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More than a decade after JPL contaminated local water wells, nobody is coming clean — and you still can't drink the water

# pasadena WEEKLY

## Cheers, Baby

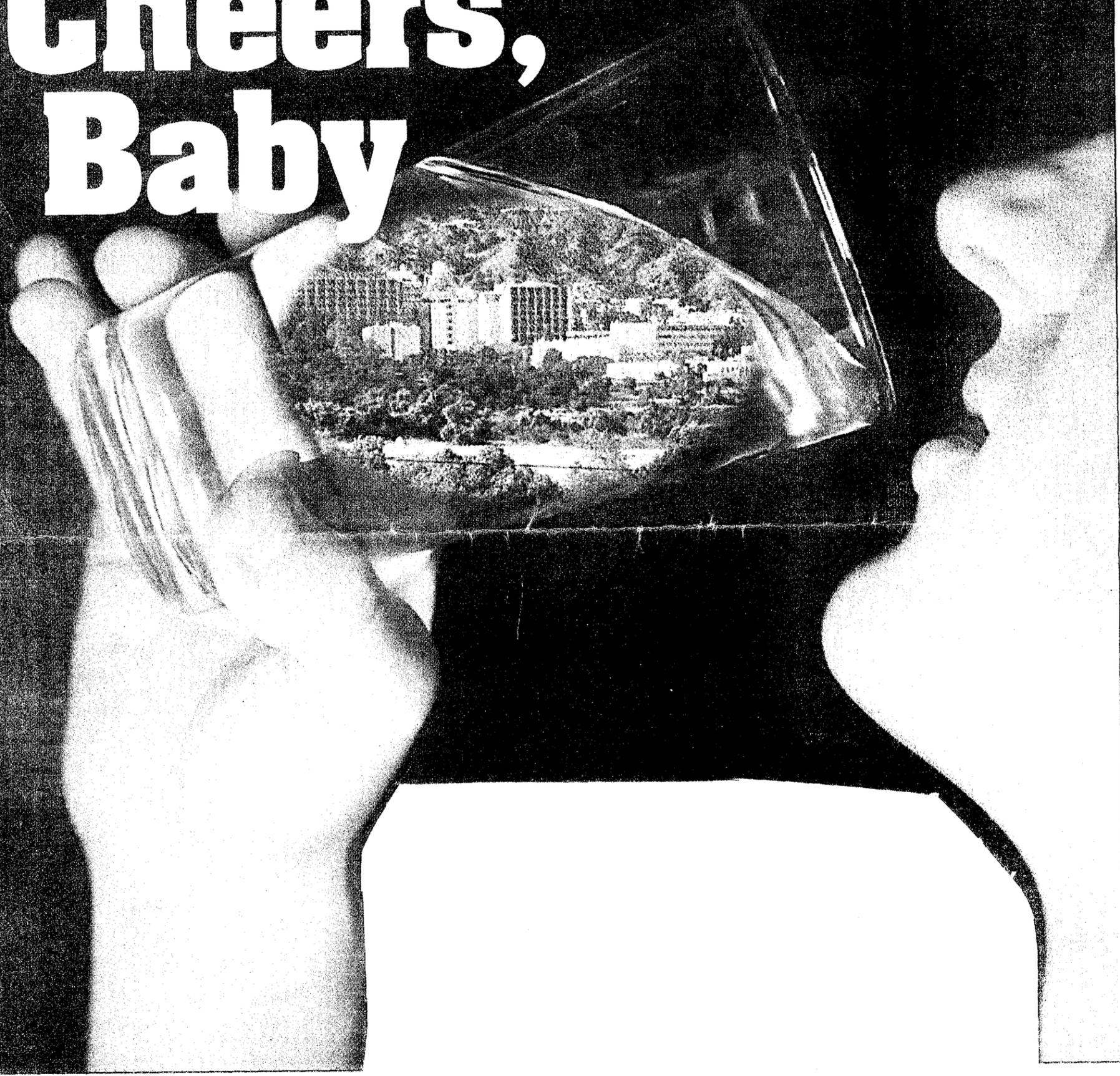
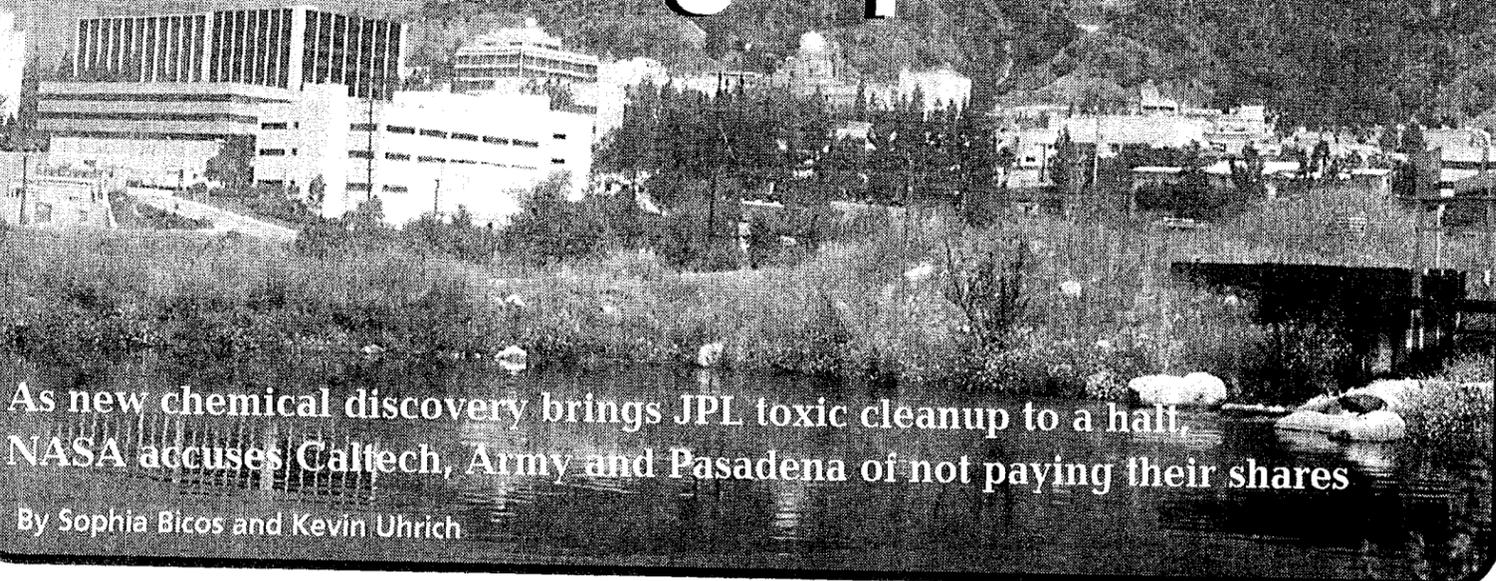


PHOTO ILLUSTRATION BY GREG FRY / PASADENA WEEKLY

# the DIRTY POLITICS of cleaning up JPL



This is the catch basin in the Arroyo Seco, which collects water from the mountains. Jet Propulsion Laboratory is in the background. This water is clean, but could become toxic if mixed with contaminated ground water near the plant. Chemical contamination at the site was first discovered in the mid-1980s, and some residents claim that contaminated ground water has given them cancer.

SOPHIA BICOS / PASADENA WEEKLY

As new chemical discovery brings JPL toxic cleanup to a halt, NASA accuses Caltech, Army and Pasadena of not paying their shares

By Sophia Bicos and Kevin Uhrich

**D**enise Bickerstaff considers herself lucky to be alive.

In 1987, the life-long Altadena resident was diagnosed with Hodgkin's disease.

Six months earlier, her older sister, Roxy, was diagnosed with the same thing. Their mother was already undergoing treatment for colon cancer by the time the sisters got the bad news, which for 42-year-old Denise came only two months after her wedding. All three women are now in remission after undergoing surgeries and extensive treatments.

The trio — along with dozens of others — allege in a federal class-action lawsuit filed against Jet Propulsion Laboratory, Caltech and the U.S. government that their illnesses are spawned from chemicals dumped near the world-famous JPL space laboratory that have since seeped into the area's water supply.

But as the plaintiffs wait for answers, the effort to clean up the hazardous material around JPL grinds on with an ever-expanding group of agencies poking into the toxic mess, looking for someone to blame and for some hope that the city's water eventually can be cleansed.

The cleanup effort — computed, in more conservative times, as a \$114 million job — has even drawn heat from NASA, which is examining alleged conflicts of interest between JPL, Caltech and possibly the city of Pasadena.

Crippling the effort to decontaminate the water supply was the recent discovery of perchlorate, a chemical used in the production of solid rocket fuel that may cause thyroid and other

health problems.

"JPL, in my mind, has always been a good neighbor. I was shocked to find out that they had dumped chemicals," Bickerstaff said. "I have no idea when there will be a resolution. I suspect it will be a long and involved process. I'm not holding my breath."

While lawyers and bureaucrats haggle over who's responsible for cleaning up the toxic brew made by government and military scientists over the past 60 years, an audit prepared by NASA's Office of Inspector General alleges the city, the U.S. Army and Caltech have ducked paying their share of the cleanup costs. In the meantime, regional water experts, government officials and people like the Bickerstaffs are asking even more troubling questions: What ecological damage has perchlorate already caused? And will the discovery of the chemical delay the nearly six-year cleanup effort at the Environmental Protection Agency's Superfund site?

To Tim Brick, a Pasadena water-use expert, the nagging question is simply why all of the attempts to cleanup JPL's abundant contamination problems have taken so long. "I've been hearing about all of this for more than 12 years," said Brick, Pasadena's representative to the Metropolitan Water District who most recently served as a city consultant for the development of the Hahamongna Watershed Park, a proposed 300-acre park next to JPL.

"They have been so closed-mouthed about this...," Brick said of the government's ongoing cleanup efforts at the space lab. "I would like to know what the hell they're doing up there. It's just



SOPHIA BICOS / PASADENA WEEKLY

Gauges around the monitoring well in the parking lot on JPL property test the ground water for contaminants and chemicals.

amazing to me how long this thing has been dragging on."

Mark Repperda, the EPA's manager of the toxic cleanup at JPL, maintains perchlorate poses no immediate danger to local water supplies. However, Repperda and area water officials acknowledged there is no known way to rid local water wells of the chemical.

"It can be treated in the laboratory, but no one knows if [that extraction process] can be scaled up to commercial application," Repperda said in a telephone interview from his San Francisco office.

#### CONTAMINATION MAY BE SHIFTING

Prior to last summer's discovery of perchlorate, Repperda said it looked as though EPA was on a "glide path" to finishing the

cleanup of the numerous volatile organic compounds — among them known carcinogenic solvents trichloroethylene, tetrachloroethylen and carbon tetrachloride — that have been found over the past several years in groundwater supplies around JPL. But now, "perchlorate has certainly affected things because there is no known treatment for it," he said.

Further, Repperda said, there is still no estimate on how much the inclusion of perchlorate on the EPA's long list of contaminants will drive up the cost of the ongoing cleanup, which government officials initially estimated could run as high as \$114 million. For the time being, panels of experts are being formed to look at JPL's problems with perchlorate, much like boards created to study similar chemical pollution problems

being experienced near aerospace facilities in Sacramento, Nevada and Virginia. That figure, Repperda said, has been shelved. A new estimate has not yet been determined.

"It's impossible to say what the final price tag will be. There is so little data" on perchlorate, Repperda said. Peter Robles, environmental manager and remedial project manager for NASA at JPL, said neither agency has performed a cost analysis on cleaning up what Repperda called "a plume of contamination" caused by perchlorate. "We have no idea how much it will cost, and the EPA has not set a cost."

That plume, said Vera Melnyk Vecchio, district engineer in charge of the metropolitan district for the California Department of Health Services' Drinking Water Program, is now migrating toward other wells.

"With wells closed, the contamination has to go somewhere," Vecchio said. At present, only the city of Pasadena's municipal water wells have been affected, she said.

Brad Bowman, principal civil engineer for the Pasadena Water and Power Department, explained that groundwater moves very slowly and that the "closure of the well shouldn't cause a problem."

Although no one is really sure what is a safe level of perchlorate exposure, the state has set 18 parts per billion as the standard. Federal officials are expected to issue a toxicology report on perchlorate by September.

But, Bowman said, "It will probably be a few years before they [the federal government] set a maximum contaminant level."

To get an idea what one part per billion means, it is the equivalent of one drop of water in an Olympic-size swimming pool, said Inna Babbitt, water quality laboratory supervisor for the city's Water and Power Department. "The truth is," said Babbitt, "very little is known about perchlorate at this time."

The Pasadena municipal water wells were first tested for perchlorate on June 9, 1997. Perchlorate contamination, which was detected in eight of the city's 14 active wells, ranged in levels from a low of four parts per billion to a high of 54 parts per billion. The city well that tested at the highest level, the Arroyo Well, was closed on June 25, 1997. That well remains closed and has since shown levels of perchlorate contamination as high as 160 parts per billion.

But aside from figuring out what to do about perchlorate, the problem facing government officials is determining who is actually responsible for making the mess and who should clean it up. Robles, NASA's person at JPL, said Caltech, which manages JPL, disputes the findings of a 1997 audit that found the college failed to pay its share of the cleanup costs. So does the U.S. Army, which assumed ownership of JPL from Caltech in 1945.

During that time, Caltech developed missile systems and satellites for the Army. In 1958, the Department of Defense transferred ownership of the lab to NASA, which has been responsible for such technological interstellar marvels as Galileo, Cassini and, most recently, the Mars Pathfinder and Mars Global Surveyor.

**CLEANUP EFFORTS AT A STANDSTILL**

Robles and Olga Dominguez, acting director of environmental management for NASA, said the space agency is — for now — paying all the costs involved with the JPL cleanup. Robles assures, "NASA is taking full responsibility for the public health. Public health comes first at all times." In fact, Robles says that even beyond perchlorate and the known volatile organic compounds, NASA is also looking for any other chemicals that may have been dumped at JPL and might pose a public health risk.

In spite of those assurances, Alex Carlos, the JPL cleanup manager for the state Regional Water Quality Control Board, said the discovery of perchlorate has brought the EPA's cleanup efforts at JPL to a standstill.

Carlos said that in 1997 a decision was made to employ a "pump and treat" system, a process that uses carbon filtration to eliminate contaminants. The system needed for that process was already in place by the time that decision was made. Back in 1990, two years before the lab site had even been designated as a Superfund site by the EPA, Pasadena city and Caltech officials had contracted with Calgon Carbon Corp., a company that specializes in just



Altadena resident Denise Bickerstaff, who has Hodgkin's disease, is one of 53 plaintiffs involved in a federal class-action lawsuit against JPL, Caltech and the government. Bickerstaff and other plaintiffs, who all live near JPL, all suffer from cancer.

such water treatment purification systems, to set up what was supposed to be a temporary treatment plant to cleanse municipal water supplies. Since then, the city's contract with Calgon has been amended several times, with the latest amendment in April. At that time, the Pasadena City Council approved a three-year extension of the Calgon contract — the contract with Calgon was initially supposed to expire in 1993 — at a cost of \$800,000. According to a report prepared by city Water and Power Department engineer Farid Niknam, the city will be reimbursed by Caltech.

But, as Carlos explained, that carbon filtration process works only to eliminate volatile organic compounds. "When they found perchlorate, the whole thing was thrown off. This form of treatment is useless for getting rid of perchlorate," Carlos said.

**DIFFERENCES OF OPINION**

Ellen Norris, an auditor with NASA's Office of Inspector General, said both Caltech and the Army were notified last July for the first time that they were being considered as "potentially responsible parties" in the JPL cleanup effort. Both entities are now strongly disputing those findings, she said.

Just as the cleanup effort has taken years, simply getting the parties to the negotiating table to determine who's responsible could also be a protracted process. "It is my understanding that negotiations will probably take place in about a year," Norris said.

NASA's Robles said Caltech is

at least willing to negotiate. The Army, on the other hand, "is not even willing to come to the table," he said. NASA has been trying to get the Army to discuss the situation. But, Robles said, "The Army has a difference of opinion on when these things happened and about who actually did it."

In a one-paragraph press release issued July 1, Caltech spokesman Max Benavidez wrote: "The U.S. Army and Caltech have been designated PRPs [potentially responsible parties] by NASA. Caltech and the U.S. Army have agreed to meet with NASA to discuss remediation. We look forward to a positive result from these discussions."

Benavidez, however, refused to discuss NASA's allegations of conflict of interest. Benavidez also declined requests to speak with Caltech President David Baltimore.

"This is the only thing we are saying at the moment," Benavidez said of the press release. "This is old news. This is over a year old, and we're not going to say anything about that."

Regarding NASA's audit, Michael Reilly, an assistant district counsel for the Army Corps of Engineers, said in a telephone interview from his Omaha, Neb., office, "We haven't either accepted or rejected those findings. Later this year, we are meeting with several other parties to discuss what needs to be done." And, Reilly said without elaborating, "Not all of the parties who will be involved in this discussion have been identified as of yet."

**"I suspected there was some kind of environmental cause."**

**Denise Bickerstaff,** on the circumstances surrounding she and her sister contracting Hodgkin's disease.

**WATER WATER EVERYWHERE, YET ...**

Nearly half of the water supplied to Pasadena area residents comes from the Raymond Basin, a 40-square-mile underground water storage area fed by the Arroyo Seco that runs through Pasadena and most of the communities surrounding it. The remaining bulk of Pasadena's water comes from the Colorado River and is supplied through the Metropolitan Water District. While alarmingly high levels of perchlorate have been detected in the river, particularly where it runs near Las Vegas, the perchlorate contained in the water being supplied to Pasadena has been measured at seven parts per billion and is not considered dangerous, said Bowman of the city's Water and Power Department.

The JPL site, located in the foothills of the San Gabriel Mountains directly north and above the Arroyo Seco, and adjacent to the planned Hahamongna community park, has been listed as an EPA Superfund site since 1992.

Chemical contamination at the site, minus perchlorate, was first discovered in the mid-1980s, according to government documents. Since the Superfund designation, NASA has been required by the EPA to monitor the basin's water quality on a quarterly basis, then report its findings to the EPA and the state Regional Water Quality Control Board. For its part, the city is working with Calgon and the American Waterworks Research Foundation in an effort to find solutions for dealing with perchlorate.

Within a 2-mile radius of the space lab there are four city wells, two wells owned by the Lincoln Avenue Water Co. and nine other wells that supply water to parts of Altadena, Pasadena and La Canada Flintridge. On the JPL property alone there are 20 monitoring wells, some of them located in the space lab's parking lots. Five more monitoring wells are dispersed around the site, according to the maps contained in quarterly groundwater monitoring reports prepared for JPL by Costa Mesa-based Foster Wheeler Environmental Corp.

The maps, along with other data concerning the JPL Superfund site, are available at the Pasadena Central Library, the Altadena Public Library and the La Canada Flintridge County Library.

But it is the city's four production wells, and the other wells that supply drinking water to local residents, where high levels of volatile organic compounds and potentially dangerous levels of perchlorate have been found that have generated the most concern among local, state and federal regulators.

Although volatile organic compounds have been found in the Lincoln Avenue Water Co. wells located near JPL, perchlorate has not been detected in high enough quantities to trigger emergency action, officials said. The amounts of perchlorate found in Pasadena wells are not listed on the Foster Wheeler maps. It was not immediately known exactly how much perchlorate has been found in the Lincoln Avenue water wells.

Monitoring wells on the JPL site itself have shown contamination levels ranging from a low of 4.4 parts per billion to a high of 550 parts per billion, more than 30 times those allowed by current water quality standards, according to Foster Wheeler maps.

Bob Hayward, general manager of the Lincoln Avenue Water Co., said there are still enough volatile organic compounds in Lincoln Avenue water to require ongoing treatment, which he said the water company is doing at its own expense.

## AT A STANDSTILL

As part of an agreement with Caltech, Hayward confirmed a NASA audit finding that Caltech paid the water company \$50,000 in 1994 in exchange for a pledge not to sue the institution over the contamination. The so-called "Standstill Agreement," which has since expired, was struck as a result of threatened litigation on the part of the Lincoln Avenue Water Co., according to the NASA audit. Benavidez also refused to discuss the college's negotiations with the local water company.

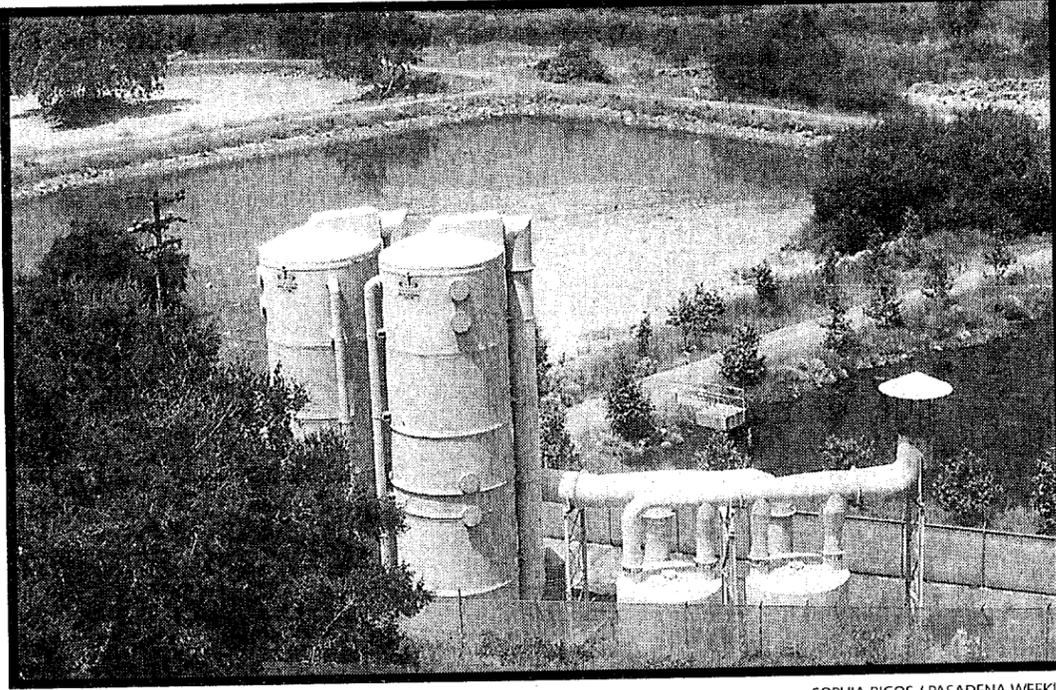
Hayward said Caltech and Lincoln Avenue Water Co. officials are presently hammering out a permanent settlement, which the audit claims could net the water company \$2.5 million over the next two years. That information was culled from a report sent to the Weekly by NASA following the filing of a Freedom of Information Act request. However, information about the settlement negotiations was contained in an unaltered version of the same report that was subsequently obtained by this newspaper.

Hayward also said Caltech and JPL "highly dispute" the \$2.5 million figure used in the NASA analysis as being too high. Although Hayward said negotiations are going well, the water company will sue if Caltech does not meet its demands.

"Lincoln Avenue has a treatment facility set up to deal with these contaminants and wants JPL and Caltech to compensate them for this," Hayward said. "The \$50,000 Lincoln received was to create a positive environment for the negotiations."

According to the NASA audit, Caltech, which operates the lab, and the city, which negotiated waste disposal agreements with Caltech, avoided paying any portion of the \$17.5 million that has already been spent by NASA on the cleanup of JPL.

In fact, the audit found Caltech was reimbursed by NASA for the on-site work it had contributed to the cleanup. As of last July, NASA had paid every



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**The Calgon treatment facility treats the water for volatile organic compounds — but not perchlorate — that have seeped into the spreading grounds near JPL.**

penny that had been spent up to that time and was expected to pick up the rest of the originally estimated \$114 million that was needed to finish the job. According to the unedited audit, NASA could possibly recover \$57 million from the potentially responsible parties identified by L.G.S. Turner and Associates, an independent firm hired by NASA to perform file searches of those parties.

The first series of searches completed in July 1996 found that "The parties identified as having the most significant responsibility were Caltech, as a past owner and the continual operator, and the Department of Army, as a past owner. Other

parties identified included the U.S. Forestry Service, the state of California and the city of Pasadena."

Further, the audit states, "Caltech (the disposer) and the city of Pasadena (the approval authority) are liable for a portion of the costs associated with the groundwater treatment activities. Yet," the audit continues, "NASA relied on Caltech to negotiate the agreement with the city of Pasadena while Caltech clearly had a conflict of interest. As a result, both Caltech and the city may have unjustly benefited from Caltech's position, as NASA paid the full costs of this agreement."

As of this writing, Robles,

NASA's on-site cleanup manager, said the city of Pasadena is not being considered a potentially responsible party. But Robles went on to say that other potentially responsible parties, including the city, could be considered at a later time.

## OPEN TO THE PUBLIC

The city has spent roughly \$2 million since 1992 on development of the Hahamongna Watershed Park. Most of that money has gone to planning, maintenance of the property and administrative costs. Another \$3 million is in reserve. By the time it's finished, with biking, equestrian and hiking trails, along

with wildlife areas and sports fields, Hahamongna is expected to cost up to \$15 million and be larger than all of Pasadena's existing city parks combined.

Although Brick expressed serious concerns about underground water contamination at the site, he said most of those poisons are more than 100 feet below the earth's surface. "It's the groundwater that's contaminated," he said, adding that some volatile compounds are rendered impotent once they get into the air and probably wouldn't have much effect if that happened. "I don't think anyone's going to break out in boils if they walk across the park." But, he said, "We don't know about perchlorate."

A tour of the area showed no signs warning of any danger, or indicating that the EPA has designated the area as a Superfund site. The area, which is open to the public, is regularly used by equestrians and hikers. Spreading grounds that catch clean mountain water are located on the site next to the Calgon treatment plant. Some water officials wonder why the treatment plant is not located on the actual JPL site instead of on city property that's been designated for a park.

Like Brick, the Bickerstaffs are also wondering what affect perchlorate and the other chemicals that are now part of the community's water supply will have on people's health.

Over the past year, the number of alleged victims named on the lawsuit against JPL, Caltech and the U.S. government has increased from 31 to 53.

Said Christine Myers, wife of plaintiff Rick Myers of La Cañada Flintridge, whose leukemia went into remission after a bone marrow transplant at City of Hope: "Unfortunately it isn't until something terrible like this happens to our loved ones that we start paying attention."