AGI
TECHNOLOGIES

Quarterly Groundwater Monitoring
Second Event, October 1995
Eandi Metal Works
Oakland, California

March 11, 1996

Prepared For :

Eandi Metal Works
976 23rd Avenue
Oakland, California 94606

AGI Project No. 15,876.001

AGI TECHNOLOGIES

Prepared for:

Eandi Metal Works
976 23rd Avenue
Oakland, California 94606

QUARTERLY GROUNDWATER MONITORING
SECOND EVENT, OCTOBER 1995
EANDI METAL WORKS
OAKLAND, CALIFORNIA

March 11, 1996

by:

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AGI Project No. 15,876.001.04

AGI TECHNOLOGIES

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INTRODUCTION

This report presents the results of the second quarterly groundwater monitoring event performed by AGI Technologies (AGI) at the Eandi Metal Works (EMW) in Oakland, California (see **Figure 1**). The EMW site includes property at 1023 and 976 23rd Avenue, and 1440 East 11th Street; quarterly groundwater monitoring is being performed on three monitoring wells near the East 11th Street property as part of a subsurface investigation initiated in June 1995 (see **Figure 2**).

The 2nd round of groundwater monitoring was conducted in October 1995 and was performed in accordance with AGI's Work Plan dated June 13, 1995, which was approved by Alameda County Health Care Services Agency (ACHCSA) on June 29, 1995. A site Health and Safety Plan (HASP) was included in the Work Plan, and adhered to during groundwater monitoring. A copy of the Work Plan is included in **Appendix A.**

SCOPE OF SERVICES

The purpose of our services is to evaluate subsurface conditions near the East 11th Street portion of the site. The subsurface evaluation will be based on data collected during soil boring and quarterly groundwater monitoring. Our scope of services for this project include:

- Preparing and implementing a site-specific HASP to guide field personnel in proper safety procedures to be followed during investigation and monitoring activities.
- Obtaining a permit for the installation of three groundwater monitoring wells.
- Conducting a utility survey of the proposed drilling area using Underground Service Alert. Private utility locating services were not included in the scope of this project, since the proposed borings were located in the public right-of-way.
- Drilling and sampling 5 soil borings to approximately 12 to 15 feet below ground surface (bgs). The original boring depths were based on an expected depth to groundwater of 5 to 10 feet bgs. During drilling operations on July 10, 1995, the above scope was modified on your verbal approval due to conditions encountered (i.e., depth to groundwater was significantly greater than 10 feet and boring depths were extended to 21 feet).
- Installing and developing three groundwater monitoring wells within the soil borings.
- Performing four quarterly groundwater monitoring events after installation. The frequency of monitoring may be modified, if appropriate, based on distance of the wells from the tank cavity, groundwater flow direction, and groundwater gradient.

- Collecting and submitting 6 soil samples (2 per monitoring well boring) and 12 groundwater samples (4 events for 3 monitoring wells) for chemical analyses. Samples have been and will be analyzed for the following constituents:

  — Total petroleum hydrocarbons quantified as gasoline (TPH-G) using a modified EPA Method 8015.

  — Benzene, ethylbenzene, toluene, and total xylenes (BETX) using EPA Method 8020.

  — Total lead using EPA Method 6010/7000 Series.

- Collecting and analyzing three soil samples from the location of a former underground storage tank (UST). Two samples were collected from below the excavation base. One sample was collected from the backfill material.

- Evaluating the hydrological and chemical data generated during the field activities.

- Preparing four quarterly reports presenting our findings and calculations.

BACKGROUND

The EMW site previously contained three USTs, all of which have been removed. One 550-gallon UST containing gasoline was located near the main EMW facility at 976 23rd Avenue; one 1,000-gallon UST containing diesel was located near the building at 1023 23rd Avenue; and one 1,000-gallon UST containing gasoline was located near 2440 East 11th Street. Groundwater was not encountered during UST removal.

Following removal of the 550-gallon UST, the portion of the site near 976 23rd Avenue was deemed clean since only trace amounts of lead (14 ppm and 4.8 ppm in two samples) and total xylenes (14 ppm in one sample) were detected in the soil. No further action has been required by ACHCSA at this portion of the site.

Low levels of diesel-range petroleum hydrocarbons were detected in samples collected from soil removed near the 1,000-gallon diesel UST; however, no diesel-range petroleum hydrocarbons were detected in the soil following UST removal.

Gasoline-range petroleum hydrocarbons, BETX, and lead were detected in soil samples collected near the 1,000-gallon gasoline UST removed near the East 11th Street building (see **Figure 2**); however, no holes were reported in the UST during its removal. The UST was reported to be 25 to 30 years old.

During removal of the UST near the East 11th Street building, an effort was made to remove the majority of soil containing gasoline-range petroleum hydrocarbons. The excavated soil was allowed to aerate on site for approximately 9 months. Following aeration, the soil was sampled by EMW to verify that aeration was complete, and the aerated soil was placed back into the excavation. The UST excavation remains open pending authorization for closure. The soil surface in the excavation is approximately 1 foot (average) below the adjacent sidewalk surface, since no imported fill has been used to replace the UST volume.

Since petroleum hydrocarbon contamination was detected in soil near the former East 11th Street UST, a subsurface investigation was initiated in June 1995. Only the area near the East 11th Street UST will be addressed in the investigation since no petroleum hydrocarbon contamination was detected near the other two former UST locations.

In July 1995, five soil borings (E-1 through E-5) were advanced and three monitoring wells (MW-1 through MW-3) were installed, developed and sampled near the former UST on East 11th Street (see **Figure 2**). The groundwater sampling and analysis constituted the first quarterly groundwater monitoring event. A report was prepared describing well installation activities, findings regarding subsurface conditions encountered during drilling, and the results of the first quarterly monitoring event. Results of the investigation indicated the majority of the soil containing gasoline-range petroleum hydrocarbons has been removed and only minor amounts of petroleum hydrocarbons remain in the soil underlying and adjacent to the former UST excavation. Gasoline-range petroleum hydrocarbons were detected in the groundwater samples collected from each of the three wells installed at the site. Lead was detected in groundwater samples collected from two of the wells, but was not attributed to the former UST.

This report presents the results of the second quarterly groundwater monitoring event, which was performed in October 1995.

GROUNDWATER MONITORING

This section presents information regarding activities performed during groundwater monitoring at the site. A detailed description of groundwater monitoring procedures is presented in the Work Plan (see **Appendix A**).

FIELD PROCEDURES AND RESULTS

During the monitoring event, depth to groundwater was measured from the top of casing using an electronic water level meter. Depth to water and groundwater elevation data are presented in **Table 1**.

Following water level measurements, the wells were purged until the pH, temperature, and specific conductance of the purged water stabilized. Approximately four well casing volumes of water were removed prior to collecting groundwater samples using a clean disposable bailer. Well purge water was stored on site in DOT-approved 55-gallon drums, pending disposal by the owner. Copies of field data sheets are presented in **Appendix B.**

Water samples collected from the wells were placed in the appropriate containers supplied by the laboratory. All samples were placed in an ice chest, and kept cool until delivery to the analytical laboratory. Sample handling was documented using Chain-of-Custody records. A copy of the Chain-of-Custody record is presented in **Appendix C.**

LABORATORY PROCEDURES AND RESULTS

The groundwater samples collected from the monitoring wells were submitted to Anametrix Laboratories of San Jose, California. The samples were analyzed for TPH-G using a modified EPA Method 8015, BETX using EPA Method 8020, and total lead using EPA Method 6010.

Results of groundwater sample analyses indicate the presence of TPH-G at concentrations ranging from 0.73 mg/L at MW-2 to 14 mg/L at MW-1 (see **Table 2**). BETX compounds were present in each sample at concentrations ranging from 0.018 mg/L benzene at MW-2 to 1.8 mg/L total xylenes at MW-1. Copies of the analytical reports are presented in **Appendix C.**

CONCLUSIONS AND RECOMMENDATIONS

Results of groundwater monitoring indicate groundwater at the site occurs at approximately 10 to 12 feet bgs, and flows in a westerly direction. Based on typical regional groundwater conditions and preliminary qualitative depth to groundwater measurement data, variations in groundwater flow may vary between west and southwest, depending on seasonal conditions. Conditions encountered at the site indicate MW-1 is immediately downgradient from the former UST location, MW-2 is further downgradient and slightly cross-gradient, and MW-3 (furthest from the former UST location) is directly downgradient.

Hydrocarbons were detected in groundwater samples collected from each well. Hydrocarbon concentrations in site groundwater have decreased since the previous monitoring event, except for an increase in toluene (from 0.15 mg/L to 0.59 mg/L) at MW-3. The greatest decreases (more than an order of magnitude) have occurred at MW-2. The decreased hydrocarbon concentrations may be associated with the decrease in groundwater levels at the site, or other unknown factors. We will continue to monitor groundwater levels and hydrocarbon concentrations at the site, in accordance with the Work Plan for the site, to evaluate apparent trends that may be occurring.

Lead was detected, during the previous monitoring event, in groundwater samples collected from MW-2 and MW-3, but not in groundwater samples collected from MW-1. Based on this condition, lead detected in groundwater at the site does not appear to be associated with the former UST. The lead in groundwater may be an area-wide condition, associated with roadbed construction materials used beneath 25th Avenue and East 11th Street, or due to other unknown factors. The lack of detectable lead concentrations in samples collected during the second quarterly monitoring event may indicate that lead concentrations detected during the previous event resulted from soil disturbance during drilling and well installation. We will continue to monitor lead concentrations at the wells, in accordance with the Work Plan for the site, to confirm the indication that the lead is not associated with the former UST release.

Continued monitoring of groundwater, as presented in the Work Plan, is recommended to evaluate groundwater gradient conditions and monitor the presence of hydrocarbons in groundwater. Water from well purging and decontamination operations may be stored up to 90 days at the site. A licensed hazardous liquid hauling company should be contacted to remove the water. A hazardous waste generator number will be required for disposal of the water. We understand EMW already has a generator number, and does not require AGI's assistance in scheduling disposal.

DISTRIBUTION

2 Copies	Eandi Metal Works 976 23rd Avenue Oakland, California 94606 Attention: Mr. Jeffrey M. Eandi
2 Copies	Alameda County Health Care Services Agency Division of Environmental Protection Department of Environmental Health 1131 Harbor Bay Parkway, 2nd Floor Alameda, California 94502 Attention: Mr. Thomas Peacock (delivered by EMW)

AGI TECHNOLOGIES

Table 1
Groundwater Elevation Monitoring Data
Eandi Metal Works
Oakland, California

Monitoring Well ID	Date Monitored	Groundwater Elevation Monitoring Data				
		Field Measurement Data			Groundwater Elevation (feet above MSL)	Groundwater Elevation Change
		Depth to Water* (feet below TOC)	Reference	Reference Elevation** (feet above MSL)		
MW-1	07/14/95	9.72	TOC	99.90	90.18	
	07/17/95	11.11	"	"	88.79	-1.39
	10/20/95	11.96	"	"	87.94	-0.85
MW-2	07/14/95	10.74	TOC	99.57	88.83	
	07/17/95	10.93	"	"	88.64	-0.19
	10/20/95	11.92	"	"	87.65	-0.99
MW-3	07/14/95	10.95	TOC	98.45	87.50	
	07/17/95	11.04	"	"	87.41	-0.09
	10/20/95	12.11	"	"	86.34	-1.07

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Notes:

* Last stable reading prior to monitoring well purging on specified date.
** Relative elevation for gradient calculation only.
Depth to water measurements on 07/14/95 were taken prior to well development.
MSL - Mean Sea Level.
TOC - Top of monitoring well casing.

AGI TECHNOLOGIES

Table 2
Summary of Chemical Analyses - Groundwater
Eandi Metal Works
Oakland, California

Sample ID	Date Sampled	EPA Test Method						
		BTEX 5030/8020					8015M	6010
		Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	TPH-G	Total Lead
		mg/L					mg/L	mg/L
MW1	07/17/95	0.39	2.0	0.8	5.3	<0.125	22	<0.04
	10/20/95	0.27	0.54	0.36	1.8	NA	14	<0.04
MW2	07/17/95	0.37	1.7	0.93	5.1	<0.125	21	0.0564
	10/20/95	0.018	0.027	0.026	0.079	NA	0.73	<0.04
MW3	07/17/95	1.2	0.15	1.0	1.7	<0.025	8.4	0.153
	10/20/95	0.6	0.59	0.043	0.34	NA	5.8	<0.04
Laboratory Reporting Limit*		0.0005	0.0005	0.0005	0.0005	0.0005	0.05	0.04

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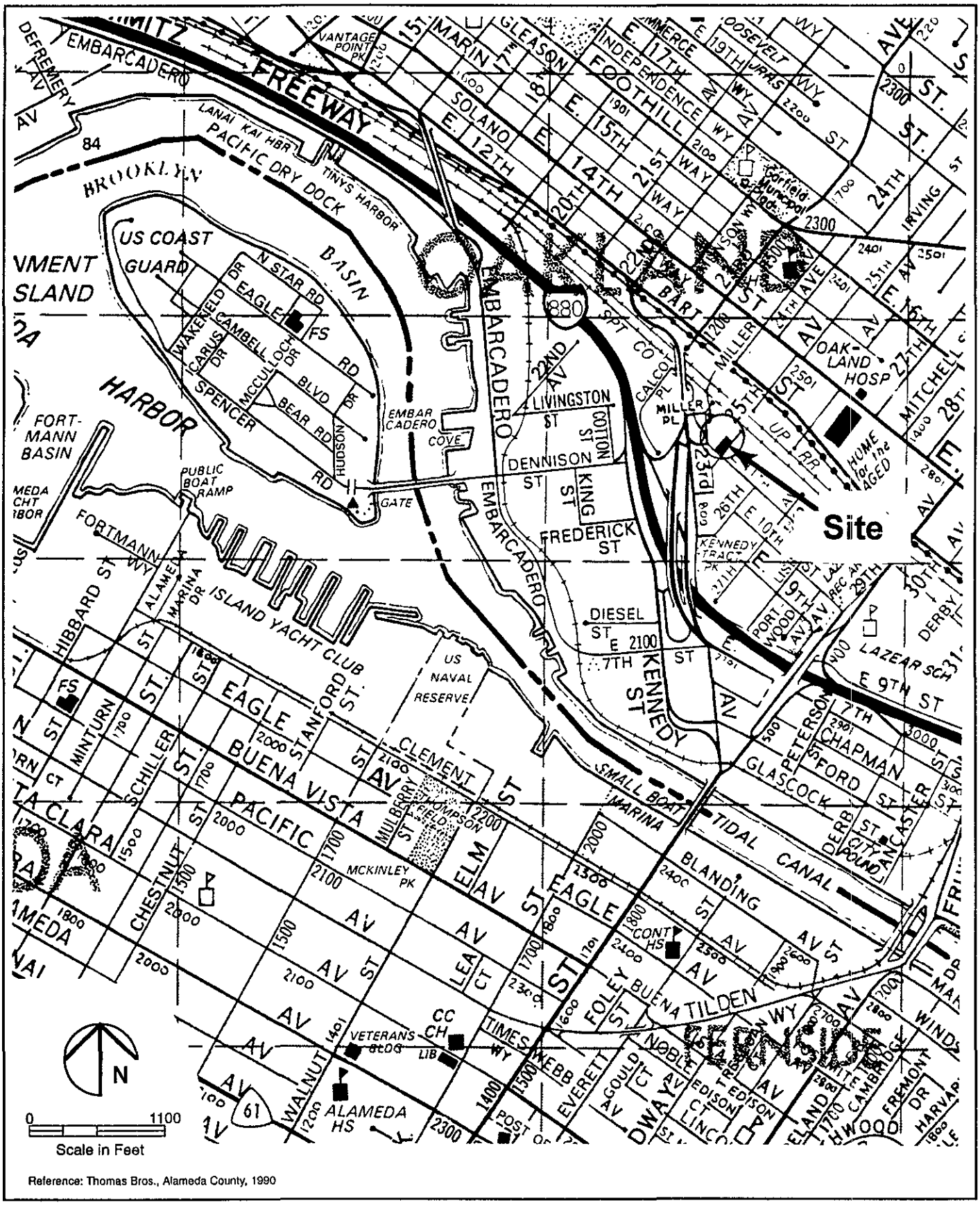
Notes:

*Reporting limit may be higher where dilution of sample is required.
TPH-G - Total petroleum hydrocarbons quantified as gasoline.
mg/L - Milligrams per liter is equivalent to parts per million (ppm).



Reference: Thomas Bros., Alameda County, 1990

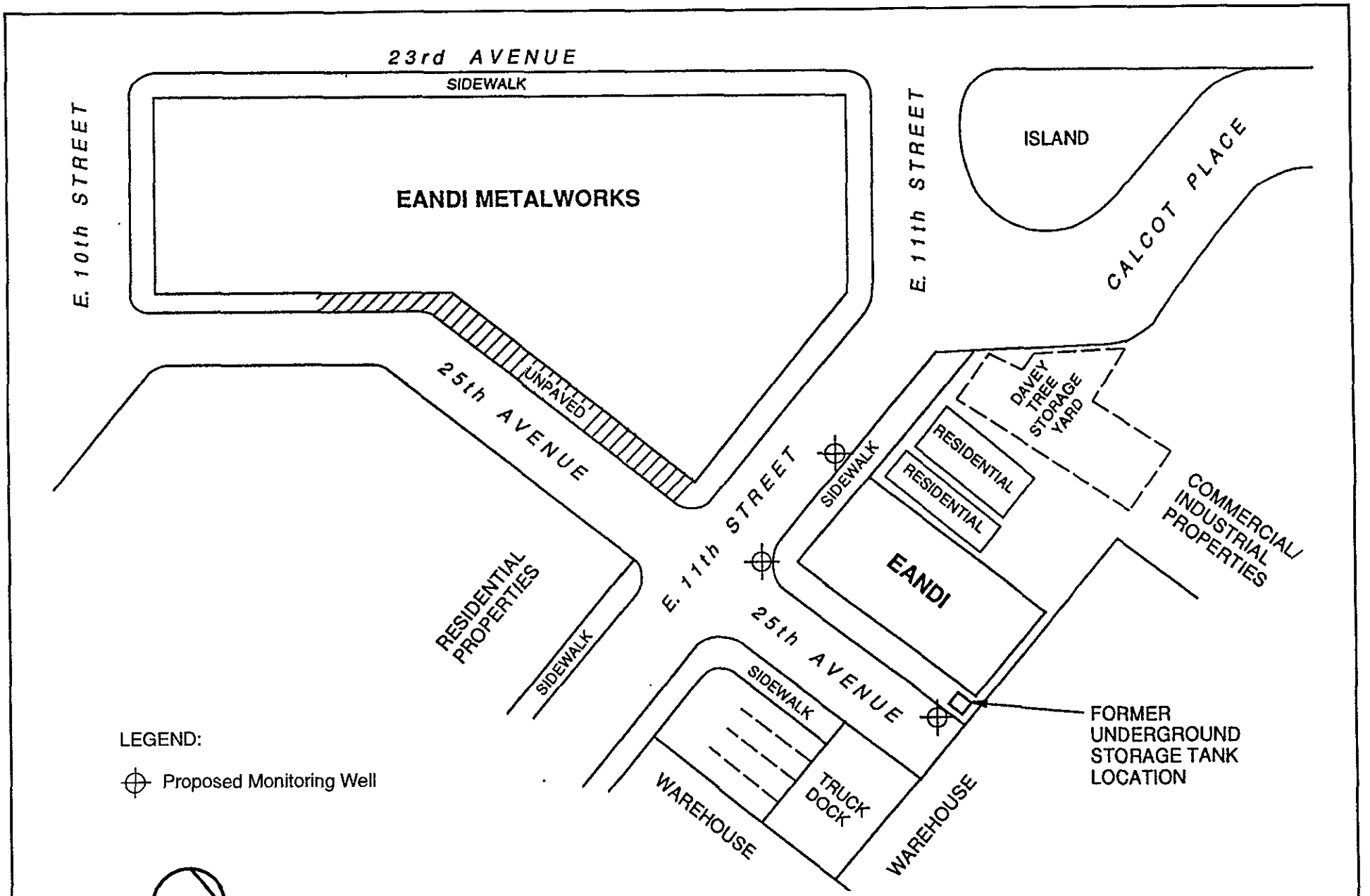
AGI TECHNOLOGIES

Vicinity Map

EANDI Metalworks/Phase II
Oakland, California

FIGURE 1

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
876001vm.cdr	15,876.001	BJA	6 Mar 96		



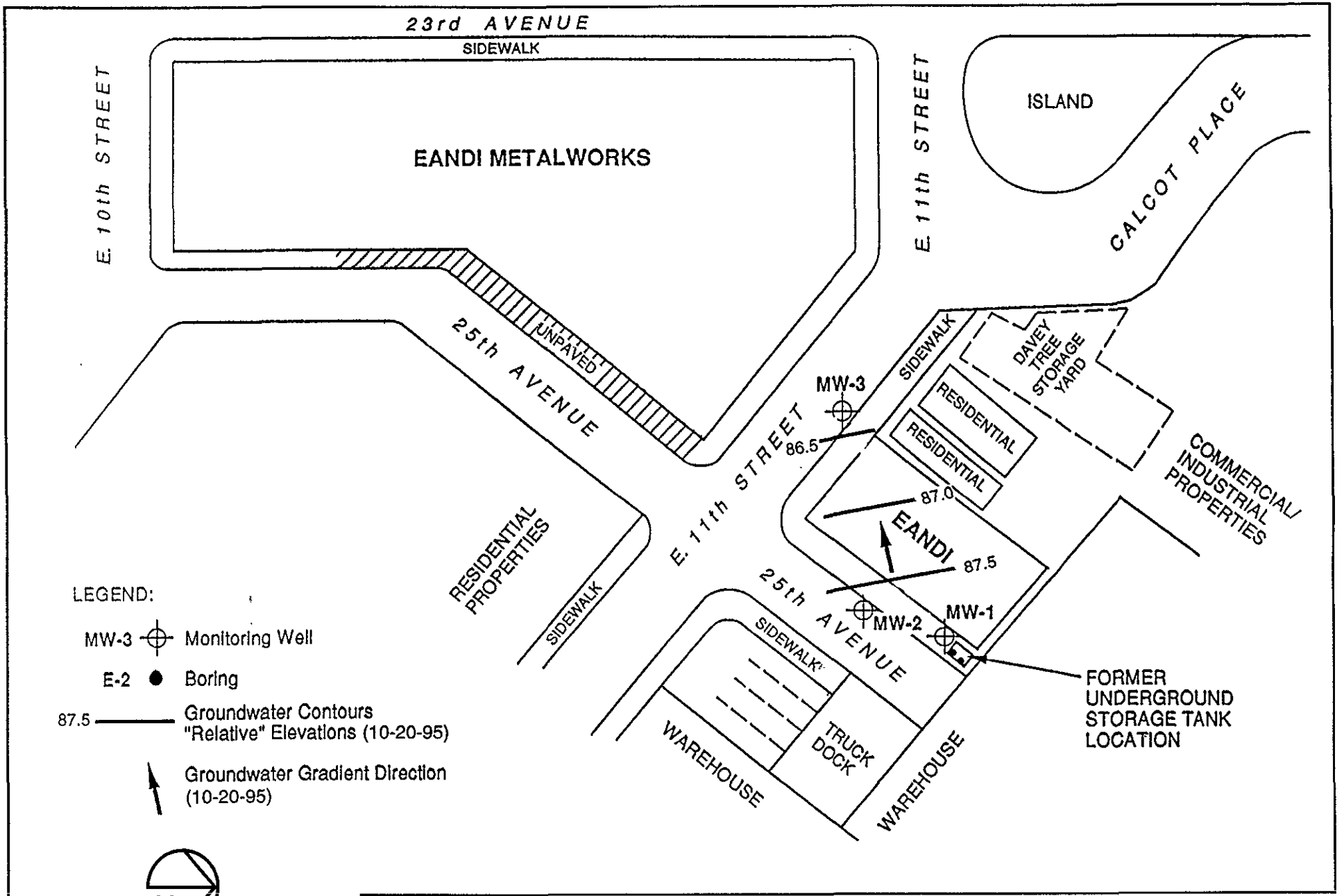
AGI TECHNOLOGIES

Site Plan

EANDI Metal Works/Phase II
Oakland, California

FIGURE 2

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
15,876.001	BD	Jun 95	STH		



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Groundwater Contour Map

EANDI Metal Works/Phase II
Oakland, California

FIGURE 3

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
15,876.001	JBA	Dec 95	DTH		

APPENDIX A

APPENDIX A

Work Plan

AGI TECHNOLOGIES

A Plan prepared for:

Eandi Metal Works
976 23rd Avenue
Oakland, California 94606

WORK PLAN
MONITORING WELL INSTALLATIONS AND QUARTERLY GROUNDWATER MONITORING
EANDI METAL WORKS
OAKLAND, CALIFORNIA

June 13, 1995

by:

William P. Henry, P. E.
Principal Engineer

AGI Technologies
827 Broadway, Suite 210
Oakland, California 94607

AGI Project No. 15,876.001.04

AGI TECHNOLOGIES

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INTRODUCTION

AGI Technologies Inc. (AGI) is pleased to present this work plan to perform a subsurface investigation at Eandi Metal Works in Oakland, California. This plan has been prepared in response to your request for proposal, dated February 9, 1995. We understand the site previously contained two gasoline underground storage tanks (USTs) and one diesel UST, which have been removed. This plan addresses the investigation of subsurface conditions surrounding the area of the site with reportedly identified petroleum hydrocarbon contamination.

BACKGROUND

The site is located at 1023 and 976 23rd Avenue, and 2440 East 11th Street, in Oakland, California, and is shown on Figure 1, Vicinity Map. Based upon information provided during our discussion of site conditions, we understand the following:

- The site previously contained three USTs, all of which have been removed. The RFP indicates only one former UST location will be addressed in this investigation, since no petroleum hydrocarbon contamination was found at the other two locations.
- Gasoline-range hydrocarbons (TPH-G), benzene, ethylbenzene, toluene, xylenes (BETX), and lead were detected in samples collected from around the 1,000-gallon gasoline UST removed from near the south side of the 2440 East 11th Street building, at the north side of 25th Avenue, as shown on Figure 2 Site Plan.
- No TPH-G, benzene, ethylbenzene, or toluene were detected in samples collected from around a 550-gallon gasoline UST removed from the main site facility at 976 23rd Avenue. Xylenes (1 sample, 14 ppb) and lead (2 samples, 14 ppm and 4.8 ppm) were detected.
- Low levels of diesel-range hydrocarbons (TPH-D) were detected in samples collected from stockpiled soil removed from around a 1,000-gallon diesel UST located at 123 23rd Avenue, but not in samples collected from the surrounding soil following UST removal.
- Groundwater was not encountered at the site during UST removal operations. According to representatives of the Alameda County Health Care Services Agency (ACHCSA), groundwater may flow in a northerly direction at the site.
- Access to the area north of the 1,000-gallon gasoline UST is limited.
- The preparation of a Work Plan for site investigation was requested by the ACHCSA on October 14, 1992.

SCOPE OF SERVICES

The purposes of our services are to determine whether groundwater contamination exists, and to evaluate subsurface conditions at the site, based upon data collected during well installation and groundwater monitoring. The following items will be completed:

- Prepare a site-specific Health and Safety Plan to guide field personnel in proper safety procedures to be followed during investigation and monitoring at the site.
- Obtain permits for the installation of three groundwater monitoring wells.
- Conduct a utility survey of the proposed drilling area using Underground Service Alert. A private utility locator may be required to locate subsurface utilities if the proposed borings are located outside of the public right-of-way. Private utility locating services are not included in the scope of this project, since the proposed borings are located in the public right-of-way.
- Drill and sample three soil borings to approximately 12 to 15 feet below ground surface. Boring depths are based upon expected depth to groundwater between 5 to 10 feet below ground surface. Proposed boring locations are shown on Figure 2.
- Install and develop three groundwater monitoring wells within the soil borings.
- Perform four quarterly groundwater monitoring events after installation. The frequency of monitoring may be modified, if appropriate, based upon distance of the wells from the tank cavity, groundwater flow direction, and gradient.
- Collect and submit 6 soil samples and 12 groundwater samples for chemical analysis. Samples will be analyzed for the following constituents:

  - Total petroleum hydrocarbons as gasoline (TPH-G), using a modified EPA Method 8015.
  - Benzene, ethylbenzene, toluene, and xylenes (BETX), using EPA Method 8020.
  - Total lead, using EPA Method 6010/7000 Series.

- Collect and analyze 3 soil samples from the former UST location. Two samples will be collected from approximately 6 inches below the excavation base. One sample will be collected from the backfill material.
- Evaluate the hydrological and chemical data generated during the field activities.
- Prepare four written reports of findings. The first report will include a description of well installation activities and findings regarding soil and groundwater contamination at the well locations. The subsequent three reports will present the results of groundwater monitoring at the site.

Borings

Prior to drilling, a utility survey of the site will be conducted. The utility survey will locate subsurface utilities at the proposed boring locations. AGI will drill three soil borings at the site. The locations of the borings, shown on Figure 2, were selected based upon available information regarding known soil conditions at the site, regional groundwater flow direction, and site accessibility.

The borings will be drilled using a truck-mounted drill rig equipped with hollow-stem augers. The rig will be operated by a licensed California drilling contractor. The borings will extend to a depth of approximately 12 to 15 feet bgs. We assume groundwater will be encountered between 5 and 10 feet bgs. An AGI professional will observe drilling operations at the site and prepare logs of the conditions encountered. Soil samples will be obtained at approximate 5 foot intervals using a California drive sampler. Soil from each sampling interval will be field tested for organic vapor content using an organic vapor meter equipped with a photo-ionization detector (OVM-PID). Drilling and sampling equipment will be steam-cleaned prior to each use. Soil cuttings generated during drilling will be placed in DOT approved 55-gallon drums and left on-site for later disposal by the owner. The soil can be properly disposed of after contaminant concentrations are determined.

Monitoring Wells

AGI will install a groundwater monitoring well in each borehole. The wells will consist of 2-inch diameter schedule 40 PVC well casing. The lower 10 feet of the wells will consist of slotted well screen. The upper portion will consist of blank casing. The well head will be set below grade in a flush-mounted well cover box. The casing sections will be connected with flush-threaded joints. The annular space around the slotted portions of the wells will be backfilled with washed sand. A 1-foot-thick bentonite seal will be placed above the sandpack. The upper portion of the annular space will be filled with cement grout. The well head will be provided with a locking cap.

We will develop each well using surge-and-pump techniques, removing approximately 5 to 10 well casing volumes. Well development water will be stored on-site in DOT approved 55-gallon drums. The water will be disposed of by the owner after the contaminant concentrations are known. The groundwater will be sampled and analytically tested as described in the following section.

After completing the well installations, we will perform a survey to determine the top of well casing elevations (using an assumed elevation datum) of the three wells. We will measure the depth to groundwater in each well using an electronic water level meter, to an accuracy of 0.01 foot. If free product is encountered we will measure its thickness to the nearest 0.01 foot using an interface probe. Based upon the data collected, we will estimate the hydraulic gradient direction across the site.

Groundwater Monitoring

AGI will monitor wells following completion of installation and development, and for three more events thereafter, on a quarterly basis. During the monitoring events, we will measure the depth to groundwater beneath the top of casing of the wells using an electronic water level meter. We will then purge the wells until the pH, temperature and specific conductance of the purged water have stabilized. For high yield wells, at least 4 well volumes of water will be removed prior to collecting groundwater samples using a clean disposable bailer. For low yield wells, each well will be purged dry and sampled immediately upon recovery. Well purge water will be stored on-site in DOT-approved 55-gallon drums. The water will be disposed of by the owner after the contaminant concentrations are known.

Former UST Location

AGI will collect three soil samples from the former UST location. Samples will be collected using a truck-mounted drill rig equipped with hollow-stem augers, using the soil sampling methods outlined above. The borings will extend to a depth of approximately 6 inches below the former excavation base. Two samples for analysis will be collected from below the former base, and one will be collected from the backfill material. Soil cuttings will be contained on-site in DOT-approved 55-gallon drums. The soil will be disposed of by the owner after the contaminant concentrations are known.

Sample Handling and Analytical Testing

Soil samples collected from the borings and former UST location for environmental testing will be retained in 2-inch diameter brass liners. Teflon sheeting will be placed over the liner ends prior to capping and sealing with tape. Water samples will be placed in the appropriate containers for the analytical tests to be performed. All samples will be placed in an ice chest, and kept cool until delivery to the analytical laboratory. Sample handling will be documented using Chain-of-Custody records.

Two soil samples from each boring, three soil samples from the former UST location, and the groundwater samples collected from the monitoring wells will be submitted to Anametrix Laboratories of San Jose, California. The samples will be analyzed for TPH-G, BETX, and total lead.

Reports

Upon completion of well installations and the first monitoring event, AGI will prepare a report documenting the depth to groundwater, the site groundwater gradient direction, and the analytical test results. The report will summarize drilling and well installation activities, describe sampling procedures, and include boring and well logs, analytical test data, chain-of-custody records, a site plan showing well locations and groundwater elevations, and a description of the subsurface conditions encountered. We will also provide recommendations for disposal of soil and water generated during the investigation, and for future services, if necessary, based upon our findings.

A monitoring report will be prepared following each of the subsequent three events. The monitoring reports will document AGI's monitoring activities, chemical analysis results, and groundwater gradient direction at the site. Recommendations for water disposal, and for further action, if necessary, will be provided based upon the results of monitoring.

AGI TECHNOLOGIES

DISTRIBUTION

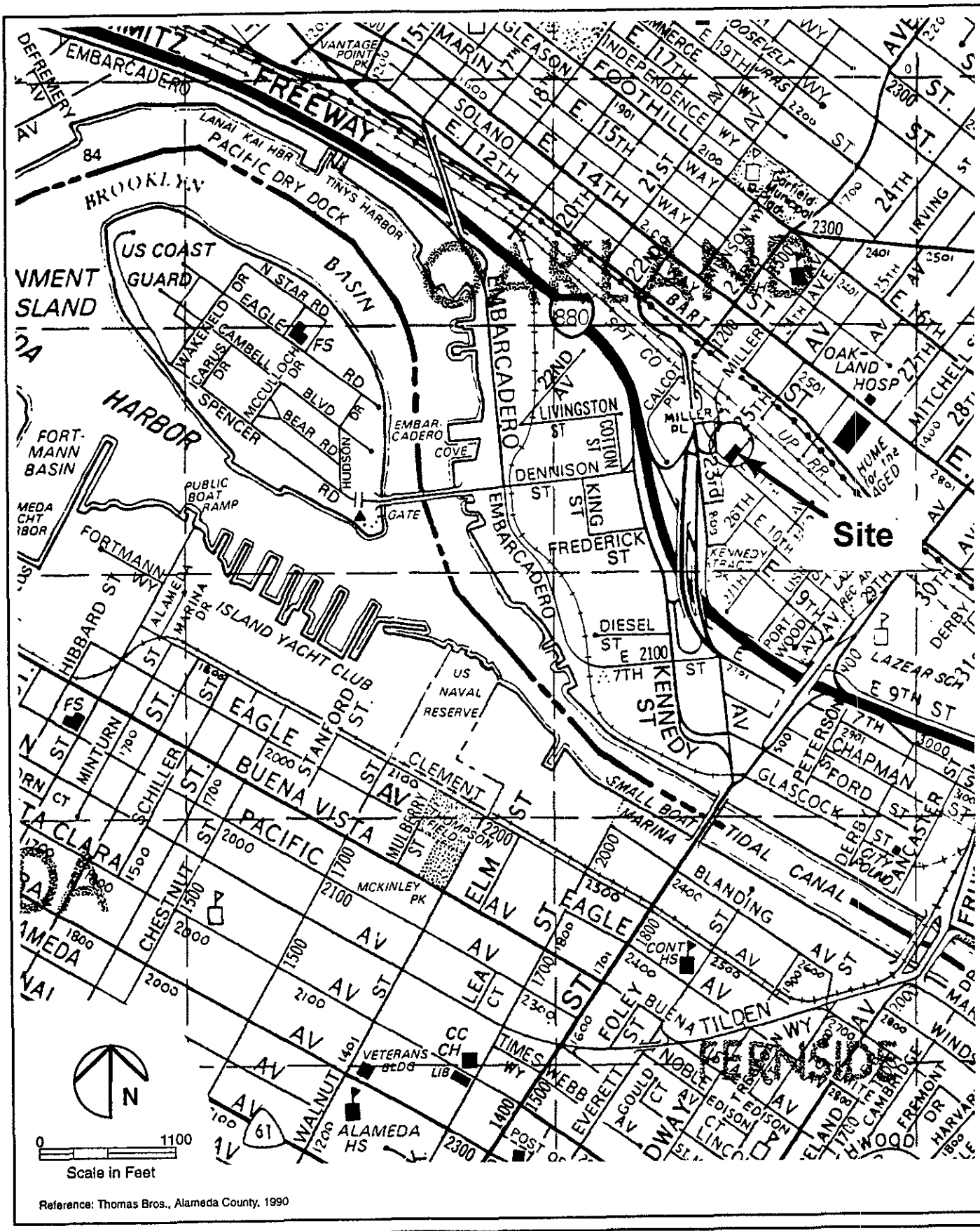
2 Copies	Eandi Metal Works 976 23rd Avenue Oakland, California 94606 Attention: Mr. Jeffrey M. Eandi
2 Copy	Alameda County Health Care Services Agency Division of Environmental Protection Department of Environmental Health 1131 Harbor Bay Parkway, 2nd Floor Alameda, California 94502 Attention: Mr. Thomas Peacock (delivered by EMW)

Quality Assurance/Technical Review by:

John B. Adams
Environmental Scientist

WPH/jba
DOC:D:\J\EANDI\EANDI2.WP5

FIGURES



Reference: Thomas Bros., Alameda County, 1990

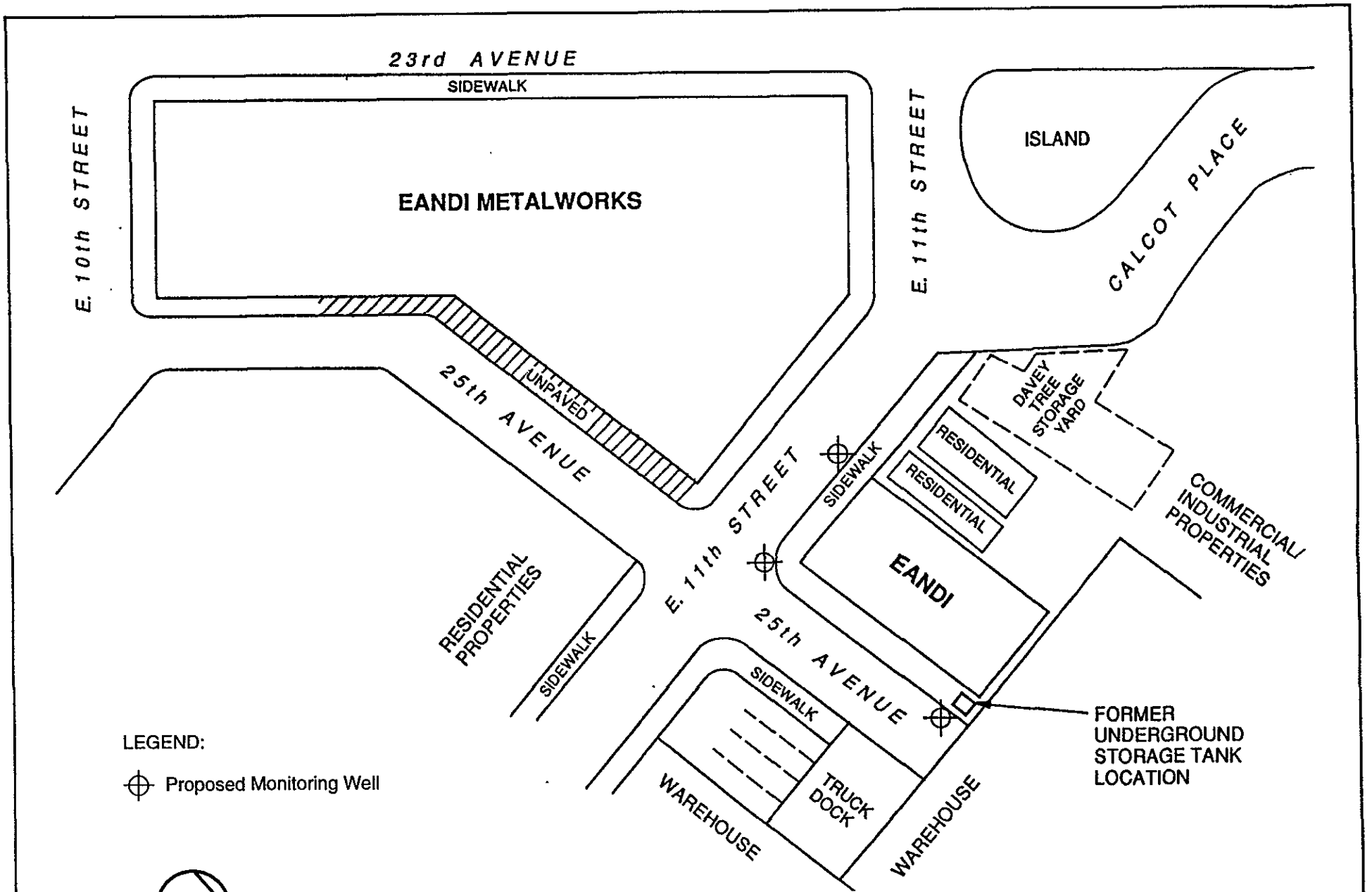
AGI TECHNOLOGIES

Vicinity Map

EANDI Metalworks/Phase II
Oakland, California

FIGURE 1

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
876001vm.cdr	15,876.001	BJA	6 Mar 96		



AGI TECHNOLOGIES

Site Plan
EANDI Metal Works/Phase II
Oakland, California

FIGURE 2

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
15,876.001	BD	Jun 95			

APPENDIX A

HEALTH AND SAFETY PLAN

AGI TECHNOLOGIES

A Plan Prepared For

Eandi Metal Works
976 23rd Avenue
Oakland, California 94606

APPENDIX A
PROJECT HEALTH AND SAFETY PLAN
MONITORING WELL INSTALLATIONS AND QUARTERLY GROUNDWATER MONITORING
EANDI METAL WORKS
OAKLAND, CALIFORNIA

AGI Project No. 15,876.001.04

Prepared by:

John B. Adams
Environmental Scientist

William P. Henry, P. E.
Principal Engineer

AGI Technologies
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Oakland, California 94607
510/238-4590

June 9, 1995

AGI TECHNOLOGIES

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LIST OF ILLUSTRATIONS

PURPOSE

The purpose of this project Health and Safety Plan (HASP) is to provide guidance and procedures to AGI Technologies (AGI) personnel involved in field activities at Eandi Metal Works, located at 976 23rd Avenue in Oakland, California. This HASP applies to AGI personnel working within the scope outlined in Section 2.0.

If, during the course of work, information is obtained indicating additional hazards or a change in scope, field work will be temporarily halted, information regarding potential hazards reevaluated, and this HASP updated or modified as necessary. Project work will resume after field personnel are notified of modifications to the HASP.

1.0 GENERAL SITE INFORMATION

1.1 CONTACT PERSONNEL

AGI Project Manager	John B. Adams	(510)238-4593
AGI Health and Safety Manager	Monica P. Beckman	(206)453-8383
AGI Site Safety Officer	Paul R. Lohman	(510)238-4590
East Bay Occupational Medicine Associates		(510)351-3553

1.2 PROJECT RESPONSIBILITIES

The AGI Health and Safety Manager (HSM) and AGI Project Manager (PM) are responsible for ensuring this HASP is implemented during project operations. The AGI Site Safety Officer (SSO) is responsible for the day-to-day safety requirements while field work is progressing. AGI personnel are responsible for following the procedures set forth in this HASP. Project-related safety responsibilities include the following:

- Project Manager:
  - Write and amend the project HASP.
  - Ensure that subcontractors have submitted a completed Subcontractor Safety Agreement Form, included as Attachment 1.
  - Ensure that site personnel and visitors comply with the requirements of the project HASP.
  - Ensure that site personnel meet the required qualifications.
- Health and Safety Manager:
  - Ensure that site personnel comply with the requirements of the HASP and have submitted a completed Field Team Review Form, included as Attachment 2.
  - Conduct specialized and site-specific training as required.
  - Address questions raised by the PM or site personnel.
- Site Safety Officer:
  - Ensure that site personnel comply with the requirements of the HASP and have submitted a completed Field Team Review Form to the HSM.
  - Monitor the site and work areas for health and safety hazards and address any unusual situations that are encountered; consult the HSM if necessary.
  - Investigate accidents, injuries, and illnesses; contact the HSM.

- Oversee the proper use, maintenance, and care of safety equipment and ensure proper decontamination procedures are followed.
- Conduct daily site safety meetings.
- Stop work if necessary (i.e., an imminent danger or health hazard exists) and contact the HSM.

- Site Personnel:
  - Read and follow the HASP.
  - Report accidents, illnesses, or unsafe conditions to the SSO or HSM.
  - Properly clean and maintain safety equipment.

Prior to working at the site, each employee will receive a copy of this HASP from the PM or HSM. Employees are required to read the HASP and forward a completed copy of the Field Team Review Form (Attachment 2) to the HSM. Employees are expected to conduct site work in a safe manner and comply with this HASP and federal, state, and local regulations.

If AGI hires subcontractors to perform field operations in support of the elevation survey, well sampling, or groundwater level monitoring, an individual authorized to commit the subcontractor's company will read the HASP and forward a completed copy of the Subcontractor Safety Agreement Form to the PM. Work performed on the site by subcontractors may include elevation surveying.

1.3 SITE INFORMATION

Eandi Metal Works is located at 976 23rd Avenue, and 2440 East 11th Street, in Oakland, California (Figure 1). The portion of the site to be investigated is located at the northeast end of 25th Avenue, adjacent to the 2240 East 11th Street facility, near the intersection of East 11th Street. The facility property is bounded by residential property to the northwest, East 11th Street to the southwest, 25th Avenue to the southeast, and commercial property to the northeast (Figure 2).

Based upon information provided during our discussion of site conditions, we understand the following:

- The site previously contained three USTs, all of which have been removed. The RFP indicates only one former UST location, described above, will be addressed for this investigation.
- Gasoline-range hydrocarbons (TPH-G), benzene, ethylbenzene, toluene, xylenes (BETX), and lead were detected in samples collected from around a 1,000-gallon gasoline UST removed from near the south side of the 2440 East 11th Street building, at the north side of 26th Avenue.
- No TPH-G, benzene, ethylbenzene, or toluene were detected in samples collected from around a 550-gallon gasoline UST removed from the main site facility at 976 23rd Avenue. Xylenes (1 sample, 14 ppb) and lead (2 samples, 14 ppm and 4.8 ppm) were detected.

Reference: Thomas Bros., Alameda County, 1990

AGI TECHNOLOGIES

Vicinity Map

EANDI Metalworks/Phase II
Oakland, California

FIGURE 1

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
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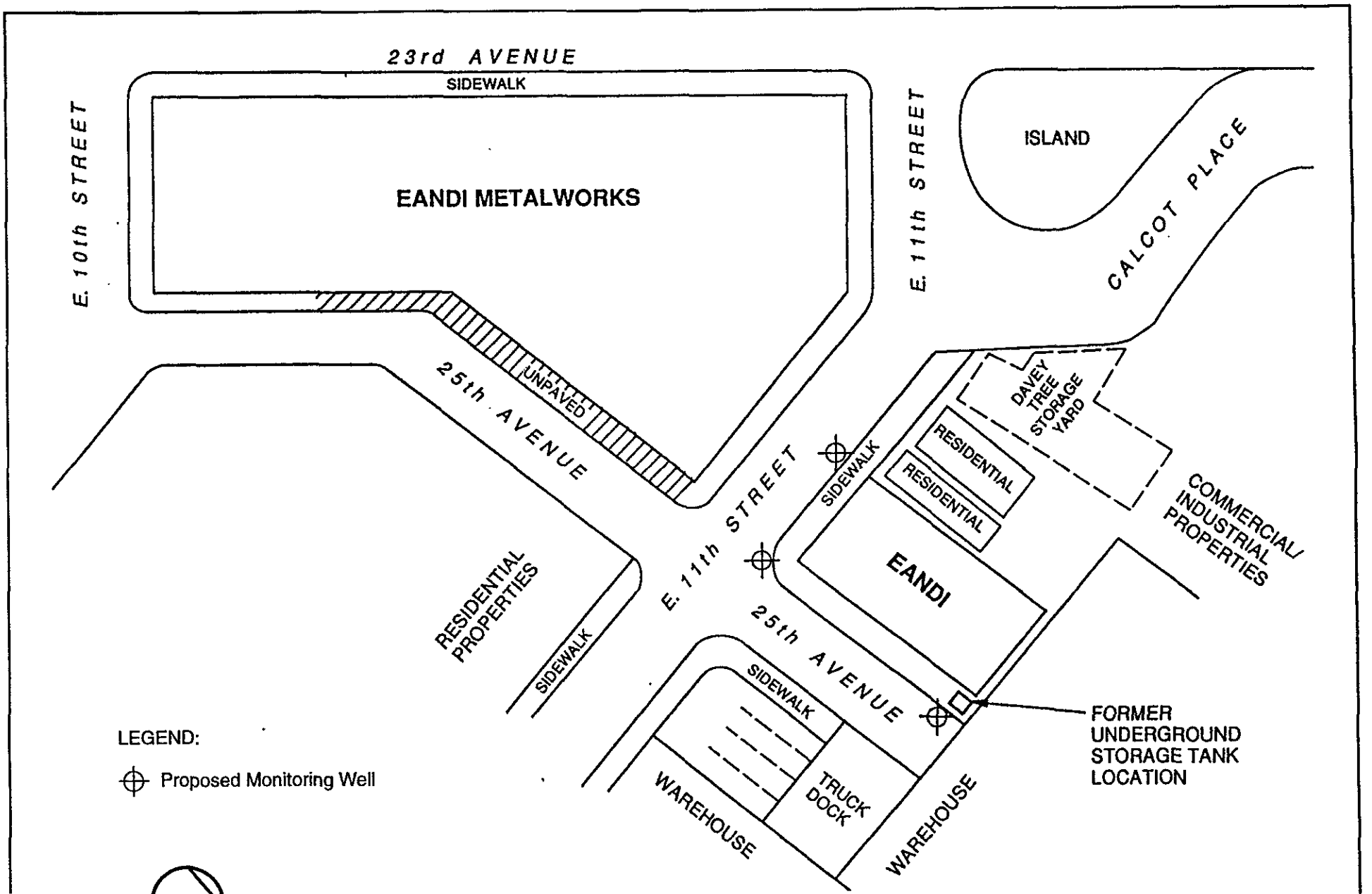

AGI TECHNOLOGIES

Site Plan

EANDI Metal Works/Phase II
Oakland, California

FIGURE 2

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
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- Low levels of diesel-range hydrocarbons (TPH-D) were detected in samples collected from stockpiled soil removed from around a 1,000-gallon diesel UST located at 123 23rd Avenue, but not in samples collected from the surrounding soil following UST removal.
- Groundwater was not encountered at the site during UST removal operations. According to representatives of the Alameda County Health Care Services Agency (ACHCSA), groundwater may flow in a northerly direction at the site.
- Access to the area north of the 1,000-gallon gasoline UST is limited.
- The preparation of a Work Plan for site investigation was requested by the ACHCSA on October 14, 1992.

2.0 SCOPE OF SERVICES

AGI will drill three borings, install groundwater monitoring wells, and perform quarterly groundwater monitoring at the site. This HASP describes procedures to be followed and personal protective equipment (PPE) to be used by AGI personnel while performing the following field tasks:

- Conduct a utility survey of proposed drilling locations.
- Drill and sample three borings to approximately 12 to 15 feet below ground surface.
- Install and develop three groundwater monitoring wells within the borings.
- Perform an elevation survey of site monitoring wells.
- Collect groundwater level data from site monitoring wells.
- Collect and submit 6 soil (during drilling) and 12 groundwater (during quarterly monitoring) samples for chemical analysis.

3.0 CHEMICAL HAZARD ASSESSMENT

3.1 GENERAL

AGI employees may be exposed to hazardous chemicals during field operations at the site. Exposure could be the result of physical contact, inhalation of dust and/or vapors, or inadvertent ingestion. The anticipated hazardous chemicals at the site include gasoline BETX, and lead.

In general, acute short-term exposure to potential site contaminants may result in eye, nose, skin, and upper respiratory tract irritation. Mild narcosis, chest pain, difficulty breathing, nausea, vomiting, and diarrhea are indications of severe exposure. Some potential site contaminants are considered carcinogenic; therefore, exposure should be minimized. Observable symptoms in site personnel may indicate a chemical's permissible exposure level (PEL) is being exceeded. If such symptoms are observed, AGI personnel should leave the site and inform the AGI HSM, who will reevaluate conditions at the site and implement engineering controls before allowing AGI personnel to reenter.

3.2 LEAD

Exposure to metals may result from inadvertent inhalation, ingestion, and skin contact, although inhalation should not pose a hazard unless total dust in air concentrations exceed 10 milligrams per cubic meter (mg/m^3). Acute short-term exposure to metals may result in pulmonary edema, headache, coughing, chest pains, muscle aches, nausea, vomiting, and abdominal pain. Prolonged dermal contact to metals may result in skin irritation. Arsenic, beryllium, cadmium, chromium, lead, nickel, and some zinc compounds are considered carcinogens.

Acute exposure to lead may result in fatigue, disturbance of sleep, constipation followed by colic, anemia, and neuritis; however, acute toxicity is unusual because lead is a relatively insoluble, cumulative poison. Occasionally, acute exposure to lead may result in vomiting, apathy, drowsiness, stupor, ataxia, hyperactivity, seizures, and other neurological signs. Chronic exposure to lead may result in loss of appetite, metallic taste, constipation, anemia, pallor, malaise, weakness, insomnia, headache, nervous irritability, muscle and joint pains, fine tremors, and colic. Prolonged exposure to lead may have effects upon the gastrointestinal tract, central nervous system, kidneys, blood, and gingival tissue. The American Council of Governmental Industrial Hygienists (ACGIH) recommends an 8-hour time weighted average-threshold limit value (TWA-TLV) of 0.15 mg/m^3 for occupational exposure to lead.

3.3 GASOLINE, BENZENE, ETHYLBENZENE, TOLUENE AND XYLENES

The most common exposure routes for gasoline, benzene, ethylbenzene, toluene, and xylenes (BETX) include inhalation and skin contact or absorption. Acute short-term inhalation of petroleum hydrocarbon concentrations up to 1,000 parts per million (ppm) may result in headache, dizziness, loss of appetite, weakness, loss of coordination, and upper respiratory tract irritation. Inhalation of vapor concentrations in excess of 5,000 ppm may result in loss of consciousness, coma, and death. Dermal contact may result in eye and skin irritation. Benzene is considered carcinogenic; therefore, exposure should be minimized.

Symptoms indicating acute exposure to benzene compounds include irritated eyes, nose, and respiratory system; giddiness; headache; nausea; staggered gait; fatigue; and dermatitis. Chronic exposure to benzene may result in damage to the blood, central nervous system, skin, bone marrow, eyes, and respiratory system. ACGIH recommends an 8-hour TWA-TLV of 10.0 ppm for occupational exposure to benzene.

4.0 PHYSICAL HAZARD ASSESSMENT

4.1 TEMPERATURE-RELATED HAZARDS

The development of temperature-related illnesses is considered the most common hazard. Ambient work site temperatures and the amount of physical activity may contribute to temperature-related illnesses ranging from heat stress to hypothermia in employees. Personnel performing physical labor while wearing protective clothing at temperatures above 70°F are subject to developing heat-related disorders. Monitoring employee temperatures and radial pulse rates should be performed to ensure an adequate work/rest regimen is followed to prevent heat-related illnesses. Appropriate clothing should be worn if outside temperatures fall below 40°F for more than 2 hours.

4.2 FIRE AND EXPLOSION HAZARDS

The risk of fire or explosion is moderate during field activities. A combustible gas meter (CGM) should be utilized during purging operations. If the CGM indicates combustible gas levels in the general work area at 20 percent of the lower explosive level (LEL), work shall cease and the tasks will be reevaluated. Work involving welding or cutting shall not be performed if the CGM indicates concentrations have reached 10 percent of the LEL in the general work area. Engineering controls, such as ventilation, will be implemented to control combustible gas levels. If combustible gas levels reach 50 percent of the LEL at the wellhead, a packing device and water will be utilized prior to conducting hot work near the wellhead. As a precautionary measure, smoking will not be permitted on site at any time.

4.3 OXYGEN DEFICIENCY HAZARDS

Site personnel are not expected to encounter an oxygen-depleted atmosphere during site activities. Confined space entries are considered a last resort and require an addendum to this HASP. Confined spaces are defined as any space having a limited means of egress, and which is subject to the accumulation of toxic or flammable contaminants or an oxygen-deficient atmosphere. This definition includes but is not limited to tanks, silos, utility vaults, trenches over 4 feet deep, and open-topped vessels with walls greater than 4 feet high.

4.4 CONSTRUCTION HAZARDS

The principal construction safety hazards will be associated with sampling activities. When equipment is being loaded and unloaded, AGI personnel should stand clear to prevent injuries in case the load falls. AGI personnel should be aware of vehicle traffic at sites and stay out of its way; particular attention should be paid when working near the traffic lane because driver visibility in the direction of travel may be decreased. Cones, flagging, bright-orange vests, and flashing lights should be used to identify work areas and limit traffic hazards to working personnel. Traffic control personnel should be on-site when encroachment into the traffic lanes is necessary to complete work.

4.5 NOISE HAZARDS

Drilling equipment and purging pumps may be sources of high levels of noise. Since noise levels vary for each piece of equipment, hearing protection will be provided. It is recommended that personnel utilize hearing protection while working within 15 feet of operating equipment.

5.0 SITE WORK ZONES

Three work zones, described in the following paragraphs, will be established during site activities as a contamination control measure.

5.1 EXCLUSION ZONE

The exclusion zone is the area that contains or is suspected of containing contamination. Because the site work is limited to sampling and monitoring at well locations, the exclusion zone will include only the space necessary to perform work at the site. An area having an approximate 5-foot radius should be established around each sampling location to serve as the exclusion zone during work activities. These areas will cease being exclusion zones when the well caps are replaced and the purge water is contained and sealed. No one should be allowed to enter an exclusion zone unless they have been given permission by the SSO and otherwise follow all portions of this HASP.

5.2 CONTAMINATION REDUCTION ZONE

A contamination reduction zone will be established adjacent to each exclusion zone to act as a transition area for decontamination of personnel and equipment. The contamination reduction zone is also considered a restricted area; therefore, personnel must meet training and medical surveillance qualifications.

5.3 SUPPORT ZONE

The support zone is the area considered to be uncontaminated. This area is used to stage clean equipment and other support facilities. Visitors must stay in the support zone unless proof of training and medical clearance is shown to the SSO.

6.0 PERSONNEL PROTECTION

6.1 EXCLUSION ZONES AND CONTAMINATION REDUCTION ZONES

This section describes the personal protective equipment (PPE) to be worn by personnel performing field operations within site exclusion zones and contamination reduction zones. Appropriate PPE was determined using information in Sections 3.0 and 4.0. The following PPE should be worn by personnel working in a site exclusion zone or contamination reduction zone:

- Head protection - American National Standards Institute (ANSI) hard hats should be worn around heavy equipment and drill rigs, and when there is an overhead hazard.

- Eye and face protection - Safety glasses should be worn during sampling activities. When there is a high splash potential (i.e., sampling of groundwater monitoring wells), face shields should also be worn.

- Foot protection - Steel-toe and shank work boots should be worn. Work boots should be made of rubber or covers may be worn over leather workboots.

- Skin protection - Coveralls should be worn. If direct contact with contaminated material is expected, Tyvek coveralls should also be worn. If the probability of being splashed or coming in contact with wet contaminants is high, personnel should wear PVC rainsuits or Saranax-coated Tyvek coveralls.

- Hand protection - Personnel should wear two pair of chemically protective gloves during sampling activities. An inner, surgical-type glove should be worn to lessen the chance of cross contamination during decontamination activities. Outer gloves should be made of Nitrile. If necessary, heavy duty work gloves may also be worn. If work gloves are worn over chemically protective gloves, they should be considered disposable. An alternative is to wear the work gloves under the chemically protective gloves.

- Respiratory protection - If organic vapor concentrations (measured in the breathing zone) exceed sustained readings (i.e., 5 minutes) of 5 parts per million (ppm), personnel should wear National Institute of Occupational Safety and Health (NIOSH) approved, properly fitted half-face respirators. Respirators should be equipped with combination organic vapor/high efficiency particulate and aerosol (OV/HEPA) cartridges. Cartridges should be changed a minimum of once per day or more often if breakthrough is suspected. At organic vapor levels between 10 and 50 ppm measured in the breathing zone, personnel should wear full-face respirators equipped with OV/HEPA cartridge. At sustained concentrations above 50 ppm, work shall cease. Additional information concerning air monitoring is included in Section 10.0.

6.2 SUPPORT ZONES

Personnel working in the support zone, or in an exclusion zone or contamination reduction zone before or after contaminated material is present, are not required to wear protective clothing or respirators. Regular work clothing should provide adequate protection during operations in these areas. Hard hats, safety glasses, and steel-toe boots must be worn while working in the traffic lane.

6.3 SUMMARY

Levels of protective clothing have been assigned to each field task. Level D is considered general work clothing; Level C is considered general work clothing with the addition of chemically protective clothing and respirators. In some cases, personnel may wear respirators and no chemically protective clothing; this is referred to as Modified Level C protection. The levels of protection listed below may be altered based on additional information and field conditions. Final determinations concerning levels of protection will be made by the SSO and are subject to approval of the HSM. The following is a list of field tasks, and the levels of protective clothing assigned to them:

- Utility survey - Level C or D (as determined on site).
- Drilling and well installation - Level C or D (as determined on site).
- Soil and groundwater sample collection, well development, elevation survey, and water level data collection - Level C or D (as determined on site).
- Contain purge and decontamination water - Level C or D (as determined on site).

7.0 DECONTAMINATION PROCEDURES

To ensure contamination is controlled and not spread from the site, decontamination procedures should be employed for equipment and personnel. In addition, contact to contaminated material should be limited. Methods to achieve minimization of contamination include using plastic covers over field equipment, and limiting personnel contact rates and areas.

7.1 PERSONNEL

Personnel should don protective equipment before entering an exclusion zone and decontaminate before reentering the support zone. Decontamination should consist of the following steps:

- Wash and rinse outer clothing, boots, and gloves. A soap and water solution should be used for the wash.
- Remove outer gloves and protective clothing (if worn).
- Remove respirator and cartridge assembly; clean respirator (if worn).
- Remove inner gloves.
- Wash hands and face.
- Shower as soon as possible after leaving the site.

7.2 SAMPLING EQUIPMENT

Sampling equipment should be brought through the decontamination line with personnel and cleaned before returning it to AGI. Samples and sample coolers should be wiped down to prevent contaminating laboratory personnel. Used disposable protective equipment and decontamination water will be packaged for off-site disposal.

8.0 GENERAL SAFE WORK PRACTICES

If respiratory protection is required, a buddy system should be used. No person will be allowed to work out of sight of other personnel. This precaution will be followed to readily detect when emergency aid is required.

A first aid kit and fire extinguisher will be available when work is performed. Fire extinguishers should be within 50 feet of the work operation.

Personnel shall not eat, drink, chew gum or tobacco, smoke, or perform any other practice that increases the probability of hand-to-mouth contact in site exclusion zones or contamination reduction zones.

The use of controlled substances or alcohol is forbidden at the site. In addition, personnel shall not work at the site while under the influence of such substances.

9.0 EMERGENCY PROCEDURES

Emergency response procedures have been developed for extraordinary events that could occur during field operations. These events include injuries, chemical exposures, fires, and spills.

In general, the following actions should be implemented in the event of an emergency:

- First aid or other appropriate initial action should be administered by those closest to the accident or emergency situation. This assistance should be conducted so those giving aid are not placed in a situation of unacceptable risk.
- The AGI PM and HSM should be contacted immediately.
- A Supplementary Record of Occupational Injuries and Illnesses Form (Attachment 3) should be completed by the injured individual or witness and forwarded to the PM. The PM will review the form prior to forwarding it to the HSM. Changes to the operation should be made to prevent the same event from occurring in the future.

9.1 PHYSICAL INJURIES

If a person is physically injured or suffers a medical emergency, Red Cross first aid procedures should be followed. Depending on the severity of the injury or medical condition, emergency medical response may be sought. Contaminated clothing may need to be decontaminated and removed prior to transport to an emergency medical facility.

9.2 CHEMICAL EXPOSURES

If the injury to the worker is chemical in nature, the following first aid procedures should be followed:

9.2.1 Eye Exposures

If contaminated solid or liquid enters the eyes, they should be flushed immediately with large amounts of clean water while lifting the upper and lower eye lids occasionally. Medical attention should be obtained immediately.

9.2.2 Skin Exposures

If contaminated material contacts the skin, the affected area should be washed promptly with soap and water. If contaminated materials penetrate clothing or protective equipment, the items should be removed and affected skin areas washed. Medical attention should be obtained if symptoms warrant.

9.2.3 Inhalation

If a person breathes a large volume of potentially toxic vapors, the individual should be moved to fresh air at once. If breathing has stopped, artificial respiration should be performed. Medical attention should be obtained immediately.

9.2.4 Ingestion

If contaminated material is swallowed, medical attention should be obtained immediately and the poison control center contacted for further directions.

9.3 FIRES

Fire extinguishers should be available on site and in vehicle cabs. In case of fire at the site, the following actions should be taken:

- Evacuate personnel from the site to an upwind location.
- Notify the fire department and emergency response agencies.
- Attempt to extinguish the fire using portable fire extinguishers or by smothering (only if the fire is small).

9.4 UNCONTROLLED RELEASE OF HAZARDOUS MATERIALS

The primary considerations during a hazardous materials spill are to prevent additional personnel from entering the area, contain existing spillage, and prevent further spillage. In the event of a hazardous materials spill at the site, the following actions should be taken:

- Evacuate personnel from the area.
- Summon emergency medical or fire services if the spill involves extremely toxic or flammable materials.
- Drains, sewers, etc. should be blocked to prevent material from migrating.
- Attempt to stop the flow of material from its point of origin.

9.5 EMERGENCY SERVICES

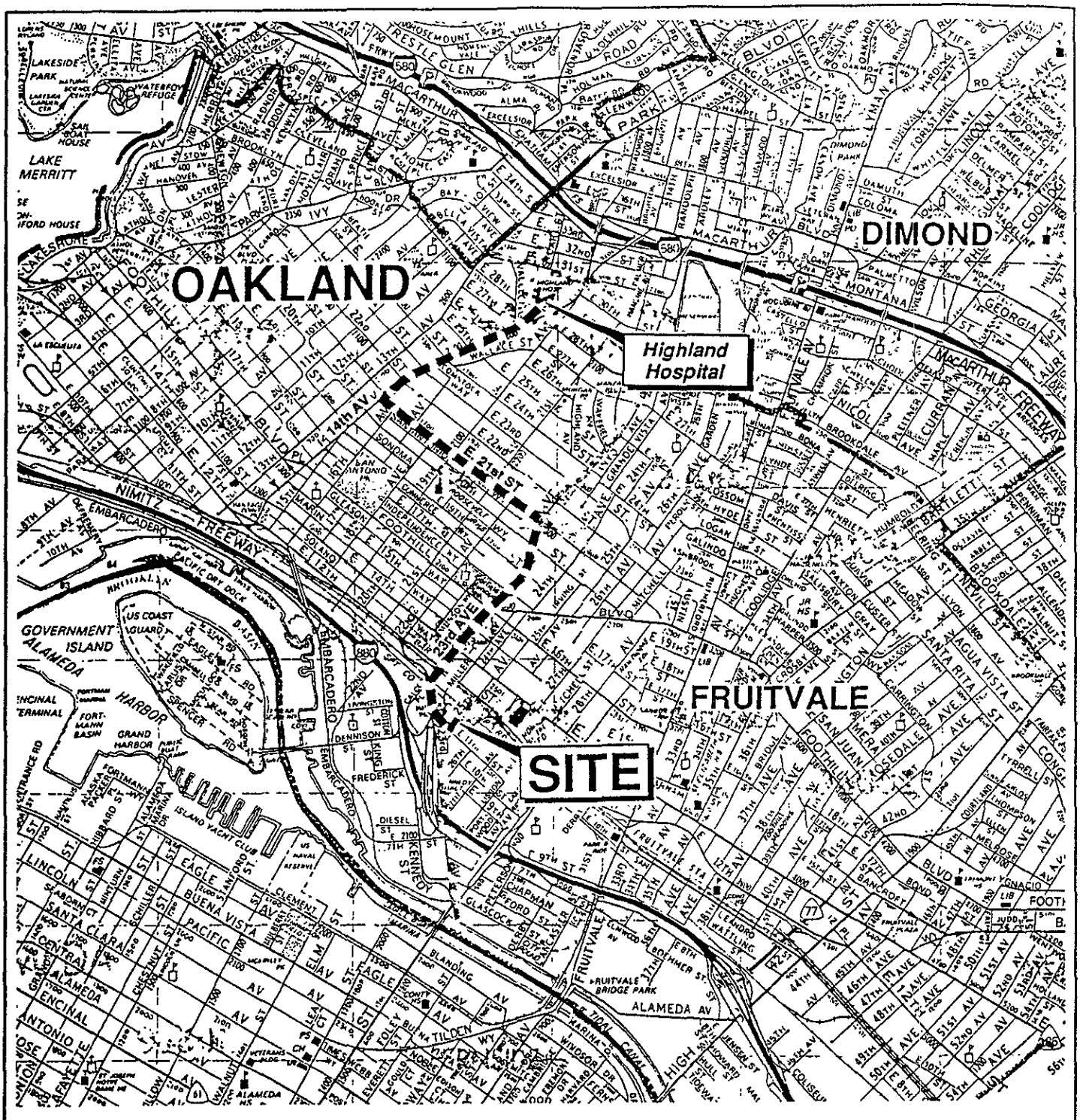
The telephone closest to the site should be located by the SSO prior to starting site work. If outside services (i.e., ambulance, fire, etc.) are required, field personnel should immediately telephone the local emergency number (911). The SSO should notify AGI at (510)238-4590 after the emergency situation has been stabilized. If medical attention is needed but the situation is not an emergency, the injured employee may be transported to the hospital by other field personnel.

9.5.1 Hospital Route

Figure 3, Hospital Route Map, shows the location of Highland Hospital with respect to the site. Driving directions are as follows:

> Exit the site and drive north on 23rd Avenue (the road will go under BART and veer to the northeast), then turn left (northwest) onto East 21st Street. Proceed approximately 6 blocks to 14th Avenue and turn right (northeast). Follow 14th Avenue to the northeast for about 7 blocks to Highland Hospital. Highland Hospital is on the left (north) side, opposite the intersection with East 29th Street.

In cases involving severe emergencies, personnel should await emergency medical transport.



Reference: Thomas Bros., Alameda County, 1995

AGI TECHNOLOGIES

Hospital Route Map

EANDI Metalworks / Phase II
Oakland, California

FIGURE 3

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
15,876.001	BD	Jun 95			

9.5.2 Emergency Telephone Numbers

The following emergency telephone numbers should be available at the site:

Fire	911
Ambulance	911
Paramedics	911
Police	911
Poison Control Center	911
Highland Hospital	(510)437-4800
East Bay Occupational Medicine Associates	(510)351-3553
AGI Health and Safety Manager (Monica Beckman, Home)	(206)760-1013

10.0 AIR MONITORING AND SAMPLING

Air monitoring will be conducted during site operations having a high potential to release contaminants. Monitoring will be used to document exposure levels and confirm necessary precautions are taken to protect on-site personnel and the general public. In addition, air sampling may be performed if personnel exposures to organic vapors are suspected of exceeding established exposure limits.

Monitoring and sampling equipment will be calibrated daily in accordance with the manufacturers' requirements. Calibration data, background readings, predominant wind direction, air monitoring readings, and air sampling information will be recorded as part of the daily field logs. If instrument readings are questionable or abnormal, the HSM should be notified.

10.1 AIR MONITORING

Action levels for various instruments have been established for work at the site. The organic vapor action level is based on readings obtained with an organic vapor monitor equipped with a photoionization detector (OVM-PID). Measurements are taken in the breathing zone, which is considered to include a 1-foot radius circle from a worker's nose during normal work operations.

Since the OVM-PID measures total organic vapors and cannot readily distinguish between compounds, a conservative organic vapor action level has been established. The organic vapor action level will be a sustained (5 minutes) reading on the PID of 5 ppm above background, measured in the breathing zone. If organic vapor levels exceed 5 ppm above background, half-face respirators should be worn. If levels exceed 10 ppm above background, full-face respirators should be worn. If organic vapor concentrations exceed 50 ppm above background, work should cease and personnel will evacuate the site.

The action levels discussed above were determined to be sufficient based on a comparison of air sampling analytical results to air monitoring readings obtained using an OVM-PID or OVM equipped with a flame ionization detector (OVM-FID) during sampling. Action levels may be adjusted as additional information is obtained. AGI employees are instructed to stay outside or upwind of the exclusion zone as much as possible. Such work practices will minimize the potential for exposures above established PELs.

10.2 AIR SAMPLING

Air samples have been collected for AGI employees observing, directing, and documenting operations at hazardous waste sites to document exposure of AGI personnel to benzene and TPH. These air samples have been collected at various project locations during different phases of site operations. Analytical results received from these samples indicate no exposures to benzene above the PEL of 1 ppm measured as an 8-hour TWA at any site.

Additional air sampling may be conducted at the discretion of the AGI HSM, PM, or SSO. Air sampling should be conducted at sites potentially contaminated with substances for which air sampling has not previously been conducted. In addition, air sampling will be conducted if an overexposure situation is suspected.

Personnel air sampling of organic vapors may be conducted using 3M brand organic vapor diffusion (OVD) badges or a charcoal tube and pump assembly. For personnel sampling, the OVD badge or charcoal tube should be placed within the breathing zone of the individual with the greatest potential exposure for 8 to 10 hours. OVD badges and charcoal tubes may be exposed for shorter durations if personnel leave the exclusion zone. Upon sampling

completion, the OVD badges or charcoal tubes are collected and sealed, exposure times recorded, and the badges are sent to an independent laboratory accredited by the American Board of Industrial Hygiene (ABIH) to perform industrial hygiene analysis. Personnel air samples are analyzed for benzene by NIOSH Reference Method 1501 and for TPH by NIOSH Reference Method 1500.

11.0 TRAINING

Personnel working at the site will have received the required 40-hour training for work at hazardous waste sites in accordance with Occupational Safety and Health Administration (OSHA) regulations. Site personnel will also be up to date with respect to 8-hour annual refresher training requirements. At least one individual working at the site will be currently certified in American Red Cross First Aid and Cardiopulmonary Resuscitation (CPR) procedures. The PM will have completed 8 hours of specialized training for supervising workers at hazardous waste sites in accordance with OSHA requirements. Training records are maintained at the AGI Bellevue office by the HSM.

12.0 MEDICAL SURVEILLANCE

Employees working at the site will participate in a Medical Surveillance Program. Medical surveillance documentation is maintained at the AGI Bellevue office by the HSM; actual medical examination results are maintained by the examining physician.

Employees are given a baseline physical and annual examinations thereafter. The examining physician verifies in writing whether each individual is fit to work at hazardous waste sites and utilize protective equipment, including respirators. Additional medical examinations may be required during the course of a project if overexposure to site contaminants or an injury occurs.

The content of the medical examinations has been determined by the AGI Corporate Occupational Medical Consultant, Dr. Susan Forrest of Virginia Mason Occupational Medicine Clinic. The following are the minimum requirements of the medical surveillance examinations:

- Baseline head-to-toe examination.
- Medical history including work history, past exposures, hobbies, and family history.
- Complete blood count and blood chemistries (including liver function, kidney function, heart function, and thyroid function screening).
- Urinalysis.
- Spirometry.
- EKG (every 2 years).
- Chest X-ray (every 2 years).
- Audiogram.
- Vision acuity test.

Additional tests may be conducted at the discretion of the examining physician.

13.0 HASP MODIFICATIONS

This project HASP should be reviewed and amended when:

- Applicable regulations are revised.
- Additional information concerning site contaminants, operations, personnel, emergency services, etc. is obtained.
- Site operations are revised.

When the HASP is revised or an addenda prepared, personnel shall review the changes or addenda and file a new Field Team Review Form with the HASP.

AGI
TECHNOLOGIES

ATTACHMENT 1

AGI
TECHNOLOGIES

SUBCONTRACTOR SAFETY AGREEMENT FORM

_____ (hereafter called Subcontractor) has been retained by AGI Technologies (AGI) to assist AGI with field work at Eandi Metal Works in Oakland, California. Subcontractor has read and understands the project Health and Safety Plan (HASP). Subcontractor is aware that its employees may be exposed to potentially hazardous materials and physical hazards during the performance of work at the above-referenced site.

Subcontractor shall ensure its employees, agents, subcontractors, and other invitees to the project site comply with all applicable health and safety laws and regulations, and the most recent version their project HASP. Subcontractor is responsible for examining regulatory requirements and determining whether additional or more stringent health and safety provisions are required for their portion of work.

_____
Authorized Signature

_____
Printed Name

_____
Title

_____
Date

Completed copies of this form should be forwarded to the AGI Project Manager.

AGI TECHNOLOGIES

ATTACHMENT 2

AGI
TECHNOLOGIES

FIELD TEAM REVIEW FORM

I have read and reviewed the most recent revision dated June 9, 1995 of the Project Health and Safety Plan (HASP) for Monitoring Well Installations and Groundwater Monitoring at Eandi Metal Works in Oakland, California. I have been given a chance to ask questions regarding the Project HASP and understand the information contained therein. I agree to comply with all aspects of the Project HASP.

Name: _____

Signature: _____

Date: _____

Completed copies of this form should be forwarded to the AGI Health and Safety Manager.

AGI
TECHNOLOGIES

ATTACHMENT 3

AGI TECHNOLOGIES

SUPPLEMENTARY RECORD OF OCCUPATIONAL INJURIES AND ILLNESSES FORM

CASE NO: ____

THIS IS AN OFFICIAL DOCUMENT, BE THOROUGH AND ACCURATE.

This section to be completed by injured employee or witness:

Employer Name: AGI Technologies

Employer Address: 827 Broadway, Suite 210, Oakland, California 94607

Project Name/Location: _____

Date of Accident/Incident: _____ Time: _____

Was place of accident/incident on employer's premises? Yes( ), No( )

Employee Name: _____

Employee Home Address: _____

Social Security Number: _____ Age: _____ Sex: M( ), F( )

Occupation/Department: _____

What was being done at time of accident/incident? _____
_____

How did the accident/incident occur? _____
_____

Employee Signature: _____ Date: _____

This section to be completed by the Project Manager/ Supervisor:

Time reported: _____ Did employee leave work? ___ When: _____

Date & time returned: _____

Nature of injury: _____ Exact body part affected: _____

Check one: Near Miss( ), First Aid( ), Doctor( ), Hospitalized( )

Doctor/Hospital Name: _____ Address: _____

Why did accident/incident occur? _____

What corrective action has been initiated to prevent recurrence? ___
_____

Project Manager/Supervisor Signature: _____ Date: ___

AGI
TECHNOLOGIES

SUPPLEMENTARY RECORD OF OCCUPATIONAL INJURIES AND ILLNESSES FORM (CONTINUED)

CASE NO: ____

THIS IS AN OFFICIAL DOCUMENT, BE THOROUGH AND ACCURATE.

This section to be completed by Health and Safety Manager:

Concur with action taken? Yes( ), No( );Remarks: _____

_____

_____

_____

Health and Safety Manager Signature: _____ Date:_____

APPENDIX B

FIELD EXPLORATION AND SOIL SAMPLING PROCEDURES

INTRODUCTION

The following sections describe the field work procedures performed by AGI Technologies (AGI) for environmental site assessment and characterization projects in California. The field investigation is performed in accordance with U.S. Environmental Protection Agency (EPA) protocol and our project agreement.

DRILLING

Truck-mounted hollow-stem auger, bucket auger, air-rotary, or mud-rotary drill rigs are used to advance soil borings. All drilling equipment is thoroughly decontaminated using a high-pressure steam cleaner prior to drilling the first boring, between borings, and after completing the final boring.

SOIL SAMPLING

Surface soil samples are collected by driving a manual hammer-driven core sampler 6 inches into the soil. Subsurface soil samples are collected at predetermined intervals by driving a split-barrel sampler 18 inches, when possible, into undisturbed soil ahead of the auger with a 140-pound surface hammer dropped 30 inches. Blow counts required to drive the sampler the final 1 foot are recorded on the boring logs. Soil samples are examined and logged according to the Unified Soil Classification System.

Soil and groundwater conditions are characterized and logged during drilling using the following methods:

- Examine drill cuttings and drive samples removed from the borehole.
- Observe the resistance to drilling, as indicated by the drilling rate, rig pressure applied, and overall rig behavior.
- Obtain soil samples, as described below.

Soil samples are collected in 6-inch-long, 2.0 or 2.4 inch diameter brass or stainless steel tubes at predetermined intervals to the total depth of each boring. The following procedures are employed during soil sampling:

- Split-barrel sampler containing soil is retrieved from auger.
- Driller provides split-barrel sample to AGI field representative.

- Sample is sectioned and the interval measured.
- Soil characteristics are described.
- The sample is field screened for volatile petroleum hydrocarbons using an organic vapor meter equipped with a photoionization detector (OVM-PID). A portion of the sample is placed in an airtight resealable plastic bag, disaggregated, and allowed to equilibrate for approximately 1 minute. The OVM-PID probe is then inserted through the bag into the headspace above the soil and the maximum reading of headspace vapors recorded on the boring log. OVM-PID analysis is not compound-specific and is affected by, among other influences, climate (e.g., temperature and humidity), soil type and conditions, and instrument calibration/operation. The intent of this analysis is to qualitatively compare samples and assist in sample selection for chemical analysis. OVM-PID measurements are shown on the boring logs.
- One 6-inch section is extracted, teflon tape foil is placed between the soil and plastic end caps, and the sample is sealed with silicon tape to prevent potential loss of volatile components.
- The sample is labeled, placed on Blue Ice in an insulated cooler, and chilled to approximately 4°C.
- Proper chain-of-custody protocol is followed to ensure laboratory receipt of a representative sample.

AIR QUALITY SURVEILLANCE

Air quality is monitored at the drill sites according to the AGI Corporate Health and Safety Plan for underground storage tank (UST) sites. An OVM-PID is used to check ambient air quality.

DECONTAMINATION PROCEDURES

All drilling and sampling equipment and materials coming into contact with soil sampled are decontaminated prior to the start of drilling, between each drilling location, and after use. This includes the auger flight(s), drill rods, split-barrel sampler, and other sampling equipment.

The drill rig and drilling equipment are decontaminated using a steam cleaner. A decontamination area is established on site during the field exploration.

The following decontamination procedures are used on soil sampling equipment:

Step 1: Rinse and preclean in potable water.
Step 2: Wash in solution of laboratory-grade nonphosphate-based soap and potable water.
Step 3: Dip rinse in potable water.
Step 4: Rinse with distilled water.

All solutions are renewed between borings, or more frequently if necessary. Scrub brushes and nylon scrubbers are used during all steps. All equipment is air dried and held in clean plastic bags between samplings.

WELL AND PIEZOMETER DESIGN AND INSTALLATION PROCEDURES

Groundwater monitoring wells and piezometers are installed in conformance with applicable well construction standards by a California-licensed well driller. Summary logs showing well completion details and a legend are prepared in the field and checked for accuracy and completeness by AGI soil laboratory personnel. The general procedures for well and piezometer construction are as follows:

- Boreholes drilled beyond screen depth are backfilled with bentonite chips or pellets to 1-1/2 feet below the base of the screen and then backfilled with silica sand to achieve the desired base depth for the well.

- PVC screen and blank sections are screwed together at land surface and lowered through the hollow-stem auger.

- The PVC casing consists of a predetermined diameter, flush-thread coupled Schedule 40 PVC pipe with milled slots comprising the screened interval. Required screen lengths and mill guage are determined in the field based upon subsurface conditions encountered. The base of each casing is sealed with a flush-threaded end cap.

- The annulus between the PVC screen and the boring wall is backfilled with the appropriately-sized silica sand to approximately 1 to 2 feet above the screen. The depth to the top of the backfill materials within the annulus is measured frequently with a fiberglass tape to maintain strict control over construction and prevent overfilling the hollow-stem auger.

- Hydraulic seals are constructed using 2 feet of hydrated bentonite pellets placed above the sand pack. Above the hydraulic seals, each boring annulus space is backfilled with bentonite pellets or cement grout to 2 feet bgs. The top 2 feet of each boring annulus space is backfilled with concrete to just above ground surface to prevent possible surface water infiltration through the borehole.

- Aboveground protective steel monument cases (typically 8 inches in diameter) with secured caps are installed over the plastic casings upon completion of construction. Monuments are set in concrete and each well or piezometer is labeled denoting the appropriate designation.

AGI TECHNOLOGIES

APPENDIX C

HYDROPUNCH SAMPLING & GROUNDWATER MONITORING PROCEDURES

APPENDIX C

HYDROPUNCH SAMPLING & GROUNDWATER MONITORING PROCEDURES

INTRODUCTION

The following sections describe procedures which are followed during groundwater monitoring at sites undergoing investigation, remediation, or quarterly monitoring. Site-specific variations may be implemented, with the approval of the project manager, based upon site conditions, client or regulatory agency requirements, or other factors, provided the quality of data collected is not in any way reduced.

GROUNDWATER MONITORING PROCEDURES

Elevation Survey

Following well installation, the top of each well casing is surveyed using an on-site benchmark with an assumed elevation of 100.00 feet, or an off-site benchmark with a known elevation. Depth to groundwater from the survey mark at the casing top is measured in each well.

Well Development

After sufficient time is allowed for a well cover seal to harden, the well is developed using surge-and-pump techniques. Surge-and-pump techniques utilized consist of the following:

- The screened portion of the well is flushed using an approximately two-inch-diameter surge block. A minimum of 40 surge strokes are used across the full screen length to remove sediment which may have settled in the well screen slots.

- Collected sediment at the base of the well is removed. A high-volume centrifugal suction pump is used to remove water with suspended sediment and sediment at the well base. Pumping of the well continues until the water removed is relatively sediment-free.

The above steps are repeated until the well is functioning properly, settled sediment is completely removed, and suspended sediment is relatively constant during pumping.

Water Level Measurements

Prior to beginning each sampling event, the depth to groundwater is measured in each monitoring well. Measurements are taken from a survey mark or the highest point on the top of each well casing and obtained to the nearest hundredth of a foot using an electronic water level meter. Water level measurements are recorded on a separate field sampling record for each well. The total depth of each well is also measured to the nearest one-half foot and recorded on the field sampling record. These measurements are used to calculate the minimum purge volume for each well and to prepare groundwater contour maps.

Groundwater Sampling Procedures

Following collection of water level measurement data, each well is purged of a minimum three well casing volumes of water prior to sample collection. During purging, the pH, temperature, and specific conductance of the pump discharge is monitored using a calibrated electronic monitoring device. The well is considered fully purged when the pH, temperature, and specific conductance of the purge water have stabilized, or when the well is pumped dry (low-yield wells only). Immediately following purging of each well, samples are collected using a two-inch diameter positive displacement bladder pump or bailer constructed of stainless steel and/or teflon materials. For low-yield wells, samples are collected following approximately 80% recovery or within 24 hours after purging. If the height of the water column within a well is insufficient to maintain proper pump operation, the sample is collected using a pre-cleaned new disposable bailer or a bailer constructed of stainless steel and/or Teflon materials.

Samples are collected in appropriate EPA-approved containers based upon the analyses required. When samples are collected for several different analyses, the samples most sensitive to field conditions are collected first, followed by less sensitive samples (in descending order). Following collection, each sample is placed on "Blue Ice" in a chilled cooler prior to transport to a certified laboratory for analysis.

Following sample collection, the pump, hose, and/or bailer is immediately decontaminated. Decontamination consists of steam cleaning exposed surfaces of the pump, hose, and/or bailer, then thoroughly rinsing each piece of equipment with steamed water. To decontaminate the interior of the bladder pump and hose, a minimum of 40 pump volumes of steamed water are flushed through the pump prior to its subsequent use. Alternatively, the following procedures are used:

Step 1: Rinse and preclean in potable water.
Step 2: Wash in solution of laboratory-grade nonphosphate-based soap and potable water.
Step 3: Dip rinse in potable water.
Step 4: Rinse with distilled water.

All solutions are renewed between samplings. Scrub brushes and nylon scrubbers are used during all steps. All equipment is air dried, when possible, and held in clean plastic bags between samplings.

Quality Assurance

The following steps are taken, as appropriate, during each groundwater sampling event to assure the quality of samples collected and field data recorded:

- Based upon review of the most recent historical analytical data from each well, a monitoring sequence is determined in order to prevent potential cross-contamination of the monitoring wells. The sequence is determined by the level of contamination in each well, and progresses from least contaminated to most contaminated. If a well is inaccessible in its sequence, an attempt is made to obtain access to the well. If obtaining access will cause significant delay of the monitoring event, the well is skipped and placed in a secondary sequence. The skipped well is not returned to until later when

decontamination of the sampling equipment has been verified with analysis of an equipment blank sample, or new equipment is used. The procedure for equipment blank sample collection is described later in this section.

- To assure the accuracy of field parameter measurements, calibration of the pH and specific conductance monitoring devices is performed each day prior to commencing sampling activities. A single-point calibration is used to verify proper function of the specific conductance meter, and a three-point calibration is used to ensure proper pH meter operation. If the calibration check indicates improper function of either meter, the meter(s) is recalibrated prior to use. No calibration of the electronic thermometer is required for proper use during groundwater sampling.

- The actual purge volume removed from each well depends upon the stability of pH, specific conductance, and temperature readings from the pump discharge water. The stabilization variance limits employed during monitoring for these parameters are 0.1 pH units, 10% specific conductance, and one (1) degree Fahrenheit. Readings are taken following removal of one well casing volume and each successive well casing volume. If these parameters do not stabilize following removal of the minimum purge volume, additional casing volumes are removed until stabilization is achieved.

- During sample collection, the flow rate of the pump is reduced in order to minimize disturbance of the sample upon collection. For samples collected with a bailer, a bottom emptying device is used when appropriate, to limit the loss of volatile organic compounds. After the sample is collected, volatile organic analysis (VOA) vials are checked for the presence of headspace. Samples with headspace are emptied and a replacement sample is collected. For pre-preserved VOA vials, a replacement vial is used. Following sample collection, each sample is labeled and placed in a chilled cooler for transport to the laboratory within 24 hours, when possible. Samples retained for more than a 24 hour period are placed in a locked refrigerator until transport to the laboratory. Only those samples collected one day prior to a holiday or weekend day, or from a remote location, are retained for more than 24 hours.

- Chain-of-custody documentation accompanies all samples collected and submitted to the laboratory. The original chain-of-custody documents remain with the samples until analyzed, and a copy of each is retained in AGI's files. The chain-of-custody indicates the sample identification number as shown on the sample label, number of sample containers, analyses required, date and time of collection, sampler's initials, and the relinquishing and receiving signatures of persons in control of sample handling following collection until delivery to the laboratory.

- Quality assurance samples are collected to document the effectiveness of sample collection, handling, analysis, and equipment decontamination procedures. A pump blank sample is submitted for analysis prior to each monitoring event and secondary sampling sequence to ensure the cleanliness of the pump prior to its use for sampling. The pump blank consists of clean water which has been passed through the pump and collected from the pump discharge. A pump blank sample is not collected when new disposable bailers are used to collect samples. A trip blank sample is prepared and submitted to the laboratory with each group of samples as a check against potential contamination resulting from sample handling. Trip blanks consist of clean water

contained in 40 ml VOA vials carried with the samples throughout the day. One equipment rinsate sample is typically collected during each monitoring event to ensure proper decontamination of sampling equipment. Rinsate samples consist of clean water collected from the pump discharge or bailer following sampling of a contaminated well and decontamination of the equipment. Duplicate samples are collected, as appropriate, during each monitoring event as a check of analytical accuracy. Duplicate samples are collected from selected wells, labeled with a fictitious sample identification number recorded on the sampling record, and submitted to the laboratory for analysis. Results of quality assurance sample analyses are presented with the data summary for the monitoring event.

- Following each day of sampling, field notes and the sampling record are reviewed to ensure the completeness and accuracy of documentation of sampling activities. Review includes verification of sample identification numbers, purge volumes, field monitoring parameter stability, and chain-of-custody documentation. Special notations regarding outside factors, such as wind direction, ambient temperature, and fugitive odors, which may affect sample integrity, are evaluated in conjunction with review of analytical data.

- During the monitoring event, field personnel evaluate the condition of each well with regard to well integrity and record findings on the sample record. These findings are tabulated and presented with or prior to the data summary report. The table provides the well identification number, condition, and any recommended actions necessary to preserve well integrity.

- Results of analytical testing are reviewed for accuracy and any anomalies that occur, based upon historical data. The review includes evaluation of results in conjunction with recorded field data and chain-of-custody documentation, comparing current and historical data, and validation of data using chromatograms and associated QA/QC procedures and results supplied by the laboratory. Any suspect results which cannot be validated through review of field or laboratory data review are immediately brought to the attention of the project manager and recommended actions to mitigate the problem are determined.

- Corrective action procedures are employed for field, laboratory, and program attributes when conditions or data require such action. Corrective actions based upon field data are recommended if such action is deemed necessary to preserve the integrity of wells or to prevent problems in obtaining representative samples from the selected wells included in the monitoring program. Corrective actions based upon laboratory data are recommended if inherent problems with analytical results occur during implementation of the monitoring program. Any necessary adjustments in the monitoring frequency or analytical schedules are recommended based upon results of the monitoring program and the status of remediation.

Containment and Disposal of Purge Water

Purge water removed from the wells during groundwater sampling is contained in 55-gallon DOT-rated drums for later treatment or disposal following receipt of analytical results. A 500-gallon tank trailer, or other approved container is used when large volumes of purge water are collected, or site conditions or the client dictate.

AGI TECHNOLOGIES

APPENDIX B

Field Data Sheets

WATER LEVEL MEASUREMENTS

Applied Geotechnology Inc.

Date 10/20/95

Page 1 of 1

Project Fandi Metal Works

Job No. 15876.001

Weather Conditions Overcast / ⇒ sunny

Measured By Keith/Joe

Site Conditions

Caluculations By JSA

Measurement Device Conductivity based DTW meter

Elevation Datum

Well	Time	Depth to Water	Reference	Reference Elevation	Water Elevation	Comments
MW-2	10:30	11.92	TOC	99.57	87.65	NO lock
MW-1	10:32	11.96	TOC	99.90	87.94	NO lock
MW-3	10:35	12.11	TOC	98.45	86.34	NO lock

Additional Comments

GROUNDWATER SAMPLING RECORD

Applied Geotechnology Inc.

WELL NO. MW-1

SAMPLE NO. 3997

Project Fandi Metalworks — Date 10/20/95

Project No. 15876.001 — Sampled By: Keith Power

Location 976 23rd Ave Oakland CA — Reviewed By SBA

PURGING

Depth to Water: 2nd well 11.96 / TD=20' — Time: 10:38

Water Volume in Casing: 1.5 — Water Volume in Sand Pack: —

Volume Purged: 6 — Purged Time (from/to): 11:30 - 11:45

Purging Method: Disposable Bailer — Purge Volume Measurement Method: 5gal Bucket

Parameter Monitoring (pH, Conductivity, Temperature):

TIME	CUMULATIVE VOLUME (gal)	READING pH	TIME	CUMULATIVE VOLUME (gal)	READING cond	TIME	CUMULATIVE VOLUME (gal)	READING temp
~~11:30~~	~~start~~		start			start		
~~11:34~~	1.5	6.64	5	1.5	410	5	1.5	18.0
11:34	3	6.60	9	3	410	6	3	17.9
11:38	4.5	6.61	11	4.5	410	11	4.5	17.9
11:45	6	6.59		6	410		6	17.9

SAMPLING

Sampling Method: Disposable Bailer — Time Sampled: 11:48

SAMPLE CONTAINER	PRESERVED BY	AT WHAT pH	FILTER TYPE	COOLED BY
3997	HCl			ICE

SAMPLE DATA

Appearance/Odor: yes slight no sheen

pH (last stabilized) 6.59 — Temperature (°C): 17.9

Eh (millivolts) — Conductivity (micromhos/cm): 410

Other:

DISPOSITION

Chain of Custody (yes) / no): — Chain of Custody No.:

Duplicate Sample No.: — Replicate Sample Nos.:

ANALYTIC LAB — Lab Name: ARAMETRIX — Date Sent to Lab: 10/23/95

Shipment Method: KLEINFELDER COURIER

SPLIT WITH — Name(s):

Organization(s):

Other:

Comments: 3 40ml VOAS TPH-G BTEX

1 200 ml Plastic total lead

GROUNDWATER SAMPLING RECORD

Applied Geotechnology Inc.

WELL NO. MW-2

SAMPLE NO. 3998

Project: Eandi Metalworks — Date: 10/20/95

Project No.: 15876.001 — Sampled By: Keith Powers

Location: 9763 3rd Ave Oakland CA — Reviewed By: JDS

PURGING

Depth to Water: 2nd well 11.92 TD= 20' — Time: 10:30

Water Volume in Casing: 1.5 gal — Water Volume in Sand Pack: —

Volume Purged: 6 gal — Purged Time (from/to): 10:55 - 11:10

Purging Method: Disposable bailer — Purge Volume Measurement Method: 5 gal Bucket

Parameter Monitoring (pH, Conductivity, Temperature):

TIME	CUMULATIVE VOLUME (gal)	READING pH
10:55	Start	
10:59	1.5	6.42
11:03	3	6.49
11:06	4.5	6.52
11:10	6	6.52

TIME	CUMULATIVE VOLUME (gal)	READING cond
S	Start	
a	1.5	480
m	3	480
e	4.5	480
	6	480

TIME	CUMULATIVE VOLUME (gal)	READING Temp
S	Start	
a	1.5	19.1
m	3	19.1
e	4.5	19.0
	6	19.0

SAMPLING

Sampling Method: Disposable Bailer — Time Sampled: 11:12

SAMPLE CONTAINER	PRESERVED BY	AT WHAT pH	FILTER TYPE	COOLED BY
3998.	HCl		None	ICE

SAMPLE DATA

Appearance/Odor (yes) No Sheen

pH (last stabilized) 6.52 — Temperature (°C): 19.0

Eh (millivolts) — Conductivity (micromhos/cm): 480.

Other:

DISPOSITION

Chain of Custody (yes) / no): — Chain of Custody No.:

Duplicate Sample No.: — Replicate Sample Nos.:

ANALYTIC LAB — Lab Name: ANAMETRIX — Date Sent to Lab: 10/23/95

Shipment Method: KLEINFELDER COURIER

SPLIT WITH — Name(s):

Organization(s):

Other:

Comments: 3 40ml VOAs TPH-G/BTEX

1 200ml Plastic Total Lead

GROUNDWATER SAMPLING RECORD

Applied Geotechnology Inc.

WELL NO. MW-3

SAMPLE NO. 3996

Project Eandi Metal Works — Date 10/20/95

Project No. 15876.001 — Sampled By Keith Powers

Location 976 23rd Ave Oakland, CA — Reviewed By JSA

PURGING

Depth to Water: 2nd well 12.11 ft T.D = 20 ft — Time: 10:35

Water Volume in Casing: 1 casing = 1.4 — Water Volume in Sand Pack: —

Volume Purged: 5.6 gal — Purged Time (from/to): 12:05 - 12:20

Purging Method: Disposable Bailer — Purge Volume Measurement Method: 5 gal buckets

Parameter Monitoring (pH, Conductivity, Temperature):

TIME	CUMULATIVE VOLUME (gal)	pH READING
12:05	start	
12:10	1.4	6.87
12:13	2.8	6.88
12:16	4.2	6.87
12:20	5.6	6.86

TIME	CUMULATIVE VOLUME (gal)	cond READING
12:05	start	410
12:10	1.4	910
12:13	2.8	400
12:16	4.2	400
12:20	5.6	400

TIME	CUMULATIVE VOLUME (gal)	temp READING
12:05	start	
12:10	1.4	19.0
12:13	2.8	19.0
12:16	4.2	19.0
12:20	5.6	19.0

SAMPLING

Sampling Method: Disposable bailer — Time Sampled: 12:22

SAMPLE CONTAINER	PRESERVED BY	AT WHAT pH	FILTER TYPE	COOLED BY
3996	HCl		none	Ice
	3 40 ml	VOA		
	1			

SAMPLE DATA

Appearance/Odor: yes no sheen

pH (last stabilized) 6.86 — Temperature (°C): 19.0

Eh (millivolts) — Conductivity (micromhos/cm): 400

Other:

DISPOSITION

Chain of Custody (yes) no): — Chain of Custody No.:

Duplicate Sample No.: — Replicate Sample Nos.:

ANALYTIC LAB — Lab Name: ANALYTRIX — Date Sent to Lab: 10/23/95

Shipment Method: COURIER

SPLIT WITH — Name(s):

Organization(s):

Other:

Comments: 3 40 ml VOAs TPH-G/BTEX

1 200 ml Plastic Total Lead

Applied Geotechnology Inc.

FIELD INVESTIGATION DAILY REPORT

Sheet 1 of 1

Project: Eandi Metal
Location: Oakland
Equipment Rental: _____ Company: _____
Equipment Hours: _____ F.E. Time from: _____ to: _____

Job No.: 15876.001 TZ-301150-001
Date: 10/20/95
To: _____
By: _____

On site @ 9:45 am
opened MW-2, ~~MW-3~~ KP MW-1, MW-3 and allowed to equilibrate ≈ ½ hour prior to taking DTW measurements.
Sampled. MW-2, MW-1, MW-3
left site @ ≈ 1:30

Visitors:
Attachments:
Distribution:

☐ Continued:
Initial:

CHAIN-OF-CUSTODY

AGI TECHNOLOGIES

Date 10/27/95 Page 1 of 1

PROJECT INFORMATION

Project Manager: _____

Project Name: Facility Model Upgrade

Project Number: 1557.01

Site Location: Oakland Sampled By: KP

DISPOSAL INFORMATION

☒ Lab Disposal (return if not indicated)

Disposal Method: _____

Disposed by: _____ Disposal Date: _____

QC INFORMATION (check one)

☐ SW-846 ☐ CLP ☐ Screening ☐ AGI Std. ☐ Special

Laboratory Number:

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	PETROLEUM HYDROCARBONS: TPH-ID State:	TPH-G State:	TPH-D State:	TPH Special Instructions	418.1 State:	8015M	ORGANIC COMPOUNDS: 8010 Halogenated VOCs	8020 Aromatic VOCs	8020M - BETX only	8240 GCMS Volatiles	8270 GCMS Semivol.	8310 HPLC PAHs	8040 Phenols	DWS - Volatiles and Semivol.	PESTS/PCB's: 8080 OC Pest/PCBs	8080M PCBs only	8140 OP Pesticides	8150 OC Herbicides	DWS - Herb/pest	METALS: Selected metals: list	Total Lead (Wa)	Organic Lead (Ca)	TCL Metals (23)	Priority Poll. Metals (13)	DWS - Metals	MFSP - Metals (Wa)	LEACHING TESTS: TCLP - Volatiles (ZHE)	TCLP - Semivolatiles	TCLP - Pesticides	TCLP - Metals	OTHER	NUMBER OF CONTAINERS
3998	10/27/95	11:12	WATER			X							X												X										4
3992	10/27/95	11:14	↓			X							X												X										4
3996	10/27/95	12:22	↓			X							X												X										4
TRIP BLANK	10/19/95					X							X																							

LAB INFORMATION

Lab Name: ANAMETRIX

Lab Address: SAN JOSE

(408) 832-8192

Via:

SAMPLE RECEIPT

Total Number of Containers:

Chain of Custody Seals: Y/N/NA

Intact?: Y/N/NA

Received in Good Condition/Cold:

Turn Around Time: ☒ Standard ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 1 wk.

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH DATA

Special Instructions: FILTER + PRESERVE Metals Samples

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time: 1116	Signature: Time: 1941	Signature: Time:
Printed Name: Date:	Printed Name: John B Adams Date: 10/27/95	Printed Name: Date:
Company: Kleinfelder	Company: Kleinfelder	Company:

RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY: 3.
Signature: Time: 0806	Signature: Time:	Signature: Time:
Printed Name: John B Adams Date: 10/27/95	Printed Name: Date:	Printed Name: Date:
Company: Kleinfelder	Company:	Company:

DISTRIBUTION: White, Canary to Analytical Laboratory; Pink to AGI Project Files; Gold to AGI Disposal Files

Rev. 4/94

AGI OFFICES: Bellevue: (206) 453-8383 Gig Harbor: (206) 851-5562
Portland: (503) 232-1800 Oakland: (510) 238-4590

APPENDIX C

AGI TECHNOLOGIES

APPENDIX C

Analytical Chemistry Data

AGI TECHNOLOGIES

APPENDIX C

Analytical Chemistry Data

REPORTS

A monitoring report will be prepared following each of the quarterly groundwater monitoring events. The monitoring reports will document AGI's monitoring activities, chemical analysis results, and groundwater gradient at the site. Recommendations for water disposal, and for further action, if necessary, will be provided based upon the results of monitoring.

Inchcape Testing Services
Anametrix Laboratories

1961 Concourse Drive
Suite E
San Jose, CA 95131
Tel: 408-432-8192
Fax: 408-432-8198

FACSIMILE TRANSMITTAL COVER SHEET

TO: DATE: 11/9/95

Name: Dan Henninger

Company: ASI Technologies

Fax #: (206) 646-9523

FROM:

Name: Cristina Velasquez Rayburn

Total Number of Pages (INCLUDING COVER): 16

If all pages are not received, please notify sender at (408) 432-8192.

DID YOU KNOW THAT:

INCHCAPE TESTING SERVICES ENVIRONMENTAL LABORATORIES is a group of six laboratories in the United States and one in the United Kingdom.

COMMENTS: Project: 15876.001

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. DAN HENNINGER
AGI TECHNOLOGIES
P.O. BOX 3885
BELLEVUE, WA 98009

Workorder # : 9510255
Date Received : 10/23/95
Project ID : 15876.001
Purchase Order: N/A
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID		MATRIX	DATE SAMPLED	METHOD
9510255- 1	3998		WATER	10/20/95	TPHgBTEX
9510255- 2	3997		WATER	10/20/95	TPHgBTEX
9510255- 3	3996		WATER	10/20/95	TPHgBTEX
9510255- 4	TBLANK		WATER	10/19/95	TPHgBTEX

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. DAN HENNINGER
AGI TECHNOLOGIES
P.O. BOX 3885
BELLEVUE, WA 98009

Workorder # : 9510255
Date Received : 10/23/95
Project ID : 15876.001
Purchase Order: N/A
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- All holding times have been met for the analyses reported in this workorder.
The xylene recoveries for the matrix spike and spike duplicate on sample 3997 are outside of quality control limits due to the relatively high background level of xylenes present in the sample.

Cheryl Bateman 11/8/95
Department Supervisor Date

Peggie Dawson 11/8/95
Chemist Date

Organic Analysis Data Sheet
Total Petroleum Hydrocarbons as Gasoline with BTEX
ITS - Anametrix Laboratories - (408)432-8192

Lab Workorder : 9510255 Client Project ID : 15876.001

Matrix : WATER Units : ug/L

Compound Name	Method Reporting Limit*	Client ID 3998 Lab ID 9510255-01	Client ID 3997 Lab ID 9510255-02	Client ID 3996 Lab ID 9510255-03	Client ID TBLANK Lab ID 9510255-04	Client ID Lab ID METHOD BLANK
Benzene	0.50	270	18	600	ND	ND
Toluene	0.50	360	27	43	ND	ND
Ethylbenzene	0.50	540	26	590	ND	ND
Total Xylenes	0.50	1800	79	340	ND	ND
TPH as Gasoline	50	14000	730	5800	ND	ND
Surrogate Recovery		96%	93%	108%	105%	103%
Instrument ID		HP4	HP4	HP4	HP4	HP4
Date Sampled		10/20/95	10/20/95	10/20/95	10/19/95	N/A
Date Analyzed		10/30/95	10/29/95	10/29/95	10/29/95	10/29/95
RLMF		100	2	25	1	1
Filename Reference		FPO25501.D	FR025502.D	FPO25503.D	FPO25504.D	BO2901E1.D

* The Method Reporting Limit must be multiplied by the Reporting Limit Multiplication Factor (RLMF) to achieve the compound's reporting limit in the analysis.

ND : Not detected at or above the reporting limit for the analysis as performed.
TPHg : Determined by GC/FID following sample purge & trap by EPA Method 5030.
BTEX : Determined by modified EPA Method 8020 following sample purge & trap by EPA Method 5030.

Lab Control Limits for surrogate compound p-Bromofluorobenzene are 61-139%.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Reggie Dawson 11/8/95
Analyst Date

Cheryl Balmer 11/8/95
Supervisor Date

Issued on 11/8/95 @ 12:28 pm

Organic Analysis Data Sheet
Total Petroleum Hydrocarbons as Gasoline with BTEX
ITS - Anametrix Laboratories - (408)432-8192

Lab Workorder : 9510255 Client Project ID : 15876.001

Matrix : WATER Units : ug/L

Compound Name	Method Reporting Limit*	Client ID	Client ID	Client ID	Client ID	Client ID
		Lab ID	Lab ID	Lab ID	Lab ID	Lab ID
		METHOD BLANK				
Benzene	0.50	ND				
Toluene	0.50	ND				
Ethylbenzene	0.50	ND				
Total Xylenes	0.50	ND				
TPH as Gasoline	50	ND				
Surrogate Recovery		105%				
Instrument ID		HP4				
Date Sampled		N/A				
Date Analyzed		10/30/95				
RLMF		1				
Filename Reference		B0300LE1.D				

* The Method Reporting Limit must be multiplied by the Reporting Limit Multiplication Factor (RLMF) to achieve the compound's reporting limit in the analysis.

ND : Not detected at or above the reporting limit for the analysis as performed.
TPHg : Determined by GC/FID following sample purge & trap by EPA Method 5030.
BTEX : Determined by modified EPA Method 8020 following sample purge & trap by EPA Method 5030.

Lab Control Limits for surrogate compound p-Bromofluorobenzene are 61-139%.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Analyst 11/1/95 Date

Supervisor 11/1/95 Date

Matrix Spike Report

Total Petroleum Hydrocarbons as BTEX

ITS - Anametrix Laboratories - (408)432-8192

Project ID : 15876.001
Sample ID : 3997
Matrix : WATER
Date Sampled : 10/19/95

Laboratory ID : 9510255-02
Analyst : GBS
Supervisor : [illegible]
Instrument ID : HP4
Units : ug/L

COMPOUND NAME	SPIKE AMOUNT	SAMPLE RESULTS	MS RECOVERY	MSD RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS
Benzene	20	18	76%	68%	45-139	11%	30
Toluene	20	27	57%	54%	51-138	5%	30
Ethylbenzene	20	26	76%	80%	48-146	-5%	30
Total Xylenes	20	79	-1%	37%	50-139	####	30
Surrogate Recovery		93%	110%	87%			
Date Analyzed		10/29/95	10/29/95	10/29/95			
Multiplier		2	2	2			
Filename Reference		FRQ25502.D	FN025502.D	FO025502.D			

* Limits established by Inchcape Testing Services, Anametrix Laboratories.

Laboratory Control Spike Report
Total Petroleum Hydrocarbons as BTEX
ITS - Anametrix Laboratories - (408)432-8192

Instrument ID : HP4
Matrix : LIQUID

Analyst : SBS
Supervisor : [illegible]
Units : ug/L

COMPOUND NAME	SPIKE AMOUNT	LCC RECOVERY	RECOVERY LIMITS
Benzene	10	95%	52-133
Toluene	10	91%	57-136
Ethylbenzene	10	94%	56-139
Total Xylenes	10	94%	56-141
Surrogate Recovery		104%	61-139
Date Analyzed		10/29/95	
Multiplier		1	
Filename Reference		MO2901E1.D	

* Limits established by Inchcape Testing Services, Anametrix Laboratories.

Laboratory Control Spike Report
Total Petroleum Hydrocarbons as Gasoline
ITS - Anametrix Laboratories - (408)432-8192

Instrument ID : HP4
Matrix : LIQUID

Analyst : SBS
Supervisor : [illegible]
Units : ug/L

COMPOUND NAME	SPIKE AMOUNT	LCS RECOVERY	RECOVERY LIMITS
Gasoline	500	94%	67-127
Surrogate Recovery		106%	61-139
Date Analyzed		10/30/95	
Multiplier		1	
Filename Reference		MO3001E1.D	

* Limits established by Inchcape Testing Services, Anametrix Laboratories.

ANAMETRIX REPORT DESCRIPTION
INORGANICS

Analytical Data Report (ADR)

The ADR contains tabulated results for inorganic analytes. All field samples, QC samples and blanks were prepared and analyzed according to procedures in the following references:

- "Test Methods for Evaluating Solid Waste," SW-846, EPA, 3rd Edition, November 1986.
- "Methods for Chemical Analysis of Water and Wastes," EPA, 3rd Edition, 1983.
- CCR Title 22, Section 66261, Appendix II, California Waste Extraction Test.
- CCR Title 22, Section 66261, Appendix XI, Organic Lead.
- "Standard Methods for the Examination of Water and Wastewater," APHA, AWWA, WEF, 18th Edition, 1992.
- USEPA Contract Laboratory Program Statement of Work for Inorganic Analyses, ILM02.1, 1991.

Matrix Spike Report (MSR)

The MSR summarizes percent recovery and relative percent difference information for matrix spikes and matrix spike duplicates. This information is a statement of both accuracy and precision. MSRs may not be provided with all analytical reports. Anametrix control limit for MSR is 75-125% with 25% for RPD limits, except for Method 6010A, which is 80-120% with 25% RPD limits.

Laboratory Control Sample Report (LCSR)

The LCSR summarizes percent recovery information for laboratory control spikes on reagent water or soil. This information is a statement of performance for the method, i.e., the samples are properly prepared and analyzed according to the applicable methods. Anametrix control limit for LCSR is 80-120%.

Method Blank Report (MBR)

The MBR summarizes quality control information for reagents used in preparing samples. The absolute value of each analyte measured in the method blank should be below the method reporting limit for that analyte.

Post Digestion Spike Report (PDSR)

The PDSR summarizes percent recovery information for post digestion spikes. A post digestion spike is performed for a particular analyte if the matrix spike recovery is outside of established control limits. Any percent recovery for a post digestion spike outside of established limits for an analyte indicates probable matrix effects and interferences for that analyte. Anametrix control limit for PDSR is 75-125%.

Qualifiers (Q)

Anametrix uses several data qualifiers in inorganic reports. These qualifiers give additional information on the analytes reported. The following is a list of qualifiers and their meanings:

- I - Sample was analyzed at the stated dilution due to interferences.
- U - Analyte concentration was below the method reporting limit. For matrix and post digestion spike reports, a value of "0.0" is entered for calculation of the percent recovery.
- B - Sample concentration was below the reporting limit but above the instrument detection limit. Result is entered for calculation of the percent recovery only.
- H - Spike percent recovery was outside of Anametrix control limits due to interferences from relatively high concentration level of the analyte in the unspiked sample.
- L - Reporting limit was increased to compensate for background absorbances or matrix interferences.

Comment Codes

In addition to qualifiers, the following codes are used in the comment section of all reports to give additional information about sample preparation methods:

- A - Sample was prepared for silver based on the silver digestion method developed by the Southern California Laboratory, Department of Health Services, "Acid Digestion for Sediments, Sludges, Soils and Solid Wastes. A Proposed Alternative to EPA SW846, Method 3050." Environmental Science and Technology, 1989, 23, 898-900.
- T - Spikes were prepared after extraction by the Toxicity Characteristic Leaching Procedure (TCLP).
- C - Spikes were prepared after extraction by the California Waste Extraction Test (CWET) method.
- D - Reported results are dissolved, not total, metals.

Reporting Conventions

Analytical values reported are gross values, i.e., <u>not</u> corrected for method blank contamination. Solid matrices are reported on a wet weight basis, unless specifically requested otherwise.

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. DAN HENNINGER
AGI TECHNOLOGIES
P.O. BOX 3885
BELLEVUE, WA 98009

Workorder # : 9510255
Date Received : 10/23/95
Project ID : 15876.001
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID		MATRIX	DATE SAMPLED	METHOD
9510255- 1	3998		WATER	10/20/95	6010
9510255- 2	3997		WATER	10/20/95	6010
9510255- 3	3996		WATER	10/20/95	6010

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. DAN HENNINGER
AGI TECHNOLOGIES
P.O. BOX 3885
BELLEVUE, WA 98009

Workorder # : 9510255
Date Received : 10/23/95
Project ID : 15876.001
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

QA/QC SUMMARY :

- All holding times have been met for the analyses reported in this section.

Department Supervisor 11/3/95 Date

Chemist 11/2/95 Date

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192
DATA REPORT

Analyte-Method: **Lead-6010A**
Client Project Number: **15876.001**
Matrix - Units: **WATER - ug/L**

Analyst:
Supervisor:

Anametrix Sample ID	Client Sample ID	Prep. Method	Instr. ID	Date Sampled	Date Prepared	Date Analyzed	D.F.	Reporting Limit	Results	Q
9510255-01	3998	3010A	ICP2	10/20/95	10/24/95	11/01/95	1	40.0	ND	
9510255-02	3997	3010A	ICP2	10/20/95	10/24/95	11/01/95	1	40.0	ND	
9510255-03	3996	3010A	ICP2	10/20/95	10/24/95	11/01/95	1	40.0	ND	
BO245WB	METHOD BLANK	3010A	ICP2	N/A	10/24/95	11/01/95	1	40.0	ND	
BO235WZ	FILTER BLANK	3010A	ICP2	N/A	10/24/95	11/01/95	1	40.0	ND	

COMMENTS:

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192
SAMPLE DUPLICATE REPORT

Anametrix Sample ID: **9510255-01D**
Client Sample ID: **3998**
Client Project Number: **15876.001**
Matrix: **WATER**

Analyst: SC
Supervisor: MAC

Analyte	Prep. Method	Analyt. Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Sample Conc.	Sample Duplicate Conc.	RPD	Q
Lead	3010A	6010A	CP1	10/24/95	11/01/95	1	ug/L	ND	ND	N/A	

COMMENTS:

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192
MATRIX SPIKE REPORT

Anametrix. Sample ID: **9510255-01MS,MD**
Client Sample ID: **3998**
Client Proj. Number: **15876.001**
Matrix: **WATER**

Analyst: SC
Supervisor: ~~MK~~

Analyte	Analyt. Method	Instr. I.D.	Date Prepared	Date Analyzed	Units	Spike Amount	Sample Conc.	Matrix Spike Conc.	% Rec.	Matrix Sp. Dup. Conc.	% Rec.	RPD	Q
Lead	6010A	ICP1	10/24/95	11/01/95	ug/L	500	0.0	467	93.4	483	96.6	3.4	U

COMMENTS:

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192

LABORATORY CONTROL SAMPLE REPORT

Lab. Control Sample ID: **LO245WB**
Anametrix WO #: **9510255**
Client Project Number: **15876.001**
Matrix: **WATER**

Analyst: SC
Supervisor: MAC

Analyte	Prep. Method	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Spike Amount	LCS Results	% Recovery	Q
Lead	3010A	6010A	ICP1	10/24/95	11/01/95	1	ug/L	500	482	96.4	

COMMENTS:

AGI TECHNOLOGIES

CHAIN-OF-CUSTODY

9510255 (18) 10/1 Date 10/20/95 Page 1 of 1

PROJECT INFORMATION

Project Manager: _____

Project Name: Fandi Metal Works

Project Number: 1587.001

Site Location: Oakland Sampled By: KP

DISPOSAL INFORMATION

☒ Lab Disposal (return if not indicated)

Disposal Method: _____

Disposed by: _____ Disposal Date: _____

Laboratory Number:

ANALYSIS REQUEST

QC INFORMATION (check one)

☐SW-846 ☐CLP ☐Screening ☐AGI Std. ☐Special

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	PETROLEUM HYDROCARBONS: TPH-ID State:	TPH-G State:	TPH-D State:	TPH Special Instructions	418.1 State:	8015M	ORGANIC COMPOUNDS: 8010 Halogenated VOCs	8020 Aromatic VOCs	8020M - BETX only	8240 GCMS Volatiles	8270 GCMS Semivol.	8310 HPLC PAHs	8040 Phenols	DWS - Volatiles and Semivol.	PESTS/PCB's: 8080 OC Pest/PCBs	8080M PCBs only	8140 OP Pesticides	8150 OC Herbicides	DWS - Herb/pest	METALS: Selected metals: list	Total Lead (Wa)	Organic Lead (Ca)	TCL Metals (23)	Priority Poll. Metals (13)	DWS - Metals	MFSP - Metals (Wa)	LEACHING TESTS: TCLP - Volatiles (ZHE)	TCLP - Semivolatiles	TCLP - Pesticides	TCLP - Metals	OTHER	NUMBER OF CONTAINERS
3998	10/20/95	11:12	WATER			X							X												X										4
3997	10/20/95	11:48	↓			X							X												X										4
3996	10/20/95	12:22	↓			X							X												X										4
TRIP BLANK	10/19/95					X							X																						3

LAB INFORMATION

Lab Name: ANAMETRIX

Lab Address: SAN JOSE

(408) 832-8192

Via:

SAMPLE RECEIPT

Total Number of Containers: 15

Chain of Custody Seals: Y/N/NA

Intact?: Y/N/NA

Received in Good Condition/Cold: ✓

Turn Around Time: ☒ Standard ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 1 wk.

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH DATA

Special Instructions: FILTER & PRESERVE Metals Samples

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: [signature] Time: 8:06	Signature: [signature] Time: 0940	Signature: Time:
Printed Name: Kelly B Powers Date: 10/23/95	Printed Name: John B Adams Date: 10/23/95	Printed Name: Date
Company: Kleinfelder	Company: Kleinfelder	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: 3.**
Signature: [signature] Time: 0806	Signature: Josephine DeCicco Time: 09:40	Signature: Time:
Printed Name: John B Adams Date: 10/23/95	Printed Name: Josephine DeCicco Date: 10/23/95	Printed Name: Date:
Company: Kleinfelder	Company: LTS - San Jose	Company:

AGI OFFICES: Bellevue: (206) 453-8383 Gig Harbor: (206) 851-5562
Portland: (503) 232-1800 Oakland: (510) 238-4590

DISTRIBUTION: White, Canary to Analytical Laboratory; Pink to AGI Project Files; Gold to AGI Disposal Files

Rev. 4/94