City of Hanford

Fire Department

Community Risk Assessment and Standards of Response Coverage

Prepared for the Hanford Fire Department

Prepared by **Mike Kraus Leadership**

February 14, 2022

Introduction

This Community Risk Assessment/Standards of Response Coverage (CRA/SORC) report of the City of Hanford is intended to serve as an update to the 1999 Fire Standards of Cover Analysis. References utilized and data retrieved from the following resources: City of Hanford Comprehensive Annual Financial Report, City of Hanford Fire Department, City of Hanford 2035 General Plan, FBI Uniform Crime Report, Institution of Fire Engineers 20/20 Vision, Insurance Services Office, Kings County Local Hazard Mitigation Plan, National Fire Protection Association, and the National Institute of Science and Technology. The content contained herein was modeled after the Center for Public Safety Excellence and the Commission on Fire Accreditation International manual.

The purpose of conducting a CRA/SORC evaluation is to obtain an accurate picture of the community risks, and where the entity and the fire department stand between what is presently delivered in the fire and life safety services baseline, and what the industry standards and best practices recommend as benchmarks. It is the first in a series of three planning documents utilized by the fire service. It is followed by a Strategic Plan for short or mid range goals, then a Master Plan, containing longer range goals. These documents, linked together, support a Planning Continuum, intended to inform and assist elected and appointed officials in improving fire and life safety platforms in their communities.

It is important to clarify that industry standards and best practices are not laws or mandates. The final decisions as to what level of fire and life safety services are provided to the community are determined by the elected officials of each entity. These decisions are based upon public expectations, available funding, and what level of acceptable risk the policy makers are willing to assume. It is also important to understand the benefits of continually improving the local delivery system. Benefits include, but are not limited to, protecting the health and welfare of the citizens and the vital job and tax producing businesses from fire and other hazards, resulting in a more vibrant and economically successful community.

It is critical, if this document is to continue to be of value, that it is referenced, reviewed, updated (minimum of every 5 years), and expanded, on a regular basis; along with the linked Strategic and Master Plans. It should be considered a dynamic tool to assist the fire department and local appointed and elected officials as they strive to improve the fire and life safety element of their community. The accuracy of the data within this document is dependent upon the accuracy of the data entered and then extracted from the department records management system.

Mike Kraus Leadership has made every effort to ensure all enclosed information is accurate. Recommendations are based upon the knowledge, experience, and research of Mr. Kraus (Sole Proprietor), and should be evaluated as to their potential effectiveness by local officials before being implemented.

As this document is updated, the City of Hanford Fire Department, after saving the original document, is hereby given express permission to remove all markings and references to Mike Kraus Leadership.

Introduction 3
Executive Summary 7
Documentation of Area Characteristics 11
Description of Agency Programs and Services 13
All-Hazard Risk Assessment of the Community 15
Emergency Medical Service Hazard 15
Structure Fire Hazard 16
Hazardous Material Hazard 17
Technical Rescue Hazard 17
Wildland Fire Hazard 18
Earthquake Hazard 18
Current Deployment and Performance 20
Performance Measures 20
Critical Tasking and Effective Response Force 23
Emergency Medical 24
Structure Fire 25
Wildland Fire 27
Hazardous Material 27
Technical Rescue 29
Community Risk Reduction 30
Station and Apparatus Deployment 31
Workload and System Reliability 32
Evaluation of Current Deployment and Performance 34
Hazard Specific Risk Levels 34
Performance Measures 35
Critical Tasking and Effective Response Forces 36
Community Risk Reduction 37
Station and Apparatus Deployment 39
Workload and System Reliability 42
Plan for Maintaining and Improving Response and Risk Reduction Capabilities 43
Correlation of CRA-SORC Document to Accreditation Model 44
Appendices 45

Executive Summary

The City of Hanford is an incorporated city within the county of Kings and the state of California, and has a population of approximately 60,000 people. Fire and life safety services are provided by the City of Hanford Fire Department from three fire stations located within the city limits. Additional resources are available from Kings County, but must respond from outside city limits and with limited staffing.

The purpose of this Community Risk Assessment/Standards of Response Cover document is to establish a baseline of the current fire and life safety system in the City of Hanford, as compared to industry standard and best practice benchmarks, exposing gaps that can then be addressed and prioritized by the policy makers.

It is important to state that industry standards and best practices are not mandates and they are not laws. Local policy makers are the ones who ultimately decide what level of fire and life safety services are provided to the community. The goal is to provide the elected officials with the facts necessary to make informed decisions on what level of risk they are willing to accept.

Within Kings County, and specific to the City of Hanford, there are certain man-made and natural hazards to which the community is exposed. Each hazard has a varying degree of potential risk, and each level of potential risk will require a certain level of emergency response to stop the progression of the hazard and ultimately mitigate it. The most common of these hazards include emergency medical incidents, structure fires, wildland fires, hazardous material incidents, technical rescue incidents, and earthquakes.

After evaluating the various levels of risk associated with these hazards, and comparing them to the current fire and life safety platform in and around Hanford, the following opportunities for improvement have been recommended:

(1) Expand the current Hanford Fire Department Response Matrix to more accurately distinguish between the different hazard/risk levels in this report.

(2) *Maintain and expand the current Target Hazard program for all hazard types listed in this report, and integrate into the Hanford Fire Department Response Matrix. Additionally, improve the present Target Hazard pre-planning program for shift personnel.*

(3) *Establish "Call Answering" and "Call Processing" performance measures and review monthly.*

(4) *Conduct "Turnout Time" trials to determine standards that are realistic to local conditions.*

(5) *Establish "First Unit Total Response Time" performance measures for Emergency Medical Service and Fire incidents, and review monthly.*

(6) *Establish an "Effective Response Force Total Response Time" performance measure, and review monthly.*

(7) *Evaluate through exercise, the generic Critical Tasking numbers in this report for adequacy to Hanford Fire Department needs.*

(8) *Assemble a working group of stakeholders to evaluate the Community Risk Reduction concept, explore ways to overcome fiscal constraints, and coordinate and expand its limited use in the Hanford Fire Department.*

(9) *Establish a mission statement for the present Fire Prevention Division, reflecting what is to be delivered on a daily basis, in accordance with the Community Risk Reduction concept. Additionally, establish a vision statement, creating a goal of where these efforts should ultimately lead.*

(10) *Evaluate and update for approval, a current and comprehensive fee schedule for fire prevention services to ensure maximum allowable cost recovery. The goal being, to increase staffing and expand efforts toward improved Community Risk Reduction.*

(11) Conduct a cost/benefit analysis and position justification evaluation in an effort to determine the number of additional personnel needed in the Fire Prevention Division. This should be based upon the ability to establish a productive community risk reduction program.

(12) Begin dialogue with Kings County Office of Emergency Services to collaboratively improve the communication, cooperation, and bolstering of both City and County Emergency Management programs.

(13) Work collaboratively with City of Hanford to increase staffing on Engines 41, 43, and Truck 42 to a level of 4 each, and maintain this level as minimum staffing of future units.

(14) Work collaboratively with City of Hanford to create shift battalion chief positions, in the effort to meet the NFPA 1710 standard on Effective Response Force.

(15) Work collaboratively with City of Hanford to begin master planning an additional fire station and engine company in the general area of 13th Ave. and Grangeville Blvd.

(16) Work collaboratively with City of Hanford to begin master planning an additional fire station and engine company in the general area of 9th Ave. and Lacey Blvd.

(17) Work collaboratively with City of Hanford to forecast and master plan the probable need to relocate Fire Station 1 east and north of its present location, in the general area of 10th Ave. and E. Fargo Ave.

(18) Work collaboratively with City of Hanford to implement the above opportunities for improvement. Successful completion of these items will result in an Effective Response Force of 16 arriving within the 8 minute travel time standard, meeting Low and Moderate Critical Task standards for structure fire hazards, and leaving one engine company available for subsequent calls for service, all without the use of automatic aid.

(19) Work collaboratively with City of Hanford to implement the above opportunities for improvement in the effort to increase the firefighter to population ratio to 1 per 1,000.

Documentation of Area Characteristics

Hanford, California (36 degrees 19’39”N 119 degrees 38’44”W), is located in the northeastern part of Kings County, approximately 30 miles to the southwest of the City of Fresno. It is about equal distant from the Sierra Nevada and the Coast Ranges. State Highway 198 runs east and west through Hanford and State Highway 43 runs north and south along the easterly boundary of the city. Presently, the city limits of Hanford covers 17.4 square miles. The ultimate growth boundary, which is based on the city’s current general plan, includes the incorporated city and its sphere-of-influence and encompasses approximately 30 square miles *(See Appendix A).*

Hanford was named after James Madison Hanford, a paymaster for the Central and Southern Pacific Railroad, in 1877. It was incorporated in 1891, after 14 years of destructive fires in the downtown area, to improve Response services and provide utilities and paved streets. The settlement quickly grew into a bustling pioneer town with shops, schools, hotels, saloons, and churches. As the county seat, Hanford has developed into the residential, commercial, and industrial center of Kings County. The current population is approximately 60,000.

The terrain in Hanford is generally flat and made up of sandy, loam soils. It slopes from the Northeast to the Southwest. Elevations range from 255’ to 240’ above mean sea level. Like the rest of Kings County, Hanford is in a semiarid climate. It receives average annual precipitation of 8.6 inches. The average high temperature in summer is 96°F and in winter is 49°F. The People’s Ditch in the northeastern section of the city is a manmade facility designed as part of a water delivery system that diverts water from the Kings River and distributes it to agricultural areas to the South.

Hanford is a California General Law City. Policy is established by a council/weak mayor type of government, with five council members elected by district. A city manager oversees the daily responsibilities of the City. The City's 2020 General Fund was approximately $35,000,000.

The majority of land use *(See Appendix B)*, in Hanford is residential, with significant supporting commercial and a large industrial tract within the southern city limits. Major employers include Warmerdam Packing, Kings County, City of Hanford, Kings County Education, Nichols Farms, and M. Green and Company. Additionally, Faraday Future electric vehicles plans to open a major facility in the former Pirelli tire plant, with a projection of up to 1,300 jobs.

- *Founded: 1877*
- *Incorporated: 1891*
- *City Limit Square Miles: 17.4*
- *Sphere of Influence Square Miles: Approximately 30*
- *Population: 59,167*
- *Density: 3,400.4 per sq. mi.*
- *Growth Rate Since 2010: 9.6%*
- *Average Citizen Age: 33.5*
- *Median Household Income: $62,413*
- *Race and Ethnicity: Hispanic 50.4%, White 35.9, Black 4.9%*
- *Primary Language: English 63%, Spanish 31%*
- *Crime Rate Per 100,000: 447.87*
- *Response Area Designation: Urban*

Description of Agency Programs and Services

Fire and life safety services for the City of Hanford are provided by the Hanford Fire Department (HFD). The HFD is a professional organization consisting of 35 full time and 2 part time employees. *(See Appendix C)* Services include community risk reduction and emergency response. It was formed in 1891 by Council resolution due to several large and destructive downtown fires. The HFD has a rich history of dedicated service to its citizens.

Mission Statement

"The mission of the Hanford Fire Department is to deliver effective, professional fire prevention and emergency response."

Diversity Statement

"The Hanford Fire Department is an organization set to represent our community. Members of the department come from many socio-economic, ethnic, and cultural backgrounds. Our common thread is our passion to serve in whatever capacity is needed. Diversity provides perspective, experience, and understanding which only enhances the fire service and the people of Hanford."

Core Values

"*Compassion, Integrity, Accountability, Teamwork, Family, Respect"*

Vision Statement

"The Hanford Fire Department strives to advance public safety through metrics, self-assessment and industry advancements. The men and women of the Hanford Fire Department will remain proactive and in control of our future. We accept the challenges that will come with the same discipline and integrity of our forebears."

All-Hazard Risk Assessment of the Community

The Kings County Local Hazard Mitigation Plan (LHMP) lists a number of natural and manmade hazards that could possibly affect the City of Hanford. Of these, those most likely to occur, and require fire department response are fog, wildfire, and earthquake. Additionally, and much more likely to occur, are emergency medical, structure fire, hazardous material, and technical rescue incidents.

Listed below are hazards that have occurred, or may potentially occur, in the City of Hanford. These hazards are listed from those most frequently occurring, to those occurring less frequently.

Emergency Medical Service Hazard

City of Hanford EMS		
2018	**2019**	**2020**
3,694	3,762	3,746

Emergency medical service (EMS), incidents *(See Appendix D)*, occur in the City of Hanford on a daily basis. The majority of the incidents responded to per day are emergency medical related. The complaint may be anything from feeling ill, to having a baby, to suffering from a heart attack. Brain death can occur in as little as 4 to 6 minutes from the time of heart stoppage. Arriving expeditiously is of utmost importance in these incidents.

HFD personnel are trained to the Emergency Medical Technician (EMT) level, also know as Basic Support (BLS), and can quickly assess the patient and assist them with breathing, circulation, the stoppage of bleeding, and childbirth for example. Advanced Life Support (ALS), treatment and transport is provided by a private ambulance company.

Additionally, when the incident involves an auto accident, HFD personnel can assist in extricating the patient from the wreckage. The typical response strategy for the HFD is to dispatch one engine company with 3 personnel for an emergency medical incident.

For an auto accident with occupants trapped in the wreckage, an engine, a truck company, and a battalion chief are dispatched, for a total of 7 personnel.

Structure Fire Hazard

City of Hanford Structure Fires		
2018	**2019**	**2020**
74	67	69

Structure fires *(See Appendix E)*, occur in and around Hanford on a regular basis. Depending on the type of building, its purpose, the occupant load, and the time of day, a structure fire threat includes not only property damage, but more importantly, the life safety of the occupants. Studies show that unchecked, structure fires can double in size every minute. Expeditious fire department arrival with sufficient emergency personnel to implement critical tasks, is necessary in mitigating these threats to life and property.

Most structure fires occur in residential buildings. The majority of structures in Hanford are of this type. Residential fires are made more complicated and dangerous when in multi-unit buildings such as apartments and multi-story hotels and custodial facilities, which are also present in Hanford . These types of fires require additional fire personnel to be on the scene in a timely manner to effect life safety and incident stabilization.

Commercial and industrial buildings are vital to an entity's tax base. These buildings also present greater challenges to fire departments, mainly due to their larger size and the variety of fire loads present. Getting sufficient personnel on scene to stop the fire in its early stages is critical in saving the business and its contribution to the local economy. Hanford contains numerous commercial and industrial buildings with an array of challenges to the fire department. One example is the unreinforced masonry buildings downtown which are built to older building standards, which under fire conditions present a significant collapse threat to interior and exterior operating firefighters. Many of these buildings are tied together in city blocks, allowing fire to spread from building to building in hidden areas.

Structures/Buildings are categorized into 4 Risk levels, determined by their size, purpose, and occupancy:

- Low Risk: Detached garages, small sheds and outbuildings
- Moderate Risk: Single family residences of 2,500 sq.' or less (R-3), small retail 10,000 sq.' or less (M)
- High Risk: Schools (E), strip shopping centers and large commercial 10,000 sq.' or greater (M), hotel/motel (R-1), garden style and 2 story plus apartments (R-2), single family residences of 2,500 sq.' or greater, (R-3), warehouses (S)
- Maximum Risk: High rise buildings of 7 floors and above or 75' or greater, hospitals (I-1), buildings with large amounts of hazardous materials etc.(H)

Hazardous Material Hazard

City of Hanford HazMats		
2018	**2019**	**2020**
59	82	68

Hazardous material incidents *(See Appendix F)*, can range from a small fuel spill to a large industrial ammonia leak, to a pressurized propane tank under fire and threatening to explode. These incidents can occur in all areas of a community, including residential, commercial, and industrial. There are several industrial businesses within the City of Hanford that present significant potential hazards, many including agricultural chemicals or gasses. Additionally, hazardous materials are transported through the city on daily basis via the two State highways and the major railroad, adding another potential level of risk.

Many of these incidents will be mitigated by the initial fire unit arriving on the scene. However, there are those incidents that will require Hazardous Material Specialist intervention. All HFD personnel are trained to the Hazardous Material First Responder Operational level, with a number of personnel trained to the Specialist level. Additionally, the department is an active partner in the Kings/Tulare Hazardous Material Response Team.

Technical Rescue Hazard

The potential for incidents requiring technical rescue expertise *(See Appendix F)*, is relatively high in Hanford . Examples are high speed traffic accidents with entrapments

City of Hanford Tech Rescues		
2018	2019	2020
4	4	3

on State highways 43 and 198, mechanical entrapments in the many agriculture processing and industrial businesses, or building collapse due to severe earthquakes. Additional personnel are typically needed to mitigate these types of hazards, depending upon incident circumstances. The HFD is currently increasing the levels of training and certification to improve the response capabilities for this hazard type.

Wildland Fire Hazard

City of Hanford Wildland Fires		
2018	2019	2020
47	81	68

Wildland, or vegetation type fires *(See Appendix E)* occur on a semi regular basis in the incorporated and unincorporated areas of Hanford. Most of these fires are quickly contained and controlled by the initial arriving fire units. This is critical due to the potential of these fires spreading to structures, endangering the buildings and their respective occupants.

Fog Hazard

Fog is primarily classified as a hazard in Hanford due to the related traffic accidents resulting from poor visibility. Not only do these traffic accidents occur on Hanford surface streets, they also occur on two major state highways running through the city limits. The incidents occurring on the highways have an even higher potential of resulting in multi-casualty incidents, resulting in the taxing of responding resources.

Earthquake Hazard

There are over 500 active earthquake faults in California. While the vast majority of these earthquakes aren't felt, there are an average of 100 tremors per day in the State. Hanford has experienced several ground shaking events from earthquakes over the past few years, both from the San Andreas fault and from the Mammoth area, more than 100 miles to the North.

Soils in Hanford are not mapped as having significant liquefaction potential and the Hazards Management Element of the General Plan finds that Hanford is located in a stable geologic formation so that the effects of ground shaking should be minimal. The community's vulnerability increased due to its large number of unreinforced masonry buildings, many of them historic properties. The city has created a database of the locations of these buildings, which includes many of significance to the community, such as the Kings County Courthouse, Masonic Temple, Episcopal Church, and the Hanford Elementary District Offices.

The Kings County Office of Emergency Services (OES), coordinates emergency management functions for the County, and offers training and support to all incorporated cities, including Hanford . Additionally, and as mentioned above, the HFD is increasing the levels of training and certification to improve the response capabilities for this hazard type.

Current Deployment and Performance

There are three fire stations located within the 17.4 square miles of the city limits of Hanford *(See Appendix G)*. Station 1 is located at 350 W. Grangeville Blvd. and is staffed with one 3-0 engine company. Station 2 is located at 10553 Houston Ave. and is staffed with one 3-0 quint truck company. Station 3 is located at 1070 S. 12th St. and is staffed with a 3-0 engine company, resulting in a total of 9 on-duty personnel. While these three companies are stationed within Hanford, they also respond into unincorporated areas due to an automatic aid agreement with the Kings County Fire Department approximately 5% of the time. The next closest engine and quint companies respond into the City from Kings County fire stations 2, 4, and 5. With the exception of Station 4, which is staffed with 3, these companies are minimally staffed with 2 personnel. Additionally, Hanford chief officers respond from their administrative duties or from home, and are not a guaranteed response.

Performance Measures

The Hanford Emergency Dispatch does not acknowledge or track Call Answering or Call Processing times as stated by the National Fire Protection Association (NFPA) 1221. The examples below demonstrate what these Performance Measures would look like.

“95% of emergency calls will be answered within 15 seconds”

Call Answering %		
2018	2019	2020

“90% of all emergency calls will be processed and dispatched within 64 seconds”

Call Processing %		
2018	**2019**	**2020**

The HFD has established a 60 second “turnout” time from dispatch to responding to the incident for non-fire emergency calls, and an 80 second “turnout” time for fire calls. In addition, a “travel time” of 4 minutes has been adopted *(See Appendix G)*. Both of these are in accordance with Industry Standards and Best Practices for responses in urban and suburban areas.The current HFD Performance Measure for Turnout Time states,

“Turnout time, from dispatch to response, for EMS calls will be 60 seconds or less, with 90% dependability.

Turnout Time for EMS			
	2018	**2019**	**2020**
Engine 41	55%	32%	28%
Truck 42	42%	26%	26%
Engine 43	N/A	21%	19%

“Turnout time, from dispatch to response, for Fire calls will be 80 seconds or less, with 90% dependability.”

Turnout Time for Fire			
	2018	**2019**	**2020**
Engine 41	34%	23%	29%
Truck 42	43%	26%	24%
Engine 43	N/A	13%	23%

The current HFD Performance Measures for Travel Time states,

> **"First arriving fire units will arrive at an emergency within 4 minutes or less travel time, with 90% dependability."**

4 Minute Travel Time %			
	2018	**2019**	**2020**
Engine 41	54%	68%	69%
Truck 42	59%	58%	54%
Engine 43	N/A	60%	53%

Industry Standards and Best Practices dictate that the above standards should be added together, resulting in a "First Unit Total Response" performance measure. Currently, Call Answering and Processing not tracked or included below.

> **15 Seconds Answering + 64 Seconds Processing/Dispatch + 60 Second Turnout + 4 Minutes Travel = 6 Minutes 19 Seconds > *First Unit Total Response Time for EMS Incidents***

First Unit Total Response Time for EMS%			
	2018	**2019**	**2020**
Engine 41	52%	66%	52%
Truck 42	48%	49%	35%
Engine 43	N/A	43%	36%

> **15 Seconds Answering + 64 Seconds Processing/Dispatch + 80 Second Turnout + 4 Minutes Travel = 6 Minutes 39 Seconds > *First Unit Total Response Time for Fire Incidents***

First Unit Total Response Time for Fire%			
	2018	2019	2020
Engine 41	35%	54%	50%
Truck 42	17%	0%	42%
Engine 43	N/A	37%	40%

Critical Tasking and Effective Response Force

Critical tasks are those tasks that must be promptly put into operation at the scene of an emergency to stop the negative progression and begin the mitigation of the incident.

NFPA 1710 recommends *minimum* numbers of personnel to be on the scene of the incident, rated by the level of risk associated with the hazard, and the critical tasks that must be performed to effectively mitigate the emergency. These recommendations state that the Effective Response Force (ERF), be on the scene within 8 minutes travel time (10 minutes 10 seconds for Maximum Risk/High Rise), for urban and suburban response areas, with 90% dependability. Currently, Call Answering and Processing not tracked or included below. Additionally, metrics based upon 15 personnel.

15 Seconds Answering + 64 Seconds Processing/Dispatch + 80 Second Turnout + 8 Minutes Travel = 10 Minutes 39 Seconds > *Effective Response Force Total Response Time*

*ERF Total Response Time %		
2018	2019	2020
22%	31%	57%

** For Low and Moderate Risk Structure Fires*

Listed below are the common hazards faced in Hanford, each specific risk level, the associated critical tasking and ERF numbers, as well as the respective current deployments by the Hanford Emergency Dispatch Center:

Emergency Medical

Current Dispatch Level
1 Engine (3) or Truck (3)
1 Private Ambulance (2)
Total: **5**

Critical Tasks - Low/Moderate Risk EMS	
Task	**Personnel**
Command/Safety	1
Patient Assessment/Care	2
Patient Transport Ambulance	2
Effective Response Force	**5**

Current Dispatch Level
1 Engine (3) or Truck (3)
1 Private Ambulance (2)
Total: **5**

Critical Tasks - High Risk EMS	
Task	**Personnel**
Incident Commander w/Aide	2
Scene Safety	1
Triage	2
Treatment	4
Patient Transport Ambulance	4
Effective Response Force	**12**

Structure Fire

Current Dispatch Level
HFD 2 Engines (6), 1 Truck (3), 1 BC (1)
KCFD 1 Engine (2), 1 Truck (2)
Total: **14**

Critical Tasks - Low Risk Structure Fire	
Task	**Personnel**
Incident Commander	1
Attack Line	2
Back Up Line	2
Water Supply/Pump Operation	2
Search	2
Ventilation	3
Utilities	1
RIC (1 Officer, 2 FF's)	3
Effective Response Force	**16**

Current Dispatch Level
HFD 2 Engines (6), 1 Truck (3), 1 BC (1)
KCFD 1 Engine (2), 1 Truck (2)
Total: **14**

Critical Tasks - Moderate Risk Structure Fire	
Task	**Personnel**
Incident Commander	1
Attack Line	2
Back Up Line	2
Water Supply/Pump Operation	2
Search	2
Ventilation	3
Utilities	1
RIC (1 Officer, 2 FF's)	3
Effective Response Force	**16**

Current Dispatch Level
HFD 2 Engines (6), 1 Truck (3), 1 BC (1)
KCFD 1 Engine (2), 1 Truck (2)
Total: **14**

Critical Tasks - High Risk Structure Fire	
Task	**Personnel**
Incident Commander w/Aide	2
3 Attack Lines	9
Water Supply/Pump Operation	2
Search Team	3
Ventilation + Aerial Operator	4
Ground Ladders	2
RIC (1 Officer and 3 FF)	4
EMS/Rehab	2
Effective Response Force	**28**

Current Dispatch Level
HFD 2 Engines (6), 1 Truck (3), 1 BC (1)
KCFD 1 Engine (2), 1 Truck (2)
Total: **14**

Critical Tasks - Maximum Risk Structure Fire	
Task	**Personnel**
Incident Commander w/Aide	2
Incident Safety Officer	2
Fire Floor Division	1
Fire Floor Attack	9
Evacuation	4
Search	4
Ventilation	3
Floor Above Division	4
Staging	4
RIC	4
Lobby/Systems	4
Base	2
Effective Response Force	**43**

Wildland Fire

Current Dispatch Level
1 Engine (3), 1 Patrol (3)
Total: **6**

Critical Tasks - Low Risk Wildland	
Task	**Personnel**
Command/Safety	1
Investigation	2
Effective Response Force	**3**

Current Dispatch Level
1 Engine (3), 1 Patrol (3)
Total: **6**

Critical Tasks - Moderate Risk Wildland	
Task	**Personnel**
Incident Commander w/Aide	1
Safety	2
Perimeter Control	5
Evacuation	3
Defensive Containment	3
Effective Response Force	**14**

Hazardous Material

Current Dispatch Level
1 Engine (3), 1 Truck (3), 1 BC (1)
Total: **7**

Critical Tasks - Low Risk Haz-Mat	
Task	**Personnel**
Command/Safety	1
Investigation	2
Effective Response Force	**3**

Current Dispatch Level
1 Engine (3), 1 Truck (3), 1 BC (1)
Total: **7**

Critical Tasks - Moderate Risk Haz-Mat	
Task	**Personnel**
Incident Commander w/Aide	1
Safety	2
Perimeter Control	5
Evacuation	3
Defensive Containment	3
Effective Response Force	**14**

Current Dispatch Level
1 Engine (3), 1 Truck (3), 1 BC (1)
Total: **7**

Critical Tasks - High Risk Haz-Mat	
Task	**Personnel**
Incident Commander w/Aide	1
Incident Safety Officer	1
Assistant Safety Officer	1
Haz-Mat Tech Reference	1
Haz-Mat Group Supervisor	1
Entry Team	2
Back Up Team	2
Site Access Control	1
Medical Monitoring	1
Site Refuge	1
Decontamination	3
Effective Response Force	**15**

Technical Rescue

Current Dispatch Level
1 Engine (3), 1 Truck (3), 1 BC (1)
Total: **7**

Critical Tasks - Moderate Risk Tech-Rescue	
Task	**Personnel**
Incident Commander	1
Scene Safety	1
Stabilization	2
Extrication	3
Fire Protection	2
Patient Care	3
Effective Response Force	**12**

Current Dispatch Level
1 Engine (3), 1 Truck (3), 1 BC (1)
Total: **7**

Critical Tasks - High Risk Tech-Rescue	
Task	**Personnel**
Incident Commander w/Aide	2
Incident Safety Officer	1
Tech-Rescue Safety Officer	1
Entry Group Supervisor	1
Attendant	1
Entrant/Backup Entrant	2
Rigging/Hauling Team	8
Ventilation	2
Atmosphere Monitoring	2
Patient Assessment	1
Patient Treatment	2
Effective Response Force	**23**

Community Risk Reduction

Fire and life safety organizations should strive to prevent potential hazards from actually occurring, and lessen their impact when they do occur. The American fire service has historically been response oriented, resulting in the vast majority of available funds being allocated to fire and emergency suppression platforms. It has been proven that it is more cost-effective to prevent fires and other emergencies from occurring than it is to respond/suppress and recover from them. According to the Federal Emergency Management Agency (FEMA), “Response” is only one component of a Comprehensive Emergency Management Program. The other components include Mitigation, Preparation, and Recovery.

The Institution of Fire Engineers established the Vision 20/20 program of Community Risk Reduction (CRR). This effort focuses heavily on reducing risk in communities through 5 specific strategies: Education, Engineering, Enforcement, Economic Incentives, and Emergency Response (as focused with this document). NFPA 1300 defines Community Risk Reduction as “a process to identify and prioritize local risks, followed by the integrated and strategic investment of resources to reduce their occurrence and impact.” The overall goal being to identify current community risks, or incident trends, and proactively work within the appropriate 5 strategies to reduce those risks or control those incident trends for the good of the community. The effective use of CRR requires a combined effort between the fire department and the community. Within the fire department, the CRR concept must become part of the organizational culture, coordinated and shared between fire administration, fire prevention/education, fire suppression, and emergency management/preparation.

Current CRR efforts in Hanford are limited to new construction review, an attempt to identify and complete state mandated inspections, fire cause investigation, limited fire education programs, and Cardio-Pulmonary Resuscitation (CPR) classes.

Station and Apparatus Deployment

The Insurance Services Office (ISO), is an organization which evaluates fire departments and their ability to suppress building fires. Categories such as fire station location, apparatus, staffing, training, water supply, emergency communications, and community risk reduction efforts are evaluated. A resulting rating number from 1 to 10 is issued, with 10 indicating virtually no fire suppression ability and a 1 indicating excellent fire suppression ability. These ratings are then utilized by the insurance industry to assist in setting rates for customers. Generally speaking, the higher the rating number, the higher the premiums, and the lower the number, the lower the premiums. Currently, the ISO rating for the City of Hanford is 2.

ISO recommends that in an urban/suburban area of response, a building be no further than 1 1/2 miles from an engine company and 2 1/2 miles from a truck company (Truck company required for 5 buildings of 3 floors or higher, and/or large buildings needing fire flow over 3,500 gallons per minute. Both exist in Hanford). Additionally, an engine company should not cover more than 9 square miles, and a truck company more than 25 square miles.

Station 1 is 2.3 miles from Station 3 with State Route 198 separating them, and 3.4 miles from Station 2. Stations 2 and 3 are 1.8 miles apart, with Kings County Stations 4 and 5 to the East and the West respectively, and within 4 minutes travel time. Additionally, Kings County Station 2 is located to the North, however, with current roadway infrastructure it is well beyond the 4 minute travel time to the City. While the quint is not counted as a full engine or truck company by the ISO, it does serve as an aerial device within the city limits of approximately 17 square miles, which is within ISO standards. None of the 3 Hanford stations cover more than 9 square miles.

NFPA 1710 states that a minimum of 4 personnel should staff an engine or a truck company. Documented studies https://www.nist.gov/system/files/documents/el/fire_research/Report-on-Residential-Fireground-Field-Experiments.pdf

demonstrating the improved efficiency of increased company staffing are published. Presently, HFD engine and quint companies are each staffed with 3 personnel.

Workload and System Reliability

Total Responses			
	2018	2019	2020
Station 1	4,934	4,025	3,375
Station 2	1,446	1,104	907
Station 3	N/A	1,441	2,092

Determining how busy fire units are is important for establishing their availability for the next call and because it provides insight on how much capacity various units have to handle more work, or whether additional units are needed.This is a critical part of a system's overall reliability. The first factor to determine is the unit demand, or call volume. General guidelines for demand are:

- Very Low (Less than 500 responses per year)
- Low (500-999 responses per year)
- Moderate (1,000-1,999 responses per year)
- High (2,000-2,999 responses per year)
- Very High (3,000-3,999 responses per year)
- Extremely High (more than 4,000 responses per year)

The benchmark for consideration of additional units in a response area is 3,000 responses per year.

Unit Hour Utilization			
	2018	2019	2020
Station 1	29%	16%	22%
Station 2	8.6%	4.3%	6%
Station 3	N/A	5.7%	13%

The second factor in determining workloads is the Unit Hour Utilization (UHU). The UHU is a calculation that estimates the amount of time a unit is occupied on emergency calls as a percentage of the total amount of hours a unit is staffed and available for response. The specific formula used to calculate the UHU is:

$$\text{UHU\%} = \frac{\text{number of responses per year x average call duration in hours}}{\text{8,760 hours per year}}$$

The generally accepted UHU numbers should be between 5 and 15 percent. Which means the unit will be unavailable for calls between 5-15 percent of the time, and available for calls between 95 and 85 percent of the time. An UHU number higher than 15 is an indicator of a fire unit that may be too busy, and lowers the overall system reliability.

Outside Resource Called In

	2018	2019	2020
Station 1	U/A	U/A	U/A
Station 2	U/A	U/A	U/A
Station 3	N/A	U/A	U/A

A third indicator as to the system reliability is determining what percentage of time an outside resource (a fire unit other than the first due), was called in to address an emergency because the regularly assigned unit was not available. It is important to clarify that a fire unit not being available for a response doesn't necessarily mean it is occupied on an emergency call. While most of the time this would be the case, there are times the unit may be unavailable due to a mechanical issue, a training session, or at the hospital; restocking or picking up a firefighter that assisted the ambulance for a critical medical call.

Fire Loss vs. Fire Saved

	2018	2019	2020
Property Value	U/A	$22,001,146	$69,618,692
Fire Loss	U/A	$4,029, 981	$1,830,538
Fire Saved	U/A	$17,971,165	$67,788,154

A fourth, and more subjective indicator as to the reliability of the system, are the annual fire loss vs. fire save dollar amounts. Reviewed on an annual basis, and compared to other more objective indicators, this information can be utilized to evaluate the overall system effectiveness from year to year. This is especially valuable when reducing or adding personnel and apparatus to the fire delivery platform.

Evaluation of Current Deployment and Performance

Hazard Specific Risk Levels

Opportunity for Improvement #1: *Expand the current HFD Response Matrix to more accurately distinguish between the different hazard/risk levels in this report.*

The HFD Response Matrix is basic. It is not comprehensive enough to differentiate between the varied Risk levels of each specific Hazard. Comparing and aligning that information with the Hazard/Risk information in this report will create a more effective matrix, resulting in a more accurate matching of hazard/risk levels with the appropriate Effective Response Force.

Specifically, Structure Fire hazard types are not evaluated for the various risk levels. For example, structures are not differentiated in the Response Matrix between Low, Moderate, High, and Maximum. This means that a High Risk structure fire dispatch will receive an ERF equal to that of a Moderate Risk structure fire.

Opportunity for Improvement #2: *Maintain and expand the current Target Hazard program for all hazard types listed in this report, and integrate into the HFD Response Matrix. Additionally, improve the present Target Hazard pre-planning program for shift personnel.*

There is a limited Target Hazard program within the HFD, including a robust inventory. By expanding this program, and also applying the obtained knowledge to the Response Matrix, a higher percentage of adequate ERF's will be dispatched to each Target Hazard incident. Most importantly, this will ensure that responding personnel have as much information as possible regarding the emergency. By utilizing a collaborative effort between fire suppression companies, fire prevention personnel, and City of Hanford building officials, an even more robust Target Hazard system can be created and utilized, resulting in a more comprehensive community risk assessment

and response plan. The lack of pre-planning Target Hazards by suppression companies resulted in loss of points during the latest ISO evaluation *(See Appendix H)*.

Performance Measures

Opportunity for Improvement #3: *Establish "Call Answering" and "Call Processing" performance measures and review monthly.*

"Call Answering" and "Call Processing" performance measures do not exist and therefore are not monitored, reviewed, or acted upon. This issue negatively impacted the latest ISO evaluation *(See Appendix H)*. Examples:

> "95% of emergency calls will be answered within 15 seconds"
>
> "90% of all emergency calls will be processed and dispatched within 64 seconds"

Performance measures should be evaluated at regular monthly intervals.

Opportunity for Improvement #4: *Conduct "Turnout Time" trials to determine standards that are realistic to local conditions.*

Current "Turnout Time" percentages are well below the 90% goal. While 60 and 80 seconds respectively are the NFPA standards, the time should reflect local conditions such as station layout. Additionally, promptness must be balanced with safety. Conducting time trials to determine what is adequate for local conditions will assist in creating HFD turnout standards that are not only realistic, but enforceable.

Opportunity for Improvement #5: *Establish "First Unit Total Response Time" performance measures for EMS and Fire incidents, and review monthly.*

A "First Unit EMS Total Response Time" or "First Unit Fire Total Response Time" performance measure does not exist. The content of such should include the Call Answering, Call Processing, Turnout, and Travel time standards. Examples:

> "The Total Response Time for the First Arriving Unit at an EMS Incident should be 6 minutes and 19 seconds or less, with 90% dependability."
>
> "The Total Response Time for the First Arriving Unit at a Fire Incident should be 6 minutes and 29 seconds or less, with 90% dependability."

The performance measure for Call Answering, Call Processing, Turnout Time, and Travel Time should be broken down under the "Total Response Time" standard to allow fire management to evaluate potential problem areas. This evaluation should take place at regular monthly intervals.

Opportunity for Improvement #6: *Establish an "Effective Response Force Total Response Time" performance measure, and review monthly.*

An "Effective Response Force Total Response Time" performance measure does not exist. Example:

> "The Total Response Time for an Effective Response Force at an incident should be 10 minutes and 39 seconds or less, with 90% dependability"

The difference in the first arriving unit standard and the Effective Response Force standard is the 4 additional minutes "Travel Time" for the balance of the ERF to arrive on scene, per NFPA 1710.

The performance measures for Call Answering, Call Processing, Turnout Time, and Travel Time should be broken down under the "Total Response Time" standard to allow fire management to evaluate potential problem areas. This evaluation should take place at regular monthly intervals.

Critical Tasking and Effective Response Forces

Opportunity for Improvement #7: *Evaluate through exercise, the generic Critical Tasking numbers in this report for adequacy to HFD needs.*

The Critical Tasking charts provided in this report are generic and based upon industry standards and best practices. However, they have not been verified as to their relevancy to the HFD. Critical Tasking exercises should be conducted by every fire department to determine what specific personnel numbers are required for each specific need. Once HFD Critical Tasking numbers are determined, they should be compared to the Response Matrix for each hazard and risk level to ensure compliance and consistency. For example, as previously mentioned, it is clear at this time that the Response Matrix is not adequate for High Risk Structure Fire incidents. By verifying Critical Tasking numbers and matching them to the Response Matrix, the ERF dispatched will meet the risk level of the hazard.

Community Risk Reduction

Opportunity for Improvement #8: *Assemble a working group of stakeholders to evaluate the CRR concept based upon NFPA 1300 Standard, explore ways to overcome fiscal constraints, and coordinate and expand its limited use in the HFD.*

Opportunity for Improvement #9: *Establish a mission statement for the present Fire Prevention Division, reflecting what is to be delivered on a daily basis, in accordance with the community risk reduction concept. Additionally, establish a vision statement, creating a goal of where these efforts should ultimately lead.*

Opportunity for Improvement #10: *Evaluate and update for approval, a current and comprehensive fee schedule for fire prevention (CRR) services to ensure maximum allowable cost recovery. The goal, being to increase staffing and expand efforts toward improved community risk reduction.*

Opportunity for Improvement #11: *Conduct a cost/benefit analysis and position justification evaluation in an effort to determine the number of additional personnel needed in the Fire Prevention Division. This should be based upon the ability to establish a productive community risk reduction program.*

Opportunity for Improvement #12: *Begin dialogue with Kings County OES to collaboratively improve the communication, cooperation, and bolstering of both City and County Emergency Management programs.*

There is a need to greatly expand the CRR efforts in Hanford due to minimal legacy related attention. Under current leadership there is a desire to move in this proactive direction, however, with a limited fire prevention budget and resulting minimal staff, simply establishing a basic inspection program has been a challenge. Staff is largely concentrating on state mandated inspections, (apartments, schools, hotels/motels, etc.). Even so, state mandated fire inspections are not all being completed, or even accurately inventoried at this time. This includes buildings with sprinklers, fire alarms, and hood systems. Additionally, only a small number of annual business inspections are being conducted, including hazardous material permitted occupancies. New construction plan reviews and approvals are coordinated between the building and fire departments and a third party contractor.

Public fire and life safety education efforts include school programs presented by on-duty fire companies, public CPR classes, weekly street faire booths, and station tours.

There does not appear to be a collaborative effort between Kings County OES and the HFD in the areas of emergency management, disaster preparation/training of entity personnel, or community disaster education. This is a significant CRR issue, considering that the bulk of the county population is based in the City of Hanford, as well as the City and County local governments and related infrastructure.

Tracking, identifying, and acting upon negative community trends is not presently occurring. For example, noticing an increase in cooking fires, chimney fires, incendiary fires, drownings or other medical emergencies, and then taking positive steps to prevent those occurrences within the strategies of CRR. These efforts are paramount to embracing the CRR concept, and will result in a safer community.

There does appear to be the basis of a Target Hazard program. These structures have been identified within the city, resulting in what appears to be a thorough inventory.

This inventory includes, but is not limited to, Pre-1933 unreinforced masonry buildings, which present a significant collapse hazard to emergency personnel and citizens under fire conditions and during an earthquake. Additionally, a new follow up practice is being initiated which assigns on-duty fire companies to review and preplan these hazardous buildings on a rotating basis.

Station and Apparatus Deployment

Opportunity for Improvement #13: *Work collaboratively with City of Hanford to increase staffing on Engines 41, Truck 42, and Engine 43 to a level of 4 each, and maintain this level as minimum staffing for future units.*

The City of Hanford has an ISO rating of 2 *(See Appendix H)*. This is a respectable number, however it does leave considerable room for improvement. In the most recent evaluation (*See Appendix H)*, the majority of points were lost due to low daily staffing. This issue is also directly related to the inability to assemble an Effective Response Force within the NFPA 1710 Standard of 8 minutes travel time. Staffing each company with a minimum of 4 personnel increases the amount of firefighters arriving on scene in the initial minutes of the emergency. Increasing these numbers also reduces the amount of companies that must be ultimately dispatched to meet the standard, which leaves more companies available for subsequent incidents. Additionally, increasing the minimum staffing levels to 4, greatly increases the efficiency of each company.

The latest update of the City of Hanford General Plan acknowledges these standards:

"NFPA 1710 is a standard concerning engine and ladder company crew size to respond with the appropriate number of firefighters in the minimum amount of time to fires and medical emergencies. The standard calls for 4 firefighters to arrive at a fire scene within 5 minutes, 90% of the time. The 5-minute standard includes 1 minute to get into turnout gear. The standard also calls for 14 or 15 people to arrive at a "Full Alarm Assignment" within 9 minutes, 90% of the time. The 9-minute standard includes 1 minute to get into turnout gear. Currently the Hanford Fire Department can put a maximum of 7 firefighters on an emergency incident at any given time."

Opportunity for Improvement #14: *Work collaboratively with City of Hanford to create shift battalion chief positions, in the effort to meet the NFPA 1710 standard on Effective Response Force.*

To meet the NFPA 1710 standard, in regard to an Effective Response Force, a command officer must arrive within the 8 minute travel time. Presently, the HFD does not have shift battalion chief positions. As a result, a command officer must respond from administrative duties or from home. This is not a guaranteed response and can and has resulted in delays or the absence of a command officer arriving on scene.

Opportunity for Improvement #15: *Work collaboratively with City of Hanford to begin master planning an additional fire station and engine company in the general area of 13th Ave. and Grangeville Blvd.*

Opportunity for Improvement #16: *Work collaboratively with City of Hanford to begin master planning an additional fire station and engine company in the general area of 9th Ave. and Lacey Blvd.*

Opportunity for Improvement #17: *Work collaboratively with City of Hanford to forecast and master plan the probable need to relocate Fire Station 1 east and north of its present location, in the general area of 10th Ave. and E. Fargo Ave.*

Opportunity for Improvement #18: *Work collaboratively with City of Hanford to implement the above opportunities for improvement. Successful completion of these items will result in an ERF of 16 arriving within the 8 minute travel time standard, meeting Low and Moderate Critical Task standards for structure fire hazards, and leaving one engine company available for subsequent calls for service, all without the use of automatic aid.*

ISO states that in an urban/suburban environment, engine companies should be no further than 1 1/2 miles from the furthest building. This logically translates that engine companies should be no further than 3 miles apart. ISO also states that truck companies should be no further than 2 1/2 miles from the furthest building, or 5 miles

from each other. The current 3 stations and engine and truck placement generally meet this standard. However, there are current and future issues when the NFPA 1710 4 minute travel time standard is applied. Currently, areas in the Southeast, the Northwest, and the North are beyond the 4 minute time standard. Times are extended even more when the sphere of influence proposed city limits are laid over the current city limits.

To improve travel times within the current city limits, as well as meet the travel time standard in the proposed city limits (City of Hanford General Plan), two additional stations and one current station relocation are needed.

Opportunity for Improvement #19: *Work collaboratively with City of Hanford to implement the above opportunities for improvement, in the effort to increase the firefighter to population ratio to 1 per 1000. It is important to note that whether the above opportunities for improvement are carried out specifically as recommended, or in some other manner, the significance of this gap between what currently exists and industry standards and best practices - cannot be overstated. Increasing the fire department daily staffing is the most critical need facing the Hanford Fire Department.*

The generally accepted industry standard ratio of career firefighters to an entity's population is 1 firefighter for every 1,000 citizens. In 2013, when the current City of Hanford General Plan was updated, that ratio was at .49 firefighters per 1000 citizens. While firefighters have been added since 2013, the population has also increased. As a result, that ratio continues to be generally accurate.

The current City of Hanford General Plan states, in part:

"**Fire and Rescue Personnel.** The following guidelines are identified in the International City/County Management Association (ICMA) Yearbook (2011). ICMA identifies leading practices to address the needs of local governments and professionals serving communities globally. The Yearbook recommends 1.02 firefighters per 1,000 population. With that recommendation, the Hanford fire department would have 55 fire suppression personnel. Currently, the department has 27 fire suppression personnel, which is a ratio of .49 firefighters per 1,000 population."

“The national average is 1.3 per 1,000 and the statewide average is .92/1,000. The neighboring city of Tulare currently staffs .70 firefighters per 1,000.”

Workload and System Reliability

The current HFD Workload and System Reliability evaluation consists of annual response numbers and UHU percentages for each engine and truck. Presently, accurate data on outside resources being dispatched into a primary unit’s area is not available. Utilizing two of the three evaluation tools, the following observations can be made:

1. Engine 41 has surpassed the 3,000 call benchmark to consider adding a second unit.

2. Engine 41 is over the desired 15% maximum Unit Hour Utilization benchmark.

Note: Adhering to the Opportunities for Improvement in this report should remedy the Workload and System Reliability observations listed above. Other options include, but are not limited to: 1) Ensure appropriate 911 call triaging is as efficient as possible to reduce unnecessary dispatches, and/or 2) Add a squad or second company to Station 1.

Plan for Maintaining and Improving Response and Risk Reduction Capabilities

The goal of establishing, maintaining, reviewing, and improving this Community Risk Assessment/Standards of Response Coverage document is based upon the concept of continual improvement. By clarifying the baseline performance of the organization, then comparing it to established industry standards and best practice benchmarks, gaps in performance become evident, as well as the need to think strategically, and develop plans to overcome them. This is the easy part of the process.

The difficult part of the process includes maintaining continual focus on the benchmarks, improving data input as well as creating, reviewing, and interpreting useful status output reports, adjusting strategic action plans as necessary, and most importantly, holding each other accountable for our responsibilities within the process.

The Hanford Fire Department, as an organization, commits to utilizing, maintaining, expanding, and annually updating this document as a useful tool in the continual process of organizational strategic planning, in the pursuit of attaining the stated vision.

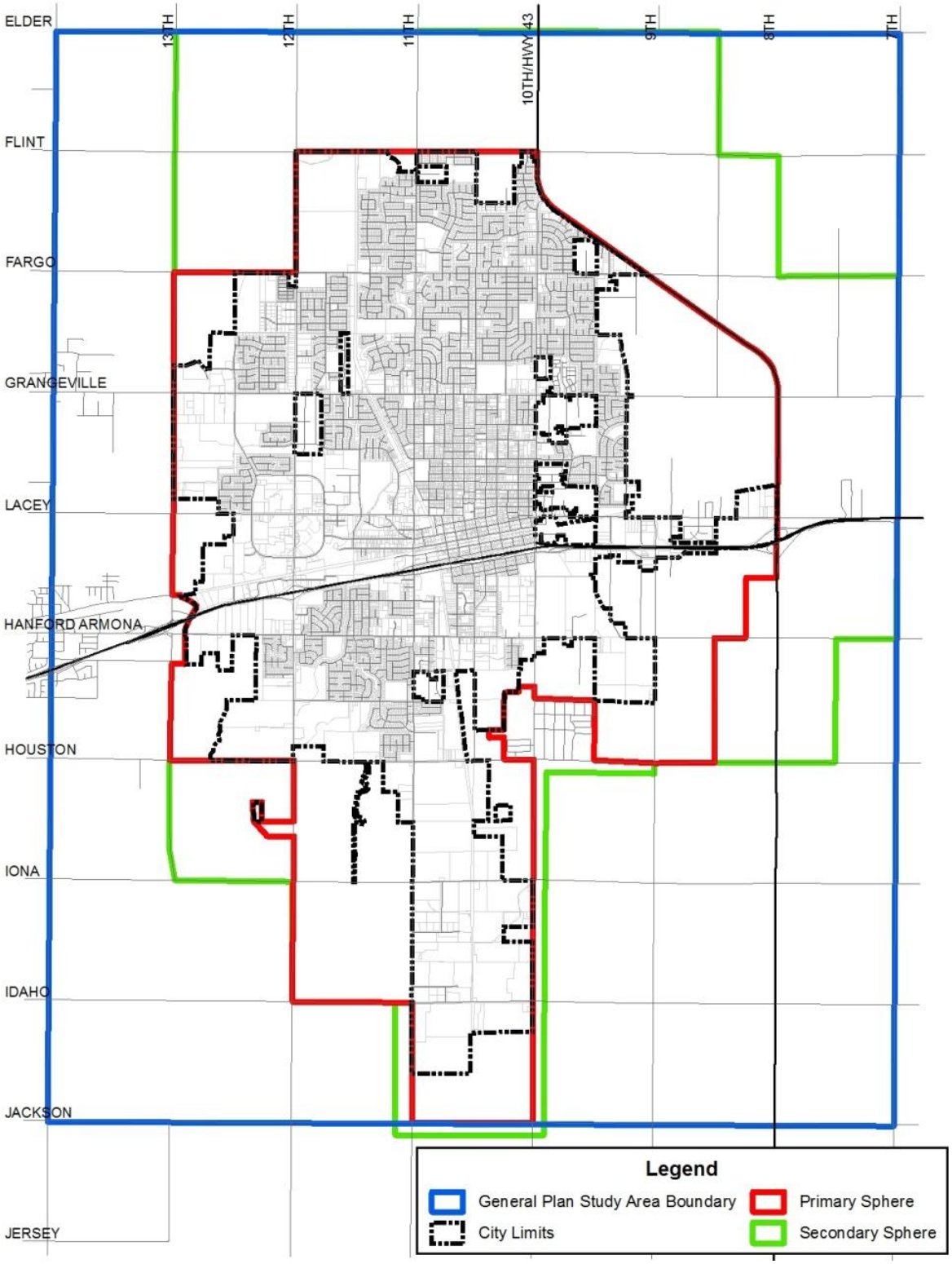
Correlation of CRA-SORC Document to Accreditation Model

It is the goal of the Hanford Fire Department to, at some point, become an accredited agency under the Commission on Fire Accreditation International (CFAI). The creation of this Community Risk Assessment/Standards of Response Coverage document is a core competency requirement of this process. The Department understands that the organization cannot be considered for evaluation by the CFAI until at minimum, 3 years of response data are established, and all other core competency requirements listed in the Center for Public Safety Excellence (CPSE), Fire and Emergency Service Self-Assessment Manual are completed.

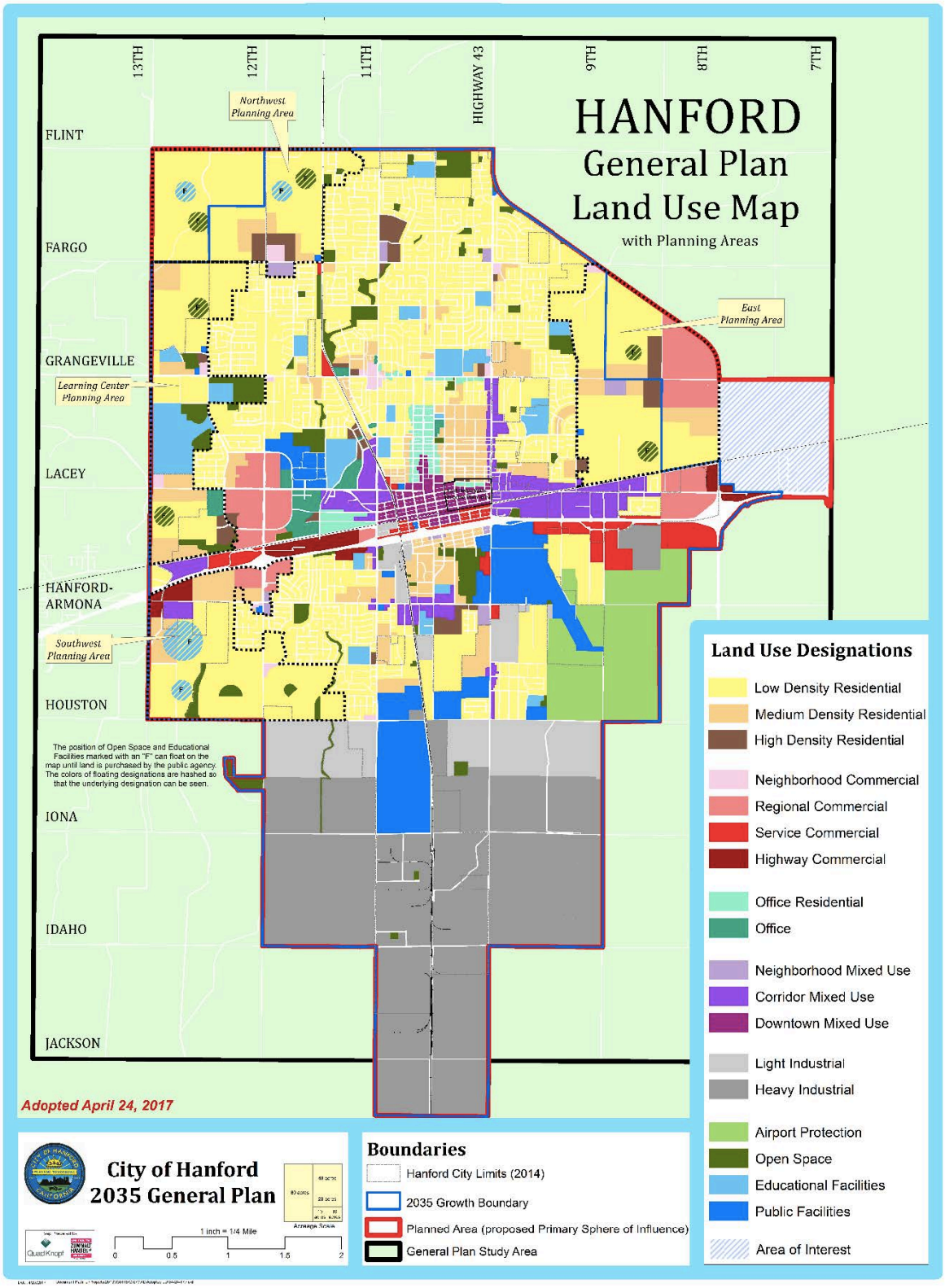
The HFD also understands that this document is an industry best practice and should be fully utilized to continually improve service to the citizens, irrelevant of the attainment of Fire Accreditation.

Appendices

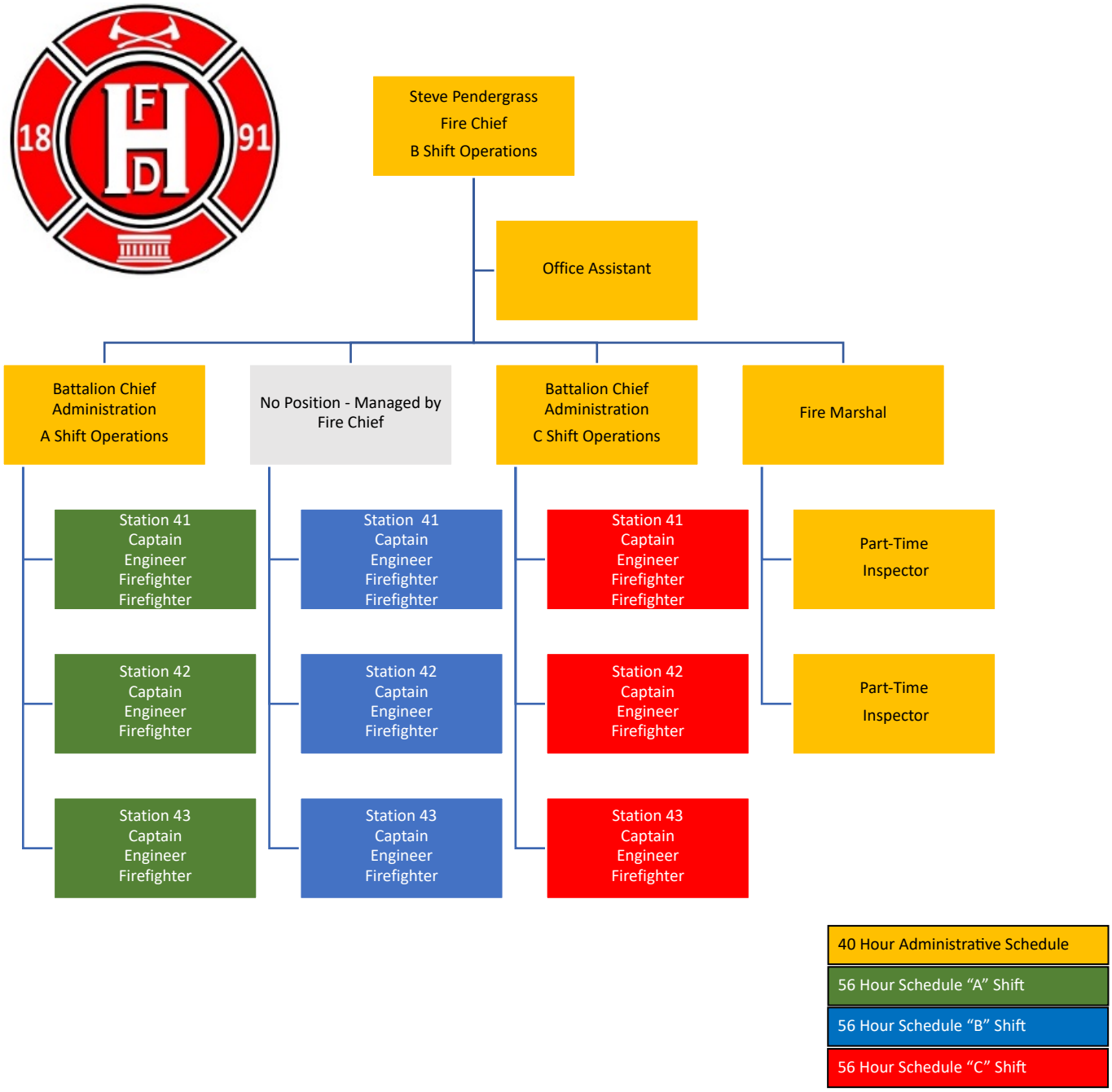
Appendix A
Planning Area, SOI & City Limits



Appendix B
Land Use Map



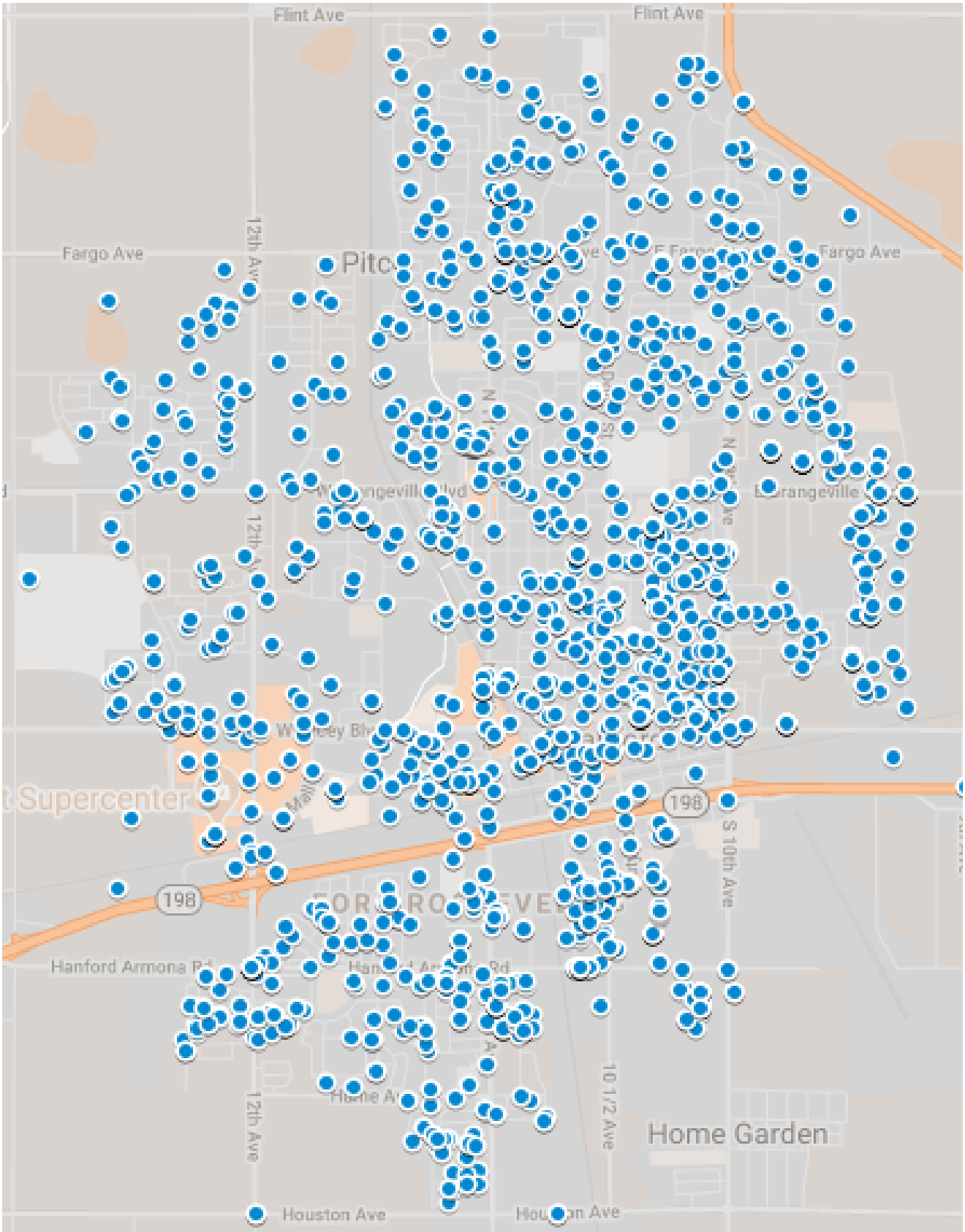
Appendix C


Steve Pendergrass
Fire Chief
B Shift Operations
Office Assistant
Battalion Chief
Administration
A Shift Operations
No Position - Managed by
Fire Chief
Battalion Chief
Administration
C Shift Operations
Fire Marshal
Station 41
Captain
Engineer
Firefighter
Firefighter
Station 42
Captain
Engineer
Firefighter
Station 43
Captain
Engineer
Firefighter
Station 41
Captain
Engineer
Firefighter
Firefighter
Station 42
Captain
Engineer
Firefighter
Station 43
Captain
Engineer
Firefighter
Station 41
Captain
Engineer
Firefighter
Firefighter
Station 42
Captain
Engineer
Firefighter
Station 43
Captain
Engineer
Firefighter
Part-Time
Inspector
Part-Time
Inspector
40 Hour Administrative Schedule
56 Hour Schedule "A" Shift
56 Hour Schedule "B" Shift
56 Hour Schedule "C" Shift

Appendix D

HANFORD FIRE DEPARTMENT - 2020 EMS

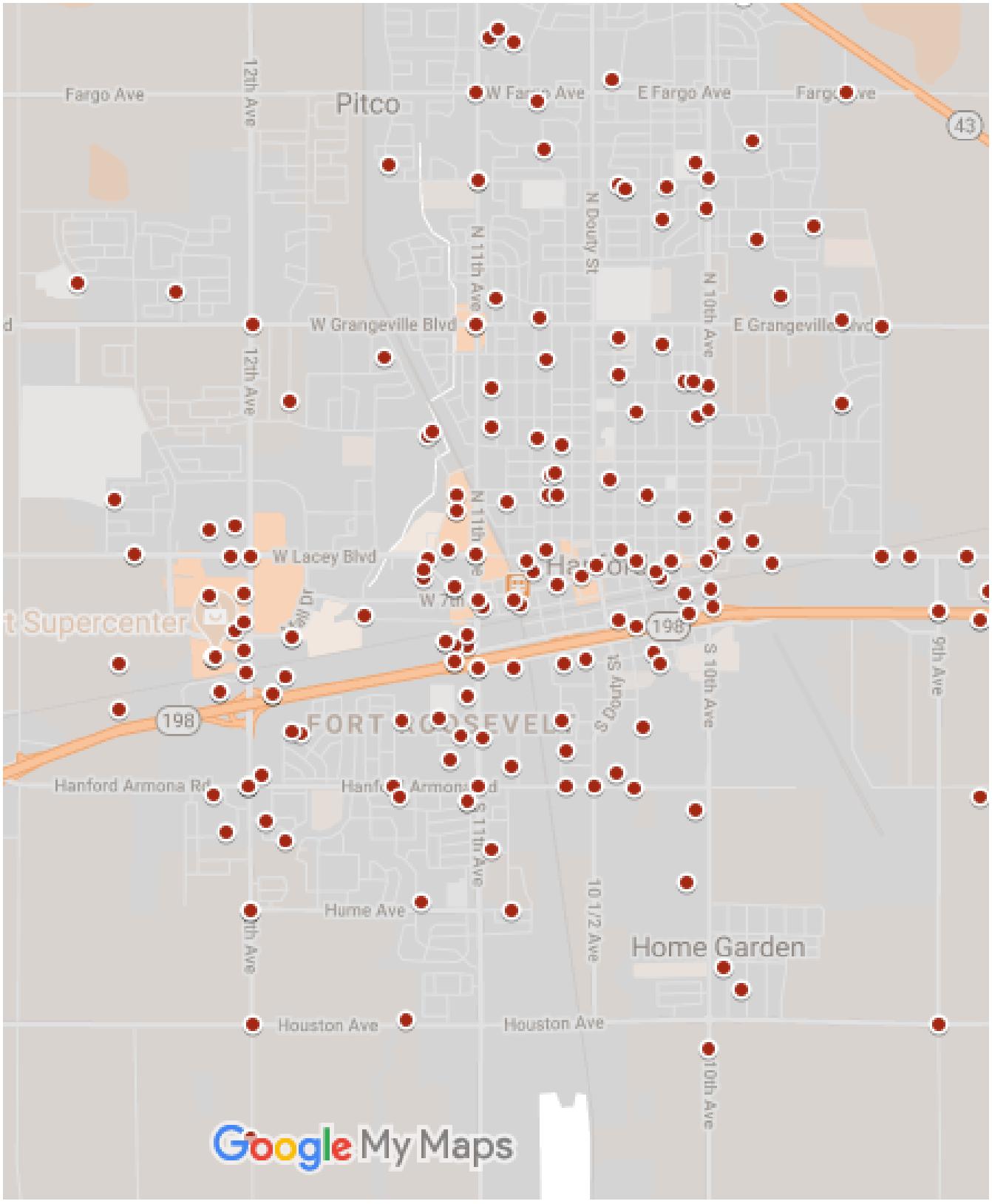
Reflects all EMS types; medical response, traffic accident with injury, rescue, etc.



Appendix E

HANFORD FIRE DEPARTMENT - 2020 FIRES

Reflects all fire types; structure, vehicle, vegetation, other



Appendix F

TARGET HAZARD

Name :	Hazard :
Adventist Medical Center	Life Construction
Kings County Courthouse	Life, Construction
Sierra Pacific High School	Life
College of the Sequoias	Life
Frontier Elementary School	Life
Pioneer Elementary School	Life
Edgewater Isle Apartments	Life
River Oaks Apartments	Life
Washington Elementary School	Life
11th at Fargo Condos	Life
Cortner Square Apartments	Life
Monroe Elementary School	Life
Simas Elementary School	Life
55+ Mobile Home Park	Life
Cedarbrook Apartments	Life
Hanford High School	Life
Sierra Vista Mobile Home Park	Life
Hanford del Arroyo Mobile home Park	Life
Hamilton Elementary School	Life
Lee Richmond Elementary School Life	Life
Shelly Baird School	Life
JFK Middle School	Life
Kings Garden Apartments	Life
EFJ High school	Life
Central Valley General	Life, construction
St.Rose McCarthy School	Life
Redington at Florinda Apartments	Life
Woodrow Wilson Middle School	Life
Shilo Apartments	Life
Greenfield Condos	Life
Apartments on Greenfield	Life
Casa del Rio Apartments	Life

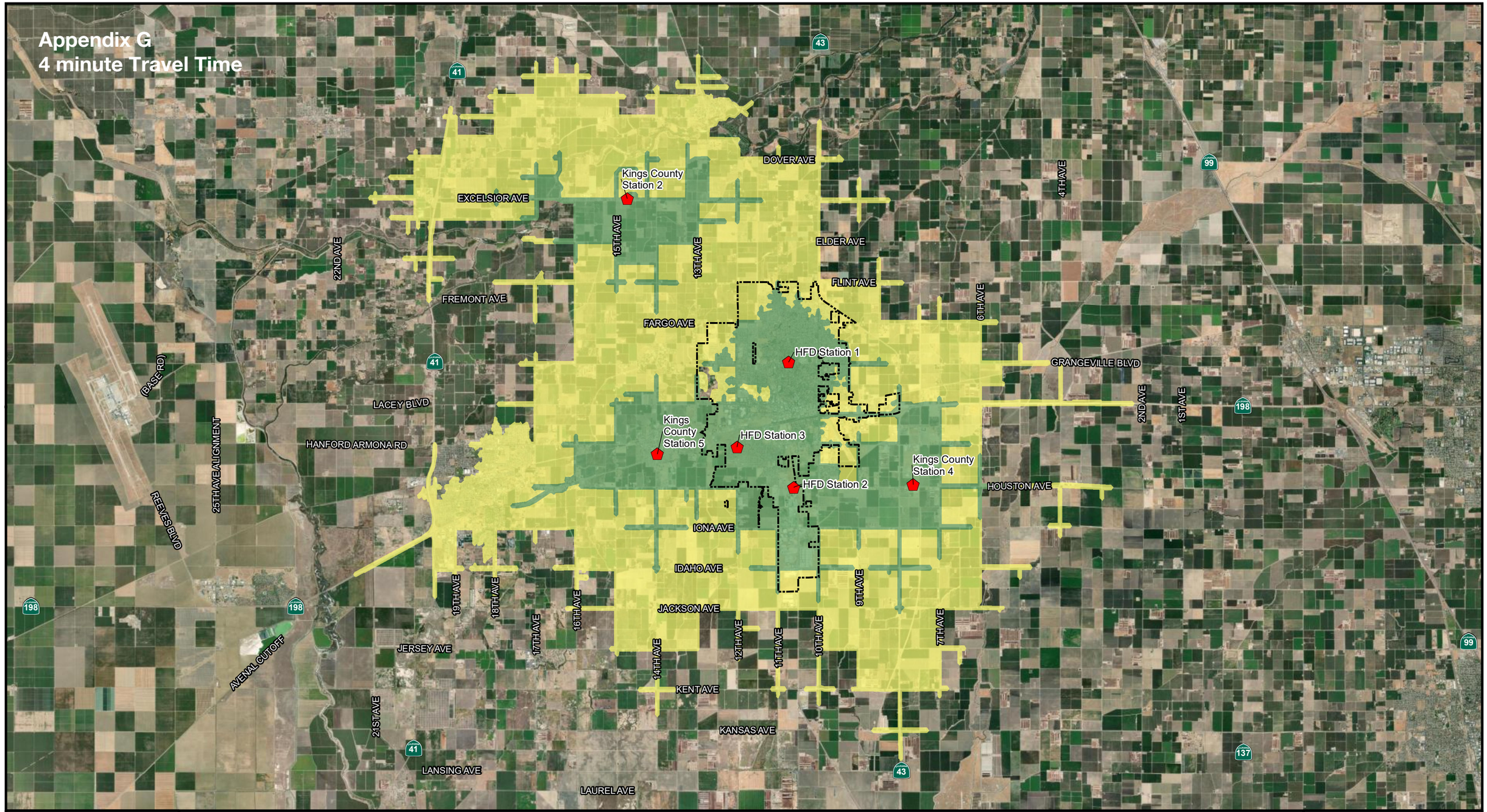
TARGET HAZARD

Outrigger Apartments	Life
Normandy Apartments	Life
Kerr outpatient surgery center	Life, construction
Hanford West High School	Life
Kings County Jail	Life, construction
Centennial Place Apartments	Life
Heritage Park Retirement	Life
Four season mobile home park	Life
Opera House	Life, construction
Vendome	Life, construction
Carnegie Building	Construction
Bastille	Construction
Original courthouse	Construction
Marquez Brothers	Hazmat
Amberwood Apartment complex	Life
Bel Air Mobile home park	Life
Casa del sol apartments complex	Life
Diamond Terrace Retirement	Life
Hacienda Healthcare Assisted Living	Life
Windgate Apartments Complex	Life
Terra Vista Apartment Complex	Life
Hanford Apartments	Life
Martin Luther King Elementary	Life
Hanford Mall	Life
Hanford Post-Acute Assisted Living	Life
Jordan Way Apartment Complex	Life
Jana Way and Emma lee Apartments	Life
Kings Nursing and Rehab Assisted Living	Life
Lacey West Apartments Complex	Life
Leslie Lane Apartments Complex	Life
Lincoln plaza Apartments complex	Life
Lincoln elementary school	Life
Redwood Apartments complex	Life

TARGET HAZARD

Sequoia Inn hotel	Life, construction
Home2Suites Hotel	Life, construction
View road Apartments complex	Life
Verdegaal Brothers	Hazmat
Tessenderlo Kerley Inc.	Hazmat
Walmart Distribution Center	Hazmat
Nitrogen Ag Solution	Hazmat
Simplot	Hazmat
Wastewater Treatment	Hazmat
Faraday Futures Electric Cars	Construction, Hazmat
BNSF Railroad	Hazmat
Artesian Building	Construction

Appendix G
4 minute Travel Time



City of Hanford - Fire Station Response Time Estimate

Fire Station | 0 - 4 Minutes | 4 - 8 Minutes

N

0 Miles 3

QK Sources: ERSI Drive Time Analysis
ESRI Source: Esri, Maxar, GeoEye,

Public Protection Classification

(PPC™)

Summary Report

Hanford

California (N)

Prepared by

Insurance Services Office, Inc.
1000 Bishops Gate Blvd., Ste. 300
P.O. Box 5404
Mt. Laurel, New Jersey 08054-5404
1-800-444-4554

May 2016

Background Information

Introduction

ISO collects and evaluates information from communities in the United States on their structure fire suppression capabilities. The data is analyzed using our Fire Suppression Rating Schedule (FSRS) and then a Public Protection Classification (PPC™) grade is assigned to the community. The surveys are conducted whenever it appears that there is a possibility of a PPC change. As such, the PPC program provides important, up-to-date information about fire protection services throughout the country.

The FSRS recognizes fire protection features only as they relate to suppression of first alarm structure fires. In many communities, fire suppression may be only a small part of the fire department's overall responsibility. ISO recognizes the dynamic and comprehensive duties of a community's fire service, and understands the complex decisions a community must make in planning and delivering emergency services. However, in developing a community's PPC grade, only features related to reducing property losses from structural fires are evaluated. Multiple alarms, simultaneous incidents and life safety are not considered in this evaluation. The PPC program evaluates the fire protection for small to average size buildings. Specific properties with a Needed Fire Flow in excess of 3,500 gpm are evaluated separately and assigned an individual PPC grade.

A community's investment in fire mitigation is a proven and reliable predictor of future fire losses. Statistical data on insurance losses bears out the relationship between excellent fire protection – as measured by the PPC program – and low fire losses. So, insurance companies use PPC information for marketing, underwriting, and to help establish fair premiums for homeowners and commercial fire insurance. In general, the price of fire insurance in a community with a good PPC grade is substantially lower than in a community with a poor PPC grade, assuming all other factors are equal.

ISO is an independent company that serves insurance companies, communities, fire departments, insurance regulators, and others by providing information about risk. ISO's expert staff collects information about municipal fire suppression efforts in communities throughout the United States. In each of those communities, ISO analyzes the relevant data and assigns a PPC grade – a number from 1 to 10. Class 1 represents an exemplary fire suppression program, and Class 10 indicates that the area's fire suppression program does not meet ISO's minimum criteria.

ISO's PPC program evaluates communities according to a uniform set of criteria, incorporating nationally recognized standards developed by the National Fire Protection Association and the American Water Works Association. A community's PPC grade depends on:

- **Needed Fire Flows**, which are representative building locations used to determine the theoretical amount of water necessary for fire suppression purposes.
- **Emergency Communications**, including emergency reporting, telecommunicators, and dispatching systems.
- **Fire Department**, including equipment, staffing, training, geographic distribution of fire companies, operational considerations, and community risk reduction.
- **Water Supply**, including inspection and flow testing of hydrants, alternative water supply operations, and a careful evaluation of the amount of available water compared with the amount needed to suppress fires up to 3,500 gpm.

Data Collection and Analysis

ISO has evaluated and classified over 48,000 fire protection areas across the United States using its FSRS. A combination of meetings between trained ISO field representatives and the dispatch center coordinator, community fire official, and water superintendent is used in conjunction with a comprehensive questionnaire to collect the data necessary to determine the PPC grade. In order for a community to obtain a grade better than a Class 9, three elements of fire suppression features are reviewed. These three elements are Emergency Communications, Fire Department, and Water Supply.

A review of the **Emergency Communications** accounts for 10% of the total classification. This section is weighted at **10 points,** as follows:

- Emergency Reporting 3 points
- Telecommunicators 4 points
- Dispatch Circuits 3 points

A review of the **Fire Department** accounts for 50% of the total classification. ISO focuses on a fire department's first alarm response and initial attack to minimize potential loss. The fire department section is weighted at **50 points,** as follows:

- Engine Companies 6 points
- Reserve Pumpers 0.5 points
- Pump Capacity 3 points
- Ladder/Service Companies 4 points
- Reserve Ladder/Service Trucks 0.5 points
- Deployment Analysis 10 points
- Company Personnel 15 points
- Training 9 points
- Operational considerations 2 points
- Community Risk Reduction 5.5 points (in addition to the 50 points above)

A review of the **Water Supply** system accounts for 40% of the total classification. ISO reviews the water supply a community uses to determine the adequacy for fire suppression purposes. The water supply system is weighted at **40 points,** as follows:

- Credit for Supply System 30 points
- Hydrant Size, Type & Installation 3 points
- Inspection & Flow Testing of Hydrants 7 points

There is one additional factor considered in calculating the final score – **Divergence**.

Even the best fire department will be less than fully effective if it has an inadequate water supply. Similarly, even a superior water supply will be less than fully effective if the fire department lacks the equipment or personnel to use the water. The FSRS score is subject to modification by a divergence factor, which recognizes disparity between the effectiveness of the fire department and the water supply.

The Divergence factor mathematically reduces the score based upon the relative difference between the fire department and water supply scores. The factor is introduced in the final equation.

PPC Grade

The PPC grade assigned to the community will depend on the community's score on a 100-point scale:

PPC	Points
1	90.00 or more
2	80.00 to 89.99
3	70.00 to 79.99
4	60.00 to 69.99
5	50.00 to 59.99
6	40.00 to 49.99
7	30.00 to 39.99
8	20.00 to 29.99
9	10.00 to 19.99
10	0.00 to 9.99

The classification numbers are interpreted as follows:

- Class 1 through (and including) Class 8 represents a fire suppression system that includes an FSRS creditable dispatch center, fire department, and water supply.
- Class 8B is a special classification that recognizes a superior level of fire protection in otherwise Class 9 areas. It is designed to represent a fire protection delivery system that is superior except for a lack of a water supply system capable of the minimum FSRS fire flow criteria of 250 gpm for 2 hours.
- Class 9 is a fire suppression system that includes a creditable dispatch center, fire department but no FSRS creditable water supply.
- Class 10 does not meet minimum FSRS criteria for recognition, including areas that are beyond five road miles of a recognized fire station.

New PPC program changes effective July 1, 2014

We have revised the PPC program to capture the effects of enhanced fire protection capabilities that reduce fire loss and fire severity in Split Class 9 and Split Class 8B areas (as outlined below). This new structure benefits the fire service, community, and property owner.

New classifications
Through ongoing research and loss experience analysis, we identified additional differentiation in fire loss experience within our PPC program, which resulted in the revised classifications. We based the differing fire loss experience on the fire suppression capabilities of each community. The new PPC classes will improve the predictive value for insurers while benefiting both commercial and residential property owners. Here are the new classifications and what they mean.

Split classifications
When we develop a split classification for a community — for example 5/9 — the first number is the class that applies to properties within 5 road miles of the responding fire station and 1,000 feet of a creditable water supply, such as a fire hydrant, suction point, or dry hydrant. The second number is the class that applies to properties within 5 road miles of a fire station but beyond 1,000 feet of a creditable water supply. We have revised the classification to reflect more precisely the risk of loss in a community, replacing Class 9 and 8B in the second part of a split classification with revised designations.

What's changed with the new classifications?
We've published the new classifications as "X" and "Y" — formerly the "9" and "8B" portion of the split classification, respectively. For example:

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

Prior Classification	New Classification
1/9	1/1X
2/9	2/2X
3/9	3/3X
4/9	4/4X
5/9	5/5X
6/9	6/6X
7/9	7/7X
8/9	8/8X
9	9

Prior Classification	New Classification
1/8B	1/1Y
2/8B	2/2Y
3/8B	3/3Y
4/8B	4/4Y
5/8B	5/5Y
6/8B	6/6Y
7/8B	7/7Y
8/8B	8/8Y
8B	8B

What's changed?
As you can see, we're still maintaining split classes, but it's how we represent them to insurers that's changed. The new designations reflect a reduction in fire severity and loss and have the potential to reduce property insurance premiums.

Benefits of the revised split class designations

- To the fire service, the revised designations identify enhanced fire suppression capabilities used throughout the fire protection area
- To the community, the new classes reward a community's fire suppression efforts by showing a more reflective designation
- To the individual property owner, the revisions offer the potential for decreased property insurance premiums

New water class
Our data also shows that risks located more than 5 but less than 7 road miles from a responding fire station with a creditable water source within 1,000 feet had better loss experience than those farther than 5 road miles from a responding fire station with no creditable water source. We've introduced a new classification —10W — to recognize the reduced loss potential of such properties.

What's changed with Class 10W?
Class 10W is property-specific. Not all properties in the 5-to-7-mile area around the responding fire station will qualify. The difference between Class 10 and 10W is that the 10W-graded risk or property is within 1,000 feet of a creditable water supply. Creditable water supplies include fire protection systems using hauled water in any of the split classification areas.

What's the benefit of Class 10W?
10W gives credit to risks within 5 to 7 road miles of the responding fire station and within 1,000 feet of a creditable water supply. That's reflective of the potential for reduced property insurance premiums.

What does the fire chief have to do?
Fire chiefs don't have to do anything at all. The revised classifications went in place automatically effective July 1, 2014 (July 1, 2015 for Texas).

What if I have additional questions?
Feel free to contact ISO at 800.444.4554 or email us at PPC-Cust-Serv@iso.com.

Distribution of PPC Grades

The 2015 published countrywide distribution of communities by the PPC grade is as follows:

Assistance

The PPC program offers help to communities, fire departments, and other public officials as they plan for, budget, and justify improvements. ISO is also available to assist in the understanding of the details of this evaluation.

The PPC program representatives can be reached by telephone at (800) 444-4554. The technical specialists at this telephone number have access to the details of this evaluation and can effectively speak with you about your questions regarding the PPC program. What's more, we can be reached via the internet at www.isomitigation.com/talk/.

We also have a website dedicated to our Community Hazard Mitigation Classification programs at www.isomitigation.com. Here, fire chiefs, building code officials, community leaders and other interested citizens can access a wealth of data describing the criteria used in evaluating how cities and towns are protecting residents from fire and other natural hazards. This website will allow you to learn more about the PPC program. The website provides important background information, insights about the PPC grading processes and technical documents. ISO is also pleased to offer Fire Chiefs Online — a special, secured website with information and features that can help improve your PPC grade, including a list of the Needed Fire Flows for all the commercial occupancies ISO has on file for your community. Visitors to the site can download information, see statistical results and also contact ISO for assistance.

In addition, on-line access to the FSRS and its commentaries is available to registered customers for a fee. However, fire chiefs and community chief administrative officials are given access privileges to this information without charge.

To become a registered fire chief or community chief administrative official, register at www.isomitigation.com.

PPC Review

ISO concluded its review of the fire suppression features being provided for Hanford. The resulting community classification is **Class 02**.

If the classification is a single class, the classification applies to properties with a Needed Fire Flow of 3,500 gpm or less in the community. If the classification is a split class (e.g., 6/XX):

- The first class (e.g., "6" in a 6/XX) applies to properties within 5 road miles of a recognized fire station and within 1,000 feet of a fire hydrant or alternate water supply.
- The second class (XX or XY) applies to properties beyond 1,000 feet of a fire hydrant but within 5 road miles of a recognized fire station.
- Alternative Water Supply: The first class (e.g., "6" in a 6/10) applies to properties within 5 road miles of a recognized fire station with no hydrant distance requirement.
- Class 10 applies to properties over 5 road miles of a recognized fire station.
- Class 10W applies to properties within 5 to 7 road miles of a recognized fire station with a recognized water supply within 1,000 feet.
- Specific properties with a Needed Fire Flow in excess of 3,500 gpm are evaluated separately and assigned an individual classification.

FSRS Feature	Earned Credit	Credit Available
Emergency Communications		
414. Credit for Emergency Reporting	**3.00**	**3**
422. Credit for Telecommunicators	**3.34**	**4**
432. Credit for Dispatch Circuits	**1.72**	**3**
440. Credit for Emergency Communications	**8.06**	**10**
Fire Department		
513. Credit for Engine Companies	**6.00**	**6**
523. Credit for Reserve Pumpers	**0.50**	**0.50**
532. Credit for Pump Capacity	**3.00**	**3**
549. Credit for Ladder Service	**0.61**	**4**
553. Credit for Reserve Ladder and Service Trucks	**0.00**	**0.50**
561. Credit for Deployment Analysis	**5.76**	**10**
571. Credit for Company Personnel	**9.02**	**15**
581. Credit for Training	**8.06**	**9**
730. Credit for Operational Considerations	**2.00**	**2**
590. Credit for Fire Department	**34.95**	**50**
Water Supply		
616. Credit for Supply System	**30.00**	**30**
621. Credit for Hydrants	**3.00**	**3**
631. Credit for Inspection and Flow Testing	**4.80**	**7**
640. Credit for Water Supply	**37.80**	**40**
Divergence	**-4.92**	–
1050. Community Risk Reduction	**4.75**	**5.50**
Total Credit	**80.64**	**105.50**

Emergency Communications

Ten percent of a community's overall score is based on how well the communications center receives and dispatches fire alarms. Our field representative evaluated:

- Communications facilities provided for the general public to report structure fires
- Enhanced 9-1-1 Telephone Service including wireless
- Computer-aided dispatch (CAD) facilities
- Alarm receipt and processing at the communication center
- Training and certification of telecommunicators
- Facilities used to dispatch fire department companies to reported structure fires

	Earned Credit	Credit Available
414. Credit Emergency Reporting	**3.00**	3
422. Credit for Telecommunicators	**3.34**	4
432. Credit for Dispatch Circuits	**1.72**	3
Item 440. Credit for Emergency Communications:	**8.06**	**10**

Item 414 - Credit for Emergency Reporting (3 points)

The first item reviewed is Item 414 "Credit for Emergency Reporting (CER)". This item reviews the emergency communication center facilities provided for the public to report fires including 911 systems (Basic or Enhanced), Wireless Phase I and Phase II, Voice over Internet Protocol, Computer Aided Dispatch and Geographic Information Systems for automatic vehicle location. ISO uses National Fire Protection Association (NFPA) 1221, *Standard for the Installation, Maintenance and Use of Emergency Services Communications Systems* as the reference for this section.

Item 410. Emergency Reporting (CER)	Earned Credit	Credit Available
A./B. Basic 9-1-1, Enhanced 9-1-1 or No 9-1-1 For maximum credit, there should be an Enhanced 9-1-1 system, Basic 9-1-1 and No 9-1-1 will receive partial credit.	**20.00**	**20**
1. E9-1-1 Wireless Wireless Phase I using Static ALI (automatic location identification) Functionality (10 points); Wireless Phase II using Dynamic ALI Functionality (15 points); Both available will be 25 points	**25.00**	**25**
2. E9-1-1 Voice over Internet Protocol (VoIP) Static VoIP using Static ALI Functionality (10 points); Nomadic VoIP using Dynamic ALI Functionality (15 points); Both available will be 25 points	**25.00**	**25**
3. Computer Aided Dispatch Basic CAD (5 points); CAD with Management Information System (5 points); CAD with Interoperability (5 points)	**15.00**	**15**
4. Geographic Information System (GIS/AVL) The PSAP uses a fully integrated CAD/GIS management system with automatic vehicle location (AVL) integrated with a CAD system providing dispatch assignments.	**15.00**	**15**
Review of Emergency Reporting total:	**100.00**	**100**

Item 422- Credit for Telecommunicators (4 points)

The second item reviewed is Item 422 "Credit for Telecommunicators (TC)". This item reviews the number of Telecommunicators on duty at the center to handle fire calls and other emergencies. All emergency calls including those calls that do not require fire department action are reviewed to determine the proper staffing to answer emergency calls and dispatch the appropriate emergency response. NFPA 1221, *Standard for the Installation, Maintenance and Use of Emergency Services Communications Systems,* recommends that ninety-five percent of emergency calls shall be answered within 15 seconds and ninety-nine percent of emergency calls shall be answered within 40 seconds. In addition, NFPA recommends that ninety percent of emergency alarm processing shall be completed within 60 seconds and ninety-nine percent of alarm processing shall be completed within 90 seconds of answering the call.

To receive full credit for operators on duty, ISO must review documentation to show that the communication center meets NFPA 1221 call answering and dispatch time performance measurement standards. This documentation may be in the form of performance statistics or other performance measurements compiled by the 9-1-1 software or other software programs that are currently in use such as Computer Aided Dispatch (CAD) or Management Information System (MIS).

Item 420. Telecommunicators (CTC)	Earned Credit	Credit Available
A1. Alarm Receipt (AR) Receipt of alarms shall meet the requirements in accordance with the criteria of NFPA 1221	20.00	20
A2. Alarm Processing (AP) Processing of alarms shall meet the requirements in accordance with the criteria of NFPA 1221	13.48	20
B. Emergency Dispatch Protocols (EDP) Telecommunicators have emergency dispatch protocols (EDP) containing questions and a decision-support process to facilitate correct call categorization and prioritization.	20.00	20
C. Telecommunicator Training and Certification (TTC) Telecommunicators meet the qualification requirements referenced in NFPA 1061, *Standard for Professional Qualifications for Public Safety Telecommunicator*, and/or the Association of Public-Safety Communications Officials - International (APCO) *Project 33.* Telecommunicators are certified in the knowledge, skills, and abilities corresponding to their job functions.	20.00	20
D. Telecommunicator Continuing Education and Quality Assurance (TQA) Telecommunicators participate in continuing education and/or in-service training and quality-assurance programs as appropriate for their positions	10.00	20
Review of Telecommunicators total:	83.48	100

Item 432 - Credit for Dispatch Circuits (3 points)

The third item reviewed is Item 432 "Credit for Dispatch Circuits (CDC)". This item reviews the dispatch circuit facilities used to transmit alarms to fire department members. A "Dispatch Circuit" is defined in NFPA 1221 as "A circuit over which an alarm is transmitted from the communications center to an emergency response facility (ERF) or emergency response units (ERUs) to notify ERUs to respond to an emergency". All fire departments (except single fire station departments with full-time firefighter personnel receiving alarms directly at the fire station) need adequate means of notifying all firefighter personnel of the location of reported structure fires. The dispatch circuit facilities should be in accordance with the general criteria of NFPA 1221. "Alarms" are defined in this Standard as "A signal or message from a person or device indicating the existence of an emergency or other situation that requires action by an emergency response agency".

There are two different levels of dispatch circuit facilities provided for in the Standard – a primary dispatch circuit and a secondary dispatch circuit. In jurisdictions that receive 730 alarms or more per year (average of two alarms per 24-hour period), two separate and dedicated dispatch circuits, a primary and a secondary, are needed. In jurisdictions receiving fewer than 730 alarms per year, a second dedicated dispatch circuit is not needed. Dispatch circuit facilities installed but not used or tested (in accordance with the NFPA Standard) receive no credit.

The score for Credit for Dispatch Circuits (CDC) is influenced by monitoring for integrity of the primary dispatch circuit. There are up to 0.90 points available for this Item. Monitoring for integrity involves installing automatic systems that will detect faults and failures and send visual and audible indications to appropriate communications center (or dispatch center) personnel. ISO uses NFPA 1221 to guide the evaluation of this item. ISO's evaluation also includes a review of the communication system's emergency power supplies.

Item 432 "Credit for Dispatch Circuits (CDC)" = 1.72 points

Fire Department

Fifty percent of a community's overall score is based upon the fire department's structure fire suppression system. ISO's field representative evaluated:

- Engine and ladder/service vehicles including reserve apparatus
- Equipment carried
- Response to reported structure fires
- Deployment analysis of companies
- Available and/or responding firefighters
- Training

	Earned Credit	Credit Available
513. Credit for Engine Companies	**6.00**	6
523. Credit for Reserve Pumpers	**0.50**	0.5
532. Credit for Pumper Capacity	**3.00**	3
549. Credit for Ladder Service	**0.61**	4
553. Credit for Reserve Ladder and Service Trucks	**0.00**	0.5
561. Credit for Deployment Analysis	**5.76**	10
571. Credit for Company Personnel	**9.02**	15
581. Credit for Training	**8.06**	9
730. Credit for Operational Considerations	**2.00**	2
Item 590. Credit for Fire Department:	**34.95**	**50**

Basic Fire Flow

The Basic Fire Flow for the community is determined by the review of the Needed Fire Flows for selected buildings in the community. The fifth largest Needed Fire Flow is determined to be the Basic Fire Flow. The Basic Fire Flow has been determined to be 3500 gpm.

Item 513 - Credit for Engine Companies (6 points)

The first item reviewed is Item 513 "Credit for Engine Companies (CEC)". This item reviews the number of engine companies, their pump capacity, hose testing, pump testing and the equipment carried on the in-service pumpers. To be recognized, pumper apparatus must meet the general criteria of NFPA 1901, *Standard for Automotive Fire Apparatus* which include a minimum 250 gpm pump, an emergency warning system, a 300 gallon water tank, and hose. At least 1 apparatus must have a permanently mounted pump rated at 750 gpm or more at 150 psi.

The review of the number of needed pumpers considers the response distance to built-upon areas; the Basic Fire Flow; and the method of operation. Multiple alarms, simultaneous incidents, and life safety are not considered.

The greatest value of A, B, or C below is needed in the fire district to suppress fires in structures with a Needed Fire Flow of 3,500 gpm or less: **3 engine companies**

a) **2 engine companies** to provide fire suppression services to areas to meet NFPA 1710 criteria or within 1½ miles.

b) **3 engine companies** to support a Basic Fire Flow of 3500 gpm.

c) **3 engine companies** based upon the fire department's method of operation to provide a minimum two engine response to all first alarm structure fires.

The FSRS recognizes that there are **3 engine companies** in service.

The FSRS also reviews Automatic Aid. Automatic Aid is considered in the review as assistance dispatched automatically by contractual agreement between two communities or fire districts. That differs from mutual aid or assistance arranged case by case. ISO will recognize an Automatic Aid plan under the following conditions:

- It must be prearranged for first alarm response according to a definite plan. It is preferable to have a written agreement, but ISO may recognize demonstrated performance.
- The aid must be dispatched to all reported structure fires on the initial alarm.
- The aid must be provided 24 hours a day, 365 days a year.

FSRS Item 512.D "Automatic Aid Engine Companies" responding on first alarm and meeting the needs of the city for basic fire flow and/or distribution of companies are factored based upon the value of the Automatic Aid plan (up to 1.00 can be used as the factor). The Automatic Aid factor is determined by a review of the Automatic Aid provider's communication facilities, how they receive alarms from the graded area, inter-department training between fire departments, and the fire ground communications capability between departments.

For each engine company, the credited Pump Capacity (PC), the Hose Carried (HC), the Equipment Carried (EC) all contribute to the calculation for the percent of credit the FSRS provides to that engine company.

Item 513 "Credit for Engine Companies (CEC)" = 6.00 points

Item 523 - Credit for Reserve Pumpers (0.50 points)

The item is Item 523 "Credit for Reserve Pumpers (CRP)". This item reviews the number and adequacy of the pumpers and their equipment. The number of needed reserve pumpers is 1 for each 8 needed engine companies determined in Item 513, or any fraction thereof.

Item 523 "Credit for Reserve Pumpers (CRP)" = 0.50 points

Item 532 – Credit for Pumper Capacity (3 points)

The next item reviewed is Item 532 "Credit for Pumper Capacity (CPC)". The total pump capacity available should be sufficient for the Basic Fire Flow of 3500 gpm. The maximum needed pump capacity credited is the Basic Fire Flow of the community.

Item 532 "Credit for Pumper Capacity (CPC)" = 3.00 points

Item 549 – Credit for Ladder Service (4 points)

The next item reviewed is Item 549 "Credit for Ladder Service (CLS)". This item reviews the number of response areas within the city with 5 buildings that are 3 or more stories or 35 feet or more in height, or with 5 buildings that have a Needed Fire Flow greater than 3,500 gpm, or any combination of these criteria. The height of all buildings in the city, including those protected by automatic sprinklers, is considered when determining the number of needed ladder companies. Response areas not needing a ladder company should have a service company. Ladders, tools and equipment normally carried on ladder trucks are needed not only for ladder operations but also for forcible entry, ventilation, salvage, overhaul, lighting and utility control.

The number of ladder or service companies, the height of the aerial ladder, aerial ladder testing and the equipment carried on the in-service ladder trucks and service trucks is compared with the number of needed ladder trucks and service trucks and an FSRS equipment list. Ladder trucks must meet the general criteria of NFPA 1901, *Standard for Automotive Fire Apparatus* to be recognized.

The number of needed ladder-service trucks is dependent upon the number of buildings 3 stories or 35 feet or more in height, buildings with a Needed Fire Flow greater than 3,500 gpm, and the method of operation.

The FSRS recognizes that there are **1 ladder companies** in service. These companies are needed to provide fire suppression services to areas to meet NFPA 1710 criteria or within 2½ miles and the number of buildings with a Needed Fire Flow over 3,500 gpm or 3 stories or more in height, or the method of operation.

The FSRS recognizes that there are **0 service companies** in service.

Item 549 "Credit for Ladder Service (CLS)" = 0.61 points

Item 553 – Credit for Reserve Ladder and Service Trucks (0.50 points)

The next item reviewed is Item 553 "Credit for Reserve Ladder and Service Trucks (CRLS)". This item considers the adequacy of ladder and service apparatus when one (or more in larger communities) of these apparatus are out of service. The number of needed reserve ladder and service trucks is 1 for each 8 needed ladder and service companies that were determined to be needed in Item 540, or any fraction thereof.

Item 553 "Credit for Reserve Ladder and Service Trucks (CRLS)" = 0.00 points

Item 561 – Deployment Analysis (10 points)

Next, Item 561 "Deployment Analysis (DA)" is reviewed. This Item examines the number and adequacy of existing engine and ladder-service companies to cover built-upon areas of the city.

To determine the Credit for Distribution, first the Existing Engine Company (EC) points and the Existing Engine Companies (EE) determined in Item 513 are considered along with Ladder Company Equipment (LCE) points, Service Company Equipment (SCE) points, Engine-Ladder Company Equipment (ELCE) points, and Engine-Service Company Equipment (ESCE) points determined in Item 549.

Secondly, as an alternative to determining the number of needed engine and ladder/service companies through the road-mile analysis, a fire protection area may use the results of a systematic performance evaluation. This type of evaluation analyzes computer-aided dispatch (CAD) history to demonstrate that, with its current deployment of companies, the fire department meets the time constraints for initial arriving engine and initial full alarm assignment in accordance with the general criteria of in 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.*

A determination is made of the percentage of built upon area within 1½ miles of a first-due engine company and within 2½ miles of a first-due ladder-service company.

Item 561 "Credit Deployment Analysis (DA)" = 5.76 points

Item 571 – Credit for Company Personnel (15 points)

Item 571 "Credit for Company Personnel (CCP)" reviews the average number of existing firefighters and company officers available to respond to reported first alarm structure fires in the city.

The on-duty strength is determined by the yearly average of total firefighters and company officers on-duty considering vacations, sick leave, holidays, "Kelley" days and other absences. When a fire department operates under a minimum staffing policy, this may be used in lieu of determining the yearly average of on-duty company personnel.

Firefighters on apparatus not credited under Items 513 and 549 that regularly respond to reported first alarms to aid engine, ladder, and service companies are included in this item as increasing the total company strength.

Firefighters staffing ambulances or other units serving the general public are credited if they participate in fire-fighting operations, the number depending upon the extent to which they are available and are used for response to first alarms of fire.

On-Call members are credited on the basis of the average number staffing apparatus on first alarms. Off-shift career firefighters and company officers responding on first alarms are considered on the same basis as on-call personnel. For personnel not normally at the fire station, the number of responding firefighters and company officers is divided by 3 to reflect the time needed to assemble at the fire scene and the reduced ability to act as a team due to the various arrival times at the fire location when compared to the personnel on-duty at the fire station during the receipt of an alarm.

The number of Public Safety Officers who are positioned in emergency vehicles within the jurisdiction boundaries may be credited based on availability to respond to first alarm structure fires. In recognition of this increased response capability the number of responding Public Safety Officers is divided by 2.

The average number of firefighters and company officers responding with those companies credited as Automatic Aid under Items 513 and 549 are considered for either on-duty or on-call company personnel as is appropriate. The actual number is calculated as the average number of company personnel responding multiplied by the value of AA Plan determined in Item 512.D.

The maximum creditable response of on-duty and on-call firefighters is 12, including company officers, for each existing engine and ladder company and 6 for each existing service company.

Chief Officers are not creditable except when more than one chief officer responds to alarms; then extra chief officers may be credited as firefighters if they perform company duties.

The FSRS recognizes **8.66 on-duty personnel** and an average of **2.00 on-call personnel** responding on first alarm structure fires.

Item 571 "Credit for Company Personnel (CCP)" = 9.02 points

Item 581 – Credit for Training (9 points)

Training	Earned Credit	Credit Available
A. Facilities, and Use For maximum credit, each firefighter should receive 18 hours per year in structure fire related subjects as outlined in NFPA 1001.	35.0(	35
B. Company Training For maximum credit, each firefighter should receive 16 hours per month in structure fire related subjects as outlined in NFPA 1001.	25.00	25
C. Classes for Officers For maximum credit, each officer should be certified in accordance with the general criteria of NFPA 1021. Additionally, each officer should receive 12 hours of continuing education on or off site.	12.00	12
D. New Driver and Operator Training For maximum credit, each new driver and operator should receive 60 hours of driver/operator training per year in accordance with NFPA 1002 and NFPA 1451.	5.00	5
E. Existing Driver and Operator Training For maximum credit, each existing driver and operator should receive 12 hours of driver/operator training per year in accordance with NFPA 1002 and NFPA 1451.	5.00	5
F. Training on Hazardous Materials For maximum credit, each firefighter should receive 6 hours of training for incidents involving hazardous materials in accordance with NFPA 472.	1.00	1
G. Recruit Training For maximum credit, each firefighter should receive 240 hours of structure fire related training in accordance with NFPA 1001 within the first year of employment or tenure.	5.00	5
H. Pre-Fire Planning Inspections For maximum credit, pre-fire planning inspections of each commercial, industrial, institutional, and other similar type building (all buildings except 1-4 family dwellings) should be made annually by company members. Records of inspections should include up-to date notes and sketches.	1.56	12

Item 580 "Credit for Training (CT)" = 8.06 points

Item 730 – Operational Considerations (2 points)

Item 730 "Credit for Operational Considerations (COC)" evaluates fire department standard operating procedures and incident management systems for emergency operations involving structure fires.

Operational Considerations	Earned Credit	Credit Available
Standard Operating Procedures The department should have established SOPs for fire department general emergency operations	50	50
Incident Management Systems The department should use an established incident management system (IMS)	50	50
Operational Considerations total:	100	100

Item 730 "Credit for Operational Considerations (COC)" = 2.00 points

Water Supply

Forty percent of a community's overall score is based on the adequacy of the water supply system. The ISO field representative evaluated:

- the capability of the water distribution system to meet the Needed Fire Flows at selected locations up to 3,500 gpm.
- size, type and installation of fire hydrants.
- inspection and flow testing of fire hydrants.

	Earned Credit	Credit Available
616. Credit for Supply System	30.00	30
621. Credit for Hydrants	3.00	3
631. Credit for Inspection and Flow Testing	4.80	7
Item 640. Credit for Water Supply:	37.80	40

Item 616 – Credit for Supply System (30 points)

The first item reviewed is Item 616 "Credit for Supply System (CSS)". This item reviews the rate of flow that can be credited at each of the Needed Fire Flow test locations considering the supply works capacity, the main capacity and the hydrant distribution. The lowest flow rate of these items is credited for each representative location. A water system capable of delivering 250 gpm or more for a period of two hours plus consumption at the maximum daily rate at the fire location is considered minimum in the ISO review.

Where there are 2 or more systems or services distributing water at the same location, credit is given on the basis of the joint protection provided by all systems and services available.

The supply works capacity is calculated for each representative Needed Fire Flow test location, considering a variety of water supply sources. These include public water supplies, emergency supplies (usually accessed from neighboring water systems), suction supplies (usually evidenced by dry hydrant installations near a river, lake or other body of water), and supplies developed by a fire department using large diameter hose or vehicles to shuttle water from a source of supply to a fire site. The result is expressed in gallons per minute (gpm).

The normal ability of the distribution system to deliver Needed Fire Flows at the selected building locations is reviewed. The results of a flow test at a representative test location will indicate the ability of the water mains (or fire department in the case of fire department supplies) to carry water to that location.

The hydrant distribution is reviewed within 1,000 feet of representative test locations measured as hose can be laid by apparatus.

For maximum credit, the Needed Fire Flows should be available at each location in the district. Needed Fire Flows of 2,500 gpm or less should be available for 2 hours; and Needed Fire Flows of 3,000 and 3,500 gpm should be obtainable for 3 hours.

Item 616 "Credit for Supply System (CSS)" = 30.00 points

Item 621 – Credit for Hydrants (3 points)

The second item reviewed is Item 621 "Credit for Hydrants (CH)". This item reviews the number of fire hydrants of each type compared with the total number of hydrants.

There are a total of 2060 hydrants in the graded area.

620. Hydrants, - Size, Type and Installation	Number of Hydrants
A. With a 6 -inch or larger branch and a pumper outlet with or without 2½ -inch outlets	2060
B. With a 6 -inch or larger branch and no pumper outlet but two or more 2½ -inch outlets, or with a small foot valve, or with a small barrel	0
C./D. With only a 2½ -inch outlet or with less than a 6 -inch branch	0
E./F. Flush Type, Cistern, or Suction Point	0

Item 621 "Credit for Hydrants (CH)" = 3.00 points

Item 630 – Credit for Inspection and Flow Testing (7 points)

The third item reviewed is Item 630 "Credit for Inspection and Flow Testing (CIT)". This item reviews the fire hydrant inspection frequency, and the completeness of the inspections. Inspection of hydrants should be in accordance with AWWA M-17, *Installation, Field Testing and Maintenance of Fire Hydrants.*

Frequency of Inspection (FI): Average interval between the 3 most recent inspections.

Frequency	Points
1 year	30
2 years	20
3 years	10
4 years	5
5 years or more	No Credit

Note: The points for inspection frequency are reduced by 10 points if the inspections are incomplete or do not include a flushing program. An additional reduction of 10 points are made if hydrants are not subjected to full system pressure during inspections. If the inspection of cisterns or suction points does not include actual drafting with a pumper, or back-flushing for dry hydrants, 20 points are deducted.

Total points for Inspections = 2.40 points

Frequency of Fire Flow Testing (FF): Average interval between the 3 most recent inspections.

Frequency	Points
5 years	40
6 years	30
7 years	20
8 years	10
9 years	5
10 years or more	No Credit

Total points for Fire Flow Testing = 2.40 points

Item 631 "Credit for Inspection and Fire Flow Testing (CIT)" = 4.80 points

Divergence = -4.92

The Divergence factor mathematically reduces the score based upon the relative difference between the fire department and water supply scores. The factor is introduced in the final equation.

Community Risk Reduction

	Earned Credit	Credit Available
1025. Credit for Fire Prevention and Code Enforcement (CPCE)	**1.71**	2.2
1033. Credit for Public Fire Safety Education (CFSE)	**2.06**	2.2
1044. Credit for Fire Investigation Programs (CIP)	**0.98**	1.1
Item 1050. Credit for Community Risk Reduction	**4.75**	**5.50**

Item 1025 – Credit for Fire Prevention Code Adoption and Enforcement (2.2 points)	Earned Credit	Credit Available
Fire Prevention Code Regulations (PCR) Evaluation of fire prevention code regulations in effect.	10.00	10
Fire Prevention Staffing (PS) Evaluation of staffing for fire prevention activities.	2.84	8
Fire Prevention Certification and Training (PCT) Evaluation of the certification and training of fire prevention code enforcement personnel.	3.10	6
Fire Prevention Programs (PCP) Evaluation of fire prevention programs.	15.10	16
Review of Fire Prevention Code and Enforcement (CPCE) subtotal:	31.04	40

Item 1033 – Credit for Public Fire Safety Education (2.2 points)	Earned Credit	Credit Available
Public Fire Safety Educators Qualifications and Training (FSQT) Evaluation of public fire safety education personnel training and qualification as specified by the authority having jurisdiction.	10.00	10
Public Fire Safety Education Programs (FSP) Evaluation of programs for public fire safety education.	27.50	30
Review of Public Safety Education Programs (CFSE) subtotal:	37.50	40

Item 1044 – Credit for Fire Investigation Programs (1.1 points)	Earned Credit	Credit Available
Fire Investigation Organization and Staffing (IOS) Evaluation of organization and staffing for fire investigations.	8.00	8
Fire Investigator Certification and Training (IQT) Evaluation of fire investigator certification and training.	3.90	6
Use of National Fire Incident Reporting System (IRS) Evaluation of the use of the National Fire Incident Reporting System (NFIRS) for the 3 years before the evaluation.	6.00	6
Review of Fire Investigation Programs (CIP) subtotal:	17.90	20

Summary of PPC Review
for
Hanford

FSRS Item	Earned Credit	Credit Available
Emergency Communications		
414. Credit for Emergency Reporting	3.00	3
422. Credit for Telecommunicators	3.34	4
432. Credit for Dispatch Circuits	1.72	3
440. Credit for Emergency Communications	8.06	10
Fire Department		
513. Credit for Engine Companies	6.00	6
523. Credit for Reserve Pumpers	0.50	0.5
532. Credit for Pumper Capacity	3.00	3
549. Credit for Ladder Service	0.61	4
553. Credit for Reserve Ladder and Service Trucks	0.00	0.5
561. Credit for Deployment Analysis	5.76	10
571. Credit for Company Personnel	9.02	15
581. Credit for Training	8.06	9
730. Credit for Operational Considerations	2.00	2
590. Credit for Fire Department	34.95	50
Water Supply		
616. Credit for Supply System	30.00	30
621. Credit for Hydrants	3.00	3
631. Credit for Inspection and Flow Testing	4.80	7
640. Credit for Water Supply	37.80	40
Divergence	-4.92	--
1050. Community Risk Reduction	4.75	5.50
Total Credit	80.64	105.5

Final Community Classification = 02

INSURANCE SERVICES OFFICE, INC.

HYDRANT FLOW DATA SUMMARY

City Hanford

County Kings State California (N) (04) Witnessed by: Insurance Services Office Date: Apr 20, 2016

TEST NO.	TYPE DIST.*	TEST LOCATION	SERVICE	FLOW - GPM $Q=(29.83(C(d^2)p^{0.5}))$ INDIVIDUAL HYDRANTS			TOTAL	PRESSURE PSI STATIC	RESID.	FLOW -AT 20 PSI NEEDED **	AVAIL.	REMARKS***	MODEL TYPE
1		Crown & Industry	Hanford City, Main	0	0	0	0	100	56	750	5000		
10		W. Lacey (1500 blk)	Hanford City, Main	0	0	0	0	60	34	2500	3800		
10.1		W. Lacey (1500 blk)	Hanford City, Main	0	0	0	0	60	34	4000	3800		
11		N. 11th (1716)	Hanford City, Main	0	0	0	0	57	39	3500	4500		
12		Douty & Grangevile	Hanford City, Main	0	0	0	0	62	37	2500	3000		
13		Lemonswood & Greenwood	Hanford City, Main	0	0	0	0	57	34	1500	3200		
14		N. 11th & Fargo	Hanford City, Main	0	0	0	0	51	38	3000	3200		
15		102 S 11th	Hanford City, Main	0	0	0	0	0	0	7500	3174		
16		112 E 7th	Hanford City, Main	0	0	0	0	0	0	5500	1612		
17		103 S Williams	Hanford City, Main	0	0	0	0	0	0	5000	1979		
18		101 S 11th	Hanford City, Main	0	0	0	0	0	0	4500	3114		
19		113 S Douty	Hanford City, Main	0	0	0	0	0	0	4500	5123		
2		Woodland & Hanford-Armona	Hanford City, Main	0	0	0	0	52	26	1000	3100		
20		602 E 6th	Hanford City, Main	0	0	0	0	0	0	4000	2716		
21		112 E 7th	Hanford City, Main	0	0	0	0	0	0	4000	4271		
22		140 N 12th	Hanford City, Main	0	0	0	0	0	0	4000	1767		

THE ABOVE LISTED NEEDED FIRE FLOWS ARE FOR PROPERTY INSURANCE PREMIUM CALCULATIONS ONLY AND ARE *NOT* INTENDED TO PREDICT THE MAXIMUM AMOUNT OF WATER REQUIRED FOR A LARGE SCALE FIRE CONDITION.

THE AVAILABLE FLOWS ONLY INDICATE THE CONDITIONS THAT EXISTED AT THE TIME AND AT THE LOCATION WHERE TESTS WERE WITNESSED.

*Comm = Commercial; Res = Residential.

**Needed is the rate of flow for a specific duration for a full credit condition. Needed Fire Flows greater than 3,500 gpm are not considered in determining the classification of the city when using the Fire Suppression Rating Schedule.

*** (A)-Limited by available hydrants to gpm shown. Available facilities limit flow to gpm shown plus consumption for the needed duration of (B)-2 hours, (C)-3 hours or (D)-4 hours.

INSURANCE SERVICES OFFICE, INC.

HYDRANT FLOW DATA SUMMARY

City Hanford

County Kings State California (N) (04) Witnessed by: Insurance Services Office Date: Apr 20, 2016

TEST NO.	TYPE DIST.*	TEST LOCATION	SERVICE	FLOW - GPM INDIVIDUAL HYDRANTS			FLOW - GPM TOTAL	PRESSURE PSI STATIC	PRESSURE PSI RESID.	FLOW -AT 20 PSI NEEDED **	FLOW -AT 20 PSI AVAIL.	REMARKS***	MODEL TYPE
23		501 N 12th	Hanford City, Main	0	0	0	0	0	0	4000	6171		
24		1679 W Lacey	Hanford City, Main	0	0	0	0	0	0	4000	2880		
3		Bonney View LN (11162)	Hanford City, Main	0	0	0	0	60	25	1500	2200		
4		Hanford-Armona & At Fairground	Hanford City, Main	0	0	0	0	63	32	2250	3400		
5		9 1/4 Ave. & Myrtle	Hanford City, Main	0	0	0	0	58	20	1750	2100		
6		Miller & Lacey	Hanford City, Main	0	0	0	0	58	36	1250	3800		
7		Douty & 5th	Hanford City, Main	0	0	0	0	56	46	3500	5100		
8		Douty & Fuller Wy	Hanford City, Main	0	0	0	0	56	40	2250	4700		
9		11th & Lacey	Hanford City, Main	0	0	0	0	62	48	3500	7100		
9.1		11th & Lacey	Hanford City, Main	0	0	0	0	62	48	6000	7100		

THE ABOVE LISTED NEEDED FIRE FLOWS ARE FOR PROPERTY INSURANCE PREMIUM CALCULATIONS ONLY AND ARE *NOT* INTENDED TO PREDICT THE MAXIMUM AMOUNT OF WATER REQUIRED FOR A LARGE SCALE FIRE CONDITION.

THE AVAILABLE FLOWS ONLY INDICATE THE CONDITIONS THAT EXISTED AT THE TIME AND AT THE LOCATION WHERE TESTS WERE WITNESSED.

*Comm = Commercial; Res = Residential.

**Needed is the rate of flow for a specific duration for a full credit condition. Needed Fire Flows greater than 3,500 gpm are not considered in determining the classification of the city when using the Fire Suppression Rating Schedule.

*** (A)-Limited by available hydrants to gpm shown. Available facilities limit flow to gpm shown plus consumption for the needed duration of (B)-2 hours, (C)-3 hours or (D)-4 hours.