total Service Demand
Hazardous Material	2016	1	0.15%
	2017	0	0.00%
	2018	0	0.00%
Total		1	0.05%

Source: District Fire Department incident data

As Table 20 shows, hazardous material service demand has been extremely minimal over the three-year study period with just a single incident.

Hazardous Materials Risk Evaluation

Table 21 summarizes Citygate’s scoring of a hazardous material leak or spill probability based on recent historic service demand from Table 20, probable impact severity, and overall risk.

Table 22—Hazardous Material Risk Scoring

Hazardous Material	Groveland CSD
Probability Score	0.5
Impact Severity Score	3.0
Overall Risk Score	1.50
Overall Risk Rating	Low

2.2.12 Technical Rescue Risk

Technical rescue risk factors include active construction projects; structural collapse potential; confined spaces, such as tanks and underground vaults; bodies of water and rivers or streams; industrial machinery; transportation volume; and earthquake, flood, and landslide potential.

Construction Activity

There is minimal significant ongoing residential, commercial, industrial, and/or infrastructure construction activity occurring within the District.

Confined Spaces

There are a minimal number of confined spaces within the District, including tanks, vaults, open trenches, etc.

Waterways and Bodies of Water

There are multiple waterways and bodies of water within the District, including Pine Mountain Lake, Big Creek, and other smaller waterways and bodies of water.

Transportation Volume

Another factor is transportation-related incidents requiring technical rescue. This risk factor is primarily a function of vehicle traffic within and through the District, with State Highway 120 carrying an aggregate average of 8,600 vehicles daily. General aviation traffic into and from the Pine Mountain Lake Airport is an additional risk factor.

Earthquake Risk⁸

Tuolumne County has only one active seismic fault, the New Melones fault, which transects the County running roughly north to south along the western boundary and is part of the Foothill fault system which runs along the west base of the Sierra Nevada mountain range. The estimated maximum capability for this fault is magnitude 6.5. In addition to the New Melones fault, the Foothill fault system also contains four “capable” faults located in Tuolumne County, including Negro Jack Point, Bowie Flat, Rawhide Flat West, and Rawhide Flat East.

Only five earthquakes have occurred in or within 50 miles of Tuolumne County over the last century with a recorded magnitude of 3.5 or greater, and the U.S. Geological Service (USGS) database shows that there is only a 28 percent chance of a magnitude 7.0 or greater (major) earthquake occurring within the next 50 years, and the probability of a magnitude 5.0 (moderate) earthquake is less than 15 percent.

Flood Risk⁹

No portion of the District lies within a flood hazard area as designated by the Federal Emergency Management Agency (FEMA). There are two dams within the District, including Big Creek and the District wastewater treatment pond, that would cause flooding impacting some District properties in the event of a partial or complete failure.

Technical Rescue Service Demand

Table 23 summarizes the District’s technical rescue service demand over the three-year study period.

Table 23—Technical Rescue Service Demand

Risk	Year	Groveland CSD	Percent of Total Service Demand
Technical Rescue	2016	1	0.15%
	2017	1	0.17%
	2018	0	0.00%
Total		2	0.11%

Source: District Fire Department incident data

⁸ Reference: 2018 Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan, Section V

⁹ Reference: 2018 Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan, Annex B—Groveland CSD

As Table 23 shows, technical rescue service demand is very low comprising only two incidents over the three-year study period.

Technical Rescue Risk Evaluation

Table 24 summarizes Citygate’s scoring of technical rescue probability based on recent historic service demand from Table 23, probable impact severity, and overall risk.

Table 24—Technical Rescue Risk Scoring

Technical Rescue	Groveland CSD
Probability Score	0.5
Impact Severity Score	2.50
Overall Risk Score	1.25
Overall Risk Rating	Low

2.3 DISTRICT FIRE DEPARTMENT

2.3.1 Overview

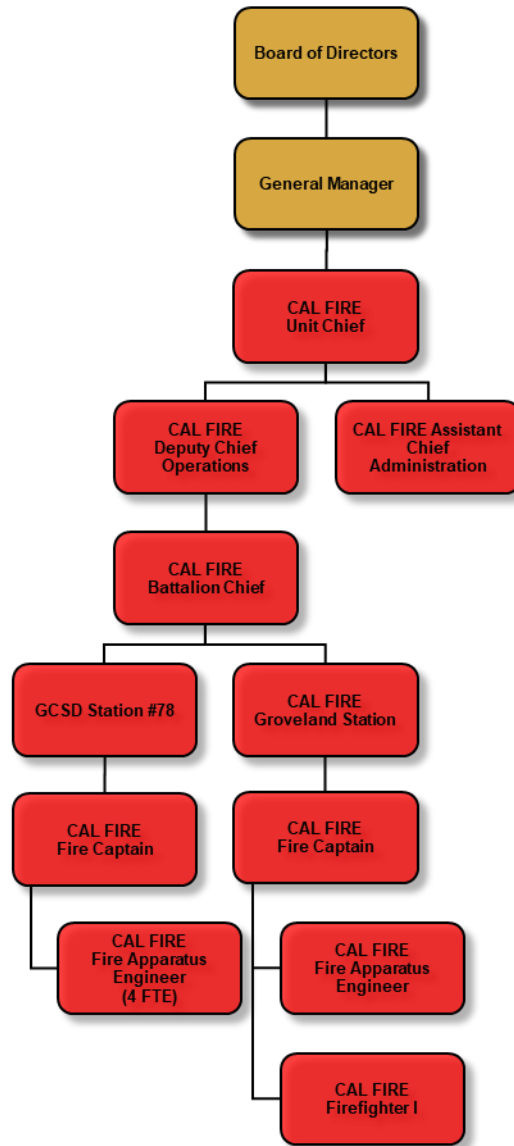
The District contracts with CAL FIRE to staff, manage, and operate its Fire Department through a Cooperative Fire Services Agreement, which funds two career CAL FIRE personnel on duty daily at District Fire Station #78, and two CAL FIRE personnel on duty daily at the CAL FIRE Groveland Station during the non-fire season months.¹⁰ During the remainder of the year, CAL FIRE funds two wildland fire engines staffed with three personnel each at its Groveland Station approximately one mile west of District Station #78.

2.3.2 Organization

The Department, operating under authority of California Government Code Section 61000 et seq. (Community Service District Law), provides fire suppression, rescue, and Basic Life Support (BLS) pre-hospital emergency medical services with CAL FIRE contract personnel organized as shown in Figure 11.

¹⁰ Generally November 1 – April 30

Figure 11—Department Organization Chart



2.3.3 Service Capacity

Service capacity refers to an agency’s available response force; the size, types, and condition of its response fleet and any specialized equipment; core and specialized performance capabilities and competencies; resource distribution and concentration; availability of automatic and/or mutual aid; and any other agency-specific factors influencing the agency’s ability to meet current and prospective future service demand relative to the risks to be protected.

The Department’s service capacity for building fire, wildland fire, medical emergency, initial hazardous material, and technical rescue risk consists of a minimum daily on-duty response force

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of two personnel staffing a Type-1 structural fire engine from the District fire station. During the summer wildland fire season,¹¹ this capacity is increased to include one or both of the Type-3 wildland engines, staffed with a minimum of three personnel each, from the CAL FIRE Groveland Station approximately one mile west of District Fire Station #78, as available. During the non-fire season, the District has an Amador Plan Agreement with CAL FIRE to serve the District with a Type-3 wildland engine staffed with two personnel from the CAL FIRE Groveland Station. The two CAL FIRE Groveland Station engines respond to an average of 80 calls each per year within the District.

Prior to 2013, the Department had a small and declining number of volunteer firefighters; however, given the Groveland community demographics and overall loss of volunteers nationwide, the District, like many other similar rural jurisdictions, has had to find ways to fund full-time and/or part-time firefighters to ensure a timely response to emergency incidents within the community. In January 2020, as recommended in the 2007 Fire Master Plan and in response to having no volunteer firefighters since 2013, the District Board of Directors authorized implementation of a Volunteer Resident Firefighter Program to provide supplemental daily response staffing.

In addition, all areas of Tuolumne County outside of the City of Sonora, the Stanislaus National Forest, and Yosemite National Park are designated as State Responsibility Areas (SRA) as defined in California Public Resources Code Sections 4126-4127, where the CAL FIRE has fiscal responsibility for wildland fire protection. The CAL FIRE Tuolumne-Calaveras Unit, with administrative headquarters in San Andreas, provides wildland fire protection for Tuolumne and Calaveras counties with 22 fire engines deployed from 15 fire stations, two bulldozers, eight fire hand crews, one helicopter, and two air tankers. In addition to any local fire agency response, a medium dispatch level¹² CAL FIRE response includes six engines, two Hand Crews, one bulldozer, one Air Attack, two Air Tankers, one Helicopter, and one Battalion Chief, with an estimated 30:00-minute ERF response time to Groveland.

All District response personnel are trained and certified to provide BLS pre-hospital emergency medical care, and most are trained and certified to the Emergency Medical Technician (EMT)-level. Advanced Life Support (ALS) pre-hospital emergency medical care and ground ambulance service is provided by the Manteca District Ambulance through a cooperative agreement with Tuolumne County and the Tuolumne County Ambulance Service (TCAS). TCAS stations an ambulance in the Groveland Area that is partially funded through a tax measure. Air ambulance service, when needed, is provided by the California Highway Patrol, or PHI from the Columbia

¹¹ Wildland fire season in Tuolumne County is generally May 1 – October 30 depending on weather conditions.

¹² CAL FIRE utilizes a three-tiered initial response plan for wildland fires based on weather factors: low, medium, and high dispatch levels with an increased number of resources dispatched for each correspondingly higher dispatch level.

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airport. The nearest hospital with emergency room services is Adventist Health in Sonora, and the nearest trauma center is at Sutter Health Memorial Medical Center in Modesto.

All response personnel are further trained to the U.S. Department of Transportation Hazardous Material First Responder Operational (FRO) level to provide initial hazardous material incident assessment, hazard isolation, and support for a hazardous material response team. The nearest technical hazardous materials response capacity is available through mutual aid from the Stanislaus County Hazardous Materials Response Team in Modesto.

Response personnel are also trained to the Confined Space Awareness level as required by the California Occupational Safety and Health Administration (Cal/OSHA), as well as low-angle rope rescue. Search and rescue, and low- and high-angle rope rescue services are also available from the Tuolumne County Sherriff’s Department Search and Rescue Team.

2.3.4 Current Deployment

Facilities, Resources, and Staffing

The Department provides services from one District fire station with a daily response force of two personnel as summarized in Table 25. The District also has an Amador Plan contract with CAL FIRE that provides a two-person CAL FIRE engine from the CAL FIRE Groveland Station approximately one mile west during the winter months. The CAL FIRE Groveland Station also responds to emergency incidents within the District during the summer wildland fire season as available. Response personnel work a 72/96-hour shift schedule of three consecutive 24-hour days on duty, followed by four consecutive days off.

Table 25—Department Facilities, Resources, and Staffing

Station	Address	Assigned Resources	Resource Type	Minimum Staffing	
				Fire Season 5/1–10/30	Non-Fire Season 11/1–4/30
Groveland CSD Station 78	18930 State Highway 120 Groveland, CA	E-781¹ E-787 E-788	Type-1 Engine Type-1 Engine (Reserve) Type-2 Engine	2	2
CAL FIRE Groveland Station	11300 Merrill Road Groveland, CA	E-4466 E-4476	Type-3 Engine Type-3 Engine	3 3	2
Total Daily Staffing				8	4

Source: District Fire Department

¹ **Bold font** indicates staffed apparatus

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The Department is a signatory to the Tuolumne County Mutual Aid Plan and the State of California Master Mutual Aid Agreement. Under the County Plan, every fire agency agrees to provide free assistance to any other County fire agency upon request as available. For the District, however, given its remote location at the top of Priest Grade, there are no mutual aid resources available within approximately 20–30 minutes travel time other than the CAL FIRE Groveland Station resources, if available. In addition, the District is signatory to the Automatic/Mutual Aid Agreement between Tuolumne County, Mariposa County, and Stanislaus Consolidated Fire, as well as an Assistance-by-Hire Agreement with the CAL FIRE Tuolumne-Calaveras Unit.

Response Plan

The Department provides all-risk first response services to the people and facilities they protect including fire suppression; pre-hospital BLS emergency medical services (EMS); initial hazardous material and technical rescue response; and other non-emergency services, including fire prevention, community safety education, and other related services.

The CAL FIRE Tuolumne-Calaveras Unit Emergency Command Center (ECC), which provides dispatch services for the District under its Schedule A contract, utilizes a best practice-based tiered response plan for different types of incident responses by utilizing its computer-aided dispatch (CAD) system to select and dispatch the closest and most appropriate resource type(s) pursuant to the County-wide response plan, as summarized in Table 26.

Table 26—Response Plan by Major Incident Type

Incident Type	Resources Dispatched	Total Personnel
Single-Patient EMS	1 Engine + Ambulance	4
Vehicle Fire	3 Engines + Battalion Chief	7/9 ¹
Residential Building Fire	4 Engines, 3 Water Tenders, Breathing Support, Battalion Chief, Safety Officer	14/17 ¹
Wildland Fire (Medium)	8 Engines, Air Attack, 2 Air Tankers, 1 Copter, 2 Fire Crews, 1 Dozer, 3 Water Tenders, Battalion Chief, Safety Officer	70
Rescue	3 Engines, Battalion Chief, Safety Officer	8/10 ¹
Hazardous Material	2 Engines	4/5 ¹

Source: District Fire Department

¹ Depending on time of year

Finding #3: The District Fire Department and CAL FIRE Emergency Command Center utilize a standard response plan that considers risk and establishes an appropriate initial response for each incident type. Each call for service receives the combination of engines, specialty units, and command officers customarily needed to effectively control that type of incident based on each agency's experience.

Operational Response Objectives/Policies

Nationally recognized standards and best practices suggest using several incremental measurements to define response time. Ideally, the clock start time is when the 9-1-1 dispatcher receives the emergency call. In some cases, the call must then be transferred to a separate fire dispatch center. In this setting, the response time clock starts when the fire dispatch center receives the 9-1-1 call into its computer-aided dispatch (CAD) system. Response time increments include dispatch center call processing, and crew alerting (call processing/dispatch time), response unit boarding (commonly called crew turnout time), and actual driving (travel) time.

NFPA Standard 1710,¹³ a recommended deployment standard for *career* fire departments in urban/suburban population density areas, recommends initial (first-due) intervention units arrive within a 4:00-minute travel time and recommends arrival of all the resources comprising a multiple-unit response Effective Response Force (ERF), or First Alarm, within 8:00 minutes travel time, at 90 percent or better reliability. NFPA Standard 1720,¹⁴ a recommended standard for predominantly *volunteer* fire departments, recommends initial unit arrival within 14:00 minutes in rural areas where the population density is less than 500 per square mile.

The most recent published NFPA best practices for dispatching have increased the dispatch processing time up to 90 seconds and, if there are language barriers, 120 seconds. Further, for crew turnout time, 60–80 seconds is recommended, depending on the type of protective clothing that must be donned. Citygate has found, however, that few if any agencies are able to meet this standard and has for many years recommended a 2:00-minute crew turnout time as a more achievable goal.

If the travel time measures recommended by the NFPA (and Citygate) are added to dispatch processing and crew turnout times recommended by Citygate and best practices, then a realistic 90 percent first-due unit arrival goal for the District is 14:00 minutes from the time of fire dispatch

¹³ 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 (2016 Edition).

¹⁴ NFPA 1720—Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments (2014 Edition).

receiving the call for rural areas, which includes 90 seconds dispatch, 2:00 minutes crew turnout, and 10:30 minutes travel time.

The District has not established operational response performance objectives consistent with industry best practices. The Public Safety Element (Chapter 9) of the Tuolumne County General Plan references the Tuolumne County Fire Department (TCFD) Service Level Stabilization Plan. Adopted in 1992, the plan provides for the development of TCFD through acquisition of fire stations, apparatus and equipment, and personnel and support services to achieve the following three goals:

1. Clearly define a baseline service level.
2. Identify stable funding sources.
3. Establish an apparatus replacement fund.

The plan further defines the baseline service level as the ability to provide fire protection, rescue, and first responder emergency medical services to 95 percent of significantly developed land within the TCFD jurisdiction within 7:00 minutes response time.

Finding #4: The District has not adopted fire response performance objectives meeting best practice elements for time and desired outcomes.

2.4 OUTCOME GOALS

Current national best practice is to measure percent completion of a goal (e.g., 90 percent of responses) instead of an average measure. Mathematically, this is called a fractile measure.¹⁵ This is because measuring the average only identifies the central or middle point of response time performance for all calls for service in the data set. Using an average makes it impossible to know how many incidents had response times that were far above the average or just above.

For example, Figure 12 shows response times for a small fictitious fire department that responds to 20 calls for service each month. Each response time has been plotted on the graph from shortest response time to longest response time.

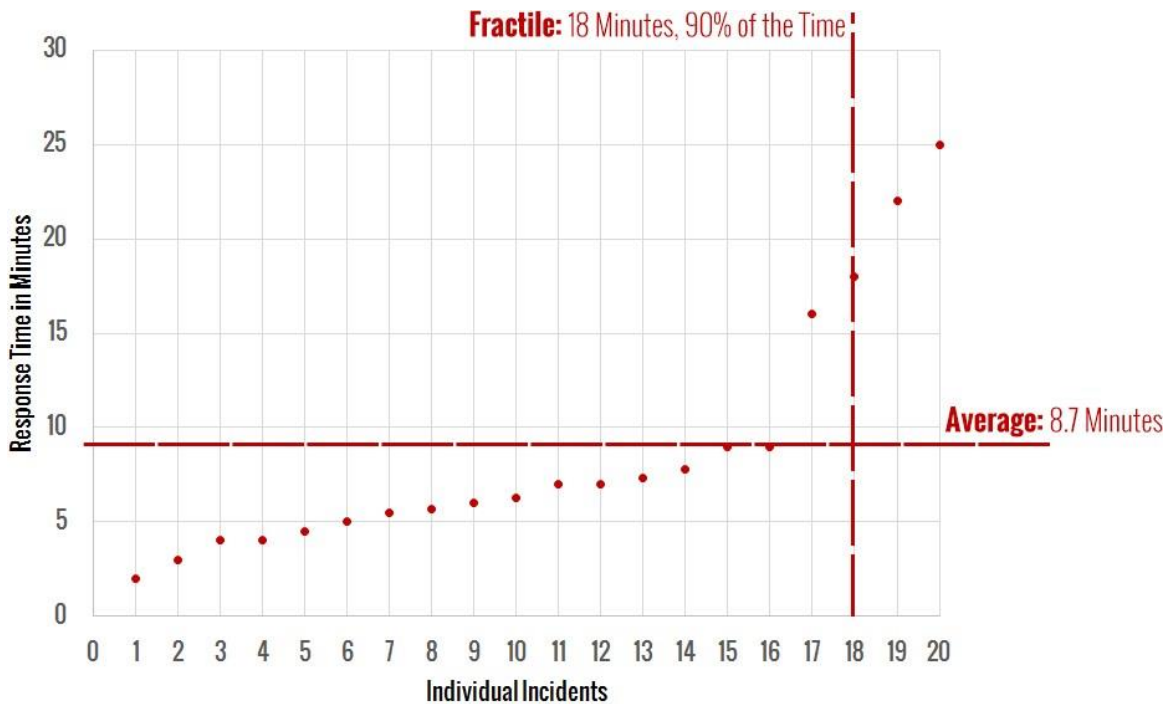
Figure 12 shows that the average response time for this fictitious department is 8.7 minutes. However, the average response time fails to properly account for four calls for service with response times far exceeding a threshold in which positive outcomes could be expected. In fact, it is evident in Figure 12 that 20 percent of responses are far too slow and that this fictitious

¹⁵ A *fractile* is that point below which a stated fraction of the values lay. The fraction is often given in percent; the term percentile may then be used.

jurisdiction has a potential life-threatening service delivery problem. Average response time as a measurement tool for fire services is simply not sufficient. This is a significant issue in larger cities if hundreds or thousands of calls are answered far beyond the average point.

By using the fractile measurement with 90 percent of responses in mind, this small fictitious jurisdiction has a 90th percentile response time of 18:00 minutes. This fractile measurement is thus far more accurate at reflecting the service delivery situation of a smaller agency.

Figure 12—Fractile versus Average Response Time Measurements



More importantly, positive outcomes to emergency incidents are a desired goal. Accurate response data, as well as an understanding of the factors influencing response times, are important elements in determining appropriate fire station locations and types of response resources needed. From that, crew size and response time can be calculated to allow appropriate fire station spacing (distribution and concentration). Outcome goals include determining why the emergency response system exists and whether the governing body has adopted response performance goals or standards that can deliver desired emergency incident outcomes.

Many types of medical emergencies have the most severe time constraints, including heart attacks and other events such as drowning, choking, trauma constrictions, or other similar events that can cause oxygen deprivation to the brain. Humans can only survive without oxygen for 4:00 to 6:00 minutes without impairment. Similarly, a small incipient fire within a building can grow to involve an entire room in 6:00 to 8:00 minutes. Thus, if desired emergency incident outcomes include preventing permanent impairment from a medical emergency where possible and keeping building

fires from spreading beyond the room of origin, the first responding resource must arrive within a 7:00- to 8:00-minute total response time, and *all* responding resources must arrive within a 10:00- to 11:00-minute total response time.

It is also important to note that fire and medical emergencies continue to deteriorate from the time of inception, not the time the fire engine starts to drive the response route. Ideally, the emergency is noticed immediately and the 9-1-1 system is activated promptly. Response time includes three distinct components: call processing / dispatch time, crew turnout time, and travel time. Call processing includes the time from the dispatch center answering the 9-1-1 call to the completion of the dispatch of the appropriate response resources. Best practice for this response element is 90 seconds or less, 90 percent of the time. Crew turnout quantifies the time from receipt of the dispatch notification until the response apparatus is ready to move, including verifying the response route, donning appropriate safety clothing, boarding the apparatus, and fastening seat belts. Best practice for this response element is 2:00 minutes or less, 90 percent of the time. Travel includes the time from initial vehicle movement to arrival at the emergency and application of the parking brake. Best practice for this response element is 4:00 minutes or less, 90 percent of the time for urban population areas, and 10:30 minutes or less for rural population areas. Table 26 summarizes the performance goals for each response time element to facilitate positive outcomes in *rural* areas.

Table 27—Rural Response Time Elements and Performance Goals

Response Element	Best Practice Performance Goal	
	Time	Percentage Compliance
Dispatch / Call Processing	1:30 minutes or less	90%
Crew Turnout	2:00 minutes or less	90%
Travel	10:30 minutes or less	90%
Total Response Time	14:00 minutes or less	90%

Unfortunately, there are times when the emergency has become too severe, even before the 9-1-1 notification and/or fire department response, for the responding crew to reverse; however, when an appropriate response time policy is combined with a well-designed deployment system, only anomalies like bad weather, poor traffic conditions, or multiple emergencies slow the response system down. Consequently, a properly designed system will give citizens the hope of a positive outcome for their tax dollar expenditure.

For this report, total response time is the sum of the CAL FIRE Emergency Communication Center dispatch processing, crew turnout, and road travel time, which is consistent with CFAI best practice recommendations.

2.5 CRITICAL TASK TIME MEASURES—WHAT MUST BE DONE OVER WHAT TIME FRAME TO ACHIEVE THE EXPECTED OUTCOME?

Deployment studies use critical task information to determine the number of firefighters needed within a specific timeframe to achieve desired objectives on fire and emergency medical incidents. Table 28 and Table 29 illustrate critical tasks typical of building fire and medical emergency incidents, including the minimum number of personnel required to complete each task. These tables are composites from other suburban/rural Citygate clients and recognized best practices. It is important to understand the following relative to these tables:

- ◆ It can take considerable time after a task is ordered by the Incident Commander to complete the task and arrive at the desired outcome.
- ◆ Task completion time is usually a function of the number of personnel that are *simultaneously* available. The fewer firefighters available, the longer some tasks will take to complete. Conversely, with more firefighters available, some tasks are completed concurrently.
- ◆ Some tasks must be conducted by a minimum of two firefighters to comply with safety regulations. For example, two firefighters are required to enter a building with smoke or fire, with at least two additional firefighters on the exterior of the building ready for immediate entry to rescue the interior team, if needed.

2.5.1 Critical Firefighting Tasks

Table 28 illustrates the critical tasks required to control a typical single-family dwelling fire with five response units (four engines and one Chief Officer), with a typical total Effective Response Force (ERF) of 13 personnel. These tasks are taken from fire departments' operational procedures, which are consistent with the customary findings of other agencies using the SOC process. No conditions exist to override the Cal/OSHA two-in/two-out safety policy, which requires that firefighters enter atmospheres that are immediately dangerous to life and health, such as building fires, in teams of two while two more firefighters are outside and immediately ready to rescue them should trouble arise.

Scenario: *Simulated approximately 2,000-square-foot, two-story, residential fire with unknown rescue situation. Responding companies receive dispatch information typical for a witnessed fire. Upon arrival, they find approximately 50 percent of the second floor involved in fire.*

Table 28—Critical Building Fire Tasks – 13 Personnel

Critical Task Description		Personnel Required
First-Due Engine (3 Personnel)		
1	Conditions report	1
2	Establish supply line to hydrant	2
3	Deploy initial fire attack line to point of building access	1–2
4	Operate pump and charge attack line	1
5	Establish incident command	1
6	Conduct primary search	2
Second-Due Engine (3 Personnel)		
7	If necessary, establish supply line to hydrant	1–2
8	Deploy a backup attack line	1–2
9	Establish Initial Rapid Intervention Crew	2
Third-Due Engine or Truck (3 Personnel)		
10	Conduct initial search and rescue, if not already completed	2
11	Deploy ground ladders to roof	1–2
12	Establish horizontal or vertical building ventilation	1–2
13	Open concealed spaces as required	2
Chief Officer (Incident Command/Safety)		
14	Transfer of incident command	1
15	Establish exterior command and scene safety	1
Fourth-Due Engine (3 Personnel)		
16	Establish Initial Rapid Intervention Crew if not already done	3
17	Secure utilities	2
18	Deploy second attack line as needed	2
19	Conduct secondary search	2

Grouped together, the tasks in Table 28 form an ERF, or First Alarm Assignment. These distinct tasks must be performed to effectively achieve the desired outcome; arriving on scene does not stop the emergency from escalating. While firefighters accomplish these tasks, the incident progression clock keeps running.

2.5.2 Critical Medical Emergency Tasks

EMS incidents constitute most annual calls for service, including vehicle accidents, strokes, heart attacks, difficulty breathing, falls, and other medical emergencies. For comparison, Table 28 summarizes the critical tasks required for a cardiac arrest patient.

Table 29—Cardiac Arrest Critical Tasks – 3 Engine Personnel + ALS Ambulance

	Critical Task	Personnel Required	Critical Task Description
1	Chest compressions	1–2	Compression of chest to circulate blood
2	Ventilate/oxygenate	1–2	Mouth-to-mouth, bag-valve-mask, apply O ₂
3	Airway control	1–2	Manual techniques/intubation/cricothyroidotomy
4	Defibrillate	1–2	Electrical defibrillation of dysrhythmia
5	Establish I.V.	1–2	Peripheral or central intravenous access
6	Control hemorrhage	1–2	Direct pressure, pressure bandage, tourniquet
7	Splint fractures	2–3	Manual, board splint, HARE traction, spine
8	Interpret ECG	2	Identify type and treat dysrhythmia
9	Administer drugs	2	Administer appropriate pharmacological agents
10	Spinal immobilization	2–5	Prevent or limit paralysis to extremities
11	Extricate patient	3–4	Remove patient from vehicle, entrapment
12	Patient charting	1–2	Record vitals, treatments administered, etc.
13	Hospital communication	1–2	Receive treatment orders from physician
14	Treat en-route to hospital	2–3	Continue to treat/monitor/transport patient

2.5.3 Critical Task Analysis and Effective Response Force Size

A critical task analysis reveals that the time required to complete the critical tasks necessary to stop the escalation of an emergency (as shown in Table 28 and Table 29) must be compared to outcomes. Fire in a building can double in size during its free-burn period before fire suppression is initiated. As shown in nationally published fire service time versus temperature tables, after approximately 4:00 to 5:00 minutes of free burning a room, fire will escalate to the point of flashover. At this point, the entire room is engulfed in fire, the entire building becomes threatened, and human survival near or in the room of fire origin becomes impossible. Additionally, brain death begins to occur within 4:00 to 6:00 minutes of the heart stopping. Thus, the ERF must arrive in time to prevent these emergency events from becoming worse if that is the desired outcome.

Previous critical task studies conducted by Citygate and NFPA Standard 1710 find that all units need to arrive with a minimum of 14 firefighters plus at least one Chief Officer within 11:30

minutes (from the time of 9-1-1 call) at a building fire to be able to *simultaneously and effectively* perform the tasks of rescue, fire suppression, and ventilation.

If fewer firefighters arrive, most likely, the search team would be delayed, as would ventilation. The attack lines would only consist of two firefighters, which does not allow for rapid movement of the hose line above the first floor in a multiple-story building. Rescue is conducted with at least a two-person team (plus another two-person team on the exterior); thus, when rescue is essential, other tasks are not completed in a simultaneous, timely manner. Effective deployment is about the **speed** (*travel time*) and the **weight** (*number of firefighters*) of the response. The number of personnel and the arrival time frame can be critical in a serious fire. Fires in older and/or multiple-story buildings could well require the initial firefighters to rescue trapped or immobile occupants. If the ERF is too small, rescue *and* firefighting operations *cannot* be conducted simultaneously. If the ERF is substantially smaller than the recommended 14 personnel, or some or all the ERF arrives beyond 11:30 minutes, it is highly unlikely that a building fire could be contained to only a portion of the building.

While the Department's *minimum* daily staffing level of two to five personnel,¹⁶ including a CAL FIRE Groveland Station engine crew and Chief Officer during winter months, could be *adequate some of the time* to perform the critical tasks associated with small, emerging fires and routine single-patient EMS incidents, even a best-case staffing level of nine personnel (two District personnel and seven CAL FIRE Groveland Station personnel including a Chief Officer) is clearly *insufficient* to safely and effectively perform the critical firefighting/rescue tasks at a confined building fire, moderate to significant vegetation/wildland fire, serious multiple-patient EMS incident, or complex rescue incident in a timely manner without additional assistance. This best-case ERF staffing of nine personnel reflects a likely outcome of confining building fires to the building or parcel of origin, an inability to confine a developing vegetation/wildland fire, and some EMS patients not surviving.

2.6 DISTRIBUTION AND CONCENTRATION—HOW THE LOCATION OF FIRST-DUE AND ERF RESOURCES AFFECTS EMERGENCY INCIDENT OUTCOMES

The District is served today by two agencies deploying one or two engine companies and one Chief Officer from one or two fire stations depending on the time of year. It is appropriate to understand, using geographic mapping, what the existing stations do and do not cover within specific travel time goals, if there are any coverage gaps needing one or more stations, and what, if anything, to do about those gaps. In addition, it is important to understand that mutual aid resources, other than

¹⁶ Depending on time of year (i.e., CAL FIRE Amador Plan Agreement only provides additional daily District staffing during winter, non-fire season months)

the CAL FIRE Groveland Station resources, require approximately 20–30 minutes travel time to arrive.

In brief, there are two geographic perspectives to fire station deployment:

- ◆ **Distribution**—the spacing of first-due all-risk intervention units to control routine emergencies before they escalate and require additional resources.
- ◆ **Concentration**—the spacing of fire stations close enough to each other so that more complex emergency incidents can quickly receive sufficient resources from multiple fire stations. As indicated, this is known as the ERF, which is the collection of a sufficient number of firefighters on scene, delivered within the concentration time goal to stop the escalation of the problem.

Citygate used a 14:00-minute total response time goal for the first-arriving unit, reflecting a nationally recommended best practice for *rural* population density areas.¹⁷ While the 2007 Fire Master Plan recommended a 10:00- to 12:00-minute first-due response goal for an emerging *suburban* community, Citygate finds that the population density of the District is more rural (500 per square mile or less) than suburban (501–1,000 per square mile). In addition, Table 35 in Section 2.8 shows the Department’s actual response performance more closely aligns with the 14:00-minute rural goal than the 10:00- to 12:00-minute suburban goal, which in Citygate’s opinion can only be achieved by re-locating the current District fire station or adding a second staffed station. Given the District’s fiscal situation as discussed in Section 2.10, neither of these alternatives are likely achievable in the foreseeable future.

2.6.1 Deployment Coverage Baselines

The following maps, contained in **Appendix A** (Map Atlas), show the District’s baseline deployment and incident locations.

Map #1—General Geography, Station Locations, and Response Resource Types

Map #1 shows the District boundary and existing fire station locations, including the District Station #78 and the CAL FIRE Groveland Station. This is a reference map for other maps that follow.

¹⁷ NFPA 1720 — Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments (2014 Edition).

Map #2—10:30-Minute (5.5-mile) First-Due Travel

In this map the red circle shows the areas of the District within 5.5 miles of either fire station, which equates to approximately 10:30 minutes travel time given the District’s topography and road network. Note the travel time coverage gap in the eastern area of the District.

Finding #5: The area of the District generally east of the mid-point of the Pine Mountain Lake Airport is beyond the 10:30-minute first-due travel time goal and related 14:00-minute first-due arrival goal.

Map #3—All Incident Locations

Map #3 shows the locations of all 1,831 incident responses over the three-year study period. Note that emergency incidents occurred in all areas of the District.

Map #4—All EMS/Rescue Incident Locations

This map shows the location of the 1,043 EMS/rescue incidents over the three-year study period. Note that EMS/rescue incidents occurred throughout all areas of the District.

Map #5—All Fire Incident Locations

Map #5 shows the location of the 21 fire incidents over the three-year study period. Note that this is a significantly smaller number of incidents, yet they occurred throughout all areas of the District.

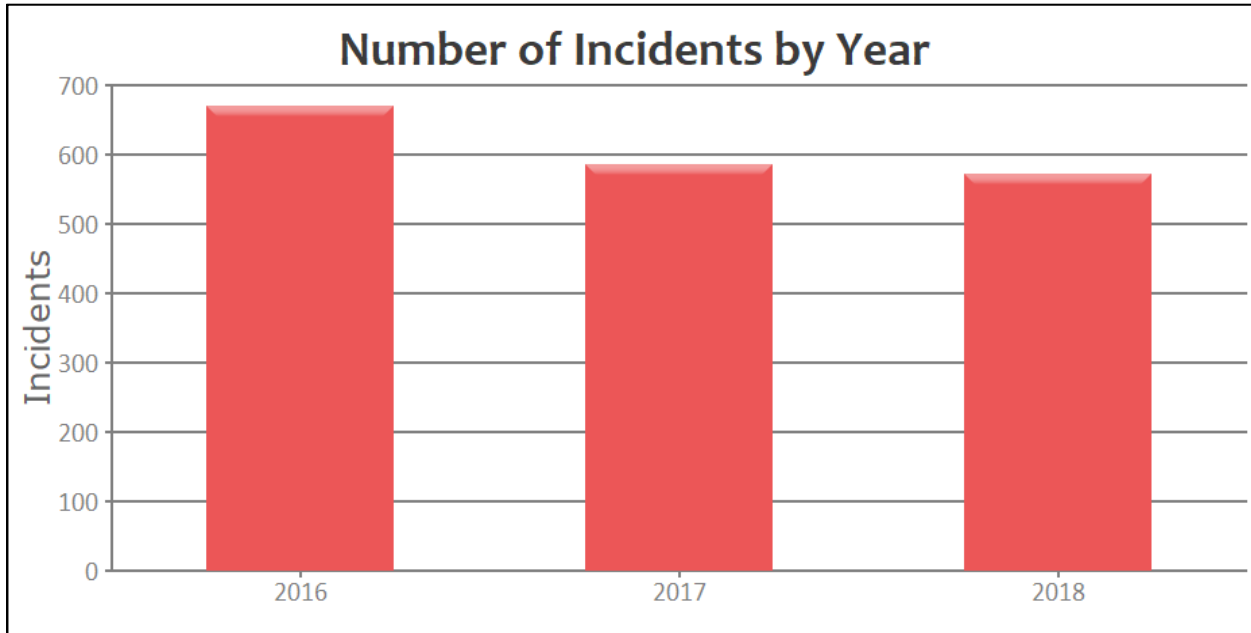
Map #6—All Building Fire Locations

This map shows the location of all building fire incidents over the three-year study period. Note that although there were only nine building fires as summarized in Table 14, they occurred in all sections of the District.

2.7 SERVICE DEMAND

The Department responded to 1,831 calls for service over the three-year study period from January 1, 2016 through December 31, 2018, as shown in Figure 13. Note that annual service demand has trended down an average of approximately 7.4 percent over the past two years.

Figure 13—Service Demand by Year – 2016–2018



Annual service demand by general category is summarized in Table 29 and Figure 14.

Table 30—Annual Service Demand by General Incident Category – 2016–2018

Incident Category	Year			Total	Percent of Total Service Demand
	2016	2017	2018		
Fire	5	10	6	21	1.15%
EMS	361	362	320	1,043	56.96%
Other	305	215	247	767	41.89%
Total	671	587	573	1,831	100.00%

Figure 14—Number of Incidents by Year by General Category – 2016–2018

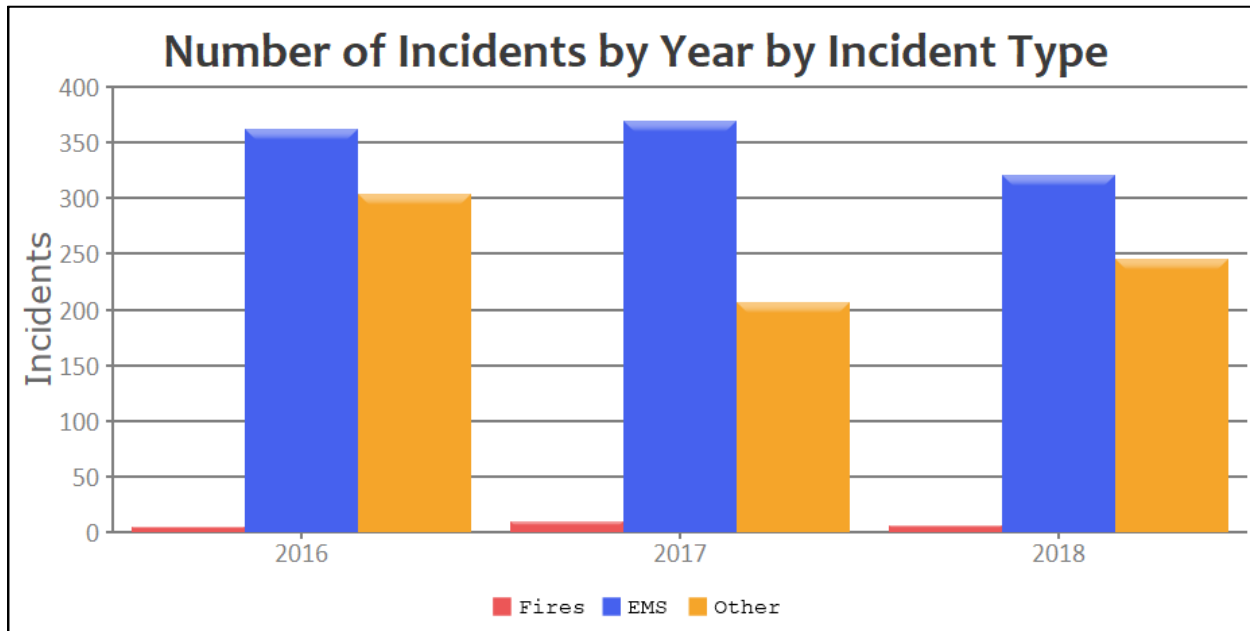


Table 31 shows service demand by more specific call type. Only call types with more than 10 calls over the three-year study period are shown. Note the number of calls (192) with missing incident type data.

Table 31—Service Demand by Incident Type – 2016–2018

Incident Type	2016	2017	2018	Total
EMS call (excluding vehicle accident with injury)	342	351	312	1,005
Public service assistance	130	47	54	231
Blank or missing NFIRS data	75	53	64	192
Assist police or other government agency	45	59	64	168
False alarm or false call	36	23	33	92
Hazardous condition	13	18	13	44
Motor vehicle accident (no injuries)	14	5	6	25
Smoke scare / odor of smoke	5	6	3	14
Vehicle accident with injuries	5	6	2	13

Reference: District Fire Department incident data

Figure 15 illustrates annual service demand by month.

Figure 15—Service Demand by Month – 2016–2018

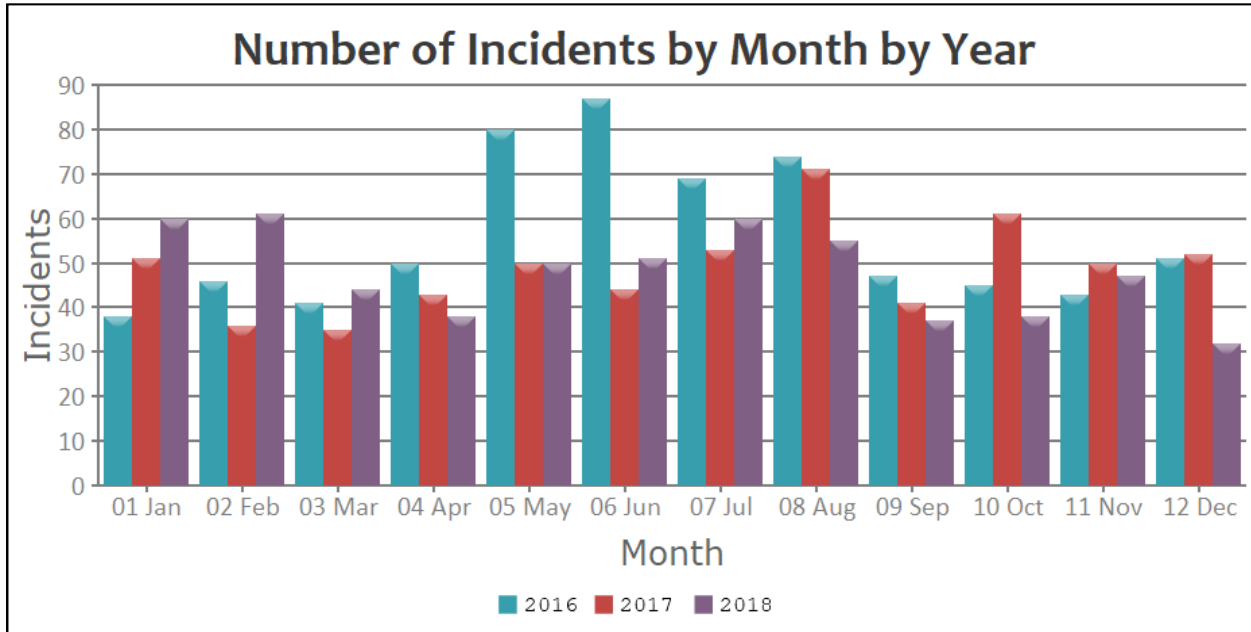
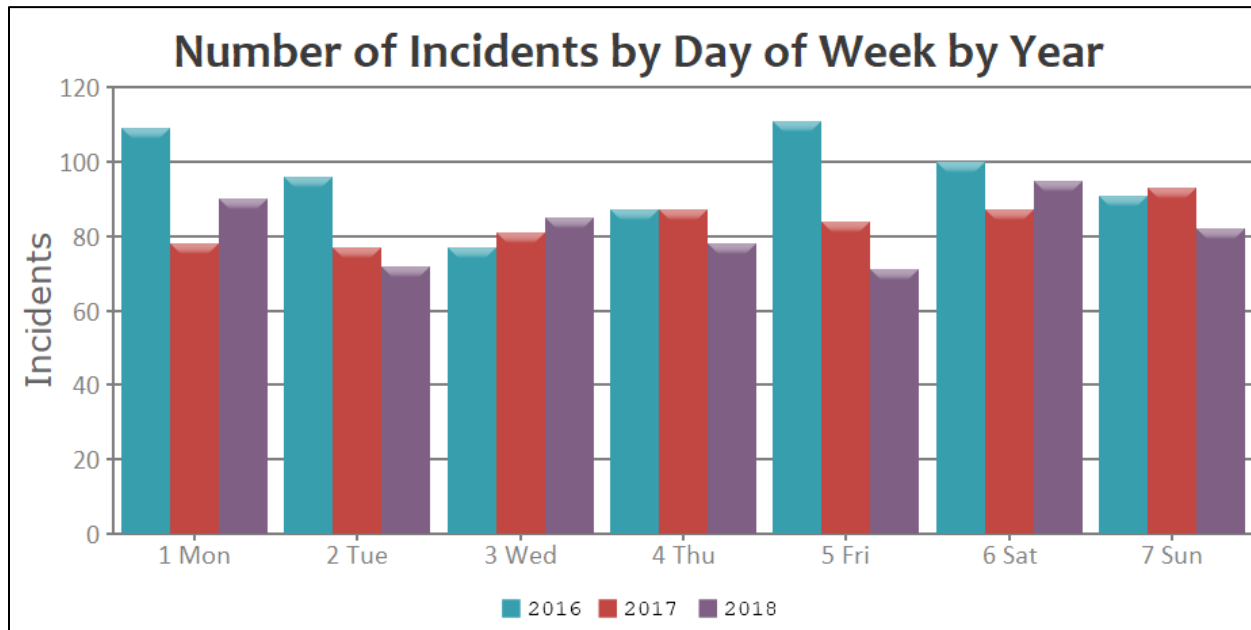


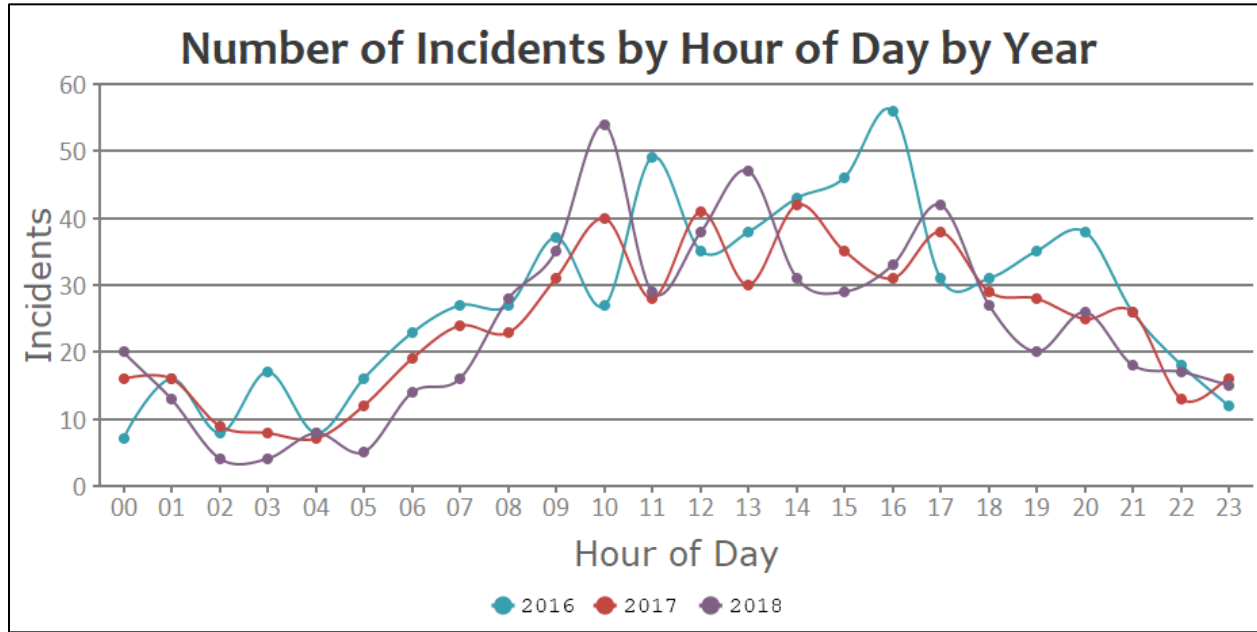
Figure 16 shows annual service demand by day of week.

Figure 16—Service Demand by Day of Week – 2016–2018



Service demand by hour of day is summarized in Figure 17.

Figure 17—Service Demand by Hour of Day – 2016–2018



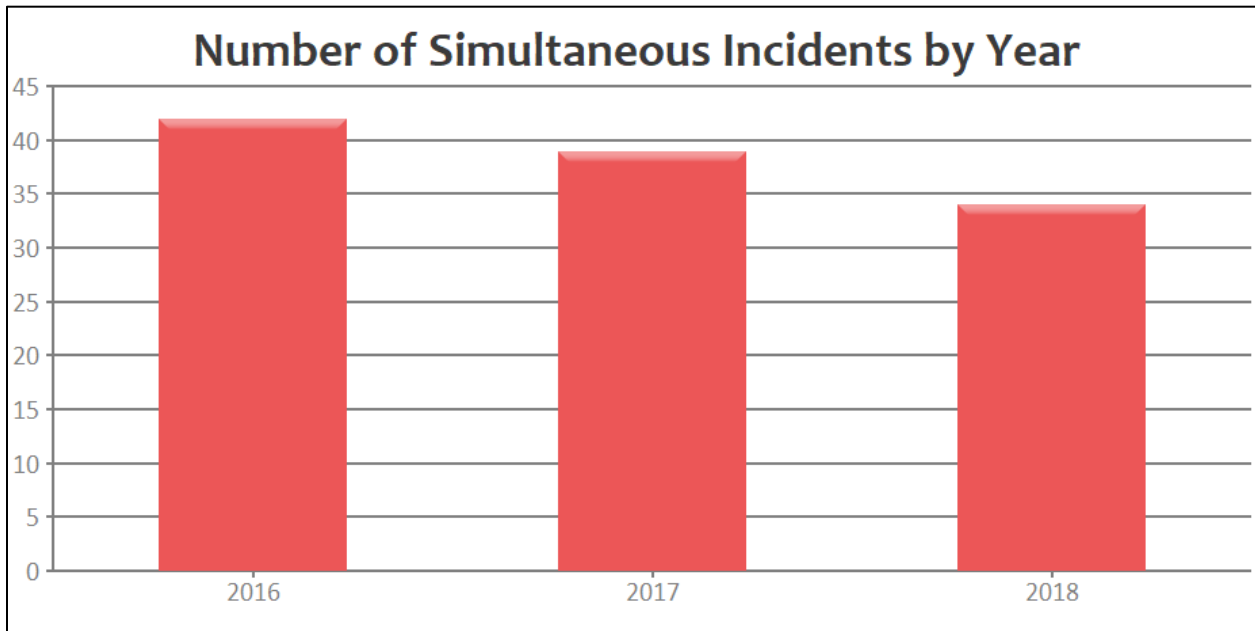
2.7.1 Simultaneous Incident Activity

Simultaneous incident activity is when two or more incidents are occurring at the same time. As Table 32 shows, less than six percent of all calls for service involved one or more simultaneous incidents, which equates to approximately one every 21 days on average, as shown in Figure 18. Also of note is that simultaneous incident activity decreased approximately 19 percent from 2016 to 2018.

Table 32—Simultaneous Incident Activity – 2018

Number of Simultaneous Incidents	Percentage
1 or more	5.93%
2 or more	0.87%

Figure 18—Simultaneous Incident Activity – 2016–2018



Finding #6: Simultaneous incidents minimally impact first-due response performance, occurring on average approximately once every 21 days.

2.7.2 Mutual Aid

Table 33 summarizes aid given and received over the three-year study period.

Table 33—Aid Given and Received – 2016–2018

Aid Type	2016	2017	2018	Total
Auto Aid Received	2	0	0	2
Mutual Aid Received	0	0	1	1
Auto/Mutual Aid Given	49	67	66	182
BLANK	75	53	64	192
Total	126	120	131	377

Reference: District Fire Department incident data

Analysis of the 182 out-of-District responses (11.8 percent of total responses) in the following table shows that District resources were committed to those incidents a total of 100:25 hours over

the three-year period, or 37 percent of the total 270:25 hours committed to all incidents over the same time period.

Table 34—Incident Response Summary – 2016–2018

Incident Location	3-Year Total			
	Number of Responses	Percentage of Responses	Total Time Committed	Percentage of Total Time Committed
Groveland CSD	1,361	88.20%	169:59:37	62.86%
Out-of-District	182	11.80%	100:25:39	37.14%
Total	1,543	100.00%	270:25:16	100.00%

Source: Groveland CSD Fire Department incident data

Finding #7: Out-of-District responses account for 37 percent of the total time District resources were committed to emergency responses over the three-year study period.

In addition to the CAL FIRE Groveland Station, mutual aid into the District is only available from the west, including Tuolumne County Fire Department Station #61 (Chinese Camp), a volunteer-staffed station located 17 miles southwest of Groveland on Highway 120, and Jamestown, approximately 28 miles northwest of Groveland.

Finding #8: The District provides significant mutual and automatic aid to the unincorporated areas of the County outside of the District.

2.7.3 Future Service Demand

Given minimal projected full-time resident population growth within the District as discussed in Section 2.1.3, recent annual service demand as described in Section 2.7, and the increased use of vacation rentals in the area, Citygate projects service demand within the District could increase slightly over the next 5–10 years. Service demand *outside* the District, however, could increase more significantly with the Terra Vi and other potential resort developments and the associated increased population density and Highway 120 traffic volume *if* the District continues to be the primary first responder along that segment of Highway 120.

2.8 OPERATIONAL RESPONSE PERFORMANCE

Table 35 summarizes the Department’s operational response performance over the three-year study period.

Table 35—90th Percentile Response Performance – 2016–2018

Response Performance Component	Best Practice Goal	Groveland CSD
Call Processing/Dispatch ¹	1:30	00:46
Crew Turnout ²	2:00	4:25
First-Due Travel ³	10:30	9:51
First-Due Call-to-Arrival ⁴	14:00	13:42

¹ Time interval from receipt of call in fire dispatch center to completion of dispatch notification

² Time interval from completion of dispatch notification to start of responding apparatus movement

³ Time interval from start of apparatus movement to arrival at incident and parking brake set

⁴ Time interval from receipt of call in fire dispatch center to arrival of first responding unit

It should be noted that CAL FIRE Tuolumne-Calaveras Unit ECC procedures currently do not accurately and consistently track the time a response resource is first en route (start of response travel time). Thus, crew turnout time in Table 35 is questionable and longer than would be reasonably expected in Citygate’s experience for a staffed fire station. In addition, no data was available to evaluate ERF travel or call-to-arrival performance.

2.9 OVERALL DEPLOYMENT EVALUATION

Citygate finds that the Department is well organized to accomplish its mission to serve a rural resident and transient visitor population in a remote area of Tuolumne County. The Department is using best practices and is data driven, as necessary. Citygate further finds that the District’s CAL FIRE Schedule A contract has been very beneficial in providing high quality and well-trained personnel, staffing stability, and high quality administrative and operational oversight. The District’s CAL FIRE Amador Plan Agreement is also extremely beneficial by providing an additional staffed CAL FIRE engine during the winter months at minimal cost. This Amador Plan Agreement, funded by District residents, also provides direct benefit to the unincorporated areas of Tuolumne County outside of the District, and particularly the proposed resort developments along the Highway 120 corridor, as developments in other unincorporated areas of Tuolumne County have required a similar Amador Plan Agreement or local fire station to provide year-round structural fire protection services.

Finding #9: The CAL FIRE Schedule A contract and Amador Plan Agreement provide good value and benefit to the District and also provide direct benefits to the unincorporated areas of the County surrounding the District.

While the state fire code now requires fire sprinklers even in residential dwellings, it will be many more decades before most homes are replaced or remodeled with automatic fire sprinklers. If desired outcomes include limiting building fire damage to only part of the inside of an affected building and/or minimizing permanent impairment resulting from a medical emergency, then the Department would need both first-due unit and multiple-unit ERF coverage in all neighborhoods consistent with a Citygate response performance recommendation of first-due arrival within 7:30 minutes from 9-1-1 dispatch notification and ERF arrival within 11:30 minutes of 9-1-1 notification, all at 90 percent or better reliability. This response performance and related outcome goal is seldom achievable in rural areas, thus Citygate recommends a more realistic best practice *rural* performance goal of 14:00 minutes for the first-due unit, and 19:30 minutes for a multiple-unit ERF, all at 90 percent or better reliability. This more realistic response performance goal, however, generally results in less-desirable outcomes including:

- ◆ Building fires are confined to the building or parcel of origin and do not extend to other buildings or the wildland.
- ◆ Some EMS patients do not survive due to the travel distance to a hospital emergency room.
- ◆ Modest to severe wildland fires cannot be controlled within the first few hours, resulting in modest to significant building damage.

As discussed in the previous section, the Department's operational response performance is *meeting* this recommended rural response goal at 90 percent or better reliability, except for crew turnout as noted in Table 35 due to CAL FIRE's current inability to accurately track this response performance measure. This has not, however, prevented the Department from meeting the recommended 10:30-minute travel time and 14:00-minute first-due arrival performance goals.

Given this level of operational response performance, combined with the District's CAL FIRE contracts and the fiscal assessment in Section 2.10, Citygate finds that the District is currently providing the best fire services it can afford. Daily on-duty staffing levels continue to be less than desirable, however, as discussed in Section 2.5.3, and in Citygate's opinion, optimal daily operational response staffing for the District is six personnel given the values to be protected and the risks as outlined in Section 2.2. This could be achieved incrementally as funding permits by adding one FTE on the District engine, and one Amador Plan firefighter during the winter months, with associated estimated annual costs as summarized in Table 36 and Table 37. To help ease the

Groveland Community Services District

2020 Fire Master Plan Update

fiscal transition associated with adding daily on-duty staffing, the District could seek a Federal Emergency Management Agency (FEMA) Staffing for Adequate Fire and Emergency Response (SAFER) grant that reimburses 75 percent of first- and second-year costs, and 35 percent of third-year costs.

Table 36—Estimated Optimal Staffing Level Costs (FY 2020–21 through FY 2024–25)

Expenditure Category	Annual Change Factor	FY 2020–21	FY 2021–22	FY 2022–23	FY 2023–24	FY 2024–25
CAL FIRE Schedule A Contract	5.00%	1,131,604	1,188,184	1,247,593	1,309,973	1,375,472
3.0 Additional Engineer FTEs	5.00%	616,497	647,322	679,688	713,673	749,356
Schedule A Contract Total		1,748,101	1,835,506	1,927,281	2,023,646	2,124,828
CAL FIRE Amador Plan Agreement	5.00%	286,138	300,444	315,467	331,240	347,802
1.5 Additional FF-I FTEs	5.00%	227,798	239,188	251,148	263,705	276,890
Amador Plan Total		513,936	539,633	566,615	594,945	624,693
Total Annual District Fire Personnel Costs		2,262,037	2,375,139	2,493,896	2,618,591	2,749,520

Table 37—Estimated Optimal Staffing Level Costs (FY 2025–26 through FY 2029–30)

Expenditure Category	Annual Change Factor	FY 2025–26	FY 2026–27	FY 2027–28	FY 2028–29	FY 2029–30
CAL FIRE Schedule A Contract	5.00%	1,444,245	1,516,457	1,592,280	1,671,894	1,755,489
3.0 Additional Engineer FTEs	5.00%	786,824	826,165	867,473	910,847	956,389
Schedule A Contract Total		2,231,069	2,342,623	2,459,754	2,582,741	2,711,879
CAL FIRE Amador Plan Agreement	5.00%	365,192	383,452	402,624	422,756	443,893
1.5 Additional FF-I FTEs	5.00%	290,735	305,272	320,535	336,562	353,390
Amador Plan Total		655,927	688,723	723,160	759,318	797,284
Total Annual District Fire Personnel Costs		2,886,996	3,031,346	3,182,913	3,342,059	3,509,162

Finding #10: Call processing/dispatch performance is well within the recommended best practice goal of 90 seconds or less.

Finding #11: Crew turnout performance cannot be accurately measured given current CAL FIRE Tuolumne-Calaveras Unit Emergency Command Center procedures.

Finding #12: First-due travel performance is more than six percent *faster* than the Citygate-recommended 10:30-minute goal for *rural* areas.

Finding #13: First-due call-to-arrival performance *is meeting* the Citygate-recommended 14:00-minute goal for *rural* areas.

Recommendation #1: **Adopt Deployment Policies:** The District Board of Directors should adopt the following fire deployment goals to deliver outcomes that will save medical patients when possible upon arrival and to keep small but serious fires from becoming more serious:

1.1 Distribution of Fire Stations: First-due response units should arrive within 14:00 minutes, 90 percent of the time from the receipt of the 9-1-1 call at the fire dispatch center, which equates to a 90-second dispatch time, 2:00-minute crew turnout time, and 10:30-minute travel time.

1.2 Multiple-Unit Effective Response Force (ERF) for Serious Emergencies: A multiple-unit ERF, including at least one Chief Officer, should arrive within 19:30 minutes from the time of 9-1-1 call receipt at fire dispatch 90 percent of the time. This equates to a 90-second dispatch time, 2:00-minute company turnout time, and 16:00-minute travel time.

1.3 Hazardous Materials Response: To provide hazardous materials response designed to protect the community from the hazards associated with uncontrolled release of hazardous and toxic materials, a first-due response unit should arrive within 14:00 minutes, 90 percent of the time from the receipt of the 9-1-1 call at the fire dispatch center to isolate the hazard, deny entry into the hazard zone, and notify appropriate officials/resources to minimize impacts on the community. Following initial hazard evaluation and/or mitigation actions, a determination can be made whether to request additional resources from a regional hazardous materials team.

1.4 Technical Rescue: To respond to technical rescue emergencies as efficiently and effectively as possible with enough trained personnel to facilitate a successful rescue, a first-due response unit should arrive within 14:00 minutes, 90 percent of the time from the receipt of the 9-1-1 call at the fire dispatch center to evaluate the situation and/or initiate rescue actions. Following the initial evaluation, assemble additional resources as needed within a total response time of 19:30 minutes to safely complete rescue/extrication and delivery of the victim to the appropriate emergency medical care facility.

Recommendation #2: The Department should work with the CAL FIRE Tuolumne-Calaveras Unit Emergency Command Center to modify its procedures to accurately track crew turnout time.

Recommendation #3: The District should consider augmenting daily on-duty staffing as funding permits.

Recommendation #4: The District's staffing would be much safer and more effective if a total of six firefighters were always stationed in Groveland between the District and CAL FIRE.

Given six personnel, under the safety laws, there could be three teams of two: one command and pump operator team and two 2-firefighter teams for simultaneous fire attack and occupant rescue duties.

While the Department's physical resources are appropriate to protect against the hazards likely to impact the District, the daily staffing level of four to eight depending on the time of year is barely sufficient to safely resolve even a single moderately serious ERF incident—if the CAL FIRE wildland season units are in the District. If CAL FIRE is committed to an out-of-District wildfire, then the District's staffing is insufficient for all but the most basic emergency. The District is also *not* geographically located to receive prompt mutual aid, which is generally only available from the west with extended travel times of 20:00-plus minutes due to the 1,950-foot elevation difference and the very slow two-lane climb up Priest Grade on State Highway 120. In addition, the District is the only staffed and available response agency, other than the CAL FIRE Groveland Station when available, for mutual aid response to the unincorporated areas of the County east of the District along the Highway 120 corridor, including current and planned resort developments.

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Given the fiscal review in the following sub-section, the District can only afford the level of fire and EMS service it is currently providing and will require additional ongoing funding to even maintain the current service level.

Finding #14: The District's minimum daily staffing level is *barely sufficient* to safely perform the critical tasks associated with small, emerging fires and routine single-patient medical emergencies in a timely manner.

Finding #15: The District's best-case Effective Response Force of nine personnel is *insufficient* to safely perform the critical tasks associated with a confined building fire, moderate to significant vegetation/wildland fire, serious multiple-patient emergency medical services incident, or complex rescue incident in a timely manner without additional assistance.

Finding #16: The District is not geographically located to receive prompt mutual aid and increases in mutual aid calls outside the District could impact service levels including response times.

Finding #17: The District is the primary provider of mutual aid and is the first-in responder to the unincorporated areas of the County east of the District along the Highway 120 corridor except for the CAL FIRE Groveland Station when staffed and available.

District Fire Station #78 and the CAL FIRE Groveland Station can be expected to provide desired first-due response times to approximately 90 percent of the District. In Citygate's opinion, it would be cost-prohibitive to consider relocating District Fire Station #78 to provide desired first-due response times to the remaining 10 percent.

Finding #18: District Fire Station #78 and the CAL FIRE Groveland Station can be expected to provide desired first-due response times to approximately 90 percent of the District.

Finding #19: It would be cost-prohibitive to consider relocating District Fire Station #78 to provide desired first-due response times to the remaining 10 percent.

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2.10 FISCAL REVIEW

In this section, Citygate provides a detailed review of the District’s Fire Fund revenues, expenditures, and fund balance over the previous ten fiscal years, and projected future Fire Fund revenues, expenditures, and resultant fund balance for the current and succeeding five fiscal years. The Fire Fund is a dedicated District fund solely for fire services, funded by ad valorem property taxes received by the District, with 92 percent allocated to the Fire Fund and the remaining 8 percent to park facilities.

2.10.1 Fire Service Costs

Revenues

Table 38 summarizes District Fire Fund revenues over the previous ten fiscal years.

Table 38—Recent Fire Fund Revenue History

Revenue Source	FY 2009–10	FY 2010–11	FY 2011–12	FY 2012–13	FY 2013–14	FY 2014–15	FY 2015–16	FY 2016–17	FY 2017–18	FY 2018–19
Property Taxes/Assessments	1,242,793	1,190,039	1,201,039	866,887	879,808	917,968	965,762	992,078	1,039,722	1,082,599
Investment Earnings	840	0	0	898	1,557	1,541	1,704	1,704	1,704	9,733
State Revenue	0	0	0	0	0	0	0	0	0	141
Other Operating Revenue	364,606	25,203	27,528	48,118	52,305	42,735	82,730	35,932	59,099	55,106
Other Non-Operating Revenue	10,969	7,414	0	0	17,761	2,554	0	950	0	4,100
Total Revenue	1,619,208	1,222,656	1,228,567	915,903	951,431	964,798	1,050,197	1,030,664	1,100,525	1,151,679
Change	-24.49%	0.48%	-25.45%	3.88%	1.40%	8.85%	-1.86%	6.78%	4.65%	

Source: Groveland Community Services District

As Table 36 shows, 94 percent of FY 2018–19 revenues were property taxes. Of the different revenue sources used to support local government services, secured property taxes can be reliable and predictable over time, but are also subject to fluctuation as economic factors affect property values. Supplemental property taxes can also fluctuate when the local market intersects with factors affecting the local/regional economy. Fire Fund property tax revenue *decreased* nearly 13 percent from \$1.243 million in FY 2009–10 to \$1.083 million in FY 2018–19, primarily due to the defeat of a parcel assessment ballot measure in 2012. Based on anticipated minimal District growth and related minimal anticipated growth in the District’s property tax base, property tax revenue is projected to increase an average of a mere three percent annually.

Other Fire Fund revenue sources include interest on investments (fund balance), and other operating and non-operating sources, many of which are unpredictable or non-permanent including State Assistance by Hire assignment reimbursements, grant funds, refunds, donations, sale of

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assets, etc., some of which also have full or partial offsetting costs. For the purpose of this review, Citygate conservatively projected total annual revenue growth over the next five fiscal years at an average of 2.85 percent.

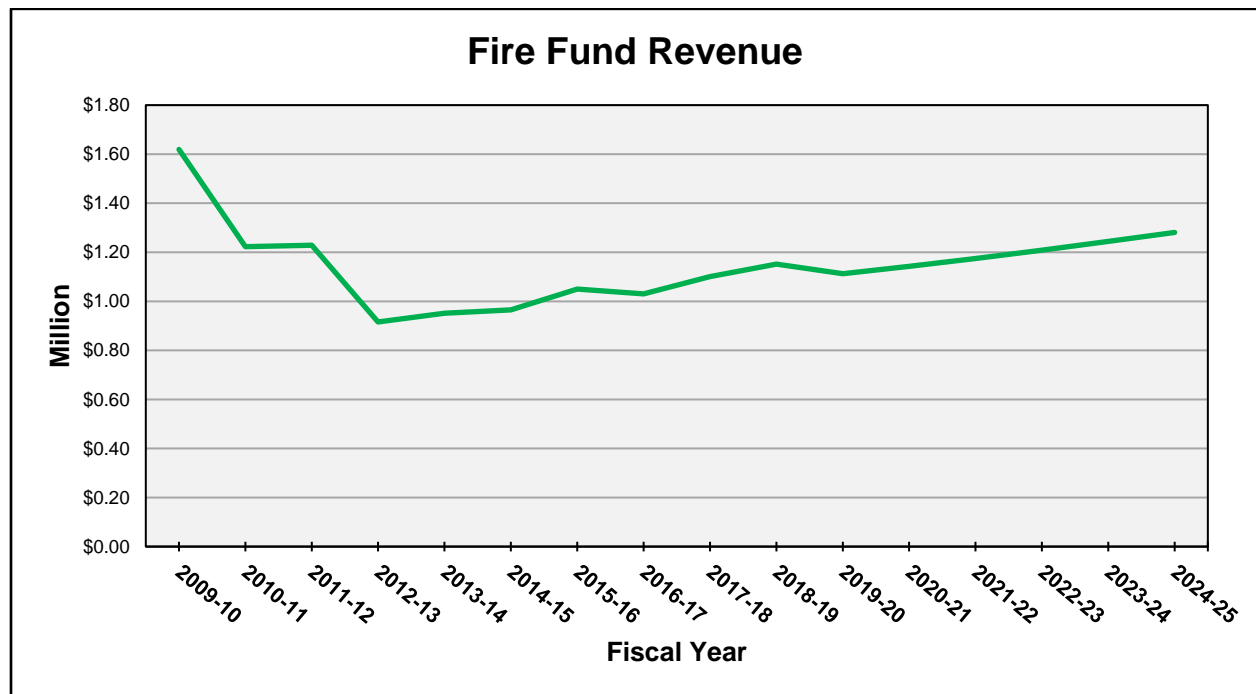
Table 37 summarizes projected Fire Fund revenue for the current and succeeding five fiscal years based on three percent annual growth in property tax revenue, 50 percent annual reduction in investment earnings, and no annual change in other revenue sources.

Table 39—Projected Fire Fund Revenue

Revenue Source	FY 2019–20	FY 2020–21	FY 2021–22	FY 2022–23	FY 2023–24	FY 2024–25
Property Taxes	1,086,768	1,119,371	1,152,952	1,187,541	1,223,167	1,259,862
Investment Earnings	5,000	2,500	500	0	0	0
State Revenue	0	0	0	0	0	0
Other Operating Revenue	20,000	20,000	20,000	20,000	20,000	20,000
Other Non-Operating Revenue	1,000	1,000	1,000	1,000	1,000	1,000
Total Revenues	1,112,768	1,142,871	1,174,452	1,208,541	1,244,167	1,280,862
Change	-3.38%	2.71%	2.76%	2.90%	2.95%	2.95%

Figure 19 illustrates recent and projected near future Fire Fund revenue.

Figure 19—Fire Fund Revenue by Year



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Expenditures

Table 38 summarizes District Fire Fund expenditures over the previous ten fiscal years.

Table 40—Recent Fire Fund Expenditure History

Expenditure Category	FY 2009–10	FY 2010–11	FY 2011–12	FY 2012–13	FY 2013–14	FY 2014–15	FY 2015–16	FY 2016–17	FY 2017–18	FY 2018–19
CAL FIRE Schedule A Contract	0	0	0	133,403	599,889	633,791	700,015	826,304	852,238	948,239
CAL FIRE Amador Plan	505	112	313	0	0	0	130,466	149,645	0	144,449
Operating/Maintenance	1,097,073	1,097,883	1,081,531	681,830	204,645	156,410	94,473	99,225	91,279	131,439
District Administration	58,200	67,941	103,139	42,160	27,859	28,158	28,363	31,767	23,203	7,801
Capital Expense	148,878	88,413	25,552	0	4,641	0	0	0	0	106,417
Total Expenditures	1,304,656	1,254,349	1,210,535	857,393	837,034	818,359	953,317	1,106,941	966,720	1,338,345
Change		-3.86%	-3.49%	-29.17%	-2.37%	-2.23%	16.49%	16.11%	-12.67%	38.44%

Source: Groveland Community Services District

As Table 38 shows, Fire Fund expenditures increased a total of 2.6 percent from FY 2009–10 to FY 2018–19, with the CAL FIRE Schedule A contract cost increasing 58 percent over the past five years.

Table 39 summarizes projected necessary Fire Fund expenditures for the current and succeeding five fiscal years based on a five percent annual increase in the CAL FIRE Schedule A and Amador Plan Agreements, five percent annual increase in operations and maintenance, and a two percent annual increase in District administration costs. Capital expenses are projected pursuant to the Fire Department’s Capital Replacement Plan; however, current and projected revenues are insufficient to provide for replacement of the District’s fire apparatus and related equipment.

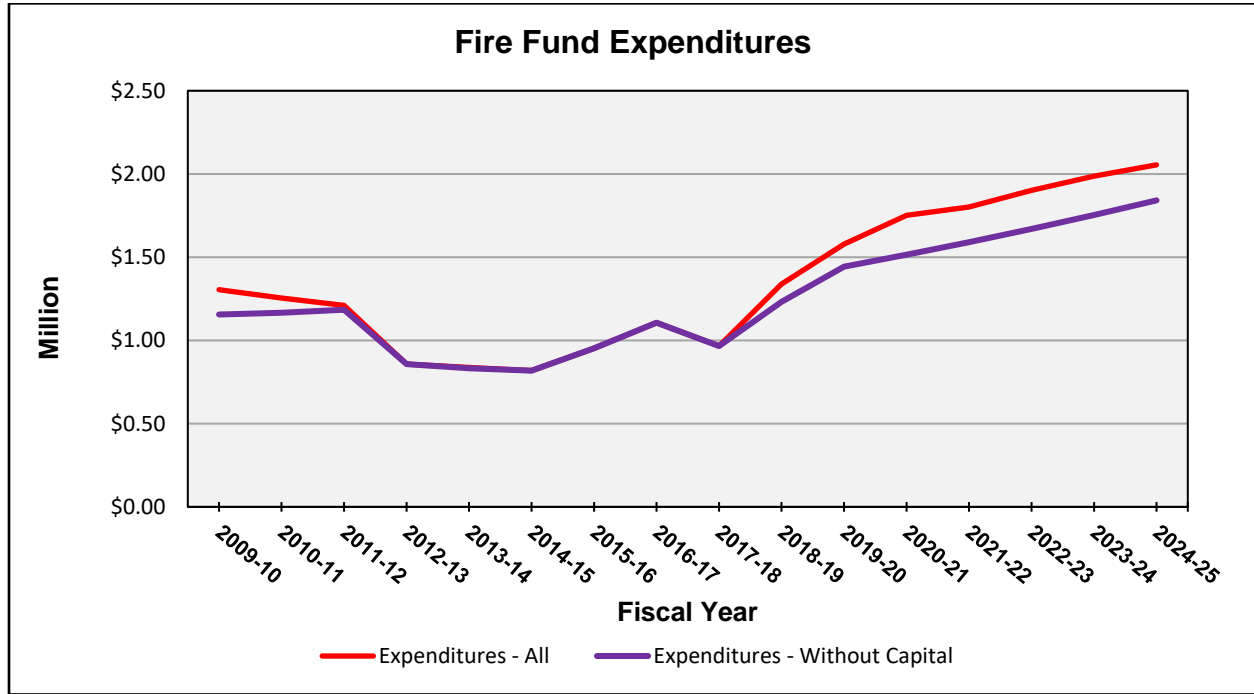
Table 41—Projected Fire Fund Expenditures

Expenditure Category	FY 2019–20	FY 2020–21	FY 2021–22	FY 2022–23	FY 2023–24	FY 2024–25
CAL FIRE Schedule A Contract	1,077,718	1,131,604	1,188,184	1,247,593	1,309,973	1,375,472
CAL FIRE Amador Plan	272,512	286,138	300,444	315,467	331,240	347,802
Operating/Maintenance	72,499	76,124	79,930	83,927	88,123	92,529
District Administration	20,007	21,007	22,058	23,161	24,319	25,535
Capital Expense	136,000	236,500	211,500	231,500	233,500	213,500
Total Expenditures	1,578,736	1,751,373	1,802,116	1,901,647	1,987,155	2,054,837
Change		17.96%	10.94%	2.90%	5.52%	3.41%

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Figure 20 illustrates recent and projected near future Fire Fund expenditures.

Figure 20—Fire Fund Expenditures by Year



Revenues to Expenditures

Table 40 summarizes Fire Fund revenues to expenditures over the previous 10 years.

Table 42—Fire Fund Revenues to Expenditures

Category	FY 2009–10	FY 2010–11	FY 2011–12	FY 2012–13	FY 2013–14	FY 2014–15	FY 2015–16	FY 2016–17	FY 2017–18	FY 2018–19
Revenues	1,619,208	1,222,656	1,228,567	915,903	951,431	964,798	1,050,197	1,030,664	1,100,525	1,151,679
Expenditures (All)	1,304,656	1,254,349	1,210,535	857,393	837,034	818,359	953,317	1,106,941	966,720	1,338,345
Revenues to Expenditures (All)	314,552	-31,693	18,032	58,510	114,397	146,439	96,880	-76,277	133,805	-186,666
Expenditures (Less Capital)	1,155,778	1,165,936	1,184,983	857,393	832,393	818,359	953,317	1,106,941	966,720	1,231,928
Revenues to Expenditures (Less Capital)	463,430	56,720	43,584	58,510	119,038	146,439	96,880	-76,277	133,805	-80,249

Source: Groveland Community Services District

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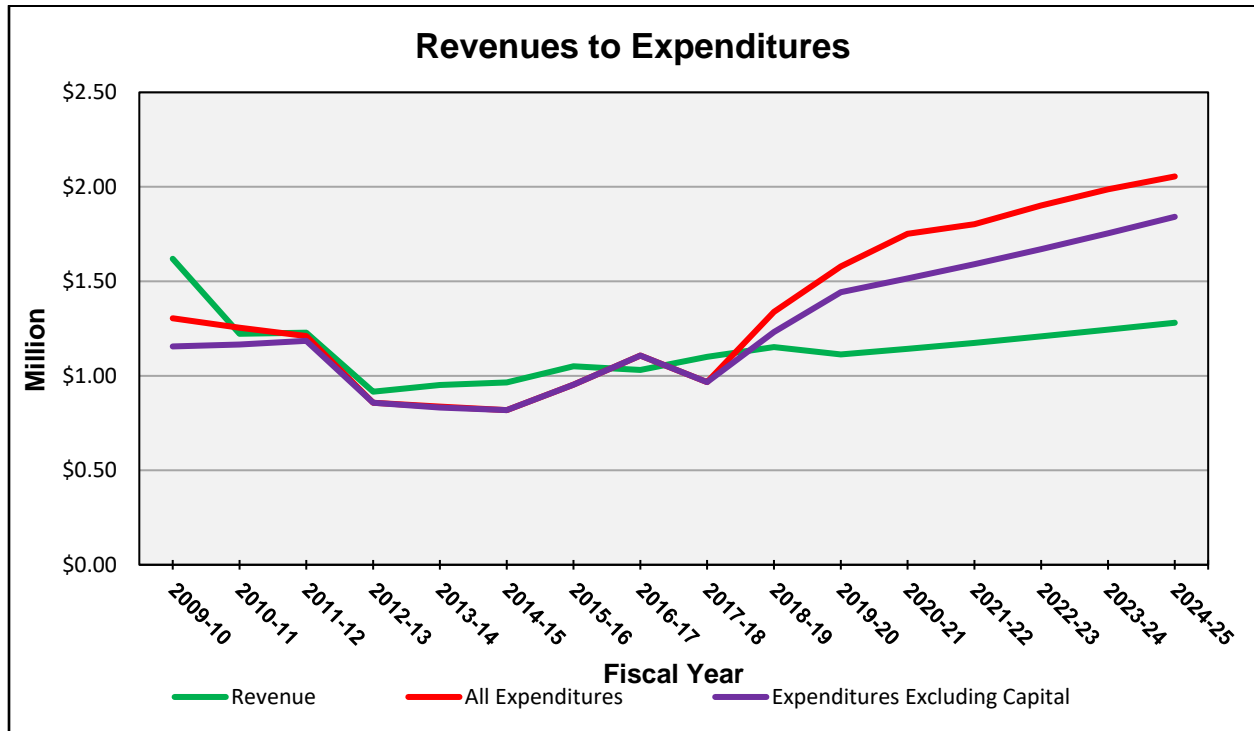
As Table 40 shows, revenues have generally exceeded expenditures over the previous ten years except in FY 2010–11, 2016–17, and 2018–19. Table 41 summarizes projected Fire Fund revenues to expenditures for the current and succeeding five fiscal years.

Table 43—Projected Fire Fund Revenues to Expenditures

Category	FY 2019–20	FY 2020–21	FY 2021–22	FY 2022–23	FY 2023–24	FY 2024–25
Revenues	1,112,768	1,142,871	1,174,452	1,208,541	1,244,167	1,280,862
Expenditures (All)	1,578,736	1,751,373	1,802,116	1,901,647	1,987,155	2,054,837
Revenues to Expenditures (All)	-465,968	-608,502	-627,664	-693,106	-742,988	-773,975
Expenditures (Less Capital)	1,442,736	1,514,873	1,590,616	1,670,147	1,753,655	1,841,337
Revenues to Expenditures (Less Capital)	-329,968	-372,002	-416,164	-461,606	-509,488	-560,475
Deficit to Revenue Percentage	29.65%	32.55%	35.43%	38.20%	40.95%	43.76%

As Table 40, Table 41, and Figure 21 show, expenditures consistently exceed revenues beginning in FY 2018–19, resulting in a structural annual budget deficit requiring augmentation from Fire Fund reserves to balance. This budget deficit is due, in part, to projected continued CAL FIRE Schedule A contract cost increases in excess of projected annual property tax revenue, as well as the District’s projected CAL FIRE Amador Plan costs, for which the state has not charged the District three of the last five years due to drought conditions and the extended fire seasons. As these tables further show, this structural budget deficit is nearly 30 percent of revenues in the current fiscal year and is projected to increase each succeeding year to nearly 44 percent by FY 2024–25 without a significant amount of new revenue and/or a significant reduction in expenditures. Even elimination of the District’s CAL FIRE Amador Plan Agreement would not close this structural budget deficit.

Figure 21—Revenues to Expenditures



Finding #20: Fire Fund revenues exceeded expenditures in seven of the last ten fiscal years.

Finding #21: Since Fiscal Year 2017–18, the District has experienced a structural fire services budget deficit where expenditures exceed revenues, requiring augmentation from Fire Fund reserves to achieve a balanced budget. Without significant new revenues and/or a significant reduction in expenditures, this structural budget deficit is projected to increase annually.

Capital Asset Replacement/Renewal

The Department has developed an extensive capital asset replacement and renewal plan that establishes an expected useful service life for each asset, estimated current replacement cost, and annual cost required to replace or renew each asset as scheduled. The District’s annual fire budget, however, has not included any significant capital expense from FY 2010–11 through FY 2017–18. The current fiscal year budget includes the full \$250,000 allocation in the replacement plan; however, the Department is approximately \$180,000 in arrears on scheduled capital replacement

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and will require an average annual allocation of \$250,000 over the next five years to maintain scheduled capital replacement/renewal.

Fire Fund Balance

Table 42 shows the District’s Fire Fund balance for the previous ten fiscal years.

Table 44—Fire Fund End of Fiscal Year Balance

Fire Fund	FY 2009–10	FY 2010–11	FY 2011–12	FY 2012–13	FY 2013–14	FY 2014–15	FY 2015–16	FY 2016–17	FY 2017–18	FY 2018–19
End-of-Fiscal-Year Balance	823,963	792,270	810,303	868,813	983,210	1,129,649	1,231,528	1,155,251	1,289,056	1,102,390

Source: Groveland Community Services District

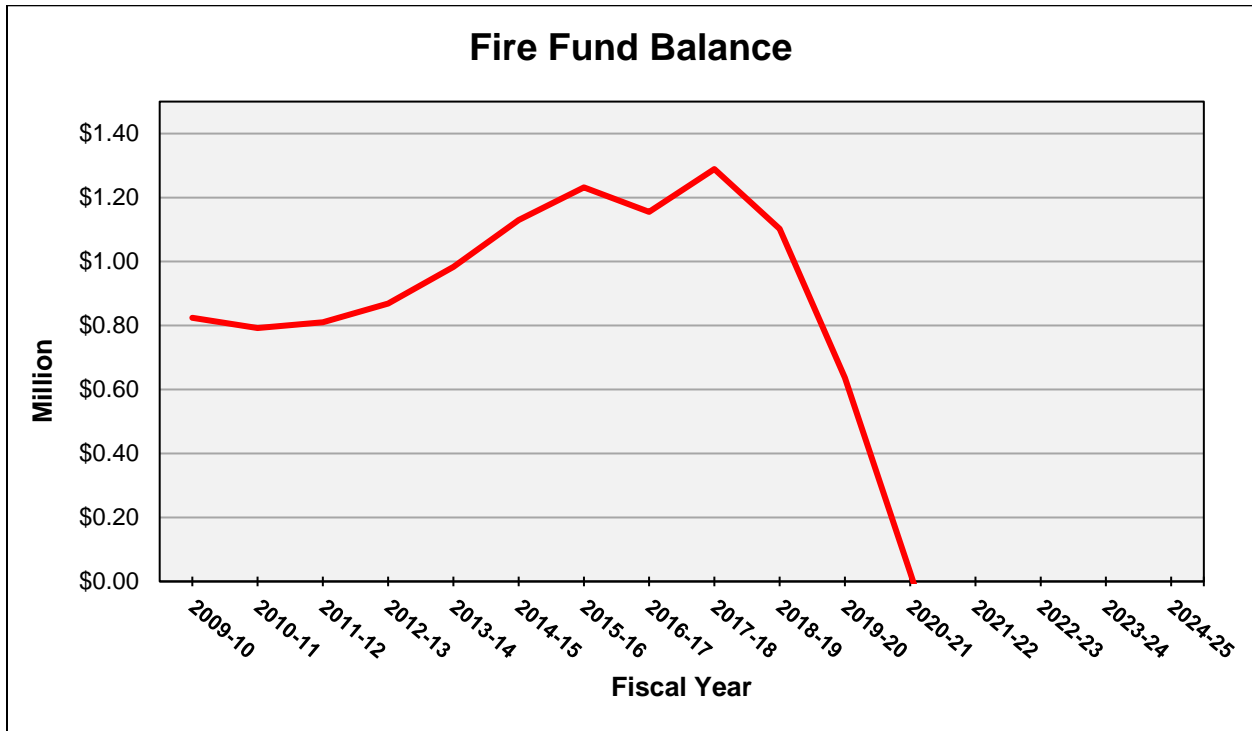
Table 43 shows the projected Fire Fund balance for the current and succeeding five fiscal years given projected revenues and expenditures.

Table 45—Projected Fire Fund Balance

Fire Fund	FY 2019–20	FY 2020–21	FY 2021–22	FY 2022–23	FY 2023–24	FY 2024–25
Projected End-of-Fiscal-Year Balance	636,422	27,920	-599,744	-1,292,851	-2,035,838	-2,809,814

Figure 22 illustrates the District’s historical and projected end-of-fiscal-year Fire Fund Balance.

Figure 22—Fire Fund Balance



As Figure 22 illustrates, the District’s Fire Fund is projected to be exhausted within the next two fiscal years without additional revenue and/or significant reduction in expenditures.

Finding #22: Given projected revenues and expenditures, the District’s Fire Fund is projected to be *exhausted* within the next two fiscal years.

2.10.2 Long-Term Funding Needs

Table 46 and Table 47 identify Citygate’s estimated costs to maintain current fire services, including establishing and maintaining a 20 percent Fire Fund reserve.

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Table 46—Projected Fire Service Costs (FY 2020–21 through FY 2024–25)

Cost Category	Annual Change Factor	Projected Costs				
		FY 2020–21	FY 2021–22	FY 2022–23	FY 2023–24	FY 2024–25
CAL FIRE Schedule A Contract	5.00%	1,131,604	1,188,184	1,247,593	1,309,973	1,375,472
CAL FIRE Amador Plan Agreement	5.00%	286,138	300,444	315,467	331,240	347,802
Operations/Maintenance	5.00%	76,124	79,930	83,927	88,123	92,529
District Administration	5.00%	21,007	22,058	23,161	24,319	25,535
Fire Fund Reserve	0.00%	26,500	26,500	26,500	26,500	26,500
Capital Replacement/Renewal ¹		236,500	211,500	231,500	233,500	213,500
Total Projected Expenditures		1,777,873	1,828,616	1,928,147	2,013,655	2,081,337
Projected Revenue		1,142,871	1,174,452	1,208,541	1,244,167	1,280,862
Gap		-635,002	-654,164	-719,607	-769,488	-800,475

¹ As identified in the District Fire Capital Replacement Plan

Table 47—Projected Fire Service Costs (FY 2025–26 through FY 2029–30)

Cost Category	Annual Change Factor	Projected Costs				
		FY 2025–26	FY 2026–27	FY 2027–28	FY 2028–29	FY 2029–30
CAL FIRE Schedule A Contract	5.00%	1,444,245	1,516,457	1,592,280	1,671,894	1,755,489
CAL FIRE Amador Plan Agreement	5.00%	365,192	383,452	402,624	422,756	443,893
Operations/Maintenance	5.00%	97,156	102,013	107,114	112,470	118,093
District Administration	5.00%	26,811	28,152	29,559	31,037	32,589
Fire Fund Reserve	0.00%	26,500	26,500	26,500	26,500	26,500
Capital Replacement/Renewal ¹		236,500	236,500	242,500	239,500	218,500
Total Projected Expenditures		2,196,404	2,299,074	2,397,578	2,483,157	2,645,065
Projected Revenue		1,318,658	1,357,588	1,397,685	1,438,986	1,481,525
Gap		-877,746	-941,487	-999,893	-1,044,171	-1,163,540

¹ As identified in the District Fire Capital Replacement Plan

Finding #23: The District will require an *additional* estimated \$0.635 million in revenue in Fiscal Year 2020–21 to maintain current fire services, increasing approximately five percent each subsequent year to an estimated \$1.164 million in Fiscal Year 2029–30.

2.10.3 Potential Supplemental Funding Strategies

Given the minimal projected growth of the District's property tax base over the foreseeable future as discussed in Section 2.10.1, the District will require additional revenues to maintain current fire services as estimated in Section 2.10.2. Potential supplemental funding strategies include:

1. An annual parcel assessment.
2. A special tax.
3. Non-resident service fees.
4. A cost recovery/reimbursement agreement with Tuolumne County.

Parcel Assessment

The District had a voter-approved supplemental parcel assessment in place until a replacement assessment was defeated by District voters in 2012. Proposition 218 (California Government Code Section 53750 et seq.), adopted by state voters in 1997, established the following requirements for parcel assessments:

- ◆ The proposed assessment must be supported by a detailed engineer's report prepared by a California certified Registered Professional Engineer.
- ◆ All property owners affected by the proposed assessment must be notified in writing of the proposed assessment at least 45 days in advance of the Public Hearing to adopt the assessment. An assessment ballot must be included.
- ◆ The agency proposing the assessment shall conduct a public hearing on the proposed assessment.
- ◆ At the conclusion of the public hearing, the assessment ballots will be tabulated by proportional weight by an impartial person.
- ◆ If a majority of weighed votes received oppose the assessment, it cannot be imposed.

California Government Code Section 61122 (Community Services District Law) authorizes community services districts to levy assessments for operations and maintenance consistent with the requirements of Proposition 218.

Special Tax

A special tax, which is typically charged at a uniform rate to applicable parcels, is another potential revenue strategy. This alternative, however, requires a two-thirds majority approval by District registered voters, many of whom are not the property owners.

Non-Resident Service Fees

California Government Code Section 61115 authorizes community services districts to establish rates or other charges for services and facilities that a district provides and provides for the enforcement and collection of those rates or other charges. California Government Code Section 61060 further authorizes community services districts to adopt, by ordinance, and enforce rules and regulations for the administration, operation, and use and maintenance of the facilities and services of the district.

Some California agencies have adopted ordinances charging non-residents for services funded predominantly through taxes and/or fees paid by residents. Many of these agencies are reluctant to bill non-residents directly, and generally seek reimbursement for services provided to non-residents from their automobile or homeowner/renter insurance carrier. While the California insurance industry has not legally challenged these ordinances, successful collection has been mixed depending on the insurance company involved. One challenge with this process is identifying the insurance provider. Regarding traffic collisions, the California Highway Patrol (CHP) or local law enforcement agency has been the source of this information; however, the CHP has changed its policy and no longer shares this information. Because of this, some agencies are discontinuing enforcement of their non-resident service fees, including the Ebbetts Pass Fire Protection District locally. While this funding strategy may appear to have merit, based on the number of non-residents who receive services from the District Fire Department, Citygate recommends that the District thoroughly investigate and evaluate the potential revenue likely to be generated from this source versus the capacity and costs required to administer such a program.

Cost Recovery/Reimbursement Agreement with Tuolumne County

The District provides emergency vegetation and vehicle fire, and EMS emergency response services between Moccasin and the entrance to Yosemite National Park along Highway 120 pursuant to the Tuolumne County Automatic Aid Agreement. The District has historically provided services as needed beyond its statutory boundaries as the only career-staffed agency available year-round on Highway 120 between Highway 49 and Yosemite National Park. Most of the Tuolumne County Fire Department stations are staffed by volunteer firefighters as available, including Moccasin and Smith Station nearest Groveland. According to District staff, nearly all District responses outside the District are due to no other staffed response resources being available, including Smith Station and Buck Meadows. During summer fire season months, any response outside of the District leaves no staffed resources immediately available for a concurrent incident within the District, unless the CAL FIRE Groveland Station is staffed and available. It should be noted that an out-of-District fire or traffic accident response may result in the District's resource being committed to the incident for several hours.

While the County funds the volunteer County Fire Department stations, it also provides the following services within the District at no direct District cost:

- ◆ Dispatch services
- ◆ New development site plan review
- ◆ New construction fire inspections
- ◆ State-mandated fire safety inspections for specified occupancies
- ◆ Administration of District fire services (Division Chief)
- ◆ Training of District fire personnel
- ◆ Safety Officer response to emergency incidents, as required.

The Terra Vi Resort Project Summary (September 25, 2019) reviewed for this report does not address which agency will provide first responder fire services at the proposed resort, although the County Fire Department Smith Station and U.S. Forest Service (USFS) Buck Meadows stations are closest. If no full-time staffing is provided at either of these stations, it is reasonable to assume that Groveland will continue to be the closest staffed response agency. If this appears likely as the development continues through the environmental review and approval process, the District should negotiate a cost recovery agreement with the County for responses outside of the District. Where there are no other response forces, the automatic mutual aid zone area is not reciprocal and, as such, a District response capacity standby fee is appropriate. A per-incident reimbursement for actual costs does not, at the frequency of use, appropriately compensate the District for all its direct and overhead expenses in operating fire services. Thus, a more stable annual fee is needed to offset a percentage of the District's annual fire service provided outside of the District.

2.10.4 Fiscal Review Summary

Beginning in FY 2016–17, and continuing again since FY 2018–19, the District has spent more on fire services than it receives in revenue. This is the result of several factors including voter defeat of the District's former parcel tax in 2012, minimal growth in the District's property tax base, an increase in revenues of 19 percent from FY 2014–15 to FY 2018–19 compared to an increase in expenditures of 63 percent over the same time, and a 50 percent increase in the District's CAL FIRE Schedule A contract cost over the same time.

Given projected near-term revenues and expenditures and a resultant widening fiscal deficit, the District's Fire Fund is projected to be *exhausted* within the next two fiscal years, absent additional revenue and/or significant reductions in expenditures. Even elimination of the District's CAL FIRE Amador Plan Agreement would not close this fiscal gap. The District will require an additional estimated \$0.635 million in revenue next fiscal year to close the projected gap to maintain current fire services, increasing by a total of 83 percent to \$1.164 million in FY 2029–

30. The District has multiple funding strategies available for consideration to close this revenue gap, including:

1. An annual parcel assessment.
2. A special tax.
3. Non-resident service fees.
4. A cost recovery/reimbursement agreement with Tuolumne County.

Of these four alternatives, Citygate considers an annual parcel assessment or special tax, and/or a cost recovery/reimbursement agreement with Tuolumne County, as the most viable funding strategies. Absent significant additional annual revenues as described in Section 2.10.2, the District is facing *severe* fire service reductions, including elimination of its CAL FIRE Amador Plan Agreement as well as potential loss of its CAL FIRE Schedule A contract. Should this occur, the District could also be facing elimination of fire protection services in total, which would likely require abandonment of those latent District powers through a formal process as established by the Tuolumne County Local Agency Formation Commission.

Finding #24: The District has multiple supplemental funding strategy options available for consideration, with an annual parcel assessment and cost recovery/reimbursement agreement with Tuolumne County considered most viable.

Finding #25: Absent significant additional annual revenues, the District is facing *severe* fire service reductions, including elimination of its CAL FIRE Amador Plan Agreement as well as potential loss of its CAL FIRE Schedule A contract.

Finding #26: Absent significant additional annual revenues, the District could potentially be faced with eliminating fire protection services through a Local Agency Formation Commission latent power abandonment process.

Recommendation #5: The District should consider seeking voter approval of an annual parcel assessment or special tax to provide necessary supplemental funding to, at a minimum, maintain current fire protection services.

Recommendation #6: The District should consider seeking a cost recovery/reimbursement agreement with Tuolumne County for the District's percentage of total responses outside of the automatic mutual aid zone.

SECTION 3—NEXT STEPS

Citygate's recommended next steps include:

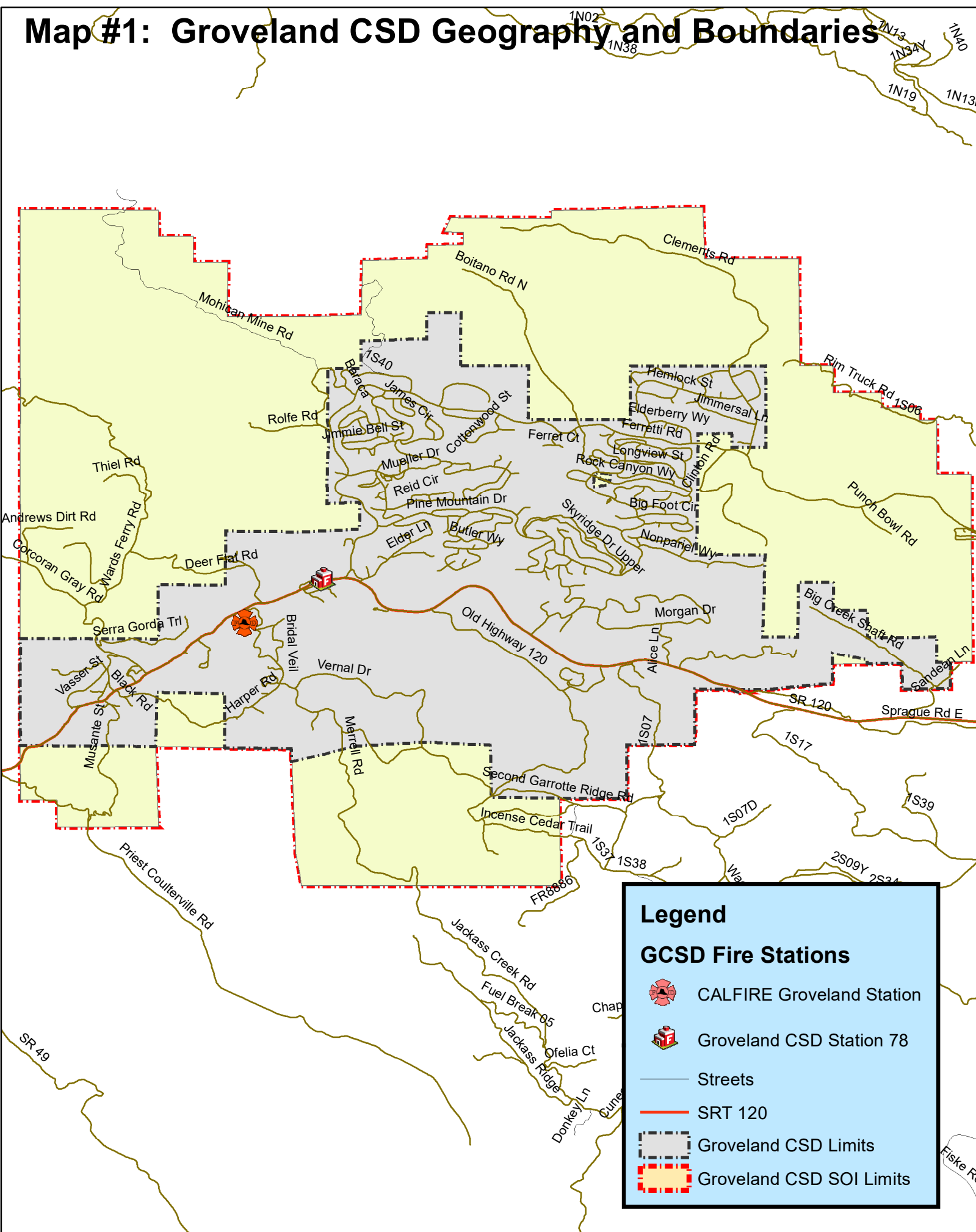
1. Review and absorb the content, findings, and recommendations of this Fire Master Plan Update.
2. Prepare a staff report and draft resolution for consideration by the District Board of Directors adopting the included recommended response performance goals.
3. Aggressively pursue one or more of the suggested funding strategies to ensure long-term fiscal sustainability.
4. Provide additional daily staffing if/when funding becomes available; consider seeking a Federal Emergency Management Agency (FEMA) Staffing for Adequate Fire and Emergency Response (SAFER) grant to provide partial reimbursement of those costs over the first three years.

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APPENDIX A—MAP ATLAS







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Map #1: Groveland CSD Geography and Boundaries

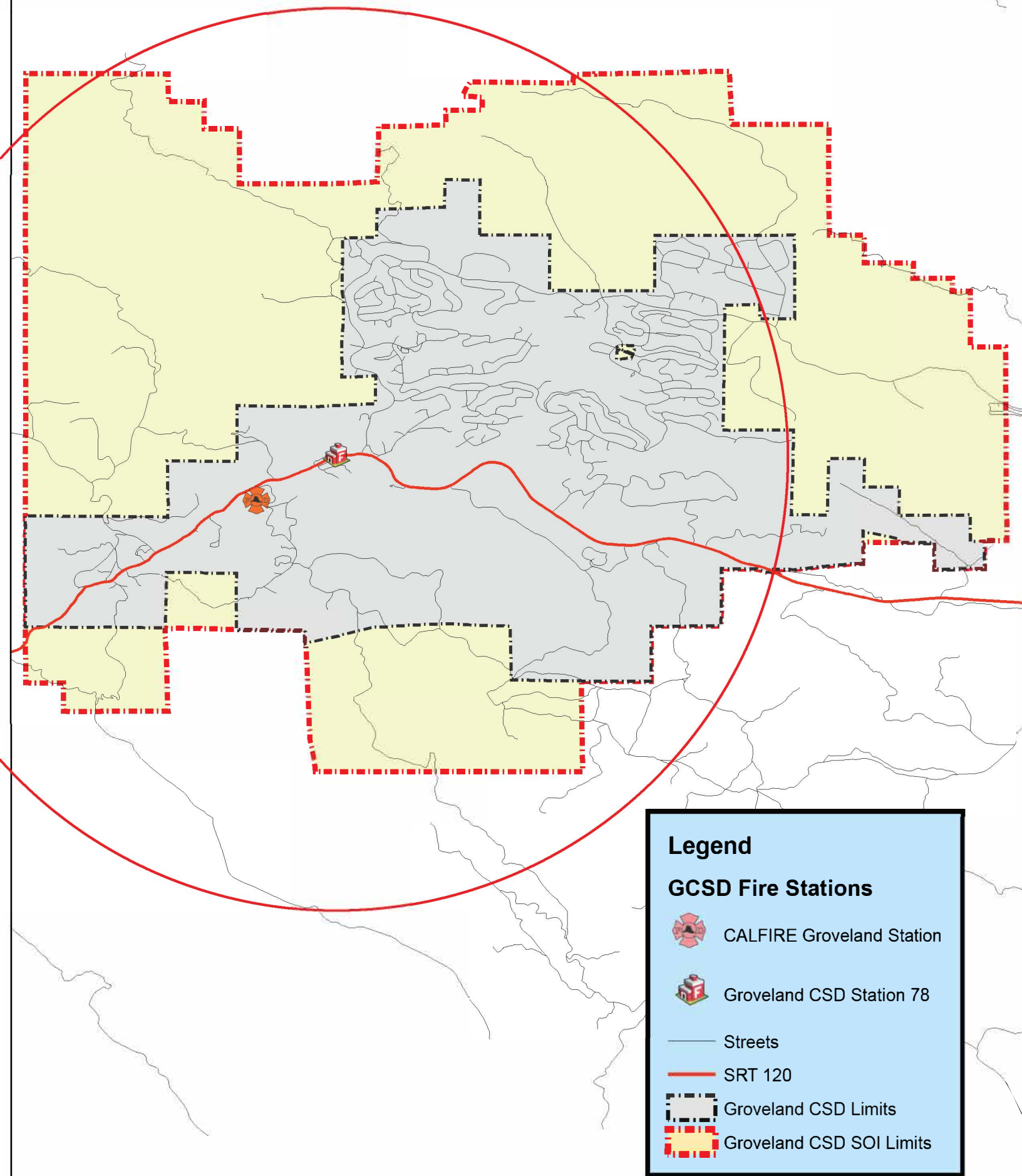


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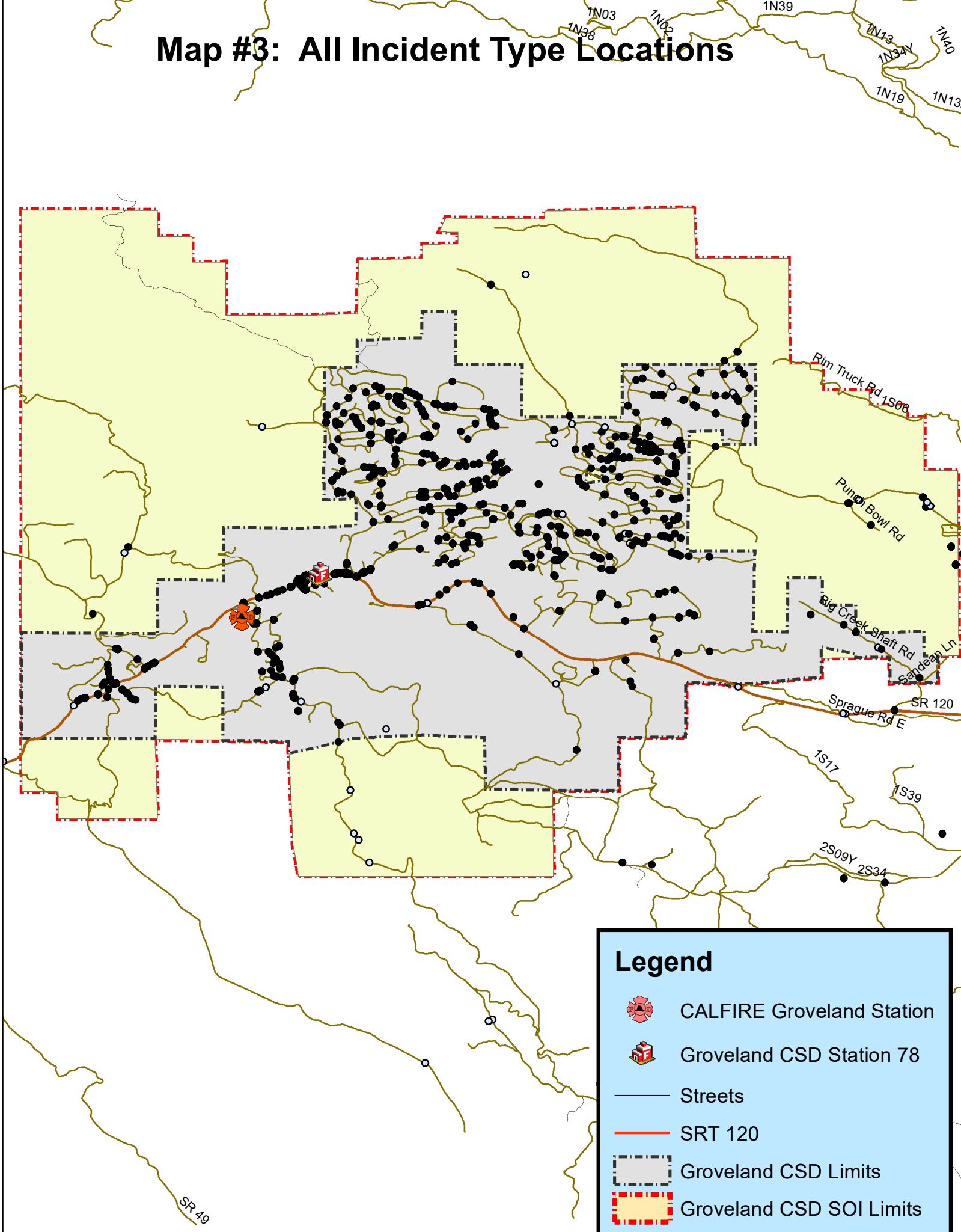
GCSD Fire Stations

-  CALFIRE Groveland Station
-  Groveland CSD Station 78
-  Streets
-  SRT 120
-  Groveland CSD Limits
-  Groveland CSD SOI Limits







Map #2: 10:30 (5.5 Mile) First Due Travel from FS 78



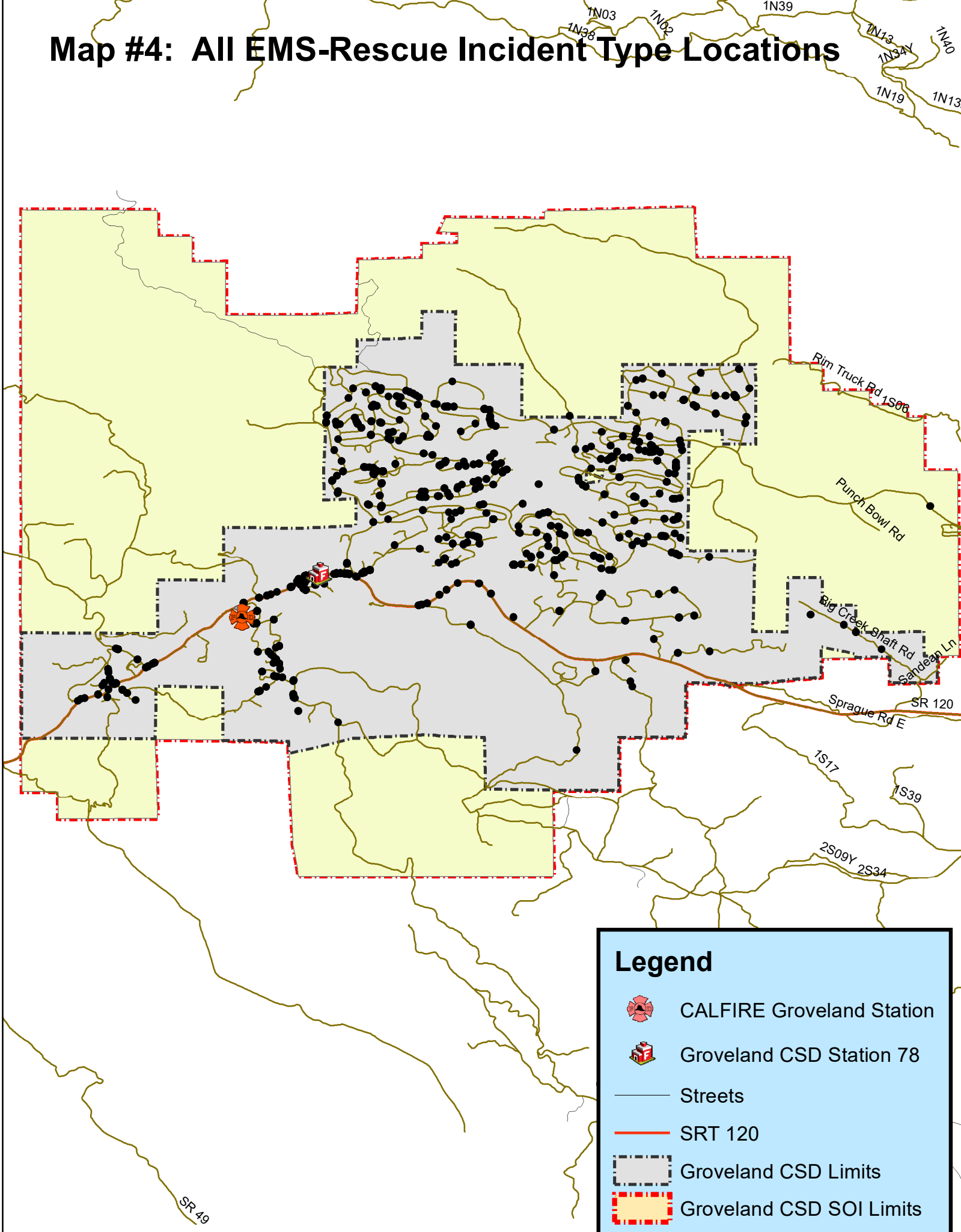
Map #3: All Incident Type Locations









Legend

-  CALFIRE Groveland Station
-  Groveland CSD Station 78
-  Streets
-  SRT 120
-  Groveland CSD Limits
-  Groveland CSD SOI Limits

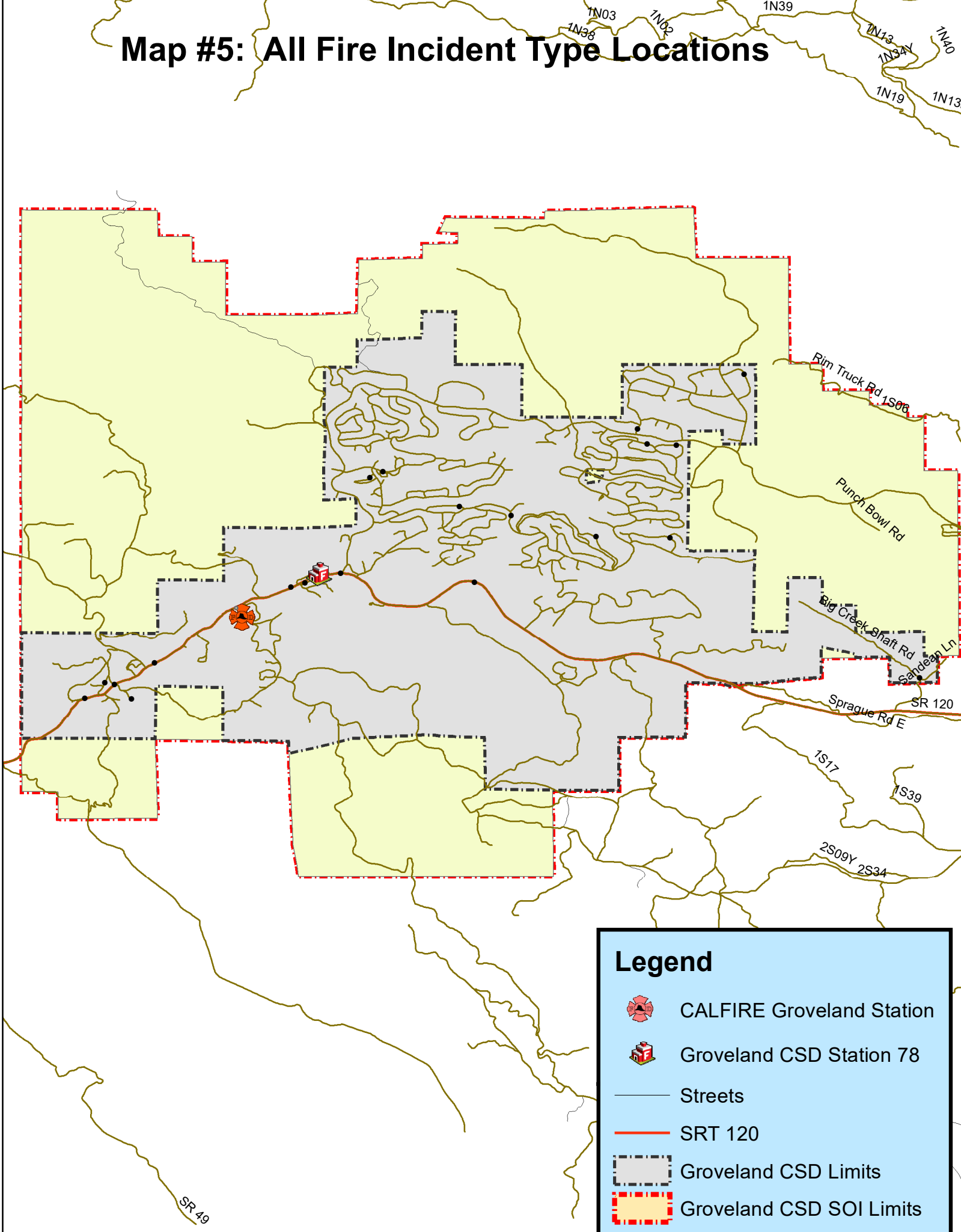
Map #4: All EMS-Rescue Incident Type Locations









Legend

-  CALFIRE Groveland Station
-  Groveland CSD Station 78
-  Streets
-  SRT 120
-  Groveland CSD Limits
-  Groveland CSD SOI Limits

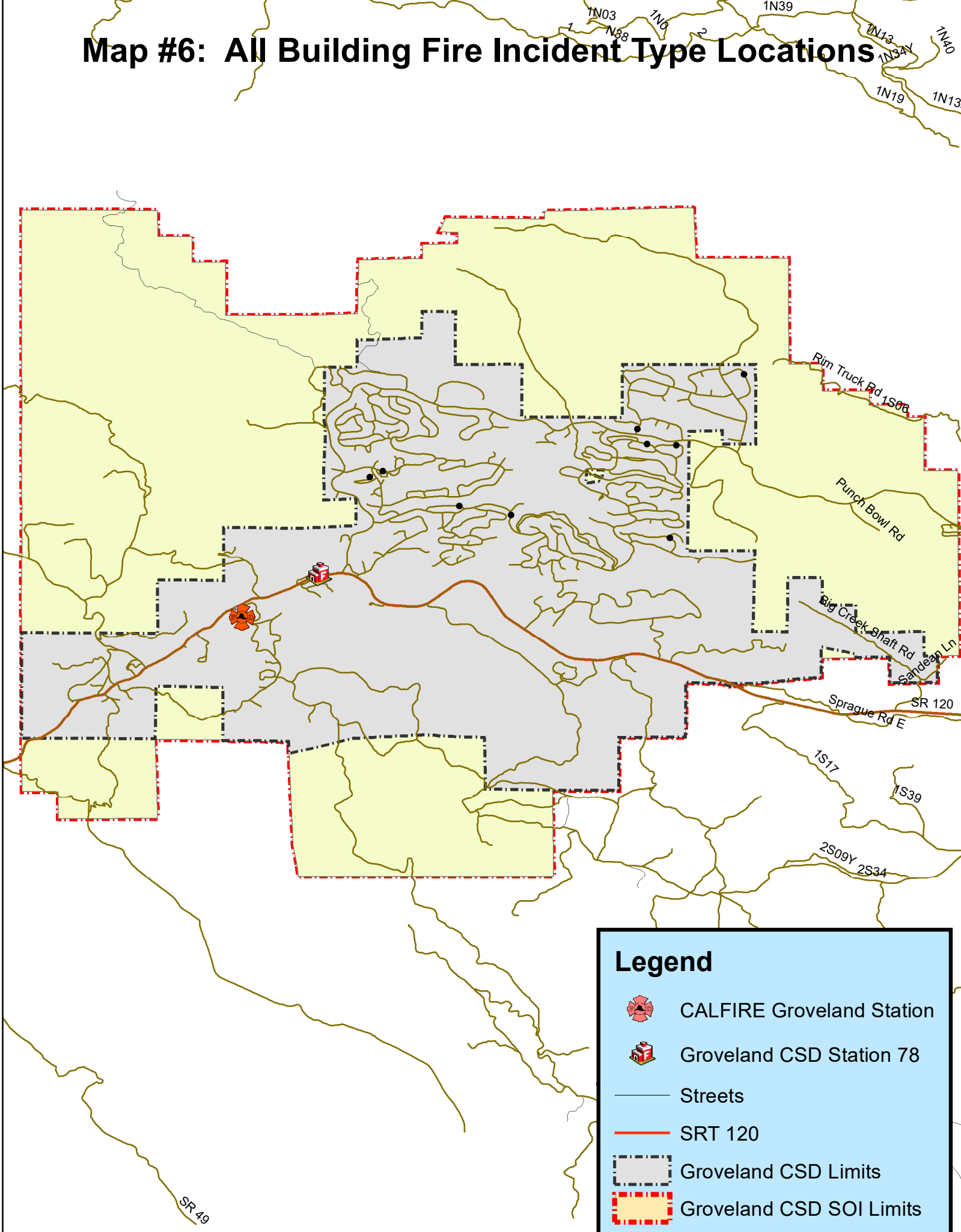
Map #5: All Fire Incident Type Locations









Legend

-  CALFIRE Groveland Station
-  Groveland CSD Station 78
-  Streets
-  SRT 120
-  Groveland CSD Limits
-  Groveland CSD SOI Limits

Map #6: All Building Fire Incident Type Locations



Legend

-  CALFIRE Groveland Station
-  Groveland CSD Station 78
-  Streets
-  SRT 120
-  Groveland CSD Limits
-  Groveland CSD SOI Limits