

red 2/20

LAW OFFICE
PETER MACDONALD
400 MAIN STREET, SUITE 210
PLEASANTON, CALIFORNIA 94566

(415) 462-0191
FAX (415) 462-0404

February 15, 1990

Rafat Shahid
Hazardous Materials Division
Department of Environmental Health
80 Swan Way, Suite 200
Oakland, California 94621

**SUBJECT: Proposed Work Plan For Characterization Of Petroleum Contamination,
187 North "L" Street, Livermore, California**

Dear Mr. Shahid,

We have progressed to the point where we now have a Proposed Work Plan for the Characterization of Petroleum Contamination at the Arrow Rental site in Livermore. Based on my discussions with Leslie Peeters from Science Applications International Corporation ("SAIC") and Al Ridley from Woodward-Clyde Consultants, it is my understanding that the best practice is to submit the Proposed Work Plan for review and comment by the Hazardous Materials Division of Alameda County prior to putting the work out to bid.

Thus I hereby submit the Proposed Work Plan to you and, by copy, to the Regional Water Quality Control Board. As you know, the City of Livermore has planned a Redevelopment Project for the site and further progress on that project is dependent upon a timely review of this Proposed Work Plan by the County.

We have obtained the cooperation of the City of Livermore Redevelopment Agency, Mobil Oil and several of our insurance companies to provide funding for the Proposed Work Plan. Thus we expect to proceed expeditiously upon receipt of your approval. Should you have any questions relating to the technical aspects of the Proposed Work Plan, please call Leslie Peeters of SAIC at 415-463-8111 Ext. 113. All other questions and requests should be directed to me at 415-462-0191.

422 2990
How
is tank being used?
Should be removed -
monitoring - Sub tests 1b unnecessary

Mr. Rafat Shahid
February 15, 1990
Page 2.

Thank you for your continuing cooperation and assistance.

Very truly yours,



Peter MacDonald

PM:kjm
Enclosure

cc: **Lester Feldman**, Regional Water
Quality Control Board
Tony and Rita Sullins,
Arrow Rentals
Leslie Peeters, Science Applications
International Corporation
Al Ridley,
Woodward-Clyde Consultants
Karen Majors, City of Livermore
Redevelopment Agency
Stan Roller, Mobil Oil Company
Roger Westendorf, Bullivant, Houser,
Bailey, Pendergrass & Hoffman
Frances A. Baker, Scottish & York

PROPOSED WORK PLAN
FOR
CHARACTERIZATION OF PETROLEUM CONTAMINATION
187 NORTH L STREET, LIVERMORE, CALIFORNIA

INTRODUCTION

Previous exploration at this site has detected petroleum product contamination in soil and groundwater at the site (WCC, 1989A, 1989B). As a result of review of that information the Alameda County Hazardous Materials Division of the Department of Environmental Health (letter dated July 25, 1989) has requested that additional site studies be performed and that a work plan for site remediation be submitted to the County for their review.

The previous site exploration detected petroleum in soil in the vicinity of former underground fuel storage tanks from a depth of about 15 feet to the depth of the groundwater table at about 45 feet. Groundwater samples from three 50 to 55 foot deep groundwater monitoring wells installed at the site detected the highest concentration of petroleum products in water from well W-1 located near two former underground fuel storage tanks. Those wells were screened from depths of about 40 to 55 feet. However, well W-1 is also located in the approximate downgradient direction from an existing 1,000 gallon underground gasoline storage tank. It has been reported by Mr. Tony Sullins that during delivery of gasoline several years ago that an unknown quantity (estimated 600 gallons) of gasoline was poured down one of the two vapor monitoring wells near that tank. In addition, since no upgradient groundwater data is available other possible upgradient sources of groundwater contamination were not evaluated.

The purpose of the proposed site exploration work is to develop sufficient soil and groundwater information to form the basis for development of a Site Remediation Plan, as requested in the July 25, 1989 letter from Alameda County. Also, the site exploration and laboratory testing will be intended to evaluate the possible relative contribution of petroleum contamination from the former underground tanks, and the reported release into the vapor monitoring well, or an upgradient source.

SCOPE OF WORK

Task 1 - Alternate Source Evaluation

This task will be directed towards evaluation of possible alternative sources of petroleum contamination on-site. This task will include soil exploration along piping from the former tanks, a precision integrity test of the existing fuel tank, and a soil vapor survey around the existing fuel tank.

Subtask 1a - The existence and pathway of the piping connection the former tanks with the pump island will be evaluated using an underground line locating equipment. If the piping is located it will be excavated and removed and disposed of properly. If the piping is located, or it's former pathway found, soil samples will be taken approximately every 20 linear feet with footage adjustments made to locate sampling at pipe joints and junctures. Samples will be taken from undisturbed material. Collection, storage and transportation techniques will be as described under Task 1. Samples will be analyzed for gasoline and BTX&E using EPA Method 8020/8015 and diesel using EPA Method 3550/8015. In addition, soil samples taken from pipe joints and junctures will be fingerprinted and analyzed for organic lead, as discussed under Task 3.

Subtask 1b - A precision integrity test will be performed on the existing 1,000 gallon underground gasoline storage tank. The purpose of this test is to evaluate if the tank is leaking, and could be a source of petroleum contamination.

*Tanks should be
removed*

*tests
are not
valid
except
in gross
cases*

Subtask 1c - A soil vapor study will be performed around the existing 1,000 gallon underground gasoline storage tank. This study will consist of driving temporary probes into the soil at selected points and extracting soil vapors. The probes will be installed immediately adjacent to the tank, in the backfill, and at points on a grid extending north and west across the site. About 15 sample points will be used. A portable laboratory will be used to analyse the sampled soil gas at the site. Soil gas will be analysed for TPH as gasoline, with BTEX, using EPA method 8020/8015.

remove tank

Task 2 - Exploratory Borings and Groundwater Monitoring Wells

A total of six exploratory borings will be drilled to investigate the extent of petroleum contamination in the vicinity of the site. Three exploratory borings will be drilled on the 187 North L Street site, and three borings will be located off site. See Figure 1 as a reference to the location of existing and proposed borings and wells.

One exploratory boring B-A will be drilled in the vicinity of the vapor monitoring well near the 1,000 gallon gasoline storage tank that is the reported location of a past gasoline spill. The boring will be drilled into the tank's backfill at a point intended to be the optimal location for detecting residual gasoline, if present. The selection will be made based on the facts of the spill incident and the flow dynamics of gasoline in the tank excavation. That boring will be drilled using hollow stem auger methods. Soil samples will be collected with a drive sampler from the backfill adjacent to the tank, and at 5 foot depth intervals to the depth of groundwater which is at about 45 feet. Soil samples will be retained in clean brass tubes, and will be sealed with plastic end caps, labeled and placed in an ice chest. The soil samples will be transported to a state approved commercial analytical laboratory using chain-of-custody procedures. During drilling an organic vapor analyser will be used to perform field evaluations of the presence of organic vapors in the soil

from the boring. The location of samples, geologic materials, and moisture conditions will be recorded on a log by a geologist or engineer during drilling. The boring will be backfilled with a cement/bentonite slurry at the completion of drilling.

Two groundwater monitoring wells W-A and W-B will be installed on the site. Both of these wells will be constructed using 4 inch diameter PVC well casing, to allow for the possible use of these wells as groundwater extraction wells. One well (W-A) will be located downgradient of the 1,000 gallon gasoline tank, and well (W-B) will be located near the north property line downgradient of well W-1. (These wells will be drilled after the flow direction has been evaluated more accurately using data from the three in-place and four proposed monitoring wells.) The wells will be constructed using 12 inch diameter hollow stem augers. Soil samples will be collected at 5 foot depth intervals as described above for boring samples. The wells will be drilled to depths of about 60 feet to explore the depth of the shallow water bearing layer. Previous exploration has encountered a clay layer at 55 feet in well W-1 and a clayey gravel at 50 feet in well W-3. If a clay layer is encountered that could form an aquitard, the portion of the boring drilled into the clay layer will be backfilled with bentonite pellets. (The well will be constructed by placing a screened section from the top of that clay layer, if found, to about 5 feet above the top of groundwater. The annulus around the casing will be filled with appropriately sized sand filter materials to a point about 2 feet above the screened interval.) About 2 feet of bentonite pellets will be placed above the sand filter as shown in Figure 2. A cement/bentonite slurry will be placed in the annulus from the top of the bentonite to the surface. The on-site wells will be completed below grade, the covered with a meter box. A plastic cap will be placed over the casing and a locking cover will be placed over the cap for security.

Three off-site wells will be drilled as approximately shown on Figure 3. One well (W-C) will be drilled upgradient (southeast) of the 1,000 gallon

groundwater
flow -
wells will
be screened

with

underground gasoline tank, and two wells (W-D, W-E) will be drilled downgradient of the site. The upgradient well (W-C) will either be located on the property immediately south of the 187 North L Street Property, or within L Street, depending upon the location of utilities and site access. The upgradient well (W-C) will be constructed using 8 inch diameter hollow stem augers, and will be constructed using 2 inch diameter PVC well casing. Soil samples will be collected at 5 foot depth intervals as described above. The well will be about 60 feet deep, and will have a screened section and construction as described above. An effort will be made to locate the two downgradient off-site wells within about 150 feet of the north property line of the site. One well (W-D) will be located downgradient of well W-1 and the second well (W-E) will be located downgradient of well W-3. If permission to drill on the Western Pacific Railroad property cannot be obtained, then the wells could be located in the M Street right of way, or the property north of the railroad property. Both downgradient wells will be constructed using 2 inch diameter well casing as described above. Every effort will be made to explore for the possible presence of a clay aquitard beneath the shallow water bearing zone, and to avoid penetration of such a clay layer. The off-site wells will either be constructed with an above grade locking cover, or a below grade locking cover and meter box, as is appropriate.

Soil cuttings from drilling will be placed in 55-gallon barrels and stored temporarily at the site. Following a review of the laboratory test results of soil samples, the contaminated soil will be disposed of at an appropriate waste disposal facility. Uncontaminated soil may be disposed of at the site.

Task 3-Groundwater Sampling

Each groundwater monitoring well will be developed by bailing or pumping until the extracted water is relatively free of sediment. The extracted water will be placed in 55-gallon drums for temporary storage, and later

proper disposal. The wells will be allowed to stabilize and after about 24 hours the stabilized groundwater levels will be measured. The elevations of the top of the well casings and the locations of the wells will be surveyed to form the basis for evaluating groundwater gradients. Prior to sampling each well, about 3 to 5 casing volumes of water will be removed from the well by bailing and stored in drums until proper disposal. Temperature, pH, and conductivity will be measured during bailing to see that a representative groundwater sample is collected. A groundwater sample will be collected from each well using a clean clear bailer. The sample will be inspected for the presence of floating petroleum product. The groundwater sample will be placed in clean containers provided by the laboratory. Care will be taken to pour the water carefully into the containers to minimize air bubbles, which may affect laboratory results. The samples containers will be labeled and placed on ice in an ice chest for transport to the laboratory under chain of custody procedures.

Task 4 - Laboratory Analysis

About 40 soil samples will be analysed for Total Petroleum Hydrocarbons (TPH) as gasoline (low boiling point) and benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8020/8015 modified. About 8 samples from each of the on site boring and on site wells, and the upgradient wells will be tested for TPH and BTEX using EPA 8020/8015 modified. Each of these soil samples will also be tested for organic lead by AA using graphite furnace, using EPA Method 1510. Two soil samples from the on site boring and from the well downgradient of the 1,000 gallon tank will be tested for a fuel fingerprints. A fuel fingerprint and a test for organic lead will be performed on a sample of fuel from the 1,000 gallon tank. About 12 soil samples will be tested for TPH as diesel (high boiling point) using EPA method 3550/8015 modified. These results will be compared to a diesel standard in an effort to establish whether diesel is present or if the detected petroleum is aged gasoline, and its approximate age.

One groundwater sample from each well will be tested for TPH as gasoline, with BTEX using EPA method 8020/8015. One water sample from each well will also be tested for TPH as diesel using EPA 8015. An initial fuel fingerprint will be performed using capillary gas chromatography for a water sample from each well in an effort to characterize the age and source of petroleum. If judged to provide useful information additional fuel fingerprinting will be performed using GC/MS methods. Each groundwater sample will also be tested for organic lead, 2-methylnaphthalene, 2-naphthalene, and phenol.

Task 5 - Aquifer Tests

The hydraulic characteristics of the water bearing zone in the immediate vicinity of two wells will be evaluated by performing slug tests in the two on-site 4 inch diameter wells (W-A and W-B) and two additional wells to be selected following drilling. This may be accomplished by inserting a pressure transducer into the well, or some other water level measurement method, and then either rapidly introducing or removing a volume of water (or a solid slug) and measuring the elevation changes as the water level recovers with time. This method can be used to evaluate the conductivity of the water bearing zone that is screened by the well. This data can be used to evaluate the effectiveness of the two 4 inch wells as groundwater extraction wells.

Task 6 - Analysis and Report Preparation

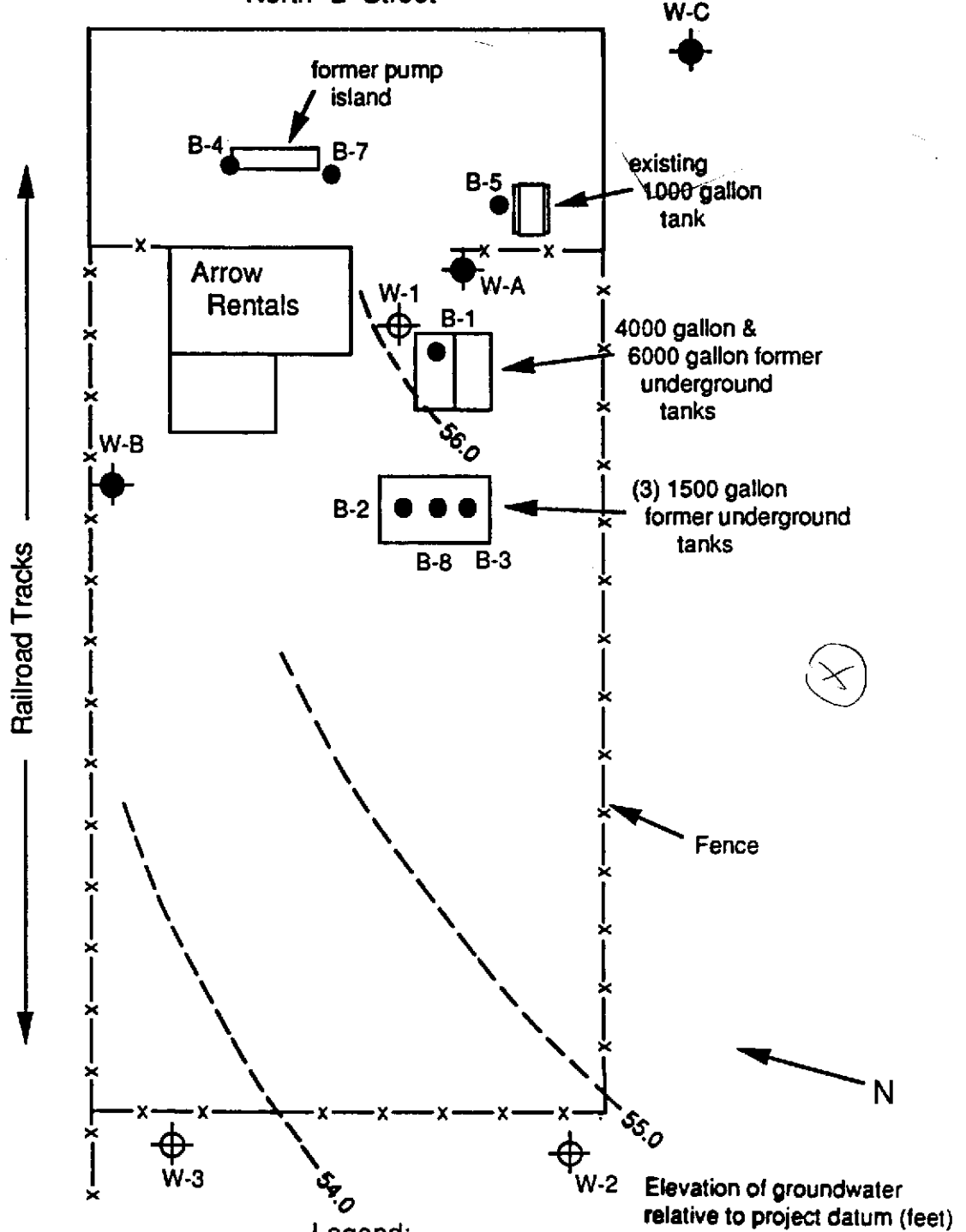
The information developed in tasks 1 through 4 will be analysed and compared to data from the previous site exploration. A report will be prepared describing the results of the site exploration. The report will contain an evaluation of the extent of soil and groundwater contamination, and an evaluation of the source(s) of petroleum contamination. An effort will be made to characterize the sources of contamination by evaluation of fuel fingerprints, relative age dates and organic lead analyses. The

upgradient groundwater data will be reviewed to evaluate possible upgradient sources. If data permits, the relative contribution of the reported gasoline spill in the vapor well will be compared to the contributions from other possible sources of contamination. The report will contain an assessment of the possible remedial measures for soil and groundwater contamination, with general recommendations for the type of remedial actions that would be appropriate for this site.

ESTIMATED SCHEDULE

It is anticipated that about one month may be required to obtain permission to drill the off-site wells. The drilling program will require about three weeks to complete. Groundwater sampling, slug tests, and well surveys will require about another two weeks. Laboratory tests may require about three weeks to complete. It is anticipated that the report will be available in draft form about three weeks after the laboratory results are available. After review by the client, the report can be finalized and made available for submittal to the agencies. A total of about 12 weeks will be required for this scope of work.

North "L" Street

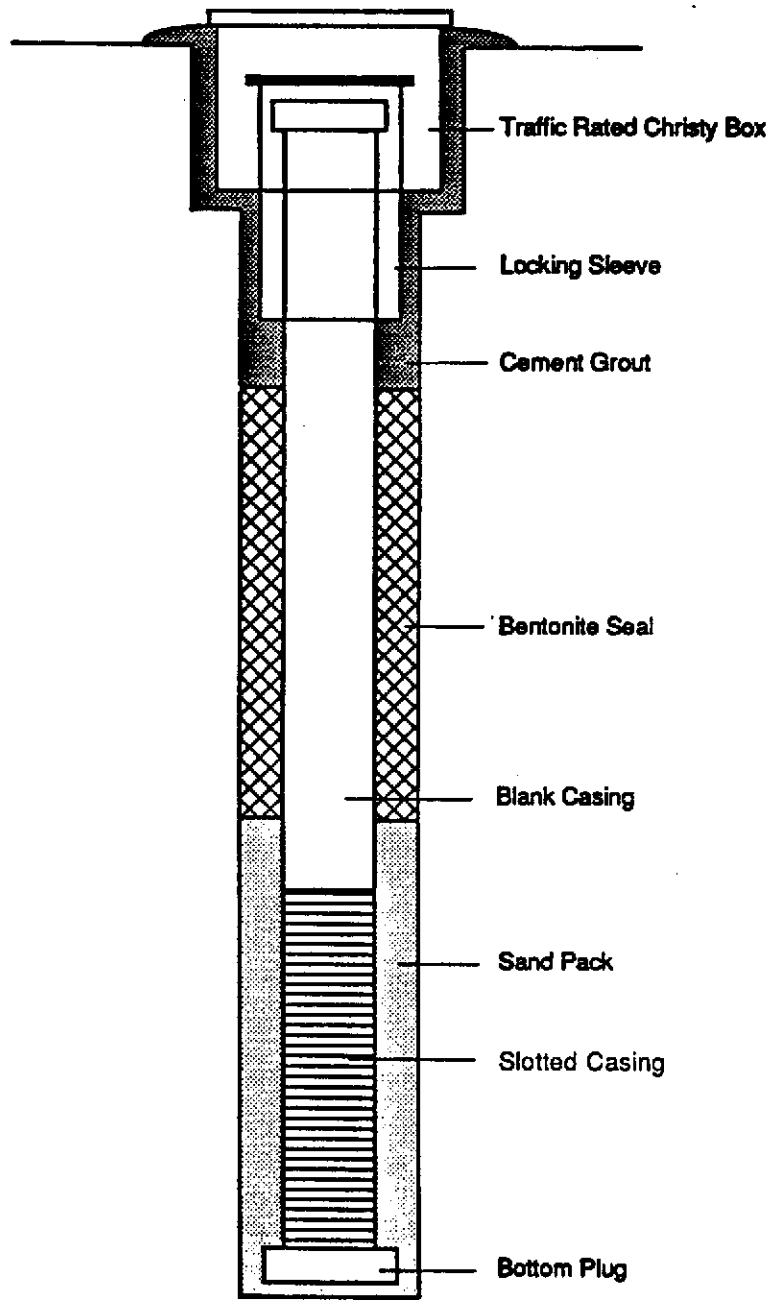


Legend:

- W-A - Approximate Proposed Well Location
- ⊕ W-2 - Existing Monitoring Well
- B-5 - Soil Boring

Scale: 1"=30'
 0 30 feet

Project No. 8810220A	Railroad Ave. Property	Proposed Well Locations Wells, 187 North L Street, Livermore, California	Figure 1
Woodward-Clyde Consultants			



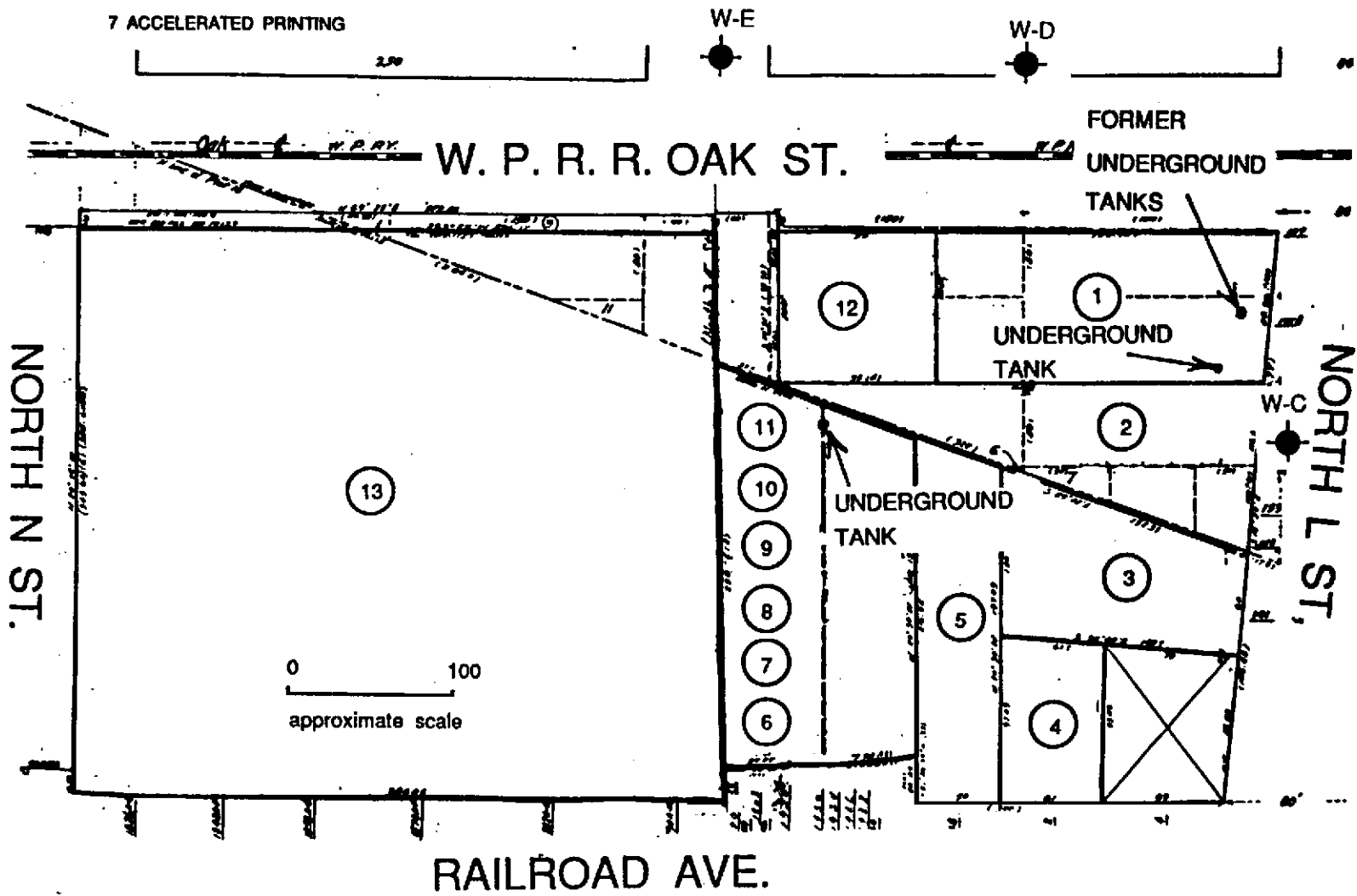
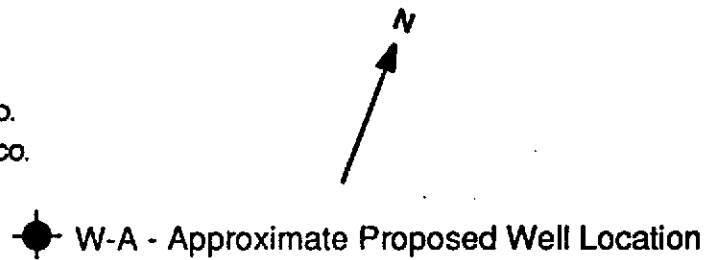
No Scale

Figure 2 TYPICAL MONITORING WELL CONSTRUCTION DETAILS

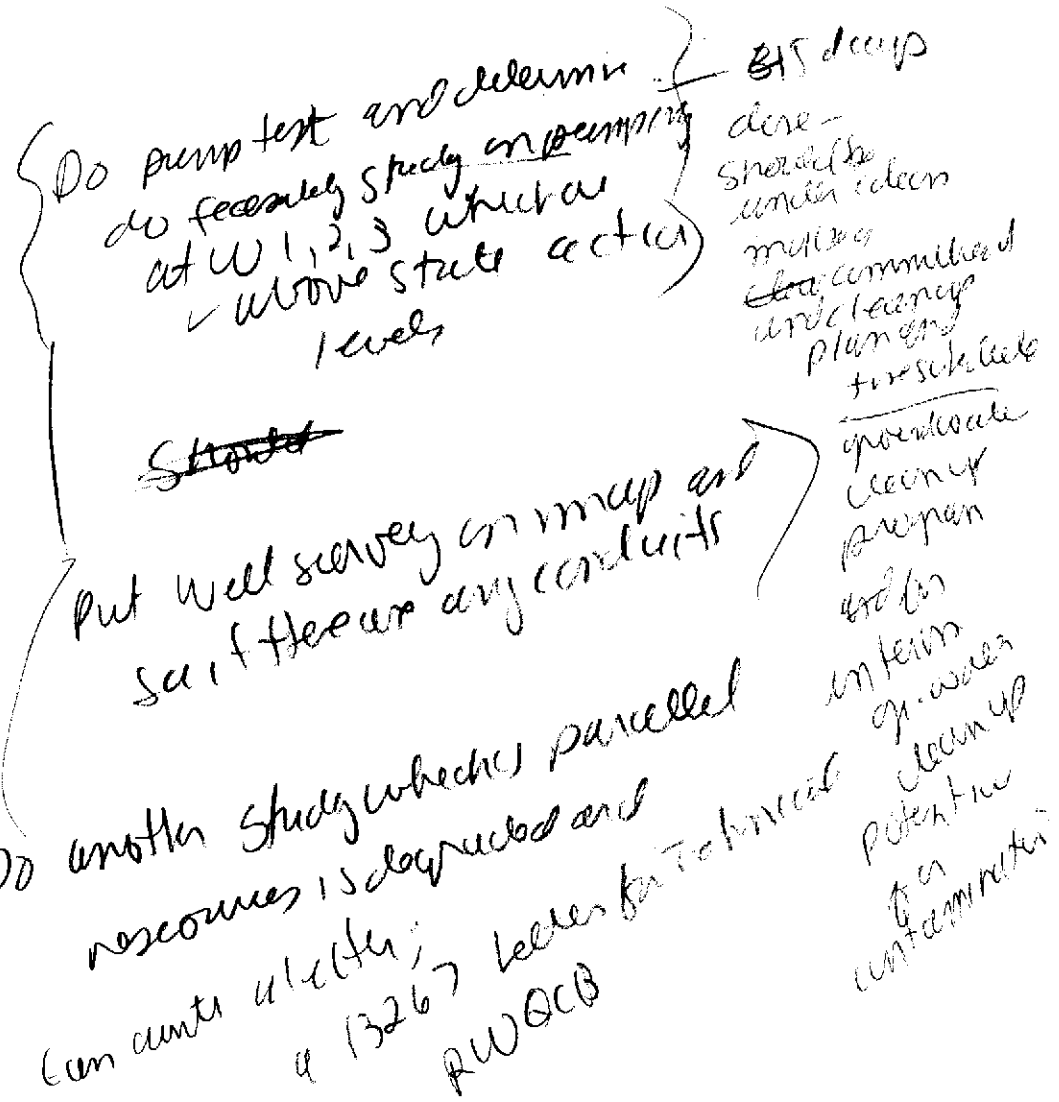
Project No. 8810220A	RAILROAD AVENUE PROPERTY
	WOODWARD-CLYDE CONSULTANTS
APPROXIMATE OFF SITE WELL LOCATIONS	
FIGURE 3	

LEGEND

- | | |
|--------------------------------------|-------------------------|
| 1 ARROW RENTALS | 8 AWARD SIGNS |
| 2 TAXIDERMIST | 9 ROSS McDONALD CO. |
| 3 RESIDENCE - 141 "L" ST. | 10 QUALITY PAINTING CO. |
| 4 RESIDENCE- 1962 RAILROAD | 11 FABTRONICS |
| 5 GIBBONS ELECTRIC & ROONEY GRAPHICS | 12 STORAGE LOT |
| 6 SCHEERINGA BROS. MEATS | 13 TUBBSVILLE |
| 7 ACCELERATED PRINTING | |



1. Pump W1 & treatment - W1 and
2. W1 do monitoring quarterly
and water levels quarterly lease
phase
3. Pump and heading



90 FEB 20 AM 11:31