

Step-By-Step Process of How the Mirabella Emergency Preparedness Committee Helped Residents Prepare to Survive a Mega-quake

**OUR MOTTO: HOPE FOR THE BEST, PREPARE FOR THE WORST,
SURVIVE WELL AND HELP YOUR NEIGHBOR DO THE SAME**

Introduction

This article is a description of steps residents of the Mirabella, a 30-story retirement community in Portland, Oregon, have taken to prepare themselves for a mega-quake along the Cascadia Subduction Zone (CSZ). As I'm sure you know, this zone is about 50-75 miles off our coast, and stretches from Northern California to Northern Vancouver Island. About every 250 to 300 years, this zone produces massive quakes similar to the Japan Tōhoku quake of 2011, the Indian Ocean quake of 2004, and the massive 9.2 mega quake in Alaska in 1964. The last one on the CSZ was in 1700. Geologists estimate that there is about a 37% chance we will have another mega quake on the CSZ in the next 50 years.

The greatest and most destructive quakes on earth are produced by subduction zones. Where two crustal plates meet, one may dive under the other. If the one on top gets "caught," the one on the bottom continues to move causing the top one to do what geologists call "load like a spring." When the spring releases, it can produce massive earthquakes of 9.0 or greater lasting up to 5 minutes, and generate tsunamis of enormous destructive power.

In the Willamette Valley, we will not be directly impacted by a tsunami, but the Governor's Resilience Report of 2013 estimates we will sustain considerable damage to our buildings, severe damage to unreinforced buildings and bridges, enough damage to roadways to render them impassible, especially in areas like ours that are susceptible to liquefaction, and that we will be without basic services for weeks or even months.

Beginning of the MEPC

The Mirabella Earthquake Preparedness Committee (MEPC) began in December 2015 with eight members. All of us had read the two New Yorker articles by Kathryn Schultz, "The Really Big One," published July 20, 2015, and "How to Stay Safe When the Big One Comes," published July 23, 2015. In September 2015, shortly after these articles were published, Oregon Public Broadcasting (OPB) aired "Unprepared: Will We Be Ready for the Mega-quake In Oregon?" The answer was a resounding no! Our committee was formed in late 2015, and we had our first meeting in January of 2016.

Motto

Our motto is: Hope for the best, plan for the worst, survive well and help your neighbor do the same. Data from previous quakes in other areas clearly show that people do best when they are organized into neighborhood assistance groups—neighbors helping neighbors. With this in mind, we formed a Mirabella Earthquake Preparedness Committee of residents and identified ten distinct tasks we wanted to address:

Work Group One

First, we wanted to help residents understand what we will face if this mega-quake happens during our lifetime. We brought in a geologist, Dr. Scott Burns of Portland State University, and Jeremy Von Keuren from the Portland Bureau of Emergency Management to talk about these issues to all Mirabella residents. In addition, we collected books, articles, and DVDs and created an area in our library that residents could access to inform themselves. A list of this material was placed in what we came to call the "Red Folder"—a folder of material distributed to every resident so they could easily store and identify all of the documents which was eventually produced and distributed by the committee.

Work Group Two

Second, we developed a Power Point program and a printed document for every resident that identified what they should do to survive the actual event of a major quake. There is an enormous amount of material on line about quakes and survival tactics. We suspected the task of distilling what would be most helpful to high-rise residents might overwhelm residents, so our committee work group did it for them.

Work Group Three

Third, we developed a Power Point and related document that addressed how residents should prepare to survive the aftermath of the quake. This preparation included information about what they could expect about services in the building like elevator, water, power, waste, and the like. Again, we knew the massive amount of material on line would very likely be overwhelming, so one of our work groups sorted through it in order to present residents with a feasible set of recommendations.

Work Group Four

Fourth, we worked with a member of the Mirabella management to evaluate the survivability of our building and made recommendations to management about how to improve. These issues include elevator service and lighting, gas shut-off, fire suppression, generator and alternate (solar) power, transport of injured residents, security, and the like.

At the group's request, Mirabella management installed an automatic gas shut-off valve for the building. The Mirabella management assisted residents by supplying and installing earthquake

latches to upper cabinets in all apartment kitchens and securing refrigerators so they would not "wander" in a quake. In addition, Mirabella administrators found and vetted a contractor to supply materials and labor at a reasonable price to do everything our committee recommended to secure apartments in order to minimize damage in a major quake. All residents had to do was call the contractor and arrange a time for the work.

Work Group Five

Fifth, we worked with the Portland Bureau of Emergency Management to organize a Neighborhood Emergency Team (NET) in South Waterfront. The local NET team meets the first Thursday of each month at 7:00 p.m. in the Mirabella Park View Room. Everyone is welcome to attend, and you don't have to be NET trained to play an important role in helping neighbors during a disaster. Of course, we encourage everyone to take NET training. You can begin by going to the PBEM website and reading about their NET program.

Work Group Six

Sixth, we worked with Pete Collins, Executive Director, South Waterfront Community Relations, to develop a BEECN site in South Waterfront. BEECN stands for Basic Earthquake Emergency Communications Node. We applied to the South Waterfront Community Association for assistance in purchasing a BEECN chest which contains not only a good supply of first aid supplies, but also a UHF radio which can be used to connect with our nearest fire station—Fire Station #4. This could be a valuable source of communication with the world outside of South Waterfront. The BEECN chest is now in place, and a BEECN team has been trained and prepared to assist the local NET team in responding to a disaster.

Work Group Seven

Seventh, we formed the South Waterfront Emergency Preparedness Committee. If residents of other buildings in our community want to prepare for this disaster, we wanted to share with them the material and procedures developed for Mirabella residents.

In addition, in the aftermath of a major quake, we knew that severe problems will arise which go beyond the capability of an individual building to solve. For example, we will need to work together as a community to address the issue of waste disposal. We are likely to be without outside waste disposal resources for many weeks. Not to address this problem as a community could expose us not only to creating an enormously unpleasant environment, but also to the spread of disease. This is only one example of many problems that are beyond the capacity of any one building to deal with—problems that need to be addressed by the whole community.

Work Group Eight

Eighth, we are creating a ham radio work group in South Waterfront. In the event of a major quake, it appears certain that cell towers will be down, land lines will be inoperable, and the only means of communication with the world outside of South Waterfront (with the exception of the

UHF radio in the BEECN chest that connects only with Fire Station #4) will be ham radios. Ham radio operators could be an invaluable resource in our community.

Work Group Nine

Ninth, we have created a Medical Work Group consisting of residents who are retired M.D.s and R.N.s as well as residents with other medical training and residents who are NET trained. This group has created a list of emergency first aid supplies recommended for residents and a second list of supplies for resident first responder teams (E-Teams) to use when they mobilize to assist other residents (see Work Group Ten).

Work Group Ten

Tenth, we created emergency response teams on each floor. As noted above, Red Folders were given to each resident with all documents created for their use by the MEPC to help them prepare to survive a major disaster. Next, residents of each floor were asked to volunteer to serve on Emergency Teams (E-Teams)

- to help all residents prepare themselves and their apartments to survive during and after a major disaster
- to take triage training to assist the Medical Work Group volunteers by performing life-saving interventions immediately after a major disaster, and
- to learn to use the UHF radios purchased for every floor by our committee with a grant from the Resident Association. At this point, every floor has an E-Team, and every member of the team has been trained to perform all of the duties of leadership, communication, triage, and "comfort care."

We believe this one-to-one contact with residents is essential to make this program work. This neighbor-helping-neighbor policy is the basis of our whole program.

Mirabella Emergency Preparedness Committee (MEPC) Medical Work Group (MWG)

Statement of Purpose

The Medical Work Group of the Mirabella Emergency Preparedness Committee has agreed to recommend and organize supplies and develop protocols for providing first aid to Mirabella residents in case of a major disaster.

When a major disaster occurs, such as that predicted in a release of the Cascadia Subduction Zone, many Mirabella residents may be injured by falls, falling debris, and the like. We do not know how much assistance would be available from nearby hospitals or Portland First Responders from the Fire and Police Departments. Therefore, we are preparing to provide first aid to Mirabella residents to the best of our ability, realizing that our ability to provide care will be extremely limited.

The MWG has assembled a group of residents who are retired M.D.s, nurses, pharmacists, psychologists, other residents who have had training in first aid, and residents who are or will be Neighborhood Emergency Team (NET) trained. These volunteers will be assigned to one or more of the 27 teams of residents who have volunteered to work together to provide assistance to residents both to prepare to survive a major quake and to survive its aftermath.

In addition, the MWG will assemble caches of first aid supplies and related materials (such as solar powered lights) to be placed at specific locations throughout the building. These will be used by earthquake teams in case of a major disaster. These caches are designed to supplement rather than supplant the first aid supplies residents in independent living are urged to maintain for themselves.

If a major quake or other disaster causes severe disruption of service for power, medical devices relying on electrical power will not operate in independent living apartments. The Mirabella will have limited electrical power in public areas for up to 4 days after a major quake. Power will not be available in individual apartments. After that, fuel for the generator will be depleted, and the Mirabella will be without power. If the quake causes roadways to be destroyed or blocked, a resupply of fuel will be impossible. We will continue to look for alternative sources of power, including solar collectors with battery storage, but at the present we do not have that resource available. Residents who rely on electric power to support medical devices should also work with their M.D.s to plan for alternative means of support.

In addition, we have no way to insure procurement of drugs, oxygen, sterile conditions and other items necessary for medical care. Residents are encouraged to work with their M.D.s to address these needs. Extra medications can be accumulated by obtaining refills as soon as insurance companies allow. This will permit residents to slowly accumulate enough medicine to last a few weeks after outside supplies become unavailable due to a major disaster.

Similarly, we have no way to provide for transport of injured residents. Not only can we not provide transport, there may be no place to take injured residents that would be better than their own apartments. What care we have to provide will be provided in individual apartments. We hope residents will have secured large furniture and other objects in order to minimize damage. Not only will these measures prevent injury, they will make apartments far more livable and, in case of a major disaster, we probably will have no place else to go.

Finally, we will need to be able to find out which residents need help. If residents have whistles available and use them to let teams know they need assistance, it would make the job of team members much easier and make help available to residents much more quickly.

Again, the MWG will be able to provide only the most basic first aid. Team members will do the best they can, but when a major disaster occurs, we will all need to help each other. The best help we can be to ourselves and each other is to be well prepared.

Approved by the Mirabella Earthquake Preparedness Committee, 9/8/16.

Mirabella Resident Emergency Response Protocol: Immediate Response to an Earthquake

Introduction

This draft protocol was prepared by the Mirabella Emergency Preparedness Committee. The protocol is intended as a preliminary set of guidelines subject to revision as more information is obtained. Users of the protocol are expected to use common sense and to adjust as needed to adapt to different or unexpected circumstances.

NOTE: If Mirabella management responders are available, every effort must be made to communicate with them, coordinate our efforts with theirs, assist them when possible, and not to interfere with their procedures in any way.

Mirabella Resident Emergency Response Organizational Structure

Resident Incident Commander

The Incident Commander will be responsible for communication and coordination with Mirabella staff, Mirabella Zone Captains, Incident Commanders in other South Waterfront buildings, and South Waterfront NET Leaders who are in charge of the South Waterfront Basic Earthquake Emergency Communication Node (BEECN) radio and communication with City of Portland disaster responders.

Mirabella Zone Captains: Mirabella will be divided into three zones.

- Zone One: Floors 3 - 7 (72 apartments)
- Zone Two: Floors 8 - 16 (72 apartments)
- Zone Three: Floors 17 - 30 (76 apartments)
- Each Zone will be led by a Captain who may also be an E-Team leader if necessary.
- Zone Captains will be in charge of inter- and intra-zone radio communication, updating E-Team assignments, and communication with the Incident Commander.

E-Teams: Every floor at the Mirabella will have an emergency team (E-Team) to respond to and care for residents as soon as possible after a disaster. (Some floors may have more than one team, and some teams may cover more than one floor, as specified in Protocol Sequence #2, below). Teams will train together and follow the protocol specified below.

E-Team Members and Duties: All members will be assigned and trained in advance.

- **Leader:** Team coordination and assignments, radio communication (See Appendix A for Radio Directions and Procedures)
- **Back-up Leader:** Each E-Team will have an assigned leader and assistant leader, but, if neither is present, the first team member present will lead until the leader arrives.

- **Medically Trained Volunteers:** Medically Trained Volunteers (MTV) will be assigned in advance to support E-Teams on multiple floors depending on their mobility and availability.
- **START/Triage (S/T) Leader:** Account for all residents in assigned areas and use S/T procedures when necessary (See Appendix B for review of S/T).
- **Scribe:** Assist and keep records
- **Other volunteers as available:**
 - at least one trained assistant S/T back up
 - at least one volunteer trained in cribbing procedures (NET volunteers are trained in cribbing or leveringing procedures — a method to lift heavy objects away from survivors)
 - as many volunteers as are available to provide comfort care and other duties that would free S/T volunteers to attend to others as needed

Mobile E-Team: Public spaces in garage, storage, and first floor (Mobile E-Team Protocol is in Appendix C)

- Highest Priority : Inspect garage level including restrooms, the storage area, and all public areas on the first floor for fire. One previously selected and trained Mobile E-Team will immediately deploy to assess the presence or danger of fire.
- If an out of control fire is detected, the Mobile E-Team Leader will notify the Resident Incident Commander to begin evacuation procedures immediately as specified in Appendix D. If it is safe for the Mobile E-Team, quickly inspect all other garage level areas (see Garage level spaces below) and the Storage level for injured survivors and immediately evacuate them if possible.
- If no fire is detected, or a small fire can be quickly and safely extinguished, inspect other public areas in lower floors (garage level, storage, and first floor) and treat survivors as specified in Protocol Sequence section 4, below. If needed, radio information about survivor status to Captain of Zone One for MTV follow-up.
- Garage level spaces: Garage, valet office, rest rooms, art studio, bike room, and wood shop.
- Storage level: All walkways.
- First floor: Bistro, lobby, library, rest rooms, meeting rooms, physical therapy area, gym, locker rooms, saunas, stalls, showers, pool, activity room, and concierge area.
- Mobile E-Team will report to Incident Commander by radio.

E-Team Protocol Sequence

1. Prepare: Ensure personal and family safety. Put on personal protective gear and optional personal emergency pack (E-Pack).

NOTE: Be mindful of the inevitability of severe and frequent after-shocks. Do whatever is necessary to insure your safety and the continuing safety of others in your apartment.

2. Deploy to staging areas

- En route to staging area, collect the radio pack and the triage pack containing additional medical and emergency supplies. These are stored under the ledge chosen by each team (See Appendix E).

- Floors 3 and 7-23, teams gather in front of tower elevators for each floor.

- Floor 4 has 24 apartments and will require three teams.

- Team A will meet in front of the tower elevators and cover apartments 401-408.

- Team B will meet in front of apartment 409 and cover apartments 409-416.

- Team C will meet in front of the terrace elevators and cover apartments 417-424.

- Floors 5 and 6 have 16 apartments each. Each floor will require two teams.

- Team A on both floors 5 and 6 will meet in front of the tower elevators and cover apartments 1-8.

- Team B on both floors 5 and 6 will meet in front of the terrace elevators and cover apartments 9-16.

- Floors 25-30 will have a total of two teams. These teams will meet in front of the tower elevators on the lower floor of each team.

- Floors 25, 26, and 27 will have one team.

- Floors 28, 29, and 30 will have one team.

3. Inspect for hazards

- Determine personal safety and safety of the team.

- Look for signs of fallen debris or fire.

- If there is a fire that can be put out using the extinguisher provided on each floor, do so. If it cannot be put out, report this to Incident Commander immediately.

- After-shocks could be severe and may be frequent. Drop, cover and hold on for each, then resume inspection of apartments and care for survivors.

- Each team will need to re-inspect and re-evaluate survivors on their floors following after-shocks. Change the color of the dot on the door if the status of the resident has changed.

4. Maintain Radio Contact

- Respond to Zone Captain check-in requests

- Listen for and acknowledge instructions from Zone Captain or Incident Commander
- Use the radiate ask the Zone Captain when medical or other assistance is needed

5. Enter apartments:

- Determine E-Team members' safety. When team members enter an apartment, perform an initial visual survey for hazards and apparent structural failures. Remember, aftershocks will occur and may be strong. Once personal safety has been determined, proceed as follows:
- Check apartments in numerical order. Start with apartment one or the first apartment in numerical order assigned to each team. Thoroughly inspect the apartment by proceeding through it in a clockwise pattern (circle through apartment left to right). Include all closets, bathrooms, showers, bedrooms, areas around and under beds, living room, under and beside and behind all furniture, kitchen and balcony. Residents may have guests or visitors. Do not take it for granted that everyone has been located if the resident you know has been accounted for.
- For teams with three floors, start with apartment one on the lower floor.
- If doorbells are inoperable, knock loudly three times. If no response, try the door and call out loudly. If it is locked, and teams do not have keys, continue on to the next apartment after placing two white dots on the door as described in 4b below. After the last apartment on a floor has been checked, return to retry all apartments you couldn't enter on the first try.
- Determine the presence of pets and assign a team member to care for them if necessary (see Appendix F).
- The Scribe will keep a written record on the team roster of each apartment visited and any interventions and status. Triage E-Packs will contain a team roster and assignments.
- Inspect apartment, perform START/Triage protocol if necessary (see Appendix B), and record and mark status with the colored dots contained in each E-Team's Triage Pack, as described below.

NOTE: If you return to an apartment after an aftershock and need to raise the urgency of the survivor status, first place a different dot over the previous highest priority dot and second, immediately notify the E-Team leader who will do a radio search for the closest MTV.

- If more than one person is in an apartment, use more than one colored dot, as follows:
 - a. Single White Dot on an apartment door means the apartment and resident(s) are actively being checked.
 - b. Double White Dots on apartment door means the E-Team could not get an answer to their entry attempts and the door was locked.
 - c. Bright Blue Dot Overlapping White Dot means the apartment is not inhabited at that time.
 - d. Black Dot(s) Overlapping White Dot on the apartment door and black dot on the top of a resident's right shoulder: Dead (MTVs re-examine victims marked with black dots after all "red" marked residents have been seen.)
 - e. Red Dot(s) Overlapping White Dot on the apartment door and red dot on the top of a resident's right shoulder: Injured, urgent, needs immediate treatment.

f. Yellow Dot(s) Overlapping White Dot on the apartment door and yellow dot on the top of a resident's right shoulder : Mild to moderate injury, needs further treatment, but not urgent.

g. Green Dot(s) Overlapping White Dot on the apartment door. No dot on the resident is necessary. No significant injury, no further treatment necessary. (If "green rated" resident is able and willing, recruit to assist the team, to be assigned as needed).

6. Inspect Public Areas

- After completing inspection of apartments, each E-Team will inspect stairways opening to their floors or assigned areas.
- Team 5B will inspect the Fifth Floor Terrace and public bathrooms.
- Team 25, 26, 27 will inspect the Sky View Room.
- All teams check the recycle room on their floors.

7. Report to Zone Captain, Provide Help on Other Floors

- Once apartments and public areas have been inspected, Zone Captains will assign E-Teams as available to answer requests for help from other floors.
- Once an E-Team's assigned apartments are completely inspected and residents have been examined and treated, report availability to Zone Captain for reassignment.
- If there are no requests for urgent assistance on other floors, the Zone Captain should instruct MTVs and E-Teams to recheck "red" survivors, and then recheck victims with "black" ratings.
- Make injured residents as comfortable and safe as possible.
- Frequently relieve E-Team members staying with "red" and "yellow" rated survivors.

8. Stay Safe: During deployment, stay safe, be alert to danger from aftershocks, possible debris falls, and other risks. Relieve team members as often as possible. Stay hydrated. No one will benefit from a team member who has to stop due to injury, dehydration, or exhaustion.

ZONE CAPTAIN (ZC) PROTOCOL

Zone One: Floors 3 - 7, 72 apartments

Zone Two: Floors 8 - 16, 72 apartments

Zone Three: Floors 17 - 30, 76 apartments

Duties immediately after a major quake

1. If you and everyone in your apartment is safe, mark your door with a white and green dot and proceed to your previously selected station. Select an easily reached location from which radio reception is good.

- In advance, inform the E-Team Leader on your floor where your station will be. You may decide to stay in your own apartment if radio reception is good.

- If you select a station outside your apartment, leave your Grab and Go bag near your door.

2. Zone Captain Radio Pack: Each Zone Captain will have a pack containing a radio, batteries and back-up batteries, check-in script, a set of white and green dots, rosters of teams in zone, and a roster of all Mirabella MTVs. Keep this pack under the Zone Captain's ledge so it will be accessible to Zone Captain back-ups if necessary.

3. Zone Captain Triage Pack: Each Zone Captain will have a triage pack containing a combat application tourniquet (CAT) and one pack of Celox bandages. Zone Captains may choose to place additional medical supplies in this pack, which should be placed under the same ledge as the radio. If a team needs these extra supplies, the E-team leader will radio the Zone Captain and, if necessary, send a team member to retrieve them.

4. Zone Captain radio check-in with E-team leaders: Approximately 10 minutes after a disaster occurs, the Incident Commander (IC) will initiate a radio check-in by notifying the Zone One Captain to begin the E-team check-in starting with the lowest floor in the zone. The captain will use the radio check-in script included in the radio pack. At the conclusion of the Zone One check-in, the Zone One Captain will notify the Zone Two Captain that the Zone one check-in is complete, at which time the Zone Two Captain will conduct the Zone Two check-in starting with the lowest floor in that zone. Once that check-in is complete, the Zone Two Captain will notify the Zone Three Captain who will conduct that zone's check-in. Duration of the complete building check-in should be about 5 minutes.

- If an E-Team does not reply in two tries, ask the Team Leader on the previous floor to send someone to check on that team and report back. For example, say, "Team Leader 9, this is Zone Captain Two. Check in please. Over." The Team Leader will reply, "Zone Captain 2, this is Team Leader 9 checking in. Over." Zone Attain Two will reply, "Team Leader 9, this is Zone Captain Two. Copy that. Out."

- If there is no reply to the initial request, the Zone Captain will radio, "Team Leader 8, this is Zone Captain Two. Send someone to check on Team 9 and report back. Over." Team Leader 8 will reply, "Zone Captain Two, this is Team Leader 8, I will send someone to check on Team 9. Over."

- Then the Zone Captain will proceed with the remaining check-in.

5. When the check-in is complete,

- Zone Captains may assist the E-Team on their floors if they can do that and remain alert to radio traffic.

- Zone Captains should be alert to any calls for assistance and respond to or relay the message if E-Team Leaders do not respond. You may be in a location from which radio messages are more easily received and sent than the E-Team Leader asking for assistance.

- Zone Captains should be prepared to respond to radio requests for the tourniquet and/or Celox in your triage pack.

- Zone Captains may need to re-deploy teams after calls for assistance or following a severe after-shock.

6. Use the radio only when necessary and make messages brief. In advance, familiarize yourself with the radio directions and procedures.

7. If the Incident Commander issues an emergency evacuation order, all Zone Captains will conduct a check-in to determine that all E-Team Leaders have received the evacuation order. The check-in will be done in the same way and order as the original check-in, and should be done as quickly as possible.