



DAMES & MOORE

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October 5, 1992

Alameda County Health Agency
80 Swan Way, Suite 200
Oakland, California 94621

Attention: Mr. Ravi Arulanathan, Ph.D., CHMM
Senior Hazardous Materials Specialist

Gentlemen:

Request for Written Response
Laguna Oaks Site
Pleasanton, California
For Ahmanson Development Company
(Dames & Moore Job No. 14943-062-015)

Dames & Moore submitted a site characterization report regarding Laguna Oaks site on July 31, 1992, and received verbal comments on August 18, 1992 suggesting a pumping test at the site. Enclosed with this letter are results of a pumping test that was recently completed at the site. These results were discussed with you over the telephone on September 21, 1992.

At this time, we are requesting two items:

- (1) A written confirmation of your approval regarding adequacy of the site characterization effort. We are in urgent need of a response for presentation to the City of Pleasanton.
- (2) Your comments on the pumping test results and the course of action recommended in the enclosure.




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Please call the undersigned if you have any questions.

Sincerely,

DAMES & MOORE


Arshud Mahmood, Ph.D., R.G.E.
Managing Principal


Michael Gemmell
Senior Geologist

AM:MG:am

Enclosure: Pumping Test Results

cc: Mr. John Jang (CRWQCB)

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**SUMMARY OF PUMPING TEST RESULTS
LAGUNA OAKS SITE
PLEASANTON, CALIFORNIA**

INTRODUCTION

The following text presents the results of Dames & Moore's pumping test at the Laguna Oaks site in Pleasanton, California. A site characterization was previously performed by Dames & Moore in July 1992 to delineate the extent of tetrachloroethylene (PCE) in the subsurface at the site. The results of Dames & Moore's characterization study indicated that PCE was limited to a small area in a perched water zone beneath the site (Final Report, Site Characterization, Laguna Oaks Site, Pleasanton, California, D&M Job No. 14943-062-015, July 31, 1992). Subsequently, on August 18, 1992, Messrs. Arshud Mahmood and Mike Gemmell of Dames & Moore met with Mr. Ravi Arulanathan to discuss closure of the Laguna Oaks site. Mr. Arulanathan subsequently met with the California Regional Water Quality Control Board (CRWQCB) to present Dames & Moore's request to close the site. The CRWQCB indicated that site remediation would be required unless it could be shown that remediation was not economically feasible. We have now performed a pumping test at the site to evaluate the feasibility of aquifer remediation by "pump and treat."

PUMPING TEST RESULTS

Between September 15 to September 20, a constant discharge test was set up at the Laguna Oaks site. The test was performed to evaluate transmissivity and storage coefficient of the perched water zone and to evaluate if PCE concentrations changed during pumping. Pumping was performed at MW-3, the well containing the highest PCE concentrations. Water level changes were monitored at the other onsite monitoring wells to evaluate the aquifer characteristics. A 2-inch submersible pump was utilized for the test.

A flow was induced at MW-3 for brief periods on September 16, 17, and 20. The discharge varied between 0.03 to 0.15 gpm. However, because of the low permeability of the perched aquifer, the flow could not be sustained for more than a few hours, and a quantitative evaluation of the aquifer characteristics could not be performed. The water volume in the well, and the well recharge rate were not sufficient to sustain a flow for meaningful periods. A drawdown or water level drop could not be observed in the adjacent wells, confirming the low soil permeability.

Although a quantitative evaluation of aquifer hydraulics was not possible, literature values for hydraulic conductivities of low-yield predominately clay formations are on the order of 1×10^{-6} cm/sec or less (Freeze and Cherry, 1979). Using this value, a gradient of 0.05 ft/ft measured at the site, and an effective porosity of 0.3, the rate of contaminant transport ($v=k dh/dl/\text{porosity}$) is estimated to be less than one foot per year. The fine grain clay is likely to adsorb the contaminant as it moves through the formation.

CONCLUSIONS

1. Based on the site characterization results, the PCE contamination at the Laguna Oaks site is limited to a small, defined zone of perched water.
2. Based on our monitoring results, the results of hydraulic testing, and significant adsorption to the soil matrix, as would be expected with a fine-grain formation, the likelihood of the spread of the PCE contamination is very low.
3. If continued monitoring for four quarters detects no spread of contamination, then site closure is technically achieved.

RECOMMENDATIONS

Based on the site characterization and hydraulic testing performed at the site, it is our recommendation that it is not economically feasible to remediate the PCE present in the perched aquifer beneath the site. Review of boring logs and low recharge rates recorded during well development, in addition to the pumping test, confirm the lack of viability of "pump and treat."

In view of the above and the lack of hydraulic connection of the perched water zone with any underlying regional aquifers, we request that the site be considered closed, with the stipulation that there is no significant change in the above conditions. The conditions will be monitored for the next four quarters.

We also request that a letter be issued, affirming your agreement.