Mountain View Sites Update

MEW • MOFFETT • GTE • JASCO

United States Environmental Protection Agency • Region 9 • January 2003

EPA Evaluates Indoor Air Pathway

The U.S. Environmental Protection Agency (EPA) invites you to attend an open house and community meeting to learn more about how EPA is assessing potential indoor air quality at four federal cleanup sites in Mountain View, California (see Figure 1).

The sites we will be discussing are: the Middlefield-Ellis-Whisman (MEW) Study Area, the GTE Government Systems (GTE) site, the JASCO Chemical Company site, and the former Naval Air Station Moffett Field site (see Figure 2).

The community meeting will be held at the Mountain View Community Center, 201 South Rengstorff Avenue, on Wednesday, January 22, 2003. The event will begin with an open house poster session from 4:00 pm to 6:30 pm, where individuals can talk one-on-one with people involved in the site cleanups.

From 7:00 pm to 9:00 pm, EPA will present information on the current status of the cleanup programs at these sites, how contamination can move into indoor air, how EPA evaluates potential health risks, and EPA's new draft toxicity findings for trichloroethene (TCE). Following the presentations, you will have an opportunity to ask questions of our Mountain View sites panel.

Open House and Community Meeting

Wednesday, January 22, 2003

4:00 pm - 6:30 pm Informational poster board session. EPA staff will be available to answer questions in an "open house" format

7:00 pm - 9:30 pm Presentations followed by question and answer session

Mountain View Community Center

201 South Rengstorff Avenue

(For agenda and parking directions, see back page)

What EPA is Doing

Figure 1: Mountain View Sites Location

EPA has been overseeing cleanup activities at these four sites for many years. However, new information concerning TCE and potential indoor air quality impacts from site contamination has led EPA to begin additional studies and take actions concerning the groundwater-to-indoor-air pathway.

EPA is working closely with the San Francisco Bay Regional Water Quality Control Board to assess the groundwater contamination in the area to determine whether site conditions require further evaluation of the "vapor intrusion pathway" (described below). EPA is collecting the information necessary to evaluate this pathway at sites throughout EPA Region 9.

EPA will continue to provide information about the results of studies and actions at the Mountain View sites through fact sheets, updated documents in the Mountain View Public Library and meetings, as appropriate. EPA will ensure that the cleanup remedies in place continue to be protective of human health and the environment and, if necessary, will take appropriate actions to protect the public from site contamination.

To understand what EPA is doing at the Mountain View sites to address potential indoor air contamination from TCE and other volatile organic chemicals (VOCs), this fact sheet: (1) explains how contamination can move into indoor air, which EPA calls the "vapor intrusion pathway;" (2) discusses potential sources of VOCs in indoor air; (3) explains how EPA evaluates potential health risks; (4) provides information about EPA's new draft TCE toxicity assessment findings; and (5) presents an overview of how EPA is addressing these issues at the four Mountain View sites.

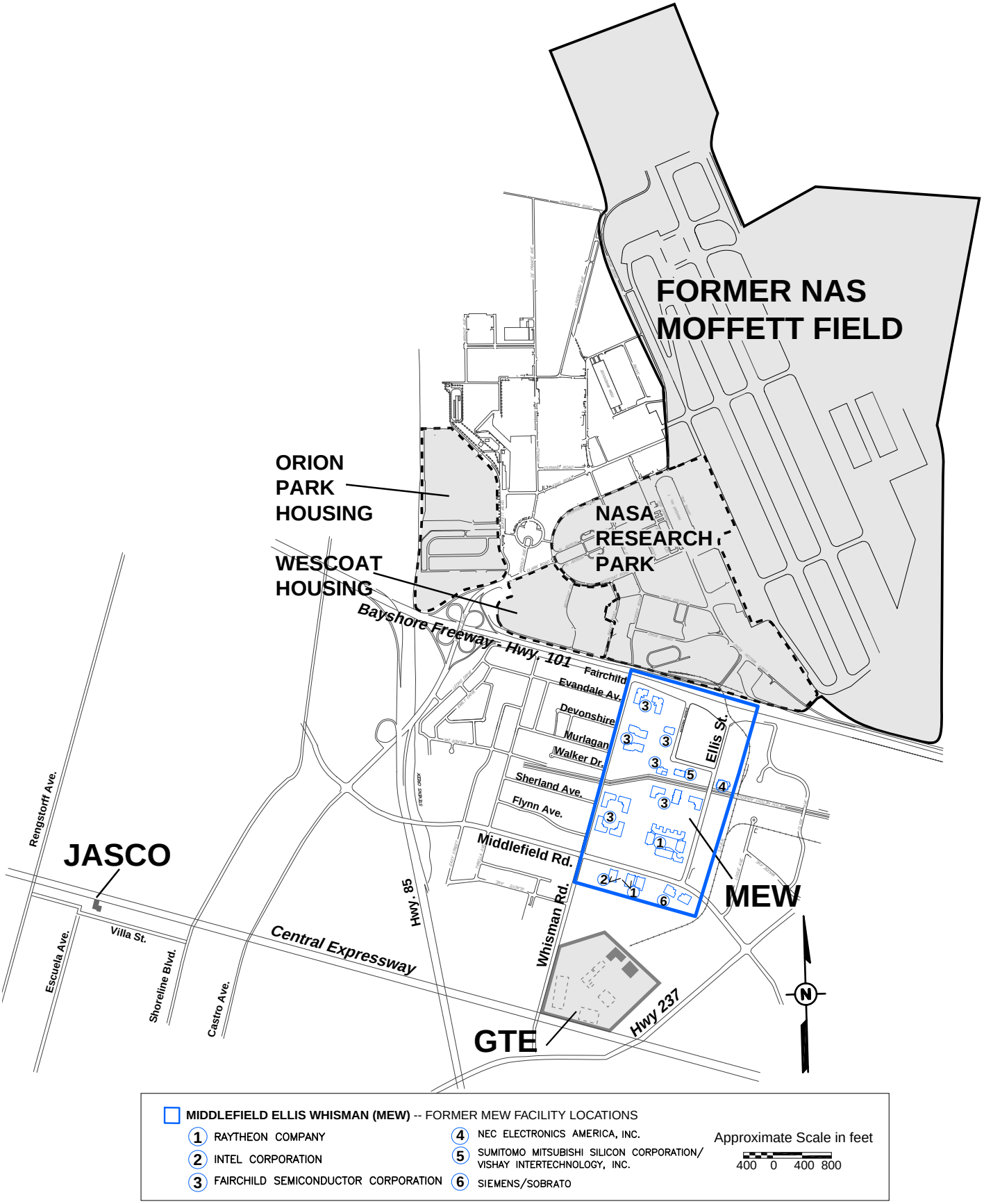

Figure 2: Locations of the Mountain View sites

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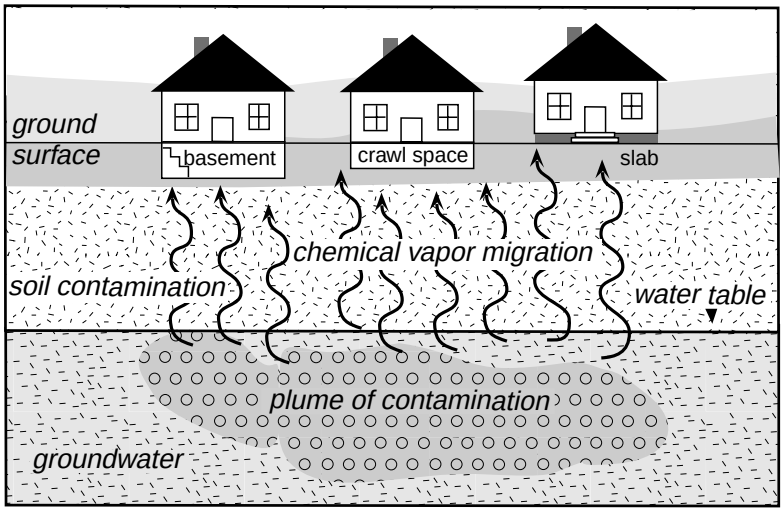


Figure 3: Schematic of Vapor Intrusion Pathway

What is the Vapor Intrusion Pathway?

The vapor intrusion pathway is the means by which volatile chemicals in shallow groundwater or soil may enter into buildings and affect indoor air quality. Volatile chemicals (i.e., those which evaporate easily, such as TCE) may emit vapors that migrate upward through the soil and cracks in the floors or through plumbing conduits and into buildings (see Figure 3).

A possible, although uncommon, situation is that these vapors can accumulate indoors at levels that may pose potential health risks, either from acute (short-term) exposure (days to weeks) or from chronic (long-term) exposure (months to years).

There are many factors which affect whether such vapors can accumulate at levels of concern inside a building, including: how volatile the chemical is; the nature of the subsurface soil; the chemical concentrations in soil, soil gas, and groundwater; the depth to groundwater; and the type and construction of the overlying buildings.

Potential Sources of VOCs in Indoor Air

The indoor air pathway is complex, and indoor air quality is affected by many factors other than subsurface vapor intrusion. Some of the most significant VOC impacts on indoor air quality come from the use of consumer products, personal habits, and outdoor air intrusion. For example, VOCs in cleaning agents, room deodorizers, dry-cleaned clothing, cigarette smoke, vehicle exhaust, and industrial emissions can all affect indoor air quality.

Certain adhesives, spot removers, paint removers, scented candles, and automotive cleaning and degreasing products can also be a potential source of TCE found in indoor air. TCE, which may be present in urban air, can also enter indoor air through open windows and ventilation systems if TCE is also present in outdoor air.

How EPA Evaluates Potential Health Risks

Human exposure to chemicals can be of potential concern depending on a number of factors. The most important factors are the toxicity of the chemical and the amount and duration to which someone is exposed. Risk assessment is one of the tools used by EPA and other regulatory agencies to determine if chemicals in the environment may cause human exposures which are so high as to create a potential health hazard. Risk assessment is also used to help regulators set realistic goals for reducing exposure to toxic chemicals to minimize potential health threats to the public.

The goal of a risk assessment is to estimate the probability that harm may occur following exposure to a particu-

lar chemical in the environment under current or expected future conditions. In order to be sufficiently health protective, most EPA risk assessments are performed assuming that the most sensitive members of a population (children, the elderly, etc.) are subject to the "reasonably maximum possible levels of exposure".

EPA believes that if the most sensitive people are protected from even the reasonably maximum exposures, an adequate margin of safety will be ensured for everyone. But this does not mean everyone is actually exposed at this level. This approach is taken to provide a sufficient margin of safety for everyone. It is a conservative method that aims to be more protective of human health.

What is TCE?

Trichloroethene (TCE) is a solvent that has been widely used by industry as a cleaning and degreasing agent. TCE is a volatile organic chemical, which means it evaporates readily in air.

EPA uses a toxicity assessment to identify what types of health effects each chemical can cause and how much exposure is harmful. These assessments usually occur independent of any specific site or community.

EPA combines the estimate of exposure to chemicals present in the community with the information in the toxicity assessment to provide an estimate of the potential for harm (risk).

The results of the risk characterization are probabilities, not certainties. They are typically based on maximum exposures to the most sensitive members of a community. Risk characterizations are never predictions of health outcomes for any individual in a community. For carcinogens (cancer-causing chemicals) under the Superfund program, EPA has established a protective risk range based on estimated theoretical cancer risks of between 1 and 100 additional cases of cancer in a population of 1 million people exposed to a carcinogen.

EPA's Draft TCE Toxicity Assessment

EPA has recently completed a draft reassessment of the health risks posed by TCE. Once it is finalized, this toxicity assessment update will replace the previous health risk assessment for TCE that was conducted in the late 1980s. The draft assessment was available for public comment between September 2001 through January 2002. A group of TCE and environmental health experts convened by the Science Advisory Board reviewed the draft assessment in December 2002 and supported EPA for its groundbreaking work in evaluating the potential health risks of TCE. The Science Advisory Board advised EPA to revise and finalize the TCE toxicity assessment.

Major New Findings and Implications. The draft toxicity assessment indicates that TCE poses a higher health risk than previously understood for susceptible populations (infants and young children, people with chronic disease, and people with higher background exposures). The draft assessment concludes that TCE has the potential to cause cancer in humans if they are exposed to high enough levels for a long enough period of time.

The major findings of the draft TCE toxicity assessment have led to changes in the recommended risk guidelines for TCE. EPA Region 9 is currently using the provisional TCE toxicity values from the draft reassessment when assessing potential health impacts from the vapor intrusion-to-indoor-air pathway.

Is Your Drinking Water Affected by VOCs in Groundwater?

Your drinking water is not affected by VOC groundwater contamination from the four Mountain View sites. Most of the drinking water in Mountain View comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains. The rest of the drinking water in Mountain View comes from deep drinking water wells and treated surface water from Santa Clara Valley Water District sources not located in the areas discussed in this fact sheet. In addition, Mountain View's drinking water is tested to make sure it meets drinking water quality standards.

Mountain View Sites Updates

Middlefield-Ellis-Whisman (MEW) Study Area

The MEW Study Area is an eight-square-mile regional study area which includes four separate Superfund sites (Raytheon Company, Fairchild-Mountain View, Intel-Mountain View, and part of former NAS Moffett Field). The MEW Study Area and the former facilities and companies responsible for the investigation and cleanup are shown on Figure 4.

In the 1960s and 1970s, several industrial companies involved in semiconductor, electronics, and other manufacturing and research contaminated the soil and groundwater, predominantly with TCE. The companies responsible for the soil and groundwater contamination are cleaning up the MEW site, but no longer own or operate the former facilities. New tenants occupy new office developments and existing buildings which overlay the TCE groundwater plume.

Chemicals used at the former NAS Moffett Field just north of the MEW site have also been released to the groundwater. The contaminated groundwater plume from the MEW area has migrated onto the former NAS Moffett Field, where the MEW plume and Moffett plume have mixed together to form a regional groundwater VOC plume. EPA has entered into a separate agreement with the U.S. Navy to address the investigation and cleanup of former NAS Moffett Field.

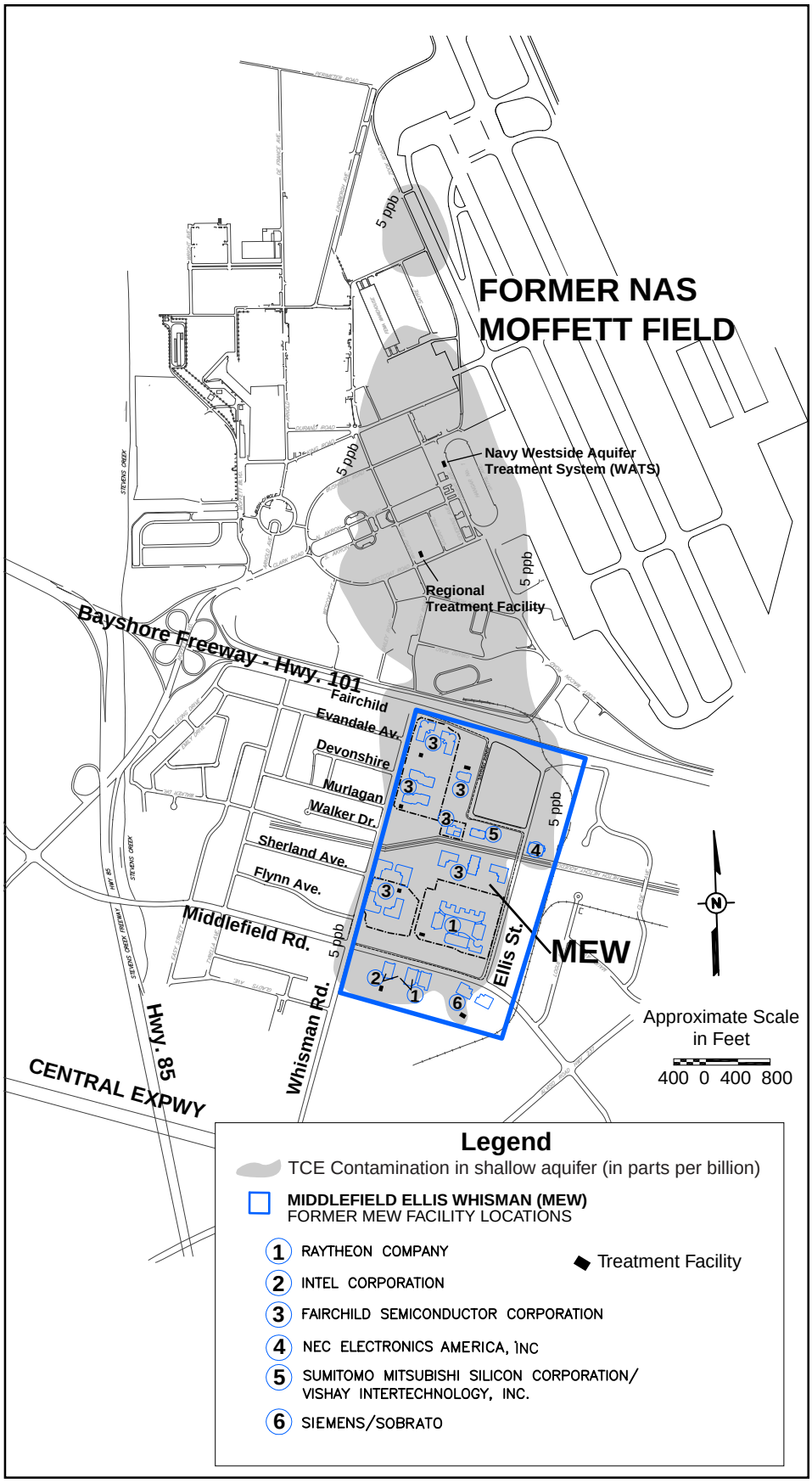


Figure 4: TCE Contamination Plume at MEW Study Area

The soil cleanup has been completed at all the MEW facilities. The groundwater cleanup is underway. The groundwater cleanup remedy uses slurry walls (barriers installed beneath the surface) to contain the contaminated groundwater and uses groundwater extraction wells to pump contaminated groundwater to treatment systems (air strippers, liquid-phase granular activated carbon, or ultraviolet light treatment) to remove VOCs from the groundwater.

The individual MEW companies responsible for the groundwater contamination have been operating eight facility-specific control groundwater treatment systems (some since as early as 1982) and two regional plume groundwater treatment systems (since 1998). The U.S. Navy and NASA also operate two separate groundwater treatment systems on the former NAS Moffett Field. Figure 4 shows the recent TCE contamination plume in shallow groundwater and the locations of the groundwater treatment systems.

Previous MEW Health Risk Assessments

In 1988, an EPA assessment for the MEW site (and part of NAS Moffett Field) addressed potential health risks posed by site contamination known at the time. The assessment concluded that there was not a significant risk over most of the MEW area because of the relatively low VOC concentrations in exposed surface soils. The assessment did not specifically evaluate the subsurface vapor intrusion pathway.

Three health risk assessments were prepared, two in 1997 and one in 1999, for the developers of the former Fairchild Semiconductor and former Raytheon facilities. These risk assessments concluded that the subsurface vapor intrusion pathway and off-gas emissions from the air stripping systems do not pose a significant health risk to on-site workers and building occupants.

However, as part of the construction of several of the new office buildings, subsurface vapor barriers and special fittings were installed as protective measures to help reduce the potential intrusion of vapors into the buildings. Operations of the heating, ventilation, and air conditioning systems at both new and existing office buildings may also help prevent vapors from entering buildings from the subsurface.

Current Activities

EPA is currently working with the MEW Companies to test the indoor air at selected buildings and outdoor air locations to evaluate the indoor air pathway from subsurface vapor intrusion and account for any identifiable point source emissions. Indoor and outdoor air sampling is expected to begin in Spring 2003.

As part of EPA's upcoming Five-Year Review for the MEW Study Area, EPA will be determining whether the cleanup remedies in place are still protective of human health and the environment.

EPA will be using the provisional TCE toxicity values when assessing the potential health risks to both on-site workers and off-site nearby residents from the vapor intrusion pathway and the air stripper treatment system emissions.

MEW Technical Assistance Grant (TAG)

EPA has a Technical Assistance Grant (TAG) program to provide funds to groups who want to hire a technical specialist to help the community understand cleanup activities at Superfund sites. Currently, EPA has funds available for a new TAG for the MEW Study Area. EPA has awarded a TAG for the NAS Moffett Field site.

EPA has received a letter of intent to apply for the MEW Study Area TAG from the Silicon Valley Toxics Coalition. Because EPA can only award one TAG per site, other groups interested in a TAG for the MEW site are encouraged to notify EPA and to contact Silicon Valley Toxics Coalition at 760 North First Street, San Jose, CA, 95112, (408) 287-6707, if they are interested in forming a coalition.

The 30-day coalition-building period runs from January 10, 2003 to February 10, 2003. If a coalition of eligible groups cannot be formed, EPA will accept individual applications, from the groups identified in the first period, for 30 days beginning February 11, 2003.

NAS Moffett Field Site

NASA Research Park and Orion Park and Wescoat Housing Areas

The U.S. Navy is the lead agency conducting environmental investigations and cleanup at the former NAS Moffett Field. The base was transferred in July 1994 with the majority of the property going to the National Aeronautics and Space Administration (NASA). As indicated previously under the MEW Study Area, groundwater VOC contamination from former Navy dry cleaning, maintenance, and fuel operations have mixed with the MEW groundwater VOC plume to form a regional VOC plume.

Because the regional VOC plume is commingled with MEW, Navy and NASA groundwater contamination, all three entities operate separate groundwater extraction and treatment systems to address both source-related and regional VOC contamination.

NASA Research Park Update: NASA Research Park comprises 213 acres within the former NAS Moffett Field that are being planned for redevelopment. NASA prepared a health risk assessment to assess the potential health risks of the portions of NASA Research Park planned for redevelopment and impacted by the regional groundwater VOC plume. The risk assessment report evaluated potential health risks to indoor workers, construction workers, and adult and child residents.

The report concluded that future on-site workers and residents may be exposed to contaminants at levels posing a health risk based on potential migration of vapors into indoor air and air samples collected inside existing buildings. NASA plans to evaluate and take appropriate measures to reduce potential exposures and migration of vapors into existing occupied buildings and future buildings.

Orion Park and Wescoat Housing Areas Update: The U.S. Army's Orion Park and Wescoat Housing areas are military housing areas formerly part of NAS Moffett Field (see Figure 5). In 2002, the Navy collected groundwater and soil samples to characterize the subsurface environment. This assessment was to identify the potential health risks from VOCs found in the groundwater beneath portions of the Housing areas. The Navy also collected soil gas, indoor air, and outdoor air samples at selected locations to evaluate the potential for subsurface vapor intrusion into indoor air. The Navy plans to complete a draft report which will include field sampling results and a health risk assessment in January 2003.

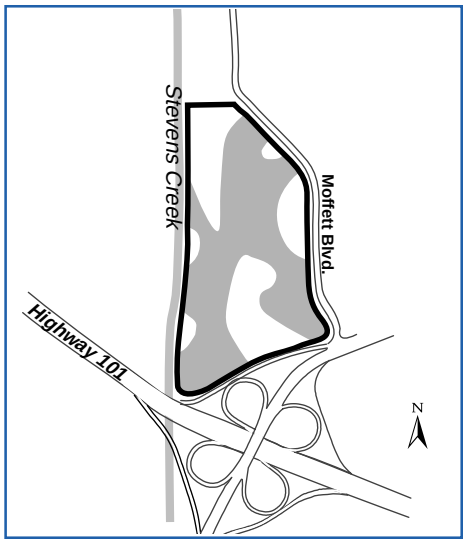


Figure 5: TCE Contamination within Orion Park Housing

GTE Government Systems (GTE) Site

The GTE site is a 60-acre property located between Whisman Road, Middlefield Road, Central Expressway, and Highway 237. From 1952 to 1993, GTE designed and assembled electronics and communications equipment. The primary cleaning solvents used were TCE and 1,1,1-trichloroethane. Three TCE groundwater plumes have been identified (see Figure 6).

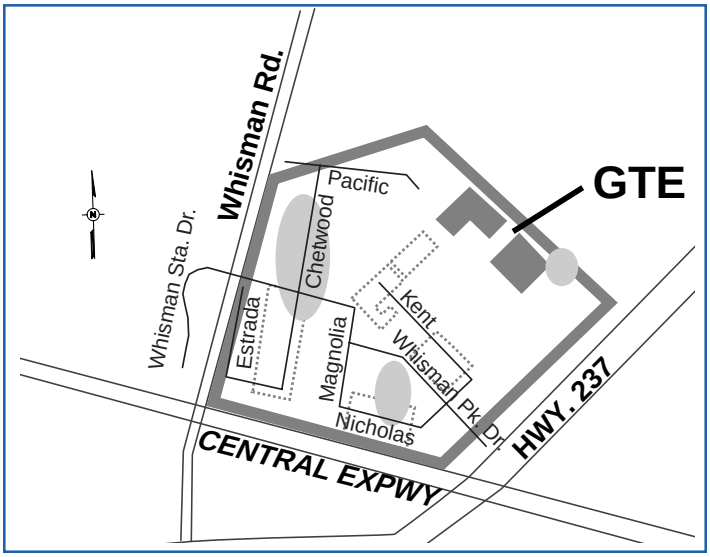


Figure 6: TCE Source Areas at GTE

Since 1993, GTE has been operating a groundwater extraction and air stripper treatment system to address groundwater contamination in the three plumes.

In 1995, GTE sold part of the southern portion of the GTE property, which was converted into the Whisman Station residential development.

In Spring and Fall 2000, EPA collected indoor air samples from seven homes overlying the highest concentrations of TCE in groundwater. Indoor and outdoor air samples were also collected at two homes not overlying the TCE plume in the neighborhood.

Elevated TCE levels inside one residence supported a link between subsurface conditions and indoor air TCE concentrations found during sampling. The indoor air at this residence was re-sampled in March 2001 and October 2002, and the test results are consistent with previous sampling.

Current Activities

Although the 2000 and 2001 sampling results suggested that indoor air concentrations in the affected home were within EPA's acceptable risk range, EPA's new draft provisional TCE toxicity value has prompted additional action at this house. EPA is currently overseeing GTE's efforts to install a system at the affected house designed to prevent TCE vapors in the subsurface from entering the house.

EPA is also working with GTE to conduct additional investigations to evaluate potential subsurface vapor intrusion into other buildings overlying the TCE groundwater plumes.

The JASCO Chemical Company (JASCO) Site

The JASCO site is a two-acre property located at 1710 Villa Street in Mountain View. JASCO repackaged and formulated chemicals from 1976 until December 1995. Both soil and groundwater were contaminated with VOCs. The soil cleanup (excavation, biotreatment, and soil vapor extraction) was completed in 1998 (see Figure 7).

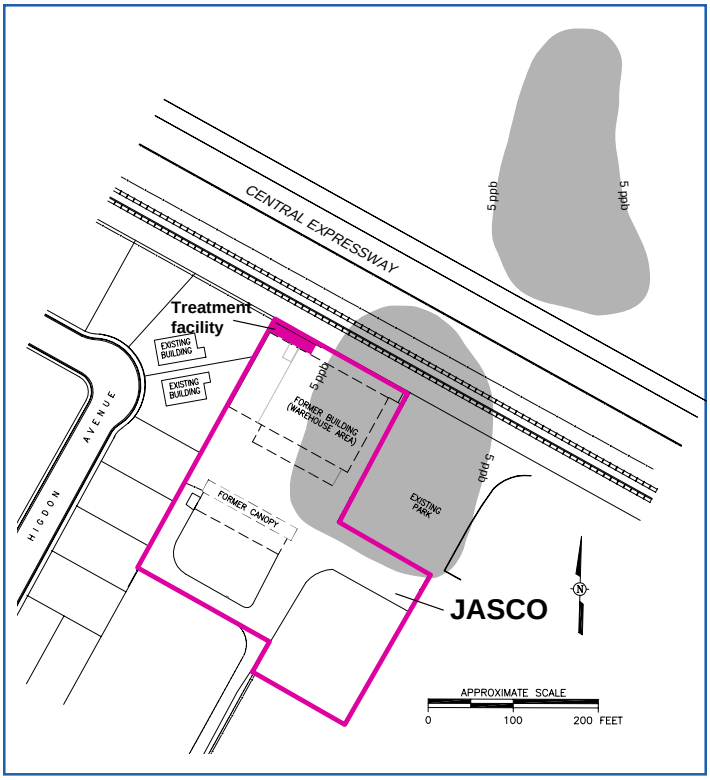


Figure 7: PCE Contamination Plume at JASCO

The current groundwater remedy pumps extracted groundwater to a treatment system to remove the contaminants. The treatment system is an air stripper and vapor-phase carbon adsorption. An existing deed restriction prevents the use of groundwater for drinking water purposes until groundwater cleanup levels are achieved.

During June 2002, all remaining structures on site were demolished. The site is a fenced vacant lot containing a groundwater treatment system.

EPA is currently evaluating whether or not subsurface vapor intrusion by perchloethylene (PCE) and other VOCs may impact future development on the property. In October 2002, vapor samples were collected. EPA will review the data from these samples and will continue working with JASCO, the City of Mountain View, and other involved parties on a redevelopment plan that will be protective of human health and the environment.

Opportunities for Community Involvement

EPA has developed a number of ways that you may learn about and become involved with the cleanup process at federal cleanup sites. EPA prepares fact sheets to update the community on site cleanup progress. Fact sheets are mailed to those on each site's mailing list. To add your name to the mailing list, please return the mailing list coupon at the bottom of this page and indicate which site(s) mailings you are interested in receiving in the future.

EPA Contacts

The Mountain View sites team is very interested in creating an open relationship with those living and working in the Mountain View area. If you would like more information or if you have questions about any of the Mountain View sites discussed in this fact sheet, please contact the following EPA staff:

- **David Cooper**
  Community Involvement Coordinator, (SFD-3)
  (415) 972-3237
- **Alana Lee**, Project Manager, (SFD-7-3)
  MEW Study Area and NAS Moffett Field site
  (415) 972-3141
- **John Moody,** Project Manager, (WST-2)
  GTE site
  (415) 972-3346
- **Shea Jones,** Project Manager, (SFD-7-2)
  JASCO Chemical site
  (415) 972-3148

Write to any of the above at:
U.S. EPA, Region 9
75 Hawthorne Street
San Francisco, CA 94105-3901

Information Repositories

EPA has created Information Repositories which hold the technical documents for cleanup activities at these four sites.

- **City of Mountain View Public Library**
  585 Franklin Street
  Mountain View, CA 94041
  (650) 903-6887
  Hours:
  Monday - Thursday: 10 am - 9 pm
  Friday and Saturday: 10 am - 6 pm
  Sunday: 1 - 5 pm
- **EPA Region 9 Superfund Records Center**
  95 Hawthorne Street, Suite 403S
  San Francisco, CA 94105
  (415) 536-2000
- **EPA Region 9 RCRA Records Center**
  (for the GTE site only)
  75 Hawthorne Street, 7th Floor
  San Francisco, CA 94105-3901
  (415) 947-4596

See EPA's Web site at: www.epa.gov/region09

Or, you may also leave a message on EPA's Toll Free Information Line: **(800)231-3075** and your call will be returned.

Mailing List Coupon

If you did not receive this fact sheet in the mail and would like to be included on the mailing list to receive future mailings about the Mountain View sites, please fill out the coupon below and return to:

David Cooper, Community Involvement Coordinator
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street (SFD-3)
San Francisco, CA 94105

PLEASE INDICATE WHICH SITE MAILING LISTS YOU WOULD LIKE TO BE ON:

MEW Study Area ☐ JASCO Chemical Site ☐
NAS Moffett Field Site ☐ GTE Site ☐

PLEASE PRINT ALL INFORMATION

NAME: _____

ADDRESS: _____

_____

PHONE: (OPTIONAL) _____ E-MAIL: (OPTIONAL) _____

*Note: You may email the above information to: cooper.david@epa.gov

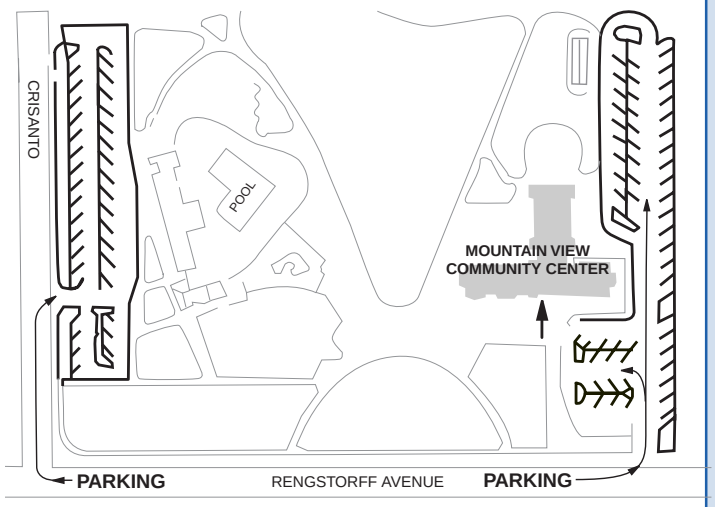
EPA Invites You To Attend Our

Mountain View Sites Open House and Community Meeting

Mountain View Community Center
201 Rengstorff Avenue
Wednesday, January 22, 2003 • 4:00 pm - 9:30 pm

AGENDA

4:00 pm - 6:30 pm	Open House/Poster Session
	Break
7:00 pm - 7:10 pm	Introductions/Welcome
7:10 pm - 7:30 pm	Presentations on TCE and Vapor Intrusion Pathway
7:30 pm - 8:00 pm	Mountain View Sites Overview and Updates
8:00 pm - 8:45 pm	Mountain View Sites Panel - Question & Answer Session
	Break
9:00 pm - 9:30 pm	Continuation of Poster Session
9:30 pm	Adjourn



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