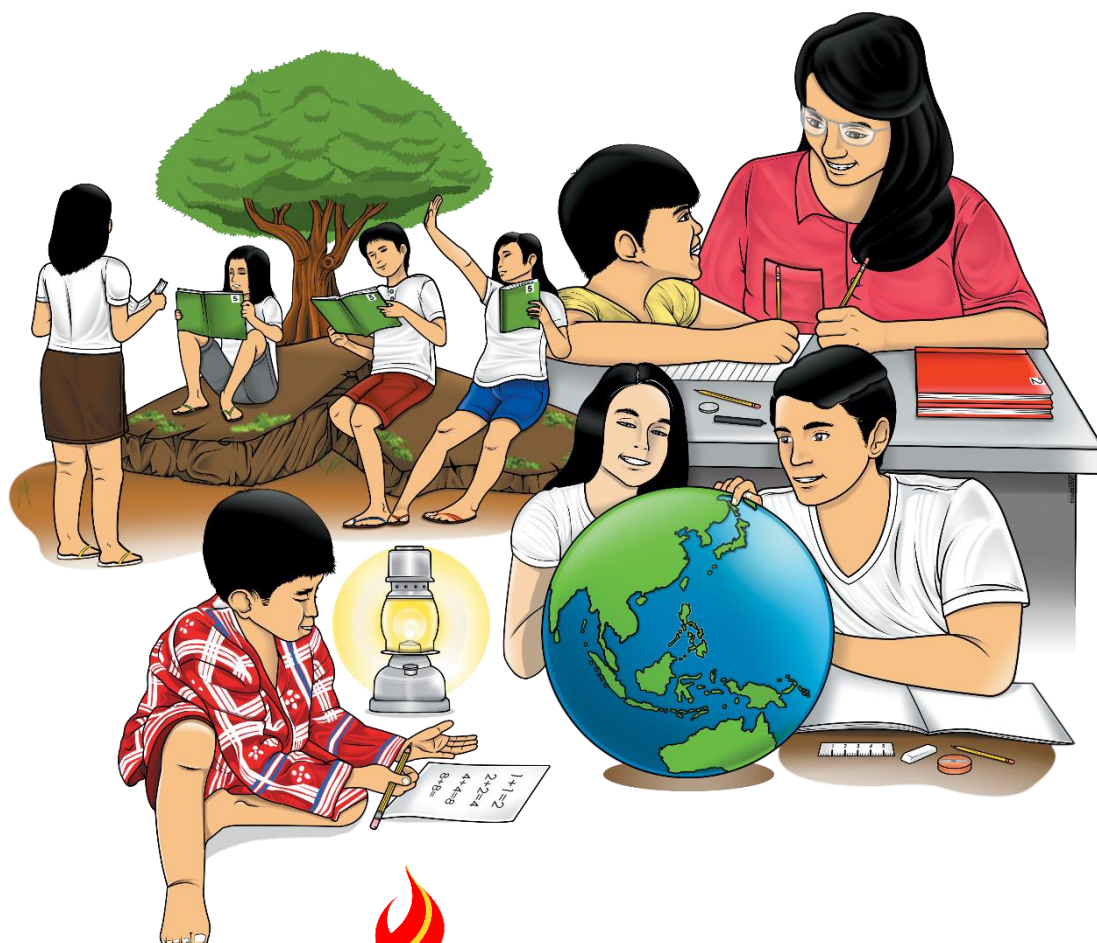


# Disaster Readiness and Risk Reduction

## Quarter 1 – Module 17: Different Volcano Hazard Maps



**Disaster Readiness and Risk Reduction**  
**Alternative Delivery Mode**  
**Quarter 1 – Module 17: Different Volcano Hazard Maps**  
**First Edition, 2021**

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**Development Team of the Module**

**Writers:** Elmo C. Maagad

**Editors:** Aries B. Manalo, Riza Mae S. Sanchez

**Reviewers:** Desiree D. Vista, Jomar D. Flores, Leo Vigil M. Batuctoc,  
Jo Anne Maurice A. Gerance

**Illustrator:** Leumel M. Cadapan

**Layout Artist:** Dyessa Jane P. Calderon

**Management Team:** Francis Cesar B. Bringas  
Job S. Zape, Jr.  
Ramonito Elumbaring  
Reicon C. Condes  
Elaine T. Balaogan  
Fe M. Ong-ongowan  
Hereberto Jose D. Miranda  
Neil G. Angeles  
Edna F. Hemedez  
Jackie Lou A. Almira  
Maribeth G. Herrero

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**Department of Education – Region 4A CALABARZON**

Office Address: Gate 2 Karangalan Village, Brgy. San Isidro, Cainta, Rizal  
Telefax: 02-8682-5773/8684-4914/8647-7487  
E-mail Address: lrm.d.calabarzon@deped.gov.ph

# **Disaster Readiness and Risk Reduction**

## **Quarter 1 – Module 17: Different Volcano Hazard Maps**

## **Introductory Message**

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.

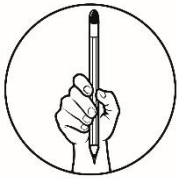


## ***What I Need to Know***

This module was designed and written with you in mind. It is here to help you master the Different Volcano Hazard Maps. The scope of this module permits it to be used in many different learning situations. The language used recognizes the diverse vocabulary level of students. The lessons are arranged to follow the standard sequence of the course. But the order in which you read them can be changed to correspond with the textbook you are now using.

After going through this module, you are expected to:

1. Interpret different volcano hazard maps;
2. Demonstrate how to use the different volcano hazard maps;
3. Appreciate the importance of knowing the volcano hazard map; and
4. Manifest readiness in facing volcanic hazards through.



## ***What I Know***

### **Pre-test**

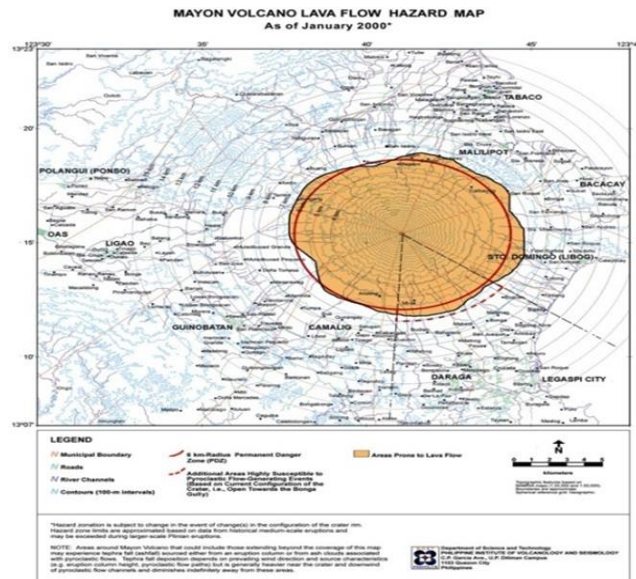
Directions: Choose the letter of the best answer. Write the chosen letter on a separate sheet of paper.

1. What map highlights areas that are affected by or are vulnerable to a particular disaster?
  - a. Archeological Map
  - b. Global Map
  - c. Hazard Map
  - d. Wind Map
2. If you are under a volcano warning, which of the following is NOT best to do?
  - a. Protect yourself from falling ash.
  - b. Follow evacuation or shelter orders.
  - c. Just stay home to protect your properties.
  - d. Listen for emergency information and alerts.
3. What hazard is associated with potential earthquakes in a particular area?
  - a. Allergens
  - b. Man-made Hazard
  - c. Quasi-natural Hazard
  - d. Seismic Hazard

4. What is the significance of studying the various signs of approaching volcanic eruption?
- a. To acquire knowledge
  - b. To be well-informed
  - c. To promote safety
  - d. To acquire skills
5. Which among the following is the LEAST use of a hazard map?
- a. Mitigation plans
  - b. Planning purposes
  - c. emergency response
  - d. Public aid guidelines
6. What do you a volcano that has not erupted for a long time but is expected to erupt again in the future?
- a. Active volcano
  - b. Dormant Volcano
  - c. Extinct Volcano
  - d. Hazardous Volcano
7. What is the HIGHEST volcanic alert level in the Philippines?
- a. 0
  - b. 3
  - c. 5
  - d. 7
8. Which of the following is an ACTIVE volcano?
- a. Mount Arayat
  - b. Mount Banahaw
  - c. Mount Makiling
  - d. Mount Pinatubo
9. Which among the following volcanoes is the MOST Active?
- a. Mount Bulusan
  - b. Mount Kanlaon
  - c. Mayon Volcano
  - d. Taal in Volcano
10. How far is the Permanent Danger Zone (PDZ) from a volcano?
- a. 3 kms. Radius
  - b. 4 kms. Radius
  - c. 5 kms. Radius
  - d. 6 kms. Radius
11. What does it mean to have volcanic Alert Level 4?
- a. Increasing Volcanic Unrest
  - b. On-going Hazardous Eruption
  - c. Hazardous Eruption Imminent
  - d. Increasing Tendency towards Eruption
12. Which among the following descriptions of volcanic alert level is the MOST alarming?
- a. Increasing Volcanic Unrest
  - b. On-going Hazardous Eruption
  - c. Hazardous Eruption Imminent
  - d. Increasing Tendency towards Eruption
13. What is the name of the volcanic authority in the Philippines?
- a. NDRRMC
  - b. PAGASA
  - c. PhilREDCross
  - d. PHIVOLCS

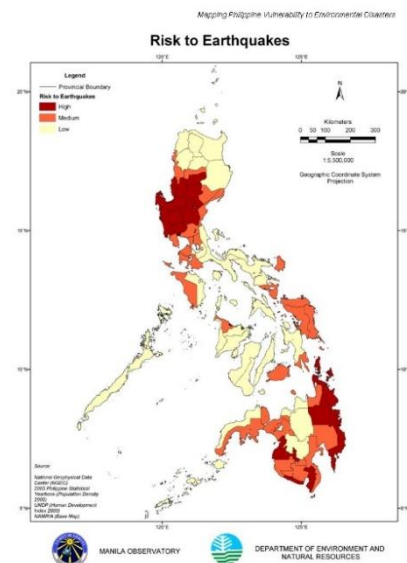
14. Based on the lava flow hazard map of Mayon Volcano above, how many kilometres from the crater is considered prone to lava flow?

- a. 4 kms
- b. 6 kms
- c. 7 kms
- d. 8 kms



15. Which part of the Philippines is highly vulnerable to volcanic related hazards?

- a. Calabarzon
- b. Central Luzon
- c. Davao Region
- d. Central Visayas





## Lesson

# 1

# Different Volcano Hazard Maps

In this world where abrupt weather condition occurs, it is important that you know the characteristics of the place you are living. This lesson will help you identify places that are prone to volcano hazard around the Philippines and/or communities near you through different volcano hazard maps.



## ***What's In***

### **Activity 1: The Dangerous One!**

Directions: Study carefully the picture below, and then think the possible hazards that happened on this natural phenomenon.



**Source:** *Taal Volcano Eruption 2020*, Actual Footage retrieved from <https://i.ytimg.com/vi/ykFtlCqjR8A/maxresdefault.jpg>

1. What are the possible hazards that happened on this volcanic eruption?

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2. Describe each possible hazard in this event.

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3. Are there negative effects on this natural phenomenon to human, animals, and environment? If yes, then explain.

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4. How would you mitigate the negative effect of volcanic hazards?

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## What's New



## Guide Questions:

The active volcanoes in the Philippines are indicated by red triangles. It can be easily identified because of the indicators.

Source: *Philippines Volcano Location Maps*,  
<https://www.bing.com/images>

Based on the Philippines Volcano Location Maps,

1. Identify five (5) different active volcanoes in the Philippines using the map above. Write your answers on the space provided.

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2. Fill out the table below by listing 5 volcanoes and indicate its provinces.

List of active volcanoes	Province
a.	
b.	
c.	
d.	
e.	

3. How is it important to you to be aware of the different locations of active volcanoes in our country?

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## ***What is It***

Seismic hazard is the hazard related with probable earthquakes in a particular area. The possible hazards caused by an earthquake is normally shown in a seismic hazard map that shows how likely can a disaster affect the lives of people living in that area and how can they prepare better for the approaching disaster.

The volcano authority in the Philippines is the Philippine Institute of Volcanology and Seismology (Phivolcs). The alert level system used by Phivolcs runs from Alert Level 0 (lowest) to Alert Level 5 (highest) as shown in the table below.

Alert Level	Description	Volcanic Activity
0	No Alert	<ul style="list-style-type: none"> <li>• Quiet</li> <li>• No eruption in the foreseeable future</li> </ul>
1	Abnormal	<ul style="list-style-type: none"> <li>• Low level unrest</li> <li>• No eruption imminent</li> </ul>
2	Increasing Unrest	<ul style="list-style-type: none"> <li>• Moderate unrest</li> <li>• Unrest probably of magmatic origin, could eventually lead to eruption</li> </ul>
3	Increasing Tendency Towards Eruption	<ul style="list-style-type: none"> <li>• Relatively high unrest</li> <li>• Magma is close to the crater.</li> </ul>
4	Hazardous Eruption Imminent	<ul style="list-style-type: none"> <li>• Intense unrest</li> <li>• Hazardous eruption is possible within days.</li> </ul>
5	Hazardous Eruption	<ul style="list-style-type: none"> <li>• Hazardous eruption ongoing</li> </ul>

What is the difference between an active, erupting, dormant and extinct volcano?

An **active volcano** is a volcano that has had at least one eruption during the past 10,000 years. An active volcano might be erupting or dormant.

An **erupting volcano** is an active volcano that is having an eruption.

A **dormant volcano** is an active volcano that is not erupting, but supposed to erupt again.

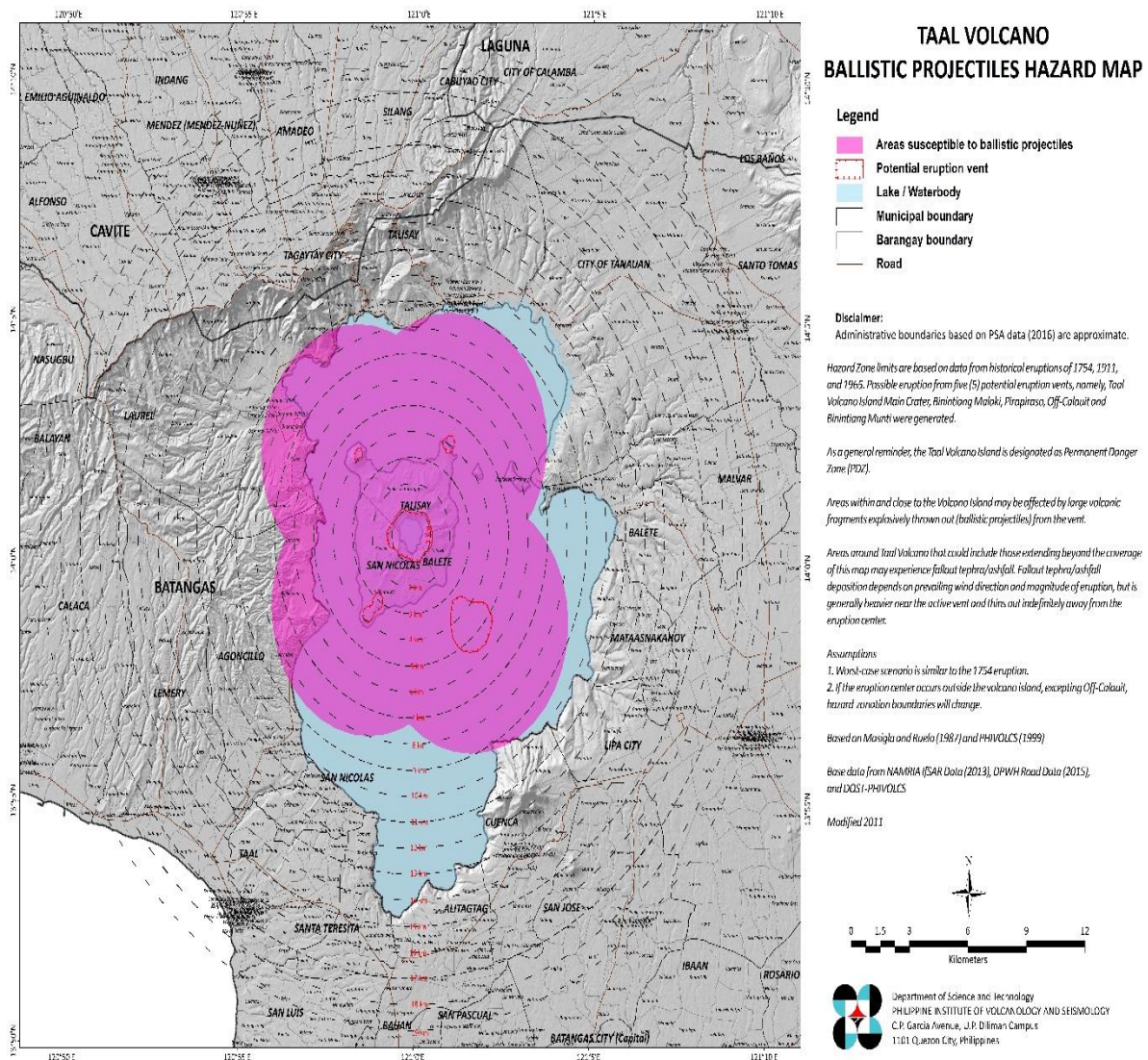
An **extinct volcano** has not had an eruption for at least 10,000 years and is not expected to erupt again in a comparable time scale of the future.

**Source:** "What is the difference between an active, erupting, dormant and extinct volcano?", Volcano Discovery, [https://www.volcanodiscovery.com/volcanoes/faq/active\\_erupting.html](https://www.volcanodiscovery.com/volcanoes/faq/active_erupting.html)

Volcanoes can be very dangerous to human beings. History proves that in every volcanic eruption there is always a great damage in terms of lives and properties. Therefore, people must know how to read and understand precautions in order to reduce the amount of damages that it may possibly cause.

One way of preparing ourselves is to know how to read and interpret warning through the use of maps, just like the given examples below.

Illustration 1.1

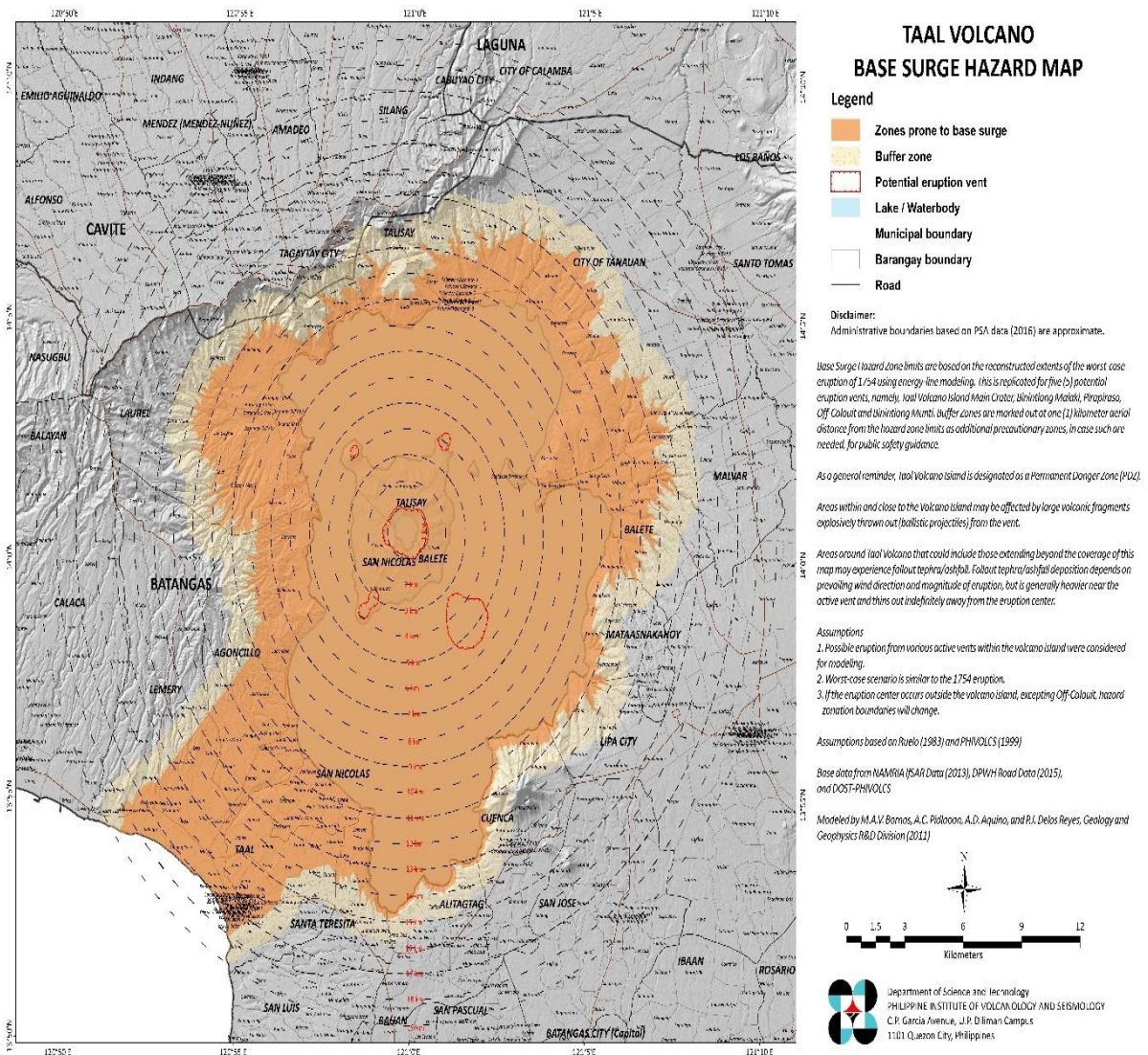


**Source:** *Taal Volcano Hazard Maps and Summary of Prone Barangays*, Philippine Institute of Volcanology and Seismology, January, 2020,  
<https://www.phivolcs.dost.gov.ph/index.php/volcano-hazard/gisweb-volcano-hazard-maps>

This volcanic hazard map basically shows the ballistic projectile or the rocks that an erupting volcano may throw into the air. Looking into the legend of the map the areas in pink, specifically the towns of Balete, San Roque and Talisay, are the places that will mostly be affected by this hazard. It is therefore very important that people in these areas be notified and warned about the disaster that may happen to them in case of volcanic eruption.



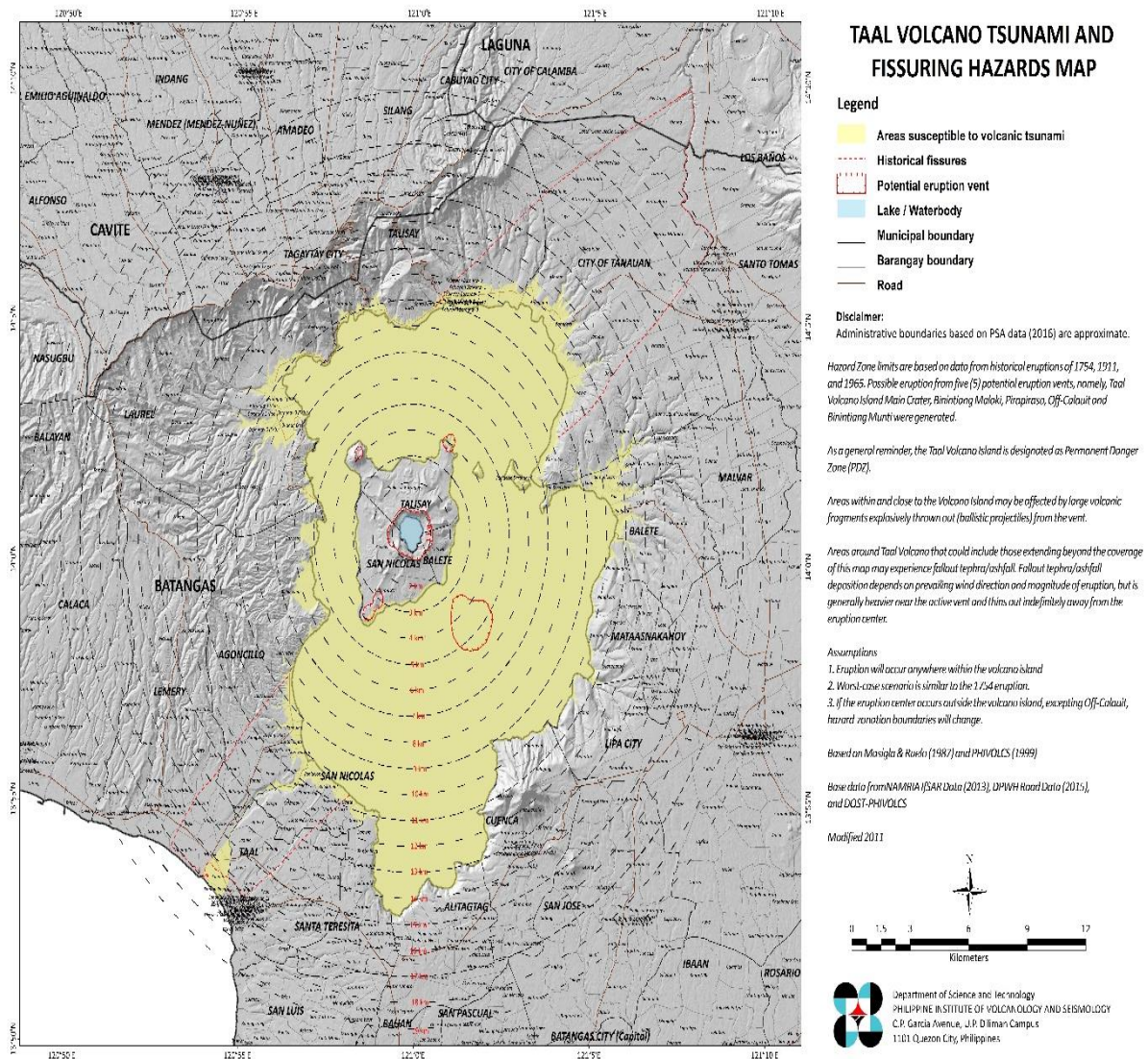
## Illustration 1.2



**Source:** *Taal Volcano Hazard Maps and Summary of Prone Barangays*, Philippine Institute of Volcanology and Seismology, January, 2020,  
<https://www.phivolcs.dost.gov.ph/index.php/volcano-hazard/gisweb-volcano-hazard-maps>

This hazard map indicates the susceptibility of the those colored areas to ground infolding, fast outward moving and raging, dilute clouds of gas and ash that are discharged from an erupting volcano. Those areas must be warned from heavy ash fall and pyroclastic materials that are harmful to the health of people especially those with respiratory problems.

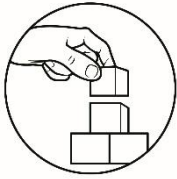
Illustration 1.3



**Source:** Taal Volcano Hazard Maps and Summary of Prone Barangays, Philippine Institute of Volcanology and Seismology, January, 2020,  
<https://www.phivolcs.dost.gov.ph/index.php/volcano-hazard/gisweb-volcano-hazard-maps>

Fissure eruptions occur when magma flows up through cracks in the ground and leaks out into the surface. Fissures can damage infrastructures, and pose great threat to the health of people and livestock. As shown in the hazard map, those areas in yellow will be greatly suffered from fissure and Tsunami, in a worst case scenario, in case of volcanic eruption. Therefore, it is very important that people in these areas know the hazards that they may experience and must be vigilant on the activity of Taal Volcano.

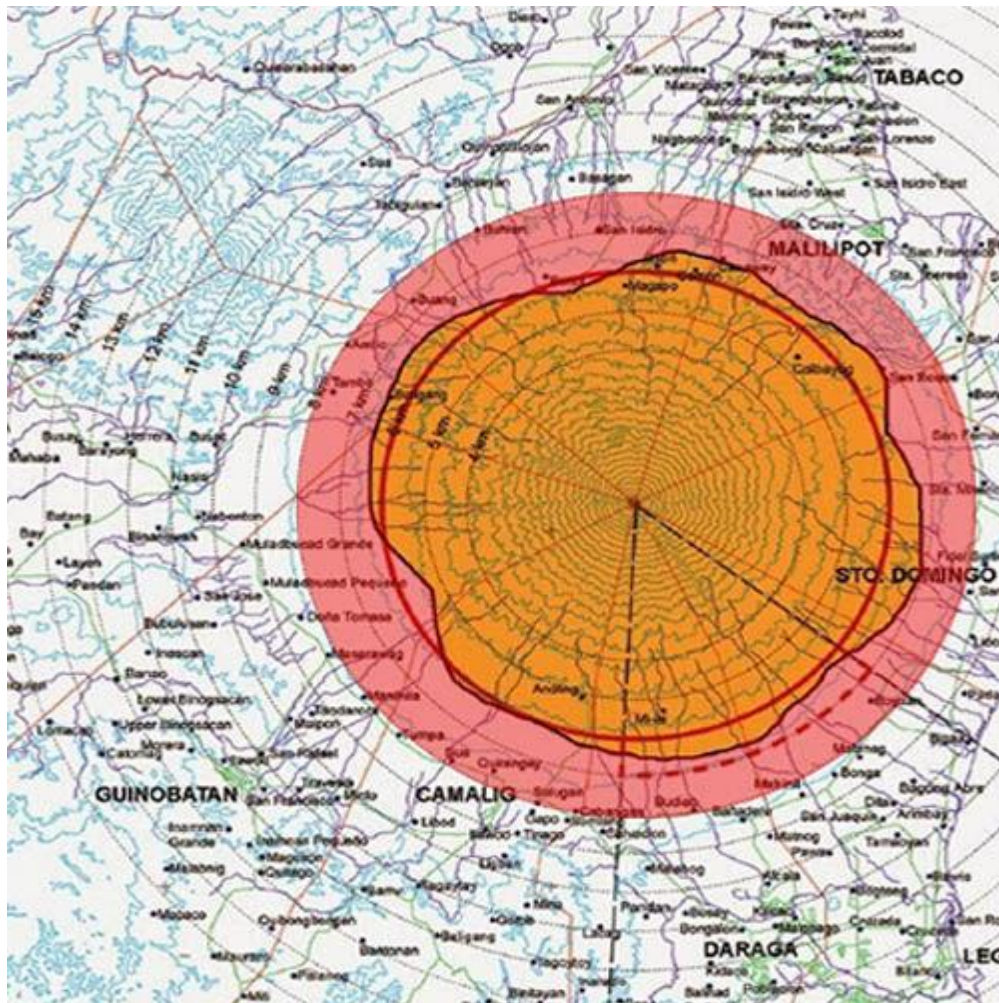




## What's More

### Activity 2: The Danger Zone of the Perfect Cone

Direction: Study carefully the map and answer the questions below on the space provided.

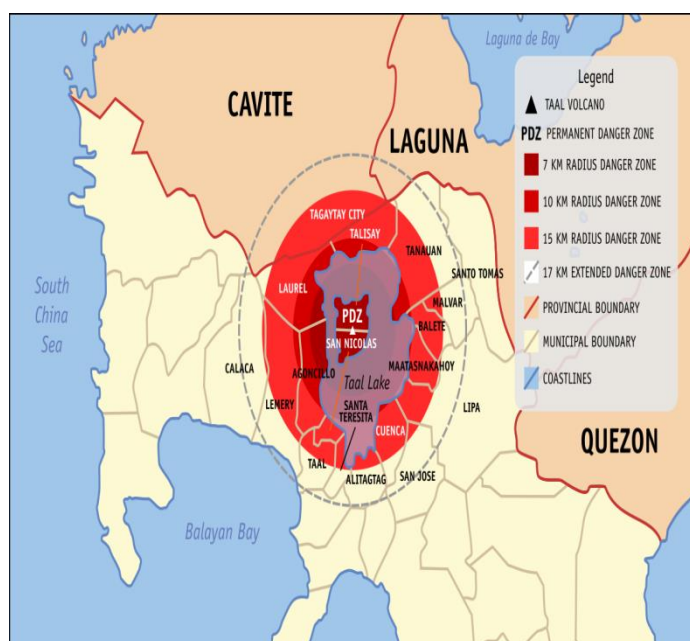


Source: Boobyer, Leigh, January 22, 2018, <https://www.express.co.uk/news/world/908064/Mayon-volcano-danger-zone-map-eruption-philippines-threat-level>

1. How many kilometers are considered as danger zones based on the map above?  
\_\_\_\_\_
2. List down the 3 cities that are within the 8 kilometer- Danger zones of Mt. Mayon.  
\_\_\_\_\_
3. What are the safe cities depicted on the map above?  
\_\_\_\_\_



### Activity 3: The Danger Zone



Direction: Study carefully the map and answer the questions below on the space provided.

Source:  
[https://upload.wikimedia.org/wikipedia/commons/thumb/1/1a/Taal\\_Volcano\\_Danger\\_Zone.svg/1200px-Taal\\_Volcano\\_Danger\\_Zone.svg.png](https://upload.wikimedia.org/wikipedia/commons/thumb/1/1a/Taal_Volcano_Danger_Zone.svg/1200px-Taal_Volcano_Danger_Zone.svg.png)

1. Based on the map above, list down the places in Batangas province which belong to the 15 km radius danger zone?  
\_\_\_\_\_
2. What are the places which belong to both 7 & 10 Km. danger zones?  
\_\_\_\_\_
3. Among the provinces present on the map, which is most affected?  
\_\_\_\_\_

### Activity 3: Read Me

Direction: Read the article and answer the questions that follow.

#### **The Importance of Hazard Maps in Averting Disasters**

*By Alfredo Mahar Lagmay*

Hazards are forever a threat but can be managed if we learn the lessons from past disasters. Over the years, it has become clear that effective disaster prevention and mitigation entails two important aspects. The first is the delivery of accurate, readily accessible, understandable and timely warnings. It is the responsibility of government and should be executed using the best science and advanced tools. The second entails the appropriate response of people when they are given a warning. This is the more difficult part because it requires the long-term involvement of everyone and not when it's too late -people must educate themselves on the different hazards, know the dangers in their neighborhood and practice evacuation drills. These long-term preparations need to be accompanied by reliable hazard maps that depict scenarios of hazards in a community. It is imperative that the maps be accurate because all plans, even if well executed, will fail if they are wrong.

Inaccurate maps may have cost the lives of thousands Filipinos in the past. Take for example the 2012 Barangay Andap disaster in New Bataan, Compostela Valley where 566 people heeded warnings by seeking refuge in an evacuation center. Instead of being relocated to a safe shelter, the evacuation center became their grave when debris flows overwhelmed the site. Another example is the Yolanda disaster. Notwithstanding the shortcomings of the storm surge warnings, there were people who dutifully trooped to evacuation centers in Tacloban where they met their untimely death. Seventy percent of evacuation centers in Tacloban were inundated by storm surges, which only tells us that the storm surge hazard maps were erroneous if they were used in the city's disaster mitigation plan. Otherwise, the evacuation centers would not have been located in those places.

To rectify the problem, the Department of Science and Technology embarked on a program on 6 July 2012 called the Nationwide Operational Assessment of Hazards (NOAH). Using frontier science and advanced technology, we are now able to map out the Philippine landscape at very high resolution. From maps that depicted the land with vertical accuracy of  $\pm 6\text{--}7$  meters and horizontal resolution of 30 meters, we now have maps that have a vertical accuracy up to  $\pm 15$  centimeters and horizontal resolution of 1 meter. This is the initial stage to create detailed maps that show hazards at barangay level. Armed with the knowledge on the physics of how water flows and stability of mountains, we can now use powerful computers to simulate floods and landslides to identify hazardous areas. More importantly, we are also able to identify safe areas, which

are the suitable sites for evacuation centers and future development of areas not prone to natural hazards. Previous maps, which are still the official maps used today, except in the 171 municipalities in the Yolanda corridor, have hazards shown everywhere in the map. Such hazard maps make it difficult to assess an area to build a well-planned and resilient community against disasters.

DOST-Project NOAH has completed the detailed hazard maps for landslides and storm surges. Flood hazard maps, however, are still incomplete because they are more difficult to generate. Hopefully, they will be finished soon. All maps are available in the DOST-Project NOAH website at <http://noah.dost.gov.ph> and in an award-winning mobile app called Arko. The NOAH maps are distributed to empower local government units (LGUs) and individuals. By knowing the hazards in their neighborhood, people are made aware of the dangers in their community – the first step in effective disaster preparedness and mitigation. In the Philippine context, however, the availability of these online maps is inadequate because not every Filipino has access to the Internet. Atlases or the hardcopy version of the digital hazard maps are needed by each barangay. Schools need them as well because it is an excellent place to develop skills in map reading. The landslide and storm surge hazard atlases have already been prepared for every province and are waiting to be printed.

The sooner there is a budget for their printing and distribution; the earlier communities can strategize their actions. Without the hazard maps, no amount of warning will suffice in efforts to avert disasters. Warnings need to be matched with the appropriate response, which only happens when there is a reliable map to map a good plan.

Source: <https://center.noah.up.edu.ph/the-importance-of-hazard-maps-in-averting-disasters/>  
This article was originally published in the Manila Bulletin on February 29, 2016.

1. According to the article, what are the important aspects of disaster prevention?  
\_\_\_\_\_
2. What is the importance of giving appropriate warning in an approaching disaster?  
\_\_\_\_\_
3. What is the importance of hazard maps?  
\_\_\_\_\_

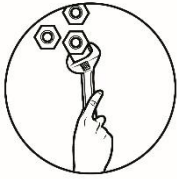


## ***What I Have Learned***

### **Activity 5: Tell me**

Direction: Fill in the blanks with your correct answer.

1. \_\_\_\_\_ is hazard related with probable earthquakes in a particular area.
2. \_\_\_\_\_ is an alert level of volcanic activity which is moderately unrest, unrest probably because of magmatic origin, and could eventually lead to eruption.
3. \_\_\_\_\_ is an alert level of volcanic activity which has imminent hazardous eruption imminent, intense unrest and hazardous eruption that is possible within days.
4. \_\_\_\_\_ is an alert level of volcanic activity which has increasing tendency towards eruption; relatively high unrest magma is close to the crater.
5. \_\_\_\_\_ is an alert level of volcanic activity which has ongoing hazardous eruption.
6. \_\_\_\_\_ is a volcano that has had at least one eruption during the past 10,000 years. It might be erupting or dormant.
7. \_\_\_\_\_ is an active volcano that is having an eruption.
8. \_\_\_\_\_ is an active volcano that is not erupting, but supposed to erupt again.
9. \_\_\_\_\_ has not had an eruption for at least 10,000 years and is not expected to erupt again in a comparable time scale of the future.



## ***What I Can Do***

### **Activity 6: Show Me the Way**

Direction: Draw an emergency hazard map for your community where you can evacuate during natural calamity such as volcanic eruption.



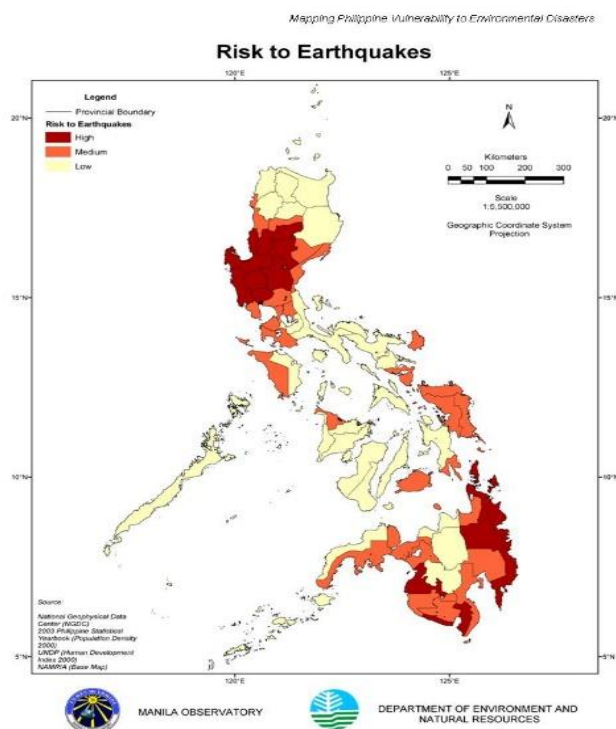
## Assessment

Multiple Choice. Choose the letter of the best answer.

1. The HIGHEST volcanic alert level in the Philippines is \_\_\_\_\_.
  - a. 0
  - b. 3
  - c. 5
  - d. 7
2. The name of the volcanic authority in the Philippines is \_\_\_\_\_.
  - a. NDRRMC
  - b. PAGASA
  - c. PhilREDcross
  - d. PHIVOLCS
3. A volcano that has not erupted for a long time but is expected to erupt again in the future is called \_\_\_\_\_.
  - a. Active volcano
  - b. Dormant Volcano
  - c. Extinct Volcano
  - d. Hazardous Volcano
4. The map that highlights areas which are affected by or are vulnerable to a particular disaster is called \_\_\_\_\_.
  - a. Archeological Map
  - b. Global Map
  - c. Hazard Map
  - d. Wind Map
5. \_\_\_\_\_ is an ACTIVE volcano.
  - a. Mount Arayat
  - b. Mount Banahaw
  - c. Mount Makiling
  - d. Mount Pinatubo
6. The hazard that is associated with potential earthquakes in a particular area is known as \_\_\_\_\_.
  - a. Allergens
  - b. Man-made Hazard
  - c. Quasi-natural Hazard
  - d. Seismic Hazard
7. It is NOT best to \_\_\_\_\_ when you are under a volcano warning.
  - a. Protect yourself from falling ash.
  - b. Follow evacuation or shelter orders.
  - c. Just stay home to protect your properties.
  - d. Listen for emergency information and alerts.
8. The LEAST use of a hazard map among the following is \_\_\_\_\_.
  - a. Mitigation plans
  - b. Planning purposes
  - c. emergency response
  - d. Public aid guidelines

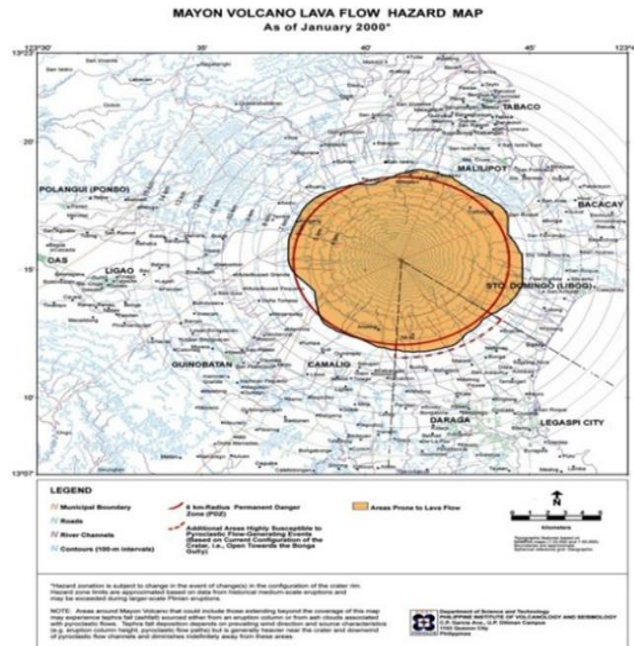
9. The significance of studying the various signs of approaching volcanic eruption is \_\_\_\_\_.
- To acquire knowledge
  - To be well-informed
  - To promote safety
  - To acquire skills
10. The most alarming description of volcanic alert level is \_\_\_\_\_.
- Increasing Volcanic Unrest
  - On-going Hazardous Eruption
  - Hazardous Eruption Imminent
  - Increasing Tendency Towards Eruption
11. The he Permanent Danger Zone (PDZ) from a volcano is \_\_\_\_\_.
- 3 kms. Radius
  - 4 kms. Radius
  - 5 kms. Radius
  - 6 kms. Radius
12. The meaning of volcanic Alert Level 4 is \_\_\_\_\_.
- Increasing Volcanic Unrest
  - On-going Hazardous Eruption
  - Hazardous Eruption Imminent
  - Increasing Tendency towards Eruption
13. Part of the Philippines that is highly vulnerable to volcanic related hazards based on the hazard map is \_\_\_\_\_.

- Calabarzon
- Central Luzon
- Davao Region
- Central Visayas



14. Based on the lava flow hazard map of Mayon volcano above, the distance from the crater that is prone to lava flow is \_\_\_\_\_.

- a. 4 kms
- b. 6 kms
- c. 7 kms
- d. 8 kms



15. The MOST Active among the following volcanoes is \_\_\_\_\_.

- a. Mount Bulusan
- b. Mount Kanlaon
- c. Mayon Volcano
- d. Taal in Volcano

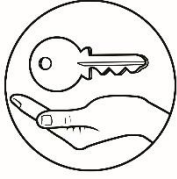


## Additional Activities

### Enrichment Activity

Watch a video or in YouTube about the eruption of Taal volcano last January 12, 2020, however if internet connection is not available, you can have newspaper as your reference material. Further search for a different hazard maps on that particular event, identify the areas affected by the eruption. Write your reactions about the different hazard maps that include places surrounding the Taal volcano.





## Answer Key

### Activity 1

Possible answers

1. Ballistic Projectiles, Ash Fall, Pyroclastic flows, Lava flows, Volcanic gases, Lahar and Tsunami
2. The descriptions of volcanic hazards:
  - a. Ballistic Projectile. Volcanic explosions can propel rock fragments on ballistic trajectories that may differ from the wind direction.
  - Ballistic Projectiles are volcanic materials which are directly ejected from the volcano's vent with force and trajectory. These objects endanger life and property due to the force of impact of falling fragments, but this occurs only close to an eruption vent.
  3. Ash fall are also referred to as tephra. Made of pulverized rock. This is formed due to explosive volcanic eruptions when dissolve gases in magma expand and escape into the atmosphere.
  - Ash Fall– A "Hard Rain" of Abrasive Particles. Volcanic ash consists of tiny jagged particles of rock and natural glass blasted into the air by a volcano.
  - Source: <https://pubs.usgs.gov/fs/fs027-00/>
  4. Pyroclastic Flows. During night time, it produces reddish light color which gives attraction during volcanic eruption.
  - Pyroclastic flows contain a high-density mix of hot lava blocks, pumice, ash and volcanic gas. They move at very high speed down volcanic slopes, typically following valleys
  - Source: [https://volcanoes.usgs.gov/vhp/pyroclastic\\_flows.html](https://volcanoes.usgs.gov/vhp/pyroclastic_flows.html)
  5. Lava flows are molten rocks that flow from the vent of the volcano; it can be non-explosive activity or explosive lava fountains.
  - Lava flows are masses of molten rock that pour into the Earth's surface during an effusive eruption
  6. Volcanic Gases. They provide the driving forces that cause most volcanic eruption.
  - Volcanic gases are gases given off by active (or, at times, by dormant) volcanoes. These include gases trapped in cavities (vesicles) in volcanic rocks, dissolved or dissociated gases in magma and lava, or gases emanating directly from lava or indirectly through ground water heated by volcanic eruption.
  7. Debris Avalanche or Volcanic landslide.
  - Massive collapse of a volcano, usually triggered by an earthquake or volcanic eruption
  - Source: DepEd Disaster Readiness and Reduction TG, 2017
  8. Tsunami
  - Tsunamis are big sea waves or wave trains that are generated by sudden displacement of water (could be generated during under sea eruption or debris avalanche).
  - Source: DepEd Disaster Readiness and Reduction TG, 2017
  3. Yes,
    - a. Volcanic hazards can affect human because it will cause harm to us like respiratory tract infection, skin irritation, and even may lead to death.
    - b. To the animals, it will also cause respiratory tract infection, skin irritation and even cause death to both animals on land and in water.
    - c. To the environment, the loss of properties, destruction of roads, buildings, bridges, agricultural lands, tourist spots, etc..
    4. To mitigate the ill effects of volcanic hazards people should evacuate to a safe place.

### Activity 3

- 1.The important aspects of disaster prevention are the delivery of accurate, readily accessible, understandable and timely warnings.
- 2.The importance of giving appropriate warning in an approaching disaster is for us to be armed with knowledge on how to prevent and mitigate disaster. It also leads us identify hazard and safe areas which are good or best for evacuation and for development centers.
- Furthermore, people are made aware of the dangers in the community and strategize their actions if disaster will come.
- 3.The importance of hazard maps is to identify/give information on the danger areas in our community as well as in the neighboring areas. This hazard maps will give us an idea where to go if natural calamities may happen.

### Activity 4

- 1.Malvar, Balete, Mataas Nakahoy, Lipa, Alitagtag, Taal.
- 2.San Nicolas, Aguncillo, Cuenca,, Tanauan, Talisay, Laurel.
- 3.Batangas provide

### Activity 2

*Possible answers:*

- 1.8 kms
- 2.Sto. Domingo, Camalig, and Malilipot
- 3.Legaspi, Daraga, Guinobatan, Tabaco

### Guide Questions

Possible answers of questions 1, 2, & 3.

- 1.Mt. Hibok-Hibok, Mt. Mayon, Taal volcano, Mt. Kanlaon, Mt. Bulusan, Mt. Pinatubo, Musuan
  - 2.Mt. Mayon: Albay, Taal volcano: Batangas, Mt. Makiling: Laguna, Mt. Kanlaon: Negros, Mt. Bulusan: Sorsogon, Mt. Pinatubo: Zambales, Palay-Palay: Cavite, Musuan: Bukidnon, Talim: Rizal
  - 3.The importance of knowing the different active volcanoes will give us ideas on how to be ready and to mitigate its negative effects to us.
- Knowing that the materials emitted during volcanic eruption such as volcanic gases and the volcanic ash are dangerous to our health. They can damage our respiratory tract leading to respiratory infection. In addition, volcanic ashes can collapse weak structures and damage power line, etc.

### Activity 6

The drawing should show a clear direction/s to the safe place/s where they could evacuate during natural calamities such as volcanic eruption.

### Activity 5

1. Seismic hazard
2. Level 2
3. Level 4
4. Level 3
5. Level 5
6. active volcano
7. erupting volcano
8. dormant volcano
9. extinct volcano

### What I Know

1. C
2. C
3. D
4. D
5. D
6. B
7. C
8. D
9. C
10. D
11. C
12. B
13. D
14. B
15. B

### What's More

Answers may vary

### Assessment

1. C
2. D
3. B
4. C
5. D
6. D
7. C
8. D
9. D
10. B
11. D
12. C
13. B
14. B
15. C

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**For inquiries or feedback, please write or call:**

Department of Education - Bureau of Learning Resources (DepEd-BLR)

Ground Floor, Bonifacio Bldg., DepEd Complex  
Meralco Avenue, Pasig City, Philippines 1600

Telefax: (632) 8634-1072; 8634-1054; 8631-4985

Email Address: [blr.lrqad@deped.gov.ph](mailto:blr.lrqad@deped.gov.ph) \* [blr.lrpd@deped.gov.ph](mailto:blr.lrpd@deped.gov.ph)