

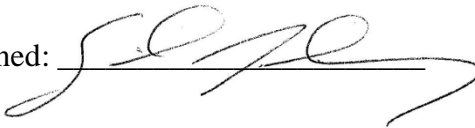
Identifying Critical Infrastructure and Key Resource sites for Novato, California

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CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed: 

### Abstract

The problem addressed by this research was that first responders to a major disaster within the community of Novato, California, did not have a shared, predetermined list of Critical Infrastructure and Key Resource (CIKR) sites that could be used to initiate damage assessments. The purpose of this research was to create a list of CIKR sites for Novato by collaborating input from many different public and private stakeholders. Using the descriptive research method, this paper asked what criteria should be used to identify sites as CIKR for Novato. The study sought out who the local, state, and federal government stakeholders were in Novato and asked them what sites they identify as CIKR in the community. The study also found the private industry stakeholders in the community of Novato and asked them what sites they identify as CIKR, as well. At the core of the research were personal communications with the Novato Emergency Manager, Dave Jeffries, assisted by an interview with Novato Fire Marshal Bill Tyler, a questionnaire obtained from a member of the Northern California Regional Intelligence Center, a survey sent to all of the members of the California Emergency Services Association, and questionnaires gathered from over 30 key stakeholders of the both the public and private sector within the community of Novato. The resulting data was combined to create a comprehensive list of CIKR sites for Novato and the recommendation was made to present the data to Jeffries. The research should be able to help Jeffries improve the damage assessment process for the community of Novato first responders when protecting the local population after a major disaster.

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### Identifying Critical Infrastructure and Key Resource sites for Novato, California

On August 24<sup>th</sup>, 2014, the City of Napa, heart of the famous Northern California wine country, was hit with a magnitude 6.0 earthquake along the West Napa fault (Pressfield & Garcia, 2014). The South Napa earthquake, as it was called, was the largest quake to hit the Bay Area since the 1989 magnitude 6.8 Loma Prieta earthquake (Pressfield & Garcia, 2014) killed 63 people, damaged the San Francisco/Oakland Bay Bridge, and caused an estimated \$6 billion in damage. (Stover & Coffman, 1993).

Sitting just 25 miles southwest of the City of Napa is the community of Novato which sits on the southwestern edge of the Rodgers Creek Fault and about eight miles west of the Hayward Fault (City, 2007). Lienkaemper et al. (2014) suggested in the *Bulletin of the Seismological Society of America* that both the Rodgers Creek and Hayward faults are due to release a magnitude 6.8 to 7.1 earthquake at any moment.

The South Napa earthquake was close enough to the Novato Fire Protection District to shake firefighters from their bunks who then initiated earthquake protocols through the dispatch center. Windshield surveys were performed by Novato Fire companies and results were communicated to the dispatch center but limited information was shared between the NFPD, the local police, highway patrol units, and various other local first responders who were individually assessing damage in their own response areas.

The problem addressed by this research is that first responders to a major disaster within the community of Novato, California, do not have a shared, predetermined list of Critical Infrastructure and Key Resources (CIKR) that can be used to initiate damage assessments in a focused, coordinated manner. The purpose of this research is to create a CIKR site list for



Novato by collaborating input from many different public and private stakeholders in the community. Once established, this Novato CIKR list could be used as a launch pad for a more coordinated effort in local disaster preparedness and response and may help foster greater cooperation among the community stakeholder groups.

The research questions posed in this paper are:

1. What criteria should be used to identify sites as CIKR within the community of Novato, California?
2. Who are the local, state, and federal government stakeholders in the community of Novato, California?
3. What sites do the local, state, and federal government stakeholders identify as CIKR within the community of Novato, California?
4. Who are the private industry stakeholders in the community of Novato, California?
5. What sites do the private industry stakeholders identify as CIKR within the community of Novato, California?

The descriptive research method is used throughout this study and the data is collected from stakeholders using interviews, personal communications, questionnaires, and a survey. At the core of this research are the personal communications with Dave Jeffries, who works closely with both the Novato Fire District and the City of Novato in his role as the Novato Emergency Services Manager.

### Background & Significance

The City of Novato lies north of San Francisco about 29 miles beyond the Golden Gate Bridge and is the northern most city in the County of Marin (Novato Fire, 2009a). Home to around 53,000 citizens living within 28 square miles, Novato boasts relatively low population density levels complimented by 3,600 acres of open space (City, 2014b). Novato has 27 city parks and there are about 8,000 school age children (Novato Fire, 2009a). The average temperature is 67 degrees Fahrenheit and rainfall averages 27.5 inches per year in Novato (Novato Fire, 2009a).

Elevation in Novato ranges from 1,887 feet on Big Rock Ridge down to sea level with access to the San Pablo Bay which runs into the northern extension of the San Francisco Bay. Winds are predominantly southwesterly with the exception of late summer when hot and dry off-shore northeast winds often penetrate the area and contribute to significant wildland urban interface fire danger (Novato Fire, 2009a).

In 1926, the Marin County Board of Supervisors formed the Novato Fire Protection District (NFD) as an independent special fire district to protect a 71 square mile area that includes the City of Novato. The NFD serves homes, businesses, and light industrial in its service area, as well as a long stretch of California highway 101. There are approximately 65,000 residents within the incorporated and unincorporated boundaries of the district, and another 25,000 workers within the district, which comprises the service population (Novato Fire, 2009a).

NFD provides emergency services from five stations and an administrative building that accommodate 79 total personnel (57 firefighters, 9 command staff, and 13 administrative staff). The district maintains an inventory of equipment that includes 40 responding units and has an annual operating budget of approximately 26 million dollars (Novato Fire, 2014a).

The City of Novato was incorporated in 1960, has around 194 full-time employees, and delivers city services through six departments: (a) central administration which includes a five member city council and a city manager, (b) administrative services, (c) community development, (d) parks, recreation and community services, (e) police department, and (f) public works (City, 2014b).

All of the local and regional public entities within Marin County are members of a Joint Powers Authority emergency radio system called the Marin Emergency Radio Authority, or MERA (MERA, 2015). The MERA system consists of 17 base station radio and receiver sites throughout the county which connect the various dispatch centers and mobile units (MERA, 2015).

While MERA has helped increase efficiency and interoperability among Marin County's public agencies, there still exist roadblocks which slow down communication between the various agencies charged with protecting the community of Novato, especially during a time of disaster. The NFD contracts dispatching services with the Marin County Public Safety Communications Center which is operated by the Marin County Sheriff's Office, but both the Novato Police Department and the California Highway Patrol (CHP) operate their own dispatching centers. Since the NFD and the Novato Police Department both use the MERA system, their information can be shared fairly easily, but communication with the CHP dispatch center is more difficult because CHP and the Marin County Public Safety Communications Center actually have to call each other on the telephone.

In 2006, partially to help overcome some of those communication barriers during a major disaster, the NFD entered into a Memorandum of Understanding with the City of Novato to establish a jointly operated Emergency Operations Center (EOC) at the NFD administrative

building (Berg, 2014). At the time the Memorandum of Understanding was signed, the City of Novato employed a full-time Emergency Services Manager who was responsible for developing and implementing goals, policies, and priorities for the City of Novato's emergency management program (Berg, 2014).

The emergency services manager position was eliminated in 2009 due to budget cuts and the responsibilities of that post were assigned to Novato Police Captain Dave Jeffries (Berg, 2014). Jeffries retired in late 2013 from the police force, but the NFD and the City of Novato were able to enter into a Memorandum of Understanding which agreed to equally share the financial cost of hiring Jeffries back as a private contract Novato Emergency Services Manager to assist with disaster preparedness and response coordination for both agencies (Berg, 2014).

On June 17, 2014, just two months prior to the South Napa earthquake, Jeffries held a four hour tabletop exercise entitled Quake Reaction 2014 to examine Novato's initial reaction and response to a significant earthquake (Novato Emergency, 2014). Participating organizations in the exercise included the City of Novato, NFPD, North Marin Water District, Novato Community Hospital, and the Marin County Office of Emergency Services (Novato Emergency, 2014).

In the After Action Report of Quake Reaction 2014, Jeffries posed many important questions for the leadership of the participating agencies to ponder and address, including the following three questions which helped to serve as the impetus for this research:

1. Which of our facilities are critical and need immediate inspection? By who?
2. What other local agencies do we need to coordinate with? How?

3. For supervisors, how and how quickly can you develop a unified command approach within the community and with all of our partner agencies until the EOC can be staffed and activated? (Jeffries, 2014)

Serving as the Novato OES, the City of Novato is ultimately responsible during times of disaster for organizing and operating the joint EOC, communicating with the public and with elected officials, directing overall operations, and collecting and evaluating damage assessment reports per their City of Novato Emergency Operations Plan (2009). In relation to this research, the City of Novato Emergency Operations Plan summarizes which vital public services, systems, and facilities are expected to be impacted by a variety of natural, technological, or manmade disasters, but falls short of identifying any type of comprehensive CIKR list.

The Novato Fire Protection District Disaster Response Plan (2005) outlines how the NFD works closely with the City of Novato Director of Emergency Services during a disaster to coordinate the commitment of resources, procurement and allocation of critical public and private medical assets, the activation of Casualty Collection Points, the relocation of patients away from damaged health care facilities, and, of course, its many roles in normal day-to-day emergency operations. In the reconnaissance section of the NFD Disaster Response Plan (2005), windshield survey's of critical target facilities are discussed and a short list of specific sites is identified and divided amongst the five fire stations based on their first due response areas. This short list of sites requiring inspection by NFD units after a disaster is the seed that this research intends to grow into a comprehensive CIKR list which can be collaboratively managed by all of the community stakeholders in the event of a disaster affecting Novato.

The problem addressed by this research regarding first responders to disasters in Novato needing a shared, pre-determined list of CIKR sites to be used for damage assessments is not

only in direct alignment with the need identified by the Novato Emergency Manager, but also with the CIKR damage assessment component of the Executive Analysis of Fire Service Operations in Emergency Management course offered in the Executive Fire Officer program (United States, 2010b). Additionally, this research links directly back to the United States Fire Administration's second goal which is to "improve local planning and preparedness" (United States, 2010a).

### Literature Review

The first research question posed in this study asks what criteria should be used to identify sites as Critical Infrastructure and Key Resources within the community of Novato. Protecting our nation's infrastructure and resources is not a new concept, but the definitions and criteria have changed over the years, especially since the September 11, 2001, attacks on the United States.

Prior to September 11, 2001, President Clinton decreed in his Presidential Decision Directive Number 63 (PDD-63) that the United States would swiftly eliminate significant vulnerability to both physical and cyber attacks on our critical infrastructures (White House, 1998). Moteff (2001) summarized that PDD-63 identified the following 12 criteria as the critical infrastructure of our country:

- Information and communications
- Banking and finance
- Water supply
- Transportation
- Emergency law enforcement
- Emergency fire service

- Emergency medicine
- Electric power, oil, and gas supply and distribution
- Law enforcement and internal security
- Intelligence
- Foreign affairs
- National Defense

The acronym CIKR began being widely used in 2003 when the White House established Homeland Security Presidential Directive (HSPD) 7: Critical Infrastructure Identification, Prioritization, and Protection (White House, 2003), which was intended to supersede PDD-63 (Bolten, 2004). HSPD-7 directed the recently appointed Secretary of Homeland Security to establish a national plan, working closely with other federal departments and agencies, state, local, tribal, and territorial governments, and the private sector, to unify national efforts to protect CIKR (White House, 2003).

HSPD-7 made use of the term “critical infrastructure” in CIKR (White House, 2003) as defined in section 1016(e) of the USA Patriot Act of 2001 which stated:

The term “critical infrastructure” means systems and assets, whether physical or virtual, so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters. (p. 130)

HSPD-7 derived the term “key resources” in CIKR (White House, 2003) as defined in section 2(9) of the Homeland Security Act of 2002 which stated the term “key resources” means “publicly or privately controlled resources essential to the minimal operations of the economy and government” (p. 7).

In relation to the first research question in this study, additional clarity in the criteria used to identify CIKR was created by the Department of Homeland Security (DHS) in 2006 with the first version of the National Infrastructure Protection Plan (NIPP) (DHS, 2006). This first NIPP established a partnership structure for 18 identified CIKR sectors and listed minimum requirements for conducting risk analysis (DHS, 2006). Providing a coordinated approach to CIKR protection roles and responsibilities, the NIPP partners federal, state, local, tribal, and private sector stakeholders together (DHS, 2013). The 2009 NIPP update put greater emphasis on regional CIKR protection and provided a common risk assessment approach along with the core criteria used to allow comparison of risk across the sectors (DHS, 2009).

In February 2013, the Obama administration issued Presidential Policy Directive 21 (PPD-21) entitled, “Critical Infrastructure Security and Resilience” (White House, 2013). PPD-21 revoked HSPD-7 and, while PPD-21 did not make any major changes in policy, roles and responsibilities, or programs, it did order a restructuring of the CIKR sectors and called for the NIPP to be updated (Moteff, 2014). Table 1 will show, in alphabetical order, the 16 current CIKR sectors and the Federal Sector-Specific Agency (SSA) responsible for each sector as of March 2015 pursuant to PPD-21 (White House, 2013).

Table 1	
CIKR sectors in the US	
Sector	Sector-Specific Agency
Chemical	DHS
Commercial Facilities	DHS
Communications	DHS
Critical Manufacturing	DHS



Dams	DHS
Defense Industrial Base	Department of Defense
Emergency Services	DHS
Energy	Department of Energy
Financial Services	Department of the Treasury
Food and Agriculture	Department of Agriculture Department of Health and Human Services
Government Facilities	DHS General Services Administration
Healthcare and Public Health	Department of Health and Human Services
Information Technology	DHS
Nuclear Reactors, Materials, Waste	DHS
Transportation Systems	DHS Department of Transportation
Water and Wastewater Systems	Environmental Protection Agency

Another significant aspect of PPD-21 that relates to this research is that it directed the Secretary of Homeland Security to update the NIPP using the new sectors listed in Table 1 (White House, 2013). DHS promptly updated the NIPP in 2013 using the new sectors in Table 1 and emphasized the same criteria to define CIKR as mentioned previously (DHS, 2013).

In relation to CIKR, the second research question asked who the local, state, and federal government stakeholders are in the community of Novato, California, and the fourth research question inquired who the private stakeholders are in that community. The NIPP highlights throughout the plan that the national effort to protect CIKR depends on a wide-ranging

community of stakeholders “composed of partnerships among owners and operators; Federal, State, local, tribal, and territorial governments; regional entities; non-profit organizations; and academia” (DHS, 2013, p. 1).

While the NIPP sets broad national goals for the security and resilience of our CIKR, it is the SSA's in Table 1 who are the primary federal CIKR stakeholders as they are the ones developing objectives and priorities at their sector levels (DHS, 2013). Each SSA maintains a Sector-Specific Plan (SSP) to help guide the collaborative planning among the different SSA's and their private and public sector partners (DHS, 2013). To answer the second and fourth research questions, the private and public partners found in the literature are categorized below by sector.

Chemical Sector: Based on the end product produced, the Chemical Sector can be divided into five main segments: (a) basic chemicals, (b) specialty chemicals, (c) agricultural chemicals, (d) pharmaceuticals, and (e) consumer products (DHS, 2013). The vast majority of the chemical sector is privately owned, but some federal partners include the U.S. Environmental Protection Agency (EPA), the Federal Bureau of Investigation (FBI), the U.S. Department of Transportation (DOT), the Transportation Security Administration (TSA), and the United States Coast Guard (USCG) (DHS, 2010a).

One nationally significant public Chemical Sector stakeholder found in the literature research was the USCG Pacific Strike Team located in Novato on the western bank of the San Pablo Bay. The USCG Pacific Strike Team is a highly specialized national asset focused on response to oil discharges, hazardous substance release, and weapons of mass destruction events (USCG, 2011). There are only three teams in the US with the capabilities of the Pacific Strike

Team (USCG, 2011) and their equipment is all housed in a large hanger in Novato on property that was once part of the Hamilton Air Force Base.

As mentioned previously, the majority of the Chemical Sector is privately owned and operated and one major stakeholder located in Novato and found in the literature was BioMarin Pharmaceutical Inc. (BioMarin, 2015). BioMarin was found to develop and commercialize biopharmaceuticals for serious diseases and medical conditions and they earned nearly \$550 Million in 2013 (BioMarin, 2015). CEO Jean-Jacques Bienaime said in 2013 that between the research labs, manufacturing operations, and warehouses, BioMarin has about 500 people working in Novato (Durrance). With an ever growing and very successful product portfolio, BioMarin was up to 1052 employees in 2014, making them the second largest employer in Novato (City, 2014a).

Commercial Facilities Sector: This sector consists of eight subsectors: (a) public assembly (e.g., arenas, stadiums, aquariums, zoos, museums, convention centers), (b) sports leagues (e.g., professional sports leagues and federations), (c) gaming (e.g., casinos), (d) lodging (e.g., hotels, motels, conference centers), (e) outdoor events (e.g., theme and amusement parks, fairs, campgrounds, parades), (f) entertainment and media (e.g., motion picture studios, broadcast media), (g) real estate (e.g., office and apartment buildings, condominiums, mixed use facilities, self-storage), and (h) retail (e.g., retail centers and districts, shopping malls) (DHS, 2010b).

Federal government stakeholders in the commercial facilities sector include the Federal Emergency Management Agency (FEMA), U.S. Immigration and Customs Enforcement (ICE), Federal Protective Service (FPS), TSA, Office of Infrastructure Protection, Office of Policy, Homeland Infrastructure Threat and Risk Analysis Center (HITRAC), Private Sector Office (PSO), and the Science and Technology (S&T) Directorate (DHS, 2010b).

A local government stakeholder in this sector identified in the literature is the County of Marin Parks and Open Space Department because it maintains and protects Stafford Lake Park (Marin County Parks, 2010a) which belongs in the Outdoor Events Subsector for its size and utilization throughout the year (DHS, 2010b).

The lodging subsector of commercial facilities has six local private industry stakeholders in Novato as the Novato Chamber of Commerce identifies as America's Best Value Inn, Best Western Plus Novato Oaks Inn, Courtyard by Marriott, Days Inn Novato, Inn Marin, and Marinwood Inn and Suites (Novato Chamber, 2015b).

Commercial office buildings, large residential buildings, multi-family dwellings, and self-storage facilities make up the Real Estate Subsector (DHS, 2010b). In a city of 60,000 people, this stakeholder group was found to be large, for instance, the US 2007 Economic Census stated that Novato had 1,691 firms with paid employees (U.S. Department of Commerce, 2007) and 2,271 residential units found in structures which had 10 or more units within (U.S. Department of Commerce, 2011). A query into the Master Housing List of Multiple Family Occupancies in the City of Novato found 10 apartment complexes with 90 or more occupants (Appendix A).

Taxes collected by the City of Novato were found to be by far the largest source of revenue for the city comprising of 76% of the general fund revenue in the 2013/2014 budget (City, 2013b). Of the taxes collected, 84% were sales and property taxes which relate well to subsectors of the Commercial Facilities Sector (City, 2013b). Novato Fire District likewise depends on property tax revenue as it equates to roughly 87% of their annual revenue (Novato Fire, 2014b). Another major stakeholder found in the Commercial Facilities Sector was the

Novato Unified School District which receives 30% of the taxes in Novato per the Marin County Department of Finance (2015).

One Commercial Facilities Sector private industry stakeholder of particular interest in Novato is the Buck Institute for Research on Aging which is a towering three building research facility perched upon 488 acres of Mount Burdell (Buck, 2013). The Buck Institute employees over 250 scientists and recently opened a new \$36.5 million research building (Halstead, 2012b). Some other important private industry stakeholders in the community include 2K/Visual Concepts with 436 employees, Cagwin & Dorward with 410 employees, Costco Wholesale with 297 employees, and Safeway Stores with 242 employees (City, 2014a).

In regards to the Retail Subsector of the Commercial Facilities Sector, Novato was found to have one large regional shopping center called Vintage Oaks at Novato with 620,379 square feet of retail space and 14 smaller local shopping centers ranging from 133,862 square feet down to 20,043 square feet (City, 2013a). A list of the Retail Subsector shopping center stakeholders can be found in Appendix B.

Communications Sector: Most of the communications infrastructure is owned and operated by the private sector, but many other federal sectors are closely linked to provide this critical component of the U.S. economy (DHS, 2010c). For example, the Energy Sector provides power to run cellular towers, the Information Technology Sector provides internet infrastructure, the Financial Services Sector depends on communications for the transmission of transactions, and, of course, the Emergency Services Sector needs communications for directing resources, coordinating response, and receiving emergency calls from the public (DHS, 2010c).

The DHS alert and warning system is administered by FEMA in partnership with many other federal stakeholders including the DHS Science and Technology Directorate, the Federal

Communications Commission (FCC), the National Oceanic and Atmospheric Administration, the U.S. Department of Justice, Office of Justice Programs for AMBER Alerts, and others (DHS, 2010c). The FEMA regions work closely with the Integrated Public Alert and Warning System (IPAWS) Program Management Office (DHS, 2010c).

Locally and around the State, the Communications Sector focuses on regulatory issues with public utility commissions, EOC's, and 911 emergency services centers (DHS, 2010c, p15). Novato's hard wired domestic communications network depends on key telephone systems, Private Branch Exchange (PBX) trunks, and data arrangements (DHS, 2010c) which are provided mainly by two private industry stakeholders, Verizon and AT&T (City, 2014b). The wireless communications system includes cellular phone, paging, high-frequency radio, unlicensed wireless, and various radio services (DHS, 2010c). The networks used to provide wireless communication include cell sites, mobile switching centers, and base switching controllers (DHS, 2010c).

The key local government stakeholder in the Communications Sector is the Marin Emergency Radio Authority (MERA) which provides 480 MHz UHF-T band radio service and support to all of the public safety and public service organizations in the county of Marin (MERA, 2015). Positioned high atop Big Rock Mountain near Novato is one of the vital base station radio and receiver sites critical to the interoperability of the MERA system (MERA, 2015).

Critical Manufacturing Sector: The following industries constitute the core of the Critical Manufacturing Sector: (a) primary metal manufacturing as in iron and steel mills, ferro alloy manufacturing, alumina and aluminum production and processing, and nonferrous metal production and processing, (b) machinery manufacturing as in engine, turbine, and power

transmission equipment manufacturing, (c) electrical equipment, appliance, and component manufacturing, and (d) transportation equipment manufacturing as in vehicle manufacturing, aviation and aerospace product and parts manufacturing, and railroad rolling stock manufacturing (DHS, 2010d)

The DHS is responsible for enhancing CIKR protection and resilience for the Critical Manufacturing Sector while the infrastructure owners and operators serve as an integral central partner in the effort (DHS, 2010d). The literature did not discover significant stakeholders in Novato for this sector.

Dams Sector: Dam projects, hydropower generation facilities, navigation locks, levees, dikes, hurricane barriers, mine tailings, industrial waste impoundments, and other similar water retention and control facilities are assets belonging to the Dams Sector (DHS, 2010e). While DHS leads the overall national effort to enhance CIKR protection in this sector, it is FEMA who leads the National Dam Safety Program and conducts flood mapping for every risk zone in the nation (DHS, 2010e). Navigation aspects of the Dams Sector are USCG responsibility (DHS, 2010e).

A major planner, designer, financier, constructor, owner, and/or regulator of more than one-third of the dams in the U.S. is the U.S. Department of Agriculture (USDA) (DHS, 2010e). Another significant federal stakeholder in the Dams Sector is the EPA who is responsible for protecting the water stored by dams or conveyed by canals (DHS, 2010e). Protection of the local population from dam failure is the responsibility of each state (DHS, 2010e).

In the U.S., 65 percent of dams are privately owned and operated, mostly for recreational purposes (DHS, 2010e). To meet the increasing demands of an ever growing community, Novato's water supplier, the North Marin Water District (NMWD), built the Stafford Dam in

Novato in 1951 (NMWD, 2014). The Stafford Dam holds 4,450 acre-feet of water and provides approximately 20 percent of Novato's water needs (NMWD, 2014).

Defense Industrial Base Sector: The worldwide industrial complex consisting of more than 100,000 companies and their subcontractors who perform under contract for the Department of Defense (DoD), companies that provide materials and services for the DoD, and government-owned/contractor operated and government owned/government operated facilities makes up the Defense Industrial Base Sector (DHS, 2010f).

World War II spawned a thriving military community in Novato at the Hamilton Air Force Base and its 554 acre DoD housing facility which has since changed hands multiple times from Air Force to Army then Navy and finally USCG (NAVFAC, 2011). The airfield was purposely flooded to provide 2500 acres of restored wetlands leading to the San Francisco Bay (City, 2015d). Most of the base and its housing has either been reused, repurposed, sold, or demolished, but there still exists 250 USCG owned and operated residential buildings at Hamilton Field (Rogers, 2006).

Emergency Services Sector: As the primary protector for all of the CIKR sectors, the Emergency Services Sector's mission is to save lives, protect property and the environment, assist communities impacted by disasters, and aid in recovery from emergencies (DHS, 2010g). The five disciplines of this sector are law enforcement, fire and emergency services, emergency management, emergency medical services, and public works, in addition to many specialties within the disciplines such as hazardous materials, search and rescue, bomb squads, SWAT, police and medevac helicopters, and 9-1-1 call centers (DHS, 2010g).

The primary federal stakeholder in the Emergency Services Sector is the DHS, but it is also aided by the U.S. Department of Health and Human Services, DOT, EPA, DOJ, DoD, U.S.



Department of Agriculture, and the American Red Cross (DHS, 2010g). Novato's access to the San Pablo Bay via the Petaluma River is protected by federal government stakeholder USCG Station Vallejo (USCG, 2015).

In California, the state leader in emergency management planning, homeland security, and response and recovery, is the California Governor's Office of Emergency Services known as "Cal OES" (Cal OES, 2015). For all of the jurisdictions in Marin County, the local Office of Emergency Services (OES) operational area is managed by the Marin County Sheriff's Office (MCSO, 2007). The eleven cities/towns and over 300 special districts in Marin County are provided emergency management services by the Sheriff's OES when needed. The Sheriff's OES has the ability to open the Marin County Operational Area Emergency Operations Center (EOC) during a major emergency or countywide disaster (MCSO, 2007).

The state level department tasked with fire protection of over 31 million acres of State Responsibility Area (SRA) is the California Department of Forestry & Fire Protection, also known as CAL FIRE (CAL FIRE, 2012). Marin County is one of only six counties in California that protects its SRA with its own fire department, the Marin County Fire Department, under a contract agreement with CAL FIRE (MCFD, 2014).

The Local Responsibility Area (LRA) of fire protection in Novato is handled by the Novato Fire Protection District (NFD) (Novato Fire, 2009a). 43 of the 71 square miles that make up Novato's fire district response area are unincorporated Marin County SRA lands to which NFD provides initial attack (Novato Fire, 2009a). The NFD provides all risk fire suppression and emergency management, basic and advanced rescue, emergency medical service including paramedic ambulance transportation, hazardous materials response, risk reduction, fire inspection, public education, plans review, and fire investigation response services (Novato Fire,

2009b). Located at the NFD administration building is the joint NFD/City of Novato as-needed EOC to serve the citizens of Novato during a major emergency (Novato Fire, 2015).

The California Highway Patrol (CHP) is the statewide law enforcement agency having responsibility for protecting state property, state employees, the entirety of the California highway transportation system, and for assisting in emergencies exceeding local capabilities (CHP, 2015). Another statewide law enforcement entity having jurisdiction in Novato is the California Department of Fish and Wildlife (CDFW) and their Wildlife Officer's or Wardens (CDFW, 2015).

Locally, the Novato stakeholders most intimately involved in law enforcement are the Novato Police Department (NPD) and the Marin County Sheriff's Office (City, 2015b; MCSO, 2007). The NPD is a department of around 80 members which serves the approximately 53,000 citizens of Novato with street patrol, investigations, traffic enforcement, narcotics enforcement, emergency services and preparedness, and a 911 dispatch center (City, 2015b)

Serving under California's Health and Human Services Agency, the California Emergency Medical Services Authority (EMSA) aims to ensure quality statewide EMS care, injury prevention, and disaster medical response (EMSA, 2015). The local arm of the EMSA is the Marin County EMS Agency which oversees the prehospital services rendered by six fire service based providers and five privately owned transporting companies (Marin County EMS, 2015). The primary local government stakeholder to the EMS component of the Emergency Services Sector in Novato is the NFD (Novato Fire, 2009b).

Two local government stakeholders in the public works discipline of the Emergency Services Sector are the Marin County Department of Public Works (MCPW) and the Novato Department of Public Works (NPW). Sharing similar missions of maintaining and improving the

public infrastructure and supporting a variety of other departments, both the NPW and MCPW help serve areas in and around Novato (MCPW, 2014; NPW, 2015c). An added way the MCPW contributes to this sector is with its participation and commitment to the Marin County Urban Search and Rescue Team (USAR) which responds to all forms of local disasters (MCPW, 2014).

The Marin County EMSA authorizes five privately owned companies to operate in the Emergency Services Sector of Novato and those are Falck/Verihealth, Falcon Ambulance, St. Joseph Ambulance Service, NorCal Ambulance, and ProTransport-1 (Marin County EMS, 2015).

Energy Sector: Electricity, petroleum, and natural gas are the three interrelated segments of the energy infrastructure of the United States (DHS, 2010h). The electricity component of the Energy Sector includes generation, transmission, and distribution of electricity (DHS, 2010h). Production, transportation, and storage of crude oil and various petroleum products make up the petroleum portion of the Energy Sector (DHS, 2010h). The portion of the Energy Sector devoted to natural gas includes the production, processing, transportation, distribution, and storage of natural gas, as well as, liquefied natural gas facilities and gas control systems (DHS, 2010h).

The main federal stakeholders in the Energy Sector are the Department of Energy in concert with the DHS and assisted by the USDA, DoD, Department of the Interior (DOI), Department of State (DOS), DOT, EPA, Federal Energy Regulatory Commission, and Nuclear Regulatory Commission (DHS, 2010h). State and local governments assist the Energy Sector by facilitating protection activities including emergency planning and response and developing energy security and reliability policies and practices (DHS, 2010h). Citizens count on the state and local governments in times of energy supply crises and depend on them to mitigate the impacts of emergencies when they do arise (DHS, 2010h).

The California Energy Commission is the state level government stakeholder who establishes energy policy and planning in addition to directing the state response to energy emergencies (California, 2015a).

A unique local government stakeholder in the Energy Sector is Marin Clean Energy (MCE). MCE is a public, not-for-profit electricity provider which offers power supplied from renewable sources such as solar, wind, bioenergy, geothermal, and hydroelectric (MCE, 2014). Although MCE is a public organization that acquires the energy, MCE still depends on the private industry infrastructure of Pacific Gas & Electric (PG&E) to deliver the product (MCE, 2014).

By far the largest private industry stakeholder in the Energy Sector of Novato is PG&E. PG&E is one of the largest natural gas and electric utilities in the US with over 20,000 employees serving more than 15 million people in California (PG&E, 2015).

Financial Services Sector: There are more than 18,800 federally insured depository institutions within the Financial Services Sector composed of broker-dealers, investment advisers, and investment company complexes ranging from corporations with greater than one trillion dollars in assets to the smallest community banks and credit unions (DHS, 2010i).

The primary federal stakeholder in the Financial Services Sector is the Treasury Department who then works hand in hand with financial regulators and the private sector (DHS, 2010i). The main state level government stakeholder in the Financial Services Sector is the Division of Financial Institutions (DFI) which is a part of the California Department of Business Oversight (DFI, 2014).

Most local stakeholders in the Financial Services Sector in Novato are from the private industry include the following banks, credit unions, and savings and loan associations as listed

by the Novato Chamber of Commerce: Umpqua Bank, Bank of Marin, Redwood Credit Union, Wells Fargo Bank, Marin County Federal Credit Union, WestAmerica Bank, Patelco Credit Union, Presidio Bank, and Bank of the West (Novato Chamber, 2015a).

Food and Agriculture Sector: Accounting for roughly one-fifth of the nation's economic activity, the Food and Agriculture Sector is composed of around 2.2 million farms, 900,000 restaurants, and over 400,000 registered food manufacturing, processing, and storage facilities (DHS, 2010j). The Food and Agriculture Sector is the responsibility of the USDA and the Department of Health and Human Services, but they also work closely with other federal stakeholders such as EPA, DOT, and the DOJ (DHS, 2010j). This sector is almost completely under private ownership (DHS, 2010j).

The California Department of Food and Agriculture (CDFA) protects and promotes the state's \$46.4 billion dollar agriculture industry as the main governmental stakeholder for the Golden State (CDFA, 2015). Locally, the Marin County Department of Agriculture supports the CDFA and the California Department of Pesticide Regulation by handling pest prevention, pesticide enforcement, integrated pest management, product quality, Marin organic certified agriculture, biological control, livestock protection, Marin/Sonoma weed management, farmers' markets of Marin County, annual crop report, and weights and measures programs (Marin County, 2014).

Some important local farming stakeholders include the 746 acre Barboni Home Ranch (beef and sheep), 448 acre Bassi Ranch (beef and sheep), 1,214 acre Fred Corda Ranch (beef and dairy heifers), 772 acre Cypress Lane Dairy (dairy ranch), 870 acre Grossi Ranch (beef and dairy heifers), and the 856 acre Ryan Tocalino Ranch (MALT, 2013).

Although restaurants are an important private industry stakeholder group as part of the Food and Agriculture Sector, individually there are at least 120 in Novato, which would be too many to list here (TripAdvisor, 2015).

Government Facilities Sector: One of the more complex sectors in the NIPP, the Government Facilities Sector includes a variety of buildings owned or leased by federal, state, local, and tribal governments (DHS, 2010k). The government facilities refer to structures that may have critical equipment, systems, networks, and functions within, as well as, cyber structures that protect the physical assets and individuals who perform essential functions (DHS, 2010k). Some examples of government facilities include military installations, embassies, courthouses, national laboratories, and general-use government office buildings (DHS, 2010k). This portion of the research is focused on government buildings not covered by other sectors.

The Government Facilities Sector has two subsectors; the Education Facilities Subsector and the National Monuments and Icons Subsector (DHS, 2010k). Education facilities refer to all primary, secondary, business, and trade schools both government and private owned (DHS, 2010k). The National Monuments and Icons Subsector has a variety of assets, many of which are categorized in the National Register of Historic Places or the List of National Historic Landmarks (DHS, 2010k).

Under the auspices of the National Park Service, Novato is home to four sites on the National Register of Historic Places; a) the Stephen Porcella House at 800 Grant Avenue, b) “Fashion Shop” at 1009 Reichert Avenue, c) the Hamilton Army Air Field Discontiguous Historic District at the former Hamilton Army Air Force Base, and d) the Olompali State Historic Park (NPS, 2015).

Relevant local government stakeholders in the Government Facilities Sector include the City of Novato with their City Hall located downtown (City, 2015a) and the Novato Unified School District (NUSD) which operates eight elementary schools, two middle schools, two high schools, a charter school, an early intervention program, an independent education center, and a district office building (NUSD, 2015). The NUSD employed 1264 people in 2014 making them the largest employer in Novato (City, 2014a). Also located in Novato, and part of the Education Facilities Subsector, is the Indian Valley Campus of the College of Marin which is an accredited California public community college (IVC, 2015).

Healthcare and Public Health Sector: Consisting of government and private sector partners, the Healthcare and Public Health Sector protects America from the effects of natural disasters, pandemics, terrorist attacks, and other manmade disasters (DHS, 2010l). This sector accounts for an estimated 16 percent of U.S. Gross Domestic Product and employs approximately 13 million people (DHS, 2010l).

In addition to acute care hospitals, ambulatory healthcare clinics, and mortuary services, the sector encompasses the complex public-private healthcare financial system and all of the private sector businesses that manufacture, distribute, and sell drugs, vaccines, and medical supplies (DHS, 2010l). The Healthcare and Public Health Sector works closely with the DHS Science and Directorate on research and development priorities and also with the Department of Veterans Affairs and the DoD which both operate very large healthcare programs (DHS, 2010l).

The Marin County local government agency in the Healthcare and Public Health Sector is the Marin Department of Health and Human Services (Marin HHS, 2015). In Novato, the largest Healthcare and Public Health Sector stakeholder is the privately owned Sutter Health which operates the Novato Community Hospital as part of a 10 acre Sutter Medical Campus (Sutter,

2013a). A smaller private stakeholder of this sector serving primarily low-income residents is the independent, nonprofit Marin Community Clinics organization which has two facilities in Novato. Novato's only local mortuary service is a private stakeholder called Keaton's Redwood Chapel of Marin (SCI, 2015).

Information Technology Sector: Central to the nation's economy, security, and public health and safety is the Information Technology (IT) Sector which produces and provides hardware, software, and IT systems and services (DHS, 2010m). In conjunction with the Communications Sector, the IT Sector is also responsible for the internet (DHS, 2010m).

Federal stakeholders in the IT Sector mostly center around the DHS with other entities assisting where needed, such as the National Institute of Standards and Technology and the FBI (DHS, 2010m).

A critical partner to the IT Sector from the state, local, tribal, and territorial government level is the National Association of State Chief Information Officers which represents key IT leaders in every State (DHS, 2010m). In California, the State Chief Information Officer is appointed by the governor, serves as a member of the Governor's Cabinet, and leads the Department of Technology (Department of Technology, 2015).

Much of the IT Sector in Novato is dependent the private industry stakeholder Comcast Cable, which is the nation's largest video, high-speed internet, and phone provider (Comcast, 2015).

Nuclear Reactors, Materials, and Waste Sector: While nuclear power accounts for about 20 percent of U.S. electrical generation (DHS, 2010n), California only has one remaining nuclear power plant in operation which is owned by Pacific Gas & Electric (PG&E) and located about 250 miles down the coast near San Luis Obispo (California, 2015b).



In addition to active power plants, the Nuclear Reactors, Materials, and Waste Sector also includes non-power reactors, manufacturers of reactors, nuclear fuel cycle facilities, transportation, storage, and disposal of waste, and radioactive materials used primarily in medical, industrial, and academic settings, but this sector does not include defense-related activity overseen by the DoD and DOE (DHS, 2010n). Federal stakeholders that work with the DHS in this sector are the TSA, USCG, FBI, DOS, DOT, and EPA (DHS, 2010n).

No significant local stakeholders were discovered in the literature for the Nuclear Reactors, Materials, and Waste Sector.

Transportation Systems Sector: Moving people and goods throughout the country and overseas is the Transportation Systems Sector which includes seven key subsectors: (a) aviation, (b) highway infrastructure and motor carrier, (c) maritime transportation system, (d) mass transit and passenger rail, (e) pipeline systems, (f) freight rail, and (g) postal and shipping (DHS, 2010o).

The Federal stakeholders in charge of the Transportation Systems Sector are the TSA and the USCG in collaboration with the DOT (DHS, 2010o). Other Federal stakeholders include the DOS, DOC, DOE, DOJ, DoD, and the US Postal Service (DHS, 2010o). The US Post Office in Novato has 106 employees, operates 59 postal routes, and, on average, delivers 3,000 parcels and 75,000 pieces of mail to Novato mailboxes every day (Wolfcale, 2014).

Many of the State government stakeholders in the Transportation Systems Sector for California operate under a relatively new agency called the California State Transportation Agency or CalSTA (CalSTA, 2014). The CalSTA includes the Board of Pilot Commissioners, CHP, California Transportation Commission, Department of Transportation (Caltrans),

Department of Motor Vehicles, High-Speed Rail Authority, New Motor Vehicle Board, and the Office of Traffic Safety (CalSTA, 2014).

Local government stakeholders for Novato's transportation system include NPD (City, 2015b), Novato Public Works (City, 2015c), CHP Marin Area Office of the Golden Gate Division (CHP, 2015), and Golden Gate Bridge Highway & Transportation District which operates the local bus system called the Golden Gate Transit (Golden Gate, 2015).

Two different governmental stakeholders share the railroad tracks that run through Novato. The North Coast Railroad Authority is currently operating freight service on the tracks (NCRA, 2013) and the Sonoma Marin Area Rail Transit (SMART) is scheduled to begin passenger rail and bicycle-pedestrian pathway service along much of the same route beginning in 2016 (SMART, 2013).

Another interesting local government Transportation Systems Sector stakeholder in Novato is the Marin County Airport at Gness Field which is operated by the Marin County Department of Public Works (MCPW, 2014). Gness Field operates under FAA federal regulations, California's Department of Aviation operational use requirements, and is under the local jurisdiction of the Marin County Board of Supervisors (Marin County Airport, 2015).

One private industry Transportation Systems Sector stakeholder in Novato is the Marin Airporter which uses full size buses and shuttles to transport people around the San Francisco Bay Area to airports, tours, and special events (Marin Airporter, 2014). Another critical private industry Transportation Systems Sector stakeholder is PG&E because they own and operate the major natural gas distribution and transmission lines that run through Novato (PG&E, 2015).

Water and Wastewater Systems Sector: Approximately 84 percent of American's get their potable water from public drinking water systems and approximately 75 percent have their

wastewater treated by a public wastewater system (DHS, 2010p). The Water and Wastewater Systems Sector aims to protect those vital resources from a variety of attacks such as physical, cyber, and contamination (DHS, 2010p).

The EPA is the lead Federal agency charged with coordinating and assisting in the protection of the Water and Wastewater Systems Sector (DHS, 2010p). Assisting the EPA with water protection at the Federal level are the DOS for border protection issues, the DOI for dams and reservoirs, and the FBI for threat information sharing (DHS, 2010p).

The vast majority of public water and wastewater programs in the U.S. are run by State agencies, so the EPA relies heavily on those agencies to implement federal initiatives (DHS, 2010p). In California, the state level agency in charge of water management and conveyance systems is the California Department of Water Resources (DWR, 2015) and the state level stakeholder that protects water quality is the State Water Resources Control Board which operates under the California Environmental Protection Agency umbrella (Cal EPA, 2015).

The State Water Resources Control Board is divided into nine semi-autonomous regional water quality control boards of which Novato falls into the San Francisco Bay Region (Cal EPA, 2013). The regional board sets standards, issues permits, determines compliance with requirements, and takes enforcement action when necessary (Cal EPA, 2013). Locally, the governmental stakeholders in the Water and Wastewater Systems Sector are the NMWD and the Novato Sanitary District (NSD).

The NMWD provides water for all of Novato by utilizing the Stafford Lake Water Treatment Plant which draws from the Stafford dam to provide about 20 percent of Novato's water needs and the North Marin Aqueduct which provides around 80 percent of Novato's water needs (NMWD, 2014). Both the water treatment plant and the dam are located in Novato and

are owned and operated by the NMWD, but the Russian River water brought into Novato via the aqueduct has to be contractually purchased from the Sonoma County Water Agency and the City of Petaluma (NMWD, 2014).

The NMWD says that 33 million gallons of finished water is stored in 30 storage tanks around Novato which equates to approximately two days' worth of maximum demand (NMWD, 2014). The NSD offers wastewater treatment, water recycling, solid waste management, and water education for the community of Novato (NSD, 2014). The NMWD and the NSD work together to provide recycled water to wetlands, pastures, golf courses, and other special projects (NSD, 2014).

The only major private stakeholder discovered in the literature for the Water and Wastewater Systems Sector was Veolia Water who is under contract with the NSD to operate the NSD wastewater treatment facility (Ainsworth, 2010).

The third research question asks what sites the governmental stakeholders identify as CIKR specifically in Novato and the fifth research question asks what sites the private industry stakeholders identify as CIKR, also related just to the community of Novato. While examining the literature to answer the third and fifth research questions, the CIKR sites identified will be grouped into the corresponding federal CIKR sectors to which they belong.

Chemical Sector: The USCG lists its Pacific Strike Team based out of Hanger 2 in the Hamilton Field area of Novato as a critical resource responding to oil and hazardous substance incidents under Emergency Support Function #10 of the National Response Framework and as a special federal resource to be used as a result of natural hazards, chemical, biological, radiological, nuclear, and explosive incidents (USCG, 2015).

The Chemical Sector private industry stakeholder identified in the literature, BioMarin, lists their key Novato facility as the Novato South Campus 105 Digital Drive (BioMarin, 2015) but BioMarin occupies 500,000 square feet of laboratories, offices, and manufacturing within a half mile radius consisting of eight separate buildings (Pharmaceutical, 2010).

Commercial Facilities Sector: Marin County Parks & Open Space list Stafford Lake Park on Novato Boulevard in Novato as a key resource representing their largest upland area park with opportunities to host events that hold up to 5,000 people (Marin County Parks, 2010b).

Communications Sector: MERA states that the countywide 911 communications system network that links all of Novato's first responders depends on 14 base station radio and receiver sites and two are located on mountains accessed through Novato; Big Rock and Mount Burdell (MERA, 2015).

Dams Sector: The NMWD identifies the Stafford Lake Dam as critical to the water supply of Novato (NMWD, 2014). The Stafford Lake Water Treatment Plant draws Stafford Lake water through the dam to provide 20 percent of the water needed in Novato and without the dam, Novato would be completely dependent on a 50 year old 7.1 mile long aqueduct says the Marin Conservation League (2010).

Emergency Services Sector: In order to continue providing the same all-risk capabilities it currently provides to the community of Novato, the NFD depends on its five fire stations and one administrative building which also doubles as the joint EOC for NFD and the City of Novato (Novato, 2009a). Additionally, Cal OES says they depend on NFD Station 62 because it houses an OES Type 1 all-risk fire engine which may be counted on in the statewide fire and rescue mutual aid system (Newquist, 2014).

Located in the center of town is the Novato Police Department headquarters out of which NPD states they provide a multitude of services including maintaining their own dispatch center (City, 2015b).

Energy Sector: One of the most important substation's on the PG&E North Bay Division electricity grid is located in the Ignacio area of Novato and PG&E states that the North Bay Division supported \$682M in economic activity and 1,110 local jobs making it a critical site to protect (PG&E, 2015). PG&E lists four important local capacity area substations in servicing Novato: Hamilton Field Substation, Ignacio Substation, Novato Substation, and Stafford Substation (PG&E, 2014).

Healthcare and Public Health Sector: Novato Community Hospital identifies itself as critical infrastructure for the community by providing 24 hour emergency, general surgery, critical care, and laboratory services (Sutter, 2013b).

Transportation Systems Sector: The TSA states that America's most basic and most critical goods are distributed and delivered by the highways and byways that the TSA calls "a lifeline US citizens depend on (TSA, 2014)." Therefore, the TSA, on behalf of the DHS, would consider Highway 101, Highway 37, and Novato's bridges and overpasses as CIKR sites for the community and the nation. Also, TSA's strategic priorities for mass transit and passenger rail security have been greatly increased post the 9/11 Act making Novato's rail system a relevant CIKR in the community (DHS, 2010o).

Another important set of CIKR locations identified by TSA for the community of Novato are the 2,100 miles of natural gas lines in the North Bay Division of PG&E's operational area (DHS, 2010o; PG&E, 2015). After a devastating pipeline explosion just south of San Francisco in 2010 which killed eight people and destroyed 38 homes, PG&E started an aggressive policy to

upgrade the gas pipeline transmission system (Halstead, 2012a). On PG&E's list of the top 100 highest-risk segments of pipeline needing replacement, Novato has four segments. (Halstead, 2012a).

Also an identified CIKR by the TSA is the Novato Post Office which is one of the 40,000 local delivery units within the Postal and Shipping sub-sector of the Transportation Systems Sector (DHS, 2010o). The Marin County Airport at Gnos Field was said by stakeholder Marin County Supervisor Judy Arnold to be a valuable asset with the "potential of being a lifeline to the county in the case of a major catastrophe (Johnson, 2014)." The literature did show some disagreement to the validity of the small airport being regarded as critical in times of disaster as the 2013/2014 Marin County Civil Grand Jury "failed to find any evidence that the airport is, in fact, included in the County's Emergency Plans (Marin County Civil, 2014)." The Grand Jury also doubted the airport's usefulness in specific disasters like earthquakes and flooding because of the airport's physical location (Marin County Civil, 2014).

Water and Wastewater Systems Sector: To "safeguard public health and the economic vitality of our Nation (DHS, 2010p)" the EPA coordinates and assists protecting the critical water system infrastructure. In Novato it is the NMWD who provides safe and reliable drinking water to Novato from the NMWD distribution system which includes critical components such as the North Marin Aqueduct, Stafford Lake, Stafford Dam, Stafford Lake Water Treatment Plant, 30 storage tanks, and a multitude of pipes and pump houses (NMWD, 2014).

The EPA says that wastewater systems are vulnerable to a variety of attacks that could result in a large number of illnesses and casualties (DHS, 2010p), for that reason, the NSD identifies the NSD wastewater treatment plant, collection system, and laterals as critical infrastructure in their very important system (NSD, 2015).

To summarize the effect of the literature discovered addressing the five research questions, a reoccurring theme of interdependency of the sectors was found. The literature was consistent with the message from the White House which said in PPD-21 that the “U.S. efforts shall address the security and resilience of critical infrastructure in an integrated, holistic manner to reflect this infrastructure’s interconnectedness and interdependency” (White House, 2013). The theme of mutual dependence amongst the infrastructure in the literature highlighted the identified problem addressed by this research that the first responders in Novato needed a shared, predetermined list of CIKR sites in order to address the concerns of all the stakeholders.

#### Procedures

The descriptive research method was used for this study and the research questions were addressed using interviews, personal communications, questionnaires, and a survey.

The first research question, which asked what criteria should be used to identify sites as CIKR within the community of Novato, was addressed with an interview with Novato’s Emergency Services Manager (Appendix C), an interview with the NFD Fire Marshal (Appendix D), a survey of the Professional Association of California’s Emergency Managers (Appendix E), and a questionnaire posed to the Northern California Regional Intelligence Center (NCRIC) (Appendix F).

The beginning of this research was kicked off with an interview of Dave Jeffries, Novato’s Emergency Services Manager. Jeffries was selected because the subject falls directly under his area of expertise and his area of responsibility as the Emergency Services Manager for the City of Novato and the Novato Fire Protection District. The initial interview with Jeffries occurred at Novato Fire Station 63 on July 23<sup>rd</sup>, 2014. Various back and forth dialog about the research was exchanged between Jeffries and the interviewer, but one very specific question was



posed to Jeffries which was, “what criteria should be used to identify sites as CIKR in Novato (Appendix C)?”

Next, a questionnaire was sent to Shane Francisco the Assistant Deputy Chief in the Homeland Security Division of the San Francisco Fire Department (Appendix F). Francisco was chosen because of his extensive knowledge of CIKR identification, vulnerability assessments, and his relationship with the Northern California Regional Intelligence Center. Francisco was asked in the questionnaire found in Appendix F, “what criteria is used to identify sites as CIKR?”

The survey of the Professional Association of California’s Emergency Managers was intended to answer the first research question from the point of view of stakeholders who are already familiar with the CIKR concept and how it integrates into disaster planning. The organization the survey was sent to was called the California Emergency Services Association (CESA) which includes representatives from government agencies, utilities, private industry, academic institutions, nonprofits, faith agencies, media, and elected officials (CESA, 2015). CESA claims to be the leaders and practitioners in preparedness, response, recovery, mitigation, and protection in California (CESA, 2015). Novato’s Emergency Manager, Dave Jeffries, serves as the vice president for the CESA statewide organization and also as the president of the Coastal Chapter Board of Directors for CESA.

The survey was created with the online survey software and questionnaire tool, SurveyMonkey, and was entitled “Identifying CIKR sites.” While the primary goal of the survey was to answer the first research question, additional questions were added to the survey to get a more complete picture of who was answering. Using Jeffries relationship with CESA, the researcher was able to get the survey attached to the Fall 2014 CESA member newsletter which

reached over 600 public and private emergency managers. The survey was designed to take five to ten minutes and was incentivized with the offer of a Starbucks or Peet's Coffee gift card with the goal of a 10-15% response rate.

The questions in the Identifying CIKR sites (Appendix E) survey were:

1. In what city/district/jurisdiction(s) do you have emergency management responsibilities?
2. What is your job title?
3. How familiar are you with identifying Critical Infrastructure and Key Resources (CIKR) sites in the community you serve?
4. Does your organization have a predetermined list of CIKR sites that can be used by first responders to initiate damage assessments during a major disaster?
5. What criteria did/does your organization uses to identify a site as being CIKR? Please be as specific as possible.
6. Thank you for your help with my research! If you will allow me to buy you a cup of coffee, just leave your name and address below. Your address will not be used in any other way. My wife capped my budget at \$300.

While the survey was designed to be brief and was incentivized with free coffee, voluntary participation was extremely low and there were numerous limitations in the survey. The non-specific nature of the first research question posed in survey question #5 led to low reliability and inconsistent answers. The validity of the survey was average as some of the answers to the questions did measure exactly as desired, but others missed the mark. The researcher tried to not shoot an arrow at a target just to then paint a bull's-eye around it later, but

the survey results show nearly no confidence in accuracy as it only garnered 13 responses out of a total population of up to 1000.

The second research question asked who the local, state, and federal government stakeholders in the community of Novato are and this question was addressed using personal communications with Novato Emergency Manager Dave Jeffries (Appendix G), an interview with NFD Fire Marshal Bill Tyler (Appendix D), and questionnaires sent to multiple stakeholders as identified in the literature review.

When collecting information to answer the second research question, the first person contacted was Jeffries, the Novato Emergency Manager. A list of identified local, state, and federal government stakeholders was provided to Jeffries and he was asked to review the list and add stakeholders, as needed (Appendix G).

Another resource used to collect information to answer the second research question was an interview with NFD's Fire Marshal, Battalion Chief Bill Tyler (Appendix D). Tyler was asked to identify the local, state, and federal government stakeholders in Novato.

To get a more well-rounded view of all of the stakeholders of Novato and their interdependencies, a questionnaire was sent to all of Novato's stakeholders as identified in the stakeholder list. The stakeholder list was made up of the local, state, and federal government stakeholders and private industry stakeholders using information found in the literature review of this research which showed a direct relationship to possible Novato CIKR sites (see Table 2). The hypothesis of this procedure was that the literature would provide an adequate list of applicable stakeholders which could be used as a starting point for discovery. It was hoped that interaction with the list of stakeholders in Table 2 would bring to light which organizations need

to be added to the list, which could be omitted, and which the many stakeholders themselves rely upon.

Table 2	
Novato CIKR site stakeholders as identified in the literature	
Sector	Stakeholders
Chemical	United States Coast Guard - Pacific Strike Team BioMarin
Commercial Facilities	City of Novato Novato Fire District Novato Unified School District County of Marin Parks and Open Space Dept. Novato Chamber of Commerce - Commercial Buck Institute for Research on Aging
Communications	Marin Emergency Radio Authority AT&T Verizon
Critical Manufacturing	n/a
Dams	North Marin Water District
Defense Industrial Base	United States Coast Guard - Novato Housing Site
Emergency Services	United States Coast Guard - Pacific Strike Team Marin County Sheriff's Office Marin County Fire Department CHP City of Novato Novato Fire District Marin County USAR
Energy	PG&E
Financial Services	Novato Chamber of Commerce - Financial
Food and Agriculture	Marin County Dept. of Agriculture Novato Chamber of Commerce - Agricultural

Government Facilities	City of Novato Novato Unified School District College of Marin
Healthcare and Public Health	Marin Department of Health and Human Services Sutter Novato Community Hospital Marin Community Clinics
Information Technology	Comcast Cable Horizon Cable TV, Inc
Nuclear Reactors, Materials, Waste	n/a
Transportation Systems	US Postal Service CHP Caltrans Novato Police Department Novato Public Works Golden Gate Bridge Highway & Transportation District North Coast Railroad Authority Sonoma Marin Area Rail Transit Marin County Public Works Marin Airporter
Water and Wastewater Systems	North Marin Water District Novato Sanitary District

The stakeholder questionnaires sent to the organizations listed in Table 2 were asked, “who, if any, are the local, state, and federal government stakeholders in Novato, California, that your organization depends on for your continuity of operation.”

The third research question, which asked what sites the local, state, and federal government stakeholders identify as CIKR within the community of Novato, was posed to all of the government stakeholders in Table 2 in a questionnaire. The local, state, and federal government stakeholders were asked, “what systems, buildings, and resources in Novato are critical to your continuity of operation?”

The fourth research question asked who the private industry stakeholders in the community of Novato are and the question was addressed with personal communications with the Novato Emergency Manager Dave Jeffries (Appendix G), an interview with Novato Fire Marshal Bill Tyler (Appendix D), and a questionnaire sent to all of the stakeholders, both public and private, in Table 2.

Similar to how the second research question was addressed, Novato Emergency Manager Jeffries was sent a list of private industry stakeholders to review and amend as necessary to help answer the fourth research question (Appendix G). Also like the procedure used to answer the second research question, NFD Fire Marshal Tyler was interviewed and asked the fourth research question, which was to identify the private industry stakeholders in Novato (Appendix D). Again, like was done for the second research question, the fourth research question was posed in a questionnaire sent to all of the identified stakeholders from the literature, public and private, as found in Table 2.

Finally, the fifth research question asked what sites the private industry stakeholders identify as CIKR within the community of Novato and this question was delivered to all of the stakeholders on Table 2 in the form of a questionnaire. The specific question read, “what systems, buildings, and resources in Novato are critical to your continuity of operation?”

### Results

The first research question asked what criteria should be used to identify sites as CIKR within the community of Novato. Novato’s Emergency Services Manager, Dave Jeffries, was interviewed regarding the first research question and Jeffries said that the focus should be placed on the agencies, businesses, organizations, and infrastructure whose absence would have an immediate impact on the normal operations of the community (Appendix C). Jeffries

categorized the areas of most concern as Public Safety, Public Health, Utilities, Schools, Economy, and Transportation (Appendix C).

In answering the questionnaire regarding what criteria is used to identify sites as CIKR, Francisco of the Homeland Security Division of the San Francisco Fire Department said that the criteria is all about the impact on the community or the city/county/nation (Appendix F). Francisco noted that the criteria is dependent on the perspective of the audience who has something to lose (Appendix F). An example Francisco gave, was that power being lost in Novato for a week would have a devastating impact on the local community, but would be fairly meaningless to the Nation as a whole (Appendix F).

Another procedure used to answer the first research question was a survey sent out to all of the members of the California Emergency Services Association. The survey was answered by 10 emergency services managers/coordinators, two disaster preparedness coordinators, and one fire chief for a total of 13 participants (Appendix E). Representing cities, counties, and special districts, the participants were from a mix of southern and northern Californian areas (Appendix E). All of the survey participants had some level of understanding about identifying CIKR in their communities with 62% of the participants saying they were very familiar and 38% stating they were somewhat familiar (Appendix E). As an interesting side note, the participants were asked if they already had a predetermined list of CIKR sites to be used by first responders to initiate damage assessments during a major disaster and 54% said they did, 8% said they did not, and 38% said they are working on doing it at the time of the survey (Appendix E).

The fifth question in the survey asked what criteria the survey participants use to identify a site as CIKR in their organization. The disaster preparedness coordinator in Oxnard, California, stated that they categorize assets as CIKR by determining if the systems and

locations, when compromised, would cause significant interruption, in scale or duration, of the operations of the community (Appendix E).

The disaster preparedness coordinator responsible for Livermore and Pleasanton, California, stated they are still determining what criteria they are going to use to identify CIKR (Appendix E). In Butte County, California, the emergency services officer stated they have mapped many sites in their Mitigation Plan Update, but criteria used for the plan was not shared (Appendix E).

The emergency manager in Sonoma County, California, responded to the survey with both the criteria used to identify CIKR in the area and to what priority the criteria is assigned (Appendix E). Sonoma County's first priorities were programs aimed at life safety, the protection of property, and the EOC activation (Appendix E). The second priority for Sonoma was the continuity of governance, the third priority was the emergency health and welfare system, and the fourth priority was the emergency, non-public safety communication system (Appendix E). The fifth priority CIKR sites in Sonoma County were custodial and residential services, the sixth priority was to support criminal justice and court services, and the seventh priority was supporting welfare assistance and fiscal systems (Appendix E). Finally, the last two priorities for Sonoma County were programs aimed at avoiding severe local government financial loss and programs aimed at economic recovery and reimbursement (Appendix E).

In Rancho Palos Verdes, California, the emergency services coordinator stated the criteria used to identify their CIKR was based on location, vulnerability of the CIKR site to security breach, and accessibility (Appendix E). The OES coordinator for Gilroy, California, said in the survey results that they generally identified CIKR based on critical utilities like



electricity, water, fuel, and wastewater, while a retired fire chief from Mill Valley, California, summarized their criteria as being city facilities and general target hazards (Appendix E).

The emergency management coordinator for Novato, California, participated in the survey and stated that the main criteria for identifying CIKR is that the site was necessary to keep the community running (Appendix E). To help judge if a site is CIKR or to help prioritize the sites' importance, the Novato coordinator suggested measuring the probable impact on the community if the facility or resource in question were no longer available (Appendix E). The Novato coordinator warned that if the criteria used in identifying CIKR is too broad, the list becomes too large and is not helpful in decision making and disaster planning (Appendix E).

The City of Dana Point, California, emergency services coordinator stated in the survey they identified utilities, government facilities, significant hazardous materials locations, large hotels, assisted living facilities, and significant transportation infrastructure as CIKR (Appendix E). Simply stated by the City of Burbank, California, and the City of Chula Vista, California, emergency services coordinators, the criteria used to identify a site as being CIKR is based on the FEMA DHS 16 identified CIKR sectors (Appendix E). The Santa Barbara County emergency manager listed the criteria used to identify CIKR was anything worth greater than \$1M and sites that were important to continuity of operations and continuity of government (Appendix E).

Finally, the City of Santa Barbara emergency services manager stated in the survey that their local hazard mitigation plan identified CIKR based on the type of facility, the facility populations, the site insurance type, the location of the facility, and the type of hazards present (Appendix E).

The second research question, which asked who the local, state, and federal government stakeholders are in Novato, was answered by personal communications with Novato Emergency Manager Jeffries (Appendix G), an interview with Fire Marshal Tyler (Appendix D), and questionnaires sent to multiple stakeholders as identified in Table 2.

In electronic personal communications with Jeffries, he agreed that the governmental stakeholders in Novato included the City of Novato, NFD, NPD, NPW, NSD, NMWD, NUSD, Marin OES, MCSO, MCOSD, USCG, California Department of Fish & Wildlife, SMART, Caltrans, CHP, Golden Gate Transit, and the College of Marin (Appendix G). Jeffries added to that list of stakeholders the Marin Flood Control District and MERA, but cautioned that the list may expand to include too many organizations.

When asked the second research question, Novato Fire District Fire Marshal Tyler said that the governmental stakeholders in Novato included the City of Novato and all of the special districts (Appendix D). Included in the special districts to which Tyler was referring was NMWD, NSD, and NUSD (Appendix D).

The literature review revealed a large list of local, state, and federal government stakeholders and private industry stakeholders in the community of Novato (see Table 2) which could possibly have CIKR sites of concern. The hypothesis of this procedure was that the literature would provide a fairly thorough list of stakeholders with which to begin further exploration into which of them belonged and which should be omitted from this particular project. After reviewing the questionnaire responses from all of the stakeholders in Table 2, the results supported the hypothesis well. The repetition of interdependencies amongst some of the stakeholders proved the need to have certain organizations on the list and some of the

stakeholders revealed that their facilities were not critical to the community thus suggesting they should be removed from the list.

All of the stakeholders in Table 2, both public and private, were asked in a questionnaire who the governmental stakeholders were that their organization depends on for continuity of operation. The results of the questionnaire procedure answering the second research question are divided below by federal CIKR sector.

Chemical Sector: Command Duty Officer Richards of the USCG Pacific Strike Team stated that his team had their own emergency medical technicians but depended on all of the local government emergency responders like police, fire, and medical (Appendix H). BioMarin Senior Director of Facilities Paul Stanley said that his company has prepared to be as self-reliant as possible to avoid too much dependence on government services (Appendix I). Around 50 people were trained internally to provide medical assessments, first aid, and environmental release containment of hazardous materials per Stanley (Appendix I). While many employees had fire extinguisher training, Stanley said that BioMarin would depend on Novato Fire to extinguish large fires (Appendix I).

Commercial Facilities: Novato Emergency Manager Jeffries described the City of Novato and the NFD as having a significant interest in helping the tax paying business community prepare for and respond to major emergencies as there is a interdependency of commercial facilities, the residents and employees that occupy them, and the services the organizations provide (Appendix C). Leslie Benjamin of the Novato Unified School District listed the governmental organizations the NUSD depends on as the NFD, NPD, CHP, MCSO, NMWD, NSD, Marin County Office of Education, California Department of Education, Marin County OES, and Cal OES (Appendix Y).

Chief Marin County Open Space Park Ranger Rob Ruiz stated that his facility in Novato at Stafford Lake mostly depends on partnerships with NMWD, MCSO, and CHP (Appendix J). The Chief Executive Officer (CEO) of the Novato Chamber of Commerce, Coy Smith, stated the commercial facilities depend on all of the government stakeholders in some fashion or another (Appendix K) and Facilities Manager Tom Starr of the Buck Institute for Research on Aging stated they basically depend on all of the first responders (Appendix L).

Communications Sector: In reference to the MERA communications system, MERA Project Oversight Committee member McCarthy stated that MERA was not dependent on any single stakeholder or organization, rather it was dependent on many systems, sites, and stakeholder groups (Appendix M). McCarthy did say, however, that MERA service, specifically for Novato, critically needed both Marin and Sonoma County government support for continuity of operation (Appendix M).

Simply put by Communications Technician Lizette Ricaforte, AT&T depends on NFD to extinguish fires in their roaming office at 350 Alameda del Prado in Novato (Appendix N) and Verizon construction splicer Kyle Riberdy stated that Verizon has a good relationship with NFD and NPD (Appendix O).

Dams Sector: The general manager of the North Marin Water District, Chris DeGabriele, stated that, in a disaster, the Stafford Dam would depend on a mutual aid agreement of other water agencies around the country who participate in the Water Agency Response Network (Appendix P). DeGabriele also said that the NMWD had cooperative service agreements already in place with the NSD and the City of Novato for items such as public works equipment and generators, if needed (Appendix P).

Defense Industrial Base Sector: Depending upon all of the local government providers, the USCG Novato Temporary Quarters and the USCG Novato Housing Site were ill prepared to care for themselves said USCG Novato Temporary Quarters Manager Ross Perry (Appendix Q).

Emergency Services Sector: USCG Pacific Strike Team Command Duty Officer Kevin Richards stated that their team would probably be trying to launch their boats in Black Point to respond to maritime emergencies during a disaster, but their base would need local government first responders if there was an issue at the facility (Appendix H). Depending on and working alongside over 300 special districts and various local jurisdictions in all 11 cities/towns within Marin County, Chris Reilly of the Marin County Sheriff Office of Emergency Services said many of the public service organizations are interrelated and depend on each other (Appendix R). The City of Novato and the Novato Fire District would operate in unified command, said Novato Emergency Manager Jeffries (Appendix C) while discussing stakeholders working together post-disaster (Appendix G).

Owen Valuch of the Marin County Urban Search & Rescue team said that the team depends on the MCFD, MCPW, and many members from multiple different local agencies to operate effectively (Appendix T). When CHP Officer Bob Winnie was asked about the governmental stakeholders to whom the CHP depends on to operate effectively in Novato, Winnie answered that CHP is fairly autonomous in Novato, cooperating occasionally with NPD and MCSO (Appendix S).

Energy Sector: Jim Wickham, PG&E Public Safety Specialist, said that PG&E does not usually depend on any governmental stakeholders and that it is usually the government agencies who are highly dependent on PG&E (Appendix U). During the Napa Earthquake, Wickham said, in addition to PG&E restoring energy to the area, the local public works crews could not

keep up with all of the debris blocking the roadways, so PG&E mobilized a fleet of dump trucks to assist (Appendix U).

Food and Agriculture Sector: The Deputy Agricultural Commissioner for Marin County, Stefan Parnay, listed on his questionnaire multiple stakeholders to which his organization depends. Parnay said on the federal level, his agency depends on the USDA and the National Resource Conservation, on the state level the California Department of Food and Agriculture and the California Department of Pesticide Regulation, and then locally, the Marin County Department of Agriculture works with all of the other county departments (Appendix W). The private sector depends on all of the help that they can get from the various government agencies that affect restaurants and other Food and Agriculture Sector businesses, answered Novato Chamber of Commerce Chief Executive Officer Coy Smith to the questionnaire (Appendix X). Smith also noted that all of the buildings in Novato obviously need utilities, police, and fire services, so those local government agencies are important (Appendix X).

Government Facilities Sector: Novato Emergency Manager Jeffries said in Appendix C that when a community loses an agency or a certain portion of infrastructure and an immediate work-around is necessary, than that CIKR is truly critical and it will take a team effort with all of the stakeholders to protect the community. Leslie Benjamin, Public Information Officer for the NUSD, said that the government stakeholders they depend on are the NFD, NPD, CHP, MCSO, NMWD, NSD, Marin County Office of Education, California Department of Education, Marin County OES, and Cal OES (Appendix Y). At the Indian Valley Campus of the College of Marin, Police Chief Mitchell Lemay says the Marin Community College District depends on occasional support from the MCSO and NPD, but college tends to need no assistance (Appendix Z).

Healthcare and Public Health Sector: Marin Department of Health and Human Services Public Health Division Program Manager Koblick listed as key government stakeholders the City of Novato, NMWD, and NFD (Appendix AA). The Chief Engineer of Sutter Novato Community Hospital, Lazaro Rojas, stated their organization depends on the NSD, NFD, NPD, City of Novato, Marin Department of Health and Human Services, and the NMWD (Appendix AB). Novato Clinic Director Susan Wiebers stated her organization is a non-profit 501c3 charitable organization and is not affiliated or dependent on any one government agency (Appendix AC).

Information Technology Sector:

Daniel of Horizon Cable stated that they are not dependent on any local, state, or federal stakeholders in Novato for continuity of operation (Appendix AE).

Transportation Sector: The local office of the United States Postal Service depends on basic local government stakeholders including NPD, NFD, and NMWD according to letter carrier Rich Silva (Appendix AF). Officer Bob Winnie stated the CHP has no significant dependencies of organizations in Novato (Appendix S).

Caltrans Public Information Officer Steve Williams stated that Caltrans depends on coordination with local OES through Cal OES and works directly with the command elements of any major incident as needed (Appendix AG). Rich Hibbs, the Director of Bus Operations for the Golden Gate Bridge Highway & Transportation District stated that his district does not have any police or fire protection employees, so they are dependent on all of the local agencies to assist when needed (Appendix AH).

Woodside Consulting Group President John Williams, the freight service provider to the North Coast Railroad Authority which passes through Novato on the SMART owned tracks,

stated they do not depend on any government entities to operate except for the NCRA (Appendix AI). Jennifer Welsh, Security Manager for SMART, stated that their passenger rail cars depend on local police, fire, and occasionally public works in each of the jurisdictions they pass through (Appendix AJ). The Vice President of the Marin Airporter, David Hughes, stated they have some dependency on the National Park Service because of a contract for service to the Point Reyes National Seashore (Appendix AK).

Water & Wastewater Sector: Engineer Sandeep Karkal, Deputy Manager of the Novato Sanitary District, stated they have close relationships with the NMWD, the City of Novato, NFD, and NUSD (Appendix AL). Likewise, NMWD General Manager Chris DeGabriele said they depend on Novato Sanitary District and the City of Novato (Appendix P).

The third research question asked what the specific sites the local, state, and federal government stakeholders identify as CIKR within the community of Novato and this question has posed to each of the governmental stakeholders in Table 2 in a questionnaire. The results of the questionnaire are listed below categorized by federal CIKR sector.

Chemical Sector: The USCG Pacific Strike Team Command Duty Officer Kevin Richards identified their Hanger #2 in Hamilton as CIKR and also noted that 40% of their USCG personal all live on the base housing in Hamilton (Appendix H).

Commercial Sector: On behalf of the City of Novato and the NFD, Emergency Manager Jeffries stated that the business community needs help protecting retail and service industry sites like grocery stores, gas stations, lumber yards, hardware stores, and clothing retailers (Appendix C). Marin County Open Space Chief Park Ranger Rob Ruiz identified their Stafford Lake corporation yard as CIKR in relation to their operating the Stafford Lake Park (Appendix J).



Communications Sector: MERA stakeholder representative McCarthy stated two CIKR sites in Novato for the MERA system are the towers on top of Mount Burdell and Big Rock (Appendix M). Another CIKR site for MERA would be the NPD building according to McCarthy (Appendix M).

Dams Sector: North Marin Water District General Manager Chris DeGabriele identified the Stafford Dam, the Stafford Lake Water Treatment Plant, and the North Marin Aqueduct as CIKR for Novato (Appendix P).

Defense Industrial Base Sector: The USCG Novato Temporary Quarters Manager Ross Perry stated that USCG members live in 65 homes, 11 apartments, and 14 rooms in the Novato Housing Site in Hamilton and those sites would be considered CIKR to their organization (Appendix Q).

Emergency Services Sector: Chris Reilly, Emergency Services Manager for the Marin County Sheriff OES, identified the NPD police station as a back-up county communications center and the multiple levees surrounding Novato which are managed by the Marin County Public Works as Novato CIKR sites (Appendix R). CHP Officer Bob Winnie stated that the Department of Motor Vehicles office and the freeways and overpasses are CIKR to which the CHP is responsible (Appendix S). Team member Valuch stated the Marin County USAR team may be able to use Rescue 65 out of NFD Station 1, but no specific sites are CIKR for the team, just the personnel (Appendix T).

Food and Agriculture Sector: The Deputy Agricultural Commissioner for Marin County, Stefan Parnay, stated that his organization does not have any CIKR sites because the most critical service they provide to the sector occurs after the emergency when they provide assistance to the sector stakeholders who need help (Appendix W).

Government Facilities Sector: Novato Emergency Manager Jeffries listed Novato CIKR sites in this sector as the NPD police station, all of the NFD stations, the NFD Admin/EOC, the City of Novato Corporation Yard, the NSD main facility, the NMWD facilities, all major roadways, Highways 101 and 37, Gness Field airport, and all of the schools (Appendix C). Jeffries also identified as Novato CIKR the Sutter NCH, the Kaiser clinic on San Marin Drive, the Marin Community Clinic on Redwood Boulevard, PG&E facilities, phone facilities, and various business categories such as grocery stores, gas stations, lumber yards, hardware stores, and clothing retailers (Appendix C). Additionally, Jeffries added the two MERA towers on Big Rock and Mount Burdell and the levees managed by Marin County (Appendix G).

Leslie Benjamin, the Novato Unified School District Public Information Officer (PIO), listed their CIKR sites as the NUSD District Office (housing their EOC, IT Department, and server room), Operations Yard on Olive Avenue, the Comcast/NUSD co-location facility at San Marin High School, and then, of course, all of the schools if school is in session (Appendix Y). The Police Chief of the Marin Community College District, Mitchell Lemay, stated that the only CIKR in Novato at Indian Valley College would be the classrooms if school was in session (Appendix Z).

Healthcare and Public Health Sector: Public Health Division Program Manager Kathy Koblick of the Marin Department of Health and Human Services identified their CIKR sites in Novato as Sutter Novato Community Hospital, the Marin Community Clinic, emergency supply trailers parked at NCH, the Kaiser Permanente Medical Center on San Marin Drive, and the NMWD water supply system (Appendix AA).

Transportation Systems Sector: Rich Silva of the United States Postal Service (USPS) identified the Novato Post Office as their sole CIKR site for Novato (Appendix AF). Caltrans

PIO Steve Williams listed Highway 101 and Highway 37 through Novato as CIKR, although 101 would have the priority as it is a “Lifeline Route” for Caltrans whereas 37 is a regional “Recovery Route” (Appendix AG). A CIKR site for the Golden Gate Bridge Highway & Transportation District per Director of Bus Operations Rich Hibbs is the Golden Gate Transit Novato Yard where around 40 buses and a significant amount of fuel may be stored at any time (Appendix AH).

John Williams, President of the Woodside Consulting Group which is the contract freight operator for NCRA, stated that the tracks are the only CIKR for their organization (Appendix AI). SMART Security Manager Welsh also identified the tracks as CIKR, but added that SMART will soon have two Novato passenger loading and unloading stations and some maintenance and repair equipment stored on Roblar Drive (Appendix AJ).

Water and Wastewater Systems Sector: As noted in the Dams Sector, General Manager Chris DeGabriele of the NMWD listed the Stafford Dam, the Stafford Lake Water Treatment Plant, and the North Marin Aqueduct as CIKR for Novato (Appendix P). Deputy Manager Karkal of the Novato Sanitary District said that all of the components of the wastewater system are critical, but the most critical are the main treatment facility on Davidson Street and the five main pump stations (Appendix AL).

The fourth research question, which asked who the private industry stakeholders are in Novato, was answered by personal communications with Novato Emergency Manager Jeffries (Appendix G), an interview with Fire Marshal Tyler (Appendix D), and questionnaires sent to multiple stakeholders as identified in Table 2.

In the personal communications with Novato Emergency Manager Jeffries, he agreed that private industry stakeholders in Novato included Sutter, Kaiser, PG&E, BioMarin, AT&T,

Verizon, Comcast, Gness Field, Marin Humane Society, and the Novato Chamber of Commerce (Appendix G). Jeffries then added the Marin Community Food Bank, churches, and business categories such as grocery stores, gas stations, hardware stores, and clothing retail stores (Appendix G).

Novato Fire District Fire Marshal Tyler was asked in an interview to identify the private industry stakeholders in Novato which relate to this research and he stated that the two major private industry stakeholders that he has been focusing on recently are PG&E and Sutter Novato Community Hospital (Appendix D).

All of the stakeholders in Table 2, both public and private, were asked in a questionnaire who the private industry stakeholders were that their organization depends on for continuity of operation. The results of the questionnaire procedure answering the fourth research question are divided below by federal CIKR sector.

Chemical Sector: Command Duty Officer Kevin Richards of the USCG Pacific Strike Team stated that communications are their most critical need, so PG&E, Verizon, and AT&T are important private industry stakeholders (Appendix H). BioMarin Senior Director of Facilities, Paul Stanley, stated that they depend on contract fuel companies to deliver fuel to the cogeneration system in their manufacturing building and also contract mediation companies to help contain potential hazardous materials releases (Appendix I).

Commercial Facilities Sector: Novato Emergency Manager Jeffries mentioned that this sector is difficult because there are so many employees, services, and families supported by the business community, not to mention the importance of the tax revenue to the public sector (Appendix C). General categories of stakeholders noted by Jeffries include grocery stores, gas stations, lumber yards, hardware stores, and clothing retailers (Appendix C). Chief Executive

Officer Coy Smith of the Novato Chamber of Commerce noted that many of the commercial facilities in Novato are leased to the occupant, so there exists dependency on all of the different building owners (Appendix K). Smith also noted that PG&E and Marin Clean Energy are very important to keep the lights on for all of the businesses (Appendix K).

Chief Park Ranger for the Marin County Open Space District, Rob Ruiz, listed PG&E and the park's contract sewer service provider as private industry stakeholders for Stafford Lake Park (Appendix J). Tom Starr, facilities manager for the Buck Institute for Research on Aging, stated the private industry stakeholders in Novato that they depend on include PG&E, a diesel fuel delivery contractor, and private contract hazardous materials abatement professionals for any issues in the labs due to chemical release during a disaster (Appendix L).

Communications Sector: The Marin Emergency Radio Authority depends on an organization called American Tower who owns the building and tower on top of Big Rock according to MERA project oversight committee member McCarthy (Appendix M). McCarthy also stated that MERA depends on PG&E, AT&T, Verizon, and other third party data transmission and system control providers (Appendix M).

AT&T Communications Technician Ricaforte stated that AT&T depends on PG&E for power (Appendix N) and Verizon construction splicer Kyle Riberdy stated that Verizon is dependent on PG&E, as well (Appendix O).

Dams Sector: North Marin Water District General Manager Chris DeGabriele stated that the Stafford Dam uses various general service agreements with private contractors for different equipment and services as needed (Appendix P).

Defense Industrial Base Sector: USCG Novato Temporary Quarters Manager Ross Perry stated that his organization depends on PG&E, AT&T, and Comcast (Appendix Q).

Emergency Services Sector: PG&E and the phone companies are critical private industry partners for this sector according to Novato Emergency Manager Jeffries (Appendix C). Marin County Sheriff OES Emergency Services Manager Chris Reilly agreed that PG&E is a critical partner (Appendix R). CHP Officer Bob Winnie did not identify any private industry stakeholders in Novato to which CHP depends (Appendix S). Marin County USAR member Valuch stated that his organization could need an emergency purchase of lumber or supplies from a local hardware store or lumber yard like Novato Builders Supply (Appendix T).

Energy Sector: Jim Wickham, PG&E Public Safety Specialist, stated in his questionnaire that PG&E was fairly autonomous and most of their needs are filled internally with mutual aid from different divisions of the company all around the state (Appendix U). Wickham noted that PG&E occasionally uses different subcontractors for various projects (Appendix U).

Financial Services Sector: CEO Coy Smith of the Novato Chamber of Commerce stated that the local banks and credit unions are an important part of the local economy (Appendix V).

Food & Agriculture Sector: Deputy Agricultural Commissioner for Marin County, Stefan Parnay, stated that his organization works a lot with the farm organizations such as the Marin Agricultural Land Trust (Appendix W). Novato Chamber of Commerce CEO, Coy Smith, stated this sector depends on PG&E and is assisted by private industry organizations like the Chamber of Commerce and the Downtown Novato Business Association (Appendix X).

Government Facilities Sector: PIO Leslie Benjamin of the NUSD stated they depend on the American Red Cross, All Star Rents, North Bay Petroleum, Marin Clean Energy, and Commercial Energy of Montana (Appendix Y). College of Marin Police Chief Mitchell Lemay denied much need for private industry at the Indian Valley Campus as his special district has a very strong union and rarely subcontracts work (Appendix Z).

Healthcare and Public Health Sector: In Novato, the private industry stakeholders that the Marin Department of Health and Human Services depends on are private health labs run by Quest, Marin Medical, and Sutter, per Public Health Division Program Manager Koblick (Appendix AA). The most critical private industry stakeholder to NCH is PG&E according to Chief Engineer Rojas (Appendix AB). Likewise, the most critical private industry stakeholder to the Marin Community Clinic is PG&E according to Novato Clinic Director Wiebers (Appendix AC).

Information Technology Sector:

Daniel of Horizon Cable stated that her organization was not dependent on any private industry stakeholders in Novato.

Transportation Systems Sector: The USPS leases their mail processing space in Novato, so their service is dependent on the building owner according to USPS employee Silva (Appendix AF). PIO Williams stated that, in an emergency situation in Novato, Caltrans would depend on suppliers of materials such as Asphalt Concrete, Ready Mix Concrete, large lumber and quarry products, and large/specialty equipment rental businesses (Appendix AG). Director of Bus Operations Hibbs of the Golden Gate Bridge Highway & Transportation District stated no private industry stakeholders were critical to his operation in Novato (Appendix AH).

Security Manager Welsh of SMART stated that her organization is using a lot of private subcontractors currently, but will eventually not depend on much private industry assistance (Appendix AJ). John Williams, contract freight operator for the NCRA (Appendix AI), and David Hughes, Vice President of the Marin Airporter (Appendix AK), both stated that their organizations did not depend on private assistance, either.

Water and Wastewater Sector: North Marin Water District General Manager DeGabriele stated that they have a private engineering firm preparing their emergency action plan, but otherwise they do not depend on a lot of private industry support (Appendix P). Sandeep Karkal, Deputy Manager of the Novato Sanitary District identified PG&E as a critical private industry partner (Appendix AL).

The fifth and final research question asked what the specific sites the private industry stakeholders identify as CIKR within the community of Novato and this question has posed to each of the private industry stakeholders in Table 2 in a questionnaire. The results of the questionnaire are listed below categorized by federal CIKR sector.

Chemical Sector: Paul Stanley, Senior Director of Facilities at BioMarin, stated that their most important asset is the storage facility at 21 Pimentel Court where 75 to 100 million dollars of product is stored (Appendix I). Another key resource for the business is the manufacturing operation at 46 Galli Drive where the staff would need to salvage the proteins being used and secure any hazardous materials (Appendix I)

Commercial Facilities Sector: No specific assets were identified by CEO Coy Smith of the Novato Chamber of Commerce as CIKR, but Smith stated that the local business community in general could be devastated if they could not operate for an extended period of time (Appendix K). The facilities manager at the Buck Institute for Research on Aging, Tom Starr, identified their facility at 8001 Redwood Boulevard as CIKR with their priority being to keep their mice alive and preserve the cell lines so as to not lose their extensive research (Appendix L).

Communications Sector: With all of the Novato AT&T telephone, T1, and T3 lines being routed through the office at 350 Alameda del Prado, Communications Technician



Ricaforte stated the building is the most critical AT&T structure in town (Appendix N). Kyle Riberdy, construction splicer at Verizon, stated that the Novato Central Office at 911 Diablo Avenue was the most critical building in Novato for Verizon communications and that all of the copper and fiber optics in Novato travel through the building (Appendix O). Riberdy stated that the Novato Central Office carries all of Novato's central phone lines, switching equipment, and city trunk lines and supplies the city with POTS, DSL, and High Caps (Appendix O). Additionally, Riberdy added that the Verizon Novato Central Office has a triple redundant system to protect the internet service for Novato (Appendix O).

Energy Sector: PG&E Public Safety Specialist Jim Wickham stated that the Ignacio Substation is a critical facility for the entire county of Marin and not just to Novato (Appendix U). Wickham added that the natural gas transmission lines that travel the length of Novato are also critical to their North Bay operations (Appendix U).

Financial Services Sector: CEO Coy Smith of the Novato Chamber of Commerce was not sure how important the individual Novato branches of all the local banks and credit unions are to the overall economic stability of the community (Appendix V). Smith suggested a meeting with each bank and credit union representative could assist in answering the research question (Appendix V).

Food and Agriculture Sector: To identify what could be considered CIKR for this sector, CEO Smith of the Novato Chamber of Commerce suggested finding sales tax records on restaurants and food distributing businesses from the City of Novato to investigate which businesses would create the greatest loss to the local economy if they were out of business because of a disaster.

Healthcare & Public Health Sector: Chief Engineer Rojas at the Sutter Novato Community Hospital identified the hospital as CIKR for the community of Novato (Appendix AB). Novato Clinic Director Wiebers with the Marin Community Clinics stated they see around 120 out-patient customers per day and are about to open another facility across the parking lot in 2016 which will double their volume of visits, but with three facilities in the county, Wiebers said they would be able to handle a temporary disruption in service to the Novato location (Appendix AC).

Information Technology Sector: Susan Daniel, General Manager of Horizon Cable stated that the headend facility for Novato is in Hamilton on a hill across from NFD Station 65 and is critical to the cable internet service in the Hamilton area (Appendix AE).

Transportation Sector: Vice President of the Marin Airporter, David Hughes, stated that the Novato Marin Airporter facility is not overly critical to their operation (Appendix AK).

#### Discussion

The problem addressed by this research was that the first responders to a major disaster in the community of Novato did not have a shared, predetermined list of CIKR sites that could be used to initiate damage assessments. The point was to create a list of CIKR sites for Novato by collaborating input from many different public and private stakeholders and this was accomplished in the study by using the descriptive research method with data collected from the many Novato stakeholders using interviews, personal communications, questionnaires, and a survey.

This research began by finding out what criteria should be used to identify sites as Critical Infrastructure and Key Resources for the community of Novato. The USA Patriot Act of 2001 defined critical infrastructure as "systems and assets, whether physical or virtual, so vital to

the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters" (p130). The term "key resources" as used in the acronym CIKR, was defined in section 2(9) of the Homeland Security Act of 2002 as "publicly or privately controlled resources essential to the minimal operations of the economy and government" (p.7).

While CIKR criteria originally focused on only national priorities, the 2009 update to the National Infrastructure Protection Plan encouraged more regional CIKR protection (DHS, 2009). An important factor about the criteria used to identifying CIKR at the local level was emphasized by Francisco when he stated that the "criteria is dependent on the perspective of the evaluating agency and always based on the potential impact to segment of the population examined" (Appendix F). Francisco added that, "CIKR is all about the impact to the city/county/region if that asset is lost" (Appendix F). Jeffries agreed saying that CIKR are "those agencies, businesses, organizations, and infrastructure that make the community run" (Appendix C).

Out of the many hundreds of emergency managers who received the survey regarding identifying CIKR sites in their jurisdiction, only 13 replied, so the results could not be used with any reliability, but it was comforting to note that the responses were in line with Francisco, Jeffries, and the literature. For example, the Oxnard disaster preparedness coordinator stated that they gauge CIKR by determining if the systems and/or locations, if compromised, would cause significant interruption to the operations of their community (Appendix E).

The Sonoma County emergency manager left a detailed response on the survey about the categories they place their CIKR into and the priority they give the CIKR groups (Appendix E). Of note in the Sonoma County response were the priorities of the EOC activation, the continuity

of governance, the emergency health system, and the non-public safety communication system (Appendix E) whereas, the Gilroy OES coordinator stated that their priorities focus more on critical utilities like water, wastewater, power, and fuel supply (Appendix E).

Both the City of Burbank and the City of Chula Vista used the FEMA DHS 16 identified CIKR sectors to guide them in selecting the appropriate sites in their communities (Appendix E). Throughout this research, the information was categorized to be in alignment with the 16 federal CIKR sectors according to Presidential Policy Directive 21 entitled, “Critical Infrastructure Security and Resilience” (White House, 2013). The relationship between the study results and the specific findings of others will now be discussed using the 16 federal CIKR sectors to help keep the information organized and in-line with our national policy.

Chemical Sector: As one of only three USCG teams in the nation capable of performing specialized response to oil discharges, hazardous materials release, and weapons of mass destruction events (USCG, 2011), the Pacific Strike Team in Hanger #2 in Hamilton should be considered CIKR for Novato and the entire western half of our country as Richards suggested (Appendix H) and Jeffries agreed (Appendix G).

BioMarin, the second largest employer in Novato (City, 2014a), was found to be a significant stakeholder in the community. Occupying 500,000 square feet of laboratories, offices, and manufacturing (Pharmaceutical, 2010), BioMarin had 75 to 100 million dollars of product stored at 21 Pimentel Court and critical manufacturing operations located at 46 Galli Drive (Appendix I). As far as CIKR, BioMarin was discovered to be an important local partner providing high end biotechnology jobs, but also well equipped to remain self-sufficient for a period of time after a major emergency (Appendix I). It was apparent in Stanley’s questionnaire (Appendix I) that no one has a greater incentive to protect BioMarin’s resources than BioMarin.

Commercial Facilities Sector: The commercial facilities sector was found to be very complicated. This sector is large and contains eight subsectors including public assembly, sports leagues, gaming, lodging, outdoor events, entertainment and media, real estate, and retail (DHS, 2010b). The most critical factor of the impact to losing sections of this sector was the harm that could be done to the local economy, but identifying specific sites seemed impractical given the volume of applicable facilities found in the results and literature. As Jeffries stated, “if the list becomes too large and unwieldy, it also becomes unmanageable and fails to support plans and decision-making” (Appendix E).

Communications Sector: As the NIPP details in the Communications Sector Specific Plan, many sectors are closely linked to provide this incredibly critical component of the U.S. infrastructure (DHS, 2010c). The two primary stakeholders in Novato for hard wired domestic communication were Verizon and AT&T (City, 2014b) and both stated they were very much dependent on PG&E for power to keep their systems up and running (Appendices N and O). Both AT&T and Verizon were found to have a complicated system of copper, fiber optics, and cellular towers strewn about the city, but both also noted a specific building in Novato that was the most critical piece of their whole operation. For AT&T, their CIKR site was 350 Alameda del Prado (Appendix N) and for Verizon, their CIKR site was 911 Diablo Avenue (Appendix O).

For the public safety and public service organizations, the most critical communications system in Marin County was the Marin Emergency Radio Authority (MERA, 2015) and Jeffries listed the three Novato CIKR sites for MERA as the Mount Burdell tower, the Big Rock Ridge tower, and the NPD dispatch center (Appendix G). McCarthy noted that the MERA system is not dependent on just one or two sites, but he also said that Novato would lose some coverage if either of the Novato MERA towers were out of service (Appendix M).

Critical Manufacturing Sector: The Critical Manufacturing Sector was represented by manufacturing industries such as primary metal, machinery, electrical equipment, and transportation equipment (DHS, 2010d) but no significant Novato stakeholders were found in the study or the literature.

Dams Sector: Built in 1951 and owned by the North Marin Water District, the Stafford Dam holds 4,450 acre-feet of water and provides about 20 percent of Novato's water demand (NMWD, 2014). The NMWD said the Stafford Dam is critical to the water supply of Novato (NMWD, 2014) and the Marin Conservation League (2010) stated it would be concerned to be forced to depend on just the North Marin Aqueduct to supply water to Novato. Protecting the dam during a disaster is the Water Agency Response Network (WARN) which is a system of mutual aid agreements between water agencies that responds with experts when needed (Appendix P).

Defense Industrial Base Sector: There were found to be 250 USCG owned residential buildings in the Hamilton area of Novato (Rogers, 2006) which depend on the local government to provide basic protections (Appendix Q). While the USCG Housing Site provides quarters for service members who work all over the San Francisco Bay Area, it is interesting to note that Richards claimed around 40% of the USCG Pacific Strike Team lived in the USCG Novato Housing Site (Appendix H). So, although no single residence would be considered CIKR in this context, it is relevant that a significant portion of the operational component of a CIKR of national importance all reside in a relatively small geographic area. For this reason, this study will consider the USCG Novato Housing Site as a CIKR.

Emergency Services Sector: The U.S. Department of Homeland Security defined the Emergency Services Sector as consisting of law enforcement, fire and emergency services,

emergency management, EMS, and public works (DHS, 2010g). Most all of the stakeholders recognized the obvious importance of the Emergency Services Sector as did Jeffries during the initial sit down meeting of this research when he identified the Novato Police Station, all of the NFD buildings including the EOC, and the City of Novato Corporation Yard as Novato CIKR sites (Appendix C).

Responding into Novato, but without having any CIKR located within the city, were the Marin County Sheriff's Office and the Marin County Fire Department (Appendix R). Valuch noted that team members of the Marin County USAR team may be on-duty at the NFD and that Rescue 65 housed at Station 61 could be requested into service, but no other critical equipment was stored in Novato (Appendix T).

Reilly mentioned in his questionnaire that the Marin County Public Works may have concern over flood control due to the significant levee system around Novato which keeps the San Pablo Bay from moving into the city (Appendix R) and Jeffries also noted concern for the levees (Appendix G).

CHP manages a significant amount of CIKR in Novato as they are responsible for the freeways, overpasses, and all state owned assets in Novato such as the DMV building on Seventh Street (Appendix S).

Energy Sector: The supply of energy from PG&E to CIKR across every sector was identified by the majority of stakeholders as the single most important private industry partner. Power delivery to Novato is supplied by four important PG&E substations (PG&E, 2014) with the Ignacio Substation being the most critical not just for Novato, but the entire North Bay region according to Wickham (Appendix U). Wickham added that another issue of great importance to the supply of energy to Novato and beyond is the high pressure PG&E natural gas transmission

lines which run north and south through the length of Novato (Appendix U). Novato is home to four segments of PG&E's list of the highest risk segments of pipelines needing replacement (Halstead, 2012a).

Financial Services Sector: With multiple local banks, credit unions, and investment companies in Novato, there exists a potential impact to the local economy if there was a loss of service, but as Smith noted, most of the important banking information is most likely cloud based and off site so no specific CIKR was noted in this sector (Appendix V).

Food and Agriculture Sector: Almost completely under private ownership, the Food and Agriculture Sector accounts for around one-fifth of the U.S. economic activity (DHS, 2010j). With over a 100 local restaurants (TripAdvisor, 2015) and multiple large farms (MALT, 2013), Novato has plenty of stakeholders who together are extremely important to the local economy, but separately do not meet criteria for CIKR (Appendix W).

Government Facilities Sector: While the Government Facilities Sector refers to a variety of buildings owned by the government, this portion of the research focused on CIKR sites not already covered by other sectors. Two subsectors of the Government Facilities Sector are the Education Facilities Subsector and the National Monuments and Icons Subsector (DHS, 2010k). Four sites in Novato are listed on the National Register of Historic Places, two original Novato buildings in the downtown area, a large area of Hamilton considered the Hamilton Army Air Field Discontiguous Historic District, and the Olompali State Historic Park (NPS, 2015).

The City of Novato building which is vitally important to their continuity of governance is the City Hall (City, 2015a). Another local government stakeholder in this sector is the Novato Unified School District which employs over 1200 people (City, 2014a) and operates more than a dozen schools and a NUSD District Office (NUSD, 2015). When school is in session, the



classrooms, of course, become CIKR which both Jeffries (Appendix C) and Benjamin (Appendix Y) agree. Benjamin stated that while the schools are not CIKR when they are empty, the NUSD District Office, Operations Yard on Olive Avenue, and the Comcast/NUSD co-location facility at San Marin High School are critical to her organization (Appendix Y). The other Novato educational facility, Indian Valley College, was said by Lemay to be CIKR only when occupied by students (Appendix Z).

Healthcare and Public Health Sector: Jeffries (Appendix C), Tyler (Appendix D), and Koblick (Appendix AA) agree that Sutter Novato Community Hospital is an extraordinarily important CIKR for the local community as it provides 24 hour emergency, general surgery, critical care, and laboratory services (Sutter, 2013b). Two out-patient medical facilities were noted by Jeffries and Koblick as possible CIKR sites; the Kaiser Permanente Medical Center on San Marin Drive and the Marin Community Clinic on Redwood Boulevard (Appendices C and AA). However, even the Marin Community Clinic Novato Clinic Director stated that since they did not handle emergent care needs, the organization would be able to temporarily handle the loss of the Novato Clinic by increasing workload on their other two facilities (Appendix AC). Also, Wiebers stated that the Novato Clinic facility is not really prepared to operate during an emergency as they do not have any power generators or emergency supplies (Appendix AC). The out-patient clinics and doctors' offices in Novato will not be considered CIKR in this study.

Information Technology Sector: Novato was found to be mostly dependent on two internet providers, Comcast Cable (Comcast, 2015) and Horizon Cable (Appendix AE). No information was available from Comcast as to their infrastructure, but Daniel stated that Hamilton's cable provided by Horizon is dependent on the headend facility on top of a hill across from NFD Station 65 (Appendix AE).

Nuclear Reactors, Materials, and Waste Sector: Only one nuclear power plant in California was discovered to still be in operation and it was not close enough to be pertinent to this study (California, 2015b).

Transportation Systems Sector: The Transportation Systems Sector includes subsectors which handle aviation, highway, maritime, mass transit, pipeline, freight rail, and postal transportation (DHS, 2010o). The literature revealed some controversy as to whether the Marin County Airport at Gness Field should be CIKR or not. Supervisor Arnold thought the airport could be very helpful during a disaster situation (Johnson, 2014), but the Marin County Civil Grand Jury disagreed as there was no mention of the airport in the county's emergency plans (Marin County Civil, 2014). This study will default to the County Supervisors opinion until further information is gathered.

As discussed in the Emergency Services Sector, Winnie said CHP is responsible for "everything connected to the freeway" (Appendix S) and one of the first agencies CHP will call for help is Caltrans. Williams said Caltrans considered Highway 101 through Novato a "lifeline route" making it a first priority for inspection and emergency repairs after a disaster (Appendix AG). The TSA uses the same terminology in calling the nation's highways "a lifeline U.S. citizens depend on" (TSA, 2014). Highway 37 in Novato was considered by Caltrans to be a "recovery route" and would receive inspection and emergency restoration only after the "lifeline routes" had been addressed (Appendix AG).

Sonoma Marin Area Rail Transit owns the railroad tracks that run through Novato and Welsh identified as CIKR the tracks themselves and the two future passenger rail stations which will be built in Novato (Appendix AJ). The TSA agreed with Welsh that passenger rail security is a strategic priority for the community and the nation (DHS, 2010o). A contract freight

operator hired by the North Coast Railroad Authority (NCRA, 2013) who also uses the tracks of course could not operate without the rails (Appendix AI).

The United States Postal Service depends on its main Novato Post Office at 1537 South Novato Boulevard in order to deliver the mail to the community according to Silva (Appendix AF). The Golden Gate Transit Novato Yard can have upwards of 40 buses and a lot of fuel on hand which would severely hamper their ability to do business and assist with emergency sheltering and transportation if impacted per Hibbs (Appendix AH). Hughes stated the Marin Airporter could find a work-around if their Novato bus facility was out of service (Appendix AK).

Water and Wastewater Systems Sector: Protecting the critical water system infrastructure to safeguard the public health is extremely important to the EPA (DHS, 2010p). The NMWD draws Russian River water from the North Marin Aqueduct along Highway 101 and water from the Stafford Dam into their Stafford Lake Water Treatment Plant in order to provide the community of Novato with their water demands (NMWD, 2014). All of those major components to the water system are CIKR according to the NMWD general manager (Appendix P).

Of the 40 wastewater pump stations and 250 miles of pipes, Karkal stated that the five main stations and the treatment facility are the most critical components of the Novato Sanitary District system (Appendix AL). Karkal says that the NMWD is supposed to be able to function after a disaster for 72 hours and that the wastewater system is supposed to be able to function for 72 hours after the water has stopped flowing, therefore the NSD could operate for 6 days without assistance (Appendix AL).

### Recommendations

Based on the results of this research, a fairly comprehensive list of Critical Infrastructure and Key Resources can now be shared amongst the community of Novato stakeholders to help better organize our damage assessment process after a major event has occurred. In collecting the data from so many agencies and organizations, the noted self-reliance and disaster preparedness already occurring throughout the sectors was surprising and encouraging. Because many of the key stakeholders are so prepared, it highlights the need to be sharing this information so that the first responders do not waste valuable time evaluating facilities that have either already been evaluated by qualified staff or could be evaluated in the near future after higher priority assets have been assessed. Below is the list of CIKR sites for the community of Novato as determined by this research and organized according to the 16 federal CIKR sectors.

#### Chemical Sector:

- USCG Pacific Strike Team – Hanger #2 on Hanger Avenue

#### Commercial Facilities Sector:

- None

#### Communications Sector:

- AT&T – 350 Alameda del Prado
- Verizon – 911 Diablo Avenue
- MERA Mount Burdell tower – top of Mount Burdell
- MERA Big Rock Ridge tower – top of Big Rock
- NPD dispatch center – 909 Machin Avenue

#### Critical Manufacturing Sector:

- None

Dams Sector:

- Stafford Dam – 3549 Novato Boulevard

Defense Industrial Base Sector:

- USCG Novato Housing Site in Hamilton

Emergency Services Sector:

- Novato Police Station – 909 Machin Avenue
- Novato Fire Administration & Novato EOC – 95 Rowland Way
- Novato Fire Station 61 – 7025 Redwood Boulevard
- Novato Fire Station 62 – 450 Atherton Avenue
- Novato Fire Station 63 – 65 San Ramon Way
- Novato Fire Station 64 (temporary) – 105 Roblar Drive
- Novato Fire Station 64 (coming soon) – 319 Enfrente Road
- Novato Fire Station 65 – 5 Bolling Circle
- City of Novato Corporation Yard – 550 Davidson Avenue

Energy Sector:

- PG&E Ignacio Substation
- PG&E Hamilton Field Substation
- PG&E Novato Substation
- PG&E Stafford Substation
- PG&E high pressure gas transmission lines

Financial Services Sector:

- None

Food and Agriculture Sector:

- None

Government Facilities Sector:

- Novato City Hall – 922 Machin Avenue
- NUSD District Office – 1015 Seventh Street
- NUSD Operations Yard on Olive Avenue
- Comcast/NUSD co-location facility at San Marin High School
- If school is in session:
  - Hamilton Elementary School – 5530 Nave Drive
  - Loma Verde Elementary School – 399 Alameda de la Loma
  - Lu Sutton Elementary School – 1800 Center Road
  - Lynwood Elementary School – 1320 Lynwood Drive
  - Olive Elementary School – 629 Plum Street
  - Pleasant Valley Elementary School – 755 Sutro Avenue
  - Rancho Elementary School – 1430 Johnson Street
  - San Ramon Elementary School – 45 San Ramon Way
  - San Jose Middle School – 1000 Sunset Parkway
  - Sinaloa Middle School – 2045 Vineyard Road
  - Novato High School – 625 Arthur Street
  - San Marin High School – 15 San Marin Drive
  - Novato Charter School – 940 C Street
  - NUSD Early Intervention Program – 720 Diablo Avenue
  - Hill Education Center – 720 Diablo Avenue
  - Indian Valley College – 1800 Ignacio Boulevard

Healthcare and Public Health Sector:

- Sutter Novato Community Hospital

Information Technology Sector:

- Comcast Cable - Unknown - in progress
- Horizon Cable – Top of hill across from NFD Station 65

Nuclear Reactors, Materials, and Waste Sector:

- None

Transportation Systems Sector:

- Highway 101 and overpasses
- Highway 37 and overpasses
- Railroad tracks
- Marin County Airport at Gness Field
- Novato Post Office – 1537 South Novato Boulevard
- Golden Gate Transit Novato Yard – 1 Golden Gate Place

Water and Wastewater Systems Sector:

- North Marin Aqueduct along Highway 101
- Stafford Lake Water Treatment Plant – 3549 Novato Boulevard
- Novato Sanitary District Treatment Plant – 500 Davidson Street
- NSD Hamilton Pump Station – near the Hamilton Amphitheater
- NSD Pacheco Pond Pump Station – near Bel Marin Keys
- NSD Marin Village Pump Station – near S. Novato Boulevard & Rowland Boulevard
- NSD Olive Avenue Pump Station – near Redwood Boulevard
- NSD Bahia Pump Station – end of Topaz Drive

There are some holes in this research which will need to be addressed. Additional conversations with Marin County officials about the levee system around Novato are necessary. Secondly, no contact was achieved with any Comcast Cable representatives who had knowledge of Novato's Comcast infrastructure. Finally, a glaring issue which never came up in this research was that many lists of this nature include skilled nursing facilities, senior housing complexes, and large apartment buildings. Those types of sites were not included because this list focused on the core infrastructure of Novato which, if lost, could have a major impact to the entire community and beyond. This research avoided identifying areas of the community which, if impacted, could entail a dramatic localized tragedy but which would not greatly affect the critical infrastructure and key resources necessary to protect the entire population.

In order to make use of the information in this study, the research will need to be presented to Novato Emergency Manager Jeffries. As part of his duties as the fulltime emergency manager, Jeffries is already near completion of a similar project to this one. Jeffries will be able to combine both works into an improved damage assessment process to be used by all of Novato's first responders. Having this upgraded list of CIKR sites should reduce the impact of the next major event that will eventually impair the community.

Future readers of this study who may want to replicate the process for their own organization should note that much of the benefit of this particular method of discovery is in the process itself and not just the end product. While the ultimate goal of creating a worthwhile CIKR list was accomplished, the researcher in this project enjoyed an unexpected wealth of important local knowledge which is not reflected in the CIKR list but will assist decision making in future projects and calls for service down the road.



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## Appendix A

City of Novato Master Housing List for Multi-family Occupancies provided by Gary P. Beretta,  
Supervising Code Enforcement Officer, City of Novato, (415) 899-8928, on 6/5/2013

124-271-34	197 SAN ANDREAS DR	4
124-292-09	285 SAN MARIN DR	5
125-610-21	31 Pinheiro	40
140-021-61	1811 NOVATO BLVD	70
140-031-44	1725 NOVATO BLVD	30
140-031-64	1721 NOVATO BLVD	18
140-062-06	1599 SO. NOVATO BLVD	35
140-062-07	1599 SO. NOVATO BLVD	12
140-131-22	806 Diablo	61
140-221-42	1500 SO NOVATO BLVD	99
140-273-41	1606 HILL RD	24
140-273-52/57	1610 HILL RD	18
140-273-53	711 DIABLO AVE	17
140-291-23	1511 SO NOVATO BLVD	56
140-292-01	1524 (1518) HILL RD	92
140-360-65	819 DIABLO AVE	33
140-360-66	809 DIABLO AVE	33
140-360-67	805 DIABLO AVE	35
140-360-68	815 DIABLO AVE	35
141-201-03	1771 GRANT AVE	16
141-211-18	1001 EIGHTH ST	18
141-212-04	1000 EIGHTH ST	13
141-212-18	1725 MARION AVE	166
141-221-47	44 JADE CT	18
141-221-48	39 JADE CT	4
141-221-49	29 JADE CT	4
141-221-50	19 JADE CT	4
141-221-51	9 JADE CT	4
141-221-52	1510 VALLEJO AVE	4
141-221-60	1506 VALLEJO AVE	7
141-221-61	1504 VALLEJO AVE	4
141-221-62	2 ROMAR CT	46
141-221-63	6 ROMAR CT	12
141-233-06	1201 SECOND ST	4
141-233-09	1300 OLIVE AVE	5
141-234-04	1200 SECOND ST	4
141-234-05	1202 Olive Ave.	4
141-234-06	1126 (1128) OLIVE AVE	30
141-234-18	1100 OLIVE AVE	16
141-241-16	1125 THIRD ST	5



141-241-18	1100 FOURTH ST	9
141-241-22	1129 THIRD ST	4
141-241-23	1126 FOURTH ST	9
141-241-24	1109 THIRD ST	4
141-241-25	1113 THIRD ST	4
141-241-26	1121 THIRD ST	4
141-241-27	1117 THIRD ST	4
141-242-05	1133 Second St.	4
141-242-10	1113 SECOND ST	5
141-242-17	1116 THIRD ST	5
141-242-21	1132 THIRD ST	5
141-242-22	1136 THIRD ST	4
141-243-02	1117 OLIVE AVE	5
141-243-36	1137 FIRST ST	8
141-251-05	1035 SIXTH ST	4
141-251-06	1033 SIXTH ST	9
141-251-07	1025 SIXTH ST	5
141-251-28	1040 SEVENTH ST	5
141-251-30	1052 SEVENTH ST	4
141-251-31	1048 SEVENTH ST	4
141-251-32	1044 SEVENTH ST	5
141-252-05	1045 FIFTH ST	4
141-252-06	1041 FIFTH ST	0
141-252-12	1014 SIXTH ST	10
141-252-17	1036 SIXTH ST	4
141-252-21	1040 SIXTH ST	8
141-253-05	1033 FOURTH ST	4
141-253-26	1046 FIFTH ST	4
141-261-06	1025 THIRD ST	5
141-261-25	1035 THIRD ST	4
141-261-34	1041 THIRD ST	4
141-262-01	1201 (1207) VALLEJO AVE	15
141-262-16	1020 THIRD ST	5
141-262-21	1221 VALLEJO AVE	20
141-262-22	1036 THIRD ST	4
141-262-24	1033 SECOND ST	4
141-262-25	1029 SECOND ST	5
141-262-26	1014 THIRD ST	4
141-262-27	1016 THIRD ST	4
141-263-16	1016 SECOND ST	4

141-263-17	1020 SECOND ST	
141-263-22	1040 SECOND ST	5
141-263-31	1048 SECOND ST	9
141-271-08	1509 PARK CT	4
141-271-23	1145 ELM DR	40
141-285-25	1140 ELM DR	4
141-285-27	950 FOURTH ST	4
141-305-01	924 GEORGE ST	16
141-340-23	1130 SEVENTH ST	56
143-072-41	729 (733) CHERRY ST	15
146-013-10	2393 VINEYARD RD	4
152-011-17	1486 SO NOVATO BLVD	58
152-011-21	1490 SO NOVATO BLVD	14
152-111-04	1304 LEAFWOOD DR	6
152-111-05	1306 LEAFWOOD DR	6
152-111-06	1308 LEAFWOOD DR	6
152-111-07	1310 LEAFWOOD DR	6
152-111-08	1312 LEAFWOOD DR	6
152-111-09	1312 LEAFWOOD DR	6
152-111-10	1316 LEAFWOOD DR	6
152-111-11	1318 LEAFWOOD DR	6
152-111-12	1320 LEAFWOOD DR	6
152-111-14	1323 LEAFWOOD DR	6
152-111-15	1321 LEAFWOOD DR	6
152-111-16	1319 LEAFWOOD DR	6
152-111-17	1317 LEAFWOOD DR	6
152-111-36	1313-1315 LEAFWOOD	12
152-111-27	1307 LEAFWOOD DR	6
152-111-28	1305 LEAFWOOD DR	6
152-111-29	325 ROWLAND BLVD	32
152-111-34	1309 LEAFWOOD DR	6
152-111-35	1311 LEAFWOOD DR	6
152-254-33	100 REDWOOD BLVD	14
152-254-34	500 CUTLASS DR	17
152-254-35	600 (400) CUTLASS DR	10
152-254-37	100 CUTLASS DR	15
152-261-54	(24) COWBARN LN	90
153-043-02	7400 REDWOOD BLVD	4
153-045-04	815 SWEETSER AVE	4
153-045-17	841 SWEETSER AVE	6

153-046-01	926 GRANT AVE	4
153-052-02	1002 RAILROAD AVE	7
153-055-07	699 LOGAN ST	6
153-056-07	919 SCOTT CT	4
153-064-08	839 REICHERT AVE	4
153-064-09	845 REICHERT AVE	6
153-071-02	850 REICHERT AVE	5
153-162-60	7020 REDWOOD HWY	17
155-010-34	1009 GREENOAK DR	180
155-020-52	5410 REDWOOD HWY(NAVE DR)	16
155-490-90	22 KELLY CT	44
155-490-91	22 EDWARDS CT	33
155-500-67	51 TINKER WAY	4
155-500-71	42 BOLLING DR	4
155-500-72	82 BOLLING DR	4
155-541-07	BAY VISTA @ MEADOW PARK	220
155-550-04	462 BOLLING CIR	6
155-550-03	122 BOLLING CIR	6
155-561-04	60 Moffett Ct.	4
157-690-19	420 (410) SO. PALM DR	128
160-020-38	199 POSADA DEL SOL	65
160-020-47	235 POSADA DEL SOL	38
160-020-50	200 POSADA DEL SOL	55
160-040-20	1000 IGNACIO BLVD	27
160-150-28	1000 IGNACIO BLVD	27
160-150-55	626 OWEN DR	50
160-161-12	450 ENTRADA DR	16
160-161-13	450 ENTRADA DR	8
160-161-14	450 ENTRADA DR	5
160-161-15	450 ENTRADA DR	16
160-161-16	450 ENTRADA DR	16
160-161-17	450 ENTRADA DR	4
160-161-18	450 ENTRADA DR	24
160-201-06	401 NORMAN DR	8
160-201-22	49 IGNACIO LN	10
160-201-26	391 ENTRADA DR	18
160-281-01	380(420) ALAMEDA DEL PRADC	96
160-302-22	175 LOS ROBLES RD	10
160-302-30	195 LOS ROBLES RD	39

160-302-37	105 CIELO LN	14
160-302-38	125 CIELO LN	17
160-302-39	135 CIELO LN	25
160-302-41	100 CIELO LN	19
160-302-42	120 CIELO LN	12
160-421-09	980 IGNACIO BLVD	18
160-581-01	2 CLAY CT	4
160-581-03	2 GRASS CT	4
160-581-04	7 GRASS CT	4
160-581-06	46 Clay CT (Grass)	4
160-581-07	63 CLAY CT	4
160-581-08	16 CLAY CT	4
160-581-09	30 CLAY CT	4
160-581-10	47 CLAY CT	4
160-581-11	53 CLAY CT	4
160-581-12	33 CLAY CT	4
160-581-13	25 CLAY CT	4
160-581-14	17 CLAY CT	4
160-581-15	9 CLAY CT	4
160-581-16	1 CLAY CT	4
160-611-01	495 IGNACIO BLVD	20
160-611-02	481 IGNACIO BLVD	16
160-611-03	475 IGNACIO BLVD	20
160-611-04	461 IGNACIO BLVD	10
160-611-05	445 IGNACIO BLVD	20
160-611-06	415 IGNACIO BLVD	15
160-611-07	401 IGNACIO BLVD	10
160-611-08	531 ALAMEDA DEL PRADO	10
160-611-09	521 ALAMEDA DEL PRADO	20
160-611-10	511 ALAMEDA DEL PRADO	10
160-611-11	501 ALAMEDA DEL PRADO	8
160-611-12	551 ALAMEDA DEL PRADO	10
160-611-13	541 ALAMEDA DEL PRADO	20
160-161-21	250 ENTRADA DR	70
125-180-34	8141 REDWOOD BLVD	56
157-710-02	1400 N HAMILTON PRKWY	136
160-480-30	215 ALAMEDA DEL PRADO	105
160-302-35	275 ALAMEDA DEL PRADO	47
143-160-20	7600 REDWOOD BLVD	55
141-303-06	935 FRONT /7299 REDWOOD	18

Appendix B

Table below taken from City of Novato 2013 Retail Market Analysis page 38

Name and Address	Total SF	Available SF	Vacancy Rate	Annual Lease Rate (\$/SF)	Year Built	Selected Tenants
Novato Fair Shopping Center 900-920 Diablo Ave.	133,862	5,850	4.4%	\$30.00	1962	Safeway, Rite Aid, Dollar Tree, Pet Food Express, Anytime Fitness, Radio Shack
Nave Shopping Center 1531-1545 South Novato Blvd.	121,692	1,200	1.0%	\$16.08	1974	Grocery Outlet, Post Office, Bike Shop, Acupuncture Clinic, California Grill, Cleaners
Downtown Novato Shopping Center 1707-1767 Grant Ave.	105,781	5,000	4.7%	\$21.00	1966	Lucky Supermarket, CVS, Crabtree & Evelyn, Noah's Bagels, U.S. Bank, Creekside Bakery
Hamilton Marketplace 5720 Nave Dr.	89,525	3,087	3.4%	N/A	2008	Safeway, Pet Food Express, Toast Café, Wells Fargo, Beauty Island Salon, Pasta Moto
The Square Shopping Center 2045 Novato Blvd.	78,272	32,583	41.6%	\$15.00	1974	CVS, Oasis Natural Foods, Planet Beach Tanning Salon, JJ's Pizza
Pacheco Plaza 366 Ignacio Blvd.	71,670	16,041	22.4%	N/A	1967	Paradise Foods, Woodlands Pet Food, Boca Pizzeria, Video Place, Taki's Restaurant
San Marin Plaza 101-199 San Marin Dr.	70,257	7,198	10.2%	\$15.60	1984	Apple Market, Tuesday Morning, Urban Escape Fitness, Mary's Pizza Shack
Rowland Plaza, 44 Rowland Way	35,377	0	0.0%	N/A	1989	CineMark Century Theatres
Ignacio Center 455 Entrada Dr.	32,839	1,970	6.0%	\$21.84	1968	Dollar Tree, Hardware Store, Bike Hut, Red Boy Pizza, Techs to Go, Valley Floral
6100 Redwood 6090-6100 Redwood Blvd.	24,837	0	0.0%	N/A	1978	Back in Motion Spinal Decompression, Good & Fresh Buffet, Picket Fence Quilts
Tresch-Triangle Shopping Center 1559 S Novato Blvd.	21,506	0	0.0%	N/A	1963	Discount Vitamins, Genesis Dollar Store, Marin Treks, Beauty Center Salon
7049 Redwood 7049 Redwood Blvd.	21,296	0	0.0%	N/A	1988	Marin Tile Supply, North Bay Artworks, Pacific Mortgage
Del Prado Square 500-530 Alameda Del Prado	20,433	0	0.0%	N/A	1981	Farmers Insurance, Postal Annex+, Round Table Pizza
The Village at Novato 7514 Redwood Blvd.	20,043	1,892	9.4%	N/A	2006	Trader Joe's, Pharmacia, Starbucks, Mr. Ribs, Two parcels available for future development

## Appendix C

Dave Jeffries Interview 7/23/14

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Who: Dave Jeffries, Novato Emergency Manager

Why: Provides leadership, education, and coordination of the joint EOC (City of Novato and Novato Fire District)

When: 7/23/14

Where: Novato Fire Station 63 at 65 San Ramon Way in Novato, CA

EM = Interviewer Erich Mesenburg

DJ = Interviewee Dave Jeffries

EM: I am conducting research to be used for my third EFO paper and also to improve our Windshield survey process conducted by the Novato engine companies during a disaster. My research paper will specifically aim to create a list of CIKR sites for the community of Novato.

DJ: Your research is coming at a perfect time. I just wrote in my After Action Review of the June 17<sup>th</sup> Quake Reaction exercise that one of the most important questions needing attention is what are the critical facilities. The NPD dispatch center is going to be overwhelmed, so how do we prioritize and handle all of that traffic. We may need to delay calls for service until we assess our critical infrastructure, so we need to identify what the critical facilities are, if they need inspection, and who is going to accomplish that task.

EM: Great...that is exactly why I want to create a list of CIKR sites for Novato using input from all of our many public and private stakeholders in the community.

DJ: Another issue we ran into during the exercise was identifying which CIKR's needed to be assessed within the first couple of hours post-disaster and which could wait a little while. This makes a big difference when trying to sort through the chaos.

EM: I wanted to make sure that my creation of a CIKR site list for the community would fall in line with your plans for improving emergency preparedness at the EOC level.

DJ: Absolutely. With buy in from all the stakeholders, the CIKR site list would help coordination while in unified command. I think that you will be able to find some great CIKR information from FEMA and I would be happy to help. I will forward you info on some good classes and conferences coming up and I'll send you copies of the Situation Manual and AAR from our Quake Reaction 2014 drill.

EM: I would like to get your take on my first research question. What criteria should be used to identify sites as CIKR in Novato?

DJ: Basically, those agencies, businesses, organizations, and infrastructure that make the community run. That in their absence, we would be forced to make plans to immediately replace or work around. For instance:

-Public Safety - NPD and all the FD facilities, EOC and City Corporation Yard

-Public Health - NCH, Potentially Kaiser on San Marin and Marin Community Clinic on Redwood

-Utilities - Sanitary , Water District, both PG&E Facilities, phone facilities

-Schools - More as to their ability to provide shelter, staging, distribution in the opening act of a disaster, but also to help return a sense of normalcy to the community and the kids affected.

-Economy - Tougher to describe, but we have a significant interest in helping our business community prepare for and respond to disasters and emergencies to support their families, employees, provide services and of course, generate taxes..... In particular, grocery stores, gas stations, lumber yards, hardware stores, clothing, etc.

-Transportation - Major roads, interconnection with US101 and SR37, Gness Field

EM: Perfect...thank you, Dave. That should get me started...



## Appendix D

## Bill Tyler Interview 6/1/15

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Who: Fire Marshall Bill Tyler, Novato Fire Protection District

Why: Battalion Chief in charge of Fire Loss Management Division

When: 6/1/15

Where: Fire Station 64(t)

EM = Interviewer Erich Mesenburg

BT = Interviewee Bill Tyler

EM: I am conducting research to be used for my third EFO paper and also to improve our Windshield survey process conducted by the Novato engine companies during a disaster. My research paper will specifically aim to create a list of CIKR sites for the community of Novato.

EM: I would like to get your take on my first research question. What criteria should be used to identify sites as CIKR in Novato?

BT: Dave Jeffries, the joint police and fire Novato Emergency Manager, recently laid out one year's worth of work to be accomplished on this very topic and one of the key items to be determined is what to do in the first hour after a disaster. We will have a joint response protocol with predetermined fire and police responsibility areas which split up important infrastructure, roadways, and target buildings into zones that correspond to our fire station response areas. Regarding the criteria used, our Standards of Cover document

used a hazard assessment system for buildings but it was a broad document which we will be updating. To answer your question, we take the important infrastructure that NFD is aware of and merge it with that of the other special districts. We don't necessarily know what's what with the infrastructure of the other districts, so our partners will have to check their own buildings to insure full operability. In the first hour of response, quick windshield surveys are very helpful but, of course, further examination will be required after that initial assessment. Time of day could really change everything we do in that first hour. We will need to focus on any high life hazards, Skilled Nursing Facilities, main road arteries, etc...

EM: Who are the local, state, and federal government stakeholders in Novato?

BT: The City and all the special districts...water, sanitary, schools.

EM: Who are the private industry stakeholders in Novato?

BT: PG&E and Sutter's Novato Community Hospital are the only ones we have been focusing on for now, but your research may be able to help us build a more complete list.

## Appendix E

## Survey Results - Identifying CIKR sites

Identifying CIKR sites

SurveyMonkey

**Q1 In what city/district/jurisdiction(s) do you have emergency management responsibilities?**

Answered: 13 Skipped: 0

#	Responses	Date
1	Oxnard	8/18/2014 1:52 PM
2	Livermore and Pleasanton	8/14/2014 9:43 AM
3	Butte County	8/13/2014 9:46 AM
4	Sonoma County	8/13/2014 9:11 AM
5	City of Rancho Palos Verdes	8/13/2014 8:26 AM
6	City of Gilroy	8/13/2014 8:16 AM
7	Mill Valley Fire Department	8/13/2014 6:23 AM
8	Novato	8/12/2014 6:13 PM
9	City of Dana Point, California	8/12/2014 4:45 PM
10	City of Burbank	8/12/2014 3:32 PM
11	City of Chula Vista	8/12/2014 3:18 PM
12	santa barbara county	8/12/2014 3:16 PM
13	City of Santa Barbara	8/12/2014 2:40 PM

## Identifying CIKR sites

SurveyMonkey

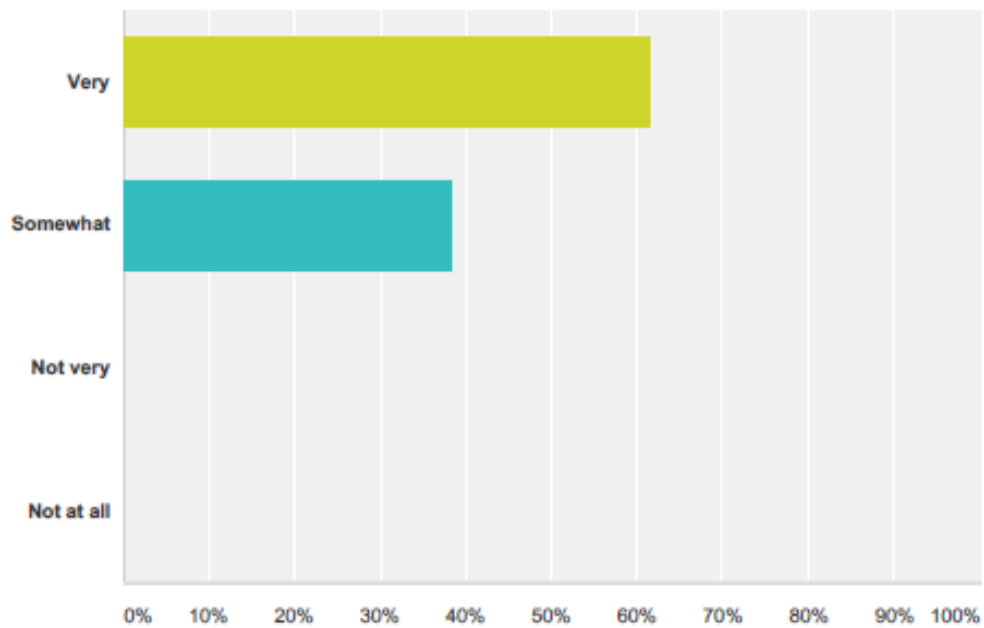
**Q2 What is your job title?**

Answered: 13 Skipped: 0

#	Responses	Date
1	Disaster Preparedness Coordinator	8/18/2014 1:52 PM
2	Disaster Preparedness Coordinator	8/14/2014 9:43 AM
3	Emergency Services Officer	8/13/2014 9:46 AM
4	Emergency Manager	8/13/2014 9:11 AM
5	Senior Administrative Analyst / Emergency Services Coordinator	8/13/2014 8:26 AM
6	Fire Captain/OES Coordinator	8/13/2014 8:16 AM
7	Fire Chief (retired)	8/13/2014 6:23 AM
8	Emergency Management Coordinator (Consultant)	8/12/2014 6:13 PM
9	Emergency Services Coordinator	8/12/2014 4:45 PM
10	Emergency Management Coordinator	8/12/2014 3:32 PM
11	Emergency Services Coordinator	8/12/2014 3:18 PM
12	emergency manager	8/12/2014 3:16 PM
13	Emergency Services Manager	8/12/2014 2:40 PM

**Q3 How familiar are you with identifying Critical Infrastructure and Key Resources (CIKR) sites in the community you serve?**

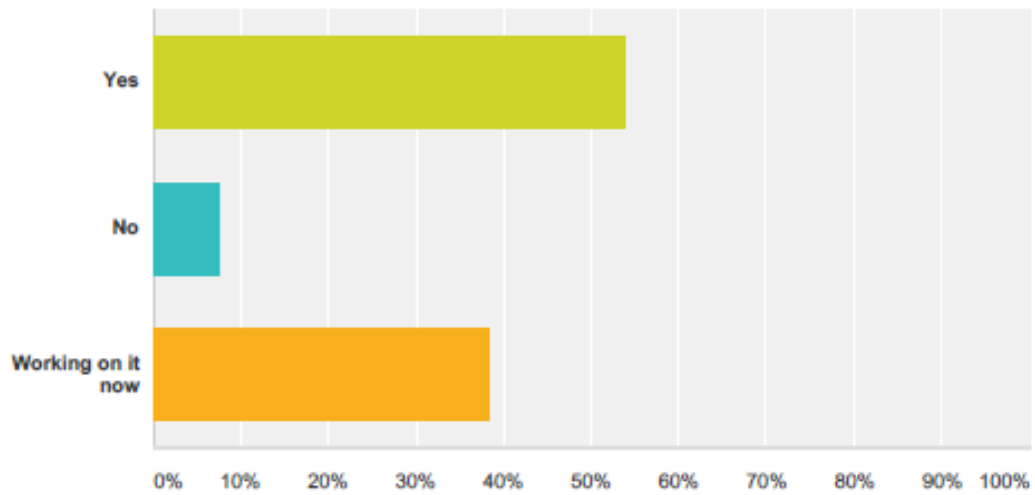
Answered: 13 Skipped: 0



Answer Choices	Responses
Very	61.54% 8
Somewhat	38.46% 5
Not very	0.00% 0
Not at all	0.00% 0
<b>Total</b>	<b>13</b>

**Q4 Does your organization have a predetermined list of CIKR sites that can be used by first responders to initiate damage assessments during a major disaster?**

Answered: 13 Skipped: 0



Answer Choices	Responses
Yes	53.85% 7
No	7.69% 1
Working on it now	38.46% 5
<b>Total</b>	<b>13</b>

Identifying CIKR sites

SurveyMonkey

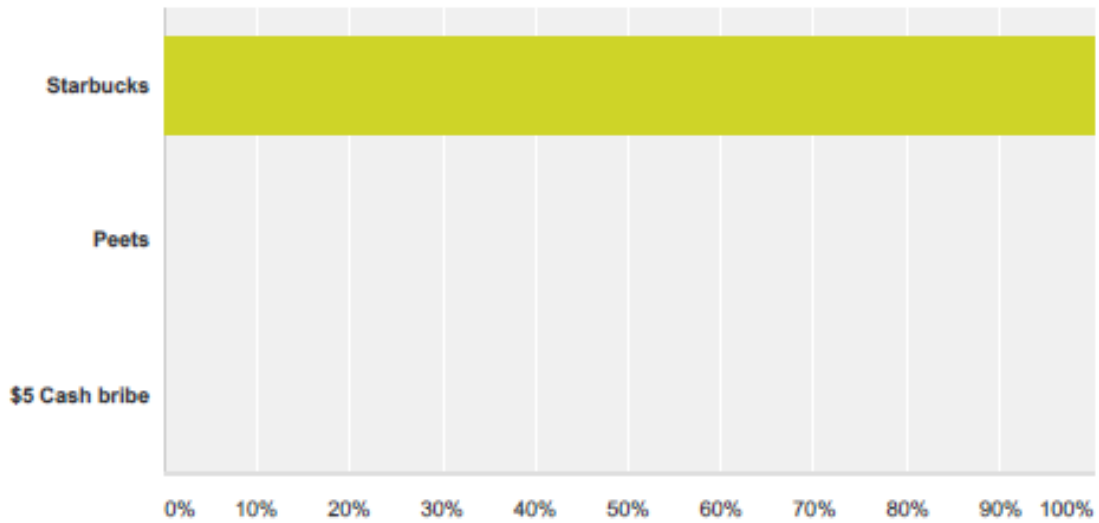
**Q5 What criteria did/does your organization use to identify a site as being CIKR? Please be as specific as possible.**

Answered: 13 Skipped: 0

#	Responses	Date
1	<ul style="list-style-type: none"> <li>• Assets categorized as Critical Infrastructure include the systems and locations, which if compromised, would cause an interruption in the continuity of operations or continuity of government of significant scale or duration.</li> <li>• Assets categorized as Mass Population include locations and events that, if compromised, may generate injuries, illness or loss of life that are significant in their scale, method or impact.</li> <li>• Assets categorized as Symbolic / Psychological Impact include cultural, religious, or national icons / patriotic locations and events. Also, facilities/infrastructure that are critical to the health and welfare of the population and that are especially important following hazard events, such as shelters, police and fire stations, and hospitals.</li> </ul>	8/18/2014 1:52 PM
2	Determining that now	8/14/2014 9:43 AM
3	We have mapped many sites during the Mitigation Plan Update but there some that were not captured during the update.	8/13/2014 9:46 AM
4	<p>Priority 1: Programs aimed at life safety and protection of property, and EOC activation                      Priority 2: Programs aimed at the continuity of governance                      Priority 3: Programs aimed at emergency health and welfare systems meeting emergency needs for food, care, and shelter                      Priority 4: Programs aimed at emergency, non-public safety communication systems and services                      Priority 5: Programs aimed at custodial and residential services                      Priority 6: Programs aimed at supporting criminal justice and court services                      Priority 7: Programs aimed at supporting welfare assistance and fiscal systems                      Priority 8: Programs aimed at protecting the County from severe financial loss                      Priority 9: Programs aimed at directly supporting county and community economic recovery and reimbursement</p>	8/13/2014 9:11 AM
5	From what I understand, criteria used is location, vulnerability of site to security breach, and accessibility are the criteria used. If you would like a more comprehensive list, please contact our LACoFD rep. Laura Walters at 310-217-7074 and/or LASD Dave Rozas at 310-782-1522.	8/13/2014 8:26 AM
6	Generally critical utilities, e.g., electrical, domestic water, wastewater, fuel, etc.	8/13/2014 8:16 AM
7	City facilities, target hazards, etc	8/13/2014 6:23 AM
8	My main interest is in identifying those sites and infrastructure that is necessary to keep the community running. One perspective would be to judge the impact on the community if the facility or resource were no longer available. Public Safety facilities and communications infrastructure having a greater impact on the community than most individual small businesses, as an example. The list needs to have criteria that limits every site in the community from being CIKR. If the list becomes too large and unwieldy, it also becomes unmanageable and fails to support plans and decision-making.	8/12/2014 6:13 PM
9	Utilities (includes pipelines), government facilities (includes offices for city/other agencies, police/fire stations, radio repeater sites, etc.), significant hazardous materials locations, large hotels and assisted living facilities, significant transportation infrastructure.	8/12/2014 4:45 PM
10	The FEMA DHS 16 identified CIKR sectors	8/12/2014 3:32 PM
11	We use the FEMA definition to determine critical facilities such as police and fire stations, jails, hospitals, etc.	8/12/2014 3:18 PM
12	1. >\$1 million, 2. importance for COOP, COG	8/12/2014 3:16 PM
13	From what I understand: 1. Type of Facility 2. Facility populations, children, seniors, AFN, etc. 3. Insurance type 4. Location of facility; type of hazards...taken from Risk Analysis in Local Hazard Mitigation Plan.	8/12/2014 2:40 PM

**Q6 Thank you for your help with my research!If you will allow me to buy you a cup of coffee, just leave your name and address below.Your address will not be used in any other way.My wife capped my budget at \$300.**

Answered: 4 Skipped: 9



Answer Choices	Responses
Starbucks	100.00% 4
Peets	0.00% 0
\$5 Cash bribe	0.00% 0
<b>Total</b>	<b>4</b>



## Appendix F

## Questionnaire - NCRIC

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Who: Shane Francisco - San Francisco Fire Department

Why: Assistant Deputy Chief - Homeland Security Division

When: 6/25/15

Where: via telephone (415) 558-3680

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: What criteria is used to identify sites as CIKR?

A1: CIKR is all about the impact to the city/county/region if that asset is lost. Power, for example...if Novato lost power for a week, that would have a huge impact locally, but on a federal level, Novato losing power would be rather insignificant nationwide. So, the criteria are dependent on the perspective of the evaluating agency and always based on the potential impact to the segment of the population examined.

## Appendix G

Personal Communications with Dave Jeffries 7/30/14

Potentially:

Marin Flood Control District - Levees

MERA sites (I can help with that, for the Novato area, it's really just Mt Burdell, Big Rock Ridge and microwave access to NPD Dispatch. Not sure what connection they used for the back-up dispatch center at your admin.)

Marin Food bank (Located in Novato, serves a larger area, but could be a great resource)

Novato Public Works (Amongst other items, pump stations and Hamilton levees)

Marin County - I believe they have a medical clinic near NFD Sta 1

Churches as shelter locations.

Resource sites like grocery, gas stations, hardware, clothing

Some of this depends on how deep you want to go.....

I have no doubt you will have enough pages, may even need to slim this down a bit.

Dave

---

From: Erich Mesenburg

Sent: Friday, July 25, 2014 22:00

To: David Jeffries

Subject: RE: Thanks!

Perfect...thank you.

Can you think of other organizations I should contact for our Novato CIKR list beyond these possibilities?:

Public:

City of Novato –you

Novato Fire District

Novato Police Department

Novato Public Works

Novato Sanitary District

North Marin Water District

Novato Unified School District

Marin OES

MCSO

Marin County Parks (MCOSD)

USCG Base Alameda – Novato Housing Site

USCG – Pacific Strike Team

California Dept. of Fish & Wildlife

SMART

Caltrans

CHP

Golden Gate Transit

College of Marin – Indian Valley Campus

Private:

Sutter – NCH

Kaiser – Novato

PG&E

BioMarin

AT&T

Verizon

Comcast

Gross Field

Marin Humane Society

Novato Chamber of Commerce

-Erich

From: David Jeffries

Sent: Wednesday, July 23, 2014 11:16 PM

To: Erich Mesenburg

Subject: RE: Thanks!

It was my pleasure.

Here you go.

Also, I have a small library at home, let me see if there is anything that may be on point and I'll arrange to get it to you.

Dave

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From: Erich Mesenburg

Sent: Wednesday, July 23, 2014 15:13

To: David Jeffries

Subject: Thanks!

Thank you again for coming by Station 63 today, Dave.

I feel like you gave me some great direction and I hope that you are able to use my work in concert with our Improvement Plan.

When you get a chance, can I please get an electronic copy of your Quake Reaction 2014 SitMan and AAR?

Thanks - Erich

## Appendix H

Stakeholder Questionnaire – Sector: Chemical & Emergency ServicesStakeholder: USCG

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Who: Kevin Richards, DC2

Why: Command Duty Officer - USCG - Pacific Strike Team

When: 6/2/15

Where: via telephone (415) 883-3311 ext 220

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: In the event of a disaster, we will work with all of the planned local government emergency responders from the Novato and Marin County emergency contingency plans like fire, police, and medical, but we also have our own EMT's and we will try to get in the water as soon as possible...probably using the Black Point launch in Novato.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: Communication will be our most critical need...cell phone access or a landline, so probably PG&E, Verizon, and AT&T.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: Obviously, our hanger is critical, but also around 40% of our personnel uses the USCG base housing in Novato.

## Appendix I

Stakeholder Questionnaire – Sector: ChemicalStakeholder: BioMarin

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Who: Paul Stanley

Why: Senior Director of Facilities at BioMarin

When: 6/2/15

Where: via telephone (415) 506-3340

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: We have really tried to do everything we can to take care of ourselves and not be reliant on government services after a disaster because we know that you will be very busy. Our BERT (BioMarin Emergency Response Team) is up to around 50 people now and they are trained in medical assessments, first aid, and, of course, environmental release containment. We also have quite a few doctors and nurses who work in many of our facilities. Our BERT members are proficient with fire extinguishers, but we don't fight big fires, so we would definitely need NFD for those. Beyond that, we are well equipped



with trailers full of supplies and bathrooms to help about 1000 of us stay fairly self-sufficient for around 2-3 days.

- Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?
- Q2: All of our buildings have emergency power generators and we have the cogeneration system in the manufacturing building, but I suppose we depend on our contract fuel companies to deliver more fuel when needed. Also, we use private contract mediation companies to help with some of our potential haz mat releases.
- Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?
- Q3: Our number one priority is the 21 Pimentel storage building because that is where we keep the finished product. We could have 75 to 100 million dollars of product in cold storage there so that is definitely our biggest concern. Our next focus would be the 46 Galli manufacturing operation. We would need to secure and stabilize the operations there, salvage the proteins, and secure any hazardous materials. After those two buildings, it would just depend on a lot of different factors. We have a comprehensive business continuity plan that spells it out for us and we meet regularly to keep it up to date. The BERT meets monthly and we have also been getting building inspection training to help with initial evaluation of our structures. We know we cannot "red tag" a structure or enter an unsafe structure, but we train on personnel sweeps and product checks to ensure the safety of our people and our product.

## Appendix J

Stakeholder Questionnaire – Sector: Commercial FacilitiesStakeholder: Marin County Parks & Open Space Department

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Who: Rob Ruiz

Why: Chief Marin County Open Space Park Ranger

When: 6/2/15

Where: via telephone (415) 473-6405

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: We mostly just work with the North Marin Water District out at Stafford Lake, but also occasionally with the Sheriff's Office. Also, at the big events like the upcoming beer festival, we partner with CHP.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: The operation out there is fairly simple...of course we need PG&E to deliver power but we have a couple of portable generators if needed. We have a sewer service contractor that empties the septic system.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: Our primary concern at Stafford Lake would be our Corp Yard which is that first collection of buildings you come to after taking a right at the guard shack. The Corp Yard has our shop, maintenance facility, and park housing. We do have one employee who lives there full time with his family.

## Appendix K

Stakeholder Questionnaire – Sector: Commercial FacilitiesStakeholder: Novato Chamber of Commerce

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Who: Coy Smith

Why: Chief Executive Officer - Novato Chamber of Commerce

When: 6/22/15

Where: 807 DeLong Avenue

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: All of the government stakeholders affect our commercial properties in some fashion.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: It seems everyone depends on PG&E and Marin Clean Energy. Many of our businesses are leasing the space and are dependent on the owners.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: Many of the businesses in town are "mom & pop" with no back-up systems and no cloud. Any extended period without being able to operate could be disastrous for our business community. Here at the Chamber, we are backed up on the cloud and we could still communicate with our members if something were to happen to our office. If I can get to a laptop and a telephone, then we will be OK for a little while.



## Appendix L

Stakeholder Questionnaire – Sector: Commercial FacilitiesStakeholder: Buck Institute for Research on Aging

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Who: Tom Starr

Why: Facilities manager

When: 6/8/15

Where: via telephone (415) 209-2000

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: Like basically everyone else, we count on all of the first responders to help out if there is an emergency beyond our control. In the event of the real “Big One,” we could have a potentially significant hazardous materials problem in many of the laboratories.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: If PG&E was down, we would need diesel fuel delivered. I believe we use Royal Petroleum, currently. We have private industry professionals who help us determine if there are any airborne issues in the labs because of all the chemicals.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: We have about three days of diesel fuel stored up for our generators so that we can preserve our research. For us, our priority is to keep the mice alive and preserve the cell lines which are kept at negative 80 degrees Celsius. We do not envision many of the 300 or so people who usually work here to want to stay here, so we do not keep many emergency supplies on hand like food and water. We have an automatic gas shut off system and probably some water because of the large storage tank on Mount Burdell right behind us, but we will not be encouraging people to stay at the facility in a disaster just because of the potential for hazardous environments in the labs.



## Appendix M

Stakeholder Questionnaire – Sector: CommunicationsStakeholder: Marin Emergency Radio Authority

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Who: Gerald McCarthy

Why: MERA Project Oversight Committee member

With MERA since inception circa 1995

When: 6/5/15

Where: via telephone (415) 878-2690

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: MERA is not dependant on one stakeholder or one critical site, rather it is a complex system dependant on many systems, sites, and stakeholder groups. Specifically speaking for Novato, I would say the most critical local government stakeholders to which we depend would be the Counties of Marin and Sonoma.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: For one, we do not own the building or tower on top of Big Rock, so we are dependent on our lease agreement with a private organization called American Tower. They handle most of our critical facility maintenance, insuring the equipment is cared for with adequate climate control and security and so forth. Other private industry stakeholders would be PG&E for power, AT&T, Verizon, and other third party providers who handle data transmission and system control facilities. There are a lot of little things all working together in perfect harmony to allow one understandable radio source.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: Of course, the two big Novato pieces of the MERA integrated system are Mount Burdell and Big Rock, but again, the system does not depend on just one or two sites. If both of those towers were impacted and out of service, Novato would lose some coverage but still have limited MERA usage thanks to other sites like Mount Sonoma's intela-repeater. The Novato PD building is a receive-only MERA site. Also, we have incorporated an off-MERA network on the Z channel of your radios and we also have the VHF overlay plan in the event of MERA fail soft, overload, or site trunking.

## Appendix N

Stakeholder Questionnaire – Sector: CommunicationsStakeholder: AT&T

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Who: Lizette Ricaforte

Why: Communications Technician – Power side, AT&T

When: 6/19/15

Where: 350 Alameda del Prado – AT&T roaming office

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: I guess NFD for fires.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: PG&E for power, definitely. We have an emergency generator and a bank of batteries in basement to provide power, but we do not have a lot of fuel stored here. We have an AC

power connecting box on the building so that we can bring in portable generators, if needed.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: This building is the most critical for Novato. All of the cities telephone, T1, and T3 lines come through here.

## Appendix O

Stakeholder Questionnaire – Sector: CommunicationsStakeholder: Verizon

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Who: Kyle Riberdy (415) 985-5562

Why: Construction splicer at Verizon - Novato Central Office

When: 6/17/15

Where: Verizon - Novato Central Office 911 Diablo Ave

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: We have a good relationship with fire and police and do our best to keep the communication network up and running.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: We have many joint poles with AT&T and Comcast and even crossover equipment right here in the building for competing telephone services as mandated by law. We depend on

PG&E for power, but we also have that giant power generator you saw in the back yard with a large underground diesel fuel storage unit.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: This building is the most critical. As a central office we have all of the central lines, switching equipment, and city trunk lines. All of the Verizon communication comes through here...all of the copper and fiber optics. Through this building we provide Novato with POTS, DSL, and High Caps. We also have a triple redundant system to protect our internet service for the community.

## Appendix P

Stakeholder Questionnaire – Sector: Dams & Water and Waste Water SystemsStakeholder: NMWD

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Who: Chris DeGabriele

Why: North Marin Water District – General Manager

When: 6/8/15

Where: via telephone (415) 897-4133 ext. 8470

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: We are part of the Water Agency Response Network (WARN), so like during the recent Napa earthquake, we would depend on other water agencies to come in and help us out in a disaster. Also, we have cooperative service agreements with agencies like the Novato Sanitary District and the City of Novato to help us get things like emergency generators and any rolling stock that we might need.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: We have general service agreements with different organizations to provide all kinds of different equipment and services as needed.

Our dam is inspected annually by the Division of Safety and Dams and they recommended we prepare an Emergency Action Plan so we have hired a private engineering firm to prepare the plan and we will be holding a table top exercise in just a couple of weeks. In fact, your Emergency Manager Dave Jeffries will be helping us to run the drill.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: Of course, our biggest concerns are the Stafford Dam, the Stafford Lake Water Treatment Plant, and the North Marin Aqueduct. Since the widening project for Highway 101 has forced us to relocate much of the aqueduct, we are taking the opportunity to rebuild it larger with brand new pipes and we are installing provisions to assure safety at critical locations. Much of the system is 60 years old, so now we will be able to catch up to current standards. Areas such as underneath the San Antonia Creek, which could be subject to liquefaction during an earthquake, have been fitted with emergency connections on either side of the creek to connect temporary flexible pipes.

The Stafford Dam is actually one of the most well studied dams in California. We were able to use recorded data from two accelerometers on the Stafford Dam during the 1989 Loma Prieta Earthquake to create a 3D model of how a large scale earthquake would



affect our dam and no significant failure is predicted. The computer models show just a minor failure of about one foot of movement.

## Appendix Q

Stakeholder Questionnaire – Sector: Defense Industrial BaseStakeholder: USCG - Housing

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Who: Ross Perry

Why: Manager – USCG – Novato Temporary Quarters

When: 6/8/15

Where: via telephone (415) 506-3130

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: We are very much at the end of line in Hamilton and we have no PX, no emergency supply facilities, we have a coke machine and that's about it. So we depend on all of local government providers.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: Our utilities are a little unusual in the way that they are set up, but basically PG&E, AT&T, Comcast.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: I have 14 rooms at 227 S. Oakwood Drive on top of some offices, 11 apartments up on Cortez Court, and Long Term Housing has 65 families here at the Novato Housing Site.

## Appendix R

Stakeholder Questionnaire – Sector: Emergency Services & TransportationStakeholder: Marin County

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Who: Chris Reilly - Emergency Services Manager

Why: Marin County Sheriff Office of Emergency Services

When: 6/16/15

Where: via telephone (415) 473-6584

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: We mostly coordinate with the Coastal Region of Cal OES, in fact, their Emergency Services Coordinator comes to our office a couple of times a month. Of course you know that we work with all of the various local jurisdictions in the 11 cities/towns in Marin including the 300+ special districts we have around here. Recently, we have been working more and more with State Parks and National Parks...for instance, I was just working a project with the Golden Gate National Recreation Area on a tsunami response plan. So many of our organizations cross over and are interrelated...I just did a oil spill

plan the other day and it involved Fish and Wildlife and the United States Coast Guard.

It is impressive how interdependent we all are.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: We do not work much with private industry, except for PG&E...they are a big one.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: I think your NPD police station can host a back-up communications system in the event our Comm Center goes down, but I cannot think of any other infrastructure that is critical to our operations which happens to be in Novato. Of course, we have various assets throughout the county, but that is all I can think of in Novato. Our Department of Public Works probably has an area of concern over flood control with some of the levee system around Novato...I know that the storms in 2014 caused some considerable damage.

## Appendix S

Stakeholder Questionnaire – Sector: Emergency Services & TransportationStakeholder: California Highway Patrol

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Who: Bob Winnie

Why: CHP Officer - Golden Gate Division - Marin Office

When: 6/10/15

Where: via telephone (415) 924-1100

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: We don't really depend on anybody in Novato. We have primary enforcement responsibility on everything connected to the freeway and all of the state buildings...beyond that, we cooperate with NPD and MCSO.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: No private's really.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: Nothing in Novato stops our operation, but we are responsible for the DMV and any other state related buildings in town there as well as the overpasses and anything connected to the freeway.

## Appendix T

Stakeholder Questionnaire – Sector: Emergency ServicesStakeholder: Marin County USAR

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Who: Captain Owen Valuch - Novato Fire District

Why: Marin County USAR for 10 years

When: 6/10/15

Where: via telephone (415) 878-2690

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: Regional Task Force 1 depends on MCFD and MCPW along with the participating members from many of the local fire departments/districts. Same with the OES Team 11 Water Rescue component of Marin County USAR.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?



- A2: We will show up with a lot of material and equipment, but there exists the possibility that the team lead would need to make an emergency purchase of lumber or supplies from local businesses like Novato Builders Supply.
- Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?
- A3: For Novato, it's really just about the personnel. Rescue 65 can be in the mix for certain call outs, but really, the most critical USAR component in town are the USAR trained people who are on-duty at the time of dispatch. Our goal is to get as many people mustered together as quickly as possible.

## Appendix U

Stakeholder Questionnaire – Sector: EnergyStakeholder: PG&E

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Who: Jim Wickham

Why: PG&E Public Safety Specialist

When: 6/17/15

Where: via telephone (925) 337-5132

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: Well, it is usually the other way around...we know that most of the government stakeholders depend on us to continue to supply energy, especially in a disaster situation. For instance, during the Napa Earthquake when public works couldn't keep up with all of the debris that was all over the place, PG&E was able to mobilize a fleet of dump trucks to help out. We work hand in hand with 1<sup>st</sup> responders all over the state and we are all interconnected.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: We use many different subcontractors from time to time, even with an organization of over 20,000 employees we need additional support occasionally. Our different divisions all help each other out and we can send units from surrounding counties to assist wherever the greatest need might be at a given time.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: The Ignacio Substation is by far the most critical facility in Novato, in fact it is one of the top priorities for the whole county. Also, the natural gas transmission lines that run through Novato are critical to our operations.

## Appendix V

Stakeholder Questionnaire – Sector: Financial ServicesStakeholder: Novato Chamber of Commerce

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Who: Coy Smith

Why: Chief Executive Officer - Novato Chamber of Commerce

When: 6/22/15

Where: 807 DeLong Avenue

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: \*did not answer\*

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: The banks and credit unions are an important part of our local economy and we have quite a few in town...Bank of Marin, Umpqua, Bank of America, Wells Fargo, and so on.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: At the chamber, we know most of the bank managers, but we are not familiar with how critical their local Novato branches are to their overall continuity of operation. You would probably need to sit down with each bank. I know that we have cloud based storage at the Chamber and I would assume most of the banks all have off-site storage for their important records. I would think that, especially for the larger banks, the loss of one branch for a period of time would be a manageable situation.

## Appendix W

Stakeholder Questionnaire – Sector: Food & AgricultureStakeholder: Marin County Department of Agriculture

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Who: Stefan Parnay

Why: Deputy Agricultural Commissioner for Marin County

When: 6/9/15

Where: via telephone (415) 473-6700

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: Well, quite a few really. On the federal level, we work with the USDA (United States Department of Agriculture) quite a bit and the NRCS (National Resource Conservation Service) up in Petaluma. At the state level, its mostly the California Department of Food and Agriculture for instance if there is a problem with cattle disease. We also interact frequently with the California Department of Pesticide Regulation and, of course, the farm bureaus. Locally, we interact with many of the other county departments.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: We work a lot with all of the farm organizations...MALT (Marin Agricultural Land Trust), for example.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: You know, it is not so much what we have that is critical, our critical service to the community comes from being requested by the other stakeholders, such as farmers, to assist them after a disaster. For instance, when we had those large storms a while back and there was a lot of structural damage, we were asked to help estimate damage caused to the agriculture infrastructure.

## Appendix X

Stakeholder Questionnaire – Sector: Food and AgricultureStakeholder: Novato Chamber of Commerce

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Who: Coy Smith

Why: Chief Executive Officer - Novato Chamber of Commerce

When: 6/22/15

Where: 807 DeLong Avenue

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: Our restaurants depend on all the help they can get to stay in business...just a short period of being closed can be extremely costly. Not to mention all of the employees that depend on working. All of our buildings in town obviously need utilities, police, and fire services.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?



A2: PG&E for one, but also organizations like our Chamber and the Downtown Novato Business Association which all help support our business community.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: You would probably need to check with the City to get a list of restaurants and stores...we have many as Chamber members, but not all of them. I know there are city reports which could provide sales and tax data to help figure out which businesses would create the greatest loss to the local economy if they were out of business.

## Appendix Y

Stakeholder Questionnaire – Sector: Government FacilitiesStakeholder: Novato Unified School District

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Who: Leslie Benjamin

Why: Novato Unified School District – Public Information Officer

When: 6/24/15

Where: via e-mail

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: Novato Fire District, Novato Police Department, California Highway Patrol, Marin County Sheriff's Department, North Marin Water District, Novato Sanitary, Marin County Office of Education, California Department of Education, Marin County Office of Emergency Services, California Office of Emergency Services

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

- A2: American Red Cross, All Star Rents, North Bay Petroleum, Marin Clean Energy, Commercial Energy of Montana
- Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?
- A3: When school is in session and children are present: District Office (our EOC, Information Technology Dept. who hosts our servers, etc.), Operations Yard on Olive, Comcast/NUSD Co-Location facility at San Marin High School, and all our schools as they may be needed for shelter for the children. When schools are not in session: District Office (our EOC, Information Technology Dept. who hosts our servers, etc.), Operations Yard on Olive, Comcast/NUSD Co-Location facility at San Marin High School

## Appendix Z

Stakeholder Questionnaire – Sector: Government FacilitiesStakeholder: College of Marin

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Who: Mitchell Lemay

Why: Police Chief of Marin Community College District

When: 6/9/15

Where: via telephone (415) 485-9455

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: We will call MCSO occasionally for assistance in the hills for grow operations, hikers down, and anything that borders our two areas of responsibility. We will also work with NPD sometimes and they have keys, like the NFD does in the lockbox, to get in the gate and the buildings for emergencies.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

- A2: We have a very strong SEIU presence on our campus, so most all of the work done to keep us in operation is union driven internally. We might may private contractors around if we have a construction project going.
- Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?
- A3: We are mostly concerned about the students and staff...you can expect around 300-400 people at IVC during the day and then the population increases a little at night to more like 500 because of all the vocational night classes like the EMT and dental programs. There are no specific sites that are more critical than others on campus...for you guys, a concern might be the auto technology building and the geothermal center, also we have fuel storage in the maintenance building in lot 6.

## Appendix AA

Stakeholder Questionnaire – Sector: Healthcare and Public HealthStakeholder: Marin Department of Health and Human Services

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Who: Kathy Koblick, MPH

Why: Public Health Division Program Manager at Marin Department of Health and Human Services

When: 6/25/15

Where: via e-mail correspondence

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: City of Novato, NMWD, NFD

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: Private health labs (Quest, Marin Medical, Sutter)

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: NCH, Marin Community Clinic, the emergency supply trailers park at NCH, Kaiser Permanente Medical Center on San Marin Drive, NMWD

## Appendix AB

Stakeholder Questionnaire – Sector: Healthcare & Public HealthStakeholder: Sutter Novato Community Hospital

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Who: Lazaro Rojas

Why: Chief Engineer – Sutter Novato Community Hospital

When: 6/19/15

Where: via telephone (415) 209-1300

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: Novato Sanitary District, Novato Fire District, the City of Novato, Novato PD, Marin Department of Health and Human Services, North Marin Water District...we have good relationships with all of the local government bodies.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: None who are very critical, except PG&E.



Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: The hospital of course. We are fairly well prepared to operate for about 96 hours after a disaster. We can cancel out-patient visits and elective surgeries. We have a 900 Kw generator to power the facility with a 5,000 gallon diesel storage tank and plenty of medical gases including 4,000 gallons of liquid Oxygen. Our water supply comes from two different directions from the Water District and we have a refillable 8,000 gallon potable water storage reservoir which is after the meter which would help us if the supply was cut off. Also, we have emergency food storage and a satellite phone.

## Appendix AC

Stakeholder Questionnaire – Sector: Healthcare & Public HealthStakeholder: Marin Community Clinics

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Who: Susan Wiebers

Why: Novato Clinic Director

When: 6/18/15

Where: via telephone (415) 448-1500

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: We are a non-profit 501c3 charitable organization and not affiliated with any government organization.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: We do not have a large generator so I suppose we need PG&E.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: We see approximately 120 people per day in our Novato Clinic and we are going to open another building across the parking lot in 2016 which will double that amount. Since we are out-patient and not emergent, we could handle a temporary disruption in service in Novato. We have three clinics in Marin, so we have some flexibility in rescheduling and other doctors could help see urgent care needs based on prioritizing our patients if the Novato Clinic was closed for some reason.

## Appendix AD - \*Incomplete\*

Stakeholder Questionnaire – Sector: Information TechnologyStakeholder: Comcast Cable

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Who:

Why:

When:

Where:

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1:

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2:

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3:

## Appendix AE

Stakeholder Questionnaire – Sector: Information TechnologyStakeholder: Horizon Cable

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Who: Susan Daniel

Why: General Manager, Horizon Cable

When: 6/18/15

Where: via telephone (415) 663-9610

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: None.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: None.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: We actually just sold our stake in Novato's cable and internet to Sonic Communications, but I can tell you that our headend facility for Novato is in Hamilton on the hill across from your firehouse. That equipment would be critical to the service in that area. All of the conduit and other equipment just runs with all of the other utilities around Hamilton.

## Appendix AF

Stakeholder Questionnaire – Sector: TransportationStakeholder: United States Postal Service

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Who: Rich Silva

Why: USPS employee for over 25 years in Novato

When: 6/2/15

Where: 25 San Joaquin Place, Novato, CA

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: Just the usual local government folks...police, fire, medical, water, etc...

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: Well, we do not own our building so we depend on our landlord to keep the lights on.



Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: We completely depend on our sole facility there at 1537 S. Novato to stay operational. We have no back-up systems whatsoever...no generators or contingency plans.

## Appendix AG

Stakeholder Questionnaire – Sector: TransportationStakeholder: Caltrans

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Who: Steve Williams

Why: Caltrans District 4 Public Information Officer

When: 6/24/15

Where: via e-mail

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: In accordance with SEMS, Caltrans would coordinate incident response operations jointly with local OES (city and OA) through CalOES, or directly with local OES depending on the circumstance. Caltrans would be looking for exchange of situation and status reports on local response (typically through the OA) directly at the EOC to EOC level as determined appropriate to address the circumstances of the incident/disaster. Caltrans can also directly coordinate operations at EOC or IC level with locals (city, county or special district) if required.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: In an emergency situation suppliers of materials such as Asphalt Concrete, Ready Mix Concrete, large lumber and quarry products, as well as large/specialty equipment rental businesses, could be critical to Caltrans emergency operations within the North Marin/Novato area depending on the circumstances of the incident.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: Route 101 through Marin/Novato is a state “Lifeline Route”, so all structures and roadway are a first priority for inspection and emergency repairs post any disaster or major incident. Priority in emergency route restoration would focus on movement of emergency response traffic (responders and critical logistics) along the route.

Route 37 through Marin/Novato is a regional “Recovery Route”, so once Lifeline route inspection is complete, recovery routes are inspected and importance for levels of emergency restoration is coordinated through Cal OES, with input from local and OA OES’s.

Caltrans does not have any Maintenance Facilities with rolling stock in Northern Marin County. Maintenance Facilities that serve the Marin County area located in Petaluma and near Sausalito (Route 1/101 junction).

## Appendix AH

Stakeholder Questionnaire – Sector: TransportationStakeholder: Golden Gate Bridge Highway & Transportation District

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Who: Rich Hibbs

Why: Director of Bus Operations

When: 6/17/15

Where: via telephone (415) 257-4559

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: We don't have our own police or fire so we depend on all of the organizations in all of the many cities in which we operate, Novato, of course, being one of them. We try our best to be a good community partner because we depend on your services and we have resources that can benefit the community in times of need like the time a while back when we sent two buses to Novato during a big storm to help you evacuate an elderly population from Los Robles Mobile Home Park.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: None really. We sublease a little bit of our yard to a tow company, but we do not depend on them.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: We have about 200 buses in our fleet spread over three yards: Santa Rosa, San Rafael, and Novato. We greatly depend on the Novato yard as we can have up to 40 or so buses there at a time, especially at night. At the Novato yard, we will fuel, service, and wash typically at night...that is why our mechanic there is typically on graveyard shift. We will also have a dispatcher at that facility and significant underground diesel fuel storage.

## Appendix AI

Stakeholder Questionnaire – Sector: TransportationStakeholder: North Coast Railroad Authority

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Who: John Williams, President of The Woodside Consulting Group, Inc.

Why: Contract freight operator for Novato area

When: 6/18/15

Where: via telephone (650) 289-9850

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: None...just the contract for freight service with the North Coast Railroad Authority.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: None.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: In Novato, just the tracks. We run through there a couple times a week, each way.

## Appendix AJ

Stakeholder Questionnaire – Sector: TransportationStakeholder: Sonoma Marin Area Rail Transit

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Who: Jennifer Welsh

Why: Security Manager - SMART

When: 6/17/15

Where: via telephone (707) 794-3330

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: We depend on all of the local PD's and FD's up and down the tracks...also, we occasionally use engineer and construction services from some of the different public works departments in the jurisdictions we operate in.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?



A2: We are using a lot of subcontractors right now, but when we are fully up and running all of our operations will be self-sufficient with SMART employees.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: Of course the tracks and the two Novato rail stations...other than that, we are probably going to purchase the structures where NFD temporary Station 64 are now and house some equipment there. What that area will consist of and how critical it will be to our operation is not clear just yet.

## Appendix AK

Stakeholder Questionnaire – Sector: TransportationStakeholder: Marin Airporter

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Who: David Hughes

Why: Vice President & Charter Manager

When: 6/18/15

Where: via telephone (415) 256-8830

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: We have contract with Marin County to provide various shuttle bus programs and we also have a contract with National Parks for some service out in Pt. Reyes.

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: None

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: Our main facility is in San Rafael and we have the most buses and fuel there. In Novato, we just have 2 or 3 large buses and couple of the smaller transit buses overnight. No fuel storage. The building there is not critical to us...we rent a small part of it, but basically we just use the awning for people to stand under and the parking lot for folks to park in. The parking lot is pretty useful, we charge for long term parking there.

## Appendix AL

Stakeholder Questionnaire – Sector: Water & Waste WaterStakeholder: Novato Sanitary District

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Who: Sandeep Karkal

Why: Deputy Manager – Engineer, Novato Sanitary District

When: 6/19/15

Where: via telephone (415) 892-1694

Intro: Captain Erich Mesenburg of the Novato Fire Protection District is creating a list of Critical Infrastructure and Key Resource sites in Novato to be assessed for damage by first responders after a major disaster. Captain Mesenburg is also using this information for an applied research project to be submitted to the Executive Fire Officers Program of the National Fire Academy.

Q1: Who, if any, are the local, state, and federal government stakeholders in Novato that your organization depends on for your continuity of operation?

A1: We have close relationships with North Marin Water and the City of Novato. Of course, you (NFD), NUSD, etc...

Q2: Who, if any, are the private industry stakeholders in Novato that your organization depends on for your continuity of operation?

A2: Well, PG&E, for sure.

Q3: What systems, buildings, and resources in Novato are critical to your continuity of operation?

A3: We could talk all day about the critical components of the system...our treatment facility on Davidson, of course, is the big one, but we also have 40 pump stations and 250 miles of pipes. If it helps you, our 5 main stations are in Hamilton by the amphitheater, Pacheco Pond near Bel Marin Keys, Marin Village near South Novato at Rowland, Olive Avenue near Redwood, and in Bahia at the end of Topaz. Each main station has a diesel generator with the exception of Olive which has a natural gas generator. We also have portable generators that we can transport out to a pump station as needed and 6,000 gallons of diesel stored. North Marin Water District is equipped to function without assistance for 72 hours so we are supposed to function that long and an additional 72 hours after they have stopped supplying water. We have food, water, and dry rations available at the treatment facility to keep us fairly self-sufficient for a while after a disaster.