

Agos

The official magazine of Manila Water Company
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Preparation is key

Despite challenges, Manila Water ensures
24/7 water service reliability

**Our Mitigation, Adaptation and
Response Strategy vs. Typhoons,
Droughts and Other Disasters**

Lifeline

We give you a quick guide to
emergency preparedness and survival



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MESSAGE FROM THE OPERATIONS GROUP DIRECTOR

To our valued Kasanggas,

There is no better time than now to take action on emergency and disaster preparedness whether at home, in the workplace, or as part of the community. Last year alone, our country experienced some of the most devastating natural disasters like the Bohol quake and super typhoon Yolanda (Haiyan) that truly tested our capacity and spirit as a people.

The times have changed and these unprecedented events remind us that we are all at risk. Extreme weather events are now the new normal. And according to an earthquake impact reduction study, a possible 7.2 magnitude earthquake may strike Metro Manila, posing the greatest threat to man and property.

In Manila Water, we consider how these realities impact our operations and service delivery because water supply is a crucial priority, as well as a vulnerable resource, during disasters.

In this issue, we share with you how we have intensified our contingency programs to ensure that Manila Water will continue to provide 24/7 water and used water services to our more than 6 million customers in the East Zone of Metro Manila in the event of a major crisis.

May we take this moment to better prepare ourselves as individuals and as a community, and work together as partners in preparing for disasters and improving our response and relief efforts.

Let us all keep safe!

GEODINO V. CARPIO
Group Director, Operations
Manila Water



ABOUT THE COVER



COVER PHOTO is taken during an emergency drill at the MWSS Compound in Balara, Quezon City. This exercise aims to increase the preparedness level of employees within the MWSS complex in case of a major crisis. Manila Water regularly conducts drills and simulations as part of its business continuity program aimed at ensuring uninterrupted service to its customers.

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Calculating Risks

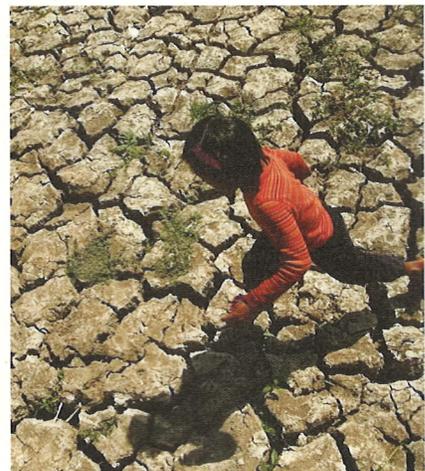
Being a critical lifeline during disasters, Manila Water recognizes the need to ensure water security and reliability for its customers in cases of emergency situations, major incidents, and calamities whether natural or man-made.

Catastrophes such as fires, earthquakes, floods, typhoons and drought necessitate the development of comprehensive disaster management plans that will ensure the company's response preparedness and capacity for recovery and continuity of business operations.

But what makes the Philippines so vulnerable to natural and man-made disasters?

El Niño

This year, the Philippines is bracing for what may be dubbed as the worst El Niño phenomenon in 17 years. Back in the 1990s, from 1991 to 1994, the Philippines was affected by successive El Niño events. This led to the rationing of water supply during the dry seasons due to low volumes of stored water in the Angat Dam for its 9 million residents at the time. Because of this, the government enacted the National Water Crisis Act of 1995, which paved the way for the privatization of Metro Manila's water supply system in 1997.



During the 2010 El Niño, Angat Dam level dipped to

157.54 meters,

the lowest ever registered, prompting the government to reduce water allocation and Manila Water to undertake pressure management and supply contingency measures. Critical level of Angat Dam is at 180 meters.

Typhoons and Monsoon Rains ('Habagat')

The Philippines is no stranger to calamities as it geographically lies just above the equator where tropical cyclones and storms form. Every year, an average of 20 typhoons hit the Philippines.

The 'habagat' season is characterized by hot and humid weather, frequent heavy rainfall, and a prevailing wind from the west. Recently, heavy monsoon rains have become as destructive as typhoons that enter the Philippine Area of Responsibility.



Disasters
cost the
Philippines
P15B
every year

IN 2011, THE PHILIPPINES TOPPED THE LIST OF THE MOST DISASTER-PRONE COUNTRIES IN ASIA ACCORDING TO A REPORT OF THE CENTER FOR RESEARCH ON THE EPIDEMIOLOGY OF DISASTERS (CRED).

The deadliest typhoons to ever hit the Philippines in the last five years

In 2009, Typhoon Ondoy dropped **455** millimeters, or a month's worth of rain for a stretch of 9 hours in Metro Manila, wreaking havoc to lives and property.

Typhoon Sendong, in 2012, hit **8** provinces and caused landslides in the southern Mindanao region, an area unused to typhoons.

Typhoon Yolanda was so strong that it slammed Tacloban with a **20**-foot high storm surge or wall of water. It has been hailed as one of the worst storms in the world having made 5 or 6 landfalls.

Heavy monsoon rains brought by typhoon Maring in 2013 caused massive flooding in Metro Manila and surrounding provinces, killing at least 15 people. More than

200,000 people sought shelter in evacuation centers.

In 2012, a combination of the southwest monsoon and tropical cyclones passing in the vicinity of the northern Philippines has resulted in massive flooding, affecting **2.11** million people in and around the Philippine capital.



Earthquakes

The Philippines rests on the Pacific Ring of Fire, making it prone to earthquakes, as well as volcanic eruptions and tsunamis.



Fire is a secondary hazard during earthquakes!

7.9 magnitude earthquake hit Baguio City in 1990

7.2 magnitude earthquake hit Bohol in 2013. It has been estimated that the energy the earthquake released was equivalent to 32 Hiroshima bombs.

Fire

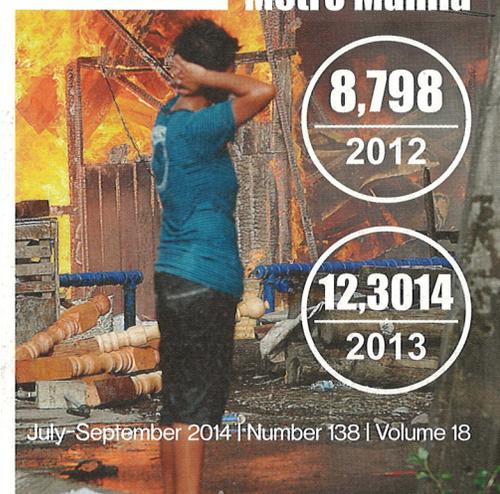
Fire incidents are a common occurrence in the Philippines. The Bureau of Fire Protection (BFP) cited power overloading and electrical glitches as the main causes of fires in the country.



Total recorded fires in Metro Manila

8,798
2012

12,3014
2013

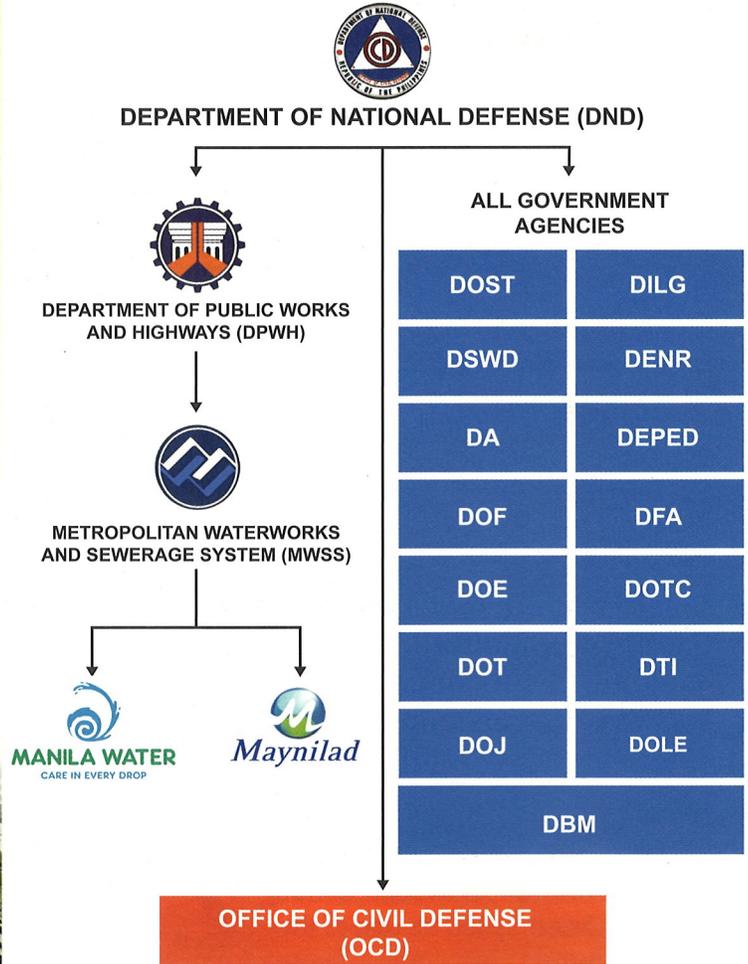


1STEP AHEAD

Climate change threats and natural disasters all make water availability a serious sustainability issue.

That's why it's important for Manila Water to consider how these events impact its operations and service delivery.

To counter these issues, a Business Continuity Program was developed by the company to efficiently manage the impact of disasters, as well as strengthen its capacity for mitigation, preparedness and response.



3Cs in Disaster Response

COMPANY

- ✓ Employee strength and recovery
- ✓ Assessment of facilities and projects

CUSTOMERS

- ✓ Continuous delivery of services
- ✓ Provision of water in evacuation centers

COUNTRY

- ✓ Assistance in relief operations
- ✓ Serving disaster-stricken communities beyond service areas



Manila Water is the first Philippine company to have a **Climate Change Policy**.

To adapt to the threats of climate change, the company pledges to:

- Assess the vulnerability of its systems
- Build and retrofit facilities to be climate change-resilient
- Establish disaster risk reduction programs
- Lead a proactive role in water source management
- Develop partnerships and capacity-building with stakeholders
- Optimize operational efficiency and use energy-efficient technologies
- Ensure continuing improvements of Climate Change initiatives



Manila Water rehabilitates watersheds through reforestation



The company builds flood- and typhoon-resilient facilities



Manila Water lays a network of resilient pipelines as part of its operational preparedness

EARTHQUAKE RESILIENCE

Because dams and water supply are directly affected in the event of a major earthquake, Manila Water strengthens and retrofits its critical structures and facilities so that these can mitigate the impact of an earthquake with an intensity higher than 7.2. This is done through:

- **Network Preparedness**
(installation of flexible pipe joints, seismic resilient lines, high-density polyethylene pipes, electrofusion joints)
- **Facilities Reinforcement and Emergency Reservoirs**
- **Water Supply Augmentation**
(utilization of standby water sources such as deepwells, mobile water tankers and static water tanks)

EMPLOYEE VOLUNTEERISM



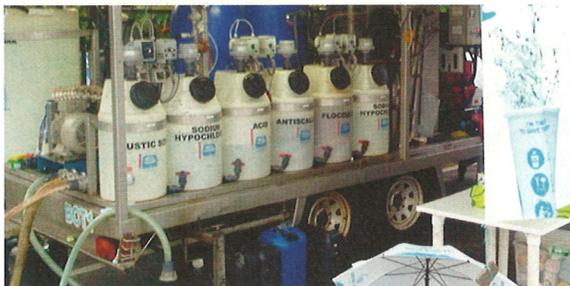
Manila Water has a Sagip Buhay team composed of emergency response-trained employees of the company.



Employees offer relief assistance to affected communities.

MOBILE WATER TREATMENT PLANTS (MTPs):

An MTP is a portable water treatment facility that utilizes reverse osmosis technology, which can produce up to 4,000 liters of potable water per hour from any type of raw water, including saltwater or floodwater.



MTP REACHES OUT BEYOND THE EAST ZONE

LUZON	VISAYAS	MINDANAO
Pangasinan (Typhoon Pepeng, 2009)	Bicol (Typhoons in 2006, 2011)	Cagayan De Oro City (Typhoon Sendong, 2011)
Bulacan (Typhoons Ondoy, 2009; Pedring, 2011)	Iloilo (Typhoon, 2008)	Compostela Valley (Typhoon Pablo, 2012)
Infanta, Quezon (Cholera Outbreak, 2008)	Leyte (Typhoon, 2011)	Jolo, Sulu (Typhoon, 2011)
Laguna (Typhoons in 2006, 2011)	Bantayan Island, Cebu (Typhoon Yolanda, 2013)	
	Loon and San Isidro, Bohol (Earthquake, 2013)	

CONTINGENCY RESOURCES



MOBILE EQUIPMENT. Manila Water is equipped with mobile command posts, mobile restrooms and portalets, rescue boats, amphibian rescue vehicles, all-terrain vehicles and back-up power (generator sets and fuel) to be used in emergencies.

WATER TANKERS are used to ration potable water for customers in need.



BASO WATER was first produced in 2009 during Typhoon Ondoy. This ready-to-drink water in sealed plastic cups helps augment the urgent need for clean drinking water.



STATIC TANKS help in providing steady supply of clean water for evacuees to carry out their daily activities.



Manila Water has gone through some of the worst disasters that hit Metro Manila, severely disrupting its operations and workforce. Having a Business Continuity Program in place enabled the timely and efficient management of the impact of these disasters and strengthened its capacity for mitigation, preparedness, and response.

Its Disaster Mitigation Strategy is focused on round-the-clock restoration of normal operations and water supply service; provision of innovative alternative water distribution systems in affected communities; implementation of a proactive crisis communication plan for all stakeholders; safeguarding health and sanitation in evacuation centers; and assistance in disaster recovery efforts.

These experiences have proven time and again the company's efficiency and commitment to quickly and efficiently normalize its operations to ensure 24/7 water supply to all customers.

2009: TYPHOON ONDOY



- 8** water supply facilities submerged in water
- 15** wastewater facilities non-operational
- 70%** employees affected
- 6** Days water supply restored
- 14** Days wastewater services restored

2010: EL NIÑO



Despite water supply threats, customers continued to enjoy 24/7 water service with adequate pressure as a result of high network efficiency and business continuity measures.

2012: HABAGAT

- 3** water supply facilities submerged in water
- 11** wastewater facilities non-operational
- 55%** employees affected
- 0** downtime in water supply services
- 8** Days wastewater services restored



2013: HABAGAT



- 1** water supply facility submerged in water
- 5** wastewater facilities non-operational
- 60%** employees affected
- 0** downtime in water supply services
- 9** Days wastewater services restored

2013: BOHOL EARTHQUAKE & TYPHOON YOLANDA

While Metro Manila was spared from the direct impacts of the Bohol quake and super typhoon Yolanda, Manila Water mobilized its people and resources to reach out to devastated communities in the Visayan region.

DEPLOYMENT OF MOBILE WATER TREATMENT PLANT LOON AND SAN ISIDRO, BOHOL:

- Produced **341,750** liters of potable water for **60,000** people
- Assisted in restoring local deepwell sources of Loon and San Isidro



BANTAYAN ISLAND, CEBU

- Produced **199,200** liters of potable water from sea water for **75,000** people
- Produced and donated **40,000** Baso Water to Leyte

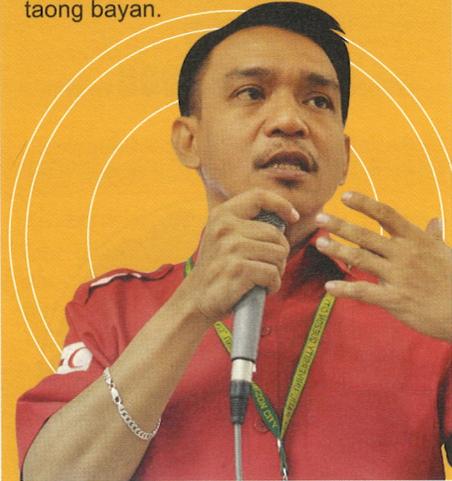
Manila Water also provided relief assistance through packing, transportation and donation of relief goods, provision of drinking water for volunteers at Camp Aguinaldo and Villamor Airbase evacuation centers, and water quality testing and analysis mission to Samar and Leyte.



RODINO CRUZ

Safety Department Head
*Philippine National Red Cross -
 Quezon City Chapter*

After Ondoy, maraming nagkasakit so ang number one assessment namin, kailangan mayroon silang clean drinking water. Tumawag kami agad sa Manila Water, then they responded din agad. Naka-ready sila para i-deploy 'yung kanilang tubig para mai-distribute sa mga taong bayan.



JESUS P. FERNANDEZ

Fire Marshall Superintendent
*Bureau of Fire Protection -
 Quezon City*

We're thankful for our partnership with Manila Water. Their fire hydrants provide the much-needed support for communities during emergency situations.

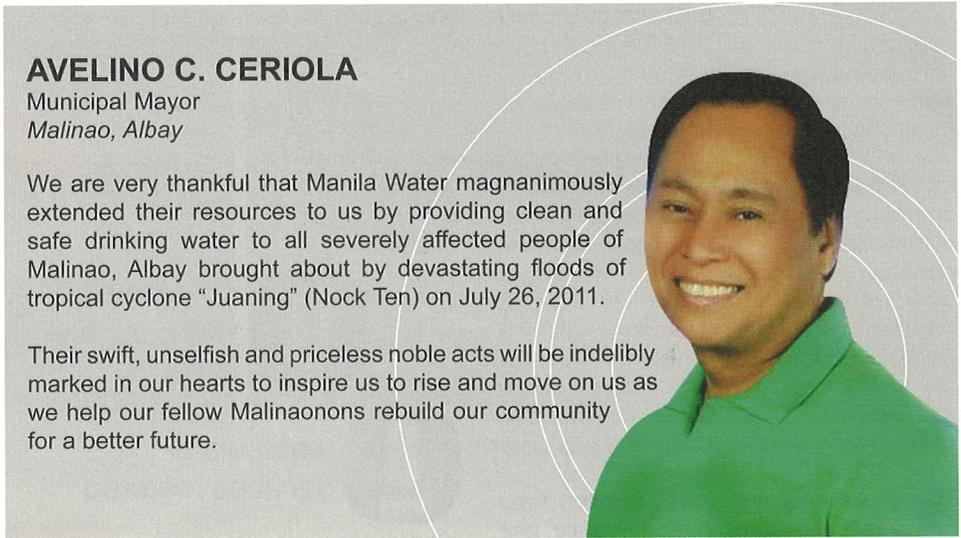


AVELINO C. CERIOLA

Municipal Mayor
Malinao, Albay

We are very thankful that Manila Water magnanimously extended their resources to us by providing clean and safe drinking water to all severely affected people of Malinao, Albay brought about by devastating floods of tropical cyclone "Juaning" (Nock Ten) on July 26, 2011.

Their swift, unselfish and priceless noble acts will be indelibly marked in our hearts to inspire us to rise and move on us as we help our fellow Malinaonons rebuild our community for a better future.

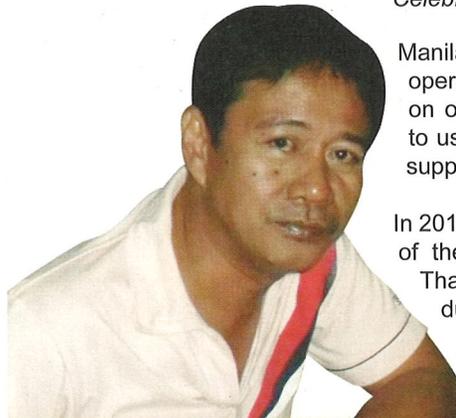


ENGR. LITO ESTORNINOS

Engineering Officer
Celebrity Sports Club

Manila Water's services are vital to our day-to-day operations. The Company's services help us save on our electric consumption as we no longer have to use our booster pump due to the sufficient water supply and pressure we receive.

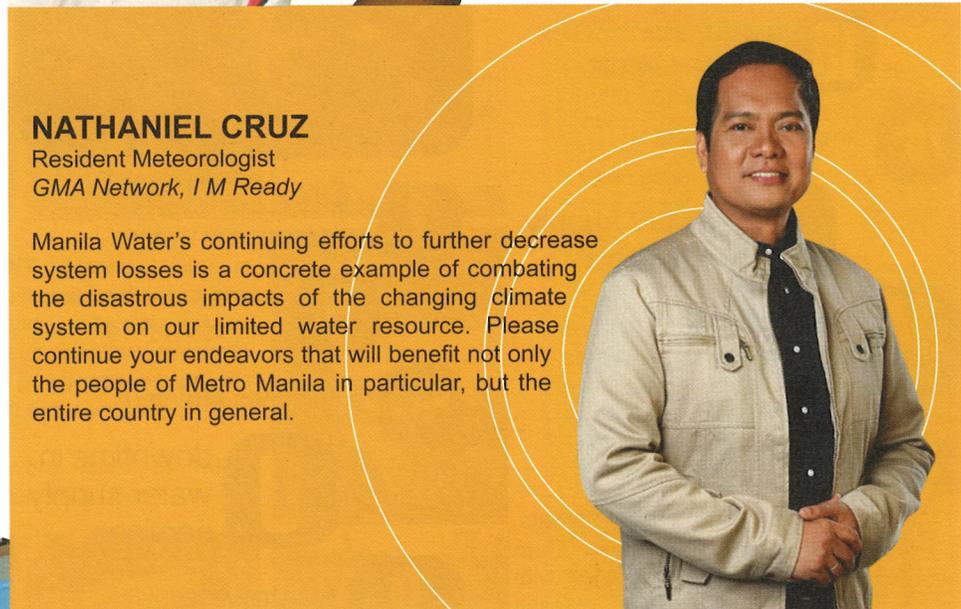
In 2010, we had plans to reactivate our pump because of the threat of the El Niño on water availability. Thankfully, there was enough supply and pressure during that period. We did not have to use our booster pump anymore.



NATHANIEL CRUZ

Resident Meteorologist
GMA Network, I M Ready

Manila Water's continuing efforts to further decrease system losses is a concrete example of combating the disastrous impacts of the changing climate system on our limited water resource. Please continue your endeavors that will benefit not only the people of Metro Manila in particular, but the entire country in general.



ESTER YUSINGCO

Head, Relief Operation and Social Services
Manila Water Sagip Buhay Emergency Responders Team

Manila Water employees are very kind-hearted and they respond immediately especially when there is a calamity. I remember during Ondoy, donations and volunteers started coming in even before we started campaigning for the fund drive. Sharing, being a blessing to others and concern to our brethren are very much alive. I really saw the spirit of genuine employee volunteerism in Manila Water.



JOMMEL A. GOMEZ

Head, Business Continuity
Manila Water

Manila Water's ability to survive a crisis and thrive in a world of uncertainty has led to attain organizational resiliency. Preparedness and awareness are key to minimize risk and maximize recovery time, in a more efficient and cost-effective way during a disaster. By strengthening our employees' capability to respond and survive during incidents, we increase our ability to continue the services we offer to our customers and to our country.



JENNY L. GAYARES

Bawat Patak, Tumatatak
 Kasangga and Volunteer
Manila Water

The *Bawat Patak, Tumatatak* is an employee-driven program with an aim to provide assistance to those in need. After Typhoon Yolanda, I was a witness to an outpouring of support from the employees of Manila Water. The company acknowledged their desire to help those who have been struck by this calamity by institutionalizing the program. The employees have also shown their commitment to nation building by raising funds to ensure that deserving students will have access to quality high school education in a private school such as APEC. Each individual's efforts and contribution are valued – whether in the form of salary pledge donation or time and skills donation. As we say, walang maliit, walang malaking tulong. Sa Manila Water, Bawat Patak, Tumatatak!

MTP TEAM (Mobile Treatment Plant Operations Team)

Manila Water

Sa bawat deployment, makikilala mo ang mga tao. Kahit na gaano kabigat yung dumaan sa kanila, tuloy pa rin, laban pa rin sila. Hindi sila sumusuko. Kaya kung saan man kami kailangan dalhin, doon kami.

Kung saan kami mas mapapakinabangan, doon magseserbisyo kami. Basta makita mong makakatulong ka, malaking bagay na 'yun sa amin. Mahirap pero kapag nakikita mo yung pasasalamat ng mga tao, mawawala ang pagod mo.



BING CAONG

Member, *Manila Water Sagip Buhay Emergency Responders Team, Water Search and Rescue Team (WASAR)*

Yung pagtulong namin after ng Ondoy, hindi kami ni-require ng opisina. Kahit Ondoy victim ako, okay lang sa akin na pumasok. Nag-relief operation kami sa mga officemates namin. Simultaneously, nag-assist rin sa mga customers. Kung nasa puso mo talaga ang pagtulong, kahit na naging biktima ka, parang hindi mo na iintindihin ang sarili mo. Yung ibang tao siguro mas may kailangan ng tulong ko, tutulungan ko hangga't kaya ko.



Bracing for "The Big One"



Project Delivery Director Tom Mattison led the drill at the San Juan-Mandaluyong command post



Group Directors Abe Basilio, Ruel Maranan and Ding Carpio at Balara command post



Manila Water's Management Committee led by President and CEO Gerry Ablaza and Group Directors Ferdz Dela Cruz, Rodell Garcia, Chito Oréta and Perry Rivera is joined by MMDA General Manager Cora Jimenez at the Taguig-Pateros command post.

While earthquakes are difficult to predict, historical records show that a possible 7.2 magnitude earthquake—dubbed as "The Big One"—looms around the corner if the West Valley Fault along the eastern side of Metro Manila shifts.

The West Valley Fault runs from the heights of Sierra Madre down to Laguna. It crosses the eastern side of Quezon City, western side of Marikina, western part of Pasig, eastern part of Makati, parts of Taguig, and Muntinlupa.

The fault has moved four times in the past 1,400 years. On average, it moves every 400 years. The last time an earthquake of this magnitude occurred along the fault was around 355 years ago in 1658.

In anticipation of "The Big One," Manila Water annually conducts a company-wide earthquake drill to simulate its incident management system, evaluate earthquake response protocols as well as business

continuity plans, and familiarize employees with their individual roles and responsibilities.

In this drill, the East Zone service area is divided into four "quadrants" based on the Metro Manila Earthquake Impact Reduction Study, which assumes key lifelines of the metro to be unavailable in the event of a major quake. The quadrants are bounded by Marikina River, Pasig River, Manggahan floodway and East Zone-West Zone (Maynilad) boundaries.

Manila Water has established six command posts within the quadrants, as well as logistical hubs and contingency resources. Employees troop to their nearest command posts based on their address or geographical locations. Aside from employees, the drill is also participated in by the Metropolitan Manila Development Authority, Bureau of Fire Protection, and the company's contractors and service providers.



Based on historical records, Phivolcs has warned that a 7.2 magnitude earthquake—also known as The Big One—may hit Metro Manila in this lifetime. Two scientific studies predicted that when this happens:

35,000

people may die

115,000

may be injured

40%

residential structures will collapse

500

fire may break out and spread

10-25%

of government buildings will be damaged

Some of the bridges may collapse

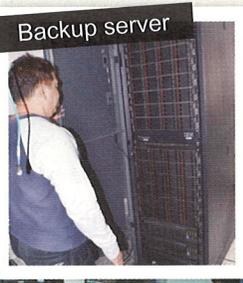
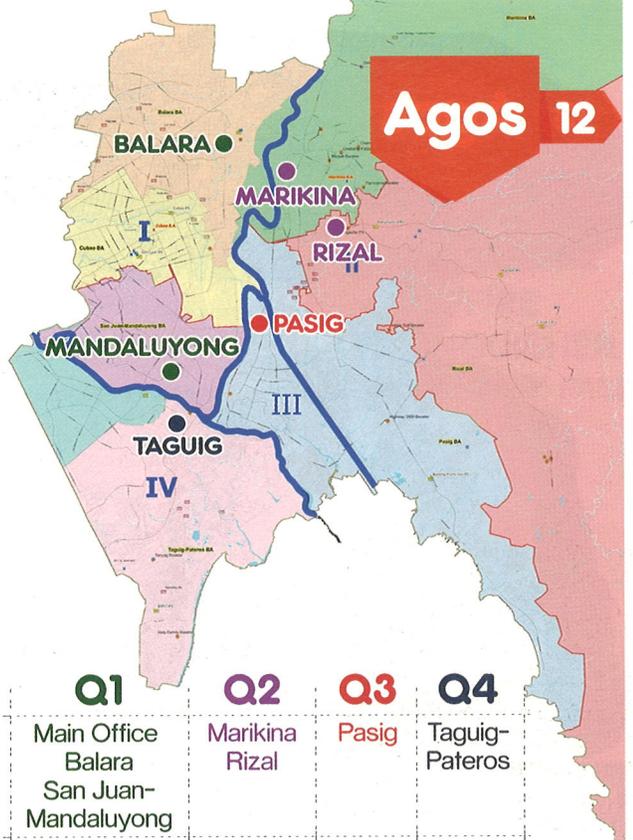
Power, WATER and communication lines will be cut

National socio-economic activities will be disrupted



Agos 12

Mock set-up of water tanks and tents at the evacuation and staging area identified by MMDA at Veterans Golf Course in Quezon City



I.T. Disaster Recovery Site at the San Juan-Mandaluyong command post

Manila Water personnel conduct a crisis management meeting and post-incident review



An Incident Management Team (IMT) was formed in each command post headed by an Overall Incident Manager (OIM).

What to do and where to go after an earthquake?
 Manila Water employees are advised to attend to their families first in case of any major disaster. After making sure of their safety, personnel are directed to report to their nearest command post to be of service to the company and its customers.



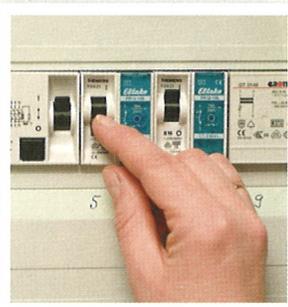
Be Prepared

Doing your part is your best protection!

IN THE EVENT OF A TYPHOON:

- ✓ Do not use gas or electrical appliances that have been flooded.
- ✓ Stay away from places that will likely be inundated by rising water or waves such as beaches and riverbanks.
- ✓ Stay away from landslide-prone areas.

WHEN EVACUATION IS NECESSARY, SWITCH OFF YOUR HOME'S MAIN POWER SUPPLY, PLACE APPLIANCES AND BELONGINGS ON HIGHER LOCATIONS AND CLOSE WINDOWS BEFORE LEAVING.



- ✓ Stay away from hanging wires and unstable structures.
- ✓ Do not wade through flood waters to avoid being electrocuted and contracting diseases.



PUT IMPORTANT APPLIANCES AND BELONGINGS ON HIGHER GROUND.

DURING AN EARTHQUAKE

If you're indoors:

- ✓ When the shaking begins, **DUCK (DROP), COVER and HOLD.**



- ✓ Stay indoors until the shaking stops and make sure it's safe to exit.
- ✓ Stay away from windows.
- ✓ Be familiar with the emergency evacuation route of the building. Know where the exits and fire extinguishers are located.

If you live in a high-rise building, expect the fire alarms and sprinklers to go off during a quake.

DURING AN EARTHQUAKE

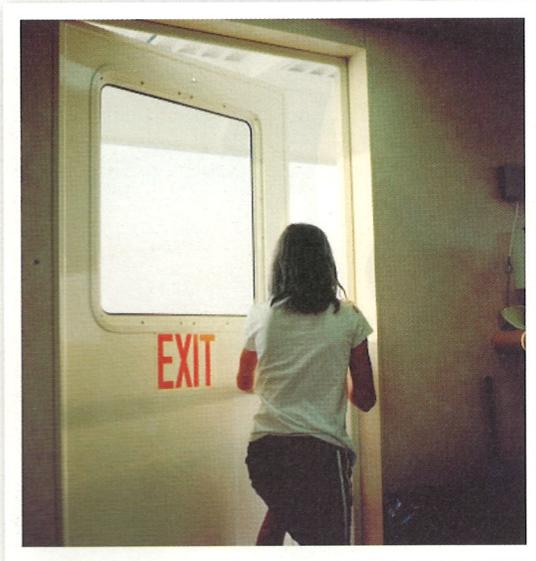
If you're outdoors:

- ✓ Find a clear spot away from buildings, trees and power lines or electric cables. Drop to the ground.
- ✓ Slow down and drive to a clear place if you're in a car. Do not step out of your vehicle until the shaking stops.



IN CASE OF FIRE

- ✓ Call the nearest fire department.
- ✓ Get out as quickly and safely as possible.



- ✓ Close doors in each room you get out of to delay the spread of fire.
- ✓ Use the stairs to escape. Avoid elevators.
- ✓ When evacuating, stay low to the ground. Cover your mouth with cloth to avoid inhaling smoke.

FIRE PREVENTION 101

- ✓ Do not store materials near a heat source.
- ✓ Keep ignitable materials away from heat-producing appliances.
- ✓ Check your LPG tank for leaks.



- ✓ No welding, cutting or heating shall be done near flammable compounds.
- ✓ Do not overload electrical outlets.



HOW TO USE A FIRE EXTINGUISHER

Just remember to PASS!



Pull the pin.



Aim at the base of the fire.



Squeeze the handle or lever.



Sweep from side to side.

PACK YOUR GO BAG!

Manila Water's Business Continuity team recommends that each family prepare a Go Bag in case of any emergency. A Go Bag is a portable kit that contains the items one would require to survive should a disaster strike. The items should be put in a large water-resistant bag and should be located along the nearest exit for ease of access.

Water **Blanket** **Whistle** **Flashlight**

Toiletries **Radio** **Dust mask**

Clothes **Notebook**

Scotch Tape **Extra Phone**

Swiss Knife **Canned Goods**

Permanent Marker **Documents** **Batteries** **Emergency Money**

First Aid Kit



**BE
READY
24/7**

EMERGENCY HOTLINES

MANILA WATER COMPANY, INC. 1627

PHILIPPINE NATIONAL POLICE (PNP) 117/2920

METRO MANILA DEVELOPMENT AUTHORITY (MMDA) 136

BUREAU OF FIRE PROTECTION (NCR) 117

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