



December 30, 1991

Environmental Geosciences Engineering

a division of Water Resources Associates, Inc. Phoenix, Arizona

Mr. Ravi Arulanantham, Hazardous Materials Specialist
Alameda County Health Care Services
Department of Environmental Health
Hazardous Materials Program
80 Swan Way, Rm.200
Oakland, CA 94621

*MW-4 NO
MW-2 - yes for one
more qtr.*

Subject: Proposal to collect water samples from four of the six groundwater monitoring wells existing at 6310 Houston Place, Dublin, California.

file

Dear Mr. Arulanantham:

Environmental Geosciences Engineering (EGE) respectfully submits this monitoring variance request for the above referenced property to allow for reduction from six to four wells, of the number of monitoring wells utilized for quarterly monitoring. This request for monitoring variance presents a site history, geologic and hydrogeologic considerations and the results of past quarterly monitoring for existing wells. The client has a limited budget but wishes to comply with the monitoring requirements. Based on the considerations presented herein, we consider that the water sampling performed in four of the six wells existing at this site will be sufficient to monitor the ground water during this Corrective Action Program.

SITE HISTORY

Previous work has been described in Kleinfelder (1989), Safety Specialists (1989 a and b, 1990), NSI Technology Services Corporation (1990) and Eirra Corporation (1991). A 500 gallon waste oil tank and two 12,000 gallon diesel tanks were removed from the property in 1989. One 12,000 gallon diesel tank remains in place for continued use. Four monitoring wells were previously installed at the property. Monitoring results, presented in Table 1, attached, have indicated a gradual and consistent decline in groundwater hydrocarbon concentrations over time. Two additional monitoring wells have been installed; MW-5 located downgradient of the former waste oil source and MW-6 approximately 150 feet downgradient of the diesel excavation, in the centerline of the plume, as defined by a previous consultant. For monitoring well locations see Figure 2, attached.

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GEOLOGIC AND HYDROGEOLOGIC CONSIDERATIONS

The subject property is located in an area zoned for light industrial use. As a result of past land use practices, several known sources of groundwater contamination have come to be located in the shallow water bearing zone in the area of the site. The shallow water bearing zone is generally comprised of clay with a low hydraulic conductivity and high retardation coefficient. Given the low hydraulic conductivity, low gradient and high retardation coefficient of the shallow water bearing zone, the potential for transport of hydrocarbon constituents in groundwater is very limited.

Evaluation of groundwater flow direction and gradient reveals the influence of hydrogeologic inhomogeneities, such as clay deposits. Utilizing published estimates for hydraulic transmissivity, effective porosity and the calculated gradient, it is estimated that groundwater flow beneath the site has an approximate velocity of between ten and 100 feet per year, which is very low.

Sediments underlying the upper twenty feet of the subject property are composed primarily of clay. Minor lenses of fine grained sand have been encountered. Evaluation of the Zone 7 data indicates that the regional groundwater flow in the vicinity of the site is directed to the south to southeast under an approximate regional gradient of 0.002 feet per foot. The local gradient has been previously calculated to be approximately 0.004 feet per foot. Both gradients are representative of essentially low flow groundwater conditions.

All monitoring wells have been surveyed by professional surveyors. Groundwater elevation data have also been presented in diagrams in previous reports. Comparison of the diagrams illustrates a slight change in on site groundwater flow direction. Groundwater beneath the site flows to the south-southeast under an approximate gradient of 0.001 to 0.004 feet per foot.

LABORATORY RESULTS

The summary of analytical results (Table 1) confirms that the petroleum hydrocarbon concentrations present in MW-1 through MW-4 have been slowly declining towards nondetectable concentrations, although some data spikes do occasionally occur, particularly in well MW-1. With reference to the newly installed wells, review of Table 1 indicates that well MW-5, located downgradient of the former waste oil tank, contains detectable concentrations of petroleum hydrocarbon in groundwater. Monitoring well MW-6, located downgradient of the sources, contains nondetectable concentrations of all constituents analyzed.



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EVALUATION

Figure 2 shows the location of on site wells. Well pairs MW-1 and MW-4, as well as MW-2 and MW-5, are located less than 40 feet apart. It is our professional opinion that an equal benefit can be obtained by monitoring four of the six wells. There is little benefit, if any, to continue the groundwater sampling in all six monitoring wells. The contaminant concentration levels observed in water over time decreased and the present levels of groundwater contamination are low. Residual petroleum hydrocarbon existing in clay pores are not likely to migrate due to the high capillary potential of the matrix and very low hydraulic conductivity. Given laboratory, geological, and hydrogeological data, it is not likely that the low quantities of petroleum hydrocarbons, known to exist at this site, will be subject to significant off site transport.

It is proposed that the plume transport, if any, be monitored by sampling the groundwater in the wells MW-1, MW-3, MW-5, and MW-6, on a quarterly basis. Wells MW-2 and MW-4 will be monitored for water level elevation.

Please call us immediately if further information is required to obtain your approval for this request for variance.

Thank you for your understanding in this matter.

Should you have any question please call either of the undersigned at (510)770-5733.

Very truly yours,

ENVIRONMENTAL GEOSCIENCES ENGINEERING

Valentin Constantinescu

Valentin Constantinescu, M.Sc.
Senior Project Hydrogeologist

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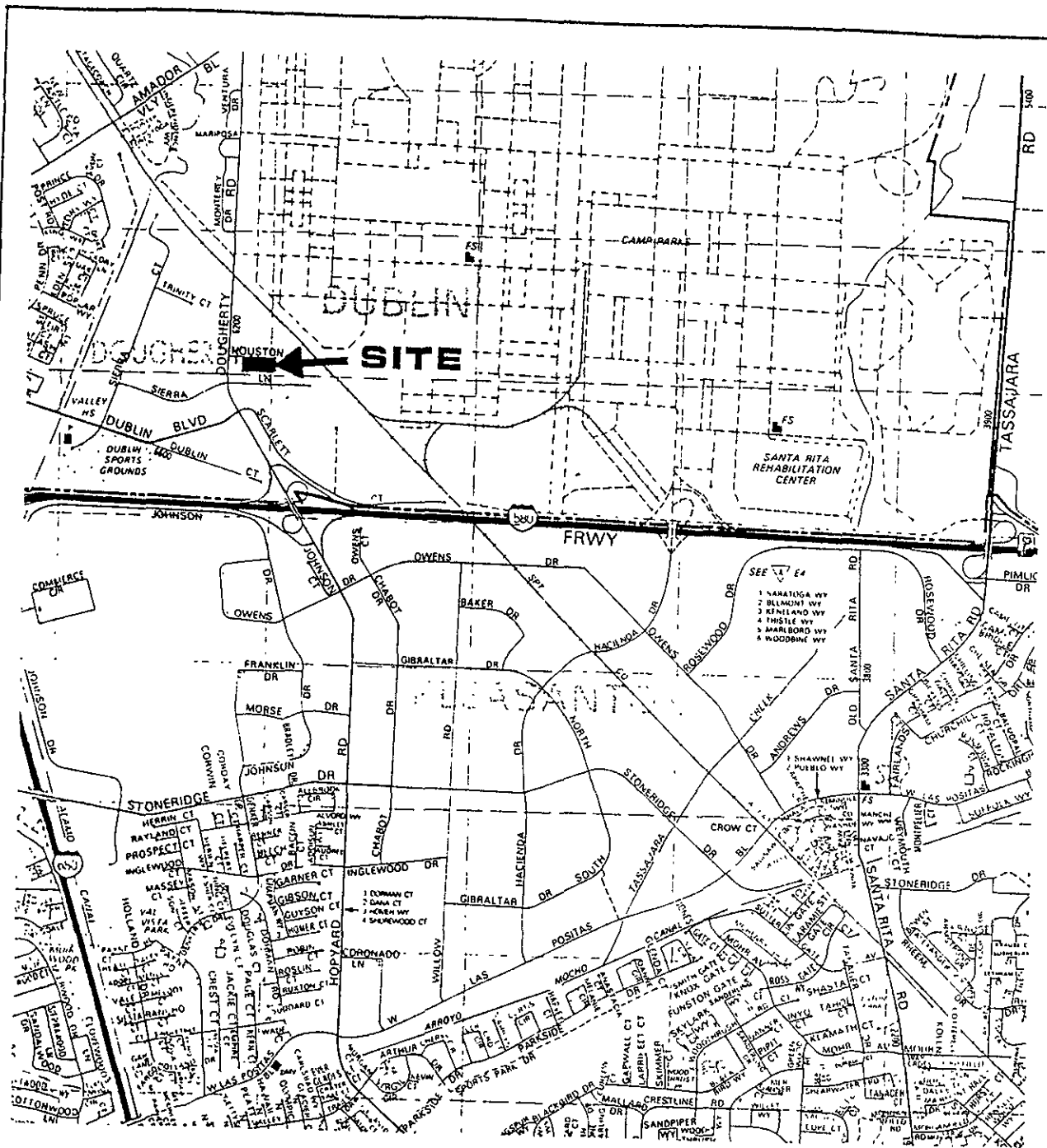
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Attachment

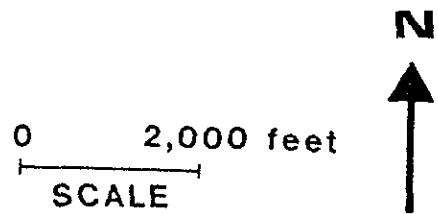


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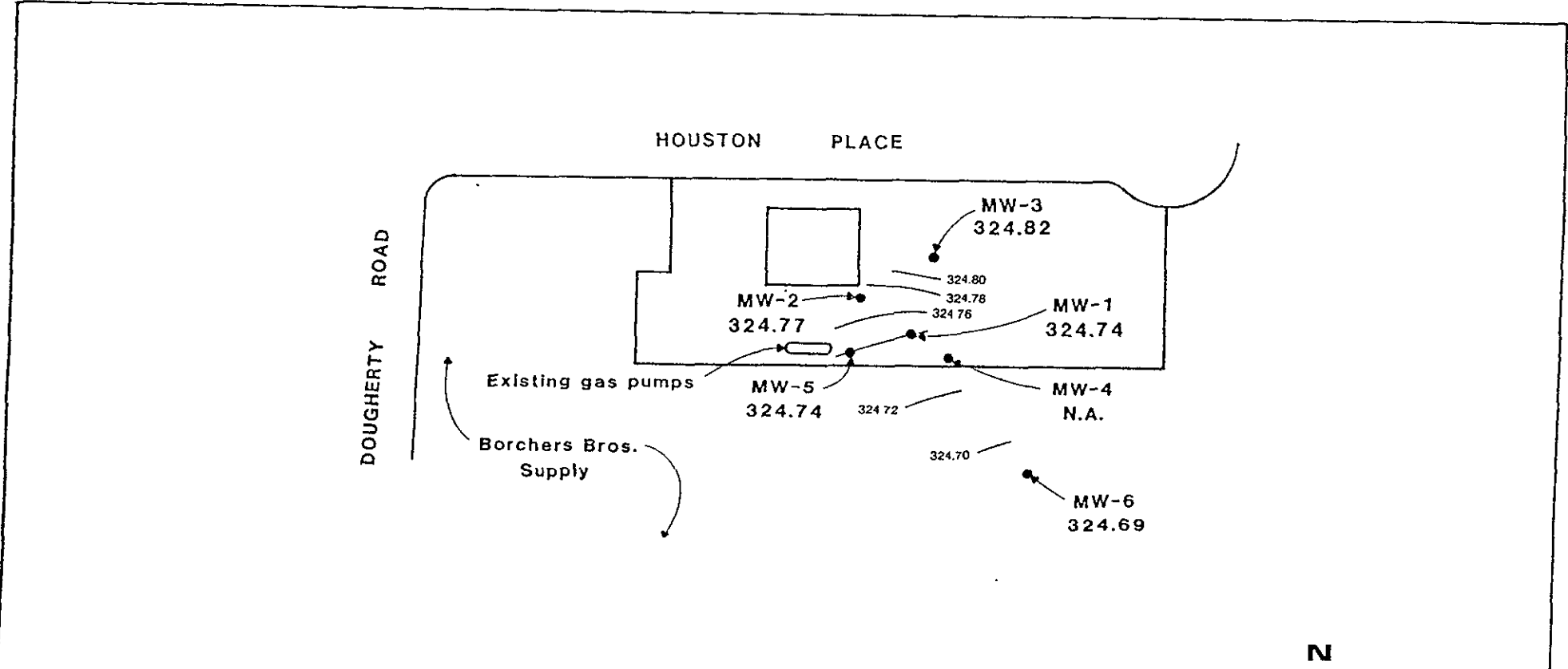




Source: Thomas Bros. Maps,
Alameda County, 1989

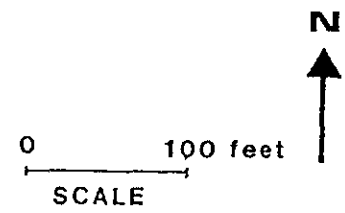


	Environmental Geosciences Engineering a division of Water Resources Associates, Inc. Phoenix, Arizona		WINNING ACTION INVESTMENTS Location Map	Figure 1
	Project No. 70120	Drawn by: v. c.		
Date: 12/17/91	Checked by: C. M. F.			



EXPLANATION

- MW-1 ● Monitoring well
- 323 - Water level of shallow water bearing zone (feet above mean sea level)



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	Environmental Geosciences Engineering a division of Water Resources Associates, Inc. Phoenix, Arizona		WINNING ACTION INVESTMENTS GROUNDWATER LEVEL CONTOUR MAP	Figure 2
	Project No. 70120	Drawn by: v. c.		
	Date: 12/17/91	Checked by: C. M. F.		

Table 1. Summary of historical groundwater monitoring results for American City Truck Stop, Winning Action Investment, Dublin, CA

MONITORING WELL MW-1

<u>DATE</u>	<u>TPHD</u>	<u>TOG</u>	<u>B</u>	<u>T</u>	<u>E</u>	<u>X</u>
8/15/89	10.6	N/A	0.016	ND	0.0024	0.0031
12/13/89	60.0	N/A	ND	ND	ND	ND
6/20/90	4.3	7.2	ND	ND	ND	ND
8/30/90	15.0	20.0	ND	ND	ND	ND
3/01/91	<0.05	<0.5	N/A	N/A	N/A	N/A
7/19/91	10.0	20.0	N/A	N/A	N/A	N/A

MONITORING WELL MW-2

<u>DATE</u>	<u>TPHD</u>	<u>TOG</u>	<u>B</u>	<u>T</u>	<u>E</u>	<u>X</u>
8/15/89	47.0	50.0	ND	ND	ND	ND
12/13/89	34.0	95.0	ND	ND	ND	ND
6/20/90	1.2	ND	ND	ND	ND	ND
8/30/90	1.8	2.5	ND	ND	ND	ND
3/01/91	<0.05	1.9	N/A	N/A	N/A	N/A
7/19/91	2.3	8.9	N/A	N/A	N/A	N/A

MONITORING WELL MW-3

<u>DATE</u>	<u>TPHD</u>	<u>TOG</u>	<u>B</u>	<u>T</u>	<u>E</u>	<u>X</u>
8/15/89	2.0	N/A	ND	ND	ND	ND
12/13/89	1.7	N/A	ND	ND	ND	ND
6/20/90	ND	ND	ND	ND	ND	ND
3/01/91	0.45	0.6	N/A	N/A	N/A	N/A
7/19/91	0.32	0.7	N/A	N/A	N/A	N/A

MONITORING WELL MW-4

<u>DATE</u>	<u>TPHD</u>	<u>TOG</u>	<u>B</u>	<u>T</u>	<u>E</u>	<u>X</u>
6/20/90	22.0	8.6	ND	ND	ND	ND
8/30/90	0.560	2.4	ND	ND	ND	ND
3/01/91	0.73	1.4	N/A	N/A	N/A	N/A
7/19/91	0.72	1.2	N/A	N/A	N/A	N/A

MONITORING WELL MW-5

<u>DATE</u>	<u>TPHD</u>	<u>TOG</u>	<u>B</u>	<u>T</u>	<u>E</u>	<u>X</u>
3/07/91	74	160	<0.0005	0.0012	0.001	0.0022
7/19/91	32	34	<0.0005	<0.0005	<0.0005	0.0020
DHS/DWS	--	--	0.001	---	0.680	1.750

Continued on following page

Table 1. (continued) Summary of historical groundwater monitoring results for American City Truck Stop, Winning Action Investment, Dublin, CA

MONITORING WELL MW-6

<u>DATE</u>	<u>TPHD</u>	<u>TOG</u>	<u>B</u>	<u>T</u>	<u>E</u>	<u>X</u>
3/07/91	<0.05	<0.5	N/A	N/A	N/A	N/A
7/19/91	<0.05	<0.5	N/A	N/A	N/A	N/A
DHS/DWS	--	--	0.001	---	0.680	1.750

Note: 1989 and 1990 results reported in Winters Petroleum (1989), Safety Specialists (1989) and NSI (1990).

Groundwater concentrations expressed in milligrams per liter (mg/L), or ppm.

Abbreviations

TPHD - total petroleum hydrocarbons as diesel

B - benzene

T - toluene

X - xylene

E - ethylbenzene

TOG - total oil and grease

ND - not detected

N/A - not analyzed

DHS/DWS - California Department of Health Services Drinking Water Standards (CCR Title 22)