

**Close to two decades of experience in the field we have become an expert in instrumentation, signal processing, seismic station installation, and monitoring. QuakeLogic engineers will define with you the best solution and provide a quality service to ensure optimum performance of your monitoring systems.**

## **Seismic Surveys: The Importance of Capturing Real-time Data of Seismic Noise and Locating Optimum Locations for Earthquake Sensors**

This technical note explains the importance of seismic surveys as an essential tool for capturing real-time data of seismic noise, which can be used for various purposes, including monitoring ground conditions for construction projects, assessing the impact of seismic activity on infrastructure, and studying the behavior of earthquakes and seismic activity in a given area.

This methodology involves the use of seismic sensors, such as geophones, that are placed on the ground at specific intervals to detect ground vibrations caused by seismic noise. These vibrations are then converted into electrical signals, which are transmitted to a data acquisition system for real-time collection and processing.

To ensure high-quality data, the collected data is often processed in real-time, with various filters and algorithms applied to enhance the signal-to-noise ratio. Once the data has been collected and processed, it can be analyzed to provide information about the source of the seismic noise, such as its type, frequency range, and intensity. This information is essential for understanding the characteristics of the seismic noise and can be used to identify areas that are prone to high seismic activity, and calibration of the seismic measurement devices and their filters applied to the recorded signals.

## What is the Required Equipment?

Equipment requirements for conducting a seismic survey can vary depending on the depth of investigation required and the desired frequency range of the data.



Equipment	Most Common
Seismograph	24-channel with 24-bit dynamic range
Power Source	A 12-V battery with relatively low capacity (e.g., 12Ah)
Receivers	4.5-Hz Geophones (higher frequency geophones can also be used; e.g., 10-Hz, 14-Hz, 40-Hz, etc.)
Source	Sledge Hammer ( $\geq 8$ -lb) (for maximum investigation depth, $Z_{\max} \leq 30$ m)
Strike Plate	Aluminum plate (e.g., 1 ft x 1 ft size with 1/2-in thickness)



Earthquake Risk Management Solutions

## Earthquake Early Warning Systems and Seismic Surveys – Why it matters?

Early detection and warning of potential seismic activity is critical for protecting people and infrastructure. The seismic survey report provided by QuakeLogic is an invaluable tool for locating the optimum locations for earthquake sensors for early monitoring. By analyzing the seismic data collected during the survey, we can identify areas of high seismic activity and recommend the best locations for earthquake sensors. This information can be used to develop an effective earthquake monitoring system, allowing for early detection and warning of potential seismic activity in the region.

As an expert in seismic signal processing, QuakeLogic can provide a full assessment of the seismic survey results and offer a comprehensive report. Our team of experts can analyze the collected data and provide insights into the source and characteristics of the seismic noise. Based on our analysis, we can also offer recommendations for mitigating the impact of seismic noise or assessing the risk of seismic activity on structures and infrastructure. Our aim is to provide clients with a complete understanding of the seismic data and its implications, helping them make informed decisions based on our findings.

Overall, seismic surveys play a vital role in capturing real-time data of seismic noise and identifying areas of high seismic activity. The comprehensive report provided by QuakeLogic is essential for locating the optimum locations for earthquake sensors and developing an effective earthquake monitoring system for early detection and warning of potential seismic activity, which is critical for protecting people and infrastructure.

For more information, contact us at [sales@quakellogic.net](mailto:sales@quakellogic.net)