

California Department of Water Resources Statewide Airborne Electromagnetic (AEM) Surveys

Frequently Asked Questions

The California Department of Water Resources (DWR) is conducting airborne electromagnetic (AEM) surveys throughout California's high- and medium-priority groundwater basins, where data collection is feasible. The AEM surveys will provide information about large-scale aquifer structure that supports local groundwater management and the implementation of the Sustainable Groundwater Management Act (SGMA) and the development of Groundwater Sustainability Plans.

What is AEM?

AEM is a geophysical method that measures the electromagnetic properties of subsurface materials from helicopter mounted equipment. The helicopter is flown by experienced pilots who follow all Federal Aviation Administration (FAA) regulations. The helicopter flies at 200 feet above ground, carrying the equipment approximately 100 feet above ground, and collects data along a defined flight path.



Why are AEM data being collected?

AEM data are being collected to detect and improve the understanding of aquifer structures, or layers, in a groundwater basin and show where there are thick layers consisting mostly of gravels and sands or silts and clays. This information supports the development and refinement of groundwater and hydrogeologic conceptual models and can be used

to identify potential locations for groundwater recharge projects.

How does the AEM method map aquifer structures?

The AEM method measures the distribution of electromagnetic properties in the subsurface to a depth of approximately 1,000 feet below ground surface. The measured response can be displayed as a two-dimensional map and interpreted for the distribution of fine- and coarse-grained materials in the subsurface, which provides information about aquifer structures.

Is the AEM method safe?

The AEM method is not harmful to humans, animals, or plants. The method has already been used to safely conduct [pilot studies in California](#) and is used by local and government agencies both nationally and internationally (for example, Nebraska, Wisconsin, the Mississippi Alluvial Plain, Denmark, Australia).

Will the surveys be noisy?

The geophysical equipment does not generate any noise. The low flying helicopter will generate noise but will not cause a loud disturbance. The noise level generated from the low-flying helicopter will be less than the noise generated from operating a leaf blower or lawn mower.

When will the surveys be conducted?

The AEM surveys will start in summer 2021 and will be conducted in different areas throughout the

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State over several years. The [AEM survey schedule](#) will be regularly updated on the AEM webpage.

Where will surveys be conducted?

The surveys will be conducted in all of California's high- and medium-priority groundwater basins as defined in DWR's [Bulletin 118 Basin Prioritization](#), where AEM data collection is feasible. AEM data will not be collected in basins that are mostly urban.



Will the helicopter fly over my house?

Flight paths will be designed to collect data over open spaces and avoid urban areas and structures containing people or confined livestock. The helicopter will make efforts to fly around people and large equipment.

How long will the helicopter fly in my area?

AEM surveys will be conducted in each survey area over a few days to a couple of weeks, depending on the size of the survey area. The AEM data will be

collected in lines that are several miles apart so it is likely that you will only see the helicopter once during a survey in your area.

Who is conducting the surveys?

DWR has contracted with Ramboll and GEI Consultants to conduct the AEM surveys. Ramboll has extensive experience collecting AEM data worldwide and GEI Consultants have expertise in California hydrogeology and regulations. Ramboll and GEI Consultants will be using vendor services from SkyTEM ApS and Sinton Helicopters to fly and collect the AEM data.

Who is funding the surveys?

The AEM surveys are funded through voter-approved Proposition 68 and the General Fund. No additional funding is required from locals or Groundwater Sustainably Agencies.

Will the AEM data be available to the public?

All AEM data and supporting data will be made available to the public through the [California Natural Resources Agency Open Data Portal](#). Data are not expected to be available until nine months after each survey is complete.

Where can I get more information?

More information can be found at <https://water.ca.gov/Programs/SGMA/AEM>.

Questions can be emailed to AEM@water.ca.gov.