



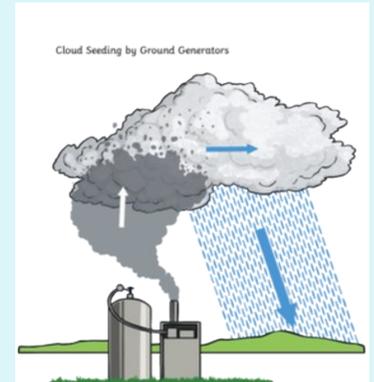
SANTA ANA RIVER WATERSHED WEATHER MODIFICATION PILOT PROGRAM

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Frequently Asked Questions

What is cloud seeding?

Cloud seeding is a weather modification technique that improves a cloud's ability to produce rain or snow by artificially adding condensation nuclei to the atmosphere, providing a base for snowflakes or raindrops to form. Though cloud seeding is often reflective of both ground based seeding and aerial seeding of storms, the pilot program will only include ground based seeding units.



Is cloud seeding safe?

Yes. From 50 years of research, there have been no human effects caused by the cloud seeding agent, silver iodide. The concentration of silver in rainwater or snow from a seeded cloud is much less than the U.S. EPA's standard for silver in drinking water. The potential environmental impacts of silver iodide have been studied extensively and represents a negligible risk to the environment. Cloud seeding operation would not result in any significant increase in silver concentrations in targeted watersheds.

Will suspension criteria impact the effectiveness of the seeding program?

No. In our region, a cloud seeding program would only miss one weather event every two years due to program design to avoid flooding concerns in the downwind areas, which would have only a marginal impact on the overall program effectiveness.

Will increasing snowpack in the upper headwaters benefit the water supply downstream of the Santa Ana River?



Yes. Increases in precipitation in the Santa Ana River Watershed yield a roughly 1.15 multiplicative factor on stream flow. For example, a 10% increase in precipitation will yield a 15% increase in streamflow. Our tributaries and streams are generally more efficient when more runoff is present, as a smaller percentage of the augmented runoff is lost to soil absorption. As a result, a positive impact down the entire stream and river network in the Santa Ana Watershed can be estimated.

Are the estimated increases calculated from assumptions of average rainfall ?

No, the average projected rainfall was not based on the most recent five seasons. Instead, the program was designed to be cost effective even if there were dry years mixed in with average years. Therefore, five seasons from the past 10 historic years were evaluated. These five seasons were selected to represent a modified average that would more accurately represent the benefits of seeding during naturally occurring “dry,” “normal” and “wetter” years.

Is there any chance that the seeding methods can cause wildfires?

The cloud seeding process uses ground based “burn-in-place” flares, meaning the flare never leaves its point of origin. The cloud nuclei generators (CNG) and the Automated High Output Ground Seeding (AHOGS) systems use specialized spark arrestors to catch embers and prevent them from hitting the ground around the installations. In addition, weed reduction is performed to prevent weeds from encroaching on the seeding stations. The AHOGS are also equipped with cameras during the seeding process. These systems have been in use for almost 30 years without any issues in California.



CNG



AHOGS



How much increase in precipitation would be expected in densely populated valleys where seasonal rainfall is lower?

The expected increase over populated areas is projected to be dramatically lower, as they are not a primary target for any of the generators. The largest increases would be for areas downwind from the AHOGS in the SW area.

How are operations handled in areas where recent wildfires risk abnormally high debris flows?

When large fires occur, an experienced weather modification contractor will work closely with flood control districts to determine the best approach for the season or seasons following the fire. Fires can result in some adjustments to the suspension criteria in affected areas of the program. The Santa Ana River Watershed’s target areas are fairly well isolated from each other and are operated during different wind regimes.

