AGI
TECHNOLOGIES

Work Plan
Off-Site Contamination Assessment
Harbert Transportation Inc.
19984 Meekland Avenue
Hayward, California

November 9, 1995

Prepared For :

Harbert Transportation
c/o Reed, Elliott, Creech & Roth
99 Almaden Boulevard, Eighth Floor
San Jose, California 95113

AGI Project No. 15,833.002.04

AGI TECHNOLOGIES

A Report Prepared For :

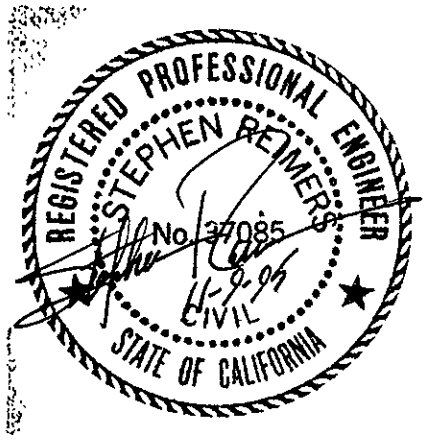
Harbert Transportation
c/o Reed, Elliott, Creech & Roth
99 Almaden Boulevard, Eighth Floor
San Jose, California 95113

WORK PLAN
OFF-SITE CONTAMINATION ASSESSMENT
HARBERT TRANSPORTATION INC.
19984 MEEKLAND AVENUE
HAYWARD, CALIFORNIA

November 9, 1995

Pamela J. Morrill
Soil Scientist

Stephen Reimers, P.E.
Principal Engineer



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AGI Project No. 15,833.002.04

AGI TECHNOLOGIES

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1.0 INTRODUCTION

1.1 GENERAL

AGI Technologies (AGI) has prepared this Work Plan (WP) for investigation of off-site contamination around the former Harbert Transportation site located at 19984 Meekland Avenue in Hayward, California. The Alameda County Health Care Services Agency (ACHCSA) requested preparation of this WP to delineate the extent of subsurface migration of known petroleum hydrocarbons in groundwater at and near the site.

1.2 PURPOSE AND SCOPE

The purpose of the investigation is to determine the extent of hydrocarbon contamination in areas near the site, and to collect additional data to be used in determining a remediation plan for the site. The major tasks to be performed for the investigation include:

- Conducting a utility survey around potential test hole locations.
- Obtaining access for test holes on private and county property.
- Conducting an exploratory survey of petroleum hydrocarbons in groundwater at up to 12 test hole locations using a drive-point sampling system to collect "grab" type groundwater samples for laboratory analysis.
- Obtaining permits for drilling borings and installing monitoring wells.
- Conducting a utility survey of boring locations.
- Drilling three borings in selected locations, based on the results of previous investigations.
- Installing three groundwater monitoring wells in the borings.
- Collecting soil samples from the borings and groundwater samples from the wells for analysis.
- Analyzing soil and groundwater samples for total petroleum hydrocarbons (TPH) quantified as gasoline (TPH-G) and diesel (TPH-D); benzene, ethylbenzene, toluene, and total xylenes (BETX); and volatile organic compounds (VOCs).
- Evaluating hydrogeologic and chemical data generated by the investigation activities.
- Preparing a report describing subsurface conditions, documenting our findings and conclusions, and presenting recommendations based on our findings.

2.0 BACKGROUND

2.1 SITE SETTING

The site is owned by Mr. Jerry Harbert and is currently unoccupied. It is located at the northeast corner of Meekland Avenue and Blossom Way in an unincorporated area of Alameda County, near the City of Hayward (see **Figure 1**). The site is relatively level and fenced on all sides. No aboveground structures are present. The site surface is paved with concrete and asphaltic concrete, except where previous excavations were performed to remove tanks and associated piping. Several drums containing soil and/or water from previous investigations are present on paved areas near the north side of the site.

Land use in the area includes residential and commercial properties. The site is generally surrounded by single-family homes and multi-family complexes. It is bounded by residential property to the east and north, Blossom Way to the south, and Meekland Avenue to the west. Businesses located at the other three corners of the Meekland/Blossom intersection include a liquor store, an auto repair shop, and a shopping center that contains a grocery store, hair salon, and comics/trading shop. Both the liquor store and auto repair shop sites were previously occupied by gas stations. We understand that fuel tanks have been removed from both locations.

2.2 GEOLOGICAL SETTING

The site is underlain by fine-grained alluvial fan and flood plain deposits derived from the Diablo Range located approximately 2 miles to the east.[1] About 3 to 4 feet of fill overlie native soils at the site. The fill consists of clayey and sandy gravel. Underlying native deposits consist of silty clay to clayey silt, with minor sand and gravel. Thin (3- to 4-inch) lenses of silty sand and gravel were encountered during installation of 10 on-site and 2 off-site groundwater monitoring wells. The clay and silt deposits reportedly extend to approximately 45 feet below ground surface (bgs), which was the maximum depth explored. The deposits were reported to be homogeneous with regard to hydrologic considerations. There are currently eight on-site and two off-site groundwater monitoring wells, installed during previous investigations, as shown on **Figure 2**. The groundwater is reportedly at 28 feet bgs and flows to the northwest.

2.3 HISTORICAL USE

During the 1940s and 1950s, the site operated as a family-owned service station. Later, Harbert Transportation purchased the site and operated it as a vehicle fueling and maintenance facility. Durham Transportation of Austin, Texas used the site for vehicle parking from 1986 to 1989. In August 1989, three gasoline underground storage tanks (USTs)—one 4,000-gallon, one 5,000-gallon, and one 6,000-gallon—and one 500-gallon waste oil UST were removed from the site.

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[1] CTTS Inc. Toxic Technology Services; *Work Plan for Delineation, Containment, and Remediation of Soil and Groundwater*, November 1, 1992.

2.4 PREVIOUS ASSESSMENTS

Previous site assessment results[2] indicate concentrations of gasoline and BETX have been detected in soil samples collected from 12 to 28 feet bgs in the area of the three former gasoline USTs. A soil vapor survey of the site indicated gasoline and BETX were present from 20 to 28 feet bgs throughout most of the site. Analysis of groundwater samples from the on- and off-site wells indicate the presence of gasoline, BETX, and low levels of halogenated VOCs. The lateral extent of impacted groundwater was not delineated during the previous assessments.

[2] CTTS Inc. Toxic Technology Services; *Work Plan for Delineation, Containment, and Remediation of Soil and Groundwater*, November 1, 1992.

3.0 INVESTIGATION ACTIVITIES

3.1 RIGHTS OF ACCESS

Prior to any site work, AGI will conduct a survey of potential test hole locations and determine whether they are located on private or county property. Property owners will be contacted by letter for authorization to conduct sampling activities.

3.2 UTILITY SURVEY

Prior to field exploration, we will contact the One-Call utility locating service for the area to identify the locations of subsurface utilities on public easements and right-of-ways in the exploration area. In addition, a private utility locating service will be used to locate private utilities, or utilities on private property, that are in the exploration area.

3.3 EXPLORATORY SURVEY

AGI will conduct an exploratory survey for petroleum hydrocarbons in the groundwater utilizing a hydraulic and percussion drive-point groundwater sampling system in accordance with the procedures outlined in **Appendix A**. The purpose of this investigation will be to further delineate the location and extent of the petroleum hydrocarbon plume. Groundwater samples will be collected from up to 12 locations. Approximate test hole locations are shown on **Figure 3**.

3.4 PERMITS

AGI will obtain permits for drilling borings and installing monitoring wells from ACHCSA prior to drilling.

3.5 BORINGS

AGI will drill three borings in off-site locations to be determined following review of the data collected during the exploratory survey. The borings will extend to approximately 40 feet bgs or 15 feet below first encountered water. The borings will be logged and conditions noted in accordance with the field exploration procedures presented in **Appendix A**.

3.6 MONITORING WELLS

Three groundwater monitoring wells will be installed in the borings. General monitoring well construction details are presented in **Appendix A**. Specific construction details for each monitoring well will appear on the corresponding boring logs, which will be included in the report.

3.7 SAMPLING

Groundwater samples from the exploratory survey will be screened in the field for VOCs using an organic vapor meter equipped with a photoionization detector (OVM-PID). Field screening results will be used in the determination of additional sample point locations. Additional samples will also be collected for laboratory analysis in accordance with the procedures outlined in **Appendix A.**

Soil samples will be collected for analysis during drilling in accordance with procedures described in **Appendix A.** Groundwater samples will be collected from the monitoring wells for laboratory analysis in accordance with the procedures outlined in **Appendix B.**

4.0 CHEMICAL ANALYSIS

Selected soil samples from borings, and groundwater samples from the exploratory survey and monitoring wells will be submitted to Anametrix Laboratories of San Jose, California, a laboratory certified by the California Department of Health Services for analytical testing. The soil and groundwater samples from monitoring wells will be analyzed for total petroleum hydrocarbons as diesel (TPH-D) and gasoline (TPH-G) using a modified U.S. Environmental Protection Agency (EPA) Method 8015; BETX using EPA Method 8020/602; and VOCs using EPA Method 8010/601. Groundwater samples from the exploratory survey will be analyzed for TPH-D and BETX only. Analytical results will be validated prior to being reported. **Appendix D** discusses analytical procedures in detail.

5.0 REPORT PREPARATION

At the completion of field exploration and laboratory analysis, we will submit a written report describing the vertical and horizontal extent of petroleum hydrocarbon contamination at the site.

The report will document: the results of the exploratory survey and basis for well locations, well installation, and sampling procedures; the results of groundwater depth measurements; and results of analytical testing. The report will also include a description of subsurface conditions encountered, a site plan showing the boring and well locations, summary tables, boring and well logs, chain-of-custody records, and copies of analytical reports.

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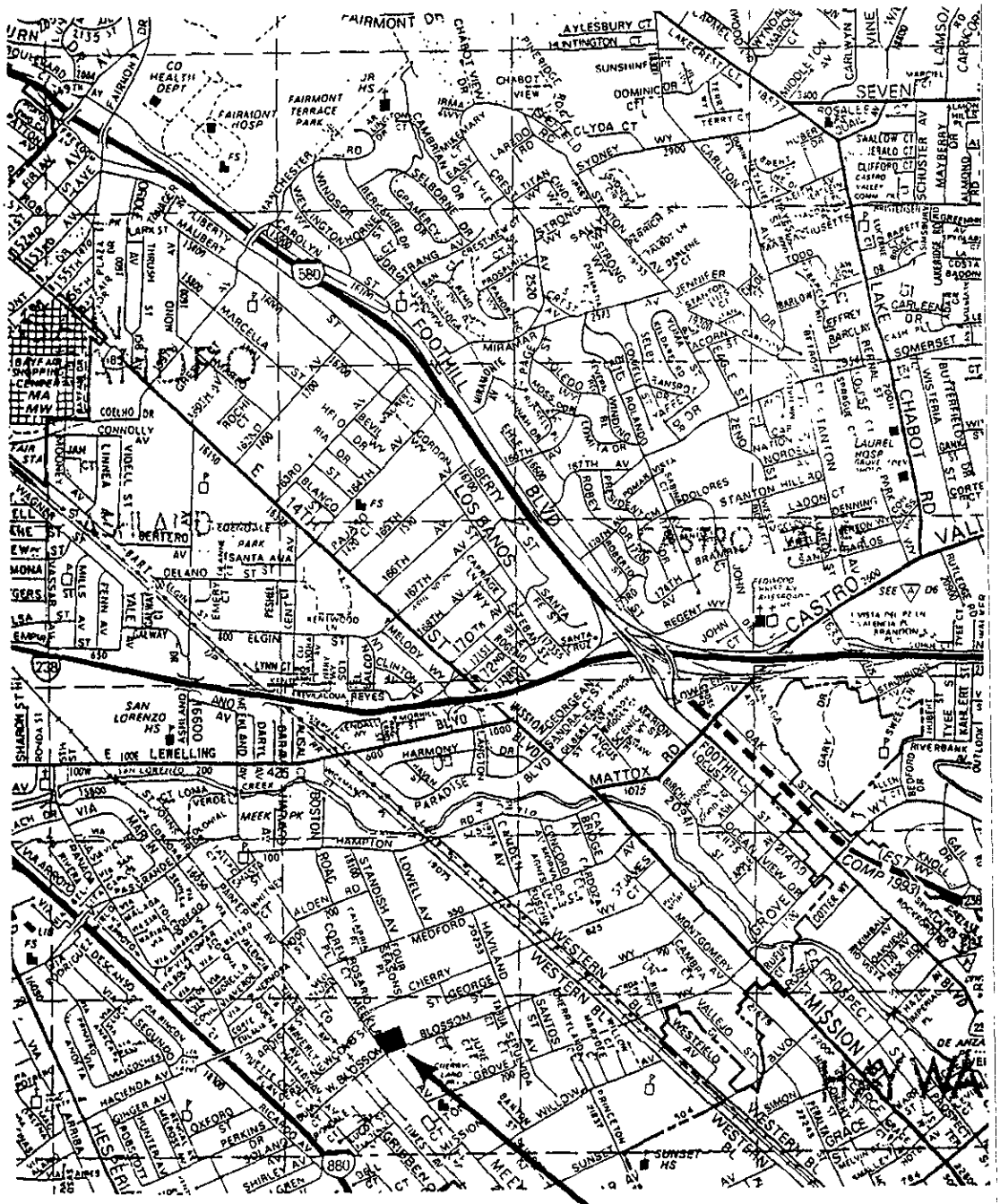
DISTRIBUTION

1 Copy	Harbert Transportation c/o Reed, Elliott, Creech & Roth 99 Almaden Boulevard, Eighth Floor San Jose, California 95113 Attention: Mr. Jeffery Lawson
1 Copy	Durham Transportation, Inc. 9171 Capital of Texas Highway North Travis Building, Suite 200 Austin, Texas 78759 Attention: Mr. David Delamontte
1 Copy	Alameda County Health Care Services Agency UST Local Oversight Program 80 Swan Way, Room 200 Oakland, California 94621 Attention: Ms. Madula Logan

Quality Assurance/Technical Review by:

Daniel T. Henninger
Senior Scientist

JBA/DTH/tag

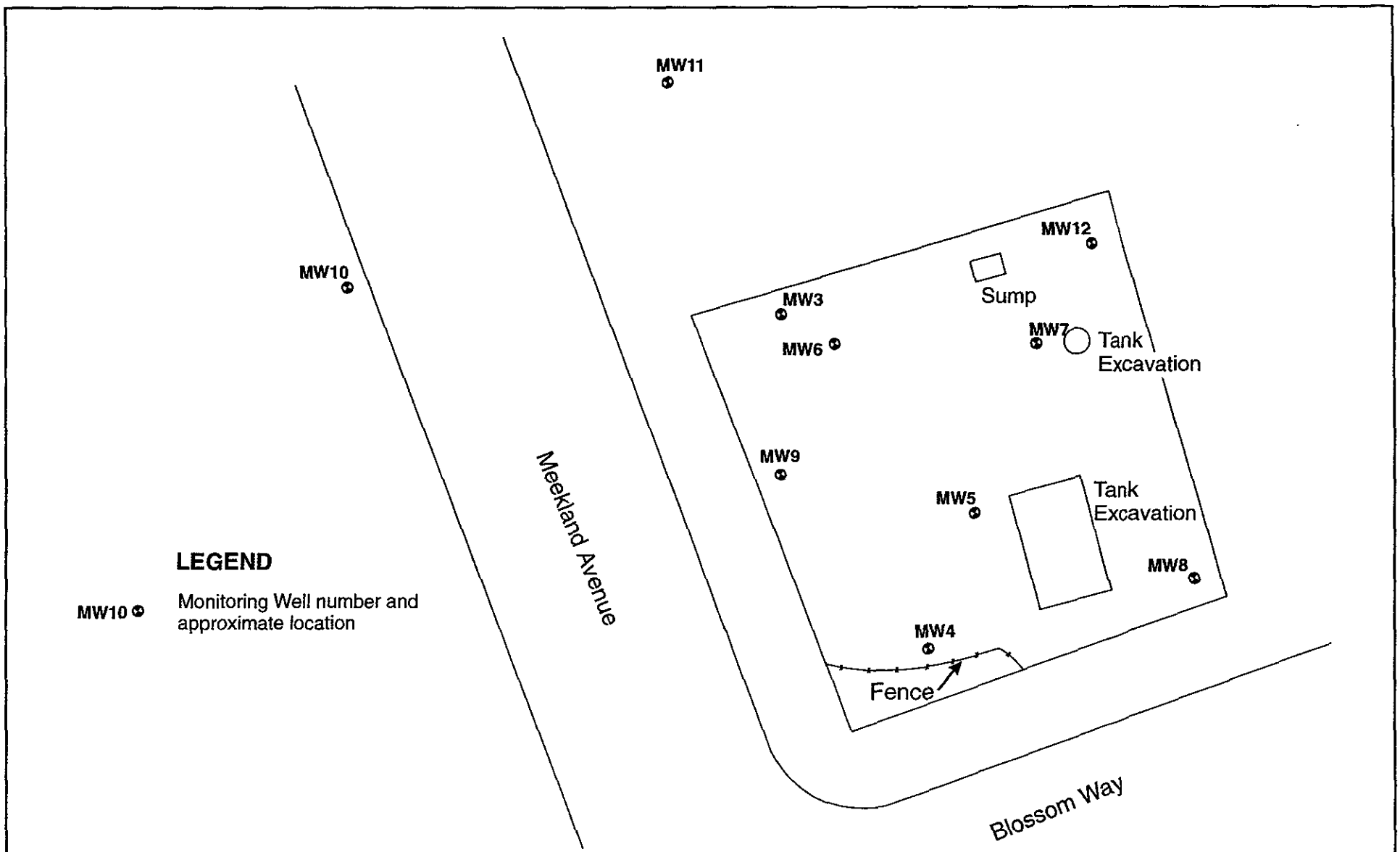


Vicinity Map

Harbert Transportation/Meekland Avenue
Hayward, California

FIGURE 1

PROJECT NO	DRAWN	DATE	APPROVED	REVISED	DATE
15,833.002.04	DFF	15 Aug 94		DFF	7 Jul 95



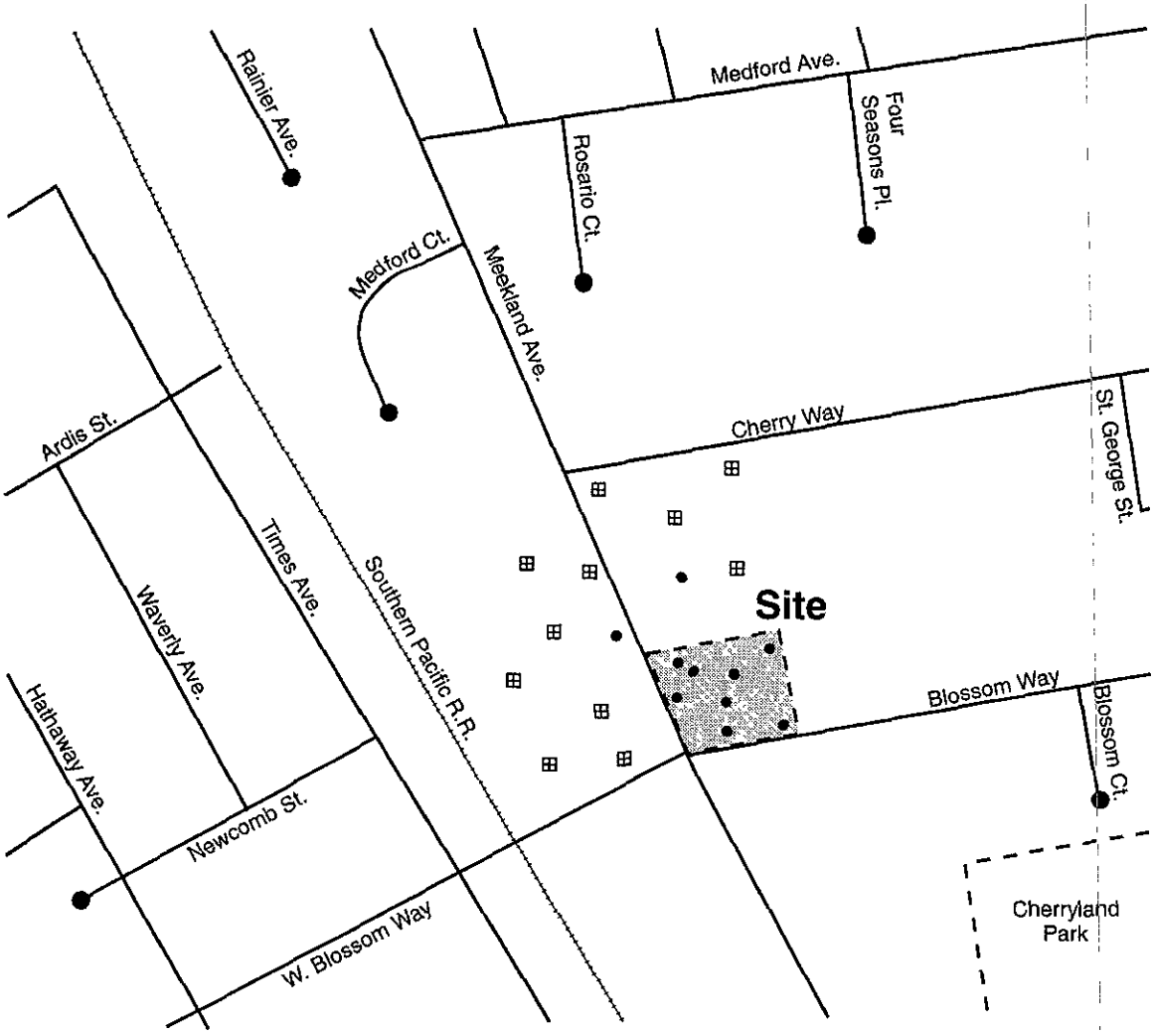
AGI TECHNOLOGIES

Site Plan

Harbert Transportation/Meekland Avenue
Hayward, California

FIGURE 2

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
siteplan.cdr	15,833.002	DFF	29 August 94	DFF	24 Jan 95



LEGEND

- ● Existing Groundwater Monitoring Well
- ⊞ Approximate Test Hole Locations

N

0 500

Scale in Feet

Test Hole Location Map

Harbert Transportation/Meekland Avenue
Hayward, California

FIGURE 3

AGI TECHNOLOGIES

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
15,833.002	DFF	15 Sep 94			

833002tp.cdr

APPENDIX A

AGI
TECHNOLOGIES

APPENDIX A

Field Exploration Procedures

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APPENDIX A

Field Exploration Procedures

INTRODUCTION

This appendix describes field work to be performed by AGI Technologies (AGI) during off site assessment of petroleum hydrocarbons at the former Harbert Transportation site in Hayward, California. The field exploration will be performed in accordance with U.S. Environmental Protection Agency (EPA) protocol.

EXPLORATORY SURVEY

AGI will utilize a hydraulic and percussion drive-point groundwater sampling system during the exploratory survey to further delineate the location and extent of the petroleum hydrocarbon plume. A Hydropunch or similar tool will be used to collect the samples. The sampling tools will be pushed directly into the aquifer in a shielded position. The sampling ports will then be unsheathed to expose them to groundwater. A bailer will then be used to bring the sample to the surface. In areas of low hydraulic conductivity, small PVC sampling tubes will temporarily be implanted into the test hole and sampled later in the day. Sampling tubes will be removed from the test hole and discarded after each use. At the end of each day, all test holes will be sealed by filling them to the ground surface with a bentonite slurry.

Groundwater Sampling

A stainless steel bailer will be used to collect groundwater samples from each test hole. A portion of the sample will be screened in the field for volatile organic compounds (VOCs) using an organic vapor meter-photoionization detector (OVM-PID). Field screening results will be used in the determination of additional sample point locations. Samples will be collected in appropriate EPA-approved containers based upon the analyses required. Following collection, each sample will be placed in a cooler chilled with Blue Ice and transported to a certified laboratory.

DRILLING

A truck-mounted hollow-stem auger drill rig will be used to advance the borings. All drilling equipment will be thoroughly decontaminated using a high-pressure steam cleaner prior to drilling the first boring, between borings, and after completing the final boring.

Soil Sampling

Soil samples will be collected at intervals of approximately 5 feet by driving a split-barrel sampler 18 inches, when possible, into undisturbed material ahead of the auger with a 140-pound surface hammer dropped 30 inches. Blow counts required to drive the sampler the final 1 foot will be recorded on the boring logs. Soil samples will be examined and logged according to the Unified Soil Classification System.

Soil and groundwater conditions will be 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 will be collected in 6-inch-long, 2.4-inch-diameter brass tubes at approximately 5-foot intervals to the total depth of each boring. The following procedures will be 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.
- One 6-inch section is selected, Teflon sheets are placed between the soil and plastic end caps, and the sample is sealed with silicone tape to prevent potential loss of volatile components.
- The sample is labeled, placed in an insulated cooler, and chilled with "Blue Ice" to approximately 4°C.
- Proper chain-of-custody protocol is followed to ensure laboratory receipt of a representative sample.

DECONTAMINATION PROCEDURES

All drive-point, drilling, and soil and groundwater sampling equipment and materials coming into contact with soil will be decontaminated between each test hole and boring. This includes the drive-points, auger flights, drill rods, split-barrel samplers, bailers, and other sampling equipment.

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

The following decontamination procedures will be used on hand washed equipment:

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

All solutions will be renewed regularly. Scrub brushes and nylon scrubbers will be used during all steps. All equipment will be air dried, when possible, and held in clean plastic bags between sampling.

WELL DESIGN AND INSTALLATION PROCEDURES

Groundwater monitoring wells will be installed in conformance with applicable well construction standards by a California-licensed well driller. Summary logs showing well completion details and a monitoring well legend will be presented in the assessment report. The general procedures for well construction are as follows:

- Boreholes drilled beyond screen depth will be 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 casing, well screen, and end caps will be steam-cleaned prior to installation.

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

- The PVC casing will consist of 2-inch-diameter, flush-thread coupled Schedule 40 PVC pipe with milled slots comprising the screened interval. Required screen lengths and milling gauge will be determined based upon subsurface conditions encountered. The base of each well casing will be sealed with a 4-inch-long, 2-inch-diameter PVC threaded end cap.

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

- A hydraulic seal will be constructed by placing 2 feet of hydrated bentonite pellets above the sand pack. Above the hydraulic seal, the annulus will be backfilled with bentonite chips or cement grout to 2 feet bgs. The top 2 feet of each annulus space will be backfilled with concrete to just above ground surface to seal the well from possible surface water infiltration.

- Flush-mount protective steel monument cases (8 inches in diameter) with secured caps will be installed over the plastic well casings upon completion of construction. Monuments will be set in concrete and each well labeled denoting well designation.

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APPENDIX B

Monitoring Well Sampling Procedures

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APPENDIX B

Monitoring Well Sampling Procedures

INTRODUCTION

This appendix describes procedures for sampling groundwater in monitoring wells for the off-site contamination assessment at the former Harbert Transportation site in Hayward, California.

GROUNDWATER SAMPLING PROCEDURES

Elevation Survey

Following well installation, the top of each well casing will be surveyed using an on-site benchmark with an assumed elevation of 100.00 feet. Depth to groundwater from the survey mark at the casing top will be measured in each well using an electronic water level meter.

Well Development

After sufficient time is allowed for the well seal to harden (at least 1 day), the well will be developed using surge-and-pump techniques as described below:

- 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 that may have settled in the well screen slots.

- Collected sediment at the base of the well is removed. A PVC development bailer or high-volume centrifugal pump is used to remove water with suspended sediment and sediment at the well base. Bailing or 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 development.

Water Level Measurements

Prior to beginning the 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 with a suction pump or bailer. During purging, the pH, temperature, and specific conductance of the pump/bailer 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 stabilizes, or when the well is pumped dry (low-yield wells only). Immediately following purging of each well, samples are collected using a clean, new, disposable or Teflon bailer suspended by new nylon cord. For low-yield wells, samples are collected following approximately 80 percent recovery or within 24 hours after purging.

Samples are collected in appropriate EPA-approved containers based upon the analyses required. Following collection, each sample is placed in a cooler chilled with "Blue Ice" prior to transport to a certified laboratory for analysis.

Following sample collection, the bailer or suction pump hose is immediately decontaminated using the following procedures:

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

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

Quality Assurance

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

- Based upon review of field exploration 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 soil contamination in each well boring, and progresses from least contaminated to most contaminated.

- To ensure the accuracy of field parameter measurements, calibration of the pH and specific conductance monitoring devices is performed 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) are 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 of these parameters are 0.1 pH units, 10 percent specific conductance, and 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.

- After the sample is collected, the sample vials are checked for the presence of headspace. Samples with headspace are emptied and a replacement sample is collected (for containers with preservative, a new container is used). Following sample collection, each sample is labeled and placed in a chilled cooler for transport to the laboratory. Samples retained for more than a 24-hour period are placed in a locked refrigerator until transport to the laboratory.

- 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.

- Following each day of sampling, field notes and the sampling record are reviewed to check for 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.

Containment and Disposal of Purge Water

Purge water removed from the wells during groundwater sampling is contained in 55-gallon DOT-rated drums. After the analytical test results are received, the water is disposed of appropriately, based upon the results.

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APPENDIX C

Health and Safety Plan

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A Plan Prepared For :

Harbert Transportation
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99 Almaden Boulevard, Eighth Floor
San Jose, California 95113

APPENDIX C
PROJECT HEALTH AND SAFETY PLAN
OFF-SITE CONTAMINATION ASSESSMENT
HARBERT TRANSPORTATION INC.
19984 MEEKLAND AVENUE
HAYWARD, CALIFORNIA

November 9, 1995

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Environmental Scientist

Daniel T. Henninger
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Bellevue, Washington 98005
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AGI Project No. 15,833.002.04

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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 the former Harbert Transportation site in Hayward, California. This HASP applies to AGI personnel working within the scope outlined below.

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	Daniel Henninger	(206) 453-8383
AGI Health and Safety Manager	Monica Beckman	(206) 453-8383
AGI Site Safety Officer	Pam Morrill	(206) 453-8383
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:
  - — 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:
  - — Write and amend the project HASP.
  - — 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 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 groundwater monitoring well installation, an individual authorized to commit the 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 excavation, drilling, installing wells, and decontaminating heavy equipment.

1.3 SITE INFORMATION

1.3.1 Site Setting

The relatively level site is located at the northeast corner of Meekland Avenue and Blossom Way, in an unincorporated area of Alameda County, near the City of Hayward. The site is fenced on all sides, and no aboveground structures are present. The site surface is paved with concrete and asphaltic concrete, except where previous excavations were performed to remove tanks and associated piping. Several drums containing soil and/or water are present on paved areas near the north side of the site.

Land use in the area includes residential and commercial properties. The site is surrounded by single-family homes and multi-family complexes. The site is bounded by residential property to the east and north, Blossom Way to the south, and Meekland Avenue to the west.

Businesses located at the other three corners of the Meekland/Blossom intersection include a liquor store, an auto repair shop, and a shopping center including a grocery store, hair salon, and comics/trading shop. Both the liquor store and auto repair shop sites were previously occupied by gas stations. We understand that fuel tanks have been removed from both locations.

1.3.2 *Geological Setting*

The site is underlain by fine-grained alluvial fan and flood plain deposits derived from the Diablo Range located approximately 2 miles to the east. Three to four feet of fill overlies native soils at the site. The fill consists of clayey and sandy gravel. Underlying native deposits consist of silty clay to clayey silt, with minor sand and gravel. Thin (3- to 4-inch) lenses of silty sand and gravel were encountered during installation of ten on-site and two off-site groundwater monitoring wells. The clay and silt deposits reportedly extend to approximately 45 feet below ground surface (bgs), which was the maximum depth explored. The deposits were reported to be homogeneous with regard to hydrologic considerations. There are currently eight on-site and two off-site groundwater monitoring wells, installed during previous investigations. The groundwater gradient direction at the site has historically been reported to be to the northwest, at a depth of approximately 28 feet bgs.

1.3.3 *Historical Use*

During the 1940s and 1950s, the subject site operated as a family owned service station. Later, Harbert Transportation purchased the site and operated it as a vehicle fueling and maintenance facility. In 1986, Durham Transportation of Austin, Texas operated the site as a fueling and maintenance facility until 1989. In August 1989, three gasoline underground storage tanks (UST) (one 4,000-gallon, one 5,000-gallon, and one 6,000-gallon) and one 500-gallon waste oil UST were removed from the site.

1.3.4 *Previous Assessments*

Previous site assessment results indicate gasoline and gasoline constituents benzene, ethylbenzene, toluene, and total xylenes (BETX) have been detected in soil samples collected from 12 to 28 feet bgs in the area of the three former USTs. A soil vapor survey of the site indicated gasoline and BETX were present from 20 to 28 feet bgs throughout most of the site. Analyses of groundwater samples from the on-site and off-site wells indicate the presence of gasoline, BETX, and low levels of halogenated volatile organic compounds (VOC). The lateral extent of impacted groundwater was not delineated during the previous assessments.

2.0 SCOPE OF WORK

AGI will be conducting a contamination assessment of off-site areas near the site. This HASP describes procedures to be followed and personal protective equipment (PPE) to be used by AGI personnel performing the following field tasks:

- Exploratory Survey
  - — Observe and document test hole locations.
  - — Collect groundwater samples from each test hole
- Groundwater Monitoring Well Installation
  - — Observe and document the drilling of four borings to approximately 40 feet bgs.
  - — Collect subsurface soil samples during drilling.
  - — Construct and develop four groundwater monitoring wells in the borings.
  - — Survey the well locations.
  - — Collect groundwater samples from the monitoring wells.
  - — Contain soil cuttings and development water.
  - — Conduct air monitoring using an organic vapor meter equipped with a photoionization detector (OVM-PID).
- Groundwater Sampling
  - — Sample the groundwater monitoring wells periodically after installation.

3.0 CHEMICAL HAZARD ASSESSMENT

AGI employees may be exposed to hazardous chemicals during field operations at the site. Exposure could be the result of physical contact with or inhalation of compounds volatilizing from or inadvertent ingestion of diesel-contaminated soil or water.

Constituents of gasoline and diesel fuels usually include kerosene and light- to middle-weight distillates; some also contain naphthalene. The most common units of exposure for diesel fuels include inhalation and skin contact or absorption. Prolonged inhalation of diesel compounds may cause central nervous system effects, including headache, dizziness, loss of appetite, weakness, and loss of coordination. Prolonged skin contact may result in pain or a feeling of heat, discoloration, swelling, and blistering. Overexposure to naphthalene may result in fever, sweating, nausea, abdominal pain, diarrhea, lethargy, tremors, and convulsions. Toxicology tests reportedly indicate middle-weight distillates and benzene (a constituent of gasoline) can cause skin cancer and mutagenic effects.

In general, acute short-term exposure to other hazardous chemicals 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 hazardous materials potentially located at the site are considered carcinogenic; therefore, exposures 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, work shall cease and site conditions will be reevaluated.

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 in employees ranging from heat stress to hypothermia. 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 excavating and drilling 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 in a borehole, a packing device and water will be utilized prior to conducting hot work near the casing. 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 UTILITY HAZARDS

Prior to beginning excavation or drilling activities, the SSO will determine whether underground or overhead utilities are located in the area. If underground utilities are located in the area, the excavation or borehole should be relocated at least 10 feet in a lateral direction. If overhead power lines are located in the work area, test pits and boreholes will be located at least 20 feet from the power lines or the power lines will be insulated, guarded, or turned off.

4.5 CONSTRUCTION HAZARDS

The principal construction safety hazards will be associated with drilling and sampling activities. Drilling operations will be conducted by a qualified subcontractor and will be performed in accordance with applicable regulations. AGI employees should not act as the Contractor's helper and shall not climb more than 4 feet up equipment unless properly tied off.

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 moving equipment at sites and stay out of its way; particular attention should be paid when backup alarms are sounding because operator visibility in the direction of travel may be decreased. AGI personnel should remain outside the swing radius and are not allowed to ride on the outside of heavy equipment. When required to approach heavy equipment, AGI personnel should first make eye contact with the operator.

4.6 NOISE HAZARDS

Drill rigs may be a source 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 drill rigs.

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 contaminated soil. An area having an approximately 15-foot radius should be established around each drilling and 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, or when the soil cuttings are verified not contaminated. 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 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 drill rigs, and when there is an overhead hazard.

- Eye and face protection - Safety glasses should be worn during drilling and 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 work boots.

- 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 rain suits or Saranex-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 the drill rig is being mobilized.

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:

- Observe and document drilling activities - Level C or D (as determined on site).
- Collect subsurface soil samples during drilling operations - Level C or D (as determined on site).
- Develop monitoring wells - Level C or D (as determined on site).
- Contain cuttings and development water - Level C or D (as determined on site).
- Collect groundwater samples from the monitoring wells - Level C or D (as determined on site).
- Measure water levels at the monitoring wells - Levels C or D (as determined on site).
- Survey wells - Level D.

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.

7.3 HEAVY EQUIPMENT

The drill rig should be decontaminated before leaving the site. Drill rigs are difficult to decontaminate; methods generally used include washing with high pressure water or steam cleaning while scrubbing accessible parts. Particular care should be given tires, augers, and other components in direct contact with potentially contaminated material.

8.0 GENERAL SAFE WORK PRACTICES

If respiratory protection is required, a buddy system will 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 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.
- Contain the spill with absorbent booms and block off the area. 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 (e.g., ambulance, fire) are required, field personnel should immediately telephone the local emergency number (911). The SSO should notify AGI at (206)453-8383 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*

Plate C1 shows the location of Eden Medical Center with respect to the site. Driving directions are as follows:

> Exit the site and drive east on Blossom Way to Mission Boulevard. Turn left and travel north approximately 1/2-mile to Mattox Road. Turn right and travel east approximately 1 mile (Mattox Road becomes Castro Valley Boulevard) to Lake Chabot Road and turn left. Eden Medical Center is located on the left (west) at 20103 Lake Chabot Road.

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

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
Eden Medical Center	(510) 537-1234
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 to 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 OVM-PID. Measurements are taken in the breathing zone, which is considered to encompass a circle of 1-foot radius around a worker's nose during normal work operations.

Because 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 OVM-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.

A combustible gas meter will be utilized to determine the percent LEL during drilling operations. If the LEL reaches 20 percent in the general area, work shall cease and personnel will evacuate the area. Engineering controls will be implemented to control combustible gas levels. Operations will resume when explosive levels fall below 10 percent of the LEL. Welding and cutting work shall not be performed if the LEL reaches 10 percent in the work area.

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 the exclusion zone or upwind 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 National Institute for Occupational Safety and Health (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.

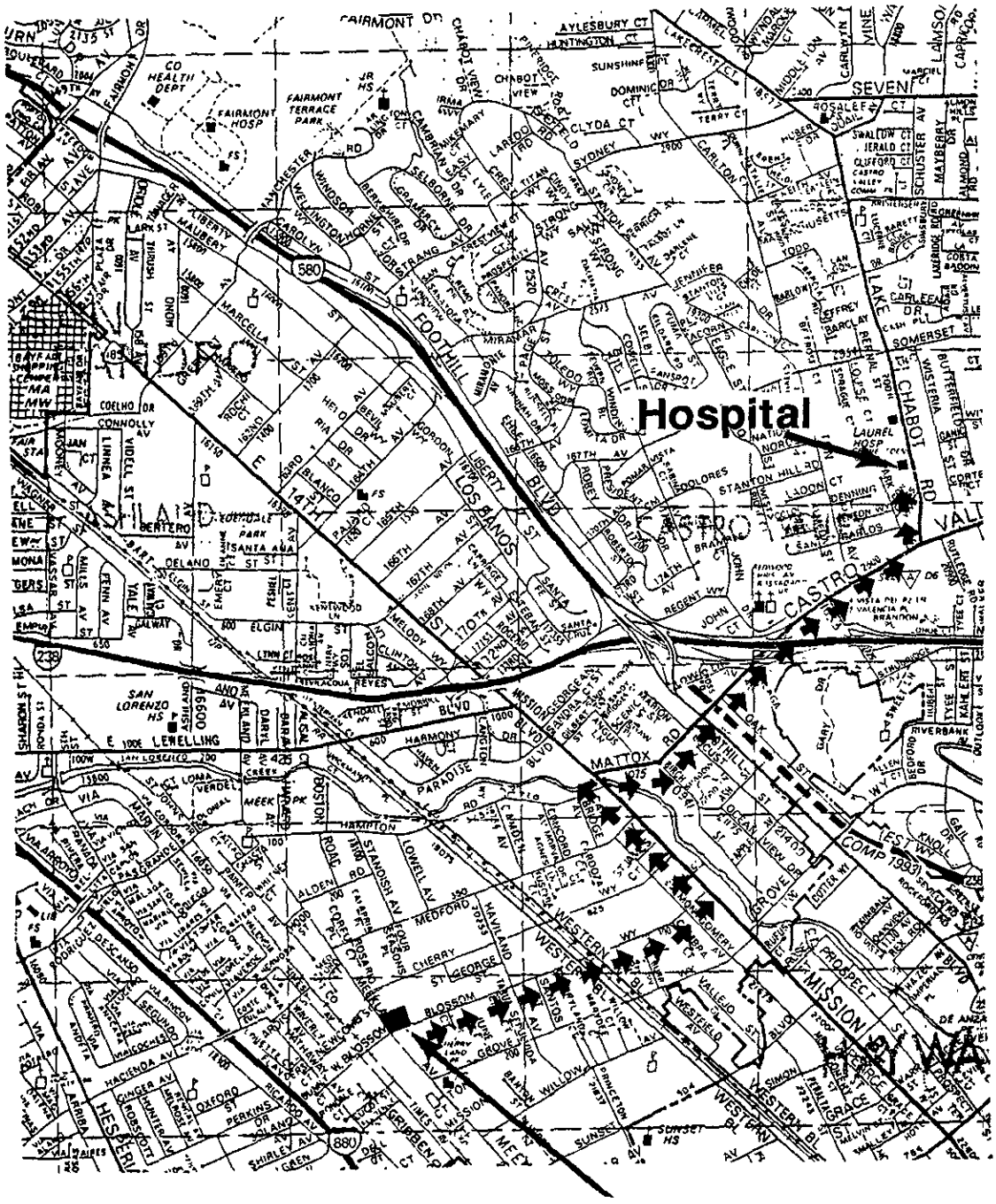
Additional tests may be conducted at the discretion of the examining physician.

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 HSM.



Hospital Route Map

Durham Transportation/Meekland Avenue
Hayward, California

PLATE
C1

AGI TECHNOLOGIES

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
15,833.002.04	DFF	15 Aug 94	DHL	DFF	12 Oct 94

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 the former Harbert Transportation site located in Hayward, 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
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ATTACHMENT 2

AGI TECHNOLOGIES

FIELD TEAM REVIEW FORM

I have read and reviewed the most recent revision, dated November 9, 1995, of the Project Health and Safety Plan (HASP) for the former Harbert Transportation site located in Hayward, 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
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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: 300 120th Avenue N.E., Bellevue, Washington 98005

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: _____

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 the Project Manager/Supervisor:

Why did accident/incident occur? _____

What corrective action has been initiated to prevent recurrence? _____

_____

Project Manager/Supervisor Signature: _____ Date: _____

This section to be completed by Health and Safety Manager:

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

_____

_____

_____

Health and Safety Manager Signature: _____ Date:_____

AGI
TECHNOLOGIES

Prepared For:

Harbert Transportation
c/o Reed, Elliott, Creech & Roth
99 Almaden Boulevard, Eighth Floor
San Jose, California 95113

APPENDIX D
QUALITY ASSURANCE PROJECT PLAN
OFF-SITE CONTAMINATION ASSESSMENT
HARBERT TRANSPORTATION INC.
19984 MEEKLAND AVENUE
HAYWARD, CALIFORNIA

November 9, 1995

Pamela J. Morrill
Soil Scientist

Daniel T. Henninger
Senior Scientist

AGI Technologies
300 120th Avenue N.E.
Building 4
Bellevue, Washington 98005
206/453-8383

AGI Project No. 15,833.002.04

AGI TECHNOLOGIES

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1.0 PROJECT DESCRIPTION

Quality assurance (QA) is an integrated program for establishing reliability of monitoring and measurement data. Quality control (QC) is the routine application of procedures for obtaining prescribed standards of performance in the monitoring and measurements process.

This Quality Assurance Project Plan (QAPP) discusses field, laboratory, and office procedures that will be used to ensure data generated for the off-site contamination assessment at the former Harbert Transportation site in Hayward, California are of known and acceptable quality. Field measurements and laboratory analyses must meet specific data quality objectives for representativeness, comparability, accuracy, precision, and completeness.

AGI Technologies' (AGI) contamination assessment will consist of the following major tasks:

- Drill test borings
- Install groundwater monitoring wells
- Collect subsurface soil and groundwater samples
- Submit selected samples for laboratory analysis

These tasks are described in the Work Plan, along with sampling procedures and chemical analysis methods. All soil and groundwater samples will be analyzed at Anametrix Laboratories of San Jose, California. Anametrix Laboratories has received California Department of Health Services certification for analytical testing.

2.0 QUALITY ASSURANCE OBJECTIVES

The QA objectives for this assessment are to develop and implement procedures to provide data of known and acceptable quality. Data quality is assessed by the following criteria:

- representativeness
- comparability
- accuracy
- precision
- completeness

Definitions of these criteria are provided below.

2.1 REPRESENTATIVENESS

Representativeness is a measure of how closely the measured results reflect the actual concentration or distribution of the chemical compounds in the soil and water sampled. Sampling plan design, including the number and location of samples, sampling techniques, and sample handling protocols (e.g., storage, preservation, and transportation), has been developed to provide data that are representative of the matrix sampled. Proposed documentation will establish that protocols have been followed and sample identification and integrity assured.

2.2 COMPARABILITY

Comparability of data is essential so that different agencies and organizations can compare data generated in different projects and at different times. Data comparability will be maintained by use of consistent methods, detection limits, and units. The specific methods are identified in subsequent sections of this report. U.S. Environmental Protection Agency (EPA) and the Association of Standard Testing Methods (ASTM) methods will be used whenever available.

2.3 ACCURACY

Accuracy is an assessment of the closeness of the measured value to the true value. Accuracy of chemical test results is assessed by spiking samples with known standards and establishing the average percent recovery (%R) and by analyzing known standards and calculating the percent difference (%D) between the measured value and the known value of the standard. For organic compounds, two types of recoveries are generally measured: matrix spike recoveries and surrogate spike recoveries. For a matrix spike, known amounts of the analytes are added to the sample. For a surrogate spike, the standards are chemically similar but not identical to the compounds in the fraction being analyzed. The purpose of the surrogate spike is to provide QC on every sample by constantly monitoring for unusual matrix effects and gross sample processing errors. For metals, generally only matrix spikes are measured.

2.4 PRECISION

Precision is the measure of the analytical system's ability to be reproducible (i.e., to obtain the same or similar results on replicate measurements of the same sample). For duplicate measurements, precision can be expressed as the relative percent difference (RPD).

2.5 COMPLETENESS

Completeness is a measure of the amount of valid data obtained from the analytical measurement system. Completeness may be defined for field sampling as the ratio of the number of valid samples collected to the total number of samples collected in the field. In the laboratory, completeness may be defined as the ratio of the number of samples measured for a specific analyte that meet QA goals to the total number of samples measured for that specific analyte.

The target completeness objective will be 90 percent; the actual completeness may vary depending on the intrinsic nature of the samples. Data completeness will be assessed during QC reviews.

2.6 QUANTITATIVE GOALS

Quantitative goals for ensuring known and acceptable data quality are dictated by intended data usage, analytical methods, and sampling procedures. For this project, the data are needed to evaluate the nature, extent, and source of contaminants on site.

The QAPP describes the protocols and procedures to meet and assess compliance with this goal.

3.0 SAMPLE COLLECTION PROCEDURES

The quality of the data collected in an environmental study depends on the quality of the sampling activities. Field operations must be well conceived and carefully implemented. Detailed procedures and protocols for site selection, sample collection, handling, preservation, shipping, and storage must be specified and documented. The Work Plan provides a detailed description of the proposed scope of work.

This section of the QAPP covers field QC samples; sample containers, preservation, and handling; and sampling equipment decontamination.

3.1 FIELD QUALITY CONTROL SAMPLES

3.1.1 *Rinsate Samples*

Rinsate samples are used to check whether sampling equipment has been properly decontaminated between sample collections. Rinsate samples will be obtained by passing distilled, deionized water over the sampling device and capturing the water in a sample jar.

Rinsate samples will be collected at a rate of approximately 10 percent of the total samples obtained. Rinsate samples will be analyzed for the same parameters as groundwater samples listed in **Table D1**.

3.1.2 *Blind Duplicate Samples*

Blind duplicate samples provide an independent check of laboratory precision and an indication of the variability within a sample or composite. A duplicate groundwater sample will be collected and analyzed for the same parameters as groundwater samples listed in **Table D1**.

A duplicate sample will be obtained for every 10 samples submitted to the laboratory. Each duplicate sample container is given an independent sample number so that upon arrival at the analytical laboratory, the duplicate appears as an additional sample.

3.2 CONTAINERS, PRESERVATIVES, AND SAMPLE HANDLING

All sample containers are to be provided by Anametrix Laboratories and all required preservatives will be added at the analytical laboratory prior to shipment from the lab. The containers will be kept closed and in their shipping boxes until used. After sampling, all containers will be placed in chilled coolers. Sample collection data will be documented on the sampling records specified in Section 4.0. All entries will be made in indelible ink. Corrections will be made by drawing a single line through the error, adding the correction, and initialing the change. **Table D2** identifies containers, preservatives and holding times for soil and water samples.

3.3 DECONTAMINATION OF SAMPLING EQUIPMENT

Excavation and drilling equipment and materials will be decontaminated prior to any excavation or drilling activities and sampling. The backhoe, auger, drill rods, and well pipe and screen will be decontaminated by steam cleaning and, if necessary, isopropanol rinse to remove grease or other organic contaminants.

All equipment used for soil and water sample collection will be decontaminated prior to each sampling event. Split-spoon samplers and other sampling equipment will also be decontaminated prior to obtaining samples. Work Plan **Appendices A** and B describe decontamination procedures.

4.0 SAMPLE CUSTODY

Samples collected during the assessment represent physical evidence collected from the site or its immediate surroundings. Because of the potential use of these samples as evidence, their possession must be traceable from time of collection through data reduction and use.

Chain-of-custody procedures will be used to maintain and document sample possession. The principal documents that will be used are:

- Sample labels and seals
- Field records
- Chain-of-custody records
- Shipping records

These documents are discussed below.

4.1 SAMPLE LABELS AND SEALS

Each sample will be labeled and have a custody seal fixed to its cap immediately after collection. All sample labels and seals will be provided by AGI. Each label will include, at a minimum, the following information:

- Project name
- AGI project number
- Name of collector
- Date and time of collection
- Number that uniquely identifies the sample and its collection location. The sample numbering sequence will not indicate to the laboratory which samples are duplicates or field blanks.
- Preservative (if any)

A custody seal will be affixed to all samples to prevent tampering during shipment to the laboratory. If any custody seals are found broken when the laboratory receives a sample shipment, no analysis will be performed unless there is incontrovertible evidence the samples were not compromised. Broken or missing custody seals will be noted on the chain-of-custody records by the receiving analytical laboratory.

Samples will be kept in AGI's possession until the end of each day, when they will be shipped to the analytical laboratory. A sample will be considered in AGI's custody if:

- It is in the field team's possession, or
- It is in a designated secure area, under AGI control.

4.2 FIELD RECORDS

Daily field investigation reports and sample collection forms will be filled out by the sampling team. These documents will contain a detailed summary of all field activities, including, but not limited to, the following:

- Samples collected
- Borings advanced
- Personnel on site
- Any deviations from the Work Plan or its appendices
- Any field decisions
- Major observations

4.3 CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

A chain-of-custody record will be completed and accompany every sample and every shipment of samples to the analytical laboratory to establish the documentation necessary to trace sample possession from the time of collection. The chain-of-custody records will be sequentially numbered and contain, at a minimum, the following information:

- Sample number
- Signature of collector
- Date and time of collection
- Place of collection
- Sample matrix
- Signatures of persons involved in the chain of possession
- Inclusive dates of possession
- Condition of samples

The chain-of-custody record will also be used to indicate what analyses are required by checking the appropriate box(s) on the form.

4.4 SHIPPING RECORDS

Following proper sealing and labeling, sample containers will be placed on Blue Ice in a cooler. The cooler will be sealed shut and a custody seal affixed across the lid. Samples will be transported to the analytical laboratory within 48 hours of collection.

4.5 CORRECTIONS TO DOCUMENTATION

All original data recorded on field sampling forms, sample identification labels, and chain-of-custody records will be written in indelible ink. All of these documents will be kept in AGI's Oakland office for at least 1 year after the sampling date, after which they will be microfiched.

If an error is made in a document, the sampler will make corrections by drawing a single line through the error and entering the correct information. The erroneous information will not be obliterated. Any subsequent error discovered on a document will be corrected by either the sampler, the Project Manager, editing geologist, engineer, or chemist. All corrections must be initialed and dated.

5.0 ANALYTICAL PROCEDURES

5.1 CHEMICAL ANALYSES

Soil and groundwater samples will be analyzed for the following parameters by the listed methods:

- Soil: TPH-G/BETX(8015M/8020), TPH-D(8015M), VOCs(8010)
- Groundwater: TPH-G/BETX(8015M/8020), TPH-D(8015M), VOCs(8010)

5.2 TIMELINESS

Sample handling, shipment, and custody procedures (discussed in Section 4.0) are meant to ensure timeliness in sample delivery and analysis. **Table D2** lists the holding times for each chemical analysis.

5.3 INITIAL AND CONTINUING CALIBRATION

The analytical laboratory will perform initial and continuing calibration checks for the instruments used during the investigation.

5.4 REAGENT BLANKS

The analytical laboratory will supply reagent blanks for every batch of samples analyzed for organic compounds and metals. The analytical methods listed below will have a reagent blank included as part of their lab QC data:

- EPA Method 8015 (modified)
- EPA Method 8020
- EPA Method 8010

5.5 MATRIX SPIKES AND MATRIX SPIKE DUPLICATES

The project laboratory will supply matrix and/or matrix spike duplicate samples for samples analyzed for BETX and TPH-D. The matrix spiking compounds will be those specified in SW-846 for the analytical methods listed below:

- EPA Method 8015 (modified)
- EPA Method 8020
- EPA Method 8010

5.6 SURROGATE SPIKES

The analytical laboratory will supply surrogate spike data for every sample analyzed. The surrogate spiking compounds will be those specified in SW-846 for the analytical methods listed below:

- EPA Method 8015 (modified)
- EPA Method 8020
- EPA Method 8010

6.0 DATA REDUCTION AND VALIDATION

The analytical laboratory will submit adequate supporting information to enable report reviewers to conclusively determine the data quality. The laboratory must also provide in the data package, where applicable, the following:

- Reagent blank results
- Matrix spike and matrix spike duplicate results
- Surrogate results

All control limits for each QC parameter developed also must be provided by the laboratory and be consistent with the precision and accuracy statement developed for the method by EPA, where available.

All QC data provided by the laboratory will be reviewed by AGI during data analysis and compilation. Appropriate data qualifier codes (J, U, UJ, B, R) will be applied to those data for which QA parameters do not meet acceptance criteria specified in EPA's *Laboratory Data Validation Functional Guidelines for Organic and Inorganic Analyses* (EPA, February 1988 and July 1988) and the precision and accuracy statements published in SW-846 (*Test Methods for Evaluating Solid Waste*).

The interpretation of the data qualifier codes is as follows:

- Data flagged with a J indicate estimated values because some of the QA criteria were not met due to either matrix interference, a method blank detection of an analyte, or analyte detections in field or trip blanks at a concentration that would affect the concentration of the analyte in the field sample.

- Data flagged with a U indicate the analyte was not detected at or above the listed detection limit (practical quantification limit).

- Data flagged with a UJ indicate the analyte was not detected at or above the listed detection limit (practical quantification limit), and the reported value is an estimate.

- Data flagged with a B indicate the analyte was detected in a method blank.

- Data flagged with an R indicate the data are unusable because several QA parameters failed to meet acceptance criteria.

7.0 QUALITY ASSURANCE AUDITS

This section describes the internal QA audits required to monitor the sampling and analysis programs. A QA Officer will monitor and audit the performance of the laboratory QA procedures to ensure data of known and acceptable quality are provided. Specific audit procedures are described below.

7.1 CHAIN-OF-CUSTODY RECORDS

The auditor will select a predetermined number of chain-of-custody records to be audited at AGI's office. The records must be reviewed to determine whether the station number, station description, date, and time correspond to the sample identification label; the parameters to be analyzed have been appropriately identified; and all custody transfers have been documented and the date and time of transfer recorded. The auditor will also determine whether samples have been kept in custody at all times and secured to prevent tampering.

7.2 FIELD RECORDS

Field records will be reviewed to see that each is signed and all entries are dated. Any lost, damaged, or voided records will be reported to the Project Manager. Photographs may be taken for evidentiary purposes by the Site Manager.