

Augeas

Jocson Auto Electric
Workplan

17771 Meekland Ave.
Hayward, CA

Augeas Corporation

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CERTIFICATION

This report was prepared under the supervision of a registered professional engineer. All statements, conclusions and recommendations are based solely upon field observations and analytical test results related to the work performed by Augas Corporation.

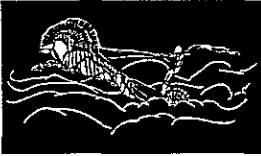
Site conditions are subject to change with time; therefore, our conclusions result only from the interpretation of present conditions and available site information. This report was prepared in accordance with accepted professional standards and technical procedures as certified below.

Reviewed by:

Frederick G. Moss

Frederick G. Moss, P.E., No. 35162
Senior Engineer





1.0 INTRODUCTION

Pursuant to your request, Augeas Corporation has prepared a proposal for a Problem Assessment Report (PAR) study for the above-referenced subject property. The following proposal summarizes the details of our workplan.

2.0 PROJECT HISTORY

The subject property is situated at 17771 Meekland in the Hayward, California. (See Figure 1) The subject property is situated in an area of mixed residential and commercial development.

The site had been previously developed as the Sunland service station in approximately 1974. On January 3, 1991, two 3,000-gallon storage tanks, one 5,000-gallon storage tank and one 300-gallon waste oil tank, associated product piping, and surface pavements were removed. These tanks were believed to contain regular gasoline. Soil samples were taken by Augeas Corporation from the excavated pit. The documentation from this portion of the assessment is included in the attachment.

SEMCO submitted the samples to Superior Analytical Laboratories, Inc. of Martinez, California for analysis. Samples were analyzed for Total Petroleum Hydrocarbon (TPHg) as referenced to gasoline (Methods 5030 & 8015), Total Petroleum Hydrocarbon (TPHd) as referenced to diesel (Methods 5030 & 8020), BTEX (Methods 5030 & 8020), cadmium, chromium, lead and zinc (Methods 7130, 7190, 7420, and 7950, Oil and Grease (Method 5520F), and Halogenated Volatile Organics (Methods 8010). The analytical results from this sampling event indicated that hydrocarbon compounds were present in the sampled soils. TPHg varied in concentration and ranged in value from 7mg/kg to 410 mg/kg. BTEX concentrations ranged in concentration from 4 ug/kg [parts per billion (ppb)] to 18,000 ug/kg.

3.0 PURPOSE AND SCOPE OF WORK

The purpose of the proposed investigation will be to evaluate hydrocarbons in subsoil and groundwater at the subject property in accordance with the criteria specified in the Regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks, Appendix A, Tri-Regional Recommendations for a Problem Assessment Report (PAR).



The scope of the proposed investigation will be accomplished by and limited to exploratory boring and soil sampling, installation of three groundwater monitoring wells, chemical analysis of soil and groundwater samples, laboratory engineering analyses of subsoils and in-situ testing of aquifer characteristics.

The completed Problem Assessment Report should bring the project to a level of understanding where a Final Remedial Plan (FRP) could be formulated, and mitigating or remedial measures implemented. The proposed scope of services will include the following tasks:

Additional research and review of pertinent, readily available geologic and hydrologic literature, review previous site studies, review of local area water wells and local businesses;

Obtaining necessary permits prior to the commencement of the field portion of the investigation;

Drilling and sampling of subsoils for lithologic evaluation and chemical analysis;

Installation, development and sampling three groundwater monitoring wells;

Conduct a survey of installed wells to establish a reference surface elevation for the evaluation of groundwater depth, gradient, and direction of flow;

Chemical analysis of groundwater samples to assess the presence and concentration of petroleum constituents;

Commence quarterly groundwater monitoring at the subject property of proposed monitoring wells; and,

Preparing a written report to present our findings, conclusions and recommendations.

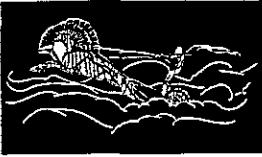


4.0 TECHNICAL APPROACH

Based upon review of previous investigation conducted at the subject property and published data regarding local geographic and hydrologic conditions, Augeas Corporation developed the following technical approach for the proposed investigation.

In order to accomplish the goals established for the proposed investigation, the project would be separated into four distinct work items as follows:

- I. **Field Investigation** to advance exploratory soil borings for the purpose of logging subsurface conditions and obtaining subsoils samples for chemical analysis. Four soil borings will be completed as groundwater monitoring wells.
- II. **Field Testing** of aquifer characteristics by means of slug-testing monitoring wells to evaluate general aquifer conditions.
- III. **Laboratory analysis** of subsoil and groundwater samples obtained from the field investigation to evaluate the presence and concentration of petroleum constituents contamination. Selected subsoils will also be submitted for engineering analysis.
- IV. **Report preparation** summarizing the results of the chemical analysis and the evaluation of applicable mitigating and/or remedial technologies appropriate for the site based upon data obtained from current and previous investigations.



TASK I FIELD TESTING

We propose to install ~~two~~ four additional exploratory soil borings at the subject property at the locations shown on the site plan which is included as Figure 2 of this proposal. Figure 2 also illustrates locations of the former tanks at the subject property. The purpose of these soil borings is to provide additional data regarding the presence of hydrocarbons in subsoils. Field screening of the subsoils samples will help to describe hydrocarbons persistence in a vertical relationship to groundwater.

Three of the four exploratory soil borings will be completed as groundwater monitoring wells. The groundwater monitoring wells will be utilized to evaluate lateral migration of hydrocarbons in groundwater, and provide data for assessing groundwater depths, gradient, direction of flow, groundwater quality, in-situ hydraulic testing and possible future monitoring.

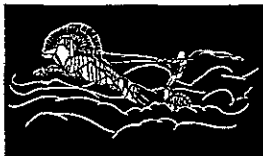
Based upon previous site investigation, we anticipate groundwater occurs beneath the subject property at depths ranging from 10 to 15 feet below the existing grade. Please refer to Appendix A at the end of the text which summarizes the methodologies to be used for the proposed study.

TASK II FIELD TESTING

In order to evaluate the feasibility of possible groundwater extraction and gradient control, it will be necessary to properly characterize site-specific hydrogeologic parameters. The most significant parameters include porosity, groundwater gradient, saturated thickness, hydraulic conductivity and transmissivity.

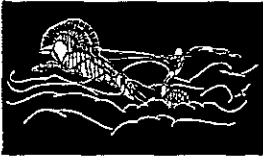
Aquifer porosity will be estimated in two ways. The first will be by comparison of soil type description with empirical relations. The second method will be from calculations using a soil bulk density. These two methods will provide a range of reasonable value for aquifer porosity.

The saturated thickness is the distance from the water table to the base of the aquifer. Based on our knowledge of local geology, we anticipate that soil comprising the saturated zone may be predominantly interbedded clays and sands. The base of the aquifer at the site will be estimated from data obtained in soil borings or by using regional geologic correlations. From this depth, and estimated saturated thickness for the aquifer beneath the site will be calculated.



TASK III LABORATORY ANALYSIS

Soil samples will be maintained and transported under proper chain-of custody protocol to a state-approved laboratory for chemical analysis. Soil samples would be analyzed to detect the presence and concentration of benzene, toluene, xylene, ethylbenzene and total petroleum hydrocarbons as referenced to gasoline. Random soil and groundwater samples will be selected for total lead analysis.



TASK IV REPORT OF FINDINGS

A summary report will be prepared at the completion of the field, laboratory, chemical analyses and office analysis portions of the investigation. The report would detail the finding of the investigation, and would address the components of the criteria established by the RWQCB for a Problem Assessment Report, including but not limited to vertical and lateral migration characteristics of hydrocarbons, nearby wells, businesses and utilities, and preliminary evaluation of appropriate and applicable remedial and mitigating alternatives based upon data obtained. The summary report will be prepared under the auspices and signed by a State of California Registered Civil Engineer or Geologist.

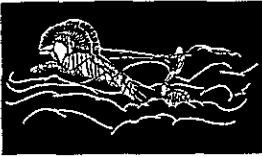
5.0 METHODOLOGY

5.1 Drilling and Soil Sampling

Drilling will be performed utilizing a truck mounted drill rig equipped with flight hollow-stem auger. An Augeas geologist or engineer will be present during drilling to assist in obtaining relatively undisturbed samples of the subsurface materials, to maintain a log of borings, to field screen samples with a device capable of detecting volatile organic hydrocarbons as a trace gas, and to make observations of the site conditions.

Subsoils will be sampled at approximate 5-foot vertical intervals (or more frequently as deemed appropriate by the field geologist or engineer), commencing at an approximate depth of five feet below the existing grade. Samples will be obtained by means of a California Modified sampler which was lined with brass sleeves or rings. The samples will be advanced by blows from a 140 pound hammer falling 30 inches. Soil will be classified according to the Unified Soil Classification System.

Upon retrieval, samples retained for chemical analysis will be contained with a plastic cap over a teflon seal, and taped at each end. The samples will be placed into a cooler chest on "ice" under proper chain-of-custody protocol for shipment to the analytical laboratory.



It is anticipated that four of the borings will be completed as monitoring wells. Borings not completed as monitoring wells will be back-filled upon termination with a sand-cement grout to the surface grade.

5.2 MONITORING WELL INSTALLATION

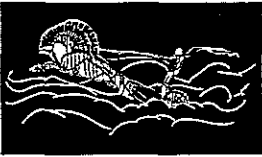
Each monitoring well will be constructed through a ten-inch diameter, hollow-stem auger using 4-inch flush thread PVC schedule pipe. Based upon our local experience, screened intervals will be constructed utilizing schedule 40 PVC flush thread 0.020 inch well screen. The screened interval will consist of sufficient screening to accommodate a minimum ten foot screened interval below and five feet above the encountered groundwater level. A No. 3 graded sand will be used a filter media around the screened interval, and completed to an equivalent depth of 2 feet above the well screen. A seal composed of bentonite pellets will be placed to an approximate thickness of 3 feet atop the filter media and hydrated.

The remaining annulus will be back-filled with a sand/cement slurry with approximately 3% bentonite added from the seal to the surface vault. A locking well head will be installed, and a water-tight surface vault will be placed at grade for well security. The design of the groundwater monitoring wells is in general compliance with the State of California Department of Water Resources Bulletin 74-90 Monitoring Well Standards (DWR 163907).

5.3 WELL DEVELOPMENT AND SAMPLING

Groundwater monitoring wells will be developed by means of bailing or pumping. Sampling of the monitoring wells will be accomplished by means of a disposable bailer. Well development water will be retained in drums at the subject property pending proper disposal by Jocson Auto Electric after results of chemical analysis are complete.

Each well head will be surveyed to establish the surface elevation to a common benchmark. The survey will be utilized in helping to evaluate groundwater surface elevations, and groundwater gradient and flow direction.



5.4 LABORATORY ANALYSES

The following methodologies will be specified for the chemical analyses of soil and groundwater samples:

- EPA Method 503.1 or 602/8020 for BTEX
- EPA Method 8015 (modified) for Total Petroleum Hydrocarbons as gasoline
- DHS LUFT method for total lead

The laboratory analyses will be focused on the detection of compounds commonly associated with gasoline.

5.5 DECONTAMINATION

Between sampling attempts, the sampler will be disassembled and washed in a trisodium phosphate (TSP) solution, rinsed twice with purified water and re-assembled with brass rings to minimize the potential of spreading contaminants among samples, if any were present.

5.6 DRILLING SPOILS

Auger cuttings from the drilling operation will be placed in drums and retained on-site. The results of chemical analysis will be used to evaluate the appropriate disposal of any contaminated auger cuttings by Jocson Auto Electric.

6.0 PROJECT SCHEDULE

Augeas Corporation is prepared to begin this study upon receipt of approval of the proposed workplan from the Alameda County Environmental Health Department. It is estimated that the proposed scope of services will require approximately ten to twelve weeks to complete. This schedule is partially dependent on the scheduling of drilling equipment, local weather restrictions access to the site, permitting requirements, and time required for specific chemical analysis.

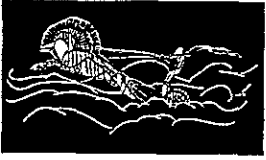
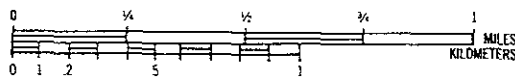
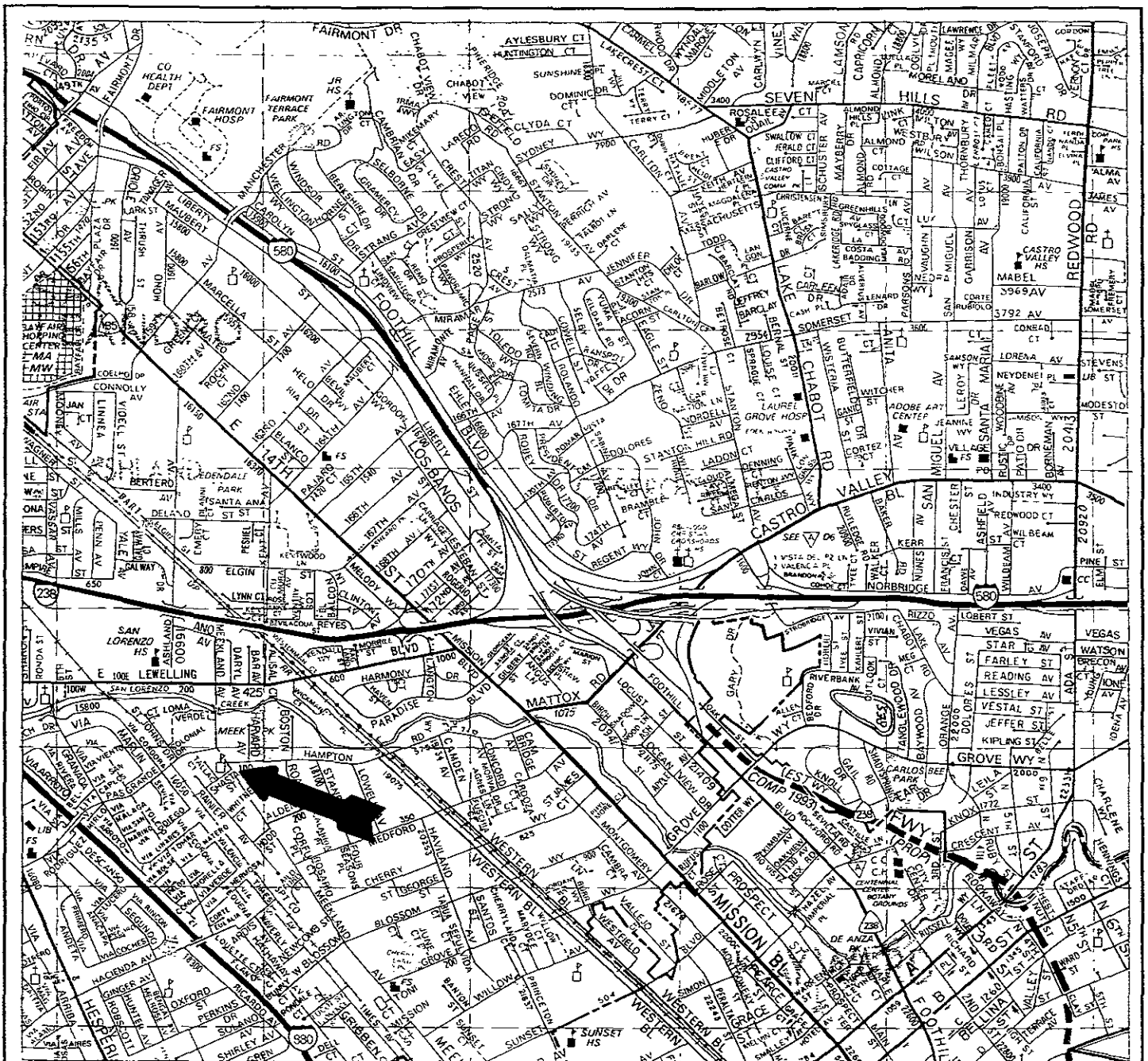


Figure 1
Site Location Map

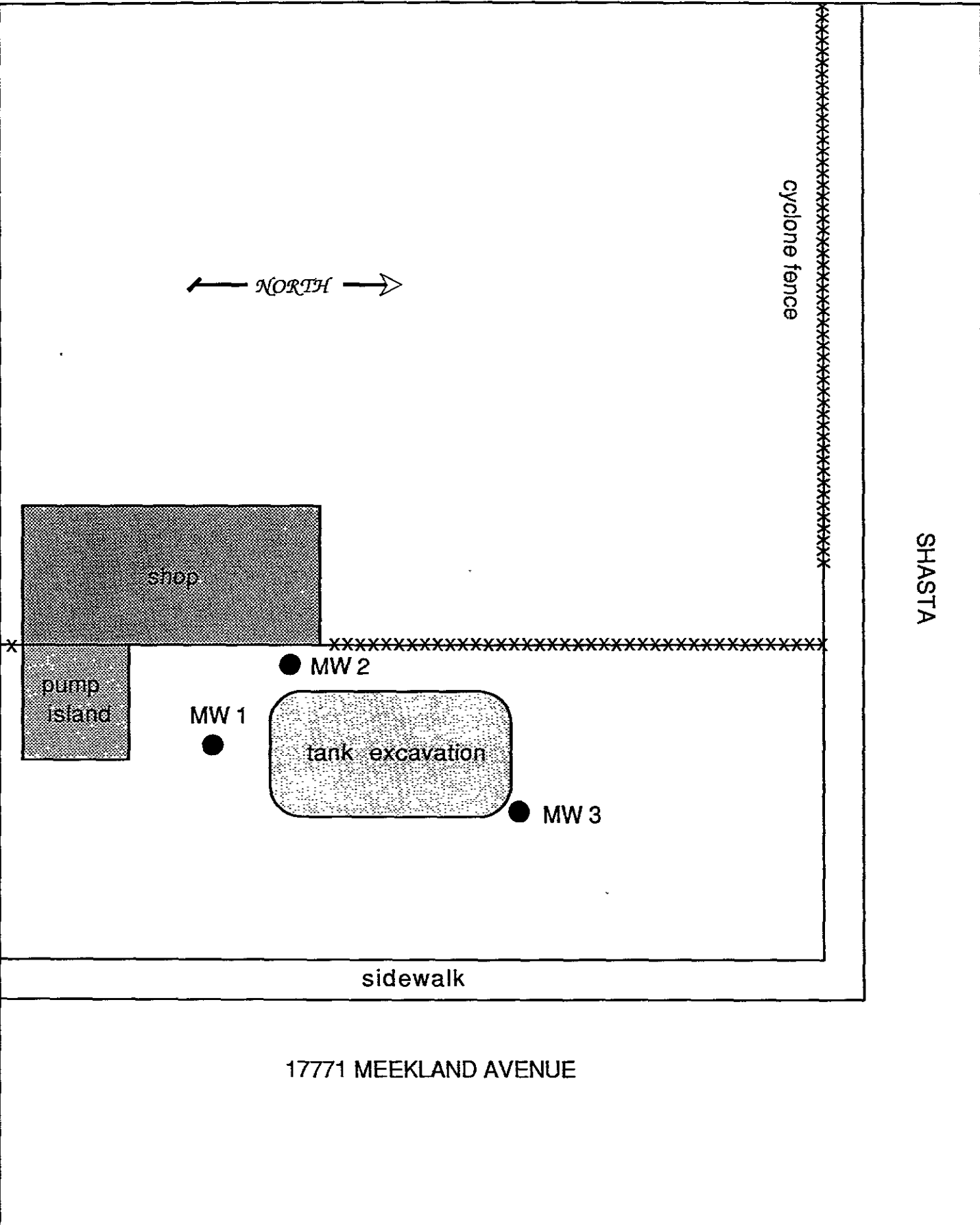


ALAMEDA COUNTY
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<p>AUGEAS CORPORATION</p>	<p>Figure 1- Site Location Map Jocson Auto Electrical, Hayward, CA</p>	<p>Prepared by JF 06/03/92</p>
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Figure 2
Proposed Monitoring Wells



AUGEAS CORPORATION	Figure 2- Proposed Monitoring Well Locations	Prepared by JF
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