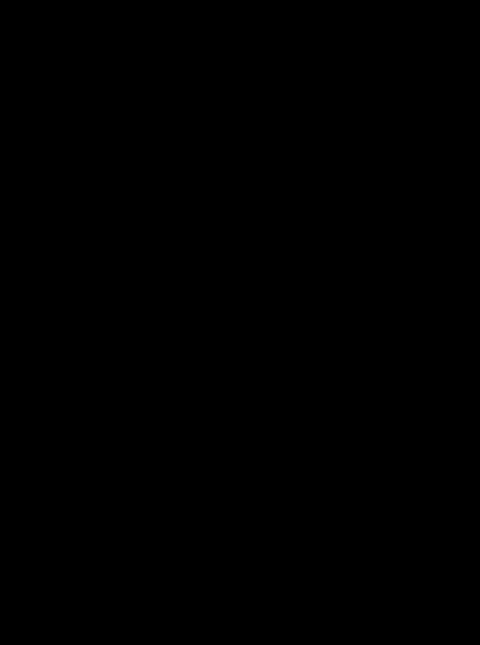


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ADDITIONAL MIGRATION PATHWAY

For contaminants from the Santa Susana Field Laboratory



- Floral pollination at Sage Ranch

SSFL impacts on Bees and food supply:

- There is concern that bees that are brought to Sage Ranch for pollination/honey production purposes may play a role in mobilizing the contaminants in a direct path to human consumption.

Bees in California

- Honey production
- Pollination for crops such as almonds (our states' most profitable) and avocados which are grown at Sage Ranch.

Source:

http://pollinator.com/Pollination_Beekeepers/ca_pollinators.htm

- **CA Pollinators**

- California's almond crop is annually the largest pollination management program in the world, with beekeepers from 38 states supplying nearly a million beehives (close to half the beehives in America) for this event. There are also many other crops that require bee pollination.
- We don't have a very complete list of California pollinators, though more are added each year. Much of the pollination is brokered, so also check the broker list. Also, for almonds, check lists for other western states, as most of the commercial beekeepers are migratory to California. Here are some other sources that may help growers.
- California has an active beekeeping extension program. Dr. Eric Mussen may be able to help growers find pollinators. Eric Mussen, Dept. of Entomology, University of California, Davis, CA 95616; (916)752-0472, Fax: (530)752-1537, E-mail: ecmussen@ucdavis.edu
- For almonds, check the newspapers in the area. One newspaper is online, others may be: Modesto CA

-

- **Blue Orchard Bees**

- ***Gerald Bodily***, Provides pollination service with blue orchard bees from Feb. 15 to May 15. Selma, CA, 559-8962355

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- **Honeybees**

- ***Allen Bee Co.***, Richard D. Allen, 32807 Avenue 9, Madera, CA 93638-8309, 209-674-1842

ALLEN BEE CO. Madera, CA 209-674-1842

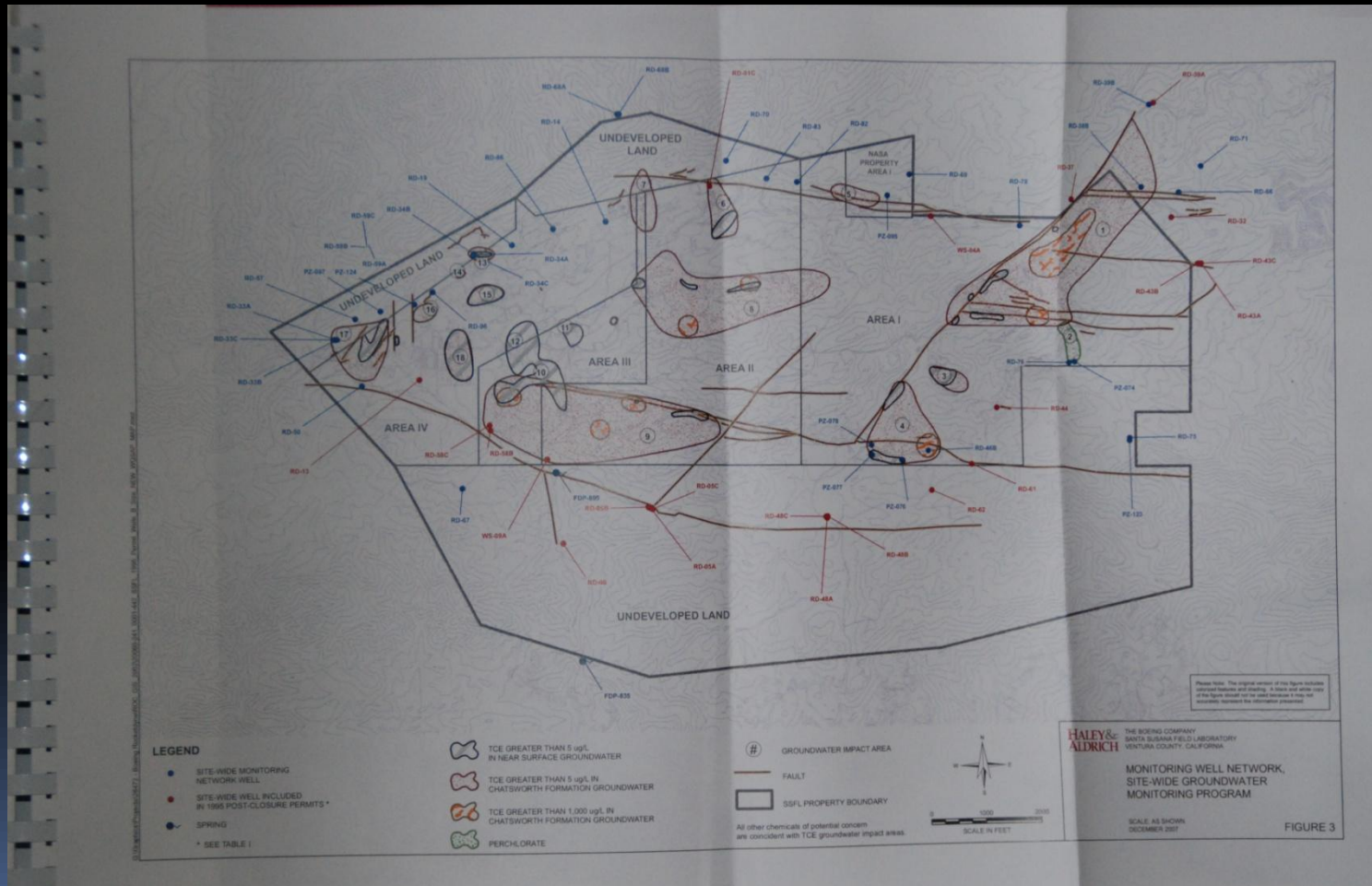


Found at Sage Ranch, adjacent to the SSFL

Sage Ranch North near OS24

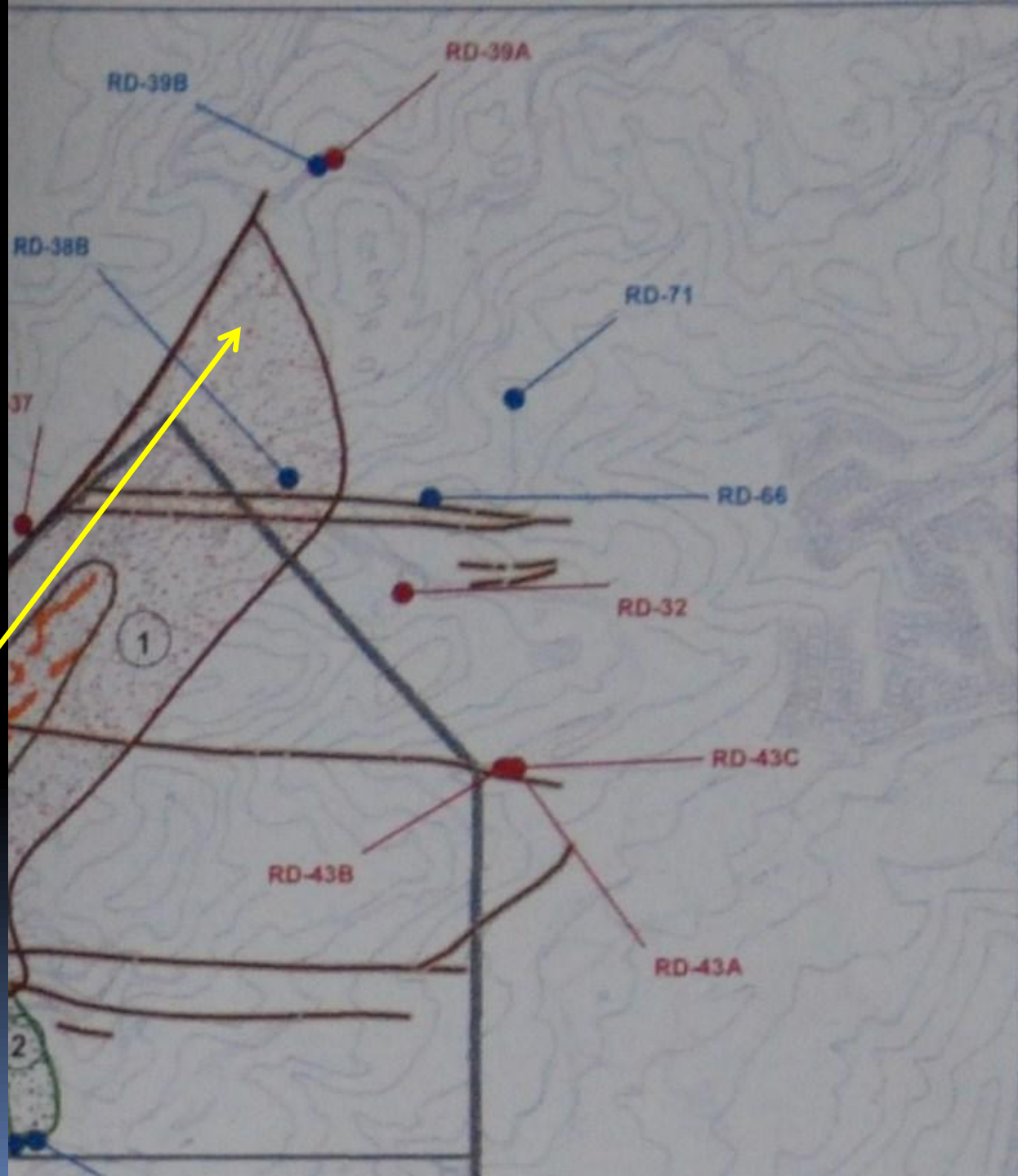


Site wide water quality sampling – Chatsworth Formation water level elevation contour map – August 2007



Please note the location and proximity of wells RD39a and RD38b for comparison purposes, since OS24 is omitted from this diagram. Based on the known TCE plume location, it appears that OS24 which is directly adjacent to the field where the bees have been placed for pollination.

**OS24
approximate
location**

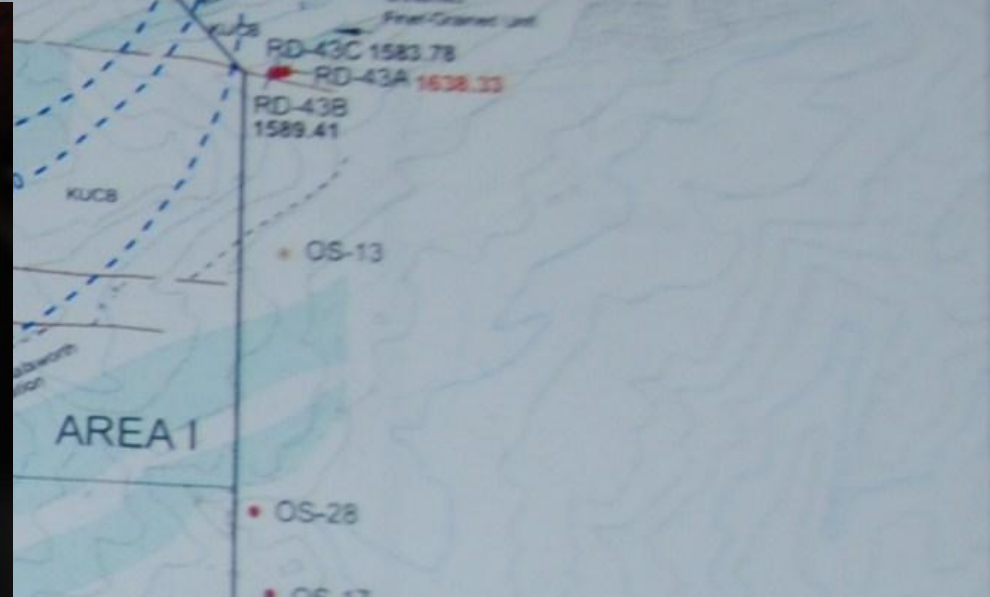
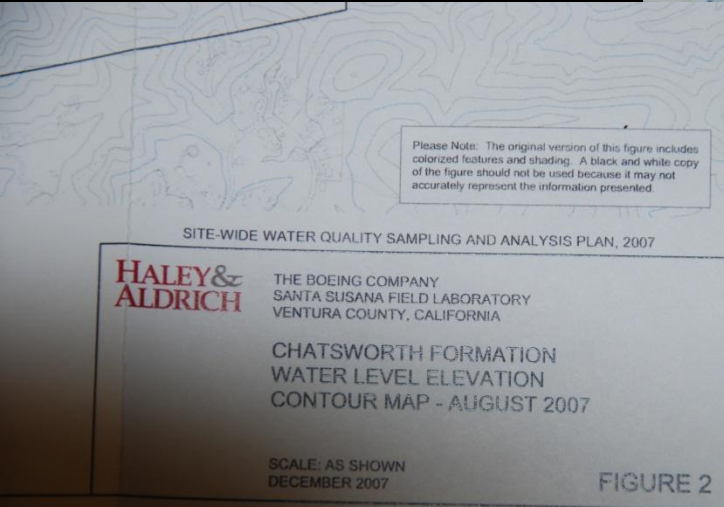


Please note the shaded area indicates TCE greater than 5 ug/L

RD39A location:

OS24 location:

Though OS24 is omitted from the other map, it is shown here to be located within the TCE known offsite plume area.



Bees for pollination from Allen Bee Co., in Madera, CA





Bee activity on 5/1/08, have been in place for at least a week



Other concerns with California Bees:

- Recent article about the disappearing bees and the ramifications to our food supply:
 - **Honeybees Vanish, Leaving Keepers in Peril**
 - Ann Johansson for The New York Times
 - Isaias Corona of Bradshaw Honey Farm, near Visalia, Calif., putting corn syrup — bee food — into hives. The farm has lost about half its bees.
 - By ALEXEI BARRIONUEVO
 - Published: February 27, 2007
 - VISALIA, Calif., Feb. 23 — David Bradshaw has endured countless stings during his life as a beekeeper, but he got the shock of his career when he opened his boxes last month and found half of his 100 million bees missing.
- A honeybee collects nectar from an almond tree in bloom.
- In 24 states throughout the country, beekeepers have gone through similar shocks as their bees have been disappearing inexplicably at an alarming rate, threatening not only their livelihoods but also the production of numerous crops, including California almonds, one of the nation's most profitable.
- "I have never seen anything like it," Mr. Bradshaw, 50, said from an almond orchard here beginning to bloom. "Box after box after box are just empty. There's nobody home."
- The sudden mysterious losses are highlighting the critical link that honeybees play in the long chain that gets fruit and vegetables to supermarkets and dinner tables across the country.
- Beekeepers have fought regional bee crises before, but this is the first national affliction.
- Now, in a mystery worthy of Agatha Christie, bees are flying off in search of pollen and nectar and simply never returning to their colonies. And nobody knows why. Researchers say the bees are presumably dying in the fields, perhaps becoming exhausted or simply disoriented and eventually falling victim to the cold.
- As researchers scramble to find answers to the syndrome they have decided to call "colony collapse disorder," growers are becoming openly nervous about the capability of the commercial bee industry to meet the growing demand for bees to pollinate dozens of crops, from almonds to avocados to kiwis.

Source: http://www.nytimes.com/2007/02/27/business/27bees.html?_r=1&oref=slogin



- Floral pollination at Sage Ranch



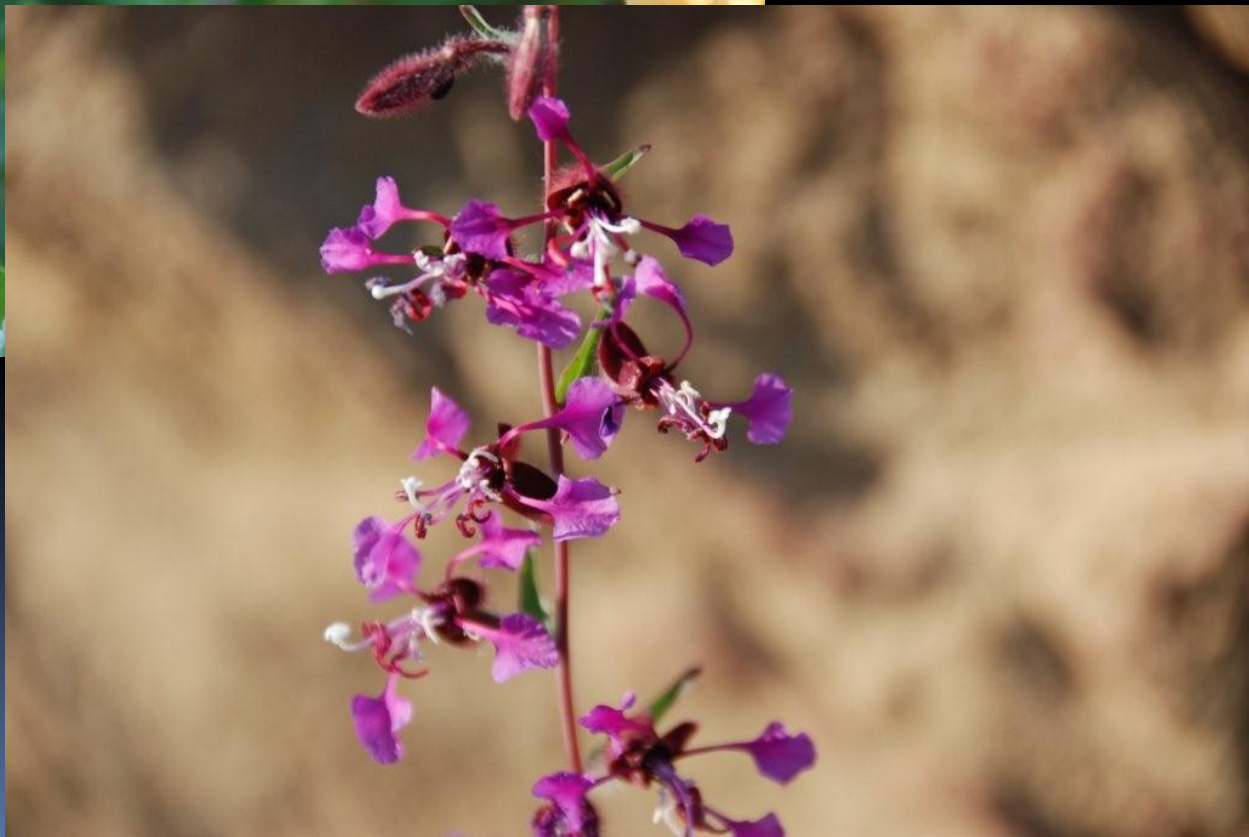
Additional facts from the article:

- Along with recent stresses on the bees themselves, as well as on an industry increasingly under consolidation, some fear this disorder may force a breaking point for even large beekeepers.
- A [Cornell University](#) study has estimated that honeybees annually pollinate more than \$14 billion worth of seeds and crops in the United States, mostly fruits, vegetables and nuts. "Every third bite we consume in our diet is dependent on a honeybee to pollinate that food," said Zac Browning, vice president of the American Beekeeping Federation.
- The bee losses are ranging from 30 to 60 percent on the West Coast, with some beekeepers on the East Coast and in Texas reporting losses of more than 70 percent; beekeepers consider a loss of up to 20 percent in the offseason to be normal.
- Beekeepers are the nomads of the agriculture world, working in obscurity in their white protective suits and frequently trekking around the country with their insects packed into 18-wheelers, looking for pollination work.
- Once the domain of hobbyists with a handful of backyard hives, beekeeping has become increasingly commercial and consolidated. Over the last two decades, the number of beehives, now estimated by the Agriculture Department to be 2.4 million, has dropped by a quarter and the number of beekeepers by half.
- Pressure has been building on the bee industry. The costs to maintain hives, also known as colonies, are rising along with the strain on bees of being bred to pollinate rather than just make honey. And beekeepers are losing out to suburban sprawl in their quest for spots where bees can forage for nectar to stay healthy and strong during the pollination season.
- "There are less beekeepers, less bees, yet more crops to pollinate," Mr. Browning said. "While this sounds sweet for the bee business, with so much added loss and expense due to disease, pests and higher equipment costs, profitability is actually falling."
- Some 15 worried beekeepers convened in Florida this month to brainstorm with researchers how to cope with the extensive bee losses. Investigators are exploring a range of theories, including viruses, a fungus and poor bee nutrition.
- They are also studying a group of pesticides that were banned in some European countries to see if they are somehow affecting bees' innate ability to find their way back home.
- It could just be that the bees are stressed out. Bees are being raised to survive a shorter offseason, to be ready to pollinate once the almond bloom begins in February. That has most likely lowered their immunity to viruses.

Source: http://www.nytimes.com/2007/02/27/business/27bees.html?_r=1&oref=slogin



- Floral pollination at Sage Ranch



Other toxins may play a role:

- Volatile Organic Compounds (VOCs) such as TCE and other contaminants may enter the food chain through the pollination process as well as the consumption of honey.
- The area where bees are being pollinated is located directly within the known TCE plume area to the north of the site.
- Since scientists do not have a clear answer beyond immune deficiencies to explain the bee disappearance, we must investigate the role of other toxic elements such as those found here.

New Migration Pathway:

- Bees play a vital role in the production of our food supply, and therefore may provide another migration pathway allowing the contaminants from the Santa Susana Field Laboratory to impact public health.
- The honey may serve as a vital sampling tool to better understand the impacts to human health and the surrounding environment.
- Please consider this migration pathway and implement a sampling plan to understand the impacts on the honey and other pollination/food-chain related issues.
- Please consider this new information to demonstrate the agricultural uses of the surrounding area that have a direct connection to human consumption on several levels from direct honey consumption, to the possible contamination of other food sources such as almonds and other orchard-grown food products which are vital to California's economy.
- In defining the clean-up standard, the EPA table of PRGs should be used based on known consumption of food-products either grown near the site, or pollinated near the site and grown at other locations, and the importance of protecting our vital food supply.
- Far-reaching impacts of possible toxicity to bees, that may contribute to the current unsolved mystery of disappearing bee populations that may have profound effects on the foods we might have available to us in the future.

- Thank you for your consideration.

Cleanuprocketdyne.org and ACMELA.ORG

- Cleanuprocketdyne.org and ACMELA.ORG mission statement: Environmental Advocacy for the proper characterization and clean-up of the Santa Susana Field Laboratory and other legacy aerospace sites, to the most protective standard for human health and the environment.
- Is in affiliation with International Humanities Center, a nonprofit public charity exempt from federal income tax under Section 501[c](3) of the Internal Revenue Code.
- The Aerospace Cancer Museum of Education is made possible through a generous grant from the Annenberg Foundation showing their ongoing dedication to Environmental Advocacy and Awareness
- Dare to educate yourself and use your voice, so the mistakes of the past do not continue to threaten our future.