



## BACKGROUND

Tsunamis are waves generated in water bodies due to sudden movement of the seafloor caused by earthquakes, volcanic eruptions, landslides, or even an asteroid collision (Richmond, 2017).

As a coastal province, many communities in BC are situated in potential inundation zones, so it is extremely vital for the public to be aware of tsunami hazards and to plan evacuation routes to avoid dangerous tsunami impacting areas.

Regional Districts of BC have published information regarding tsunami preparedness on their websites, along with pre-existing evacuation places where it is safe for communities to gather. Municipality websites and American Red Cross (2010) primarily advise the general public to seek higher ground at minimum of 30 meters above sea level, or travel at least 3 kilometres inland. Factors such as the significance of the agent causing the tsunami, the route of the tsunami waves, and the waves travel time can only be known at the time of adversity, therefore, it is difficult to identify areas that will be categorically safe from impact. However, to remain safe in such circumstances, it is important to plan routes to potential safe locations within nearby distance.

# TSUNAMI EVACUATION SITE FINDER

ASSISTING BRITISH  
COLUMBIA'S WEST  
COAST IN CRISIS  
**BY: ANMOL SAINI**

## ABOUT APP

The purpose of the Tsunami Evacuation Site Finder app is to help the public identify locations and plan routes to evacuate during an approaching tsunami. The app provides district confirmed evacuation hubs as well as possible municipal sites near coasts that are out of danger zones, which may be declared as evacuation places at the time of the event.



[Marti Bug Catcher/Shutterstock](#)



## AVAILABLE FEATURES

There are a total of 55 established evacuation sites identified from regional district databases.

Over 3,300 potential evacuation spots have been simulated from active municipal parcels, within 25 to 75 meters above sea level, to focus on communities that are at most risk of inundation and require immediate shelter.

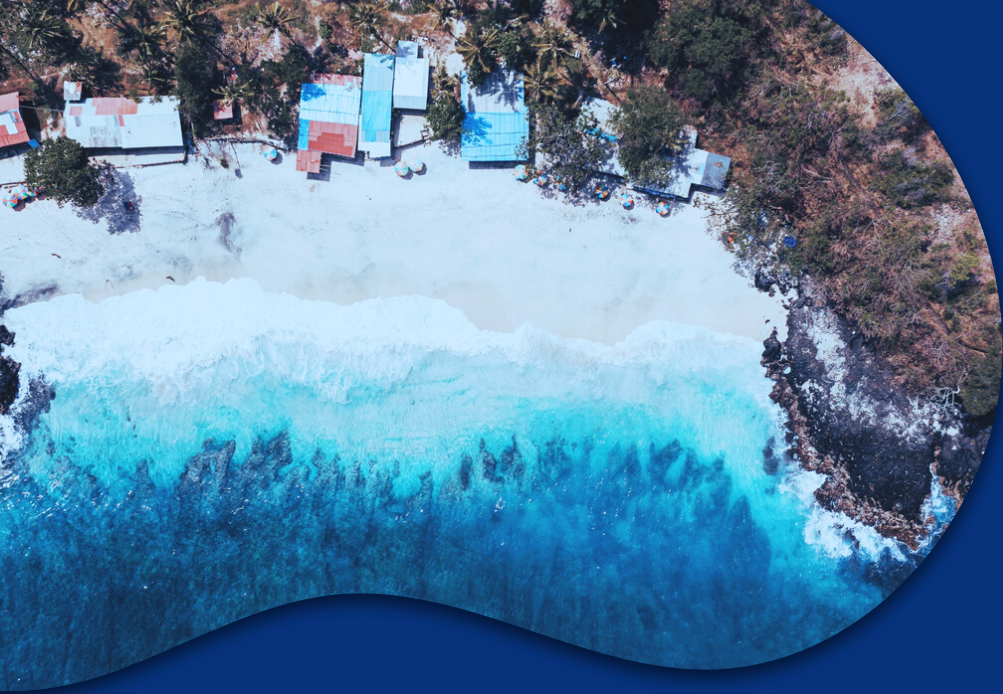
The interactive map contains data of historic volcanic eruptions, historic tsunamis and recent earthquakes to illustrate the regions most susceptible to tsunamis.

Contour lines at 25 meters, 50 meters, and 75 meters are present to highlight areas just outside danger zones, as it is optimal to remain 30 meters above sea level.

The map includes the layer classifying BC coastal regions into 5 tsunami notification zones, provided by the Government of BC (n.d.), to be aware of the advisory warning issued for areas.

“FAILING TO PLAN IS  
PLANNING TO FAIL.”





## AVAILABLE ANALYSIS

Prior Analysis: municipal subdivisions and parks within 25 to 75 meter contours are extracted and the centroids of these parcels define potential evacuation sites.

Natural disasters and evacuation sites are summarized into infographics that can be viewed from the widgets.

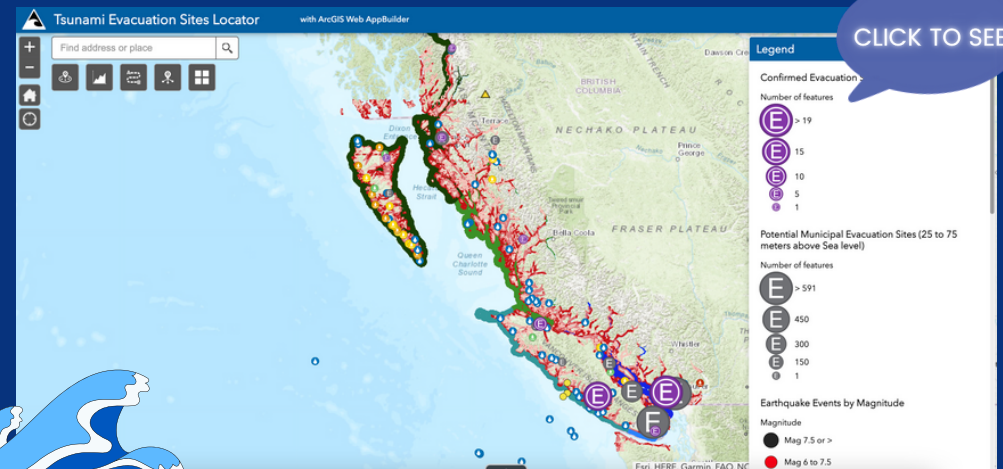
To plan evacuation routes from specific places, the 'Near Me' and 'Directions' widgets are enabled to provide the quickest path to nearby evacuation sites.

Overlayered on a topographic basemap, the app allows users to see if they're located in danger zones and their vertical elevation level. (Basemaps can be changed!)

## THE PROCESS

To understand the application, it's essential to understand where the data comes from and how it is handled.

- 1.The confirmed evacuation sites are manually collected from multiple sources (see References), and geocoded to be visualized geographically.
- 2.About 40 contour vector tiles encompass BC's coast, which are merged and simplified to the lines depicting 25m, 50m, and 75m.
- 3.Land parcels of BC are filtered to only display the municipal owned, active subdivisions and parks, contained within the 25 to 75 meters elevation levels.
- 4.Analysis is performed on these parcels to find the centroids of the polygons, which will result in the potential evacuation sites.



## REFERENCES

- Images from Canva.
- City of Richmond. (2017). Tsunami Study. [URL](#).
- Government of BC. (n.d.). Get prepared for a tsunami. [URL](#).
- Red Cross. (2010). Be Red Cross Ready: Tsunami Checklist. [URL](#).
- Data Sources for Evacuation sites: [Ocean Falls](#), [Masset](#), [Vancouver](#), [Port Hardy](#), [Prince Rupert](#), [Tofino](#), [Stewart](#), [Malcolm Island](#), [Alberni](#), [Sooke](#).
- Other Data Sources: Government of B.C, Esri, OpenDEM.