

The Impact of the 2008 Wells, Nevada Earthquake on the City of Wells: Post-Earthquake Lessons for Rural Community Governments

by

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ABSTRACT

The 2008 Wells earthquake became the instant preoccupation of and dominated the activities of the City of Wells for several months. City personnel, city structures, city infrastructure, local businesses, and residents were all impacted by the earthquake at the same time, creating confusion, uncertainty, and an overwhelming amount of work to do to clean up and recover. Although Wells had been perceived as an area of relatively low earthquake risk prior to the 2008 earthquake, preparation for emergencies through planning and training had taken place; there was an incident command model that city personnel and the Sheriff's Department were familiar with; there were mutual-aid agreements in place; there was a disaster declaration process in place; city facilities and school buildings had earthquake insurance; and Wells used building codes with seismic provisions. All of these pre-event preparations helped lessen the negative impacts on Wells' city government personnel from the earthquake and allowed them to professionally and effectively handle this event and its aftermath.

Dealing with the media and their need for information was one of the first challenges to Wells. The mayor served as the spokesperson for the town and the disaster early on, which helped free up other city personnel to do needed recovery work. The need for a safe place to put the incident command center for the disaster became an issue because the primary locations were damaged or deemed unsafe from aftershocks. There were many immediate questions from citizens, such as understanding the emergency signage, getting into damaged buildings to retrieve pets and belongings, and covering damaged buildings to protect them from the weather. Some of the immediate issues required legal perspectives.

The cost of the emergency response to the 2008 Wells earthquake was approximately \$300,000, about half of which was reimbursed by the State of Nevada. Even though there wasn't a federal disaster declaration, Nevada's U.S. legislative representatives added \$940,000 for the Wells earthquake disaster recovery for the city to the 2009 Federal Omnibus Bill. Insured costs resulting from the earthquake for city facilities were approximately \$2.24 million.

The Wells earthquake event highlights several challenges that arise between the rural community and state government in handling a rural disaster and subsequent community recovery. The same could be said of the relationship with the federal government. These challenges can be summarized as follows:

- large distances between entities
- differences in communication methods
- content and clarity of communication messages
- local understanding of state's reimbursement protocols
- local understanding of state-to-state protocols
- differences in priorities between entities, both real and perceived.

Potential solutions to these challenges should include the presence of a state liaison in the disaster area for a few weeks following the event and weekly meetings or conference calls so that: (1) questions about issues and protocols could be resolved quickly, (2) the state could have rapid first-hand observations and understanding of the local situation, and (3) a semi-continuous interaction can occur with local politicians, local government workers, and people for the first few weeks that will help inform all parties about the disaster assistance and recovery processes and dispel problematic rumors and misunderstandings.

INTRODUCTION

At 6:16 a.m., February 21, 2008, the community of Wells and surrounding Elko County were shaken by an earthquake of magnitude 6, which occurred about 5.5 miles (9 km) north of town. The effects were nearly instantaneous: a heavily damaged historical district, a partially damaged high school, and localized damage spread throughout the community and valley.

The needs of the local government were also nearly instantaneous, such as the need for information by the community, the need for an emergency operations center, and the need to understand the scope of the situation. As with all responses, some things went right and some things could have been done better. We are grateful there were no deaths or major injuries and for the capability and effectiveness of the local response to the most severe incidents, which could have become much worse had they not been effectively handled.

This paper has been prepared in the spirit of providing information and advice for better response to the next rural earthquake disaster. The first half of the paper describes the 2008 Wells earthquake and the latter part of the paper presents recommendations based on the 2008 and other earthquakes.

SETTING

Wells is a rural town of 1,657 people that was established in 1869 along an important east-west, continental transportation route. The location was first a westward trail water stop near the headwaters of the Humboldt River. Wells later grew as a rail town (the town is laid out parallel to the railroad tracks) providing water for steam locomotives and extra engines for a local railroad grade. With the introduction of the automobile, Wells became a bustling stop for travelers who used the gas stations, grocery stores, restaurants, and motels. The freeway bypass changed all that, and now most commerce takes place near the interchanges on the freeway or in the larger city of Elko, 50 miles west on Interstate 80. Wells remains a vital community for the transportation routes (located at the intersection of Interstate 80 and U.S. Highway 93) and providing support for the railroad and highway systems. Wells is also the location of several government agency outposts and for long-standing recreational activities in the surrounding mountains, rivers, and lakes. The freeway bypass did, however, result in the loss of many local businesses and jobs resulting in an increased number of unoccupied buildings in historic district. A revitalization of the historic district was slowly occurring but the earthquake has been a devastating setback to this effort.

PRE-EARTHQUAKE PREPARATION

Prior to the 2008 earthquake, Wells was prepared for an earthquake disaster in several important ways:

- Wells used a building code for new construction (1997 Uniform Building Code) that incorporated seismic resistance provisions. Modern construction fared quite well during the earthquake, partly because of the implementation of this code.
- Wells had earthquake insurance for city facilities from the Nevada Public Agency Insurance Pool and the Elko County School District had local school buildings similarly insured.
- City, county, and state employees were familiar with emergency response activities and had some emergency response training.
- Implementation of the Incident Command System model and training facilitated a smooth and orderly response to the earthquake.
- Mutual-aid agreements were in place for instances when local resources were overwhelmed and additional resources were needed.

Many of the Wells families have resided in the area for a few generations, so there is a strong sense of belonging and place. This commitment and the pioneering spirit that remains in this community helped it engage aggressively in the emergency response and recovery activities following the earthquake. The supportive attitude and assistance of neighbors in Elko County helped to sustain these efforts.

IMMEDIATE NEEDS OF WELLS CITY GOVERNMENT

With the speed of earthquake science, 24-hr news, and Internet information, the magnitude 6 earthquake was widespread news within minutes. It was felt throughout the region and occurred during the local broadcast of the morning news in the western United States.

Media inquiries began immediately with telephone calls and the promise of live news crews that were already on the way. The Mayor became the primary spokesperson and he was able to deflect media activity from the rest of the staff so they could focus on response to the incident. The media were sympathetic to Wells' situation and generally followed instructions. The heavy media impact lasted for two days.

The immediate requirement following the earthquake was assessment of the community's safety and needs. Many concerned agencies and higher levels of government offered to help with whatever was needed, but they needed specific requests for aid to be mobilized. The needs of the emergency response were assessed by the incident commanders, the city's workers, and the emergency response staff. Interagency help was requested early in the response. The services were not free of charge or covered immediately by emergency response funds, so invoices for these activities soon followed in the mail. In some cases, there were costly over-allocations made in order to err on the side of safety or resulting from some confusion. Receipts were kept but not all activities had them at the time and significant effort had to be expended to get copies of receipts and track down invoices for reimbursement consideration.

Early on the first day, a lawyer was consulted by Wells' staff to ascertain the legal framework of disaster aspects such as liability during search-and-rescue procedures, eviction because of imminent threat, and restriction of access to property so that all would be protected from potential lawsuits. There have been no legal problems thus far, so this seems to have been a forward-thinking action. Owners with requests to retrieve goods from damaged buildings or conduct repairs were required to sign a legal release form that would hold the City of Wells harmless in these activities. Entrance into damaged buildings wasn't allowed for the first couple of weeks, however, because of the continuing aftershocks. For the first couple of weeks, the only entries allowed were by emergency personnel, or limited to owners for the boarding up of broken glass windows and some minor emergency covering of holes with tarps to keep out the weather.

THE IMMEDIATE POST-EARTHQUAKE OPERATION OF CITY GOVERNMENT

The Wells earthquake disaster affected and placed large demands on many city resources simultaneously. Some of the first duties of city government were to support the emergency response needs, get the needed city departments back to a functioning level, and get local businesses up and running as soon as possible. The most immediate response needs were for building safety inspections and to repair a broken water line in a street that got worse with a large aftershock. The water line had several isolated breaks with one break that was under a sidewalk and lamp-post and was difficult to access. As a result of this water-line break, a boil-water order was issued to several of the businesses in that part of town. Safety inspections were carried out at about 600 locations the first day, including the city's facilities. There was also an early assessment made of the impact of the earthquake and current capabilities of local government.

There were many people who required timely information about the disaster including government officials (governor, legislators), damage assessment teams, and media representatives. Mayor Rusty Tybo was the city official who acted as this interface and he performed an excellent job in this capacity. Early on, it was important for the Mayor to take some time away from these demands to get a first-hand view of the impact of the earthquake so he could speak in an informed manner and give some first-hand details. Both state and federal assessment teams came to town for inspections on Days 2, 3, and 4, and inspected businesses and citizens' homes and estimated damage costs.

The need for information from citizens skyrocketed in the post-earthquake environment. People needed information about a multitude of things, such as understanding signage, gaining access to closed-off areas to retrieve pets and belongings or to protect buildings from weather damage, disposal of earthquake damage debris, and a myriad of other legitimate questions. A dedicated, hard-working staff stepped up to the challenge as best they could, but like many of the responders, they became exhausted after about a week of nonstop activity and sleep that was repeatedly interrupted by aftershocks. Nevertheless, they persisted and served their community well.

EMERGENCY RESPONSE NEEDS FROM THE EARTHQUAKE

Several emergency response issues had to be dealt with quickly after the earthquake occurred: finding a location for the Incident Command Center; locating and opening an emergency shelter; and assisting, housing, and feeding emergency responders and safety inspectors. In the post-earthquake setting, buildings had to be inspected and had to be made reasonably safe from aftershocks before they could be assigned for use in response functions. In addition to all this, city works personnel were trying to fix a broken water main and evaluate the status of city structures. The use of the Wells Elementary School for the response and relief effort was effective for those tasks, but was disruptive to the school's activities.

The largest part of the emergency response and the most pressing need came immediately following the earthquake and throughout the first day. There was a significant amount of confusion. There were equipment and personnel arriving that hadn't checked in or were part of the relief effort but weren't under the incident command control. Response resources needed operating space and housing. Some pre-event emergency response planning had been done in Wells, but not enough to prepare for this event, and as a result, many decisions had to be made very rapidly on the spot that first day.

EARTHQUAKE RECOVERY ISSUES FOR LOCAL GOVERNMENT

Recovery began immediately following the emergency response with the re-establishment of city government capabilities and infrastructure and the re-opening of local businesses as top priorities. The short-term recovery had several champions, including the Wells government leadership and some local volunteers. City government was a partner in most relief activities (most of which were community based) and tried to keep momentum going on several recovery fronts. The long-term recovery of the community was largely led by the city, although the distribution of relief funds was delegated to a community group.

The earthquake created losses and costs of over \$10.5 million in Wells. This loss of property and revenue could have gotten larger with time if the impacts had not been addressed quickly and effectively. Wells put a priority on re-establishing its business community and wholly supported recovery efforts. Only one business was lost in Wells as a consequence; this was a second-hand items store that was in a building that was damaged.

The City of Wells delegated the management and disbursements from the Wells Earthquake Recovery Fund (a volunteer relief fund collected for the community) to an interfaith group made up of several of the community's religious leaders. Initially a handkerchief on a car or mailbox indicated that some help was needed, but for more substantial financial aid, applications were accepted. These applications were for property loss only and not for personal items that were lost (e.g. house damage was considered, whereas a crushed car was not).

Managing a recovery effort requires several skill sets, particularly endurance and tenacity. There are a lot of multiple-page forms, large numbers of meetings, and the occasional setbacks to get through. Meanwhile, a confidence in the recovery of the community's future must be projected for citizens who can get discouraged. An elected official or natural leader can be effective in leading people to push forward into recovery. In the case of the Wells earthquake disaster, the mayor of Wells and several other community members initiated and led different recovery activities.

It makes sense that a community pushes as fast and far with recovery efforts as possible; this is a key to success. Higher government agencies, policies, protocols, and decision makers generally cannot be as nimble, however. There are forms, receipts, and reviews needed to make sure the taxpayers' monies are being appropriately spent and that administrators can assure this. Emergency response reimbursements to the city came between several months and 1½ years following the event and insurance payments came between 1½ and 2½ years following the event.

FINANCIAL CHALLENGES TO WELLS FROM THE EARTHQUAKE

There are many costs incurred from the response to and recovery from an earthquake disaster, some that are quite large. The cost for emergency response for this earthquake was about \$300,000. There may be initial challenges in setting up lines of credit with hotels and restaurants, and trying to track charges and receipts. Then the bills come in. Although many emergency response charges (if appropriate and requested correctly) can be reimbursed by Nevada emergency funds, many bills had to be paid by the city before reimbursement and solvency can be an issue when a community is faced with such a financial burden. For Wells, the Elko County Commissioners opened a line of credit for \$100,000 which helped cover some of the costs that were anticipated to be reimbursed. About half of the emergency response costs, \$145,000, were ultimately reimbursed by the state.

Damage to city buildings and infrastructure was a major cost. Fortunately, several of the city's buildings and other structures were covered by earthquake insurance. The city had significant unanticipated expenditures in personnel time and supplies resulting from the earthquake.

The application for a Federal Disaster was not forwarded by the State of Nevada partly because the amount of assessed damage was not enough to qualify for a declaration. Almost \$2.5 million in uninsured damage was needed for the nominal threshold to qualify for a federal disaster declaration, and the Nevada state disaster assessment team estimated only \$778,600 of uninsured public damage, which was significantly below the threshold. The public buildings with the most damage had earthquake insurance which was subtracted from the total amount.

The primary financial assistance to the City of Wells for earthquake damage and costs came from the Nevada Public Agency Insurance Pool (approximately \$2.24 million), appropriations added to a 2009 Federal Omnibus Bill to give earthquake relief to Wells City government (\$940,000), and the State of Nevada's Emergency Response Assistance Fund (\$145,000).

The City of Wells was swayed into hiring a public adjuster to negotiate the repairs of city structures with the Nevada Public Agency Insurance Pool for a fee of 8% of the insurance claim costs paid to the city. Initial underestimations of costs by the insurance pool and hidden damage that came to light during reconstruction delayed the process. Negotiations on the scope of damage and a failed complaint forwarded to the Nevada Insurance Board also delayed the resolution of damaged government buildings for more than a year. The percentage fee is an incentive for the adjuster to pursue the highest claim possible. The public adjuster's fee was \$131,000 for their services, which is fairly high for a small community.

Ultimately there are many expenses that were borne by local government, such as overtime, mutual-aid agreement expenses, police, public works, and administration costs. There are also expenses, such as wear and tear on parking lots and roads, water losses, power expenses to refill water storage, over-burden on utilities, and other indirect costs.

COMMUNITY POST-EARTHQUAKE EFFECTS, DECISIONS, AND DIRECTIONS

In the post-earthquake environment, there are many different effects, feelings, and attitudes, some of which take time to work through. The amount of post-traumatic stress syndrome that might occur in this tough old pioneering community was underestimated and began to manifest itself about four months later. Unlike other disasters, earthquake aftershocks continued to occur for months and served as constant reminders. In the early weeks there were several nights where sleep was difficult because of the anticipation of another earthquake aftershock. The losses of the earthquake coupled with the concerns of the future, may be experienced in peaks and valleys when earthquake activity is up or down. Symptoms included overreacting to situations without fully understanding why then feeling guilty for behaving that way afterwards.

There continue to be many decisions that face the community. For Wells, the damaged historic district is of particular concern. It has always been a major part of Wells' history and heritage. In so many towns, their history is told in pictures and descriptions – but in Wells, you can see the original historical buildings and still feel the rumble of trains as they pass by. Any notion of “level it all, and haul it all away or sell the bricks” has to be evaluated carefully and deliberately, weighing the historical and cultural significance of the buildings to community as a whole. Other options include rebuilding with a modern structural core and putting a façade of the original buildings, or rebuilding and strengthening the buildings one-by-one. These buildings are owned privately and their owners will ultimately make the final decision.

Recovery needs to be as fast as possible to get the community back on its feet and moving forward again, but there needs to be some consideration and discussion as to what is best for the community and the building owners. This requires a realistic flexibility and thoughtfulness. Overall community involvement by residents has been up in Wells since the earthquake, which has helped this effort.

INTERACTIONS BETWEEN A RURAL COMMUNITY AND STATE GOVERNMENT

There has been concern in recent years raised by state government representatives of the Western States Seismic Policy Council (WSSPC) about rural earthquake disasters, and particularly about whether WSSPC members understand rural situations and needs and know how to best respond to these events. The 2008 Wells earthquake was a rural disaster and we have learned a lot about what a rural community can do and some needs they have. In the hope of having more effective interactions in the future, here are a few general observations about the interactions between a rural community and the state government.

This was the first earthquake disaster the people from Wells, Elko County, and the State had dealt with. There are protocols and plans in place for a state response to an earthquake and the follow-up assistance, but this was the first time they were enacted. Other disasters, such as wildfires, had been responded to but the earthquake disaster presented its own set of challenges, such as the need for canvassing safety inspections of buildings. There was some uncertainty at all levels

on executing a disaster response, assessment, and recovery from the earthquake, which caused some misunderstandings and delays.

Some of the challenges between the interaction of the rural community and the state (and federal) government were:

- Distance. It is over a half a day's drive between Wells and Carson City. Although there is rapid communication through telephones and Internet, the interactions between the rural government and the state benefited from first-hand interactions.
- Communication methods. E-mail is significantly less common in rural communities than at state offices, where personnel are generally more familiar and comfortable with computer-based communication methods. Fortunately a wide variety of communication methods, including face-to-face meetings and telephone calls, were used for the Wells disaster to help circumvent unfamiliarity or awkwardness with e-mail.
- Communication message. It is important to provide simple, clear, and correct messages to the disaster victims, local governments, and state personnel in the days following an earthquake. While it is normal to feel and show sympathy for them, it is important to provide realistic, and not hopeful, expectations. Early miscommunications between entities can create negative feelings, assertions of an unfair response, and fundamental misunderstandings that can be long-lived and counter-productive. Review messages, perspectives, and discussions carefully before issuing them. Monitor local media for responses to messages and provide counter perspectives or clarifications if needed. Communications may have to be repeated several times to be clear and believed. For serious misunderstandings, in-person communication and discussion is the most sincere and effective.
- Local understanding of state's reimbursement protocols. A community handling an emergency response and recovery can rapidly incur overwhelming expenses. In our current system, the state will potentially financially help a community with some of the expenses if it has a state-declared disaster. There are protocols for receiving reimbursements, however, which are meant to help protect taxpayer's money. The procedures, forms, and review processes take time to complete, especially with the small staffs of a community like Wells. Early advice and possible assistance from the state can help this process go as fast as possible.
- Understanding state-to-state protocols. Reimbursement for room and board for Utah engineering volunteers was not possible because the Emergency Management Agency Compact (EMAC) was not engaged. Local government should be familiar with state-to-state protocols, their potential impacts, and how to engage EMAC if it is needed. Local governments should also be aware of in-state resources, such as pools of volunteer engineers for inspections, which can be easier to get and easier have their expenses reimbursed.
- Differences in priorities – reality and perception. While earthquake response is clearly the immediate priority for all levels of government involved, once the transition to recovery occurs, this may change. For a community recovering from an earthquake disaster, this is priority number one, whereas a state or federal entity may be working multiple disasters and because of this have a slightly lower priority for the situation. The situation changes through time from one where people from different agencies are interacting with locals whom they have met face-to-face to one where needs and paperwork are being addressed by people who have never met anyone from the local community. The differences in priorities, real and perceived, can create tension and misunderstandings between the local and state representatives. More one-on-one, face-to-face communications that include discussing each other's situation are helpful, especially when they occur in the affected community. Throughout the event and aftermath there should be a "team approach." Different parties always spoke highly of weekly meetings for the Wells disaster that seemed to resolve misunderstandings and allow different parties to see each other's viewpoints or constraints.

Clear, honest, and frequent communication is the key factor in understanding and resolving conflicts caused by differences in priorities and perspectives. A liaison person in the affected community for a few weeks would also be able to help keep communication gaps and misunderstandings from occurring.

Effective communication depends on whether people perceive that the speaker can be trusted and is credible. The following factors are important in creating trust and credibility: empathy, competence, honesty, and commitment. Note that in figure 1, half of the pie diagram of what people think is important for trust and credibility is empathy and/or caring for the affected people and that this is assessed within the first 30 seconds of an encounter. Notice further that 5/6ths of this diagram is related to attitude and character, such as honesty and dedication. Only 1/6th of the diagram is related to professional expertise (which is still nevertheless very important). Obviously such diagrams are not necessarily the same for all situations, but these ideas did seem to be successful with the local public in Wells following the earthquake disaster.

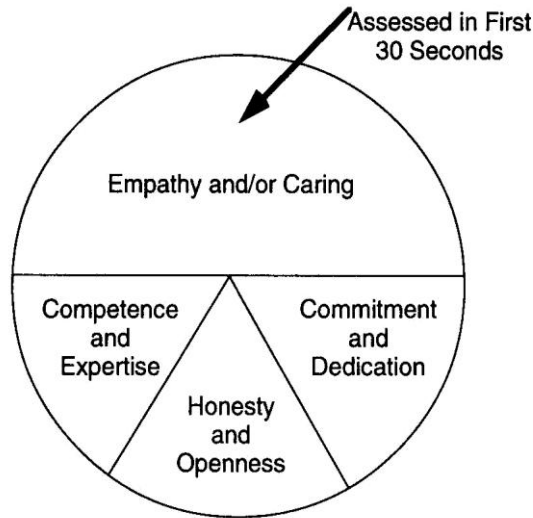


Figure 1. Factors the public views as important in establishing trust and credibility for effective communication. From the Emergency Management Laboratory (1997).

PREDICTABLE ISSUES LOCAL GOVERNMENTS WILL ENCOUNTER WITH AN EARTHQUAKE DISASTER

There are several things to expect if a community has an earthquake disaster that will need to be managed, such as the media, emergency response activities, damage assessment teams, and all that sudden attention. These comments are made in light of the 2008 Wells earthquake and other recent earthquakes.

The media are one of the first and most aggressive early disaster components. They will be calling immediately for information and arriving in person as soon as possible (helicopter is the fastest transportation). The media need a contact person immediately (community official or Public Information Officer), an area they can set up and stage in, and an information flow plan or release schedule (for example, when and where press conferences will be held and who are official contacts).

The media are important for giving the world a view of what happened and helping influence any needed response and recovery efforts from outside. They are also the fastest form of communication for getting messages out to your local community and are generally eager to do this. Media friends can help keep a community's progress in front of a regional audience. This help at a critical time encourages ongoing external assistance to the community, and even moral support can help pull a community through the recovery effort before the negative effects of procrastination set in.

There are several planning considerations for Incident Command Centers. Pre-selection and prioritization of potential locations that have been cleared by engineers as likely being operational in a post-earthquake environment are optimum. The emergency management activities and the Emergency Operating Center/Incident Command Center need to be evaluated, and decommissioned, as fast as possible if it is important to return the facility to its normal use (in the example of Wells an elementary school was being used as the center and classes needed to resume). A separate, smaller location was used to continue some response activities following using the elementary school for five days.

State and federal damage assessment teams came in quickly, but not all at the same time. Consequently, several homes and businesses were looked at multiple times over a period of three to four days, which was stressful to the residents and owners who had to relive the event and describe the damage each time. Coordination of assessment activities could help minimize this impact, but may not always be practical. There was the perception that "FEMA" and the "State of Nevada" came in fast with good ideas and intentions and then left and forgot about Wells. This is partly because Nevada did not forward a Federal Disaster Declaration request, and without a request, the federal government cannot directly assist, which was the reason for their absence. Although there was some communication about the situation with the federal declaration process in reports and news stories, it didn't "sink in" and become common knowledge to the local population, possibly because the message was not repeated enough. There were other factors that contributed to this feeling of alienation as well, such as the loss of seismometers in northeastern Nevada about five months after the earthquake. Aftershocks that were felt in Wells were no longer being located and displayed on the Nevada Seismological Laboratory's web site. Most people were

not aware that it was the loss of seismometers that created this situation and reasoned the state's attention was focused elsewhere (earthquakes were also occurring just west of Reno at this time).

It is perhaps surprising how immediately everyone took an interest in Wells because of the earthquake and how quickly they all went away. Wells adopted the slogan "Now Everybody Knows Where the Hell Wells Is!" for several events following the earthquake to poke fun at this sudden attention. It was a matter of keeping things in perspective. Having experienced the earthquake disaster and dealing with the damage was a stressful situation for people, and it was difficult to suddenly also be dealing with a very unusual and extremely high level of attention about everything from safety to news stories to curiosity. After a while, people came to resent this increased attention a bit and wanted to be left alone to focus on dealing with the earthquake's aftermath.

RECOMMENDATIONS

It is true that hindsight is 20/20, but hindsight from the experiences of the 2008 Wells earthquake may be foresight for another rural earthquake disaster, which will unfortunately, inevitably occur. This event has given us the opportunity to assess our activities and consider what we might do differently next time. Following are some of these ideas:

- City management should be actively involved in the incident command. The assumption that the crisis management "experts" from afar know more about the situation than the city may be true for some aspects, but not all. The city was financially burdened partly because other agencies spent money and resources under the umbrella of the city that weren't always necessary upon review. Erring on the side of safety can cost a city a lot of money and create very serious financial situations because a small amount of unneeded resources can cost a large percentage of a small community's budget. That said, there are definitely times when it is important to err on the side of safety in the uncertainty of an earthquake setting. City personnel need to be involved in these decisions, particularly those with significant financial consequences, but in a manner that doesn't burden the emergency response (e.g., being available and able to make rapid decisions or give rapid advice).
- A mobile incident command unit would have been a better option than using the elementary school. This would have kept recovery operations away from the emergency shelter and avoided occupying a school that needed to return into session. It also could have provided more immediate resources, such as multiple telephone lines.
- A better assessment of the on-the-ground needs leading to an appropriate number of volunteer responders would have been optimum. Approximately 100 relief and Red Cross volunteers responded from three Red Cross groups during the first few days. In hindsight, probably only about 30 volunteers were needed, and they were appreciated. The space required by the large number of volunteers responding added to the multitude of issues needing immediate action. While a more serious disaster may have needed this number of volunteers, in this case the response exceeded the need. The actual needs of a small town should be better planned for; perhaps an initial set of volunteers could be sent to assess the setting with backups ready to respond if needed.
- Personnel need to be appropriately trained and available for response activities specific to earthquake events. Although comprehensive in impact, earthquakes have several specific needs, such as the search of structures for victims and evaluation of the stability of structures. In the Wells earthquake, many emergency personnel were rangeland fire experts and were not specifically trained in earthquake response. Although they would have been very effective in fighting any fires that fortunately did not occur, they had limited experience in evaluating infrastructure damage and helping to search homes. In the immediate response, many people may be needed, but as soon as the event begins to be managed, the type of response personnel available versus the response personnel needed should be evaluated and adjusted if possible to be more effective.
- Local politicians and city councils should be briefed with important information before it is released to the public. In the flurry of activity it is easy to overlook keeping everyone up to speed on the incident, such as the city council. In some cases, council members were learning information at the same time as the general public. Ideally they would be briefed before general meetings so they could be more effective. It would have been better to keep the council abreast of the situation; perhaps by holding evening council meetings since most council members had day jobs.
- Early legal counsel was sought for decisions and situations facing Wells in the post-earthquake environment. This advice influenced a number of activities, such as owner access to damaged buildings. Reasonable approaches were developed that allowed activities to go forward, but that protected the city and its employees. No legal incidents have occurred to date related to the city, so this early counsel appears to have been wise.

- Some detailed disaster planning for earthquakes by cities should occur. Local governments can suddenly become responsible for earthquake-related consequences, such as where to house and care for pets that were lost during the event or belong to people that have moved to a shelter where pets aren't allowed, or getting needed medications for home-bound residents. Pre-disaster planning is the best time to identify potential earthquake consequences and to identify strategies to manage them.

SOME LESSONS LEARNED

- City personnel should be trained in emergency response and prepared for earthquake disasters and the use of an incident command system. The use of earthquake planning scenarios and county emergency management in table-top and real-time exercises can enhance this preparation.
- Pre-event planning can help emergency response activities run smoother and reduce negative impacts of a slow or inadequate response. For example, the identification, inspection for suitability in a post-earthquake environment, and prioritization of potential incident command centers, would have speeded up the process of establishing one during the 2008 earthquake. Local emergency management can review earthquake disaster scenarios and plans with county and state emergency managers to help identify unrecognized situations and potential needs.
- City personnel should be prepared to handle the local media, including developing a staging area and creating interview opportunities around news conferences. Use the media for getting information out to local and widespread audiences. Designate a media contact. If your town is too small, the county or sheriff's department may have a public information officer you can use. Media control begins with the first telephone call, or the first offhand comment that can become the next day's front page title.
- Legal counsel early on was valuable advice and helped when the city created release forms. Early counsel and review is recommended for a disaster where response and recovery activities are inherently dangerous.
- Gain assistance or a liaison from the state to advise community recovery and emergency response reimbursements, and to understand the situation on the ground.
- An emergency response effort can be costly and not all costs will be reimbursed. City and county personnel need to be familiar with this process.
- Damage assessment teams should coordinate their activities as much as is reasonable to minimize their impact on affected communities.
- Earthquake insurance is a wise investment for governments (and citizens) in Nevada. Wells had earthquake insurance on its facilities which paid out \$2.24 million in earthquake-related costs. This would have been a very difficult cost for the city to bear without insurance. Insurance contractors were encouraged to employ local businesses and workers, which helped revitalize the economy and gave some insight on the reconstruction taking place.
- Personnel from other states need to be requested through the Emergency Management Assistance Compact (EMAC) by the state to be eligible for reimbursement and support. Note that the requesting jurisdiction is the responsible party for all EMAC costs, as well as other costs, whether or not it is a state- or federally-declared event. An understanding of in-state resources, such as teams of volunteer engineering inspectors, will help in evaluating whether there is a need for using resources from other states. In the 2008 incident, many engineers from Utah helped with inspections; Wells covered their expenses, but these were not reimbursable from the state because the compact was not enacted.
- Structures expected to be used heavily in the post-earthquake environment (such as the City Hall and City Works buildings) should be earthquake-resistant structures. Structures that are particularly vulnerable to earthquakes, such as unreinforced masonry buildings, should be avoided or be seismically rehabilitated so they can be used following an earthquake.

REFERENCES

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