

FROM VULNERABILITY TO RESILIENCE:
EMERGENCY PLANNING FOR INDIVIDUALS WITH DEVELOPMENTAL
DISABILITIES AND THEIR SERVICE PROVIDERS IN HUMBOLDT COUNTY,
CALIFORNIA

By

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ABSTRACT

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Shortfalls in emergency mitigation, planning, response and recovery for people with disabilities have frequently resulted in increased negative impact for these individuals ranging from a loss of essential services to preventable injury and death. The purpose of this project was to identify the gaps in planning for individuals with developmental disabilities and their service providers in Humboldt County, California, and close these gaps by providing outreach, education, and emergency engagement plans for these individuals and members of their support teams. This project used a mixed-method approach, including questionnaires and feedback forms, informal interviews, workshops, and examples of on-site planning specific to the needs of the individuals involved. Secondary information was drawn from federal, state local and regional agencies and coalitions. The goals of this project were to reduce or eliminate the risk of death or injury, expedite appropriate response and recovery efforts, and ensure continuity of services for Humboldt County's developmentally disabled residents in the event of a major disaster by providing pertinent information and resources to those who support them. It also suggests guidelines for creating site-specific and individual-specific Emergency Engagement Plans for these same individuals and their service providers, in

addition to business continuity plans for those who are vendored with the Redwood Coast Regional Center to provide essential services, thus increasing community resiliency as a whole. As a result of this project, a seventeen-item list of key recommendations was developed and submitted to the Redwood Coast Regional Center to be used as a guide in assisting service providers in filling gaps in the emergency planning process. In addition, four sessions of two-day emergency planning workshops were held in Humboldt, Del Norte, Lake and Mendocino Counties in the following year.

Key Words: hazard, resiliency, disaster, vulnerable population, emergency engagement plan.

DEDICATION

“The Path is Made by Walking”

- Antonio Machado

This thesis project is dedicated to those who have walked beside me along my life’s path:

First, to my mom, Jana Clover, who is the source of her children’s strong work ethic and existential courage as a result of growing up watching her walking her own path and doing what the world said could not be done.

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Finally, this is dedicated to all of the clients and students I have worked with over the years who have been the personification of resiliency by refusing to allow the rest of the world, or their circumstances, to define who they are or what they can accomplish.

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“The Greatest Way to Find Ourselves is to Lose Ourselves in the Service of Others.”

- Mahatma Gandhi

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INTRODUCTION

We are not prepared. Residents living on the North Coast of California are subject to several natural hazards including earthquakes, tsunami, flooding, mass wasting and other events. Dan Larkin, former head of the Humboldt County Office of Emergency Services, has emphasized to local stakeholders that when the highly anticipated large-magnitude Cascadia Subduction Zone earthquake and ensuing tsunami occur, this region will be divided into “17 isolated islands of humanity.” Community members stranded within these regions will have to rely upon one another for emergency assistance, as it may be several days or even weeks before outside help can arrive. Many secondary effects will likely occur as a result of damaged infrastructure, compounding the crises of the initial event. Severe weather and other events can have a similar effect of causing widespread isolation and stretching of local emergency response and other critical resources. In short, sooner or later, we are going to experience the largest disaster to ever occur within the United States. Our lives are going to be changed forever.

While all citizens in this region may be considered vulnerable in the event of a major disaster, some will likely suffer a much greater impact than others. In the course of my efforts to promote preparedness for the elderly, disabled and general populations in local communities through my work with the Redwood Coast Tsunami Work Group, time and again I have encountered an attitude of dependence from many (though certainly not all) of the seniors, individuals with disabilities, and others whom I was helping in planning. I am frequently asked, “Who is going to come and help me

evacuate? Or “Well, who is going to save me?” Time and again I have had to look them in the eye and give them an honest answer: “Nobody. That is why you need to make a plan now to help yourself.”

This thesis project is an attempt to identify and close the gaps in emergency planning for some of the more vulnerable populations on the North Coast in terms of preparing for a natural disaster. In contemplating the severity of this issue, several questions may be raised:

- How do we define vulnerability?
- What factors contribute to vulnerability?
- What does it mean to be resilient in the event of a disaster?
- Who are the most vulnerable citizens in the local area?
- Who is responsible for helping these individuals prepare?
- What can be done to make these individuals and their service providers less vulnerable before the next major disaster?
- How can we promote community resiliency?

Everyone has a responsibility for preparing themselves for disasters.

Unfortunately, there are many who maintain an attitude of dependence and perceive their own emergency preparation as solely the responsibility of the government or other agencies. As any professional in emergency management is likely to tell you, their primary role is to keep as many people breathing as possible. Schools and other areas where there are the largest numbers of people gathered must logically take priority over responding to any individual who simply failed to plan ahead. Each agency with a

responsibility to respond in the event of a disaster already has a critical role to play to save lives, maintain critical infrastructure, and prevent further secondary effects from damage suffered. There are only so many first responders throughout the county and they will already be stretched beyond their maximum capacity. Outside assistance would take time, if it were available at all. It would therefore be impossible for them to focus their efforts to send anyone to “rescue” any one person in the initial response phase of a disaster, or to provide the services, comforts and supports that an individual may need for their special circumstances after the event occurs. In short, there is no possible way for government entities to compensate for a lack of planning in dealing with subsets of populations whose circumstances require special planning in order to maintain their health, functionality, or basic well-being. There will be no white knight coming to rescue us. We must shift these unrealistic expectations placed on government entities and recognize that preparedness is everyone’s individual responsibility. This is all the more critical to understand when dealing with any number of subsets of the population for whom individual planning is more difficult due to their dependence upon other individuals and agencies for assistance on a daily basis.

Providing adequate inclusion of the most vulnerable populations in the emergency planning, response and recovery process has historically been an area of difficulty for emergency managers. Most often, familiarity with these groups and their individual needs, such as language and other communication barriers, physical and behavioral considerations, and personal access and functional needs, are so individualized that it becomes a significant challenge during the planning process to make any attempt to

bridge the gaps that many populations present. Harder still is finding a way to identify and take into consideration all of the other factors that can contribute to individual vulnerability. Because there are an endless number of special circumstances that can apply to each individual within a society, an individualized, case by case planning is the only real, logical and viable solution. Clearly, this is not something that can be done by those who are not intimately familiar with the specific needs of the individuals themselves.

Due to gaps in understanding, interaction with, and planning for individuals with unique and often challenging needs, countless tragedies have occurred. However, lessons learned from these events can help steer us in the right direction for future planning. A well-known example is that of the Japanese tsunami in 2011. According to the SEEDS Asia Report* published in April of 2011, it was clearly identified that more than 2/3 of those who perished were over the age of sixty. At least 50% were over the age of 70. Clearly, the vast majority of those who died were elderly and unable to evacuate to a safe location. Many others who perished drove into the hazard zones in an attempt to return and save them. This post-event research indicated that three primary factors resulted in these deaths: an inability to receive the necessary information, an inability to understand the information, and an inability to act upon the information that was received.

In local post-event debriefings following the tsunami warning issued for Humboldt County in response to the Japanese Tsunami, several emergency responders reported that they were having difficulty getting some of the people to evacuate from the community of King Salmon due to lack of wheelchair-accessible transportation. It was

later revealed that a local bus company was available, but were waiting upon emergency personnel to contact them, rather than planning in advance to make themselves available for this purpose.

In another local example, responders who were conducting evacuations in the community of Manila encountered a nonverbal autistic teenager who was waiting at his bus stop to go to school. It was obvious that he was unaware that the area was being evacuated due to a tsunami warning and that there would be no school that day. The emergency responders were unable to effectively communicate with this individual to find out where he lived, tell him that the school bus was not coming for him, or get him to evacuate with them. They reported that the individual in question was becoming increasingly agitated. The first responders called in to their supervisor to get feedback as to what they should do and the message they received was to take him out the area - by force if necessary.

These examples illustrate the weakness in planning for these individuals. For me, the greatest lesson in this was how some simple planning on the part of those who know these individuals (whether it be their family, the local school, regional center, neighbors or others) could have made a big difference. It was upon hearing these and other stories that I began formulating ideas for steps that could be taken now to avoid similar shortfalls in the future.

Rather than a top-down expectation placed upon government officials, a bottom-up approach from the individuals, members of their support teams, and local community is the more appropriate means of planning. Oftentimes, ideas originating from

government entities for assisting these populations are not feasible or realistic for their needs (such as sheltering up to 200 individuals with autism at one site, as I once heard proposed during a training in Sacramento). In reading testimonials from people with disabilities as to the shortfalls they experienced during an emergency that were a direct result of lack of planning for their specific needs, it was easy to recognize that, in every case, better understanding of the needs of others during the planning process planning would have avoided many of the problems that occurred. However, the individual themselves needed to be directly involved in finding and implementing those solutions, rather than relying on those in positions of authority to do it for them.

Cookie-cutter approaches and generic information, such as a list of supplies one should incorporate into their personal disaster kit, may be a useful, albeit basic, tool in planning for the general population, but may not be adequate for those with special needs. It is also unrealistic and inappropriate for community members to expect that the government or emergency managers are in some way responsible for planning to meet the needs of every individual in the communities in which they work. The only real solution is for the individuals themselves to realize that it is their responsibility to take the necessary steps to be prepared to “go it alone”, and to receive the support they need in doing so.

This project was an attempt to identify a representative population in terms of vulnerability, and take steps to help empower these individuals and the agencies that serve them to mitigate, prepare for, appropriately respond to and recover from a disaster on the North Coast before the next major event. The project itself initially focused

primarily on residents of Humboldt County, but later led to additional education and consultation being provided in Del Norte, Lake and Mendocino Counties. Due to the ultimate determinant of success for this project being dependent upon an actual event occurring, initial success was instead determined in terms of the number of individuals and/or agencies who created or improved upon an emergency engagement plan and who participated in one or more drills in which they were able to test their plans.

In order to better understand the subject of vulnerability as it pertains to residents of the North Coast, the first chapter of this project presents a background as to the overall hazards of this region. This chapter will also serve to further reveal the importance of this project and preparedness in general.

The second chapter involves a review of the current literature pertaining to resilience and vulnerability in order to understand the best ways to reduce vulnerability while improving individual and community resilience in the work to follow.

The third chapter involves a discussion of the theories and methodologies that formed the framework for this project. I review the approach and purpose of this project as well as my role and the obstacles, bias, goals and expectations involved. There a discussion of the rights and responsibilities for individuals involved in emergency planning, and provides an explanation of some of the terminology used and information on my personal background. After laying a foundation for understanding the issue at hand and my interest in this area of study, the chapter identifies the representative population used in this project and gives a brief overview of the ways in which multiple factors pertaining to vulnerability are represented and addressed utilizing this population

as an example, which provides a basic outline for understanding ethics and challenges that may be encountered when working with this target population.

Chapter four lays out an overview of the three steps involved in the project itself, which was addressed using a dispute resolution approach. First, this project involves a situation assessment and review of the steps taken to create a strategy to address the problem, and create an objective. Second, I include an overview of the stakeholders involved and, finally, the development and implementation of workshops and tabletop exercises, including and the feedback received from this initial activity, which provided guidance for improvements. This chapter sets up opportunity for a brief evaluation of what was learned from implementing this project, and taking this project to the next level.

Chapter five provides an excerpt of the seventeen recommendations that were provided in the final report submitted to the Redwood Coast Regional Center as a culmination of information gleaned in during this project. These recommendations reflect identified needs based on information from research, interviews, feedback, tabletop exercises, and other sources utilized in this thesis project.

Chapter six concludes this project with a brief discussion, reflection on the process, identification for areas of possible improvement. It includes the activities and results that have occurred not only in Humboldt, but also in Del Norte, Mendocino and Lake Counties a direct result of this project. This list of recommendations was provided to the Redwood Coast Regional Center and Area Board One, and helped lead the way to a plan to implement a similar project over a wider geographic area.

I end this report with a bibliography and list of references used in completing this project, followed by an appendix, which includes sample documents I have created and used in the workshops, which can be modified to fit the needs of individuals and agencies who participated in the trainings and workshops I provided as they pursue their own emergency planning endeavors. It also includes a section specific to an inevitable event occurring on the Cascadia Subduction Zone and an overview of the effects that are likely to be experienced in Humboldt County during this 'worst case scenario' and a list of California regional centers.

* SEEDS Asia Report - The Great Eastern Japan Earthquake: In depth damage report by affected cities, published April 28, 2011.

BACKGROUND

Humboldt County Hazards

Residents of the Northwest Coast of California live in one of the most hazard-prone regions in the United States. This geographic area is the most seismically active region in the contiguous United States. Earthquakes large enough to cause damage occur on an average of once every three years on the North Coast (Dengler, 2012). In addition, seasonal windstorms in this forested region frequently leave people on the North Coast without power or access to open roads, isolating them from the outside world for days at a time. Large flooding events are not uncommon and an event similar to the flood of 1964, which devastated entire communities, could occur in any given year.

The 2013 Humboldt County Hazard Mitigation Plan identifies the primary hazards of concern as being catastrophic dam failure, drought, earthquake, flood, landslide, severe weather, tsunami, and wildfire. Although this is by no means an exhaustive list of potential hazards, nor does it cover all potential secondary hazards that could occur as a result of many of these events (such as an increased need for mental and behavioral health services, interruption of services, economic impact to families, etc.), it does provide a solid foundation for emergency planning. By anticipating and planning for hazard events such as these, we can also prepare ourselves for other, lesser events or secondary effects generated by larger events.

There are many active fault zones both onshore and offshore that can cause ground shaking in Humboldt County. The region can also be affected by earthquakes of

strong magnitude originating from outside of the area. The Humboldt County coastline parallels the southern end of the Cascadia Subduction Zone, which ends at the Mendocino Triple Junction, widely considered the most active seismic area in the contiguous United States. Seismic events along any of these areas can have an impact on structures and critical infrastructure, as well as hampering the availability of supplies and assistance from out of the area for extended periods. Secondary effects such as massive landslides, liquefaction, surface rupture, hazardous materials release, power outages, fire, and tsunami activity can also occur, putting more lives at risk and amplifying the amount of damage suffered (Dengler, et al, 2011).

The Northwest Coast of California is the most tsunami-prone region in the continental United States (Dengler, et al, 2011). There are two types of tsunami that can affect this region. The first is a distant-source event generated by an earthquake far away, which may take several hours to arrive and therefore would allow for some degree of advance notice to residents. On the other hand, a local earthquake with underwater land displacement could generate a local-source tsunami that arrives within minutes of the onset of ground shaking (Dengler, et al, 2011). In the event of a tsunami, there will more than likely be several surges timed minutes or hours apart (Dengler, 2012). Aftershocks can potentially cause further tsunami activity and infrastructure damage.

Despite the gravity and high risk of earthquake and tsunami activity on the North Coast, weather-related disasters are more common - particularly flooding events (Dengler, 2012). As with all states other than Hawaii, flooding is the most commonly experienced disaster in the United States (Dengler, 2012). The infamous hundred-year

flood of 1964, the worst flooding event in Humboldt County's history, affected people far beyond the immediate area, and was considered the largest emergency in the history of Cal Trans (McCarthy, 2013). The high water markers along Highway 101 and local roadways indicate the magnitude of this event. In any given year there is a 1 in 100 chance of experiencing a similar event, which is the reason such an event is often referred to as a "100-year flood" (Dengler, 2012). However, much more common is the seasonal rural and urban flooding that occurs throughout the county on an almost annual basis (Burnet & Masterman, 2010).

Weather-related events involve more than flooding. Seasonal wind storms with gusts of over 90 miles an hour (such as the New Year's wind storm in 2005) affect the North Coast, resulting in widespread power outages, uprooted trees, overturned mobile homes and other damage, including, at times, closing of all transportation corridors to and from the area (Dengler, 2012). Ground saturation also contributes to unstable slopes and mass wasting events.

Lightning strikes contribute to wildfires that have burned large areas and compromised air quality for eastern portions of Humboldt and adjacent counties. These fires resulted in State of Emergency declarations in 1999 and 2008 due to poor air quality from local wildfires (Lindsey, 2008).

Massive landslides from earthquake activity and ground saturation have caused damage to many structures and closed transportation corridors leading in and out of the area for extended periods. However, landslides also occur in good weather and without warning. Landslide events in and around Humboldt County can result in the movement

of millions of tons of earth, large rocks and debris, and take weeks or even months to clear (McCarthy, 2013).

There are some dams which, if catastrophic failure were to occur, could impact residents in certain parts of the county. An example of this would be the Matthews Dam on the Mad River in Trinity County, which could flood much of the communities of Blue Lake and Arcata if catastrophic failure were to occur while the Ruth Lake Reservoir was full. If the Scotia Log Dam on the Eel River were to experience sudden failure, over 60 homes could potentially be wiped out with no warning or time to evacuate (Larkin, 2012).

Although the preceding is not an exhaustive list of all hazards that can affect residents on the North Coast in any given year, it paints a picture of the likelihood of community members experiencing an event in their lifetime and the necessity to plan ahead for just such an occurrence.

For more information on the Cascadia Subduction Zone, see Cascadia (APPENDIX A) of this report. For further information on the potential effects of a Cascadia Subduction Zone event on Humboldt County, see Physical Vulnerabilities (Appendix B) of this report.

LITERATURE REVIEW

Since the 1960s, the topic of identification of vulnerable populations in emergency management has become an increasing area of focus. During this time, several approaches have been utilized in an attempt at identifying factors pertaining to increased vulnerability, so as to try and mitigate for those factors and thereby reduce the vulnerability of those at risk. At the same time, the study of resiliency has received more attention, starting with general systems theory in the 1950s, and, in more recent years, being applied to fields such as biology, technology, psychology and human development. This literature review seeks to present factors contributing to both vulnerability and resiliency utilizing the lens of multiple disciplines, and expanding the range of focus from the broader community level down to the more personal, individual level. This approach allows for better preparation, improved tools to assist those most in need, and the development of coping mechanisms for both clients and caregivers, in hopes to reduce effects of, and expedite recovery from, trauma and disruptions resulting from a major hazard event.

With these goals in mind, the purpose of this literature review is to identify common current themes pertaining to resiliency, and vulnerability, as indicated in recent literature. Because resilience and vulnerability are, by and large, two sides of the same coin, it is my hope that, by gaining a better understanding of some of the different perspectives on both resiliency and vulnerability, we can identify where these concepts merge, identify contributing factors which are often overlooked in emergency planning,

and utilize a more holistic approach to reducing vulnerability and increasing resiliency on an individual level, thus increasing community resiliency as a whole.

Examining in closer detail selected case studies, methods or reports from historic quantitative and qualitative-based approaches may bring to light specific examples of ways in which certain groups were found to experience increased vulnerability and reveal gaps which should be addressed prior to the next hazard event (whether it be the result of natural processes or human causes). I believe the principles gleaned from the case studies on vulnerability can be applied to help identify and prioritize populations in accordance with their perceived level of vulnerability.

By gaining a better understanding and identification of contributing factors for resiliency, this project addressed not only looking at the basic physical needs involved in emergency planning, but the social, emotional, psychological, behavioral and specialized service needs which are key for this population, yet are typically not adequately addressed in the planning, response or recovery process. Further, by incorporating interdisciplinary studies on resiliency, I was able to include information from fields of study not always applied in emergency planning, such as knowledge gained from studies in sociology, psychology, neuroscience, and human development. This allowed for this project to incorporate a more holistic perspective on planning for individuals with developmental disabilities and the overall community.

Terminology

For purposes of consistency with widely accepted definitions, during this literature review and throughout this thesis I identified with the 2009 version of accepted terminology from the United Nations International Strategy for Disaster Reduction (UNISDR) for commonly used terms such as risk, hazard, vulnerability, adaptation, disaster, exposure, mitigation, preparedness, response, recovery and resiliency. The UNISDR was established in 2000 with headquarters in Geneva, Switzerland. Its three strategic goals are to integrate disaster reduction into sustainable development policies and planning, develop and strengthen institutions, mechanisms and capacities to build resilience to hazards, and incorporate risk reduction approaches into emergency preparedness, response and recovery programs.

Resiliency

Why is it that, when a sudden, dramatic event occurs, some people step into action while others stand and watch? How can two families living side-by-side have both of their homes destroyed by a tornado, flood or fire and one manages to recover and go on with their lives fairly quickly while the other experiences deeper and more lasting impacts? Why do some people become engaged when a disaster occurs, and step up to help others, while others despair and wait to be rescued? How are some able to cope with emergencies or bounce back from a crisis while others fall apart? It could be argued that these differences in response and adaptation to events are directly linked to an individual's level of resilience.

Whether discussing psychological, physical, personal or community resiliency, we are referring to the ability of an individual or system to recover quickly from an event or misfortune without being overwhelmed. The Merriam Webster online Dictionary includes in its definitions of resilience, “the ability to become strong, healthy, or successful again after something bad happens” (2017).

Resilience “applies to systems of people and nature at all levels: individuals, communities, businesses and nations” (Walker & Salt, 2006). Whether we are discussing resilience from an ecological, community, financial, engineering, community or personal perspective, resilience can be traced back to general systems theory (von Bertalanffy, 1950). General systems theory includes the notion that there are certain universal principles that all system structures have in common. Von Bertalanffy believed that these principles could be applied to all scientific systems, from financial to biological. Since the time that von Bertalanffy presented his theory, it has been utilized in the fields of psychology, communication, computing, engineering, public health, ecology and human development, among others (Gunderson, 2000). C.S. Holling applied the concept of resilience to ecology (Holling, 1973). Gunderson (2000) later borrowed from Holling’s definition of ecological resiliency to define resilience in that particular context as “the capacity of a system to absorb disturbance and reorganize and yet persist in a similar state.” Gunderson (2000) further pointed out two aspects of adding resilience to managed systems. The first strategy deals with restoring or maintaining resilience by increasing the buffering capacity of the system, managing for processes at multiple scales, and nurturing sources of renewal in order to restore or maintain ecological resilience. The

second strategy entails properties such as those involved in functions of social learning and social capital that contribute to resilience in human organizations. The principles embedded within these strategies (such as learning, engagement, trust, institutions and local knowledge) can be also applied to social systems for increasing personal and community resilience to disasters.

From a hazards research perspective, the definition of resilience is described as “the ability to survive and cope with a disaster with minimum impact and damage” (Berke & Campanella, 2006). One could say that we can, from a political ecology standpoint, merge the concept of resiliency with that of adaptive capacity. In this manner, the definition for adaptive capacity is “the ability of a system to adjust to change, moderate the effects, and cope with a disturbance” (Brooks, Adger & Kelly, 2005). To apply these ideas to individuals and groups of people, not only can we prepare ourselves to survive and minimize damages, but we can also learn to adapt to the changes that a major event brings in order to reduce the negative personal impact we experience as a result.

A similar definition to Gunderson’s is applicable in terms of individual human resiliency, as well as support systems that serve various population groups, such as the elderly and disabled. There are factors that contribute to the capacity of an individual to handle major disturbances and still maintain an ability to function during or shortly after these times of instability, while others around them may not fare as well. In terms of developmental theory (theories on the means to achieve desired change), post-disaster

resilience is viewed on several levels, including resistance to stress, positive transformation, and recovery (Masten & Obradovic, 2008).

The Millennium Declaration of 2000 and accompanying Millennium Declaration Goals incorporated risk reduction and the correlation with poverty, with 18 targets and 48 benchmarks for countries to use as indicators for poverty reduction. (Cutter, et al., 2008). In 2005, the Hyogo World Conference on Disaster Risk Reduction took place in Kobe, Japan. Based on this conference, the Hyogo Framework for Action was created, which focused on five priorities for ways to build resilient communities (United Nations, 2005). These same macro-level principles can be applied at the micro level to build resilience among clients and service providers by 1) making risk reduction a priority; 2) identifying and assessing risks; 3) using education to build a culture of resilience; 4) reducing risk factors; and 5) strengthening effectiveness of response efforts by ensuring individuals and agencies are ready to act and equipped with the necessary tools and knowledge to do so.

In one of the more thorough assessments of community resiliency, Susan Cutter and several colleagues created a list of community resilience indicators, with sample variables for each. In this work, merging perspectives on resiliency at the community level were analyzed and a framework for measuring community-level resilience to hazards was developed (Cutter, et al. 2008). They coined it the Disaster Resilience of Place (DROP) Model. These categories for community resilience included ecological, social, economic, institutional, infrastructure, and community competence dimensions. As an example, for community competence, such factors as local understanding of risk, counseling services, rates of mental illness, and quality of life were listed (Cutter, et al.

2008). Emphasis was placed on a community's ability to cope with and learn from hazard events in order to improve mitigation and therefore increase its resilience before another event occurs. While this was a valid look at factors identified with resiliency at the community level, it lacked, in the very least, a more involved consideration of individual resiliency and vulnerability from a psychological and human development approach. However, borrowing from principles of the DROP model, it is my belief that we can create more resilient communities by reaching out to the social systems and natural supports (such as family members, care providers, friends, neighbors, and others) who work with these communities, increase competence, and make simple environmental modifications in order to decrease impact of, and increase overall client resilience to, hazard events.

Masten and Obradovic (2008) studied resilience from a human development perspective. Like Luthar (2006), Masten and Obradovic emphasized that resilience in people primarily depends upon or is developed based upon relationships, which provide opportunity for developing interactions, flexibility and adaptive capacity for change. In terms of human development, these protective systems involve "social capital," the human relationships that develop between those who live and work within a society which contribute to the effective functioning of those societies because of the support given to one another on a variety of levels, and "human capital" which involves an individual's own adaptive capacity. When each of these protective systems is in place, the likelihood of an individual being resilient in the face of challenges and adversity is high. In order to understand the best ways in which to foster resilience in order to

prepare individuals and agencies for the event of a disaster, it is important to take into consideration each of these contributing factors. For individuals with intellectual and developmental disabilities, human capital (including the knowledge, skills and experience of professionals and care providers upon which they are often dependent) is crucial. (For more information on these protective systems, see APPENDIX C of this report).

There is argument as to what degree, if any, biological and genetic factors contribute to personal resiliency. Several neurochemicals have been identified as having a potential effect on resiliency. In terms of brain development, even parent-child interactions during the earliest years of a child's life provide stress in patterns which affect future resilience. Initial responses to stress occur in the lower brain stem, which is the first part of the brain to develop. The last part of the brain to develop is the upper cortex, which allow for self-control, abstract thinking, and foresight. Threat or distress shifts control from the upper brain to the lower brain, and makes it harder to use the higher systems in the brain (Szalavitz & Perry, 2010). The differences in brain chemicals, structure, and insults due to physical injury or illness can therefore all have an impact on individual processing and resiliency. It is possible that further research on brain development can provide helpful tools and information to assist those working directly with children, mental health issues, and individuals with cognitive impairments who are impacted by 'extreme stress' events.

Windle, Bennett, and Noyes (2011) performed an assessment of research in resilience and psychopathology over the past 20 years in attempt to gain a clearer understanding of an operational definition of resilience. They brought to question

whether researchers had actually been measuring resilience or other factors and performed an analysis of the psychometric rigor of measurement scales used to study resiliency. They concluded that all of the 15 measures utilized to identify resiliency were flawed and had missing information pertaining to psychometric properties. The authors identified the Connor-Davidson Resilience Scale, the Resilience Scale for Adults, and the Brief Resilience Scale as having the best psychometric ratings. One thing the authors were able to conclude and were in agreement with was the idea that both personal factors and the availability of resources at the family and community level were important in contributing to individual resiliency.

In Resilience Thinking, Walker and Salt identify the first step towards resilience as “considering a systems perspective on how the world works” (Walker & Salt, 2006, p.11). Understanding the local hazards, their potential impact on human systems, and how individual resilience develops and is affected by stressful events are key to preparing for, responding to, and fostering resiliency in ourselves and our communities, especially when events affect the most vulnerable among us. While it is not possible to predict what the next hazard event to impact Humboldt County will be, nor to predict the exact effects it will have, some things are for certain: we cannot stop the weather, plate tectonics, or other natural planetary forces, and each day that passes brings us closer to the next major event. Peace of mind comes from knowing about these hazards and knowing we have done all we can to prepare for them. Preparation in this respect includes not only making a plan or minimizing risk, but helping others in the community to do the same. Knowing that one has done everything possible to prepare and protect one’s family, neighbors and

local businesses increases resilience for the entire community. These are the steps that will allow Humboldt County to not only survive, but thrive in the event of a potential disaster

Vulnerability

Perhaps nobody knows the barriers, shortfalls and lack of resources needed better than those who use or are in need of them. It makes sense, then, that these same individuals become more involved in the debriefings, as well as the planning process. While people have a tendency to turn to the government or other organizations to assist them when an event occurs, they are typically not sought out enough during the planning stage. The First-hand knowledge of the individuals receiving supportive services should not be discounted in terms of planning.

A current trend in research pertaining to risks and hazards appears to be an increasing shift towards direct human-environment field studies, utilizing qualitative or mixed method approaches which include the incorporation of local knowledge and survivor testimonies in identifying factors contributing to vulnerability. Questionnaires and interviews of both survivor and relief support givers can serve researchers in identifying factors pertaining to vulnerability as well as further insight on lessons learned from the experiences of the survivors and relief providers (Robbins, 2010). Success in holistic planning comes from merging the worlds of science and policy-making with the world of those who have direct experience within the given context. However, just as important is to use ethical means to add value to the lives of these individuals, and not

just view them in terms of numbers, statistics, or something to be exploited to make a point or to gain funding (Hugman, 2010). In the course of this project, feedback and input from individuals who had been affected by emergency events and who were recipients of services provided by participants were taken into consideration.

Hurricane Katrina inspired a surge of research in the field of sociology which reflected the tendency for physical, sexual, economic and other forms of abuse towards women (not to mention persons with disabilities) to dramatically increase in the wake of a disaster (Jenkins and Phillips, 2008). Inclusion of those affected most by the event is an integral component in planning and reducing future vulnerability. In order to include these populations, access to information and resources, as well as providing a platform for them to provide input in the planning, response and recovery process is crucial.

An excellent example of an impediment to accessing information is reflected in a very recent study regarding the barriers associated with literacy, language, culture or disabilities and the level at which emergency preparedness information is written by such agencies as the CDC, FEMA, and Department of Homeland Security (Neuhauser, et al., 2013). The findings of this study illustrated the gap between estimated literacy abilities of the deaf and hard of hearing communities and older adults and the emergency preparedness materials available to them. The authors concluded with a “call to action” to adapt these materials in a manner that is more suitable to the populations they are targeting, thereby increasing access of these groups to the intended messages.

Terry Cannon gives an analysis of five components of vulnerability which are determined by political, economic or social processes. These are then applied to a model

for vulnerability assessment. The first component, initial well-being, strength and resilience (ex: physical, emotional, mental, behavioral or spiritual health status prior to an event) is seen as tied in with an individual's resilience or capacity to cope with an event. Second, livelihood resilience (ex: ability to financially cope with the hazard aftermath and reinstate ability to earn a living) is tied to one's ability to return to economic well-being. The third component is self-protection (ex: ability and willingness to provide self with adequate protection or avoid a hazard). This factor is tied to the capacity of individuals to implement protective measures for their own well-being. The fourth component of societal protection (ex: ability or willingness of those at higher levels to provide protection) takes these principles of protection to a broader community, organizational or government scale. Finally, social capital (ex: support networks) are somewhat dependent upon the type of governing body and capacity for development of civil society (Cannon, 2000).

Each of these components is viewed as part of a matrix which can serve as a basis for qualitative and quantitative data collection. Perhaps the most appealing facet of this model is that it contains an expectation of incorporating individual community members through focus group meetings, public meetings, stake-holder surveys, and sample questionnaires. The involvement of the "vulnerable" population is an appealing approach, as well as Cannon's explicit awareness of the dangers of making assumptions, emphasizing negative characteristics, and viewing people as vulnerable.

Viewed from a large scale, such as in terms of entire countries or regions, vulnerability can be seen as the product of many processes, including socio-economic

and political factors such as poverty, marginalization, social instability and conflict, population growth, migration and settlement patterns, urbanization, overloaded infrastructure, growing economic value of the built environment, and environmental degradation (Abramovitz, et al., 2002).

While there are several approaches to take when defining vulnerability in the context of disasters, no individual approach can present a complete view of the subject. An integrative approach must be used in planning to reduce vulnerability for any given population, regardless of location or type of hazard event. The integration of knowledge and information on the part of vulnerable populations as to their unique needs must be taken into consideration when planning takes place. The more individuals, groups and agencies in any given circle of support who have already taken measures to prepare themselves, the more overall community resiliency will be enhanced.

Based upon these resources, I would maintain that it is possible to recognize that we are not merely helpless victims, but participants who have much power over our own destinies via mitigation, preparedness, recovery, and response efforts. Community outreach and collaboration can be utilized to identify and improve resiliency for vulnerable populations.

The final conclusion that must be drawn prior to embarking on this endeavor is to identify a sample population on which to focus this project. The region of study has already been selected as my home community of Humboldt County, California, which presents a variety of natural hazards for which emergency planning is all the more essential. Taking into account my own experience, knowledge base, and access to

members of the community, I have determined that the primary focus should be on those members of the community who may arguably be perceived as being most in need of assistance with individualized planning. In addition, the population I have selected includes individuals who fit virtually every category, description or example of human vulnerability I have found thus far.

With the support of the Redwood Coast Regional Center as well as several other community agencies, this project focused primarily on identifying gaps in emergency planning for individuals with intellectual and developmental disabilities, and seeking both individualized and collaborative solutions to fill those gaps or provide solution alternatives. In pursuit of this goal, I tried to remain flexible enough to incorporate other individuals and agencies who sought my assistance in their own emergency response and business continuity planning process out of my firm belief that everyone has a responsibility to plan for natural disasters and other emergencies, as well as a right to information, tools and assistance which enable them to do so.

(For more information on assessing for vulnerability, please see Determining Vulnerability in APPENDIX D of this report).

METHODS

Approach and Purpose

In several cases which I have already researched, there have been opportunities to improve emergency responders' ability to handle a situation that involves a person with a physical or intellectual disability, or people with cultural differences. Oftentimes, ideas for serving these populations are not feasible or realistic for their needs. I have numerous testimonials from disabled persons as to the shortfalls they experienced during an emergency that were a direct result of lack of planning for their specific needs. In every case, better planning would have avoided the problems. Time after time it has been proven that cookie-cutter approaches that work for the general population are not always an applicable solution for special needs communities.

With the assistance and support of esteemed professionals in a variety of fields, it is my hope to coordinate these messages to agencies, provide valuable information for those who are developing emergency engagement plans, reach out to and involve communities that are currently left out of the planning process, and provide a general overarching guide and training for those who will be providing services, including shelters, in their community.

The purpose of this project is to provide education and support for individuals and agencies receiving services from, and vendored with, the Redwood Coast Regional Center in Humboldt County. The primary focus is on providing resources, tools and guidelines for service agencies to create individualized emergency plans for clients, as

well as their families, and other members of their support team. This training includes a basic overview of the hazards of each area, instruction on how to conduct proper drills, a step-by-step guide for creating Emergency Engagement Plans, an opportunity for feedback and inter-agency collaboration, sharing ideas for emergency communication, assistance with putting together kits, and other support.

In pursuit of this goal, I chose to utilize a participatory action as my primary research style. The reason for this is simple: participatory action approaches involve doing research with people whose activities are under study (Bergold & Thomas, 2012). In this case, I sought to identify and close gaps in emergency planning for individuals with developmental disabilities, and their service providers, which required their involvement. The goals of this were to reduce vulnerability to hazard events and increase resilience for those who will be faced with the challenge of providing services and supports for this population in a hazard event, so as to prevent it from becoming a greater disaster for the individuals and agencies involved.

My intent was to provide tools and vital information based on the most current data available from the worlds of science, emergency management, activism, health, geography, human development and sociology. In conducting this research, I employed principles of grounded theory and feminist theory in my approach. Borrowing from principles utilized and described by Charmaz (2006) and Cresswell (2003), I chose grounded theory because of its relevance as a research tool that uses both qualitative and/or quantitative methods to compare, identify patterns, and lead me to further questions which I need to explore. I also recognized its use in doing research on a local

topic in which I saw very little direct work or progress, being made. Grounded theory works well in conjunction with addressing real-life scenarios, and utilizing the existing knowledge base of the individuals involved (Glaser, 2009).

The feminist approach was also utilized in my research because feminist approaches seek to empower others and challenge ideas made by those who hold positions of privilege (Hesse-Biber, 2006). Because I was addressing the needs of marginalized, neglected and historically oppressed populations and incorporating them in the planning process, it was imperative to ensure that I used strategies which empower, rather than objectify, these co-researchers. I found inspiration from the ethics and recognition of being in a position of privilege used by such individuals as McIntosh (2004) and Long (2009) and kept these in mind while working directly with the populations involved in this project.

In pursuit of this project, I created and held four education and workshop events at the Redwood Coast Regional Center in Eureka. Service Providers vendored with the Regional Center who provided day program, transportation, housing and direct service to individuals receiving Humboldt County Regional Center services were invited, as well as Regional Center service coordinators and staff members. The first day consisted of information on creating emergency engagement plan for day programs. The second was for creating emergency engagement plans for residential service providers. During the third and fourth days I presented tabletop exercises in which participants could put their newly developed plans into practice during a tabletop exercise, identify potential gaps,

and make the necessary adjustments to accommodate needs they had not already identified.

The goals of these presentations covered eight main topic areas. First, to help service providers to understand and better identify the hazards and reduce risks both on-site and in the community. Second, I endeavored to help service providers learn how to tailor their plans to meet the individual needs of their particular clients, and to troubleshoot any particular planning challenge their needs presented. Third, I sought to provide an outline for an emergency communication plan and offer several communication tools that could be implemented when an event occurs. My next priority was to provide an opportunity for, and facilitate a networking opportunity for these agencies to discuss ways in which they could help one another in the event of an emergency or disaster. As a means of providing a better understanding of what residents on the North Coast could possibly expect, I provided a more in-depth look into a worst-case scenario for an earthquake occurring along the Cascadia subduction zone which included details on which services would likely be impacted and how. I took time to review the means by which agencies could properly conduct drills and gave real-life examples of ways in which improperly conducted emergency drills had resulted in unnecessary hardship or even tragedy for individuals during hazard events. I also made sure to provide time to answer any “burning questions” participants might have and took time to dispel common myths and false information pertaining to what is and is not safe, what is and is not likely to occur, and gave the explanations as to why the methods presented in these workshops were the correct thing to do. Finally, I outlined steps for

service providers could take now in order to best position themselves to stay in business and ensure service continuity for the individuals they serve.

The questionnaires and feedback forms presented during the workshops held in conjunction with this project were completed by service providers vendored with the Redwood Coast Regional Center who serve individuals with developmental disabilities. The questionnaire focused primarily on reasons for seeking assistance with emergency planning and deterrents or barriers to planning. The feedback form completed after the workshops provided participants with an opportunity to identify ways to improve the workshops for future trainings.

There are several reasons why I chose to focus this project on individuals with developmental disabilities who were receiving services from the Redwood Coast Regional Center. I have several years of experience working with many of these individuals and the agencies that serve them. I have also found that, within this population, there are subsets of individuals who also fit one or more other categories that are frequently identified as a vulnerable group. These individuals provide a representational sample of such categories as varying age groups, types and degrees of ability/disability and cognitive function, persons with vision and hearing impairments, ethnic and cultural minorities, varying degrees of isolation, and several different barriers to communication. In addition, this can be one of the most challenging populations to plan for. I have also sought to present issues pertaining specifically to discrimination, bias and neglect on the basis of race, class, socioeconomic status, immigration status,

sexual orientation and preference, education level and other factors as I have encountered them in my research

Best Practices – Terminology

Even the most experienced and knowledgeable emergency managers, government representatives, and the general media are not often trained or experienced in working with individuals with intellectual and developmental disabilities, and frequently use terminology which is either outdated or considered offensive. Therefore, it is important to identify the appropriate terminology to use when referring to or working with these individuals. In this project I have used language which is currently accepted by the Redwood Coast Regional Center and the individuals receiving their services.

I will be using the term “individual” or “client” to describe the people who are considered members of the population with whom I have worked on this project. There has been debate over the years as to the most politically correct term for individuals with intellectual and developmental disabilities, even amongst the Regional Centers who pay vendors for services to support them. In recognition that what is considered ‘politically correct’ changes over time, I am using the term “client” for these individuals because when Clay Jones, Executive Director of the Redwood Coast Regional Center recently questioned individuals at People First meetings and other gatherings, that is the term which the majority of clients asked to be used, rather than the previously utilized term “consumer.” Other groups will also be referred to according to the term which their

community has collectively chosen to identify themselves in the course of interviews and other exchanges.

The use of the term ‘retarded’ (meaning ‘held back’) should never be used because it is (unfortunately) frequently and casually used as a derogatory term for insulting another individual, group or situation. There is a “Stop the “R” Word” campaign in which several individuals with cognitive disabilities travel to schools and other institutions to educate others about the harm that is caused by calling another “the ‘R’ word” as well as to educate students and others about developmental disabilities, traumatic brain injuries, and other disabling conditions.

Although the medical terminology for varying degrees of mental retardation are still used in a diagnosing capacity (mild, moderate and severe), it is never considered appropriate to refer to somebody with an intellectual disability (also referred to as a cognitive delay) or other developmental disability as being “retarded.” The acceptable terminology would be “intellectual disability” or “cognitive delay.”

The American Association on Intellectual and Developmental Disabilities defines intellectual disability as “a disability characterized by significant limitations in both intellectual functioning and in adaptive behavior, which covers many everyday social and practical skills. This disability originates before the age of 18.” The term developmental disability can refer to any number of chronic conditions which negatively impact one’s language, mobility, learning, ability to live independently, etc.

The terms “developmental disability” and “intellectual disability” are often mistakenly used synonymously, (but they are not). Many individuals with developmental

disabilities do have a co-existing intellectual disability as part of their diagnosis.

However, there are some developmental disabilities that may not necessarily result in reduced cognitive functioning. In other words, all individuals with a cognitive delay – whether it be due to a genetic condition, illness, or injury occurring prior to the age of 18, have a developmental disability, but not all developmental disabilities include an intellectual disability (National Institutes of Health, 2010).

The People First organization seeks to promote awareness and inclusion of individuals with disabilities, to support one another, and to celebrate their abilities, talents, value and contributions. It is made up of individuals who qualify for regional center supports who advocate for themselves and one another. People First Members also advocate for themselves and their peers via contact with local agencies, members of Congress, and community leaders, and participate in legislative hearings and conferences. Their emphasis is on unity and respect for one another. (People First of California, 2011). I offered outreach and inclusion of clients from People First who were interested in participating in or providing feedback for this project, and offered supports for individualized planning as part of this project.

In accordance with the principles of People First, I feel a responsibility to point out the fact that individuals with disabilities, (regardless of whether physical, intellectual or otherwise), should never be defined by their diagnosis or disabling condition, and that it should never be at the forefront of their identity. It is important to remember that they are always people first. Therefore, when speaking about, writing about, or making reference to individuals with a disability it is not appropriate to identify such individuals

by being referred to with such terms as a ‘disabled woman’, or as an ‘autistic man.’ Unfortunately, it is very easy with our language structure to list the described condition before the noun. As a result of our language structure and a general lack of awareness, many of the documents I have read in the course of research for this project, written by emergency managers and other well-meaning individuals involved in the emergency planning process, still use these terms inappropriately.

In addition, it is never appropriate to add a negative judgment or negative condition label to identify someone with a disability. For example, it is common when listening to the media to hear such phrases as “suffers from” when identifying someone with a disability, such as saying that someone “suffers from Down Syndrome.” I know many individuals who happen to have Down syndrome and it is difficult for me to identify them as “suffering” when they are providing smiles, hugs, laughter and joy to everyone around them. That is not to say that they lack challenges, but everyone has challenges of one kind or another in their life. It is never appropriate to place a label on someone’s condition, or to make assumptions about their condition that somehow labels them as a victim. This, in itself, is societal disempowering of others and, though rarely intended that way, actually promotes a group mindset that can result in treating others with certain conditions as being more disabled than they truly are and limit their opportunity to become the best version of themselves due to false assumptions that accompany such labels. Unfortunately, these assumptions, based solely on terminology, can create a mindset that excludes many individuals from being a part of discussions about what is best for them in terms of planning and services.

While these details may seem minor to some, they are very important to many individuals I know and have worked with over the years. It is my hope that any documents created as a result of this project will reflect the more appropriate terminology (and accepted practice) and serve as an example to other agencies to do the same.

Although this author is committed to assisting all individuals, regardless of age or qualifying condition, for the purpose of this thesis project, I have focused solely on those who qualify for Regional Center services. Unless an individual has or knows of someone who has received Regional Center services, they are not likely to know what is meant by being a client of the Regional Center. As such, I have encountered many community members who have asked me about my project and for whom I have had to provide an explanation as to who his particular project is geared towards. Therefore, I believe it is appropriate to briefly explain what qualifies one to receive Regional Center services in Humboldt County and throughout California.

An individual may be born with a developmental disability, or it may be acquired (such as having traumatic brain injury or illness during their youth resulting in a disabling condition). The State of California currently only recognizes and provides Regional Center funding to assist individuals whose qualifying condition occurred prior to the day they turn 18 years old. However, once an individual qualifies for Regional Center services, those supports are continuous for the duration of that individual's life, or until they choose to no longer seek services.

Because California is an entitlement state, any individual living in California who has a developmental disability (whether they are born with it, or if it is acquired prior to

the age of 18, such as from a traumatic brain injury) will qualify for Regional Center services. This may include some prenatal services for those who are diagnosed in utero, or who have been determined by prenatal testing and other health information to be at risk of being born with one or more qualifying developmental conditions.

In the course of my work, I have encountered individuals who would qualify for Regional Center services, but are not aware of what is available to them. In the interest of helping others obtain supports, I would like to point out that one does not require or have to wait upon a pediatrician's referral to seek out Regional Center services. If a parent suspects that their child may have a developmental disability, they can seek services directly from their local Regional Center at any time, which may be able to assist with the diagnosing process to determine whether or not an individual qualifies for their services. If an individual reading this document believes they may qualify for, or be in need of services to support someone with a suspected developmental disability, they should contact the local Regional Center serving their area. A list of California Regional Centers and their contact information can be found in APPENDIX L of this report.

Personal Background

Ever since I was a little girl and heard family stories of my great-grandfather's experiences as a Norwegian immigrant who had landed in San Francisco just in time to experience the famous 1906 earthquake, I have had an interest in natural disasters. I listened intently as tales of damage, fires, hunger and acts of kindness were retold. Innumerable questions flitted through my head. I had no idea at the time that, years later,

I would become enmeshed in the study of natural hazards and involve myself in assisting others in planning for such events.

I believe this project is the natural culmination of my life's path, including my background and interests, which have led me to feel passionately about, and capable of, the work I have set out to do. I approach this topic with a background in social science, geography, psychology, social work and education. I look at individuals, communities and regions from a historic and interdisciplinary approach, seeing the larger picture while identifying much smaller factors pertaining to each individual within overarching systems. The Social Science Master's Program in Environment and Community (E&C) has supported this interdisciplinary approach to research and provided me with invaluable information and support in pursuit of this project.

For 14 years prior to joining the Environment and Community Master's Program at HSU, I worked with youth and adults with physical, intellectual and developmental disabilities, as well as mental health issues. I also worked for nine years at a school serving emotionally disturbed adolescents from ages 11 to 22. In this capacity, I taught all academic subjects and all grade levels while modifying each lesson to fit the needs, goals and ability level for each student in the classroom and utilizing applied behavior techniques on a daily basis. I have also worked for agencies agency vendored with the Regional Center which provides services for adults and children with intellectual and developmental disabilities, providing direct support and service coordination.

During my career, I have provided annual classes on emergency preparedness and response for youth ages 11 and up (including field trips). I also taught disaster safety and

emergency procedures for adults with developmental disabilities, and presented separate trainings for their caregivers. I created site-specific emergency engagement plans for family homes in which our clients resided, led earthquake, fire and tsunami drills, and provided business continuity planning ideas for the agency I worked for. In addition, I have worked with and presented trainings and offered direct support and information individuals and entities ranging from preschools to care homes for the elderly and to the LGBTQ community. I also spend time working in the Tsunami Room at the Humboldt County Fair each year to help educate local citizens about earthquake and tsunami hazards, and what they can do as individuals to be more prepared, and I devote time to encouraging individuals, families, businesses and agencies to register for and participate in the annual California ShakeOut earthquake drill. I have donated countless hours to disseminating information pertaining to emergency preparedness in my community.

Additionally, I have worked as a Mental Health Support Specialist, which involved helping children and families who have undergone trauma. My previous job as a Program Coordinator included designing site-specific and individual-specific emergency engagement plans for a nonprofit foster family and adult family home agency which served both children and adults with intellectual and developmental disabilities. These plans include individualized, site-specific procedures for each home as well as providing trainings to providers and employees, and business continuity planning for the agency as a whole. I am also a certified Red Cross First Aid and CPR instructor, and have provided training for foster families, businesses and other community members in the form of emergency planning and business continuity plans. I have provided

presentations for local foster families and have assisted individuals in creating site-specific plans for their homes and families. I have worked with local day programs, nursing homes and others who provide services to vulnerable populations in the creating of their own emergency protocols, drills, employee and client education.

I have continued to expand my knowledge base outside the college classroom by attending trainings on the most current research in such topics as Dementia and Alzheimer's, Autism, Attachment Disorder, Behavior Management, Abuse Prevention for People with Disabilities, Suicide Prevention, Advocacy, Brain Development, etc. The information I have learned from trainings and my years of direct experience has provided me with ideas that can be incorporated into the development of planning, including ideas that can be used to lessen the trauma and anxiety these clients are likely to experience in the course of a disaster.

Over the past decade I have attempted to attend any training opportunities from local, state and federal agencies specific to emergency planning for special needs populations. These trainings, workshops and presentations have been held by FEMA, California Office of Emergency Management's Specialized Training Institute, the Red Cross, the California Department of Water Resources, Humboldt's Regional Training Institute, courses offered through Humboldt State University, and many others. I also have received training from the State of California to serve as a Functional Assessment Service Team member and in sheltering individuals with disabilities.

In the process of my personal and professional development, over the years I have compiled files of secondary literature, including a copy of the Humboldt County

Emergency Response Plan, FEMA and Specialized Training Institute documents, newspaper and magazine articles, statistical data and legal documents. I have procured a collection of hazard identification and mitigation maps for Humboldt County. Included are maps with such themes as the geology, regions likely to experience increased ground shaking during earthquakes, areas prone to liquefaction, earthquake faults and historic landslides. I have area maps which show the wildfire risk zones and response agencies, flood maps for dam and levee failure, and all of the most current tsunami inundation maps from the State of California Office of Emergency Services and the Redwood Coast Tsunami Work Group. I continue to add to my knowledge base by seeking out lessons learned from other events in the United States and in other regions of the world and attending post-event hot washes, debriefings and presentations whenever possible, and have drawn upon many of these as I have worked on this project.

I have utilized the data compiled in the Humboldt County Hazard Mitigation maps and brought specific scenarios to scientists, emergency managers and other members of the Redwood Coast Tsunami Work Group for their assistance in finding the most appropriate solutions, such as identifying the safest and most appropriate tsunami evacuation route for a specific agency located within a tsunami hazard zone. I have attended and gleaned a great deal of information from numerous meetings, such as those carried out by Voluntary Organizations Active in Disaster, the Humboldt County Operational Area, Redwood Coast Regional Center, the local Vulnerable Populations group, and Redwood Coast Tsunami Work Group. Additionally, I have served on the Steering Committee for the Earthquake Country Alliance (ECA), and have served on the

Elderly, Disabled and Access and Functional Needs Committee for the ECA, where I worked with a group of individuals from across the state to spread awareness and create safety messaging for persons with disabilities and access and functional needs. These messages are now being utilized in other states and countries.

I have worked as an independent consultant via grants and through Complete EM, a business providing emergency planning to large businesses, counties and other entities, providing information, feedback, and support in the development of viable emergency plans for agencies who provide supports to children and adults with various disabilities, mental health needs, and who run foster and group homes. I have also supported them in running table top exercises, completing post-exercise evaluations, and providing viable solutions for site-specific and scenario-specific planning, response, recovery and communication issues.

Obstacles, Challenges, Recognition of Bias, and Special Considerations

Through my education and experience, I have learned that providing adequate inclusion of underrepresented populations in the emergency planning, response and recovery process has historically been an area in need of significant improvement for emergency managers. There is little literature specifically addressing ways of improving planning efforts for those with specific physical, behavioral, mental health and other special needs, as most often familiarity with these groups and the individualized, specific challenges, such as language and other communication barriers, physical and behavioral

considerations, and functional access needs, are so particular that it becomes a significant challenge to bridge the myriad of gaps these populations present in the planning process.

More often than not, the processes involved in emergency planning are carried out primarily by persons of privilege who may not be as familiar with specific circumstances applying to each community. I include myself in identifying as a person of privilege in regard to my access to knowledge and level of independence, as well as race and the general social paradigms in which I live. I also realize that the fact that I have privilege on so many levels also adds to my status of outsider to many of the communities I seek to incorporate in my research. It is because I have already worked for agencies vendored with the Redwood Coast Regional Center that I have had access to working with individuals with developmental disabilities and have been able to identify gaps in emergency planning for this population.

A challenge is presented by my position as perceived holder of knowledge and working in a position of “service provider” or “caregiver” for many of these individuals. I recognize my position of power in the role of researcher and endeavor to make this project one of shared knowledge and empowerment for all parties involved. In so doing, I have to tread carefully in the individual approach I have used in including dependent individuals in the process. My goal has been to educate and empower each individual, agency and community I have worked with (to the greatest extent to which they are capable), include them in the planning process, and yet protect their privacy, protect their rights (including adhering to HIPAA, California Department of Developmental Services,

Title 17, Title 22, Regional Center and other guidelines), and include them as respected teachers and sharers of knowledge.

The accompanying challenge of maintaining subjectivity and keeping these individuals from becoming an object in the course of my research has been equally important (Charmaz, 2006; Creswell, 2003). My desire is for this research to be a form of emancipation and empowerment, recognizing that those who live in circumstances in which others have such a high degree of involvement – or who have been ignored when doing so has benefitted those in positions of power – are the best suited to identify the means by which they are oppressed, exploited, or neglected by a larger society. As such, they are also the best suited to identify practical solutions to the problems that accompany being in such a position. This is a primary reason for my feminist standpoint in pursuing this project.

I share feminist approaches to epistemology, as I believe that each individual I work with knows better than any outsider what will and will not work for their needs when it comes to planning for emergencies. It is not appropriate to create plans for individuals without including them in the process. They are the “knowers” as to their unique needs and yet, due to their individual circumstances, are often stuck in socially hierarchical positions in which they are dependent on others for various activities of daily living. It is essential that this project does not further that dependence, but rather serves to empower these individuals.

Although I have done a great deal of work in the role of teacher, it is my intention to not just act as an “educated outsider” foisting my dominance and knowledge upon

others, but to work *with* these individuals, and teach others how to do the same. The goal is to provide valuable information, recognize and empower the individual as the most important person in the planning process, and create site-specific planning that is both site-specific and individual-specific. A major component of my thesis project is addressing the necessity of modifying the “generic” planning process to meet the specific needs of these individuals. I also want to advocate for others and give them a voice to advocate for themselves to bring their needs to the attention of others and take part in the planning process as much as possible or desired.

It is important to understand that nobody knows an individual or a group’s needs more than those who are among that group. Being disabled, marginalized, ignored, and often left to fend for oneself has resulted in many of the dominant members of society looking upon these individuals as being disadvantaged – and they would be correct to an extent. However, they also have had to learn the meaning of resiliency, patience, inner strength, creative problem solving and alternative “truths.” Those who have been oppressed or who have had to deal with other handicapping situations on a daily basis are often already resilient in many ways as a result of having lived through these experiences. It is these strengths, these individual truths if you will, which I have sought to draw out as I try, albeit as an “outsider,” to find solutions which will benefit them, their support team, first responders and others. The challenge is finding the balance between incorporating my “truths” (current knowledge base) with the needs of each agency or individual while honoring their rights, their needs, their desires and their own truths.

I will be filling the role of “knowledgeable outsider,” as many of the individuals (Regional Center clients and others) that I will be working with do not have the information, or little useful exposure to the information they need, to create individualized plans. However, they do have a sense of their own needs, who their support team may consist of, and what they are and are not willing or able to do for themselves in terms of preparedness. In the case of support persons, day programs, care homes and others, many are aware of the minimum, generic requirements that licensing has for them, and of the hazards presented by living on California’s North Coast, but even in those cases, I have been approached by some who tell me, “I have no idea where to start,” or “I don’t know how to do this.”

John Gaventa (1991) once stated that participatory research involves providing others with information with the goal of moving them from attitudes of dependency towards attitudes of self-reliance. That is most definitely a main purpose in what I set out to do. I attempted to balance my own knowledge base with the perspective of others to empower them and work as a team to develop plans that will work for the individuals involved, while not pushing the dominant role as the person with the primary knowledge.

Gaventa also discusses inequalities in power and resources (Gaventa, 1995) and “Right to Know” movements, in which the focus is on the public’s right to knowledge. I have had a similar discussion already with representatives of the Regional Center when discussing the clients who are currently living in tsunami hazard zones. I pointed out that, while we cannot infringe on their right to live in whatever community they choose, we have an obligation to at least let them know of the hazards those locations present,

and provide them with the tools and information to be safe if they are going to live there. I have emphasized throughout this project that individuals with developmental disabilities have a responsibility to plan for disasters, but they also have a right to assistance in doing so.

In writing about his work on the Apache Wetlands Project for the U.S. Forest Service in Arizona, Jonathan Long (2009) wrote a list of factors which he believed made the project work, despite his involvement as an outsider. These included establishing trust, leadership, maintaining a respectful attitude, having a strong mission which motivated the participants, how the information was presented, results that were well organized and documented, good mapping which later proved useful, obtaining funding from outside entities, people who had time to invest in the project as well as time spent building and sustaining relationships, and a “How can I help you” approach. These words echo the imaginings I have of the means and purpose of my thesis project, and in fact lend to the outline I have been created.

The special considerations in participatory research methodologies don’t end there. For example, in an article Orlando Fals-Borda wrote on participatory research in social theory, he points out the importance of communication considerations when utilizing the participatory research approach (Fals-Borda, 2001). Projects such as this also require the ability to use or have access to several communication strategies, including sign language, Spanish language interpretation, picture icons and social stories, simplified language, braille, augmentative communication devices, and others. Some of these I am already familiar with, while others require the assistance of other individuals.

Goals and Expectations

This project includes a thorough assessment of emergency planning for special needs communities in Humboldt County, including identification of and special considerations that must be taken into account for persons with specific disabilities, language and cultural groups, gaps for emergency responders, and other factors. I have strived to identify issues specific to individual communities, such as the LGBTQ community, the deaf and hard of hearing community, preschools, the elderly, etc. I have sought to include means of engaging natural community supports, identification of possible alternative relocation sites, expanding the number of trained volunteers who can respond in the event of a disaster, and to work towards creating messaging in languages and means which can be acceptable, correctly understood, and acted upon.

I do not expect to solve all problems associated with planning for vulnerable populations, but hope that, by addressing what I am able to address in this project, I will at the least provide information and guidelines for others pursuing a similar goal, and hopefully will help to increase overall community preparedness, safety and resiliency, while supporting members of the local population of individuals with developmental disabilities and members of their support teams in advocating for themselves and each other, increasing their ability to maintain as high a level of self-reliance as possible for each individual, and ferret out and address issues and systems of oppression which contribute to the difficulties in meeting the planning needs of these and other vulnerable populations. My ideal is for this research to benefit a broad range of individuals, including those living far beyond Humboldt County.

At the end of Jonathan Long's documentation of his work with the Apache Wetlands Project, he included a mini-article written by one of the individuals who was involved in the restoration named Mae Burnett. She wrote the portion entitled "Talking from the Heart." When I came across this, two of her quotes really stood out for me. Mae said, "People that work from their heart should teach more..." (Burnett & DeHose, 2009). I have been, and intend to continue, to give trainings, presentations, working the tsunami room, and otherwise disseminate current, correct information to anyone and everyone who is willing to listen (Burnett & DeHose, 2009).

She also wrote, "The researcher can take knowledge, but he or she must leave something." I believe this is an important factor. Instead of doing surveys, gathering data and moving on, I will take the information I learn while completing this project in hopes that what I do will one day assist first responders, emergency managers, service providers, families and individuals. At the same time, I will hopefully leave each person involved in my research with a new or improved emergency plan, which they participated in creating and, through this process, helped to create a model for others to follow as well.

Participatory Action and Shared Knowledge

Once the target population was identified, I needed to ensure that I included as many individuals and supports in the process as possible. Community contribution to this project involved enlisting assistance from individuals who are able to bridge gaps in communication and dissemination of information, including local braille transcribers to

create braille messaging for earthquake and tsunami safety. I also identified individuals fluent in both English and a second language such as Hmong, Spanish, American Sign, and Tagalog. I am working with community partners and service providers to establish emergency response protocols for the individuals they serve as well as providing workshops and supports for their business continuity planning.

An Emergency Engagement Plan (also known as an Emergency Response Plan or Emergency Action Plan) is an easy to follow outline of the immediate steps to take when an emergency occurs. In developing site-specific emergency engagement plans, I include information relevant to those area hazards particular to the home and school, work or day program, as well as transportation corridors in-between. From my attendance at Operational Area meetings, I am aware that Humboldt County could be divided into as many as 17 isolated islands of humanity in the event of a large disaster, such as a Cascadia Subduction Zone event. When an event such as this occurs, communication, transportation and backup providers for primary caregivers who are unable to reach their clientele are of utmost importance.

The individual plans I help create involve interviews with clients, caregivers, and individuals identified as offering their home or program site as a place for temporary relocation in the event of placement disruption. These plans reflect needs specific to the individual, such as necessary medications, diagnoses, behavioral supports, household safety mitigation, age-related and cognitive circumstance, and emergency communication protocol. Additional members of the support team are identified and included in the process. All plans incorporate a means by which providing agencies and family home

providers will be able to make contact or do well-person checks within 24 hours. All plans ensure agency compliance with Department of Developmental Services, Regional Center, Title 17 and Title 22 requirements.

Included in the development of these plans is a review of access and functional needs supports for all household members or support team personnel. The plan provides a means for establishing backup plans for other residents and caregivers in the event they are unable to shelter in place. An inspection is carried out in each home to ensure residents are in compliance with these emergency engagement plans, including incorporating my recommendations for developing a realistic disaster kit, identification of natural supports (family, friends, etc.), the practice of quarterly earthquake, fire and, if applicable, tsunami or flood evacuation drills. In addition, education and training is provided for other agency employees to do quarterly home safety inspections and proper emergency response drills, and lead the agency-wide emergency communication drill in October, an additional agency tsunami drill in March, and other trainings for new and continuing family home providers, direct support professionals, and agency staff.

In discussion with emergency management and response personnel, I have sought out an understanding of not only what didn't work in any given scenario, but also what was successful - whether it is an evacuation at a specific school site, and unexpected resource which was identified, or a creative solution to an unexpected problem that arose. It is my intent to utilize this information to allow for the application of similar strategies to other scenarios and streamlining of the response process.

Oftentimes, blanket messaging for the general public is not enough and assistance with individualized planning is the only real solution. Because of the historical gaps and lack of understanding of how to deal with the needs of, and interact with, special needs individuals, countless tragedies have occurred. I have sought to work cooperatively with community members to empower them in the course of providing knowledge relevant to their real-life situation. This project is not intended to be self-serving, but lead to the development of a guideline for others to meet their own emergency planning objectives.

Fals-Borda has emphasized the concept of the student-teacher / teacher – student (2001) wherein the teacher gains knowledge from one's students in the process of teaching. As such, I also realize that I have typically been perceived, and even identified as, the “expert” on this topic. I can only emphasize my position as one of educated learner in search of further education. I do not believe that I hold information that could possibly be more valuable than that of the experiences of the individuals who have participated in this project. I feel that I cannot emphasize enough that, without each and every person who has agreed to participate in the evolution of this project, it simply could not have existed. It is the shared knowledge that is the most valuable and my philosophy is that that every person in the world today has something to teach those around them. It is my hope that, by including clients themselves in the discussion and planning whenever possible, I will enable them to have a better understanding of the planning process and reasons for planning ahead for future events, enable them to gain a greater voice and to gain more control over their own lives, as well as educating their caregivers and service providers as to their individual needs.

Rights and Responsibilities in Emergency Planning

It is clear from the writings of Jake Kosek that, in order for us to get others to care about our issues, we first need to understand and admit to the effects of a white male-dominated, patriarchal society and racial structure of this country in a modern and historical context (Kosek, 2004). Taking it a step closer to home, I am deeply aware that I have to consider within my own thesis project that the matter of racial and other bias is going to play an important role in my research. Next, I need to make an effort, as Beverly Daniels Tatum puts it, to "... move more White people from a position of active or passive racism to one of active antiracism" (Tatum, 2004, p129). I hope to be a personification of this principle. I believe that the first step I can take in answering the question posed by Tatum as to how to make this shift is to make a genuine effort to learn about, try to understand, and show that we care about the issues faced by others. Instead of wasting time trying to save the world by telling others what I think they need to do, I recognize that I need to first listen to what others have said that they needed in order to be able to save themselves first. In following the advice of Peggy McIntosh in her article, "White Privilege, Unpacking the Invisible Knapsack," (2004) I have to constantly consider what I may have discovered hiding in my own personal, hidden knapsack and how it plays out for me when engaging with others.

There are numerous instances in which institutionalized privilege played a large part in emergency planning, response and recovery. Race, sexual preferences, class, age and other areas which have been used as a basis for discrimination across America have played an important role in who has and has not received supports, adequate planning,

services, funding, and response before, during, and after a disaster, . The black community is still struggling with this on many levels years after Katrina (Mann, 2006), (Rahim, 2007). The queer community has also experienced denial of access to shelters and other forms of discrimination (Carter, 2007). Hispanic immigrants living in the hills of Southern California were at a marked disadvantage when the 2008 wildfires hit (Kailes, 2008). The needs of persons with mobility restrictions have been omitted from evacuation planning, leaving them stranded in burning buildings and in the aftermath of earthquakes, fires and hurricanes (Roomey, 2005). It is extremely important to recognize that any other recognized basis of discrimination for which people are supposed to have certain protections under the law also come in to play when it comes to disasters and these populations often miss out on any consideration in the planning process.

As part of this project, I also addressed these issues. I annually reviewed a list of the Rights and Responsibilities for each of the Regional Center clients I worked with, and believe it is also important for others to be made aware of the rights and personal responsibilities they have in the event of a disaster. There are also routinely many misunderstandings on the part of the public as to the role of the government, local emergency responders, Red Cross, FEMA and other entities when a disaster strikes in terms of the needs and rights of marginalized communities. In light of this, I have incorporated several resources from groups that have identified rights of individuals pertaining to emergency planning, response and recovery as a model for my work on this project. This includes the list of rights developed by the LGBTQ community in New

Orleans following Hurricane Katrina (Carter, 2007), and the list of Rights and Responsibilities for Persons with Disabilities under the Lanterman Act (DDS, 2012).

I am encouraging individuals in efforts towards collaboration and community building, both within their self-identified community and with others as well. For example, I have actively reached out to members of the LGBTQ community, with whom I have discussed a list of rights and tips specifically geared towards these individuals. I am also encouraging interested parties to participate in organizations such as Red Cross, VOAD (Voluntary Organizations Active in Disaster), and to take advantage of opportunities for training as CERT (Community Emergency Response Team) members.

It is my hope that, in time, similar versions of rights and responsibilities are created for non-English speakers such as those who are from Hispanic, Hmong and Portuguese speaking communities, as there are identified populations of each residing within Humboldt County. These should be translated into each language respectively and include a special information section that pertains to individuals who may be concerned about their immigration status when choosing to accept or avoid assistance in the wake of a disaster.

I understand that mistrust is a major issue when people from FEMA or other governmental – or official – appearing entities try to reach out to these communities, which greatly hampers their ability to get preparedness messages disseminated to these populations. In pursuit of this project, I fully recognized that overcoming this is, as well as language barriers in general, could be necessary. In addition, historic and generational trauma is held within local tribal communities, the impact of which continues daily.

Moreover, I have been first-hand witness to numerous examples of the arrogance and lack of cultural awareness on the part of the Caucasian population and government representatives which has left a severe, long-standing negative impact on many levels throughout these communities, further creating barriers to communication, access to resources, outreach and collaborative problem-solving.

REDWOOD COAST REGIONAL CENTER PROJECT

Objective

In the early spring of 2013, I was approached by Janet Foos of the Redwood Coast Regional Center to assist local service providers who were vendored with the Regional Center in creating emergency plans for their respective agencies. The Redwood Coast Regional Center serves individuals with intellectual and developmental disabilities in Humboldt, Del Norte, Mendocino and Lake Counties by assisting with funding for contracted services with various service providers in the area. Janet Foos asked me if I would be able to work with several of these local service providers – particularly those providing work or day program services and residential living options to adult clients of the Regional Center – by providing workshops to teach them how to put together their own emergency plans.

In addition, I was asked to develop a draft training manual to assist service providers in creating emergency engagement plans that are site-specific and client-specific for their agency. I completed this in preparation for the workshops and tabletop exercises given during the month of March, 2013. Each of the 27 participants attending one or more of these sessions received binder with a copy of this first draft.

As added incentive for participation, several site-specific hazard assessments were completed for those who registered by February 25th, 2013. These evaluations were provided in written format, free of charge, to participants during the workshops. As a follow-up to this endeavor, a situation assessment was completed, along with a list of

recommendations for future emergency planning endeavors that will support local service providers in preparing for, responding to, and recovering from disasters.

In addition to providing these workshops and tabletop exercises, I have since been working directly with some of the participants, including Gaining Ground, the Butler Valley / Carole Sund Center, the Eureka Adult Day Health and Alzheimer's Center, Enriching Lives and others. My work with these agencies involved conducting drills, creating site-specific emergency engagement plans for Foster Homes, Adult Family Homes and, in the case of those who live independently but receive Supported Living Services, the individual clients and their homes. I worked with agency administrators in creating or expanding upon business continuity plans, providing staff and client trainings, performing risk assessments for mitigation purposes, and otherwise problem-solving with working clients and staff.

I was grateful for this opportunity to create a new path in emergency planning with individuals and agencies from the local community. As I embarked on this journey, I believed that it was very important to keep in mind that, while hazards do not discriminate, certain populations are disproportionately affected by disasters. A significant purpose of this endeavor is to lessen the negative effects of disasters on clients served by the Redwood Coast Regional Center, maintain continuity of services, and increase overall community resiliency.

Recommendations based upon this situation assessment and feedback from participating service providers are included and discussed in the following chapter.

Stakeholder Descriptions

The following list of stakeholder descriptions is based primarily upon excerpts from definitions given in the Welfare and Institutions Code, as identified in the Lanterman Developmental Disabilities Services Act and Related Laws, January 2003 Edition, published by the State of California Department of Developmental Services. Many of these local stakeholders (as identified in the Lanterman Act) were represented at the March, 2013 workshops.

Regional Center – The regional centers across the state are non-profit agencies which provide access to facilities and services best suited to the individual throughout their lifetime. These services and support are intended to reduce the effects of the developmental disability and allow individuals to live a full and productive life in the community. The Regional Center uses Person-Centered Planning to develop Individual Program Plans that focus on the individual’s choices, preferences, and needs, including identifying and funding services that can help individuals work towards their goals. The Regional Center pays vendors for these services with funds from the Department of Developmental Services. The Regional Center can fund services not specifically stated in the Lanterman Act. There are 21 regional centers throughout California, with over 40 offices. The Redwood Coast Regional Center serves Humboldt, Lake, Mendocino and Del Norte counties.

Area Board - The Area Board for each region within the State of California (Humboldt County is Area Board One) meets with each person receiving Regional Center Services who is not living with their family to have an interview, called a Life Quality

Assessment (LQA) at least once every three years to ensure that the individual is receiving the services they need and are happy with their quality of life. The LQA is performed prior to the individual's IPP meeting and helps the individual and regional center to make appropriate goals and procure services as needed.

Vendors - A vendor is a person or agency approved and paid by a regional center to provide services. The regional center approves vendorization once they have made sure the vendor meets all of the requirements to provide services. They then write a Purchase of Services. Each vendor has their own ID number, code, and sub-code so they can be paid for the services they provide. Although not all vendors are non-profit (such as private behaviorists or therapists), all vendors who participated in this endeavor were non-profit agencies. The following paragraphs identify types of vendors who contract with the Regional Center:

Day Programs - Day Programs are services offered for individuals with intellectual and developmental disabilities. Most of these incorporate community access in the form of education, skills training and work opportunities which pertain to each individual's person-centered plan. Included in day programs are adult day health facilities for the elderly and disabled.

Residential Service Providers - There several types of residential service providers. The Lanterman Act states that individuals with developmental disabilities can receive the supports and services they need in order to live in whatever living arrangement they choose. Those residential support services who have thus far participated in this project are listed as follows:

SLS (Supported Living Services) - SLS Services are intended to help an individual live in a house or apartment that they own or rent. SLS Services may include social, behavioral, and daily living supports, including assisting with medication administration, accessing medical appointments, and supporting clients in advocating for themselves.

ILS (Independent Living Services) - These vendors provide supports to assist an individual in learning the skills they need to live independently – such as daily life skills of cooking, cleaning, personal hygiene, budgeting, and so forth. They also help individuals who require ongoing help to keep their living arrangement.

FHA (Family Home Agency) - An FHA is an agency that recruits, trains, certifies and supports community members in opening their home to an individual with a developmental disability – typically an adult. A Family Home Provider can serve up to two adults in their home. An FHA may also provide relief support services for independent families or other FHA providers.

FFA (Foster Family Agency) - An FFA is an agency that recruits, trains, certifies and supports community members in opening their home to a child with a developmental disability. A Foster Family can provide services for up to two children per home.

Group Homes - A group home is a small group living facility for individuals with developmental disabilities of any age. It is community care licensed with no more than 6 adults.

IHSS (In Home Supportive Services) - IHSS is a community-based program that provides persons with disabilities assistance with personal care. Daily living skills,

community access and other supports are provided in order for them to live independently in their community. SLS agencies have to apply for IHSS services for their clients and utilize as many of these hours as determined by the county. Oftentimes, SLS agencies providing 24-hour supports will use IHSS hours for overnight shifts or during periods when less hands-on supports or staff training is necessary.

Exercises Used

Workshops

A two-day workshop was held at the Redwood Coast Regional Center. The presentations were held in primarily a lecture format, utilizing a power point presentation with brief Q & A, exercises and activities throughout the day. This format (and the break periods in-between segments) allowed for questions, feedback and sharing of concepts and ideas between participants. This format also allowed representatives from different service agencies to meet and get to know one another, and to have discussions during break periods.

The reason for choosing the workshop format for this exercise is that it was intended to assist participants in creating a final product. In this case, the purpose was to create a draft of a sample site-specific and client-specific emergency engagement plan for their agency, which they could take back to share and improve upon at their facility. Workshops geared towards residential service providers and day program service providers were presented, though representatives from other agencies were also present. Some attendees later recommended me to other local agencies, such as those providing

services for the elderly, who contacted me with requests for a similar workshop. As a result, other workshops and presentations on different topics pertaining to emergency preparedness (such as employee preparedness) were held during the summer, per the request of those agencies.

Tabletop Exercises

The tabletop exercises were held at the end of the workshops in order to allow participants to take the information they had received and begin the process, then reconvene for further instruction. During this time, I presented a simulated emergency situation for participants to allow them to think about how they, their agency, staff and clients might be affected by, and respond to, the given scenarios. These exercises involved the participation of key staff discussing problems and solutions associated with simulated scenarios with my guidance and feedback. This was intended to give participants an opportunity to assess their current plans, policies and procedures, as well as engage in collaborative problem-solving.

During the tabletop exercise, participants were seated in one of three groups depending upon whether they were representatives of a day program, residential provider, or other agency representative (such as the Redwood Coast Regional Center or Area Board One). Scenarios were given for a simulated large magnitude Cascadia earthquake and subsequent tsunami event, beginning at the onset of the ground shaking.

I then provided a series of individual descriptions of events specific to the particular role, responsibilities, and possible scenarios that may be faced by each group (regional center, day program or residential program) to determine how they might be

affected and, consequently, allow them to think about and discuss with one another how they might respond.

The series of scenarios were presented with a new simulated set of circumstances or “problem to solve” presented for each of the following time frames following the initial earthquake: 20 minutes, two hours, five hours, seventeen hours, two days, and two weeks. For each time frame, I provided both a general scenario for the entire group, as well as specific scenarios for each group to respond to, as it would pertain to their type of agency.

RECOMMENDATIONS REPORT

The following pages contain the seventeen items contained within the List of Recommendations for Residential Service Providers and Day Programs vendored with the Redwood Coast Regional Center, as submitted to the Eureka office of the Redwood Coast Regional Center in May of 2013. These items address direct inclusion of clients in the planning process, including participation in drills, putting together kits, and the implementation of emergency response plans. A seven step outline for creating client-specific and site-specific emergency plan is included. In terms of meeting the needs of access and functional needs of clients, recommendations are also made for information that is presented in accessible formats, and updated videos with current, correct information specific to individuals with developmental disabilities. For service providers, recommendations include the need for education and training for staff members. It reviews the need for site-specific hazard and risk assessments and mitigation and the importance of full participation in agency-wide drills, as well as planning for business and service continuity, including the creation of a preparedness manual for day programs and residential service providers. On a larger scale, recommendations listed also include creating a mutually agreed upon policy for day program closure in the event of a tsunami warning and recommendations for continued planning supports. Additional recommendations include community involvement via community emergency response team trainings, increasing the number of licensed HAM radio operators, and the identification and collaboration with community partners. Finally, a state-level inclusion

of the right to receive help in planning for emergencies to be added to the list of client rights and responsibilities listed with the department of developmental services, which must be upheld by all regional centers and those individuals and agencies vendored with them.

Due to changes in agency staffing since the submission of the original, certain specific names have been omitted from the version included in this report. In addition, minor changes to formatting of the original version have been made to accommodate the formatting requirements of this document.

Education and Training for all Staff

Due to the needs of clients served by vendors of all regional centers, it is mandatory that all staff working with these populations be notified as to, and agree upon, requirements regarding supervision. For example, all clients living in family homes are assigned a Level of Support or Tier Level, which includes the amount of time they can be alone either at home or in the community. This is based upon each individual's level of cognitive functioning, ability to independently perform daily living skills, health and physical mobility issues, behavioral and mental health considerations, legal issues, or other matters pertaining to health and safety.

These levels are individualized for each client and their support needs. Some clients may have unlimited time alone at home and in the community, some may have a specific designated amount of time they can be independent in these situations, and some

may have restrictions pertaining to specific locations. Others may have 24-hour ongoing supports with no alone time at home or in the community under any circumstances.

A similar method is used with Supported Living clients who are receiving support services but have their own home or apartment. These supports can be intermittent or continuous and typically include several rotating staff members, including IHSS workers (most often used for overnight shifts).

Because of the factors that play into the support level requirements for each client as an individual, and the serious health and safety factors which need to be taken into consideration when establishing these levels of support, all Direct Service Professionals (DSPs) and others working with each client are required to agree to remaining with their designated client until the appropriate relief support worker arrives to relieve them. That means that if a person does not show up for their shift for any reason, the person already working with that individual must remain working with them until relief help arrives.

All Family Home Agencies, Foster Home Agencies and Supported Living Agencies are required to have an on-call person in a supervisory role at all times. In the event that a staff member is unable to, or fails to, arrive on time for their shift, it is up to that supervisor to find a replacement who is already trained to work with that particular client who is willing to take on that shift. If a replacement cannot be found, the supervisor has the responsibility of relieving that staff member, unless the staff member agrees to work the additional hours until a replacement arrives.

This also means that, in the event of a disaster in which a client and their DSP become isolated (due to hazards, closing of transportation corridors, or other factors) and

a relieve staff is unable to get to their location, that DSP is required to remain with the individual for as long as it takes until relief supports arrive. This includes staying with the client whether they are sheltering in place or evacuating to an emergency shelter or alternative temporary relocation site. This can result in a single staff member having to take on 24-hour responsibilities for the care of each individual for many hours or potentially several days until relief help can arrive. This also further emphasizes the importance of residential support agencies having at least two identified possible alternative temporary relocation sites for each individual they support, as well as a well-trained workforce who have their own personal and family emergency plans established.

Unfortunately, in the event of a disaster, there is nothing to stop an employee from quitting or abandoning their job. There have been circumstances from across the country in which care providers have abandoned their jobs in the wake of a disaster. Even mandated reporters have been willing to risk being charged with neglect or abandonment of the individual in their charge in order to go check on their own homes and families when a disaster strikes. The primary motivators for this appears to be the individual's inability to contact the location where their children are at the time of the event, general concern for the well-being of their own family members, concern for the well-being of their pets, and a desire to ascertain any damages to their own home. All of the aforementioned principles also apply to individuals who provide support services to vendored work or day programs.

In order to mitigate for this, and to ensure continuity of services, it is imperative that agencies take proactive steps to provide training and supports to all staff members

and their families so as to ensure that they have every opportunity and support to establish their own family emergency plans. These plans should include, but are not limited to, a thorough understanding of their roles and responsibilities as a first responder in the event of an emergency, established local and out of area emergency contacts, an emergency communication plan, emergency backup plans established with substitute care givers who are authorized to pick up children and/or other dependents from their school, child care, day program, after school activities, etc. These plans should also include provisions for pets, reunification plans for all family members, performing of practice drills with all involved parties, and creating disaster kits for home, vehicle and work sites.

Some agencies have chosen to provide additional supports, such as allowing critical staff to use their work site as a family reunification and temporary relocation site. This is most common with large residential care facilities, such as Timber Ridge in McKinleyville. However, there is potential for several local day programs and other agencies to provide similar supports, though that determination has to be made on a case-by-case basis, as not all agencies will have the ability or willingness to offer their employees this type of support due to the type of services, health and safety risks involving clients, young children, pets, and so forth, a lack of agency funding or infrastructure, agency location and accessibility, or other constraints.

It is therefore recommended that emergency planning and training for staff members occur on an annual basis, or at least as often as First Aid, CPR, CPI or Pro-Act trainings are conducted. Agencies should include funds for annual staff training time in their budgets as a regular and ongoing business expense. Supporting critical staff in

establishing their own family emergency response and reunification plans may help ensure that staff members are available when needed most.

Involvement of Clients in Establishing Plans

The importance of including clients in the development of emergency engagement plans cannot be overstated. This is particularly relevant for residential service providers, although many clients can also make positive contributions to the development of plans for day programs as well. Client collaboration not only provides valuable information to the individual pertaining to emergency procedures at that particular agency or site, but establishes a basic understanding of what to do (or not to do) in a disaster which can spill over into circumstances in which an event occurs while the individual is at other locations in the community.

It is important that clients know that the agency has a plan for them and what they can expect that plan to entail. This can reduce anxiety, fear and confusion during an actual event. The goal is to empower clients and remind them not only of their individual rights, but responsibilities to themselves and others.

Thus far, in my own site visits to various local day programs, there appears to be a direct correlation between the number of clients who directly initiate conversations about, and express an interest in, preparedness with me when I come to their site, and the level at which these programs have involved their clients in discussions about their site-specific plans. As an example, when I visit the Gaining Ground program, there are now clients who recognize me when I arrive, engage initiate discussions about earthquakes

and other events, and who have asked me what they can do to be safe if they are at the mall, or asked for my assistance in helping them create a plan for where they live as well. This would indicate that, by involving clients in planning and drills at their day program site, the information and skills they learn can transfer over to home and community.

Including individuals in the planning process may include group discussions about what may happen and the ways in which they can assist staff in making sure everyone stays safe. It may also, depending on the abilities of the individual clients, involve such things as practicing different support roles, teaming up as a “safety buddy” with one or more peers, meeting with local first responders, and visits to local preparedness fairs, the tsunami room, or other community events, helping to identify items at the site that may be considered unsafe in an earthquake, participating in social stories about preparedness, drills and ways to stay safe for their peers with autism.

It is imperative that all clients actively participate in fire, earthquake and, where applicable, tsunami and flood drills. Practicing what to do during these events – and learning what not to do – improves muscle memory and thus provides clients with the best likelihood of avoiding injury, reduces panic, and increases the likelihood of peers following their example.

Practicing drills creates a muscle memory which typically surpasses one’s cognitive function when in an alarmed state. Time and again it has been proven that practicing drills – and doing them all the way without taking shortcuts – vastly increases the likelihood of following the emergency response protocol, reducing personal injury, and ensuring survival during an event. As an example, those persons working in the

Twin Towers who had practiced full-scale evacuation drills were far more likely to evacuate during the events of 9-11, as compared with those who had only practiced their evacuations as far as the water cooler, and then had a discussion as to what they would do next. These individuals who have not followed through with the entire evacuation procedure were more likely to remain in a state of denial and deliberation, delaying the onset of taking action. Individuals who had participated in full evacuation drills in the past were far more likely to begin immediate evacuation of the building and thereby increased their chances of survival.

In working with Family Home Providers over the years, I have seen first-hand many times over that the level of involvement of the providers directly affects the likelihood that individuals will successfully evacuate during an actual event. It is not appropriate to only practice an evacuation when a program or service coordinator comes by the site to check and see if the mandatory drills have taken place. Drills should be conducted at all hours and in all elements, rather than during convenient daylight hours. A verbal announcement of a drill should not be the only signal for clients to engage in drills. Those homes which verbally announce their fire drills each time may be doing their clients a disservice, as this tends to create a dependence upon a verbal announcement to evacuate.

Fire drills should be conducted at least quarterly, in addition to full-drill participation every time a facility, residence or business has a fire alarm go off for any reason, regardless of the hour, weather conditions, or other circumstances for which the alarm occurs. True success for a fire drill means that a client will initiate evacuation to

whatever capacity they are physically and cognitively able to do so whenever they see fire, hear an alarm, smell smoke, or see others evacuating. It involves a timely and complete evacuation to the previously identified emergency assembly point. It involves a successful evacuation at all hours of the day or night, with or without the aid of electric lighting, and regardless of outdoor weather conditions.

Earthquake drills should be conducted at least quarterly, in addition to practicing the drop-cover-hold *and count* techniques every time an earthquake strikes, regardless of magnitude or duration. For earthquake and tsunami drills, it is recommended that individuals and agencies also take advantage of annual large-scale drills such as the statewide California ShakeOut in October and the North Coast Tsunami Warning test drill in March.

For every facility which is located in a tsunami hazard zone, regular drills should be held at least quarterly, as a second step to their earthquake drills, in addition to using smaller earthquakes as opportunities to practice the tsunami evacuation drills. Successful tsunami evacuations include the safe arrival of every person at the previously established emergency assembly point within ten minutes of the onset of ground shaking or simulated earthquake.

If necessary, it may be appropriate to enlist the assistance of behaviorists or other support and planning team members in establishing methods and supports to get the buy-in for clients to participate. Due to the importance of conducting drills on a regular basis and repeating them until successful, I would consider it entirely appropriate to have a reward system in place for those who participate in announced and unannounced drills.

The most important thing to remember is that those who practice appropriate drills on a regular basis tend to be those who remember the appropriate response when a real event occurs.

In addition, it is by practicing drills that shortfalls or gaps in the planning process can be identified and mitigated or corrected, which increases the likelihood of success during an actual event. It is okay for persons to identify shortcomings in their drills and to have unsuccessful drills. However, it is equally important that these be used as opportunities to correct those circumstances, make improvements, and conduct another drill which reflects that the gaps have been identified, corrected, and all participants have had an opportunity to practice the drills again once those corrections have been made. Some of the best plans have been created as the result of gaps or failures identified during a drill. (Sample fire, earthquake and tsunami / flood drill forms are included in the appendices at the end of this report).

Safety should always be taken into consideration when decorating client rooms, meeting areas, etc. in every facility. This includes assisting clients with suggestions and supports in locating beds and other furniture, hanging objects, and heavier décor in a manner that improves safety. Closed hooks, L-brackets, museum wax and creative placement of knick-knacks are simple and inexpensive ways in which basic mitigation for safety can take place while still adhering to the clients' right to decorate their room in a manner that suits them.

Clients can and should also be involved in preparing emergency kits whenever possible. This may include putting together a bedpost bag or go kit for each individual in

a residential setting and making suggestions for food and supplies to go into the site emergency kit.

Vendors should always take advantage of opportunities to advocate for their clients and help them to advocate for themselves. Clients should be supported in advocating for themselves whenever possible. Support staff can assist clients in doing so. If a client uses certain public facilities or frequents particular local businesses, accompanying staff can encourage the clients to ask about the emergency plans for these locations. If they don't have any, agencies can suggest group collaboration to help create plans. It is important to agencies vendored with the Regional Center to let others know about their own planning and emphasize that knowing these other businesses and vendors also have plans, as they are reliant upon them for the individuals served by both entities.

Other Supports Available for Planning WITH Clients includes, but is not limited to the following:

Department of Developmental Services - Feeling Safe, Being Safe program. There is a web site, materials and training supports available for those wanting to take advantage of these resources.

There are numerous community events which both day programs and residential service providers can take their clients to attend. These may include visiting the Tsunami Room at the Humboldt County Fair and other community preparedness events such as those sponsored by the local Red Cross, Redwood Coast Tsunami Work Group, firefighters (especially during fire safety week in October), police officers, preparedness fairs, the Red Cross Zombie Apocalypse preparedness event, Humboldt Ready, Health

Fairs, and other community events.

They can also register for and participate in the California ShakeOut in October and Tsunami Awareness Week and North Coast Tsunami Live Code drill in March.

Take advantage of future Group Workshops and training events offered by Dawn Albrecht.

Any vendor or client can ask for On-Site Visits from Dawn Albrecht for assistance with individual planning procedures.

Identification cards are offered through the local Area Board representative.

Site-Specific Hazard Assessments

It is important that each site – whether residential, day program, health care facility, Regional Center or other agency – understand the difference between hazards and risks, and conduct basic site-specific hazard and risk assessments for each of their locations.

Although most circumstances, such as earthquakes, may be experienced by everyone in a given area, not everyone will experience the event or associated secondary effects in the same capacity. Differences in geology, slope, potential for liquefaction, hazardous material locations, wildfire hazard, fire intensity ratings, dam failure inundation zones, levee failure and associated flood zones, FEMA and Department of Water Resource 100-year and 500-year flood zones, tsunami hazard zones, identified urban and rural flooding risks, critical infrastructure & transportation corridor access, and

a variety of potential hazards along evacuation routes may be entirely different from one agency to the next.

Each participant who registered early for and attended one or more workshops has been provided with a free site-specific hazard assessment. I have since been able to procure mapping sources for local hazardous materials storage which can be added to these assessments. The purpose of these assessments is to provide additional information pertaining to each site which can be taken into consideration when mitigation, planning, drills and evacuation routes are being established. (A Sample Hazard Assessment is included in APPENDIX J of this report).

Site-Specific Risk Assessments and Mitigation

Just as it is important that each site understand the difference between hazards and risks, and conduct a basic site-specific hazards assessment for their location, it is also important that each site make an effort to identify potential risks to health and safety for their site, and make an effort to minimize those risks accordingly. A risk assessment can only be completed in conjunction with a site visit.

Each individual and agency can and should refer to the Living on Shaky Ground booklet for basic information and guidance in assessing their site for potential risks (Dengler, et al, 2011). Living on Shaky Ground includes valuable information on how to mitigate these risk factors to make any home or work place safer for an earthquake, which spills over into increasing safety and reducing risk for other events as well.

In addition, there may be specific rules pertaining to the type of agency, such as Home Site Health and Safety Assessments which pertain to all Family Home Agency or Foster Family Agency homes which should be strictly adhered to as well. (A sample Home-Based Risk Assessment is included in the APPENDIX K of this report).

Agency-Wide Emergency Drills

All service providers should be conducting, on at least a quarterly basis, earthquake, fire, and – if applicable – tsunami or flood drills for each site. It is highly recommended that each agency also participate in other drills. This may include taking advantage of the statewide California ShakeOut¹ earthquake drill conducted each October. Also recommended is taking advantage of the annual North Coast Tsunami warning system drill which is held each March. I would highly recommend persons or agencies located within tsunami hazard zones particularly take advantage of this annual drill and communicate their participation to myself or any other member of the Redwood Coast Tsunami Work Group for verification and feedback.

In addition, due to the importance of communication during a large-scale event, it is also highly recommended that each agency participate in an agency-wide communications drill at least annually. This can be held in conjunction with annual emergency preparedness trainings, tabletop exercises or other aforementioned drills, or as its own stand-alone event.

¹ Parties can register online at www.shakeout.org. Participants can download a certificate of participation following the event for their records.

Ideas for communication drills include, but are not limited to, the following:

- Practicing communications with out-of-area contacts.
- Having an identification day where an Area Board representative or other

individual can come to the site and make an identification card for each client.

- Having every person working for or served by the agency practice registering on and checking the Red Cross Safely and Well registry or Google People Finder.

- Utilizing the Safely Out and other communication tools in mock scenarios.

- Practicing reporting protocols for Special Incident Reports.

- Practicing communication scenarios with transportation providers.

- Practicing mock scenarios involving agencies with whom stakeholders have

Memorandas of Understanding (MOUs) in place.

- Practicing 24-hour check-ins to identify client status and location in accordance with DDS requirements for large-scale events.

- Reviewing business continuity plans with staff.

- Holding tabletop exercises.

- Review of how to handling crime-related situations, such as break-ins or “bad guys.”

- Going over emergency shut-off procedures for utilities.

- Holding Community Emergency Response Team (CERT) training for interested staff and employees.

- Holding a “Ham Cram” weekend where several individuals can receive training and take a test to obtain their ham radio technician’s license, which can be used for communication in the event of an emergency.

7-Step Emergency Engagement Plans for Each Client or Site

It should be noted that these plans should include community response plans for mobile programs. These 7 steps should include each of the following sections:

Section 1 - Client Data

This first page has the most important, immediate information and client data.

This section would include the following information:

- Date the plan was last updated
- Data for listing Individuals served and site location
- The most important emergency and on-call #s / contact information for the

individual’s family/guardian, the regional center services coordinator, school or day/work program, transportation, police, etc. This section should also include The First 5 Steps.

Directions for the First 5 Steps for ANY scenario should be placed in the beginning of the emergency response plan. This is the one thing that should look exactly the same for everybody’s plan:

(1) Stay calm and ensure the immediate safety of yourself, then of others.

(2) Determine whether or not an immediate evacuation is necessary. If at any point you determine that an evacuation is warranted, follow official directions for evacuation procedures. If an evacuation is not warranted, shelter in place.

- (3) Do well-person checks. Call for help and provide First Aid if necessary. If client cannot be located, follow search protocol.
- (4) Listen to NOAA Weather Radio or other reliable communication source for updates, evacuation protocol and other emergency information.
- (5) If you need to evacuate: Assistance required to evacuate within 2 ½ minutes. (List assistance needed and who will provide assistance). It is also useful to include in this section is the location of medications, go kits, emergency kits, and essential augmentative equipment and mobility, communication or other devices. These should be labeled in a manner that enables essential equipment to be returned to the individual if they somehow become separated during emergency evacuation, transportation or sheltering endeavors.

Section 2 - Provisions for Emergency Communication

Everyone involved will need to be able to receive the correct, up to date information, understand the information, know what to do with the information and be able to do it, and communicate their status to agency personnel within 24 hours of the event.

The provision for emergency communication section will be individualized to include techniques that work for administrators or supervisors, staff, and those receiving services. It may also include copies of school reunification plans for children or persons attending day programs, and so forth.

Sample emergency communication lists are included in the appendices section of this report. Individuals and agencies should free to pick and choose from the sample list

provided, but remember that ALL PLANS should include instructions for registering on the Red Cross Safe and Well registry, Google People Finder, out of area contact, or other identified personal status reporting system. In addition, all homes, residential facilities and day programs should have a NOAA weather radio on site and as part of their emergency kit at all times.

Section 3 - Site and Hazard-Specific Engagement Plans

This section should include the identification of applicable natural hazards and a simplified version of the appropriate protocol to be taken for each scenario, based on information obtained in completing a hazard assessment for each site.

This section should also contain information pertaining to the proper evacuation route(s) that can be taken if an evacuation is deemed necessary, including identification of potential hazards to watch for along the way.

Section 4 - Provisions for Short-Term Resettlement

I like to list at least one temporary relocation site located nearby and one in a neighboring town or area, other than a Red Cross shelter. Due to the likelihood of inaccessible transportation corridors in a major disaster, listing people or locations to stay out of the area is not realistic for the purposes of emergency planning for a large-scale event in Humboldt County.

Agencies must always try to plan with at least two other homes / people / sister agencies, and make agreements regarding this ahead of time. Individuals and agencies should start this planning process now so as to ensure that there are potential options

available. In addition, it may be appropriate under some circumstances to have written memorandums of understanding in place, whereas other situations, such as a family member agreeing to provide short-term emergency shelter if appropriate may not require a formal agreement.

All parties involved in the planning process should remember when completing this section that they may need to make additional plans for short-term resettlement of one or more pets or service animals.

It is also important to remember that one or more agency personnel or sites may end up providing a place for temporary shelter or short-term resettlement, too! If agencies are a part of this agreement, they must remember that it is going to be helpful to plan supplies and other factors accordingly.

Section 5 - Missing Person / Search Protocols

This section should include a list of locations at or near the home or in the community where an individual(s) may frequently go, particularly those they may return to when under stress.

It may also be appropriate to list in this section the nearest persons who are active members of Community Emergency Response Teams or live / work nearby who may be able to assist with basic search and rescue or emergency evacuation operations.

This section includes a task list of who is in charge of contacting the Regional Center and local law enforcement, if necessary.

Section 6 - Special Instructions

This is where one would list important, helpful information for Providers, DSPs, Emergency Responders, CERT personnel and others. This section includes identification of circumstances specific to the identified client. These circumstances should include at least the following:

- A list of medical concerns, conditions or essential medications
- Identification of physical limitations
- Emotional and behavioral considerations, including potential risks to themselves

or the community

Section 7 - Maps

The maps indicated with ➤ should be included in all emergency engagement plans for quick and easy reference. The other maps listed may be helpful, but are not considered mandatory for legal or licensing requirements:

➤ Building & Property Site map, including location of fire extinguishers, emergency exits, go kits, and gas shut-off valves.

➤ Tsunami Hazard map(s). These can also be easily modified to include proper evacuation route(s), assembly points, local road systems and potential temporary relocation sites. If these items are not included on the tsunami hazard map, then it is advised that the following maps may be useful to include:

Map of Evacuation Route(s)

Temporary Relocation Sites

Local Road Map(s)

The last three items can be combined onto a single map located in the glove box of vehicles. In addition, copies of any pertinent written MOUs, emergency face sheets, current medication lists and extra medication administration log or other essential information can also be included in this section as an addendum to the plans.

A copy of the completed plans should be provided for each of the following, where applicable:

- Client Home Binder
- Client Office Binder
- Agency On-Call or Emergency Binder
- Parent / Conservator / Public Guardian
- Regional Center

Emergency Engagement Plans are Living Documents and will need to be updated whenever it is appropriate to do so.

Business Continuity Plans

In the interest of maintaining continuity of services, minimizing indirect losses such as long-term unemployment, ensuring well-being, reducing negative emotional impact and limiting secondary trauma, expediting recovery efforts and promoting overall community resilience, it is important that every vendor of the regional center establish for themselves or their agency a comprehensive business continuity plan. As a general practice, all business plans should include routes of action and alternative choices for

achieving agency goals when plans are blocked, emergency plans to address hazard events, and contingency plans for within-business incidents. Service providers for vulnerable individuals are no exception. Basic plans should be provided to the Regional Center in conjunction with the rest of their business proposal and, once the agency is established, service providers should review, drill, and update those plans on a regular basis.

Although factors that should be included in these plans were touched on during the workshop, it would be most beneficial to offer a separate training for this to all vendors. In general terms, business continuity plans should include at least the following:

- Copies of all site-specific hazard assessments and emergency engagement plans
- Additional emergency engagement plans for locations frequented in the community
- Emergency communications protocols
- Emergency response and recovery duties of each staff member for emergency scenarios, such as who will conduct well-person checks, change outgoing phone messages, complete site assessment for safety and provide return to work authorization, emergency management trainer, VOAD liaison, out of area contact, licensed ham radio operators, CERT leader, emergency utility shutoff, etc.
- Plans for continuity of operations, including roles of each staff member and identification of alternative work sites, agencies with whom your business may temporarily partner or share space, etc.

- A section where a list of all trainings and drills are kept, including staff fingerprinting and DDS authorization, special skills or training completed, and other qualifications such as CERT, EMT, nursing, special degrees or certificates, clients with whom they can work or have been trained, etc.
- A list of critical assets – including staff, equipment, vendors, service providers, etc.
- A list (and copies) of vital documents including business licenses, essential documents such as incident report forms, insurance documents, property deeds r rental agreements, utilities, banking, and other account information
- A list of future plans for growth, special training, special needs of the agency that have not yet been established through MOUs or other cooperative endeavors, mitigation needs, etc.
- A section or list of additional resources and helpful information

It is highly recommended that all pertinent information be scanned or copied onto an external hard drive and stored off site in a safe and secure location, such as a safe deposit box.

“Kit Campaign”

This would be a campaign promoted by the Regional Center and myself or others to encourage and support all vendored agencies and individual staff members associated with the Redwood Coast Regional Center to have basic emergency kits at home, in their vehicles, and at the workplace. A kit campaign could be sponsored in conjunction with

other community events, or as a stand-alone project to help clients and their caregivers prepare for an event and improve personal resiliency.

Community Emergency Response Team (CERT) Training

When disaster strikes, it is not unusual for makeshift teams of concerned citizens to respond. Volunteers have assisted with evacuation efforts, cleared snow for emergency responders, assisted with traffic control during power outages, helped to shelter victims, participated in search and rescue of individuals, led cleanup efforts, and worked as first responders to traffic accidents and other tragedies. (National Research Council, et. al., 2006).

For communities facing hazards such as those on the North Coast, the importance of having a ready-trained pool of volunteers is invaluable. While natural disasters tend to bring out a desire in people to assist one another, managing a large influx of people with good intentions but little or no training can add a whole new level of difficulty for those in emergency management. However, having access to pre-identified individuals who have undergone proper training and understand their role in responding to a disaster can be one of the greatest assets for a community facing a crisis of this magnitude. This essential group of Community Emergency Response Team (CERT) members who live in different communities can help offset the shortfall of available emergency responders and assist in response and recovery efforts, particularly during events such as Cascadia or weather-related events where entire communities are likely to be cut off from one another for days or even weeks (National CERT Program, 2011).

I have a strong passion in seeing meeting the goal of seeing 100 new CERT members on the North Coast, who can be available to serve the communities in which they live and work. One of the common gaps I have identified in case after case that I have studied is the need for a strong pool of adequately trained volunteers to assist in response and recovery efforts on the North Coast. Having citizens with CERT training in each of the identified 17 isolated islands of humanity within Humboldt County alone would help close these gaps and may very well prove to be the saving grace for each of these communities.

Through my trainings and community outreach, including the workshops held in March, I have thus far identified several capable individuals in the local community who have expressed a desire to undergo CERT training so as to be able to serve in this capacity in their own communities. Many of these individuals already have experience working with special needs communities. In addition to the regular CERT training curriculum, these individuals would also have the opportunity to receive special additional training for working with individuals who have undergone trauma and for assisting persons with access and functional needs, making them even more valuable to the entire community as a whole.

I am willing to provide presentations on working with individuals who have had trauma as well as further training and support for individuals and agencies attending the CERT training who desire more information pertaining specifically to emergency planning for the elderly and disabled. Local CERT trainers have already reviewed a draft I created for a grant proposal for funds to establish a CERT Scholarship fund, which has

received their approval, and written a letter of support. Dan Larkin has also stated that he would be willing to write an additional letter of support for the finalized grant proposals.

I intend to begin approaching others in the community in regards to fundraising and donations to offset the cost of CERT training for people willing to help out in times of crisis. I am proposing grants in the amount of \$5,000 that would provide scholarships for CERT training to two groups of 25 people each, in hopes that I will be able to obtain matching funds through the community to provide more scholarships for training opportunities to citizens living on the North Coast.

Priority for these scholarships would go to individuals who have experience or a strong interest in working with or assisting elderly and disabled populations, and who are able to show a commitment to serving their community as a member of a local CERT team when the next major disaster occurs, with the larger goal of increasing overall community resiliency.

These funds will be payable to a non-profit – preferably one serving individuals with intellectual and developmental disabilities and who is a local member of VOAD (Voluntary Organizations Active in Disaster). Any grant monies donated for the purpose CERT scholarships would be overseen by the Emergency Planning Consultant (Dawn Albrecht), and the Director of Operations of the partnering non-profit.

Recognition of Rights and Responsibilities of Clients in Emergency Planning

When discussing preparedness efforts with local emergency planners, including former Humboldt County Operation Area leader Dan Larkin, it has been pointed out that

there has been a shift in mentality of people over the past decade or so from a sense of independence to dependence upon the government to create solutions for them. Clearly, this is an impossible task, especially considering the myriad of issues that are involved in planning for vulnerable populations. Aside from that fact, the current population, and the lack of resources to take on such an enormous endeavor, it is also disempowering to hand over all responsibilities for emergency planning to others.

Having the privilege of access to knowledge also involves a responsibility of sharing that knowledge with those who would benefit from it. It is of utmost importance to share a current, correct unified message when it comes to preparedness. A main emphasis of emergency planning for vulnerable populations must include their empowerment through participation in the planning process. In terms of supporting emergency planning for individuals with intellectual and developmental disabilities, this involves making an addition to the current DDS list of Consumer Rights and Responsibilities to include the responsibility to plan for disasters and other emergencies and the corresponding right to receive support in creating these plans

Tsunami Warning Protocol for Day Program Closures

Across the county, day programs, schools, work sites and other service providers must establish a protocol for distant-source tsunami events. Due to the number of individuals who travel through tsunami hazard zones on their way to and from these programs, it will mean a blanket policy of full program cancellation until the tsunami warning has been lifted and an all-clear for citizens has been announced. This is

imperative in order to ensure that individuals do not undergo unnecessary risk when traveling to or from their program.

For some day programs, such as that located in Fortuna, the program may want to remain open on a restricted basis for individuals who live in the city of Fortuna and not leave the Fortuna area until the tsunami warning has passed. This would, of course, mean that clients coming from Eureka or other locations which would entail traveling through tsunami hazard zones should not attend program for that day.

Residential service providers should also be aware of these protocols and include funding and other necessary allocations to ensure that proper staffing levels are provided during the hours in which their clients would normally be attending day programs. It is important that the Regional Center support these service providers by making allowances for such events when designating monthly allowable support hours for these agencies.

Preparedness Manual for Day Programs and Residential Service Providers

In the course of preparing for the workshops and tabletop exercises, I have already created a rough draft of this training manual. Based on my experiences with these trainings, there are some changes that I will be making in the coming months, particularly in regards to the PowerPoint presentation and the addition of additional communication tools, such inclusion of information on the newly established 211 system.

Each participant who attended one or more of the March trainings received a free copy of this first-stage rough draft manual in a binder to keep for their own reference.

Janet Foos of the Redwood Coast Regional Center has a copy of this first draft for her records.

Due to the cost of binders, paper, copying and assembling these training materials, in the event of future workshops, a small materials fee will have to be charged.

Information in Accessible Formats

It is important to have preparedness materials available in a format that can be understood by the intended audience. It is therefore recommended that basic materials, such as the Living on Shaky Ground and basic earthquake, tsunami and other preparedness booklets and brochures be translated into braille (which I have already done for some of the brochures with the assistance of local braille transcribers) or recorded for the visually impaired to receive in audio format.

Workshops should be modified and presented, with sign language translators, for a future presentation to be made for the deaf community.

Simplified messaging is important for individuals with cognitive challenges. I have already co-created some simplified messaging for the Earthquake Country Alliance which is now a part of the ShakeOut materials. These are being adopted by other states and countries who are now conducting their own ShakeOut drills. I am also currently being used as a consultant on a grant-funded project to create a simplified version of the 7 Steps for Earthquake Preparedness manual for low-literacy populations.

I also intend to prepare some sample Social Stories with very basic information about preparedness and drills that can be used for individuals with autism and others.

Written materials should also be translated into multiple languages, including Spanish. A fellow intern at Humboldt State University has been working on this under the guidance of Lori Dengler. Some of these materials are almost ready for publication. I will make them available for the Regional Center and others when they are completed.

It is also recommended that other language translations, such as Hmong or Portuguese, be on the list of languages for translations to be done in the future.

Emergency Preparedness Video(s) Specific to Individuals with Disabilities

Although there are currently a few videos available that discuss emergency preparedness for individuals with disabilities, those I have reviewed thus far are outdated, incomplete, and do not discuss the very real threat of tsunamis. I would therefore recommend as a future project that a new video being produced which takes into account these and other factors, including an emphasis on individual responsibility in preparing for future events.

This video could be offered through the Redwood Coast Regional Center's lending library, the local Humboldt Access cable channel, the ShakeOut website, YouTube and shown in the earthquake and tsunami room at county fairs.

Provision for Continuing Emergency Planning Supports

This provision includes, but is not necessarily limited to, funding for in-home mitigation supports, such as museum wax, earthquake straps, closed hooks, and so forth. While it is the sole responsibility of each individual to address the manner in which their home is decorated, it is unlikely that they have the knowledge base or materials to take

measures to minimize risk. It may therefore be necessary to find alternative resources such as donations from local hardware stores, grant funds, and so forth to gather materials and assist individuals in improving the safety of their homes. This would be done, of course, with the full consent and request of the individual and with their approval of the mitigation measures before they are implemented.

A second suggestion would be to find a means of procuring more Go Kits, such as the ones I have been distributing to the Regional Center clients for whom I have created Emergency Engagement Plans. I believe that any kits obtained should be designated for individuals who choose to participate in the planning process. It may be worthwhile to examine the possibility of approaching CalOES (the California Office of Emergency Services), foundations and others to obtain a grant to help obtain the basic Go-Kits. I believe that Client Rights Advocate Chris Miller has already made a similar suggestion of finding a means to obtain basic Go-Kit materials for Regional Center clients.

The third aspect of this recommendation is in having an emergency plan integrated in the service designs. A person knowledgeable in emergency planning for individuals with intellectual and developmental disabilities being vendored with the Regional Center to assist clients with their individual planning process would be of great benefit.

Increase Number of Licensed Amateur Radio Operators among Service Providers

At a conference held in May of 2011, the FEMA Administrator Craig Fugate stated, "When Everything Else Fails, Amateur Radio often times is our last line of

defense." Time and again, the originator of social media, amateur radio, has been the single means of communication when all other means of communication had failed. Volunteers who are licensed to operate ham radios use assigned frequencies and their own equipment to get emergency messaging out to first responders, the media, and general public.

Here on the North Coast, there is a community of Ham Radio operators who are very involved in emergency planning and communications for disasters as well as community events. Don Campbell of the Humboldt Amateur Radio Club has offered free Ham Radio licensing classes every spring and fall to prepare individuals to take the required licensing exam. All emergency managers have been making a concerted effort to ensure that all emergency responders have access and equipment for ham radio operations in order to ensure that there is a viable means of communication for these agencies in the event of a major disaster. The Humboldt County Office of Emergency Services has recognized the value of having a strong amateur radio community here on the North Coast.

To quote Craig Fugate further, he said that we often rely on cell phones and public safety communication for their resilience, but we must remember that they fail - "They do, they have, they will!" He emphasized that amateur radio communications were an essential part of the primary objective of meeting the needs of survivors of a disaster.

The value of having a licensed ham radio operator and equipment available at each agency cannot be underestimated. As mentioned, there are opportunities twice a

year to receive free training and preparation to take and pass the test to obtain a basic Technician's License, which is good for ten years.

There is also the possibility, if enough people were dedicated to the endeavor, to hold a "Ham Cram" weekend in which Don Campbell or another qualified individual could provide the same training, followed by a testing session. The cost of the FCC Ham Radio Technician's License book and cost of taking the exam are less than \$50. The value of having almost guaranteed access to emergency communications in the event of an emergency is priceless.

Working with Community Partners

In moving forward in the planning process for vendors of the Regional Center, it would be important to identify community partners who can collaborate in the following areas:

- Identification of alternative work sites
- Temporary relocation sites that can provide alternatives to traditional emergency shelters
- Alternative work projects for clients involved in work programs so they can continue earning money in the event of a disaster. Examples may include brush clearing for fire safety, sand bagging for flooding events, etc.
- Partners for repairs in order to expedite getting damaged facilities reopened as quickly as possible. An example of this might entail meeting with local businesses, such

as New Live Services, to create a memorandum of understanding for the purposes of expediting any necessary repairs to provider homes that may suffer damages.

- Pooling of resources
- Continued community collaboration and planning to promote overall community preparedness and resilience.
- This process of identification of Community Partners will include facilitation of communication circles with all interested area stakeholders for the purpose of continued planning.

In proceeding with the community planning aspect, it will be important for each stakeholder to consider what their needs may be, who in their local community may be able to assist with meeting these needs, as well as what each agency may be able and willing to offer in assisting others. Examples may include:

- A Safe Place to “Wait it Out”
- Transportation
- Communication
- Moral Support
- Shared Temporary Relocation Site
- Extra Supplies or Pooling of Resources
- Help Getting “Back to Normal”
- Shared Work Space while necessary repairs are being made or alternative work

sites

I would be willing to organize and facilitate communication circles with local stakeholders. These would take place with vendored service providers, local emergency responders, emergency management personnel, local VOAD (Voluntary Organizations Active in Disaster) members and associated vulnerable populations planning committee, and other community partners for the purpose of establishing dialogue pertaining to emergency preparedness, building partnerships, identifying and filling in as of yet unidentified gaps in the planning process, receiving feedback from emergency management professionals, and continued community planning for business and service continuity, appropriate response, and increasing community resiliency.

CONCLUSION

Vulnerability and disempowerment go hand in hand. Too much top-heavy control, including control of the planning process, policy-making, the recovery process, and access to information and resources, disempowers others. Policies, attitudes, beliefs, and activities that marginalize, exert control over, discriminate against or otherwise disempower a group of individuals, or leaves them out of the planning process altogether, is likely to result in an increase in their vulnerability in relation to disasters, whether resulting from natural or manmade circumstances.

In the case of smaller scale community planning, particularly for those most dependent upon assistance from others such as individuals with severe disabilities, those with intense medical needs, or those who require professionally developed positive behavior support plans, the complexities contributing to this dependency may need to be addressed individually, as what may be a viable solution for one individual may not be applicable to another. This is a key factor which, once understood, leads to the logical conclusion that a top-down approach to emergency planning is unrealistic in terms of time, resources, and ability of emergency managers or large government entities to contribute sufficient time and attention necessary to understand these individual needs for the entire population served. It would also exacerbate the dependency of these individuals on the larger outside entities for this process, thereby increasing their level of disempowerment and vulnerability.

One of the first obstacles that must be overcome in the planning process must be to shift away from the mindset that planning for disasters is the responsibility of the government or some other outside entity. It is a responsibility we all share, but which too few take seriously. People have a right to know how to do this. A primary goal in the planning and mitigation process must therefore be to empower individuals and their circle of support at the individual and community level. If we are able to recognize this key factor and create awareness and a sense of responsibility to self and others, as well as provide these same groups with the necessary tools, correct information, and an open invitation to actively participate in the process of emergency planning, it is likely that a more comprehensive plan can be developed than if an outside entity created or provided a cookie-cutter plan for them.

If I gained nothing else from this project, it was the realization that few agencies will address emergency planning for their agencies unless prompted to do so by a higher entity, such as a licensing agency or funding source. At the present time, Title 17 and Title 22 requirements for emergency planning for service providers is very simplistic, and does not even minimally address earthquake safety and preparedness for other hazards. Few service providers have a business continuity plan in place in the event of a disaster in order to ensure that they are able to continue providing services. Employee education in terms of emergency response protocol is minimal at best, and little to no money is set aside in budgets for consideration of employee training and education on this topic or for emergency supplies. High employee turnover for those working directly with clients adds further complications to the need for disseminating the current, correct information

to those who will play an essential role in ensuring the health and safety of individuals who are dependent upon others for assistance.

Because of this project, I was able to apply for a \$10,000 grant through Area Board One to develop and present similar trainings in Humboldt, Del Norte, Lake and Mendocino Counties. Overall, those who turned out for these events were enthusiastic and engaged, although there were a couple of individuals in attendance who had been clearly sent by upper management and who had little interest in the topic. (One such individual had reportedly returned to the agency, plopped down the binder of information I provided at the training, and told the employees, "Here, you need to do this." These employees later contacted me for help, as they had not been at the training and had received no further instruction from this supervisor).

Following the devastating fires that occurred in Lake County in 2015, I was contacted by individuals who had not attended the workshops I had presented in that county under the grant. They asked me if I would be willing to come down and provide an additional training and support for them, as their agencies had not fared well in responding to the event. However, once I had explained that the grant I had been working under expired and I would have to receive some compensation for doing so, they chose to pass. Funding for these agencies (most of which are non-profits), is simply not available in many circumstances. Even for those who have the funds to have a comprehensive emergency engagement and business continuity plan developed, few take the time to review the procedures or to act upon the recommendations I have outlined for

them. It is my assumption that this is also true of the list of recommendations I created for the Redwood Coast Regional Center in conjunction with this project.

It is interesting to note that the sole individual who perished during the Lake County fires was reportedly an individual with a disability whose care provider was unable to enter the danger zone to assist her in evacuating. In addition, I had been informed during the recovery process that the regional center had been scrambling to find places to relocate some of the clients who had been impacted by the fire. I was disappointed to know that no agency had enacted the steps I'd provided to avoid such an event, including the agency I had been working for at the time the original workshops were held. Perhaps my greatest frustration in this process has been getting service providers, business owners and other community members to take emergency planning seriously and incorporate it into their routine operating processes.

During the time I worked on this project, I also worked as a student intern through the Redwood Coast Tsunami Work Group. As part of my intern duties, I spent several days going door to door to businesses in Eureka and Arcata in preparation for the California ShakeOut; a statewide earthquake drill held every October. Although I worked hard to encourage businesses to participate, getting any business owners to take interest in any aspect of preparedness, including this simplest of steps, proved to be extremely difficult. Overall participation in the business community remains dismally low, despite numerous stories of employees saying and doing things during earthquakes which have endangered the lives of their patrons and potentially set them up for issues concerning liability.

In another frustrating incident, a nationwide agency that provides services to individuals with developmental disabilities (and for whom I worked for several years) once held a training event for all coordinators from across the state. When I attended this training, I was shocked and dismayed by the erroneous information that was being presented in regards to disasters. It was riddled with incorrect, outdated and, in some cases, harmful information. As just one example, they instructed all of their coordinators to teach all clients and their families to run out of building if there was an earthquake. I spent a great deal of time reviewing their sample emergency plan, finding it full of flaws and incorrect procedures (including listing calling state police as a first step for a missing person). When I attempted to diplomatically suggest alternatives that were more appropriate and explained the reasons for it, (including reducing the risks their ideas presented to the health and safety of clients) I was reprimanded for “embarrassing a superior.” This agency later hired an “expert” to create an emergency training for their employees, much of which was not applicable to hazards in our area. (For example, one entire segment focuses on the risk of encountering certain poisonous snakes which are found only in southern and eastern states).

That is not to say that all agencies with which I have had contact were as callous as those mentioned above. In truth, based upon the surveys I provided at the end of each day of workshops, the feedback I received was very positive, with the main recommendation being that I provided more time in future workshops, as there was a great deal of information covered. Among things I would change in future workshops, it would be to modify the survey so as to emphasize more of a critique on the material

itself, and less upon the instructor, as I received very positive feedback from participants and had to consider the possibility that people were just being very nice to me, as the workshops had been provided for free. By rephrasing some of the questions in the survey, perhaps I would have received more critical responses.

Some of the success that did occur as a result of the training I provided as part of this project was an interest expressed by several Regional Center clients in preparing for disasters. A few approached me and asked if I could help them to do so. However, unless they are living independently, this would have to involve the residential service providers from whom they are receiving services. Also, if a client is conserved, I cannot proceed without signed consent from, and the inclusion of, their conservator.

Unfortunately, I never heard back from these individuals, or their Regional Center Service Coordinators to get permission to proceed with many of these individuals.

Planning for emergencies of all kinds for individuals who are dependent upon others for services is a team effort. Yet, without either the interest or requirement of inclusion of *all* team members, including the Regional Center, service providers, family members and other natural supports, as well as all employees assigned to the individual, any efforts I make in assisting others with planning for emergencies will, ultimately, be incomplete. While I remain ready and willing to assist individuals and agencies in learning about, planning for, and responding to hazard events, it is not something I can do alone. Full participation is vital. A commitment to practicing regular drills and mock scenarios is equally important in order to identify gaps, shore up weaknesses, and continually strive to make improvements to ensure that all individuals have peace of

mind that they have done all they could to prepare for, avoid, or lessen the effects of a disaster.

Continuing Activities

Since the conclusion of this project, a series of events have occurred as a result of the trainings presented by this author. In 2013-2014, I applied for and received a \$10,000 grant to create and present several two-day training events in Humboldt, Del Norte, Lake and Mendocino Counties. The training was geared toward service providers as well as individuals, family members and support teams of individuals with disabilities. The focus of these training events was on step-by-step methods for both businesses/organizations providing services as well as individuals with disabilities and members of their circle of support to prepare for disasters. In addition to presenting the trainings, I provided several hours of direct consultation for those individuals and organizations wishing extra support.

As a result of this project, I have identified an additional need for increasing the tools and information that could be helpful during the recovery phase of an event. Most emphasis is put upon the mitigation, preparedness and immediate response phases of the emergency management cycle. However, the effects of an event can continue for many weeks, months, years, or even a lifetime. My focus on the recovery phase includes identifying factors that contribute to individual as well as group resiliency and developing tools to promote both.

In 2014 I was asked to be a consultant for a large preparedness project involving an out of state agency with an operating budget of over \$40 million, as well as to give feedback on new software that could streamline emergency planning for private and governmental organizations. I was asked to provide additional supports in 2017 in the form of helping execute tabletop exercises, offer viable solutions to gaps and problem that were identified, and give feedback on post-exercise assessments. It is anticipated that I will be called upon as a consultant for continuing planning needs. In conjunction with these activities, I have spent several weeks during 2015 studying the natural hazards of Oregon, as well as learning about other types of threats that do not involve natural hazards (i.e. cyber security, biological weapon attacks, etc.). I participated in additional planning activities, including hazard and risk assessments, and creation of business contingency plans for local businesses who required this for insurance and funding purposes.

Since the conclusion of this thesis project, I have greatly expanded my personal studies on trauma and resiliency to include brain development, understanding the physiological and psychological long-term effects of trauma, post-traumatic stress and, most importantly, the effects of having a sense of community on personal and group resiliency. In June of 2015 I gave a presentation to Transition Humboldt on the topics of personal and community resiliency, and have provided information on working with children who have experienced trauma as a guest lecturer for the Foster Kinship Care Program at College of the Redwoods, where I have also given Emergency Planning, First Aid, CPR and AED courses for foster care providers.

Through October of 2017 I continued focusing on working in the field of resilience and recovery while working as a mental health support specialist, assisting children and teens that have experienced trauma and their families and community support teams. I continue to offer supports as an independent consultant for emergency planning for vulnerable populations, specializing in planning for individuals and caregivers for the elderly, disabled, child care facilities, mental health facilities, foster and group homes, and other agencies.

In the fall of 2017 I agreed to participate in a series of radio interviews on topic pertaining to trauma, resiliency, and emergency planning for the elderly and disabled populations in nearby counties. These are anticipated to begin in January of 2017. An additional request was made to participate in podcasts, also on topics pertaining to emergency planning.

At the present time I am partnering with other like-minded individuals to establish a non-profit agency that will, ultimately, provide an umbrella of services to the most marginalized and vulnerable populations within Humboldt County. We are dedicated to targeting and decreasing shortfalls in services, working towards the empowerment of the most vulnerable members of society, and building a stronger sense of community. In doing so, it is my hope to continue to offer my services in emergency planning and contribute to the overall resiliency of all Humboldt County citizens. It is my hope to also return to complete more courses through the California State Specialized Training Institute in the coming months in order to obtain a certificate in emergency management.

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APPENDIX A

Cascadia

Perhaps the most significant of the natural hazards that could affect Humboldt County involves the Cascadia Subduction Zone. Subduction zones are convergent plate boundaries where one plate moves beneath another plate. Earthquakes, mountain-building, landslides, volcanism and tsunamis can be generated in association with subduction zones. The Cascadia Subduction Zone is one such region; an extensive plate boundary where the oceanic Gorda Plate and Juan de Fuca Plates are moving beneath the continental North American Plate. It is 680 miles long and extends from Cape Mendocino in the south to beyond the northern tip of Vancouver Island in British Columbia (Abbott, 2008). In 1700, a magnitude 9 earthquake along the Cascadia Subduction Zone likely ruptured several hundred miles of this fault (Dengler, et al, 2011).

A rupture along the Cascadia Subduction Zone could potentially generate another 9.0 intensity earthquake with a rupture zone extending hundreds of miles (Dengler, 2012). An event such as this could trigger a massive tsunami, such as those occurring in Japan in 2011 and in the Indian Ocean in 2004, which killed over 230,000 people. According to Dan Larkin of the Humboldt County Operational Area, when a Cascadia event occurs it is going to be like “Katrina on Steroids” (Larkin, 2012). For residents along the West Coast of the United States, it is not a matter of whether or not this massive event is going to occur, but when.

According to the United States Geological Society, a Magnitude 9.0 earthquake has 100 times the amplitude and releases 1,024 times the energy of a 7.0 earthquake (Jaiswal & Wald, 2010). In 1992 a series of three strong earthquakes shook the North Coast. The first of the series of three quakes in 1992 was “only” a 7.1, yet was felt in high rise buildings as far away as Sacramento.

Scientists have determined that over 19 earthquakes extending along the Cascadia Subduction Zone from southern Vancouver Island to the Oregon-California border have occurred in the past 10,000 years. These would typically be of a magnitude from about 8.7 to 9.2 (Dengler, 2012). Researchers have also determined that there have been 22 additional large earthquakes that involved just the southern end of the fault, in the region from Oregon to Northern California. Therefore, on a geologic *average*, a Cascadia event of some form occurs about every 244 years. According to Abbot (2008), the last Cascadia mega-earthquake to strike the Pacific Northwest occurred on Jan. 26, 1700 – well over 300 years ago.

Native American stories shared between 1860 and 1964 describe events that occurred in relation to the 1700 Cascadia earthquake and tsunami. These stories were from people whose ancestors had lived along the coast from the Humboldt County area to Vancouver Island in British Columbia – roughly the extent of the Cascadia Subduction Zone (Ludwin, et al., 2005). These stories include detailed descriptions of strong ground shaking that occurred at night followed by flooding events that destroyed coastal villages. These native stories are validated by core samples showing sand layers near coastal areas, radiocarbon tree ring dating within forests killed by salt water inundation, and written

records from Japan indicating that an ‘orphan tsunami’ (one occurring without accompanying ground shaking) occurred within the same time frame (Ludwin, et al., 2005).

It is important to note that this event occurred long before modern day infrastructure and population densities were established along the Pacific Northwest. An event like this occurring in the current era could result in heavier damage and more widespread effects than any previous natural disaster in the nation’s history.

APPENDIX B

Physical Vulnerability

Most building structures in Humboldt County are single-story wood frame houses, which tend to fare relatively well during earthquakes, although there are still some unreinforced masonry buildings and scattered post and pier foundations (particularly in rural areas and historic regions), as well as mobile homes and other buildings that are not properly secured to their foundations. These weaker buildings are more vulnerable to structural failures in an earthquake. Most structural failures experienced in Humboldt County tend to be from buildings shifting outwards from the foundation, weak cripple walls on older Victorian-style homes, breaking windows, and falling overhangs (Dengler et al., 2011). Buildings that abide by modern engineering and building standards do not typically crumble or fall inward, (as viewed in many videos of earthquake damage in places such as Haiti, China, Morocco or Turkey) because of the difference in engineering and building materials used. California is one of the states that has overall stronger enforcement of modern building codes, similar to those in Japan (Dengler, 2012).

In 2012, the United States Geologic Survey completed a report on Community Exposure to Tsunami Hazards in California. This report provides a roadmap for understanding the impact that a Cascadia event could have on the residents of Humboldt County. By examining these predictions, we can identify factors that may increase risk for some individuals and help guide planning efforts for residents who may live, work or

recreate in the areas likely to be affected by such an event. In terms of developed/inhabited land area, our population density numbers are low compared to many other counties, but because of the distribution of our demographics, with many people living and working around Humboldt Bay, our relative adverse impacts to the people in this region will be high (Larkin, 2013).

Humboldt County has twice the amount of land area in tsunami inundation zones than the next closest of the 20 affected California counties, and from 3 to 40+ times the amount compared with the remaining 18 counties (Wood, Ratliff, & Peters, 2013). About 10% of the population residing in Eureka, Arcata and Trinidad live in a tsunami hazard zone (Wood, Ratliff, & Peters, 2013). This does not include the many homeless encampments scattered throughout the area. Nearly 40% of employees who work in the city of Eureka work in a tsunami hazard zone. Of these, around 50% (of these individuals) work in community support businesses (Wood, Ratliff, & Peters, 2013). If these community support businesses are unable to continue to offer their services due to a hazard event, this would have a significant impact on many of those who are often identified as vulnerable populations, including the poor, elderly and disabled who depend on the services these agencies provide. Arcata and Eureka also have several dependent care facilities and two day programs located within tsunami inundation zones (Wood, Ratliff, & Peters, 2013).

There are six state parks or recreation areas located in tsunami inundation zones in Humboldt County. Eureka alone has more than 30 public venues (such as parks, recreation centers, the marina, museums, hotels, entertainment centers, and so forth),

which are located within the inundation zone (Wood, Ratliff, & Peters, 2013). Lack of preparation could potentially result in an increased likelihood of death or injury if an event were to occur during visiting hours at these locations, particularly for people who are visiting from out of the area and may not be as familiar with the local hazards or procedures they should take to remain safe if a large magnitude earthquake and tsunami were to occur.

Several utilities and critical infrastructure are located in the potential tsunami inundation areas as well, including both of the municipal waste water treatment facilities for Eureka and Arcata. Damage to one of these facilities may result in a major long-term disruption to sewer services, in addition to health risks from potential chlorine gas leaks and leaked sewage material into and around Humboldt Bay. Hazardous materials are stored at the Renner Petroleum storage facility, the Samoa Pulp Mill, and other locations surrounding Humboldt Bay. Several wells, pumping stations and water transfer pipes - such as those that supply water from the Mad River to the Arcata and Eureka area - lie within tsunami hazard zones. Many gas, power and sewer lines supplying people in Arcata and Eureka also run through these areas (Wood, Ratliff, & Peters, 2013). Transportation infrastructure is located in the affected areas, including two airports and parts of Highway 101 (Wood, Ratliff, & Peters, 2013). It can easily be concluded that mitigation and repair costs for a Cascadia earthquake and tsunami event could be astronomical and require many resources.

Experts believe it is certain that a Cascadia event will occur, but it is not known exactly when it will happen or what magnitude earthquake will be generated from it.

When a Cascadia Subduction Zone event does occur, residents on the West Coast of the United States can expect strong ground shaking that lasts for several minutes (Dengler, 2013). The intensity of shaking will decrease depending upon the distance from epicenter, geologic makeup of an area, and other factors. However, the duration of ground shaking will be significantly longer than smaller, more frequent seismic events.

Fatalities in the thousands are possible up and down the West Coast, with tens of thousands more injured. Hundreds of buildings could be severely damaged. A large and extremely destructive tsunami will hit the closest point of land on the coast within as little as 10 minutes (Dengler, 2013). This tsunami could travel all the way across the Pacific Ocean, affecting people and infrastructure in Alaska, Hawaii, Southern California, other countries around the Pacific Ocean, and possibly countries in other parts of the Pacific Rim as well.

There could be hundreds of aftershocks, some of which can be of intensity 7.0 or higher. (By comparison, the earthquake that struck Humboldt County and caused damage in January of 2010 was only a 6.5). These could occur in a number of locations both onshore and offshore. Any of these aftershocks can cause further damage and those centered offshore could trigger more tsunami activity. These aftershocks could continue for several months and greatly hamper rescue and recovery efforts.

On September 26 of 2013, the Federal Emergency Management Agency (FEMA), along with the California Office of Emergency Services (Cal OES – formerly CalEMA) revealed the California Cascadia Subduction Zone Earthquake and Tsunami Response Plan for Northwestern California. This plan outlines the hazards and corresponding

emergency response protocol that is to be implemented when this event occurs. However, when the plan was presented to and discussed with Humboldt County Emergency Managers and other interested parties, studies had not yet been done that would rule out the possibility of damage to larger inland metropolitan areas. Lori Dengler pointed out that, because of the geologic makeup of northern California, it is possible that the more population-dense capital city of Sacramento could suffer even more infrastructure damage than residents on the North Coast, and that more studies were needed to determine the potential for a much larger area of impact than that which was included in the FEMA plan. This could potentially change the dynamics of how much response from Federal Agencies could be required due to a significantly larger geographic area impacted by such an event.

In terms of purely local impact, a key issue is that residents could be divided into at least 17 “isolated islands of humanity” (Larkin, 2012). Each of these will have to function independently for extended periods of time, as outside help may not arrive for several days or weeks. Families may be cut off from loved ones for extended periods – with little or no ability to communicate with each other. Emergency Response personnel will be spread thin and their efforts will need to be prioritized to schools/children or critical infrastructure, and whatever can be done to avert larger damage of secondary effects. Therefore, it is likely that most of the immediate search and rescue efforts and community support will have to come from individual citizens who happen to be located in each community when the shaking begins. There may be no one coming from outside areas to assist or rescue people in outlying areas for quite some time.

Landslides and potential damage to bridges and other infrastructure will likely hamper assistance coming to our area, as well as preventing people from leaving. Entire sections of all highways leading into and within Humboldt County - including the Highway 101 corridor - may be wiped out by landslides consisting of potentially millions of tons of earth and debris (McCarthy, 2013). Emergency assistance from other parts of the country (other than supports flown into the Arcata/Eureka Airport from out of the area) will likely not be able to come any closer than the I-5 corridor. Air support will depend greatly on weather conditions and whether or not there is significant infrastructure damage to the small airport in McKinleyville, which will have to be assessed by federal authorities prior to actual delivery of relief supplies. These supplies would then be delivered via helicopter to Points of Delivery, or 'POD' locations within each isolated community (Johnson & Plance, September 2013).

The water pumping stations, water transfer pipes and several wells, in addition to a number of underground sewer and water systems throughout Humboldt County, could suffer irrevocable damage. People with septic tanks who live in areas prone to liquefaction may see their septic systems rise up out of the ground. Although restoring water and sewer lines will be the top recovery priority for Public Works Departments, people dependent upon city utility systems could find themselves without water or sewer services for at least three to four months – possibly much longer (Albrecht, 2010). There may be standing water harboring many contaminants for a long time. The likelihood and incidents of exposure to bacterial pathogens and other disease-causing substances will be high. Maintaining adequate health and sanitation may be a challenge for many people.

Some gas leaks are likely and can result in further damage and danger for residents. People may find themselves without power or natural gas for extended periods. The Tompkins Hill gas pipelines that lead to the PG&E Power Plant near King Salmon cross the Little Salmon Fault zone multiple times. Lori Dengler has stated that there is evidence to support the idea that when past Cascadia events have occurred, the Little Salmon fault zone has also experienced earthquakes (Dengler, 2012). This fault zone can result in surface rupture.

Most businesses and service providers that have not created emergency response and business continuity plans ahead of time may not reopen. Businesses that are likely to fare best are those that have created plans for business response and continuity, and who have ensured that their employees and their employees' families have their own emergency plans in place.

The most vulnerable and negatively impacted populations are likely to be those who are isolated, elderly, disabled, and others who are already dependent upon others for help. The individuals and communities who are likely to fare the best will be the ones that have or know what resources are available, already have plans in place of how to support one another, and are prepared to "go it alone" for an extended period of time. Thousands of families may be homeless or need emergency shelter for several weeks, months or even years. Community recovery efforts may continue for many years – perhaps even decades. Many individual people could still be recovering from these events for several years after the initial event. Some may never fully recover.

Gaining an understanding of the local hazards can serve as a first step in emergency response and expedited recovery efforts. In understanding how and why these hazards take place and the impacts they can have, we are better suited to plan for, manage, and adapt to these changes, rather than becoming victims of it. Another step involves gaining a better understanding of factors that contribute to vulnerability as well as factors that can promote resilience. It is imperative that resiliency is developed and personal responsibility be emphasized with all community members. By learning the factors that contribute to resiliency, such as ways to assess vulnerability, protective systems, and availability of resources that contribute to resiliency on an individual and community level, it may be easier for those who are concerned with preparedness to guide local citizens in understanding and effectively fulfilling their roles as first responders.

APPENDIX C

Protective Systems

Masten and Obradovic (2008) identify the protective systems which contribute to developing resiliency in individual people. Among these protective systems are attachment systems, mastery motivation systems, intelligence and the central nervous system, regulatory systems, microsystems, community-level systems, and macrosystems. This project addresses each of these protective systems, as they pertain to regional center clients.

The first of these relationships involves attachment. Attachment figures can include caregivers, siblings, pets, stuffed animals, security blankets, pacifiers and, of course, parents. As a child grows, these are replaced by peers, romantic partners, and other friendships. Gunnar (2005) indicated that having these attachment figures present can go a long way to moderate stress for an individual. For example, when feeling threatened, a child will seek proximity and contact with their parent or other attachment figure. As adults, it is not uncommon directly following an earthquake or other sudden event for people of all ages to want to gather together or start calling their own “attachment figures” as a way of coping with the stress they were feeling. It was pointed out by Masten and Obradovic that separation from these attachment figures can cause more stress than the event itself.

The next protective system involves self-efficacy and motivation. Those with a positive view of their own efficacy are more likely to put forth an effort to be successful

and persistent in the face of adversity. If an individual has had to overcome adversity in their own life prior to a disaster, they are typically more likely to adapt and have internal motivation to overcome any hardship they may encounter due to an increase in self-confidence, and are more likely to take pleasure in doing well, even in the face of adversity. This is an internal, self-perpetuating system. However, even the most resilient individual has a limit and prolonged exposure to severe deprivation and events beyond one's control can take their toll. The opposite of self-efficacy may be described as learned helplessness.

An individual's intellectual skills - such as the ability to keep thinking while under threat or while facing adversity - are important in determining one's capacity for resilience (Masten & Obradovic, 2008). An individual needs to maintain one's ability for problem-solving and processing information during a disaster. They need to be able to integrate knowledge about what is going on and what to do while under stress. There are several factors that contribute to one's ability to maintain intelligent behavior, only some of which involve development, learning and prior experience. Fatigue, injury, illness, emotions, values, and motivation all contribute to one's level of arousal, and thusly their ability to make decisions, remember important details, and perform other executive functions.

Self-regulation is an important protective skill to have under high-stress situations and is identified as being among the most important and necessary skills for individuals working high-stress, life and death or other emergency roles. Not only is the ability to manage one's emotions, coordinate actions, think clearly and make essential decisions

under pressure essential for those in roles such as working in emergency rooms, but for all individuals who are presented with a crisis situation. An additional factor that makes self-regulation an integral issue is that any individual who is perceived as an attachment figure, care taker, or who is in a leadership role is going to have a strong impact on how those around them are able to handle and process a situation.

Microsystems make up the next protective system discussed by Masten and Obradovic, as they serve regulatory and protective roles through their interdependent relationships. Microsystems have the potential to increase the social capital and adaptive capacity of each of its members and people tend to automatically turn to the local school, church, workplace or other familiar arena that serves as a social microsystem. Family, friends, clubs and other groups or organizations also serve as social microsystems. When familiar social systems such as schools, churches or other entities are able to get up and running and holding classes or meetings as soon as possible after a major disruption, it can serve as a symbol of community survival for individuals, whether or not they actually attend or are members of those institutions. Additionally, the locations of these institutions tend to serve as natural gathering points for community members when a disaster strikes. Regular routines, rituals, shared beliefs, stories and a sense of unity associated with any of these social systems can provide a sense of emotional protection.

Community-level resources and collective efficacy also play a role in individual resilience. Just as an individual or group can have an effect on other individuals and groups of people, the overall ability of the larger community to respond to and expedite recovery from a disaster can have a significant impact on the ability of individuals within

that community to experience greater resiliency and a lessened impact on their lives in general.

On a larger scale, macrosystems such as cultural systems, mass media, and national or international organizations can serve as protective systems, as the level of trust in leadership or media coverage, sense of spirituality and attachment to spiritual and religious figures, and sense of social support have an impact on an individual's resilience. Rituals, positive words of support, prayer or meditation, and a sense of social support and regulation can serve as a source of impetus for individuals to engage in similar self-regulation behaviors.

There are other considerations to be taken into account when developing a framework for resilience. These include the nature of the threat, the degree to which one is directly impacted (such as a child losing their parent vs. watching something from halfway across the world unfold on television), the number of threats and time frame in which they occur, whether there is a direct threat of bodily harm, individual history, availability and strength of support systems, prior planning, degree of cognition, physical dependence upon others, exposure to previous traumatic events, and an individual's personal stage of development. Each person will have a different level of susceptibility to a threat and people will not be uniformly affected by the same event. "Changing perceptions, cognition, resources, roles, and responsibilities, all of them related to development, are likely to influence the reaction of human individuals to catastrophe" (Masten & Obradovic, 2008).

First responders for vulnerable populations need to be identified, trained in response, and included in planning for disasters (conducted with their participation). It is important to take into consideration the different types and degrees of cognitive, emotional and behavioral response may be expected at all levels of human development, and best practices for basic psychological and physical first aid be taught to all first responders. The perception of safety of other members of one's systems, and those with whom they are most closely attached, will affect one's ability to function in the face of adversity. Preparation for disasters needs to be done with an understanding of, and consideration for, the interdependence of these protective systems (Masten & Obradovic, 2008).

The constructs identified by Masten & Obradovic as potentially contributing to resiliency include coping styles that involve problem-solving and facing one's fears. Task-oriented coping appears to contribute to increasing resiliency, while emotion-oriented coping is correlated with lower resilience. Cognitive functions that contribute to coping include placing blame where it belongs rather than blaming oneself or others, and remaining flexible in one's approach to solving problems. The ability to reframe or identify a more positive meaning from an event, and acceptance of the event are likely to contribute to personal resiliency. Other functions that were identified by Masten & Obradovic as likely contributing to resiliency include using humor, maintaining a positive outlook, getting physical exercise, having a strong sense of spirituality, having a social support system, and having previous experience with a stressful event.

APPENDIX D

Determining Vulnerability

One means of trying to make sense of a disaster throughout history has been to view such events from a fear-based, religious perspective, sometimes to persuade people that they must repent, turn to god, or change their ways in order to prevent a similar supernatural event from occurring. However, a major earthquake occurring in Lisbon, Portugal in 1775 marked a turning point in how humans view disasters. The causes of such events started to be seen from a neutral standpoint; disasters happened because of reasons that could be explained by science (Dynes, 1997).

In the early 1900s, an additional layer was added to the definition of disaster. It was now recognized that not all natural events qualified as a disaster. Lowell Julliard Carr summarized this new view in 1932: “Not every windstorm, earth-tremor, or rush of water is a catastrophe. A catastrophe is known by its works; that is to say, by the occurrence of disaster. So long as the ship rides out the storm, so long as the city resists the earth-shocks, so long as the levees hold, there is no disaster. It is the collapse of the cultural protections that constitutes the disaster proper” (Carr, 1932). Thus, the study of disasters began to take into consideration three main societal factors: Population (number, composition and distribution), culture (number, quality and distribution of cultural traits) and relationships (between individuals or groups).

Following the tsunami-generating Great Alaskan earthquake on March 27, 1964, a new interest in vulnerability and disasters took shape at the government level. The United States called for an assessment on vulnerability. This first assessment focused mostly on factors relating population and infrastructure, such as suburbanization, mobilization, and mobile homes (Cutter, et al., 2008). Thirty years later, in 1994, the World Conference on Natural Disasters took place. In the same year, the United States government called for a second assessment to be performed. This time, the focus was on building disaster-resistant communities (Cutter, et al., 2008).

In 1987, the United Nations, in response to major droughts, famines and other events, made a declaration that the 1990s would be the Decade of Disaster Reduction. Ironically, the 1990s was reflected upon as a decade of disasters – both natural and man-made. Many post-event studies, reports, and other literature were produced as a result of that tumultuous decade which left no doubt as to the responsibility humans had for creating the opportunity for disasters to occur. Former FEMA Director James Lee Witt summarized this in 2001 when he stated that the large disaster losses experienced in the 1990s had been “the result of a lethal combination of fierce nature and human decisions” (Oliver, 2011). Among the topics of study during this period were historical reflections on the relationships that humans had with disasters. Models were soon developed to explain the human-disaster relationship, and why some groups were more resilient and some more vulnerable than others.

In an attempt to explain the relationship human activity played in the development of a disaster, several techniques have been developed to identify vulnerability and assess

risk. One of these is the Pressure and Release Model. The Pressure and Release Model is a simple tool which takes the primary three elements: (disaster expressed as) risk, vulnerability and hazard, and explains the relationship between these components as expressed with the formula $R = H \times V$ (Wisner, et al., 2003). The basis for this is in the idea that a disaster occurs as the result of two processes working against one another. One of these is the hazard, which is the natural event that can occur in a given place and time, and with varying degrees of severity, and regardless of whether or not anyone is present. It is the presence of, and effect on humans that works in conjunction with the hazard to determine the level of disaster. (Therefore, if there were no people present, the formula would read as $H \times 0 = 0$, meaning there was no disaster).

The second process in this model, vulnerability, is a reflection of the social processes and underlying causes which add pressure to the formula. This is actually a combination of factors, such as population density, resources, and social relationships. Thus, people are under pressure from a combination of the level of hazard and level of contributing societal processes. The result is the level of disaster that occurs. The release component in this model theoretically comes from the actions taken to reduce vulnerability and thereby release the pressure (Wisner, et al., 2003). While this model tries to explain vulnerability, including taking into consideration aspects such as livelihood, it does not measure it.

An expanded version of the Pressure and Release (PAR) model is the Access Model, which also does not measure vulnerability directly, but still takes the same basic principles as the PAR, such as factors involved in securing a livelihood as contributing to

resilience (Wisner, et al., 2003). The Access Model further expands on the economic and political resources required for those livelihoods to continue, focusing more on global, regional and national systems of economic, social and political power, along with the material conditions in daily life, as contributing factors to vulnerability. The purposes of these models are to reveal more clearly how conditions within societal systems must change in order to reduce vulnerability and increase the capacity for an individual, group or region to prevent or recover from a disaster (Wisner, et al., 2003). However, neither of these models is able to measure vulnerability.

In an attempt to address the need for statistical methods for measuring vulnerability in disaster risk assessments, and with advances in technology, new vulnerability indexes, databases, and computer modeling were developed. In response to the aforementioned United Nations Declaration, the Human Development Index (HDI) was developed in 1990 by a Pakistani economist, Maybug ul Haq, and an Indian economist, Amartya Sen. The HDI is used by the United Nations Development Program to rank countries of the world into four divisions: very high, high, medium or low development. The HDI takes into account three basic factors: life expectancy, level and years of education, and gross national income per capita. The HDI is used primarily as a reference tool for the purpose of economic and development policies and programs, and assessments thereof. Although not primarily intended to serve as an indicator of likely impact from disasters, a clear trend has since been identified with this tool wherein the impact of disasters often trend towards higher impacts being suffered by countries identified as being medium or low on the HDI (Human Development Index, 2012).

The glaring result of looking at disasters by comparing results with the Human Development Index is that the impacts in the form of direct and indirect losses - including death and economic loss in terms of proportion of GDP - are experienced far more intensely in developing countries (Abramovitz, 2001). Based on this, it could be argued that this pattern could also be reflected on a smaller scale when comparing the vulnerability of different communities or even from one individual to the next, depending upon the criteria used to identify their level of vulnerability. What was needed by emergency managers was a different tool for determining the factors contributing to vulnerability for a smaller geographic scale, with the belief that, once these factors were identified, steps to mitigate for these factors could be addressed at the local level.

The Social Vulnerability Index (SoVI), created in 2003, is a similar model to the Human Development Index, using U.S. Census Data and Principal Component Analysis.** However, instead of using three basic indices to rank countries, the 2010 version utilizes 29 variables and applies them at the county level across the United States. These variables focus on population characteristics, and include such factors as race or ethnicity, language, gender, family structure, access to health care, socioeconomic status, age, occupation and employment status, place and type of residence, education, special needs and dependence upon services. This data can also be categorized to reflect different forms of vulnerability. For example, the Center for Disease Control uses a SoVI which looks at these categories and groups them into four areas: Socioeconomic Status, Household Composition, Race/Ethnicity/Language and Housing/Transportation. The

data is used to create maps and provide quick assessments of vulnerable regions within a city, county, state or other geographic region. (Flanagan, et al., 2011).

The intent of the SoVI is to quantify variations in the levels of social vulnerability in a given area. However, the SoVI is limited in that it does not provide for a means of validating the level of vulnerability indicated by the algorithm used, which would require it to be “judged with reference to expert knowledge of the characteristics of the area” (Schmidtlein, et al., 2008).

While the SoVI is intended to provide a general reflection of vulnerability for a given county in terms of a number value reflecting that county’s vulnerability, it does not reflect more intricate variations at a smaller level. For example, it would not indicate the number of elderly residents living in a particular neighborhood who may require evacuation assistance in the event of a disaster. In order to better understand this, a census-block level of focus allows for the identification of sub-groups within a community.

It is important to note that any one of the components utilized in creating the SoVI does not necessarily equate with personal vulnerability. In fact, I would argue that there is a risk of actually generating a stigma of vulnerability through labeling individuals or groups identified with one or more of these components as vulnerable based on just these factors. The SoVI is unable to reflect individual vulnerability, such as behavioral factors, or the fact that, within these groups, there are varying degrees of vulnerability. It is also limited to what census data is available at the time. Whether or not an individual, group or entity has taken steps to prepare for a hazard event also is not taken into

consideration in the SoVI, which is generally applied at the county level, as it is intended to create generalizations about groups of people with common characteristics.

That is not to say that the SoVI is without value. It has been successfully used to identify generic factors which can provide a starting point for emergency planning. For example, between 1960 and 2000 it was found that "...those components that consistently increased social vulnerability for all time periods were density (urban), race/ethnicity, and socioeconomic status" (Cutter & Finch, 2008). The SoVI therefore can serve as an important tool for emergency managers and others involved in community-based planning, as it provides a better reflection of the small-scale social environment as a guideline for tailoring plans to meet the specific needs of a community (Wood, Burton & Cutter, 2009). By identifying those individuals or areas most likely to suffer greater impact from a hazard event, or those likely to be least prepared, it may be easier to plan ahead for response efforts and resource allocation. The SoVI should not, however, be used as a sole determining factor to define personal vulnerability.

The Disaster Risk Index (DRI) was developed for the United Nations in response to the Millennium Development Goals identified in 2000 (Pelling, 2004). It was created as a tool for identifying factors which contribute to loss of life as a result of natural hazards, which could be applied across all countries. This model is a reflection of the widely accepted Risk = Hazard + Exposure ($R=H+E$) equation for vulnerability. In this undertaking, a GIS model was developed which takes into account the different types of hazards that may be present and population distribution, which gives an indication of the level of exposure. This information is then compared with certain pre-determined socio-

economic parameters to determine the general level of vulnerability in a given area and at a specific time. While this model is not an exact reflection of circumstances, nor does it take into account all possible contributing factors (such as political unrest, gaps between rich and poor, impact of a particular disease, etc.) its primary use is to identify regions in which to focus preventative measures and development (Peduzzi, et al., 2009).

In the United States, the Federal Emergency Management Agency (FEMA) has invested large sums of money to develop a similar Geographic Information System (GIS) known as HazUs (FEMA, 2014). This software provides a standardized computer model for estimating losses from earthquakes, floods and hurricanes in a particular area by allowing users to ‘create’ a simulated disaster in a given region. The statistical data generated by this process is given in the form of percentages as to the likelihood of how many casualties or injuries would likely have happened, a rough estimate of the amount of damage in dollars, etc. By seeing the likelihood of these direct losses, more accurate risk assessments and appropriate mitigation strategies can be employed in the planning process to help minimize these damages. In addition to increasing awareness, this information can be utilized to help expedite the response process in terms of mobilizing the estimated supports they expect to be required in that region, rather than waiting upon submission of official damage reports, which may not be accurate or timely, and could result in wasted resources and delayed response (Dengler, 2012).

In 1990 the Seismic Hazards Mapping Act laid the groundwork for layered mapping systems, which are now widely employed by emergency planners and others at the local and state level (Dengler, 2012). These maps contain GIS layers which can be

manipulated through a computer program to show such components as areas likely to experience strong ground shaking, liquefaction, unstable slopes, river and stream flooding, flood inundation from catastrophic dam or levee failure, critical infrastructure, fire hazards, and tsunami inundation areas. Spatial Analyses such as these are crucial in assessing hazards for a given area so as to create emergency plans that reflect these possibilities.

Taking spatial mapping and social vulnerability factors into consideration, a better assessment of community exposure to hazards can be created. As an example, the United States Geological Survey took the same statistical information used in developing the SoVI model and coupled this with modern spatial analysis mapping systems to create a report which reflects factors of vulnerability in relation to tsunami hazards along the West Coast of the United States. (Wood, Ratliff and Peters, 2013). This report, released in early 2013, is already proving to be a useful tool in emergency planning.

In addition to the databases listed above, the Emergency Events Database (EM-DAT) is a widely used resource which draws from several sources, such as agencies within the United Nations, government organizations, non-government organizations, research institutions, press agencies, and the insurance industry (Cavallo & Noy, 2010). It provides various statistics and trends relating to natural and technological disasters from around the world since 1900, based on reported direct losses. While this provides a quick and useful visual analysis of hazards and geographic areas, the individual, social and environmental variables are impossible to include, as well as aspects of loss which one cannot put a number to.

The statistical analysis of vulnerability would be helpful in terms of assessing things you can put a number to, such as such as deaths, displacement, the value of lost infrastructure, and so forth. For those in the field of economics, for example, these numbers would be very helpful. However, many who work with vulnerable populations may need to view vulnerability through a different lens. Depending upon one's discipline, vulnerability may be measured in a number of ways. Alwang, Siegel and Jorgensen (2001) identified eight approaches to vulnerability. They found that, while many disciplines recognize vulnerability as a function of risk and risk response, the terms of outcome by which vulnerability was measured varied, based upon the interests of that area of study. The approaches studied include those based upon poverty dynamics, asset-based approaches, sustainable livelihoods, food security, disaster management, environment, sociology, anthropology, and health and nutrition (Alwang, et al., 2001). Each of these approaches is obviously going to be somewhat limited due to the narrowed scope of each given field of study. However, they individually and collectively provided important perspectives in putting together the overall puzzle of vulnerability, and highlight the need for interdisciplinary approaches to planning.

For many involved in the higher echelons of emergency management, disasters are a numbers game which boils down to minimizing direct losses. To an emergency manager, this may mean making decisions which result in saving the most lives. Our economic-based approach to disasters and vulnerability also stem from viewing the direct numbers-based outcome, or direct loss, of the event (Alwang, et al., 2001). Direct losses include casualties and immediate financial losses for which a number can be assigned,

such as damage to property, buildings and infrastructure, and which are tied to the immediate effects of the event. (Some of these losses may be reimbursed, some are not).

Economic factors and loss of life are also the most common markers for determining vulnerability on a larger scale, such as an entire country or region; and for identifying patterns within the numeric data, such as the effect of disasters on the welfare of persons living in developing countries compared with disasters experienced in developed countries. Economic literature highlights disasters as being events for which the costs associated are determined on an economic basis, rather than the result of a natural hazard. The vulnerability is therefore determined in what can be measured in terms of numbers (Cavallo & Noy, 2010).

A criticism of this economics-based approach to vulnerability is that its limited focus on direct loss in terms of monetary units does not take into account the other ways in which disasters are measured (Alwang, et al., 2001). Indirect losses resulting from disasters can be much harder to measure, as many are not tangible. They also tend to be much more personalized. Nevertheless, indirect losses are no less relevant in identifying factors pertaining to vulnerability. Loss of feelings of security, revenue, personal anguish, diminished quality of life, interruption of services, inability to access resources, loss of personal items, dismemberment of social networks, and economic downturns due to lack of income from long-term unemployment or lost tourism revenue are just some examples of these indirect losses (Dengler, 2012). In order to better understand these indirect losses, we must turn to those who are directly affected by the event to gain a better understanding of how the most vulnerable are affected by disasters.

Following major events, emergency responders and often stakeholders will review the series of events, debrief and share stories of what worked and what didn't work. Donahue and Tuohy describe these mechanisms for sharing "lessons learned" processes which consist of reviews, reporting, hot washes and debriefings (Donahue & Tuohy, 2006). Just as holding a drill provides an opportunity to learn from mistakes and successes, identify gaps, and mitigate those shortfalls for future events, the post-event "lessons learned" processes are intended to provide feedback in order to create a guide for moving forward and making improvements. However, when a study was conducted comparing shortfalls in response to the Anthrax attacks, sniper investigation, Columbine, Columbia recovery, SARS scare, Hurricane Katrina, the September 11 attack in 2001, the Oklahoma City bombing in 1995 and Hurricane Andrew in 1992, the same shortfalls were reported in almost all events studied (and across the board) in the areas of leadership, planning, public relations and resource management (Donahue and Tuohy, 2006). Clearly these studies can be beneficial in terms of future planning, if the lessons learned are applied prior to the next major event. These reviews of what worked and what didn't work should also be applied by the private sector whenever a drill is held, or in the wake of an actual event, in order to constantly work towards improved planning, response and recovery efforts.

Following hearings on government response to Hurricane Katrina, another "Lessons Learned" reporting project was conducted. As a result of the findings, there were 125 recommendations made, split into 17 categories of "Critical Challenges"

(FEMA, 2006). Amongst these were many recommendations for providing changes and support to the private sector. It also included a series of examples of what went right during Katrina, which also included such private sector endeavors as thousands of Citizen Corps volunteers who collectively responded to the area and assisted countless evacuees. In the same year, the Post-Katrina Emergency Management Reform Act was passed, outlining a series of actions that needed to be taken by FEMA to better prepare vulnerable populations, including persons with disabilities and their caregivers (Bea, 2007).

Although studies such as this are geared towards emergency management at the government level, there are facets that can also serve as lessons in planning for the private sector, including individuals and groups identified as vulnerable, to be inclusive of their support networks. In other words, the “lessons learned” process does not just apply to emergency management and first responders. The National Organization on Disability also created a report in which it described Katrina’s effect on the elderly and individuals with physical, emotional and cognitive disabilities (Stough, et al., 2010). Yet another study used grounded theory methodology and descriptive statistics to reveal the barriers to recovery for what have been historically referred to as persons with “special needs.” In both studies, it was determined that it is typically more difficult and complex for these individuals to recover from a disaster and that the services intended to assist them are often inadequate to meet their specific needs, and complex to navigate. Several more easily identified barriers to recovery were pronounced, including lack of accessible housing, transportation, and ability to connect with necessary resources. In addition,

adequately trained case managers, resource availability, inter-agency collaboration and motivation were necessary in order for recovery efforts to move forward. (Stough, et al., 2010).

Recent years have seen a dramatic increase in attention paid to (the myriad of) gender inequalities that contribute to the increased vulnerability of women in disasters, including failure to weave women into the relief and rebuilding efforts (Enarson, et al., 2009). A need to include the knowledge and abilities possessed by women, who are often the providers for families in these stricken areas, is essential for the rebuilding process. Yet, it is often these same individuals who are omitted from the discussion on determining the best means of doing so (Enarson, et al., 2009). Much of this information is being presented by women scholars from across the globe. For example, the Gender and Disaster Network, started in 1997 by persons interested in gender relations in disaster contexts, and the scholarly works produced by its members, are a reflection of this trend. Their research indicates that gender-based vulnerabilities and connected gaps in disaster reduction strategies can be overcome by incorporating the individuals who are most vulnerable and the knowledge they possess to create plans to mitigate, plan for and adequately respond to future events.

One of these individuals providing research on the subject of gender inequality in disaster management is Fatma Denton, who has written numerous articles linking gender and agriculture, energy, climate change adaptation, climate equity, resilience, and development practices. She highlights the absolute necessity of looking at gender differences, particularly in regards to impacts of climate change in the developing world

(Denton, 2002). Denton provides a series of examples of ways in which women are more adversely affected by climate change as a result of their gender roles and policies made by these members of the global North, any of which can be seen as contributing to gender-based vulnerability. These are primarily based on the role of women and their associated knowledge base. While the aforementioned literature focused on the developing world, it is important not to overlook the fact that gender also plays a role in levels of vulnerability in more developed countries.

Jenkins and Phillips (2008) researched factors pertaining to circumstances which impacted the safety of women immediately following Katrina. The experiences of these 'Women of Katrina' can theoretically be used as predictors for not only women, but also other vulnerable populations, in the next disaster. Based on this shared knowledge, it can be anticipated that during the next disaster there will likely be a collapse of the social supports many survivors have come to depend on, an increase in domestic violence, beatings, aggressive robbery and rape after the event, diminished resources, population shifts, new or compounded stressors on all family members, and a decreased ability for women to keep themselves and their children safe. Local law enforcement, attorneys, shelters and other community supports are likely to be hard-pressed to step up to the challenges to meet the needs of victims, particularly when faced with a lack of resources, as the social networks and safety nets that would have otherwise provided safety are likely to be damaged, disrupted or destroyed (Jenkins & Phillips, 2008).

There were also several positive outcomes and lessons learned from this post-Katrina research. Most advocates and providers eventually did return, improvements

were made to better structure the services offered to battered women, the storm gave some women a reason and ability to leave their abusers for good, and the shift back to a survivor-based planning model, (wherein advocates and survivors do the work of rebuilding the safety net and develop the services for survivors) has provided the potential for policy changes before the next event (Jenkins & Phillips, 2008).

Timely post-event reconnaissance missions performed by scientists and others to locations such as Indonesia, Papua, New Guinea and Japan following tsunamis, and other large-scale events have also revealed previously overlooked vulnerabilities and provided guideposts to follow in order to avoid a similar tragedy from occurring elsewhere. The research conducted following the 2004 tsunami with survivors and emergency workers in India, Indonesia, Sri Lanka, the Maldives, and Thailand, provides an example of the value of including the knowledge of those deemed most vulnerable in future planning efforts.

In conducting post-event research, Fletcher, Stover and Weinstein identified six themes pertaining to human rights and vulnerability in the wake of the 2004 Indian Ocean Boxing Day Tsunami. Common findings included an exacerbation of prior human rights violations, inequities in aid distribution, impunity and lack of accountability, poor coordination of relief aid between humanitarian and aid agencies, low public confidence in coastal redevelopment, and deliberate exclusion of certain groups, or ignoring of community input in decision-making pertaining to recovery programs (Fletcher et al., 2005).

This study points out the importance of addressing human rights violations in order to prevent escalation of human rights abuses, or reduce the level of vulnerability of certain groups. Keeping with the goal of reducing vulnerability, the authors argue that a concerted effort should be made to ensure that future response and recovery efforts are planned, coordinated and overseen with the intent of not repeating these same mistakes. The assurance of protection for women, children, racial and ethnic minorities and other marginalized groups should be specifically addressed in the planning stage (Fletcher et al., 2005). Planning ahead for a better understanding of the pre-existing human rights problems, inequity in distribution of goods and resources, means of accountability, better coordination between states, NGOs, the UN and local aid providers, land rights and issues surrounding pre-existing civil wars were some of the identified areas for policy changes that could be addressed now to ensure the mistakes of the past are not repeated (Fletcher, et al., 2005). In each case, understanding the socio-political climate in which aid and recovery efforts would occur was a key component. In each country studied, multi-agency and community-based collaboration appear to be important for developing successful response and recovery strategies that help to ensure the rights of others.

** Karl Pearson invented the Principal Component Analysis in 1901 as a tool for exploratory data analysis and for making predictive models, as is the purpose of the SoVI.

APPENDIX E

Fire Drill Report

DATE FIRE DRILL CONDUCTED: _____

Person(s) leading this drill:

Other people participating in this drill:

Review of Fire Safety Plan on this date: _____ YES _____ NO

Time Drill was initiated: _____ AM or PM (circle one)

Length of time to evacuate: _____ Min. _____ Sec.

Emergency Assembly Point:

Fire Drill successful? _____ YES _____ NO

If NO, describe problems noted: _____

Steps taken to correct: _____

Signature of Person Conducting Drill: _____ Date: _____

Signature of Supervisor Reviewing Drill: _____ Date: _____

APPENDIX F

Earthquake Drill Report

DATE EARTHQUAKE DRILL CONDUCTED: _____

Person(s) leading this drill:

Other people participating in this drill:

Review of Earthquake Safety Plan on this date: _____ YES _____ NO

Review of Emergency Engagement Plan on this date: _____ YES _____ NO

Hazard identification: _____

Time Drill was initiated: _____ AM or PM (circle one)

Length of time to drop, cover, hold & count: _____ Min. _____ Sec.

Follow-up Tsunami evacuation? _____ YES _____ NO

Room or location of drop & hold (ex: under table, against inside wall)

If in the community, list location & measures taken:

Earthquake Drill successful? _____ YES _____ NO

If NO, describe problems noted: _____

List corrective actions and date of completion for problems noted: _____

Signature of Person Conducting Drill: _____ Date: _____

Signature of Supervisor Reviewing Drill: _____ Date: _____

APPENDIX G

Tsunami Drill Report

DATE DRILL CONDUCTED: _____

Person(s) leading this drill:

Other people participating in this drill:

Initiating Factor for Drill: *(ex: ground shaking, warning siren, NOAA weather radio, live code test, community drill, etc.)*

Review of Safety Plan on this date: _____ YES _____ NO

Time Drill was initiated: _____ AM or PM (circle one)

Length of time to evacuate: _____ Min. _____ Sec.

Emergency Assembly Point:

Tsunami Drill successful? _____ YES _____ NO

If NO, describe problems noted: _____

Steps taken to correct: _____

Signature of Person Conducting Drill: _____ Date: _____

Signature of Supervisor Reviewing Drill: _____ Date: _____

APPENDIX H

Flood Drill Report

DATE DRILL CONDUCTED: _____

Person(s) leading this drill:

Other people participating in this drill:

Review of Safety Plan on this date: _____ YES _____ NO

Identified Temporary Relocation Site:

Time Drill was initiated: _____ AM or PM (circle one)

Length of time to evacuate: _____ Min. _____ Sec.

Flood Drill successful? _____ YES _____ NO

If NO, describe problems noted: _____

Steps taken to correct: _____

Signature of Person Conducting Drill: _____ Date: _____

Signature of Supervisor Reviewing Drill: _____ Date: _____

APPENDIX I

Communication Drill Report

DATE DRILL CONDUCTED: _____

Person(s) leading this drill: _____

Drill / exercise event, if specified: (ex: flood evacuation, earthquake, lockdown, etc.)

Other individuals / agency partners participating in this drill:

Out of Area / Sister Agency and current contact info:

Review of Communication Plan on this date: _____ YES _____ NO

Time Drill was initiated: _____ AM or PM (circle one)

Length of time to complete Well Person Checks: _____ Hours _____ Minutes

Time of Safe and Well Registration: _____ AM or PM (circle one)

Was communication drill successful? _____ YES _____ NO

If NO, describe problems noted: _____

Steps taken to correct: _____

Signature of Person(s) Conducting Drill: _____ Date: _____

Signature of Person(s) Conducting Drill: _____ Date: _____
(Sister Agency / Out of Area Contact)

Signature of Supervisor Reviewing Drill: _____ Date: _____

APPENDIX J

Sample Hazard Assessment

Weather

Severe Wind - Resident's house is located in the "Arcata bottoms." This is an area that can experience windstorms and severe winter weather conditions, such as those experienced in the "New Year's Storm" of 1996. As experienced in this event, wind speeds can reach an excess of 90 mph. Typical damage can include damage to buildings, trees blown down, downed power lines, loss of power, overturned mobile home not secured to foundations, and blockage of transportation corridors.

Heightened seasonal winds typically occur from late February through early April. In the event of high winds, prepare by securing outdoor belongings - including garbage cans - or bring them inside.

In the past, power lines and transformers in the nearby vicinity have frequently been affected by severe winter weather, resulting in loss of electricity for several hours up to several days, as well as possible danger from downed power lines. Downed power lines may remain active for a long time and it is not necessary to be close enough to touch one to be electrocuted. Keep a safe distance from all suspected downed power lines and notify PG&E.

Tornado - Resident does not live in an area historically susceptible to frequent tornado activity. Although waterspouts have been sighted just off the coast, there has only been one recorded tornado of significance in Humboldt County, striking at 1:40 pm

on March 29, 1958. No deaths resulted from this event. The risk of personal injury or tornado damage where Resident lives is virtually nonexistent.

Hurricane - Resident does not live in a region susceptible to hurricanes or other major cyclonic storms.

Lightning - Lightning strikes do not typically occur in this region, but may be common in the mountains to the east and may ignite fires. In the event of a lightning storm, remain indoors, stay off the phone and avoid using electronic equipment.

Precipitation Extremes - Resident lives in an area prone to precipitation extremes in the way of rainfall between the months of November through March. Resident receives automatic NOAA weather outlook reports for the coming weeks via internet and plans accordingly. Snowfall is rare in this region. Hailstorms are a possibility and have occurred in the past, resulting directly in minor damage to vehicles and indirectly via traffic accidents.

Temperature Extremes - Resident does not live in a region that typically experiences wide temperature extremes. However, the temperature can change significantly if she were to travel just a few miles inland or to the Southern Humboldt area. Dressing in layers is recommended and therefore multiple layered clothing is included in her family's emergency and go kits.

The average low temperature in Arcata is 41 degrees and typically occurs during the month of January. The average high temperature is 62 degrees and typically occurs during the month of September. The highest recorded temperature in Arcata was 87

degrees in 1993. The lowest recorded temperature in Arcata was 20 degrees in the winter of 1888.

Earthquake

Resident lives in a region that can be severely impacted by seismic activity from both local and distant-source earthquakes of an intensity of 6.0 and greater. Resident and her family have received appropriate annual training in earthquake and tsunami awareness and safety. Family conducts quarterly earthquake drills, in addition to participating in the California Shakeout held each October. During any ground shaking event, Residents have been instructed to “Drop – Cover – Hold and Count” for the duration of the shaking. Family has been instructed not to exit the home during an earthquake under any circumstances. In past earthquake events, family members have exhibited the ability to follow these steps appropriately. Once the shaking has stopped, Head of Household will conduct well-person checks. Following well-person checks, the family will exit the home if necessary in order to complete indoor and outdoor home safety checks, including looking, listening and smelling for gas leaks.

Local Faults - Residents live close to several “active” fault lines. The closest of these is the Fickle Hill Fault, running from Fickle Hill, under the city police station, under the Jacoby storehouse, and straight out into the ocean. There are at least 6 known active faults within a 20-mile radius of her home. Because her home is located on an area of mud, fill and river channel sediment, ground shaking is strongly increased during an earthquake.

Cascadia Subduction Zone - Residents live in Humboldt County near the coast.

The entire Humboldt County coastline parallels the southern end of the Cascadia Subduction Zone, which follows the coastline offshore and turns inland near Petrolia and the Mendocino Triple Junction area. Because her home is located on an area of mud, fill and river channel sediment, ground shaking is strongly increased during an earthquake.

Out of Area - Historically, the region has been greatly impacted by earthquakes of strong magnitude originating from out of the area. Any event of a 4.5 magnitude or higher which originates from out of the area - including ones occurring along the San Andreas Fault, in the Bay Area, Mendocino County, etc. - can have an impact on both structures and infrastructure, as well as availability of goods, supplies and assistance in and out of the Humboldt County area.

Liquefaction - Although the residence is in a region identified as being relatively stable in terms of seismicity, Resident's home is located on an area consisting of mud, fill, and river channel sediment. As a result, ground shaking is strongly increased during an earthquake. This region is located in a zone most prone to ground failure and liquefaction.

Landslides

Resident does not live in an area susceptible to landslides.

Tsunami

Resident and her family participate in tsunami drills, as they relate to locations frequented in the community, in addition to taking part in the annual North Coast tsunami drill in March.

Local Source - Resident lives at the edge of the Tsunami hazard zone. During a Cascadia event, Resident and her family will not be required to evacuate in the event of a local-source tsunami, though the waters may reach to within 50 feet of their home.

Distant Source - Resident lives beyond the edge of the tsunami inundation zone. Resident should not evacuate in the event of a distant-source tsunami.

If a tsunami warning is issued (either by nature or official notice) Resident's children will not attend school. If Resident's children are at school when the warning occurs, they will remain on campus until the warning has been lifted and a secondary all-clear is issued.

Flood

River & Stream Flooding - Resident lives in the Mad River floodplain. Her home is near, but not within, the FEMA 100-year flood zone and Department of Water Resources' awareness floodplain. Flooding along the Mad River is more likely to result in inundation in the area north of Resident's home and along Jacoby Creek. In the event of a 100-year flood event that happened to be at risk of extending as far as Resident's home, Resident and her family will evacuate to the Arcata High School campus on the top of the hill along 16th and M Streets in Arcata.

General Urban Flooding - Resident's home is in an area at low risk for general urban flooding. However, regions within close proximity of her home have been known to have seasonal flooding incidents. Resident and her family members should plan their transportation routes accordingly, and stay home if flooding conditions prevent safe mobility, or if advised by official notice to do so. If driving is required, driving through any moving water will be avoided.

General Rural Flooding - Resident's home is in an area at low risk for general rural flooding. However, there are rural flood risk areas within a very short distance of her residence. Resident and her family members should plan their transportation routes accordingly, and stay at home if flooding conditions prevent safe mobility or if advised by official notice to do so. If driving is required, driving through any moving water will be avoided.

Resident has received flood fight methods training, including proper sandbagging techniques. In the extremely unlikely event that water reaches the ground level of the home for any reason, and any household member is unable to evacuate beforehand, they will move to the upstairs region of the house.

Fire

Resident lives within the Arcata Fire Protection District. While her fire hazard severity is listed as nil, the southern end of her property borders a region of extensive

vegetation where homeless encampments are not uncommon. This region is considered a zone of moderate fire hazard severity.

House Fire - Resident lives in a 'typical' residential neighborhood consisting of closely placed houses. She resides in a 2-story townhouse. Her house is located in a low-risk fire hazard severity zone. There is a charged fire extinguisher located next to the pantry in the downstairs and another located just inside the garage. Working smoke detectors are located in the downstairs, one in the upstairs hallway and one in each of the three upstairs bedrooms. Resident and her family have practiced fire drills. An escape ladder is located beneath her youngest daughter's bed. Access out of the other southern bedroom is available via back porch overhang and fence dividing the adjacent property, thus enabling two evacuation routes from each of the southern bedrooms. Secondary evacuation from the northern upstairs bedroom or bathroom would take place by exiting through the window and jumping down from the slanted roof to the front yard.

Resident and her family perform quarterly fire drills, including unannounced and nighttime fire drills. During fire drills, family members practice evacuating the house and gathering at the designated assembly point in front of the neighbor's house (2287 Ariel Way) located two doors down to the east. All members of the household are ambulatory and have successfully exited the house and gathered at the established meeting place independently during random fire drills in under 45 seconds. There are leashes for each of the dogs hanging at the bottom of the stair railing and the dogs have all responded appropriately when called to exit the home during fire drills.

Wildfire - Resident does not live in a wildfire hazard zone. Brush along rear of property line has been removed.

Pandemics

Resident and her family and all pets remain up-to-date on required vaccinations (with the exception of annual flu vaccines) and take basic precautions to prevent the spread of illness in the home. Vaccination records for all residents and pets are located in the home and office binders.

Resident and family members have received training in Universal Precautions. In the event of a pandemic, Resident will abide by Public Health Department recommendations for health and safety of herself and all family members.

Flood

Dam Failure - Resident lives in an area considered at risk for coastal vulnerability and dam failure inundation. The expected inundation from failure of the dam behind the Humboldt State University campus at the edge of the Arcata Community Forest will not likely pose a threat to Resident's home. If this dam breaks, Resident should remain at home and not evacuate.

Lake in Trinity County, Resident will have at least two hours to evacuate to higher ground. If the Matthews dam were to fail while at maximum capacity, the low-lying areas of the city of Arcata (from the Mad River south to Humboldt Bay) could be flooded by 6-12 feet of water. In the event of catastrophic dam failure of the Matthews Dam, Resident and her family will In the event of catastrophic dam failure at the

Matthews Dam located at Ruth evacuate via car to the Arcata High School campus on M Street or an alternative location east of Alliance Road.

Levee Failure - The levees surrounding Humboldt Bay on the north side have undergone retrofitting by consultants from the Oscar Larson Company. In the event of levee failure on the north side of the bay, there is not likely to be damage from flooding expected to reach as far as Resident's house (the major risk factor being contamination from sewer water from the wastewater treatment facility and Humboldt Bay in general). Long-term effects in the area from contamination of this sort are not expected to have greater impact than to provide fertilization of soils in local cow pastures. Therefore, in the event of levee failure in this area, Resident and her family should temporarily avoid roads and pasturelands on the south side of Samoa Boulevard.

Man-made Hazards

Resident lives within two miles of the chlorine storage located near the Arcata Marsh. In the event of an event resulting in toxic leakage, Resident will either evacuate to an area upwind of the event or stay home and seal all window sills and door jams – whichever is recommended by local authorities at the time.

There are no known meth labs or hash oil labs currently operating near Resident's house.

The nearest petroleum storage facilities are located over a mile from Resident's house. One petroleum storage facility is located at the corner of 11th and K streets and another along Samoa Boulevard at the J Street intersection.

Identification of potential hazards to avoid

There are power lines along evacuation routes (marked with “=” on map). There is potential for flooding along the Janes Creek / McDaniel Slough areas. There is potential for liquefaction along entire evacuation route. There is hazardous materials storage in the form of petroleum at gas stations on 11th & K and at Samoa and J Street. There is chlorine gas storage at south end of G Street.

APPENDIX K

Sample Risk Assessment

Structure is a modern, two story townhouse, in the Windsong subdivision on the outskirts of the city of Arcata. The house was constructed in 2005, in accordance with the current building standards for earthquake safety as of the date of construction.

The house is secured directly to the cement foundation.

There is no chimney or other unreinforced masonry feature to the home.

The driveway is paved and smooth. There is a metal PG&E grate over part of the right side of the driveway which may become slippery under wet or icy conditions.

There are two separate steps from the driveway to the front door. There is one step from the dining room to the back yard. These steps would not be negotiable to an individual in a wheelchair.

There is a built-in central heating and air conditioning unit.

Upstairs there are three bedrooms and a full bathroom, with separate sink / vanity area. Downstairs there is a living room, kitchen, pantry, laundry room, dining room and half bath.

The hand railing on the stairs leading from the first floor to second floor is secure.

Pictures and butterfly display cases hanging on the wall along the stairwell are not yet secured with closed hooks and may therefore present a hazard upon evacuation after an earthquake.

Pictures hanging on bedroom walls, including the framed poster above the bed, have been hung utilizing closed hooks. The large mirror hung in the living room and all larger pictures on walls in the downstairs area have been mounted using closed hooks.

All free-standing furniture above 4 feet in height has been mounted properly to walls using L-brackets secured into wall studs.

Knick-knacks located on the hutch in the downstairs living room have been mounted using earthquake putty. Other knick-knacks and small breakables are stored in the dining room in the white hutch which has closed doors that are latched. However, items inside

of the hutch have not been secured with earthquake putty or museum wax and therefore present greater risk of breakage.

The solar hot water heater is located in the garage and secured in place. The tall water heater unit alongside this has been inspected to ensure that is properly anchored using an earthquake strap and other reinforcements. Most recent PG&E inspection occurred in October, 2017.

The washer, dryer and filing cabinet in the laundry room have not been secured in place, but are surrounded on three sides by walls / furniture / another appliance.

The dryer vent is checked and cleaned monthly to avoid fire hazard. The lint collector is cleaned out after each load.

The house received a heating system inspection in March, 2017.

The appliances in the kitchen area, with the exception of the refrigerator, have been secured in place. The refrigerator and oven are enclosed on three sides by walls and counters.

Owner carries basic homeowner's insurance which is updated annually with Farmers Insurance. At the present time, Owner does not have earthquake or flood insurance. Proof of homeowner's insurance is located in the office binder and scanned onto a flash drive.

All upstairs and downstairs rooms undergo a quarterly inspection for earthquake and fire safety. The outdoor area and foundation of the house is also inspected annually (in June) by Humboldt Bay Housing Development Corporation. The most recent fire inspection occurred in February of 2017.

A mobile disaster kit is stored in the storage area beneath the stairs. Multiple 3-5 gallon water jugs are stored underneath the tea service table in the dining area, with additional five gallon jugs stored on the bottom shelf of the black bookcases, also located in the dining area. Additional gallon jugs of water are stored on the bottom two shelves of the pantry and underneath the kitchen sink.

Bedpost bags / evacuation kits for each resident are located on wall hooks in each resident's bedroom.

There are no posted evacuation plans.

A list of emergency numbers is located on the door of the refrigerator.

PRN medications and medical supplies are stored unlocked in the apothecary in the dining room area. PRN rescue inhalers are stored in the nightstand adjacent to the bed in the Master bedroom as well as on the white dresser in the southwest bedroom. An additional rescue inhaler may be found in the center console or glove box of each vehicle.

First Aid Kits are stored in four separate rooms of the house, including the following locations: within the large brown “doctor kit” upstairs in the southwest bedroom, underneath the sink in the upstairs bathroom, on the middle shelf in the downstairs laundry room, and on the top of the apothecary in the dining room. Disposable gloves are available in these same locations. An additional small first aid kit is located in each go kit. CPR masks / shields are available in the kit in the southwest bedroom and attached to her backpack, and in the top drawer of the first aid supplies located next to the apothecary.

Fire extinguishers are located in eye-level positions upstairs on the wall between the two southern bedroom doors, and downstairs on the side of the black bookshelf between the kitchen and dining area. A third fire extinguisher is located on the southern wall, just inside the door of the garage. All household members have been trained in proper use of the fire extinguishers. Fire extinguishers are inspected quarterly and recharged or replaced as needed.

Smoke detectors are located in each bedroom, in the upstairs hallway, in the downstairs living room, in the dining room, above the pantry door in the kitchen, and in the garage. Each of these is tested quarterly to ensure that the batteries are charged and that the units are fully operational.

Carbon monoxide detectors are located upstairs at the top of the stairs and downstairs next to the thermostat. An additional carbon monoxide detector will be added to the garage.

There is a gas shut-off wrench inside a large plastic bag located next to the gas shut-off valve in front of the house. Neighbors have been authorized to use this to shut off gas if necessary in the event that residents are not at home when a gas leak is detected.

Access to the water shutoff is located in the front yard near the street, next to the raised garden bed.

The breaker box is located in front of the house along the outside of the garage.

House rules dictate that candles may only be burned when a person is present in the room with the candle. Additionally, pets are not allowed in rooms with a burning candle.

Space heaters are rarely used (such as when the furnace needed repair or when the gas was temporarily shut off following a neighbor accidentally hitting the gas line when digging). A space heater may be used for people working in the garage during winter months.

A check-list for lights, candles, running water, appliances, doors and heaters is located next to the front door.

Indoor and outdoor safety and evacuation maps of the home site are located in both home and office binders. There are at least two exits from the north and south side of the home. However, the back yard of the home is completely enclosed by fencing. Evacuation to the back yard would therefore require passing through the back door of the garage or going over the neighbor's fence to gain access to the front of the house and should be avoided if possible unless other evacuation routes are completely unsafe to use.

In the event of a house fire, the emergency assembly point is in the front yard at 2287 Ariel Way – the second house to the east.

APPENDIX L

List of California Regional Centers

Alta California Regional Center
2135 Butano Dr.
Sacramento, CA 95825
(916) 978-6400

Central Valley Regional Center
4615 North Marty Avenue
Fresno, CA 93722-4186
(559) 276-4300

Regional Center of the East Bay
7677 Oakport St., Suite 300
Oakland, CA 94621
(510) 383-1200

Eastern Los Angeles Regional Center
1000 South Fremont
Alhambra, CA 91802-7916
Mailing address:
P.O. Box 7916
Alhambra, CA 91802-7916
(626) 299-4700

Far Northern Regional Center
1900 Churn Creek Rd., #319
Redding, CA 96002
(530) 222-4791

Frank D. Lanterman Regional Center
3303 Wilshire Boulevard, Suite 700
Los Angeles, CA 90010
(213) 383-1300

Golden Gate Regional Center
875 Stevenson St., 6th Floor
San Francisco, CA 94103
(415) 546-9222

Harbor Regional Center
21231 Hawthorne Boulevard
Torrance, CA 90503
(310) 540-1711

Inland Regional Center
674 Brier Drive
San Bernardino, CA 92408
Mailing address:
P.O. Box 6127
San Bernardino, CA 92412-6127
(909) 890-3000

Kern Regional Center
3200 North Sillect Avenue
Bakersfield, CA 9308
(661)-327-8531

North Bay Regional Center
10 Executive Court, Suite A
Napa, CA 94558
(707) 256-1100

North Los Angeles County Regional Center
15400 Sherman Way, Suite 170
Van Nuys, CA 91406-4211
(818) 778-1900

Regional Center of Orange County
801 Civic Center Drive West, Suite 100
Santa Ana, CA 92701
(714) 796-5100

Redwood Coast Regional Center
525 Second St., Suite 300
Eureka, CA 95501
(707) 445-0893

San Andreas Regional Center
300 Orchard City Drive, Suite 170
Campbell, CA 95008
(408) 374-9960

San Diego Regional Center
4355 Ruffin Road, Suite 200
San Diego, CA 92123-1648
(858) 576-2996

San Gabriel/Pomona Regional Center
761 Corporate Centers Drive
Pomona, CA 91768
(909) 620-7722

South Central Los Angeles Regional Center
650 West Adams Boulevard, Suite 200
Los Angeles, CA 90007-2545
(213) 744-7000

Tri-Counties Regional Center
520 East Montecito Street
Santa Barbara, CA 93103-3274
(805) 962-7881

Valley Mountain Regional Center
702 North Aurora Street
Stockton, CA 95202
(209) 473-0951

Westside Regional Center
5901 Green Valley Circle, Suite 320
Culver City, CA 90230-6953
(310) 258-4000