



## Memorandum

**June 20, 2005**

**TO:** City Council

**FROM:** Sue Gedestad, Operations Administrator  
Linda Cano, Administrative Aide

**SUBJECT:** Annual NRC Hazardous Waste Sites Report

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Attached is Natural Resources Commission's Hazardous Waste Sites Report for 2005.



## Staff Memo

**April 18, 2005**

**To:** City Council

**From:** Sue Gedestad, Public Works  
and the City of Davis Natural Resources Commission

**Subject:** Annual NRC Hazardous Waste Site Report

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Annually the NRC reviews the various hazardous waste sites in Davis and reports to Council on the status of the clean up efforts on the critical sites. Attached is the Natural Resources Commission's Annual Hazardous Waste Sites Report for 2005. The NRC also approved the following recommendations for consideration by the City Council.

### **Recommendations**

1. Frontier Fertilizer Superfund Site – The NRC recommends that the Commission review the proposed cleanup options that will be included in the proposed work plan expected to be published in late 2005 and that the City continue their outreach to interested citizens.
2. LEHR – The NRC recommends that the LEHR site be removed from future annual Hazardous Waste site reports.
3. Lewis Cleaners – The NRC is interested in encouraging cleanup of this site and requests a staff update in September.
4. 5<sup>th</sup> and G and 435 G Street – NRC is interested in the clean up progress of these sites and requests a staff update in September.
5. Old Davis Landfill - The NRC added this site to the 2005 report and recommends that it continue to be monitored, especially in relation to the proposed Covell Village Project.
6. Eight sites were added to the 2005 report and are recommended for follow up in the 2006 Hazardous Waste site report. Many of these are current or former underground storage tanks sites.

### **Background and Report Summary**

In September, 2005 the Commission will be updated on the clean up process on the following sites:

- Frontier Fertilizer Superfund site – 4303 Second Street

- Former Texaco Station – 712 G Street
- Fifth and G Streets
- Lewis Cleaners – 670 G Street
- Former Shell Station – 435 G Street

In addition to the above, the following sites will be reviewed and updated in the 2006 annual report:

- Davis Liquor & Food – 4810 Chiles Road
- Munich Amalgamated (Court Galvanizing) – 2500 Fifth Street
- 203 J Street
- Davis Amtrak Station – 840 Second Street
- Cable Car Wash – 904 Third Street
- Contech Construction Projects – 2525 Second Street
- Old Davis Landfill – Pole Line Road
- Union 76 Service Station – 2002 Lyndell Terrace
- Timperly Property – 1700 Olive Drive
- Arco Station – 705 Russell Blvd.
- George Jandera Property (Mobile Service Station) – 1600 8<sup>th</sup> Street
- Chevron Station 9-1420 – 1935 Anderson Road
- Shell Station – 1944 Anderson Road
- Circle K – 1930 Lake Blvd.

## **Annual Hazardous Waste Sites Report**

April 18, 2005

### **Introduction**

One of the functions of the Natural Resources Commission (NRC) is to periodically investigate the status of cleanup activities at hazardous waste-contaminated sites in the City, and to report on the results of those investigations, with recommendations as appropriate, to the Davis City Council. This task, which has been performed by the NRC since 1988, has evolved into an “Annual Hazardous Waste Sites Report.” In conducting this task, Commission members typically consult with staff from the cognizant regulatory agencies; they also review pertinent technical reports and correspondence, review online information, and run queries on available hazardous waste databases. This report is the NRC’s Annual Hazardous Waste Sites Report for 2005.

### **Regulatory Sources**

Various government agencies are involved with contaminated site identification, characterization, monitoring, and cleanup. At the State level, primary responsibility for the enforcement of water quality regulations rests with the Regional Water Quality Control Board. For Davis and much of the Central Valley, the responsible regional board is the Central Valley Regional Water Quality Control Board (RWQCB). Another State agency with hazardous waste-related functions is the State Department of Toxic Substances Control (DTSC), a branch of the California Environmental Protection Agency (CalEPA). The DTSC regulates hazardous waste, conducts and oversees cleanups, and promotes pollution prevention.

In the City of Davis, the Central Valley RWQCB is generally the responsible agency for managing the characterization and cleanup at most contaminated sites. Also there are two designated “Superfund” sites in Yolo County – the Frontier Fertilizer Site in East Davis and the LEHR Site on the UC Davis campus; cleanup of these federally designated sites is managed by the US Environmental Protection Agency (USEPA). The Yolo County Health Department also provides environmental health information and services throughout the County, including the City of Davis; among their related programs are storage tank programs and a hazardous material program.

### **History of Site Monitoring and Reporting by the NRC**

As part of preparing this report for 2005, in addition to updating the information on individual sites on the list, Natural Resource Commission members also reviewed reports from previous Commissions in previous years. Particularly useful was the Natural Resource Commission’s

report from September 2000, which provided an overview and historical perspective on NRC annual hazardous waste reports, summarized here.

According to the 2000 NRC report, the Commission first assumed responsibility in 1988 for reviewing the progress of cleanup at hazardous waste sites in Davis. Originally, the City Council had evidently requested monthly reports, but this was modified in the first year to quarterly reports. In the early years, the RWQCB, County Environmental Health, and the State Department of Toxic Substances provided quarterly reports to help in the preparation of the NRC reports. In 1988, there were five identified hazardous waste sites under the scrutiny of the NRC: Armour Oil, Frontier Fertilizer, Court Galvanizing, Davis Transmitter/McClellan Air Force Base, and Dow Chemical.

In February 1996, based on a recommendation from the NRC, the City Council changed the Hazardous Waste Sites reporting function to consist of (1) an annual Hazardous Waste Sites Report containing a status report on all the sites tracked by the commission and (2) quarterly Hazardous Waste Sites Reports focused on just the three or four most critical sites in the City of Davis. The City Council at this time modified the list of “critical sites” and “non-critical” sites to be as follows:

“Critical Sites”

1. Frontier Fertilizer (4303 Second Street)
2. Davis Center Sites (Fifth & G Streets)
3. Former Texaco Sites (712 G Street)

“Non-Critical Sites”

1. Armour Oil (Gas N Save) (504 L Street)
2. George Jandera Mobil (1600 East Eighth Street)
3. Court Galvanizing (2500 Second Street)
4. LEHR (UC Davis Campus)

The revised report format was used for the second quarter Hazardous Waste Sites reports of 1996, in which only the three most critical sites were reported. The Annual Hazardous Waste Sites Report was not produced in 1996. After 1996, the County Environmental Health Department no longer provided quarterly or annual reports to the NRC.

In both 1997 and 1998, the three quarterly reports and the annual report described work on the three “critical sites.” Only one of the non-critical sites (LEHR) was included in these two annual reports, although an attached memo from the RWQCB did include a summary of activities at the Court Galvanizing and the Armour Oil sites. In 1999, three quarterly reports described work on the three “critical sites;” the annual report was evidently not produced.

The 2000 Annual Hazardous Waste Sites Report provided the historical overview of the NRC's hazardous waste reporting summarized above, as well as a number of recommendations for future reports. The report also provided (1) an update on sites then on the "critical list," (2) an update on sites on the "non-critical list," (3) other "sites of potential interest," and (4) sites with potential MTBE contamination.

Among the recommendations from 2000 were the following:

1. Remove Davis Center and Texaco from quarterly report of critical sites; include in one more annual report so as to tie up loose ends for the record. These sites are undergoing remediation, necessitating no further oversight.
2. Remove Armour Oil from the annual report list of non-critical sites. Since the Regional Board plans to give the sites a "No Further Action" letter, the sites no longer needs NRC oversight.
3. Keep Jandera Property, Court Galvanizing, and LEHR on the non-critical list to be reported on in the annual report.
4. Add Lewis Cleaners to the list of critical sites since it is located near a city well.
5. Add the group of sites in the 3rd and I Street area (I Street Development, Cable Car Wash, 212 I Street, 203 J Street, Davis Train Station, and Davis Enterprise) to the critical list of sites to follow, although the I Street Development property may eventually be the only sites to keep following.
6. Based on a review of all the sites in Davis where MTBE has been found, the following sites are recommended to be placed on the non-critical list and monitored annually as they are located close to city wells: the cluster of four sites near the intersection of Chiles Road and Mace Boulevard (Van Wert Motors, Davis Food and Liquor, Chevron, and Yates/Exxon), Texaco at 712 G Street, and the Shell Station at 1944 Anderson Road.

The NRC's Hazardous Waste Report in November of 2002 (there was no report for 2001) addressed the following ten sites (without distinguishing between "critical" and "non-critical" sites): Fifth and G Street Site; Lewis Cleaners Site; 203 J Street Site; Frontier Fertilizer Superfund Site, Davis Amtrak Depot, Texaco Station Site at 712 G Street, Van Wert Motors Site at 5100 Chiles Road, Munich Amalgamated (Court Galvanizing) Site at 2500 5th Street, Davis Liquor & Food at 4810 Chiles Road, and the LEHR Superfund Site.

In January 2004, the NRC produced a 2003–2004 Hazardous Waste Site Report, which consisted of updates of most of the ten sites identified above; dropped from the list of sites were the Davis Amtrak Station and Van Wert Motors.

### **Initial List of NRC Hazardous Waste Sites for 2005**

The current members of the Natural Resources Commission accepted assignments to investigate the following nine hazardous waste sites in 2005; these site-specific reports are presented below:

1. Frontier Fertilizer Superfund Site
2. LEHR Superfund Site
3. Davis Liquor & Food
4. Former Texaco Station

5. Munich Amalgamated (Court Galvanizing)
6. Fifth and G Streets Sites
7. Lewis Cleaners
8. 203 J Street
9. Davis Amtrak Station

**Frontier Fertilizer Superfund Site**  
**4303 Second Street (North side), south of Mace Ranch**  
(USEPA Contact: Bonnie Arthur, 415-972-3030)

EPA completed an expansion of the groundwater pump and treat system in spring 2004. Modifications are still on-going to optimize the capture of contaminated groundwater (pesticides, carbon tetrachloride). Sixteen extraction wells are pumped continuously and contaminated groundwater is run through large vessels containing carbon at the treatment plant. Treated water is discharged to City of Davis POTW.

Benchscale treatability studies are currently underway to test a few promising technologies on contaminated soils from the site. If the current testing is successful, EPA plans to conduct field testing in late spring or summer. The results of the treatability studies will be incorporated into a draft Feasibility Study (FS) planned for early summer. The FS will evaluate final cleanup options for on-site soil and groundwater. After the FS is finalized the proposed cleanup option/s will be summarized in a Proposed Plan. Community meetings will be held as part of a formal public review timeframe to solicit community input regarding the cleanup option/s. The Proposed Plan is expected to be released in late 2005.

A non-profit, citizen oversight committee, Frontier Fertilizer Superfund Oversight Group, has been actively involved with the City and the regulatory agencies for this site. The Group has received grants from EPA and has a paid technical advisor. FFSOG's main concerns are the continued migration of contamination in groundwater, development that could impede cleanup efforts, and health and economic risks potentially associated with the contamination. Correspondence from the group late last year (available from the City Manager's office or Department of Public Works) expressed concerns about development on the site before clean up is complete, particularly a road connection associated with Mace Ranch.

**LEHR Superfund Site**  
**UCD campus, Old Davis Road**  
(Contact: Jay Tomlin, U.S. Department of Energy; 510-637-1637)

It is reported that most of the site has been cleaned up. There is ongoing monitoring of surface and underground water in the area. Unresolved issues with the reports on the site cleanup center on the methods used to detect, measure and report harmful chemicals in runoff from the study area. Dr. Fred Lee has been commenting on the report and his comments include that methods used to evaluate the cleanup efforts do not meet industry standards. It is therefore not clear to what extent the surrounding areas are impacted at this time.

Other documents indicate that hexavalent chromium continues to be present in concentrations above acceptable levels in well samples in the study area.

Per the Department of Energy: All known field work has been completed and all hazardous wastes of concern have been removed and properly disposed. UC Davis is currently working on the site-wide residual risk assessment under the guidelines of CERCLA and might finish it by the end of this calendar year. DOE and USEPA will then recommend action after reviewing the risk assessment document. There are several other steps that will need to be taken (such as public meetings, records of decision, etc.) before a final proposal is adopted. To review the current annual report on the internet, go to the site [www.landtrek.org](http://www.landtrek.org), click on LEHR, scroll down and select the annual report.

**Davis Liquor and Food,  
4810 Chiles Road, Davis**  
(RWQCB Contact: David Stavarek, 916-464-4673)

This is an active retail station dispensing gasoline and diesel at a convenience store. In April 1999, two 10,000-gallon gasoline and one 12,000-gallon diesel USTs were replaced with three gasoline and two diesel USTs. Soil and groundwater investigations have defined an elliptical plume of gasoline hydrocarbons beneath the site that is approximately 50 feet trending northwest-southeast. The plume is centered beneath dispenser islands. The vertical limit of the plume is approximately 30 feet bgs. In September 2004 concentrations of TPHg, benzene, and MtBE in shallow groundwater were as high as 5,700, 980, and 150 µg/L, respectively. Quarterly groundwater monitoring is performed and shows the plume to be relatively stable. Remediation by natural attenuation has been proposed and the site is being considered for closure.

**Former Texaco Station  
712 G Street, Davis**  
(RWQCB Contact: David Stavarek, 916-464-4673)

The former Texaco site, currently a vacant lot, was a service station from 1963 until 1983 when the USTs were removed and site buildings demolished. Soil and groundwater investigations were begun in 1988, and in May 1999 an air sparge system was installed and operated to remediate gasoline-contaminated groundwater. Groundwater data shows an elliptical plume approximately 160 feet trending north-south. In October 2004 TPHg, benzene, and MtBE in shallow groundwater were as high as 150,000, 30,000, and 2 µg/L. The plume attenuates with depth and MtBE was the only gasoline hydrocarbons detected at 0.79 µg/L at 75 feet bgs. The air sparging system was shut down with Regional Board approval in February 2002 because it was not effective at remediating groundwater beneath the site. A three-month dual-phase extraction test planned for the fourth quarter 2004 has been deferred until Chevron/Texaco evaluates whether the test will adversely affect a nearby plume of halogenated organic compounds. A dry cleaner (see Lewis Cleaners) on an adjacent lot is the source of the halogenated organic compounds. Quarterly groundwater monitoring continues to monitor water quality beneath the site [RWQCB 2005].

**Lewis Cleaners Site**  
**670 G Street**

(RWQCB Contact: Brian Taylor at [betaylor@waterboards.ca.gov](mailto:betaylor@waterboards.ca.gov). 916-464-3291)

The Lewis Dry Cleaner's site is located at 670 G Street, at the north end of the shopping complex north of the Davis Food Co-op. The primary contaminant of concern is tetrachloroethene (PCE), which is commonly used as a dry cleaning fluid. There was an apparent release of PCE outside the back corner of the dry cleaner, which penetrated the soil and entered the groundwater aquifer. The RWQCB issued a cleanup and abatement order in mid-2002. The order stated four areas that needed to be addressed: soil contamination, groundwater contamination, indoor air levels in adjacent buildings, and public participation to provide information to local residents.

As of January 2004, there were 5 monitoring wells and 8 soil vapor extraction (SVE) wells installed. The apparent groundwater flow is to the southeast. The highest concentration (77,000 µg/L) of PCE in the groundwater was detected via a CPT sampling point near the southeast corner of the building. The vadose zone has been characterized for PCE and the lateral extent has been assessed. The groundwater plume appears to extend east approximately to I Street, south to the Food Co-op, west to the edge of the parking lot, and north to the former Texaco site. The nearest municipal wells are wells #1, #7, and #14, which are about 1,000 feet southwest, 1,200 feet north-northwest, and 1,800 feet east-southeast, respectively of the site. No PCE contamination had been detected in any of these wells.

In spring 2004 a tracer study was conducted to evaluate PCE in indoor air, attributable to migration through the common ceiling over the mall. A physical baffle was installed between suites and sampling was conducted to see if the barrier was effective at preventing migration. Some of the tracer was found to get through the barrier. The company handling liability for the property owner will not reimburse the owner for this work and they are currently involved in mediation.

RWQCB notes that the owner is in violation of the cleanup and abatement order for the site, and they are considering an enforcement action. The City has been named in a lawsuit concerning this site and is currently voluntarily participating in a mediation process.

A Phase II report in June 2001 indicated extensive PCE contamination in both soil and shallow groundwater. Concentrations of PCE were found to be extremely high in proximity to the cleaners (77,000 micrograms per liter). The plume extends well across the railroad tracks and beneath the I and J Street neighborhood to the southeast. While PCE concentrations are significantly lower near the leading edge of the plume along I Street, they still exceed the maximum contaminant level (MCL) by several orders of magnitude. Neither the lateral or vertical extent of the contamination was determined. The recommended next step was to prepare a work plan to determine the vertical extent of the contamination under the site and to determine the lateral extent of the plume. A plan for monitoring wells at the edge of the plume will be prepared. The nearest wells to the site are well 1 at 6th and E Streets, and well 14 within the Corporation Yard, just east of L Street. Well 1 is likely not a concern because it lies upgradient

of the contamination. Well 14 is still some distance from the site and the “hit” locations discovered during the investigation.

**Munich Amalgamated Site (Court Galvanizing)**  
**2500 5<sup>th</sup> Street, Davis**  
**(RWQCB Contact: Amy Terrell, 916-464-4680)**

Munich Amalgamated has been in the process of removing chromium, nickel, zinc, and sulfate from the groundwater and overlying soil. The source of the contaminants is an old evaporation pond. A report submitted in 2004 concluded that the groundwater extraction system has been effective in removing metals but the soil flushing system had not been operating as anticipated. The metals observed in the soil in the late 1980's are most likely still there. At this time, groundwater monitoring is continuing. Staff at the Central Valley Regional Water Quality Control Board (Regional Board) is reviewing a proposal for an infiltration gallery to facilitate movement of metals through the soil column, into groundwater to be extracted and treated on-site for removal of metals. Meanwhile, in March 2004, Regional Board staff requested that owners of properties to the south of the Munich Amalgamated conduct a groundwater investigation into possible sources of metal pollutants on their properties. As of November 2004, no investigative results have been delivered to Regional Board staff.

**Fifth and G Street Site**

**Fifth Street to Fourth, F Street to the Railroad,**

(RWQCB Contact: Brian Taylor at [betaylor@waterboards.ca.gov](mailto:betaylor@waterboards.ca.gov). 916-464-3291

The contamination (PCE) at this site is bounded by Fifth Street on the north, Fourth Street on the south, F Street on the west, and the railroad spur on the east. The groundwater flow is toward the southeast. At this site, the City is responsible for compliance with the conditions of RWQCB Resolution 99-002, which requires that the City remove 75 percent of the PCE in the underlying groundwater and attain the groundwater cleanup goal of 5 µg/L. The cleanup is subject to a \$500,000 spending cap, a substantial portion of which has been spent. A Groundwater Extraction Treatment System (GETS) has been in place since 2000 to attempt mass removal of contamination. Operation of the GETS is required by Resolution 99-002; quarterly groundwater monitoring is also conducted.

The GETS has been extracting groundwater at an average rate of approximately 1.5 gpm, which is approximately 25 percent of the rate required by Resolution 99-002, and this may not be effective at decreasing the concentrations in groundwater. The 3<sup>rd</sup> quarter monitoring report submitted in 2004 indicated PCE detected at 18 µg/L. RWQCB staff are of the opinion that, at this rate, the cleanup goal will not be reached, and they contend that the City is not meeting its obligations with respect to Resolution 99-002. City staff disagree with this interpretation and have taken the position that the City's obligations are being met in compliance with Resolution 99-002 and the spending cap.

The City completed a GETS Optimization Work Plan in January 2004, which evaluated several remedial options to supplement the current GET system. RWQCB staff reviewed this Work Plan

and concurred with the City's proposal to redevelop the existing extraction well to improve the extraction rate. An additional extraction well has also been approved. RWQCB staff expect that the City will apply for a containment zone for this site, but they do not think that the site will comply with the requirements for a containment zone designation.

### **Former Shell Station / Proposed Roe Building Site 435 G Street**

In January 2003, three 10,000-gallon USTs, dispensers, associated product pipelines, and site buildings were removed from this former Shell service station. Soil and groundwater investigations show that groundwater is not affected by petroleum hydrocarbons, but lead was detected at up to 82 milligrams per kilogram in soil and up to 470 µg/L in groundwater. Work to investigate the extent and potential environmental and health threat of the lead is scheduled. Quarterly monitoring of groundwater continues [RWQCB 2005].

This site was previously reported by the NRC as part of the "Davis Center Sites." This vacant lot is currently proposed for development. The proposed development, the Roe Building, would be a mixed use building with 5,000 sq. ft. of retail space on the first floor and eight townhouses on the second and third floors. The project was approved by the City Planning Commission hearing on January 26 and by City Council on February 15, 2005. A condition of approval requires the applicants to submit verification to the City that the onsite soils have been remediated to the satisfaction of the applicable regulatory agencies for the proposed use prior to the issuance of a building permit.

### **203 J Street**

(RWQCB Contact: Brian Taylor at [betaylor@waterboards.ca.gov](mailto:betaylor@waterboards.ca.gov). 916-464-3291

Several site investigations have been conducted in and around 203 J Street to determine the extent of trichloroethylene (TCE) pollution (I Street, Cable Car Wash, and the Depot). TCE has been detected at 74 feet below ground surface (610 ppb) at this site but according to the Regional Board, the investigation that took place in early 2003 did not adequately define the vertical extent of the contamination. In October 2003, the Board reviewed the pilot test and workplan submitted by the consulting firm ENGE0. The workplan addresses soil and groundwater sampling, the installation of dual-phase soil vapor and groundwater extraction system (DPES), and the completion of a 5-day dual phase extraction pilot test. Monitoring at the site will continue quarterly.

### **Davis Amtrak Depot**

(RWQCB Contact: Brian Taylor at [betaylor@waterboards.ca.gov](mailto:betaylor@waterboards.ca.gov).. 916-464-3291

There are two constituents currently being monitored at the site. A small PCE (tetrachloroethene) plume as well as a smaller TCE (trichloroethene) contamination are being watched. PCE and TCE are both solvents that may have been used on the site for degreasing or other purposes. The date the contamination occurred is unknown.

The Central Valley RWQCB requires semiannual monitoring and reports from Union Pacific Railroad Company. For the last year and a half, the Regional Board has allowed Union Pacific to study whether intrinsic bioremediation (IBR) parameters are present. Simplistically, IBR is another term for natural attenuation, and Union Pacific wants to rely upon natural rather than active remediation. In November of 2004, Union Pacific submitted a report asserting its conclusions that biodegradation is occurring. The Regional Board disagreed with the conclusions, and found inadequate evidence that the constituents were biodegrading. The Regional Board authorized Union Pacific to submit its reanalysis in its May 2005 report, demonstrating both that biodegradation is occurring, and if so, that such biodegradation will attenuate the PCE to the groundwater quality objective of 0.06 µg/L. Union Pacific has also asked that the required monitoring frequency be reduced to annually from semiannually. No decision has been made on that request yet.

### **Old Davis Landfill**

(Contact: Department of Public Works, City of Davis)

The Old Davis Landfill is located approximately one mile north of Covell Boulevard on Pole Line Road. This area covers approximately 31 acres and was also the site of the former City of Davis Wastewater Treatment Plant. Landfill operations began in 1969 and was used to dispose of residential, commercial, industrial, and demolition-type wastes. The landfill consists of 5 inactive cells that were excavated 10 to 20 feet below grade. They were unlined and no leachate collection systems were installed. In 1975, disposal operations were transferred to the present day site of the Yolo County Central Landfill.

In 1992, Dames and Moore conducted a Solid Wastewater Quality Assessment Test (SWAT) that consisted of drilling, installing, and sampling five monitoring wells; three on site, DM-MW1 through 3, and two off site, HLA-1 and HLA-2. They completed their investigation with an Evaluation Monitoring Report (EMP) in 1995 by drilling and sampling cone penetrometers at eight locations; installing and sampling two off-site monitoring wells, DM-4 and MD-5; and conducting slug tests to determine on and off site aquifer characteristics. The EMP was completed in 1996 and a Corrective Action Plan (CAP) was submitted to the State Regional Water Quality Control Board in June 1997. Since 1999, the City has monitored the site as proposed in the CAP (bi-annually).

Since 1999, only three organic compounds have been detected at the site: vinyl chloride, Freon 12, and DCB (Dichlorobenzene). Vinyl Chloride was detected once at 2.8 ppb in 2001; DCB has not been detected since 2000, and Freon 12 continues to be detected in monitoring well DM1. High concentrations of selenium and nitrates are present in some of the wells but overall, the concentrations of inorganic constituents have not changed significantly over the last six years.

### **Additional Sites Identified by the NRC for 2005**

In addition to investigating the status of the individual sites above, NRC members also conducted a broader search for other possible sites in Davis that should be included in the NRC's Hazardous Waste Site reporting function. Useful in this regard was a collection of summaries of

the status of underground storage tanks sites in Davis received from David Stavarek of the RWQCB; this report is attached as Attachment A. Other sources of information included:

State of California, Central Valley RWQCB: 916-464-3291

<http://www.swrcb.ca.gov/rwqcb5/>

Contacts: Brian Taylor  
David Stavarek

Cal EPA, Department of Toxic Substances Control  
(Site Mitigation and Brownfields Reuse Program Database – “CalSites”)

(Hazardous Waste and Substances Site List – the “Cortese List”)

<http://www.dtsc.ca.gov/>

Contact: Steve Ross 916-255-3694

US EPA Envirofacts Data Warehouse

<http://www.epa.gov/enviro/>

US EPA Superfund Information Systems

(including the CERCLIS Database)

<http://www.epa.gov/superfund/sites/siteinfo.htm>

State Water Resources “GeoTracker”

<http://geotracker.swrcb.ca.gov/>

“Scorecard”

<http://www.scorecard.org/env-releases/land/rank-sites.tcl>

Based on this research, as well as the review of NRC reports from previous years, the NRC is recommending the addition of the following sites be added to the list of hazardous waste sites in the City of Davis that should be tracked by the NRC and staff.

### **Circle K**

#### **1930 Lake Boulevard**

This is an active retail gasoline station at a convenience store with three USTs. Soil and groundwater investigations have defined an elliptical plume of gasoline hydrocarbons that trends northeast-southwest beneath the site, and extends approximately 100 feet northeast of the site. The center of the plume is near the center of the site. The vertical limit of the plume appears to be 35 feet bgs, but MtBE was 0.73 micrograms per liter in one monitoring well screened from 135 to 140 feet bgs. In August 2004 concentrations of TPHg and MtBE in shallow groundwater were as high as 2,700 and 3,600 µg/L, respectively. BTEX compounds have been non-detect. Quarterly groundwater monitoring is performed and an additional investigation to define the limits of the plume is planned. City of Davis Well No. 30 is 300 feet southwest of the site, but does not appear to be threatened by the onsite plume [RWQCB 2005].

### **Cable Car Wash 904 Third Street**

Established in 1970 as a retail gasoline station and car wash, their three 10,000-gallon USTs were removed in 1998. Soil and groundwater investigations have defined a plume of gasoline hydrocarbons beneath the site that trends northwest-southeast approximately 400 feet and approximately 150 feet northeast-southwest. The center of the plume is approximately 15 feet east of the site. The vertical limit of the plume is approximately 85 feet bgs. In June 2004 MtBE was the only gasoline hydrocarbon detected at 0.51 micrograms per liter ( $\mu\text{g/L}$ ) at 85 feet bgs. In June 2004 concentrations of total petroleum hydrocarbons as gasoline, benzene, and MtBE in shallow groundwater were as high as 30,000, 6,000, and 740  $\mu\text{g/L}$ , respectively. Quarterly groundwater monitoring is performed and shows the plume to be relatively stable. Remediation alternatives are currently being evaluated. [RWQCB 2005]

The NRC 2000 Annual Hazardous Waste Report included a group of sites associated with the Cable Car Wash property, including the 203 J Street Site, reported above, and the following site.

### **I Street Development 920 Third Street**

The soil and groundwater have been found to be contaminated with chlorinated hydrocarbons, in the range of 3,000 to 10,000 ppb. In June 2000, the RWQCB approved a workplan for further site investigation; the workplan called for soil investigation to identify the source area, soil gas sampling, and grab water samples. This site investigation has taken place and the RWQCB is anticipating the report of the sampling analyses [NRC 2000].

### **George Jandera Property (former George Jandera Mobil Service Station) 1600 8th Street**

Formerly operated as George Jandera Mobil Service Station, site is now an unused brownfield. Three fuel hydrocarbons USTs and one waste oil UST were removed in 1991. Soil and groundwater investigations have defined a plume of gasoline hydrocarbons beneath the site, and vertically the plume extends to 90 feet bgs. In March 2004 concentrations of TPHg, benzene, MtBE, DIPE, and 1,2-DCA in shallow groundwater were as high as 61,000, 18,000, 680, 1.5, and 180  $\mu\text{g/L}$ , respectively. At 90 feet, TPHg, benzene, MtBE, DIPE, and 1,2-DCA were as high as 280, 18, 0.93, and 2.4  $\mu\text{g/L}$ , respectively. Quarterly groundwater monitoring is performed and shows the plume to be relatively stable. Additional investigation and evaluation of remediation alternatives are planned [RWQCB 2005].

### **Contech Construction Projects 2525 Second Street**

Leaking underground storage tanks were removed from the site in 1991. Groundwater contamination also existed, and a groundwater treatment system was installed in 1990. However, it seems that the groundwater system was only operated on a periodic basis, and

several legal actions were taken against the owner. The NRC deleted this site from its quarterly report in 1993 because the pollution is localized and other sites seem to pose more of a threat. [NRC 2000]

**Shell Station  
1944 Anderson Road**

This is an active Shell station. In October 1996, three old fuel USTs were replaced with two new USTs. Soil and groundwater investigations have defined a plume of gasoline hydrocarbons in groundwater beneath the site and approximately 270 feet south of the site, beneath the parking lot of an Albertson Supermarket. In August 2004 the vertical limit of the plume was approximately 65 feet bgs with 28 µg/L of MtBE. In August 2004 concentrations of TPHg, benzene, MtBE, DIPE, and ETBE in shallow groundwater were as high as 85, 100, 130, and 2 µg/L, respectively. BTEX has been non-detect in groundwater. Quarterly groundwater monitoring is performed and shows the plume to be relatively stable. Remediation alternatives are currently being evaluated [RWQCB 2005].

**Chevron Station No. 9-9148  
4475 Chiles Road**

This is an active Chevron station with three 12,000-gallon USTs that were installed when six old USTs were removed in 1991. Soil and groundwater investigations have defined a plume of diesel and gasoline hydrocarbons in groundwater beneath the site that extends approximately 80 feet southwest, south, southeast, and east beneath the surrounding Chiles Road and Interstate 80 off-ramp. In August 2004 TPHd, TPHg, and MtBE were as high as 1,500, 400, and 0.7 µg/L at 77 feet bgs. In August 2004 concentrations of TPHd, TPHg, benzene, MtBE, TBA, and TAME in shallow groundwater were as high as 7,000, 130,000, 26,000, 3,700, 840, and 170 µg/L, respectively. Quarterly groundwater monitoring is performed and shows the plume to be relatively stable. Additional work to install monitoring wells to monitor the eastern limit of the plume is planned, and remediation alternatives are being evaluated [RWQCB 2005].

**Shell Station  
4480 Chiles Road**

This is an active Shell service station. In August 2004 three old fuel USTs were removed and replaced with three new USTs. Soil and groundwater investigations show a plume of gasoline hydrocarbons beneath the site that is not defined south of the site. In August 2004 TPHg, MtBE, TBA, DIPE, and TAME in shallow groundwater were as high as 810, 880, 210, 3.3, and 8.4 µg/L, respectively. At 80 feet bgs TPHg, MtBE, and TBA were as high as 100, 210, and 450 µg/L, respectively. BTEX compounds have been non-detect in groundwater. Quarterly groundwater monitoring is performed, and an additional investigation and evaluation of remedial alternatives are planned [RWQCB 2005].



Terry Tamminen  
Secretary for  
Environmental  
Protection

3443 Roubier Road, Suite A, Sacramento, California 95827-3003  
(916) 255-3000 • Fax (916) 255-3015  
<http://www.swrcb.ca.gov/rwqcb5>

Arnold Schwarzenegger  
Governor

**COPY**

CITY OF DAVIS

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PUBLIC WORKS

27 February 2004

Mr. Robert Weir, Public Works Director  
Public Works Department  
City of Davis  
23 Russell Boulevard  
Davis, California 95616)

***GETS OPTIMIZATION WORK PLAN, and RESPONSE TO CITY OF DAVIS' 9 JANUARY 2004 LETTER FIFTH AND G STREET SITES, DAVIS, YOLO COUNTY***

The Regional Water Quality Control Board (Regional Board) staff have reviewed the 30 January 2004 *GETS Optimization Work Plan*, (Workplan), prepared by Kennedy/Jenks Consultants on behalf of the City of Davis, (City). The Workplan presents the results of a technical feasibility study and engineered cost evaluation of remedial options to supplement the current groundwater extraction system (GETS) at the Fifth and G Streets Site (Site) in Davis, Yolo County. Operation of the GETS is required by Regional Board Resolution 99-002. Quarterly groundwater monitoring at the site is performed in accordance with the requirements of Monitoring and Reporting Program (MRP) No. 95-807.

The Work Plan provides a technical and financial feasibility assessment of four remedial technologies for potential use at the Site. These include: soil vapor extraction (SVE) at a cost of \$481,000; dual phase extraction (DPE) at \$408,000; *in-situ* chemical oxidation (ISCO) at \$185,000; and an additional groundwater extraction well at \$156,000. The Workplan selected installation of an additional extraction well to the north or south of the existing extraction well (EX-1). Based on previous groundwater modeling, an additional well is expected to yield an extraction rate of approximately 4 gallons per minute (gpm). Simultaneous operation of EX-1 and the proposed well reportedly would produce a combined extraction rate of 5.5 gpm. This rate would comply with the extraction rate specified in Resolution 99-002. Our comments on the selected remedial technology are presented below.

**General Comments**

1. The Workplan is accompanied by a cover letter stating that the insufficient GETS extraction rate of 1.5 gallons per minute is attributable to clogging of the filter pack around EX-1. The letter recommends aggressive well redevelopment by airlifting followed by a one-month

- evaluation to assess whether the extraction rate was enhanced. Regional Board staff concur with the proposal to redevelop well EX-1, please proceed immediately.
2. The proposed location of an additional GETS well, north of EX-1, is reportedly chosen to take advantage of the more permeable subsurface soils in the vicinity. This rationale fails to consider that groundwater monitoring results indicate that the higher PCE concentrations have historically been detected in MW-5, located south of EX-1. Given these circumstances, Regional Board staff are concerned that an additional well, installed north of EX-1 would not result in the additional mass removal intended. Please provide a figure illustrating the proposed location and design of the enhanced GETS system showing the proposed location of the additional extraction well in cross-section and plan view. The figure should also include, a depiction of subsurface soils, current groundwater monitoring data, and diagram of the current plume location.
  3. We understand that excessive drawdown is the main reason for the deficient EX-1 extraction rate. As such, we are concerned that the cumulative drawdown from an additional extraction well could result in even lower EX-1 extraction rates. Please explain why the City does not anticipate that an additional well would not negatively impact the pumping rate of EX-1.
  4. The Workplan cites economic feasibility as the critical factor in the selection of a remedial technology. This concern was also expressed in the 9 January 2004, *5<sup>th</sup> and G Streets Site ("Site") Our File No. 1976.006* letter submitted to Regional Board staff by the Diepenbrock Law firm, on behalf of the City of Davis. This letter was prepared in response to Regional Board concerns regarding the efficacy of the GETS technology to comply with the terms of Resolution 99-002. The letter from Mike Brady essentially stated that in providing a critical review of GETS performance the Regional Board staff are attempting to modify the conditions of Resolution 99-002.

Resolution 99-002 requires a review of system efficacy and, if required, remedial technology optimization after 2 years of operation. Groundwater extraction was implemented in July 2000 with the intent of performing extraction at 5 GPM. However, extraction has only averaged approximately 1.5 GPM and the optimization Workplan was not submitted until January 2004, approximately 2 years after the City was reminded of their obligations in a 21 February 2002 meeting and after Regional Board staff sent a 29 May 2002 letter alerting the City that their system was not in compliance with the conditions of Resolution 99-002. Our response to the City's 9 January 2004 letter is best summarized in the findings stated in our 17 December 2003 *Quarterly Groundwater Monitoring Report, Third Quarter 2003, Fifth and G Street Sites, Davis, Yolo County* letter. Our findings are reproduced below.

*Regional Board staff concur with the optimization and recalibration efforts discussed in the meeting. However, we are concerned that total expenditure of \$500,000 for the cleanup effort will not result in the fulfillment of the City's obligation to remove 75% of the PCE in groundwater and attainment of the cleanup goal of 5 µg/L as required by Resolution 99-002.*

*The City estimates that approximately \$150,000 remains in the cleanup fund. Based on the Third quarter monitoring results, PCE was detected at 18 µg/L in MW-08 and averages 40 µg/L in the GETS influent. In addition, the GETS is extracting groundwater at 1.4 gpm. This extraction rate is approximate 25% of the rate required by Resolution 99-002. As such, it is unlikely that the cleanup goal of 5 µg/L will be attained using the current cleanup strategy. The City's failure to perform groundwater cleanup in accordance with the specified extraction and mass removal rates specified by Resolution 99-002 therefore invalidate the conditions of economic feasibility allowed by the \$500,000 spending cap.*

*Based on the City's failure to comply with the terms of Resolution 99-002, which dictate minimum operational parameters of the GETS, remediation must be continued at the site, using the GETS or using an alternate remedial strategy, as concurred with by Regional Board staff, regardless of exceedance of the \$500,000 spending cap, until the Resolution 99-002 groundwater cleanup goals are attained.*

The City of Davis is obligated to meet the cleanup criteria established in the Resolution 99-002, in particular, the requirement to clean up the protect the beneficial uses of groundwater. Since operation of the GET system has not met the model predicted performance estimated cleanup costs may be exceeded.

6. Table 4 lists the estimated cost per gram of PCE removed at \$3.00 by dual phase extraction (DPE). Alternatively, the cost per gram increases to \$260 using an additional GETS well. This cost comparison suggests that DPE is capable of removing approximately 80 times more PCE mass than the remedial system featuring the additional GETS well. In addition, use of the DPE technology will increase EX-1 extraction rates and also address vadose zone contamination. These advantages indicate that remediation of the PCE plume in downtown Davis may be more expeditiously accomplished using DPE.
7. Please proceed with the recommended well development and report on the resultant effects on an addendum to the GET optimization Workplan addressing our comments by 12 April 2004.

If you have any questions please contact me at (916) 464-4811 or [taylorb@rb5s.swrcb.ca.gov](mailto:taylorb@rb5s.swrcb.ca.gov).

  
Brian Taylor, R.G.  
Associate Engineering Geologist

cc list on next page

Mr. Robert Weir  
City of Davis

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26 February 20

cc: Ms. Jeannie Hippler, City of Davis Redevelopment Agency, Davis  
Yolo County Environmental Health Services Department, Woodland  
Mr. Daniel K. Dowling, Dowling Properties, Davis  
Mr. Jim Curtis, Kennedy Jenks Consultants, Sacramento  
Mr. Bob Hart, El Macero  
Livingspace, Partnership c/o Mr. Daniel K Dowling, Davis  
Mr. Randy Miller, Davis  
Mr. Suresh Patel, Paradise  
Mr. W. Robert Powell, Davis  
Ms. Lynn Yackzan, Davis  
Mr. Michael Brady, The Diepenbrock Law Firm, Sacramento  
Mr. Jeffory J. Scharff, Law Offices of Jeffory J. Scharff, Sacramento  
Ms. Harriet A. Steiner, McDonough, Holland & Allen, Sacramento  
Mr. Jim Wilson, Bellevue, Washington

**COPY**

April 12, 2004

Mr. Brian Taylor  
California Regional Water Quality Control Board  
Central Valley Region ("Regional Board")  
11020 Sun Center Drive #200  
Rancho Cordova, CA 95670-6114

**Subject: GETS Optimization Work Plan and Response to Regional Board's  
February 27 2004 Letter; Fifth and G Street Site, Davis, Yolo County**

Dear Mr. Taylor:

The City of Davis ("City") is in receipt of the above-referenced letter ("Regional Board Letter") and has a number of comments and responses which are arranged below by reference to the order in which the issues appear in the Regional Board Letter.

First paragraph. The City agrees with each statement in this paragraph.

Second paragraph. The Regional Board states that combined pumping from existing well EX-1 and the proposed new well at a rate of 5.5 gpm would "comply with the extraction rate specified in Resolution 99-002" and that "groundwater extraction began in July 2000 with the intent of performing extraction at 5 gpm." [The latter quote is from comment #4.] The modeling referred to in the April 29, 1999 Staff Report supporting Resolution 99-002 references groundwater modeling at 2, 4.5 and 10 gallons per minute (gpm). This range of pumping rates were evaluated during the negotiations with Regional Board Staff leading up to Resolution 99-002 because the pumping rate that could be achieved at the location selected by Regional Board Staff for well EX-1 was unknown at that time. The pumping rate for extraction well EX-1 was not known until the aquifer pumping test was completed in May 2000 and as reported in the *Groundwater Extraction and Treatment System Installation and Aquifer Pumping Test Report* (Kennedy/Jenks Consultants [Kennedy/Jenks], September 2000). The pumping rate for extraction well EX-1 was estimated, based on the May 2000 aquifer pumping test, to be 2 gpm. The groundwater modeling discussed in the April 1999 Staff Report was calibrated in the *Groundwater Extraction and Treatment System Installation and Aquifer Pumping Test Report* to 2 gpm.

Comment #1. The Regional Board concurs with the City's proposal to redevelop well EX-1. The City's consultant, Kennedy/Jenks, will coordinate this work. Please note however that the Regional Board incorrectly represents that the Kennedy/Jenks cover letter states that the "insufficient GETS extraction rate of 1.5 gpm is *attributable to* clogging of the filter pack around EX-1 (emphasis added)." That is not what the cover letter stated. Specifically, Kennedy/Jenks stated that "the decline in pumping rate *may* be due to clogging of the filter pack (emphasis added)." The referenced paragraph is quoted in full below.

"Kennedy/Jenks has given considerable thought to the performance of the GETS, specifically the sustainable pumping rate from extraction well EX-1. For periods of time the pumping rate from extraction well EX-1 has achieved and sustained the design pumping rate of 2 gallons per minute (gpm). Over time this rate has declined to the current average of 1.5 gpm. Although we are not certain, we believe the decline in pumping rate may be due to clogging of the filter pack surrounding the extraction well. To overcome this, Kennedy/Jenks recommends that the extraction well be aggressively redeveloped by jetting with airlift pumping. This operation should temporarily lift the filter pack and allow removal of accumulated fines. We recommend that this operation be completed and GETS operation resumed for at least one month to re-evaluate the GETS performance prior to installing a second extraction well."

Comment #2. The Regional Board expresses concern over technical justification for location of an additional extraction well. The following discussion addressing those concerns is provided as a courtesy to the Regional Board only. Because the cost of such work would well exceed the remaining amount of money under the Resolution No. 99-002 cost cap (roughly \$120,000) this work will not be pursued further by the City.

The *GETS Optimization Work Plan* (Work Plan) (Kennedy/Jenks, 30 January 2004) does not select a location for an additional extraction well. Section 4.4.1 discusses the assumed pumping rates for a well located north of existing well EX-1 (4 gpm) versus a well located south of extraction well EX-1 (1.5 gpm) based on the City's knowledge of site lithology, GETS performance, and the results of the 1995 aquifer pumping test. Section 4.4.4 restates these pumping rates as the basis for the cost analysis.

Section 4.4.1 presents assumed mass removal rates based on the distribution of PCE within the shallow water-bearing zone. Mass removal from a new well located north of extraction well EX-1 is assumed to be 0.8 grams of PCE per day based on historical concentrations of PCE in this area and the performance of the 1995 aquifer pumping test conducted to the northeast of existing well EX-1. Mass removal from a new well located south of extraction well EX-1 is assumed to be 0.3 grams of PCE per day based on historical concentrations of PCE detected in samples collected from well MW-5.

The Work Plan does not incorporate the results of the *Quarterly Groundwater Monitoring Reports*. A review of the groundwater/chemical graphs over time in the Reports indicates PCE

concentrations detected in samples collected from well MW-11, located to the north and west of extraction well EX-1, have been similar, over time, to the concentrations in samples collected from well MW-5. Currently, the concentrations detected in samples collected from well MW-11 are numerically lower than concentrations detected in MW-5 (12 µg/l vs. 13 µg/l, Fourth Quarter 2003). The decrease in PCE concentrations in the samples collected from well MW-11 may be attributable to the mass removal achieved by the GETS.

The Regional Board does not take into account the soil gas data provided in the Work Plan as it may pertain to the selection of the location of a new extraction well. Figures 5 through 7 indicate the greatest concentration of PCE in soil gas as depth below ground surface increases is to the north of extraction well EX-1. The interaction of dissolved PCE in water and PCE in soil gas is acknowledged by the Regional Board. A new extraction well located north of extraction well EX-1 would take advantage of this fact.

Comment #3. The Regional Board requests an explanation for why the City does not anticipate that an additional well would not negatively impact the pumping rate of EX-1. As with the City's response to Comment #2, the following analysis is provided as a courtesy. The City has no obligation to proceed with this or any other work the Regional Board requests which would exceed the cost cap in Resolution No. 99-002.

Extraction well EX-1 has created and maintained a cone of depression that is definable within engineering accuracy. A new extraction well would also create a cone of depression that can be estimated based on lithology, GETS performance data, and 1995 aquifer pumping test data. The location of a new extraction well would need to be positioned so the cones of depression do not overlap to a significant extent causing a negative impact to the pumping rate of either well.

Comment #4. The Regional Board again insists that the cost cap in Resolution No. 99-002 no longer applies. Rather than respond to the City's explication of Resolution No. 99-002 the Regional Board repeats selective quotes from Resolution No. 99-002 and the accompanying staff report. If Regional Board staff wishes to address the City Council on this issue, please contact the undersigned. Staff's continued insistence upon an unsupportable interpretation of Resolution No. 99-002 undermines the City's efforts to comply with the directives of the Regional Board itself. If Regional Board staff truly believes that the City has not complied with Resolution No. 99-002, now is the time for the Regional Board to say so and explain exactly what the City could do, consistent with Resolution No. 99-002, to achieve compliance.

Comment #6. The Regional Board opines that a dual phase extraction system (DPE) would be 80 times more effective in removing PCE. Again as discussed above, the cost of such a system would well exceed the remaining funds under the cost cap. Under Resolution No. 99-002, the City has no obligation to exceed the costs cap and will not expend such funds. As a courtesy, the City provides the following response to the Regional Board's statements regarding the efficacy of DPE.

Mr. Brian Taylor  
California Regional Water Quality Control Board  
Central Valley Region  
April 12, 2004  
Page 4

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The use of the conceptual cost estimates generated for a feasibility evaluation of technologies to suggest that DPE is capable of removing 80 times more mass than the addition of a second extraction well is inappropriate. This reasoning assumes that there is 80 times more PCE mass within the combined capture envelope (SVE radius of influence and increased cone of depression created by the vapor gradient—the effective area of remediation) created by a DPE system than within the combined cones of depression of two extraction wells. As noted in Section 4.2.2.1 and based on the 1995 SVE Test #1, the DPE is assumed to create a radius of influence of 13 feet at depths of 30 to 40 feet. It is unknown, but unlikely, whether 80 times the PCE mass resides within this 5,300 cubic foot volume (the effective area). Section 5 of the Work Plan discounts DPE as being too limited in the effective area of remediation. To increase the effective area of remediation for DPE, a second dual-pump system could be installed at a cost very similar to the installation of the second extraction well. This would not guarantee access to 80 times the PCE mass and would increase the cost per pound of PCE removed to slightly greater than the cost for mass removal by the combination of the existing extraction well and a new extraction well.

Conclusion. The City will provide the requested information, as described above, by April 12, 2004. The City will not expend funds in excess of the cost cap. The City again requests that the Regional Board take a more constructive, and legally appropriate, approach in light of Resolution No. 92-002.

If you have any questions, please do not hesitate to contact me.

Sincerely,

Robert Weir  
Public Works Director