aqua science engineers inc.

3/27/98
did not pass Tier 2 for GW volat. of VC to indoor air.
install 1 permanent GW mw across street to delineate extent of plume.

February 11, 1998

RISK BASED CORRECTIVE ACTION (RBCA) ASSESSMENT

at

Custom Alloy Scrap Sales
2711 Union Street
Oakland, California

- did not pass for 10^{-5} risk
~~GW → outdoor air~~
PCE/TCE/VC GW → indoor

Submitted by:
AQUA SCIENCE ENGINEERS, INC.
2411 Old Crow Canyon Road, #4
San Ramon, CA 94583
(510) 820-9391

1.0 INTRODUCTION

This submittal outlines Aqua Science Engineers, Inc. (ASE)'s Risk Based Corrective Action (RBCA) assessment for the Custom Alloy Scrap Sales (CASS) property located at 2711 Union Street in Oakland, California (Figure 1). The RBCA activities were initiated by Mr. James A. Cherry, attorney for Gardiner Manufacturing, owner of the property, as required in a letter from the Alameda County Health Care Services Agency (ACHCSA) dated December 8, 1997 (Appendix A).

2.0 SITE HISTORY AND BACKGROUND INFORMATION

The site was previously occupied by Gardiner Manufacturing as a machining and press operation. Beginning in 1985, CASS occupied the property as a scrap metal recycling operation. CASS is currently the tenant on the property.

In August 1990, MacKinnon Environmental Consulting (MacKinnon) of Walnut Creek, California conducted a limited soil assessment at the site. Up to 4,000 parts per million (ppm) oil and grease (O&G) and 2,600 ppm total petroleum hydrocarbons as diesel (TPH-D) were detected in the soil samples collected during the assessment. No analyses for volatile organic compounds (VOCs) was performed during the MacKinnon assessment.

In March 1996, ASE drilled ten soil borings at the site (Figure 2). Up to 4,300 ppm TPH-D, 4,500 ppm O&G, 0.01 ppm toluene, 0.0092 ppm ethylbenzene, 0.011 ppm total xylenes, 0.055 ppm cis-1,2-dichloroethene (cis-1,2-DCE), 0.018 ppm trans-1,2-dichloroethene (trans-1,2-DCE) and 0.052 ppm trichloroethene (TCE) were detected in the soil samples collected during this assessment. Up to 7,100 parts per billion (ppb) O&G, 43 ppb vinyl chloride, 2.1 ppb 1,1-dichloroethene, 22 ppb 1,1-dichloroethane, 78 ppb cis-1,2-DCE, 15 ppb trans-1,2-DCE, 100 ppb TCE, 1 ppb tetrachloroethene (PCE), 21 ppb chlorobenzene, and 39 ppb 1,2-dichlorobenzene were detected in groundwater samples collected from the site. On June 17, 1996, Ms. Susan Hugo of the ACHCSA prepared a letter requesting additional soil and groundwater assessment activities at the site. Analytical results for soil and groundwater samples are tabulated in Tables One through Five.

In September 1996, ASE drilled four soil borings at the site and installed groundwater monitoring wells MW-1 through MW-4 in the borings. Up to 350 ppm TPH-D were detected in the soil samples collected from borings MW-2 and MW-4, although the chromatogram pattern on these samples

did not resemble the diesel standard. Motor oil range hydrocarbons were detected in the soil samples collected from boring MW-4. 0.048 ppm fluorene was detected in the soil sample collected from 6.0-feet below ground surface (bgs) in boring MW-4. Relatively high VOC concentrations were detected in groundwater samples collected at the site. The PCE, benzene, vinyl chloride, cis-1,2-DCE, trans-1,2-DCE and chlorobenzene concentrations exceeded California Department of Toxic Substances Control (DTSC) maximum contaminant levels (MCLs) for drinking water, especially in groundwater samples collected from monitoring well MW-2.

Groundwater samples were collected from the site wells in January, April and July 1997. The analytical results for groundwater samples are tabulated in Tables Four and Five. Depth to groundwater measurements and groundwater elevation data are tabulated in Table Six. On December 8, 1997, the ACHCSA issued a letter requesting that a RBCA be performed for the site to determine whether the case may be closed, and if not, to establish cleanup levels for case closure.

3.0 SCOPE OF WORK

ASE performed a RBCA assessment for the site using the Groundwater Services, Inc. (GSI) computer model which follows the procedures outlined in ASTM 1739 Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites. Based on a conversation between ASE senior geologist Robert Kitay and Ms. Eva Chu and Ms. Madhulla Logan of the ACHCSA, the following criteria was utilized for this assessment:

1) The risk factor used was 1 in 100,000 (1.0 x E-5) cancer risk.

2) The following scenarios were to be considered:

   a) Vapor intrusion from subsurface soil to the existing industrial operation at the site (Outdoor air). VOC concentrations from all soil samples collected above the water table were averaged to determine the average concentrations of each VOC in soil beneath the site.

   b) Vapor intrusion from groundwater to the existing industrial operation at the site (Outdoor air). All detectable VOC concentrations from groundwater samples collected from all four site wells over each of the four sampling periods were averaged to determine the average VOC concentrations in groundwater beneath the site.

c) Vapor intrusion from subsurface soil to a potential on-site industrial building (Indoor air). VOC concentrations from all soil samples collected above the water table were averaged to determine the average concentrations of each VOC in soil beneath the site.

d) Vapor intrusion from groundwater to a potential on-site industrial building (Indoor air). All detectable VOC concentrations from groundwater samples collected from all four site wells over each of the four sampling periods were averaged to determine the average VOC concentrations in groundwater beneath the site.

e) Vapor intrusion from groundwater to an off-site industrial building downgradient of the site. All detectable VOC concentrations from groundwater samples collected from monitoring wells MW-1 and MW-2 (the two most downgradient wells) over each of the four sampling periods were averaged to determine the average VOC concentrations in groundwater beneath the downgradient edge of the site.

f) Exposure of a construction worker to chemicals of concern though dermal contact, inhalation of vapors and particulate ingestion.

3) Dissolved oxygen measurements for each well were measured and averaged to be taken into account as a factor for bioattenuation.

4) An area well survey was conducted to show that ingestion of groundwater does not need to be considered as a factor in the RBCA.

4.0 GEOLOGY

4.1 Regional Hydrogeology

The site lies in the East Bay Plain groundwater basin. The East Bay Plain groundwater basin is generally characterized by a very thick alluvial sequence overlying Franciscan bedrock. The basin extends from the Oakland Hills in the east to the San Francisco Bay to the west. Sediments in the basin are predominantly silt and clay with localized areas of sand. Groundwater in the basin generally flows from the hills in the east to the bay in the west.

4.2 Site Hydrogeology

Fourteen (14) borings have been logged by an ASE geologist during the course of this project. Boring Logs are included as Appendix B. Sediments beneath the site generally consist of silty clay or clayey silt from beneath the concrete surface to 15-feet bgs, silty sand from 15-feet bgs to 24-feet bgs, and clayey silt from 24-feet bgs to the total depth explored of 26.5-feet bgs. The silty sand layer was not present in all of the borings. Groundwater was encountered at approximately 7-feet bgs. Groundwater elevation (potentiometric surface) contour maps for each quarter of the project are presented as Figures 3 through 6.

5.0 BENEFICIAL USES OF GROUNDWATER

5.1 Well Inventory

A survey of registered groundwater wells within approximately one-quarter mile of the site was conducted by ASE using information provided by the Alameda County Department of Public Works (ACDPW). This information is provided in Appendix C. A total of 17 registered existing wells are located within approximately one-quarter mile of the site. ASE also has knowledge of three other wells within this radius which did not appear in the search of the ACDPW well database. The well locations are plotted on Figure 7, and a list of well addresses, well owner names, dates the wells were drilled and use of the wells are included in Table Seven. All of these wells are either monitoring wells or cathodic protection wells. There are no water supply wells located within one-quarter mile of the site.

5.2 Sources of Drinking Water Determination

Oakland and the surrounding communities receive their drinking water from the East Bay Municipal Utility District (EBMUD). EBMUD imports the majority of their water from the Mokelumne River system. EBMUD does not utilize groundwater for its water supply.

5.3 Risk of Direct Ingestion of VOC Impacted Groundwater

Since this site lies in a primarily industrial setting with extensive regional groundwater contamination, it is unlikely that any domestic or municipal wells would ever be installed in the site vicinity. For this reason, direct ingestion of groundwater was not considered during this RBCA assessment.

6.0 EXPOSURE SCENARIOS

Each of the following exposure scenarios were taken into account for this assessment. ASE used the Groundwater Services, Inc. (GSI) computer model to complete this RBCA. The risk assessment was performed to a risk factor of 1 in 100,000 (1.0 x E-5) cancer risk for all scenarios, and a hazard quotient of 1 for all non-carcinogenic compounds of concern.

SCENARIO 1 - VAPOR INTRUSION FROM SUBSURFACE SOIL TO THE EXISTING ON-SITE INDUSTRIAL OPERATION

This scenario involves workers at the existing on-site industrial operation breathing vapors which may emanate from the VOC-impacted soil beneath the site. The site is currently a scrap metal storage area. Since the site does not have a roof, this is considered an outdoor air scenario. Site specific parameters which were known (such as area of impacted soil, groundwater depth, etc.) or which could be reasonably estimated (such as soil porosity) were utilized as much as possible. The model's conservative default values were utilized for any parameters in which site specific values were not known. These parameters included items such as exposure time of workers, etc. The VOC concentrations in soil were obtained by averaging all detectable VOC concentrations from all fourteen soil borings that have been drilled by ASE at the site. All of these soil samples were above the water table at the site. Ten of these borings were drilled in March 1996 and four of these borings were drilled in September 1996. See Tables One and Two for the soil analytical data.

SCENARIO 2 - VAPOR INTRUSION FROM GROUNDWATER TO THE EXISTING ON-SITE INDUSTRIAL OPERATION

This scenario involves workers at the on-site industrial operation breathing vapors which may emanate from the VOC impacted groundwater beneath the site. Site specific parameters which were known (such as area of impacted soil, depth to groundwater, etc.) or which could be reasonably estimated (such as soil porosity) were utilized as much as possible. The model's conservative default values were utilized for any parameters in which site specific values were not known. These parameters included items such as exposure time of workers, etc. The VOC concentrations in groundwater were obtained by averaging detectable VOC concentrations from groundwater samples collected from all four site wells during the four sampling events. See Tables Four and Five for a copy of the groundwater analytical data used for these calculations. The average

depth to water at the site was 7.81 feet bgs, and was calculated by averaging the data from Table Six.

SCENARIO 3 - VAPOR INTRUSION FROM SUBSURFACE SOIL TO A POTENTIAL FUTURE ON-SITE INDUSTRIAL BUILDING

This scenario involves workers in a potential future on-site industrial building breathing vapors which may emanate from the VOC impacted soil beneath the site and building. Site specific parameters which were known (such as area of impacted soil, groundwater depth, etc.) or which could be reasonably estimated (such as soil porosity) were utilized as much as possible. The model's conservative default values were utilized for any parameters in which site specific values were not known. Since this hypothetical future building does not currently exist and no building is currently planned for the site, the model's conservative default values were used for all aspects of building construction and worker exposure rates. The VOC concentrations in soil were obtained by averaging all detectable VOC concentrations from all fourteen soil borings that have been drilled by ASE at the site. All of these soil samples were above the water table at the site. Ten of these borings were drilled in March 1996 and four of these borings were drilled in September 1996. See Tables One and Two for the soil analytical data.

SCENARIO 4 - VAPOR INTRUSION FROM GROUNDWATER TO A POTENTIAL FUTURE ON-SITE INDUSTRIAL BUILDING

This scenario involves workers in a potential future on-site industrial building breathing vapors which may emanate from the VOC impacted groundwater beneath the site and building. Site specific parameters which were known (such as area of impacted groundwater, depth to groundwater, etc.) or which could be reasonably estimated (such as soil porosity) were utilized as much as possible. The model's conservative default values were utilized for any parameters in which site specific values were not known. Since this hypothetical future building does not currently exist nor is a building planned for the site, the model's conservative default values were used for all aspects of building construction and worker exposure rates. The VOC concentrations in groundwater were obtained by averaging detectable VOC concentrations from groundwater samples collected from all four site wells during the four sampling events. See Tables Four and Five for a copy of the groundwater analytical data used for these calculations. The average depth to water at the site was 7.81 feet bgs, and was calculated by averaging the data from Table Six.

SCENARIO 5 - VAPOR INTRUSION FROM GROUNDWATER TO AN OFF-SITE COMMERCIAL BUILDING

This scenario involves workers in an off-site commercial building located 70 feet downgradient of the site breathing vapors which may emanate from the VOC impacted groundwater beneath the building. The distance from the downgradient well to the closest building was measured from maps and verified in the field. This building is directly downgradient of the site with the groundwater flow direction to the west at an gradient of 0.017 (the gradient during the final three quarters of monitoring). Bioattenuation was factored into this calculation using the dissolved oxygen readings collected from groundwater in monitoring wells MW-1 and MW-2 on January 9, 1998. These dissolved oxygen readings are tabulated in Table Eight. The VOC concentrations in groundwater for this scenario were obtained by averaging all detectable VOC concentrations from groundwater samples collected from monitoring wells MW-1 and MW-2 (the two most downgradient wells on-site) over each of the four sampling periods. Site specific parameters which were known (such as area of impacted groundwater, depth to groundwater, etc.) or which could be reasonably estimated (such as soil porosity) were utilized as much as possible. The saturated hydraulic conductivity for the site was obtained using values for a silty sand from Freeze and Cherry (1979). The model's conservative default values were utilized for any parameters in which site specific values were not known. The model's conservative default values were used for all aspects of building construction and worker exposure rates.

SCENARIO 6 - CONSTRUCTION WORKER EXPOSURE

This scenario involves exposure of a construction worker to VOCs though dermal contact, inhalation of vapors and particulate ingestion while excavating through shallow subsurface soils. Concentrations used for this scenario were the highest concentration of each compound detected assuming that the highest concentration was at the surface. Concentrations were not averaged in this scenario. All model default values for worker exposure duration were used.

7.0 RBCA RESULTS

The following are the results of the computer model. All of the model input and output worksheets are included as Appendix D (On-Site Scenarios) and Appendix E (Off-Site Scenario).

SCENARIO 1 - VAPOR INTRUSION FROM SUBSURFACE SOIL TO THE EXISTING ON-SITE INDUSTRIAL OPERATION

The model shows that no site specific threshold level (SSTL) was exceeded for vapor intrusion from soil to the existing on-site industrial operation. These SSTL values are shown on the Tier 2 Worksheet 9.2 (Subsurface Soil SSTL Values) under the column labeled "Soil Volatilization to Outdoor Air - Commercial (on-site)" in Appendix D. Based on these results, the VOC impacted subsurface soil does not appear to be an unacceptable threat to the health of workers at the existing on-site industrial operation.

SCENARIO 2 - VAPOR INTRUSION FROM GROUNDWATER TO THE EXISTING ON-SITE INDUSTRIAL OPERATION

The model shows that no SSTL was exceeded for vapor intrusion from groundwater to the existing on-site industrial operation. These SSTL values are shown on the Tier 2 Worksheet 9.3 (Groundwater SSTL Values) under the column labeled "Groundwater Volatilization to Outdoor Air - Commercial (on-site)" in Appendix D. Based on these results, the VOC impacted groundwater does not appear to be an unacceptable threat to the health of workers at the existing on-site industrial operation.

SCENARIO 3 - VAPOR INTRUSION FROM SUBSURFACE SOIL TO A POTENTIAL FUTURE ON-SITE INDUSTRIAL BUILDING

The model shows that no SSTL was exceeded for vapor intrusion from soil to a potential future on-site building. These SSTL values are shown on the Tier 2 Worksheet 9.2 (Subsurface Soil SSTL Values) under the column labeled "Soil Volatilization to Indoor Air - Commercial (on-site)" in Appendix D. Based on these results, the VOC impacted soil does not appear to be an unacceptable threat to the health of workers at a potential future industrial building.

SCENARIO 4 - VAPOR INTRUSION FROM GROUNDWATER TO A POTENTIAL FUTURE ON-SITE INDUSTRIAL BUILDING

The average vinyl chloride concentration in groundwater beneath the site of 0.038 ppm exceeded the SSTL of 0.0051 ppm in this scenario. These results are shown on Tier 2 Worksheet 9.3 (Groundwater SSTL Values) under the column labeled "Groundwater Volatilization to Indoor Air - Commercial (on-site)" in Appendix D. Based on these results, this vinyl chloride concentration is an unacceptable risk at a 1.0 x E-5 cancer risk for

workers in a hypothetical building which could be potentially built at the site.

SCENARIO 5 - VAPOR INTRUSION FROM GROUNDWATER TO AN OFF-SITE INDUSTRIAL BUILDING

Since the RBCA model does not directly calculate volatilization from groundwater to an off-site building, these calculations were obtained by calculating the projected Point of Exposure (POE) concentration in groundwater through the model's off-site groundwater ingestion calculations and then using those concentrations in an on-site groundwater to indoor air scenario. The POE concentrations are available on Tier 2 Worksheet 8.1 (Exposure Concentration and Intake Calculation - Groundwater Exposure Pathways) from the column labeled "Exposure Medium - Groundwater POE Conc." in Appendix E. The SSTL using those POE concentrations is shown on Tier 2 Worksheet 9.3 (Groundwater SSTL Values) under the column labeled "Groundwater Volatilization to Indoor Air - Commercial (on-site)." The projected vinyl chloride concentration beneath the downgradient commercial site across Poplar Street is 0.053 ppm which exceeds the SSTL of 0.0051 ppm in this scenario. Based on the model results, the vinyl chloride concentration in groundwater beneath the off-site downgradient commercial building could potentially be an unacceptable risk to workers in that building at a 1.0 x E-5 cancer risk.

SCENARIO 6 - CONSTRUCTION WORKER EXPOSURE

The model shows that no SSTL was exceeded for construction worker exposure to hydrocarbons though dermal contact, inhalation of vapors and particulate ingestion while excavating through shallow subsurface soils. These SSTL values are shown on the Tier 2 Worksheet 9.1 (Surface Soil SSTL Values) under the column labeled "Construction Worker - Commercial (on-site)" in Appendix D.

8.0 CONCLUSIONS

The conclusions from the RBCA model are as follows:

1) There was no unacceptable threat to human health (1.0 X E-5 cancer risk and a hazard quotient of 1 for all non-carcinogenic compounds of concern) for any of the current on-site scenarios (volatilization from soil to outdoor air, volatilization from groundwater to outdoor air, and construction worker).

2) There was no unacceptable threat to human health (1.0 X E-5 cancer risk and a hazard quotient of 1 for all non-carcinogenic compounds of concern) for an on-site volatilization from subsurface soil to indoor air scenario. There was, however, an unacceptable threat to human health (1.0 X E-5 cancer risk) for an on-site volatilization from groundwater to indoor air scenario with vinyl chloride being the compound providing an unacceptable risk. This risk is only evident in the hypothetical building scenario.

3) The model also showed that there is a potential for an unacceptable threat to human health (1.0 X E-5 cancer risk) in an off-site volatilization from groundwater to indoor air scenario for the CASS properly across Poplar Street with vinyl chloride being the compound providing an unacceptable risk.

9.0 RECOMMENDATIONS

1) The site appears suitable for the current on-site usage and no remediation relative to on-site usage appears to be necessary at this time. The site does not appear to be suitable for on-site development of a building at this time.

2) There is a potential for an unacceptable threat to human health at the CASS property across Poplar Street at 2730 Peralta Street related to groundwater contamination beneath the site. ASE recommends that two soil borings be drilled across Poplar Street to determine the actual vinyl chloride concentrations in groundwater and these results should be compared to the site SSTL. This will determine if an unacceptable threat to human health actually exists on the 2730 Peralta Street property related to contamination which may have emanated from the 2711 Union Street property. It is ASE's understanding that groundwater monitoring wells may still exist on the 2730 Peralta Street property. If the wells still exist on that property, ASE recommends that monitoring well MW-4 on the 2730 Peralta Street property be sampled in lieu of one of the soil borings if access to this well can be granted by CASS.

show location of MW-4 relative to wells at Gardiner Mfr.

10.0 REFERENCES

American Society for Testing and Materials, 1995, ASTM 1739-95 Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites.

Freeze, R. Allan and Cherry, John A., Groundwater, 1979, page 29.

Groundwater Services, Inc., Tier 2 RBCA Tool Kit, Version 1.0.1.

10.0 REPORT LIMITATIONS

This RBCA was performed using the Groundwater Services, Inc. (GSI) computer model which follows the procedures outlined in ASTM 1739 Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites using scenarios requested by the ACHCSA. The values used in the RBCA represented conditions at the time of the soil and groundwater sampling, at the specific locations where the samples were collected, and for the specific parameters analyzed by the laboratory.

This RBCA only represents parameters analyzed by the laboratory. All of the laboratory work cited in this report was prepared under the direction of an independent CAL-EPA certified laboratory. The independent laboratory is solely responsible for the contents and conclusions of the chemical analysis data.

Should you have any questions or comments, please call us at (510) 820-9391.

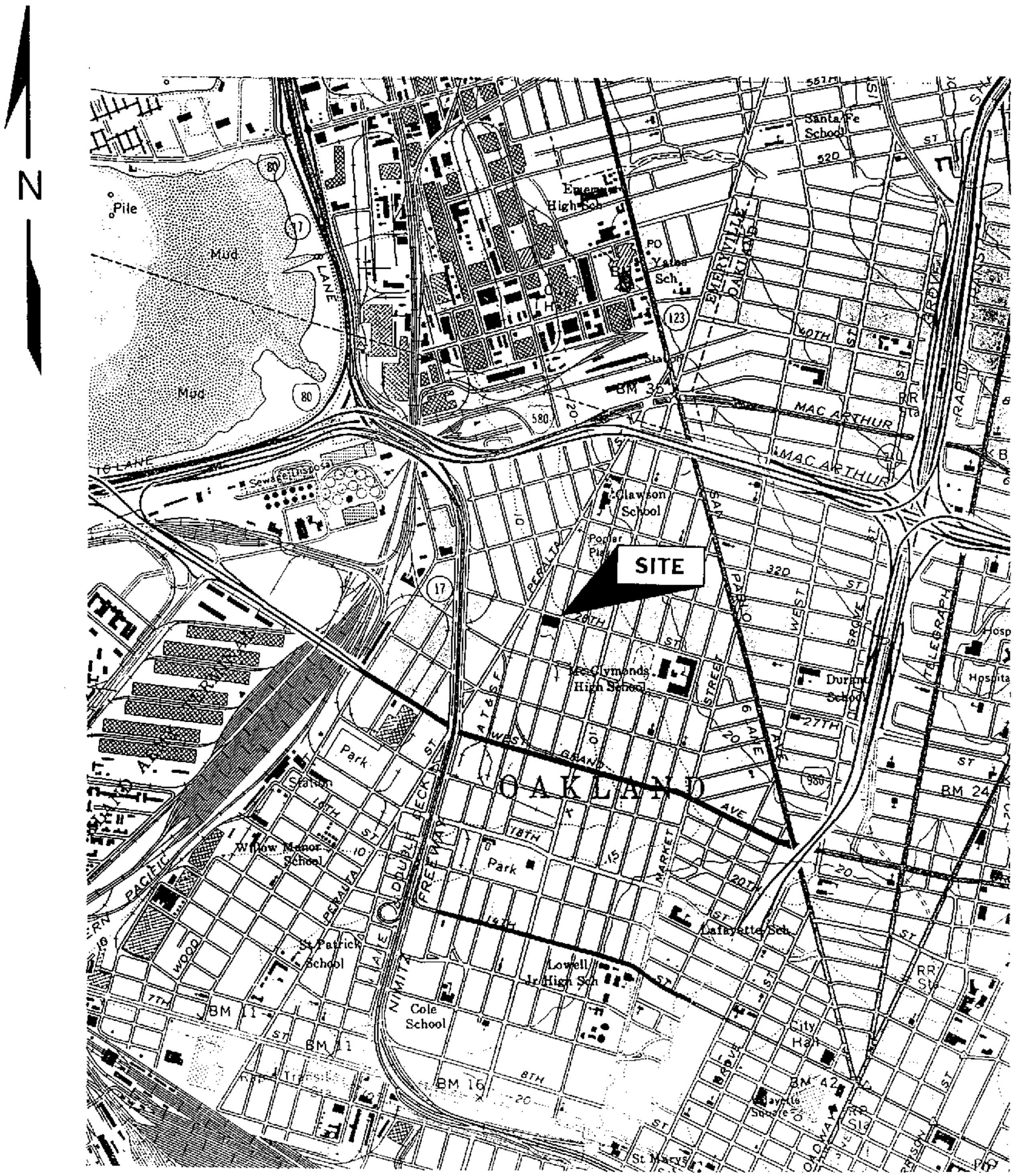
Respectfully submitted,

AQUA SCIENCE ENGINEERS, INC.

David Allen, R.E.A.
Senior Project Manager

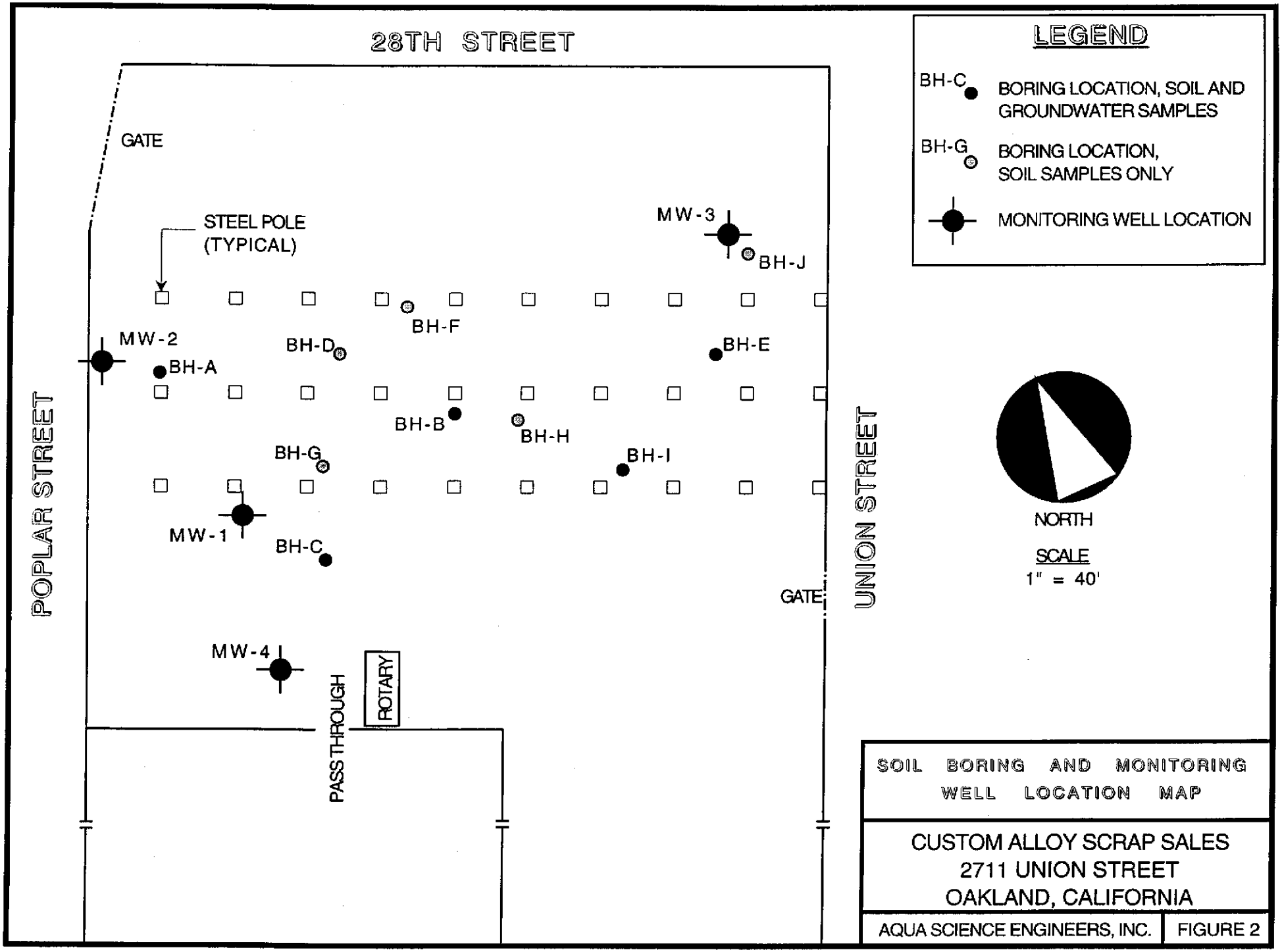
Robert E. Kitay, R.G., R.E.A.
Senior Geologist

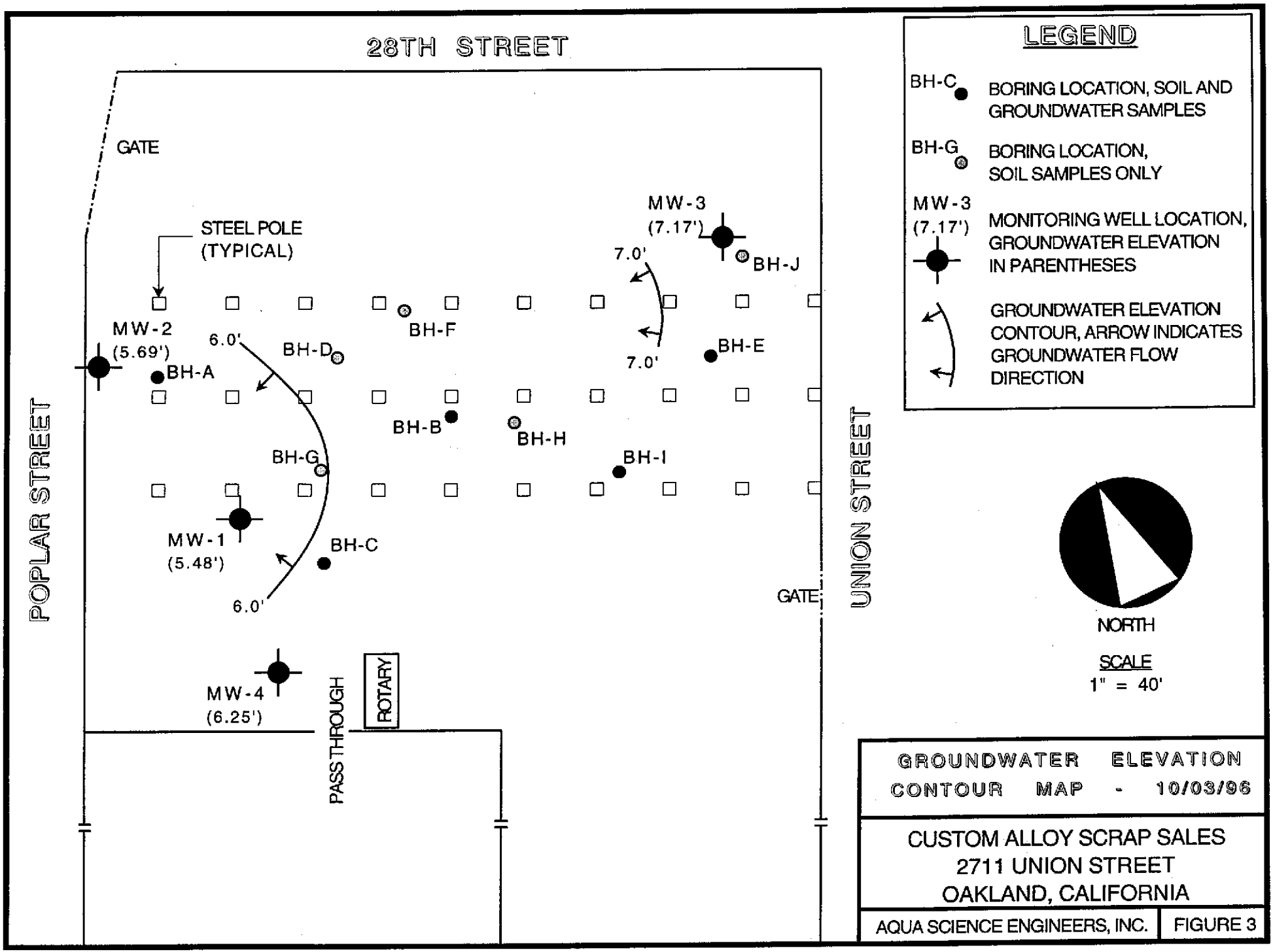
REGISTERED GEOLOGIST
ROBERT E. KITAY
No. 6586
STATE OF CALIFORNIA



BASE: USGS Oakland West 7.5 minute quadrangle topographic map, dated 1980, scale 1:24,000.

SITE LOCATION MAP	
Custom Alloy Scrap Sales 2711 Union Street Street Oakland, California	
Aqua Science Engineers, Inc.	Figure 1

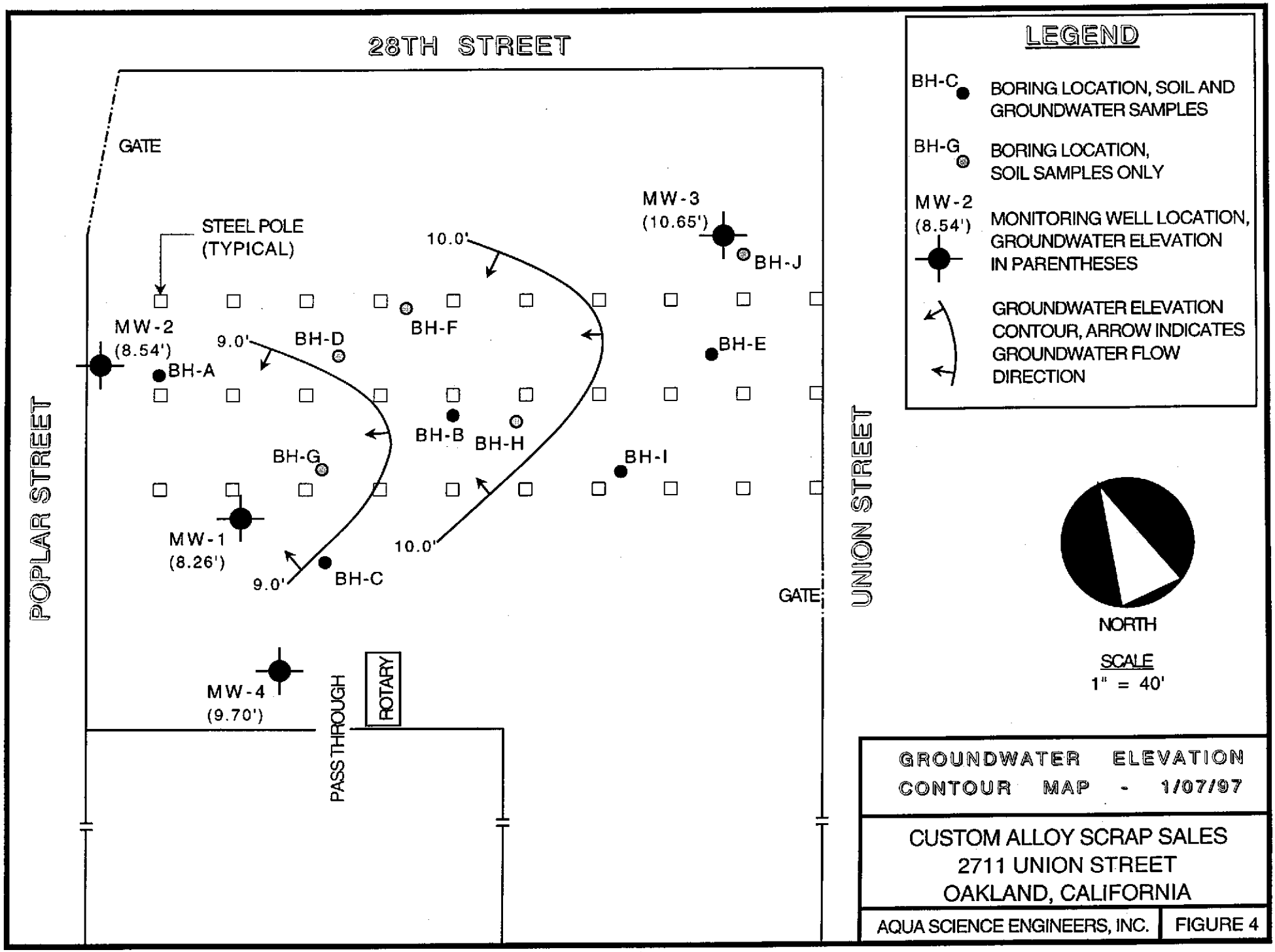

28TH STREET
GATE
STEEL POLE
(TYPICAL)
MW-3
BH-J
BH-F
MW-2
BH-D
BH-E
BH-A
BH-B
BH-H
BH-G
BH-I
MW-1
BH-C
POPLAR STREET
UNION STREET
GATE
MW-4
PASS THROUGH
ROTARY
LEGEND
BH-C
BORING LOCATION, SOIL AND GROUNDWATER SAMPLES
BH-G
BORING LOCATION, SOIL SAMPLES ONLY
MONITORING WELL LOCATION
NORTH
SCALE
1" = 40'
SOIL BORING AND MONITORING WELL LOCATION MAP
CUSTOM ALLOY SCRAP SALES
2711 UNION STREET
OAKLAND, CALIFORNIA
AQUA SCIENCE ENGINEERS, INC.
FIGURE 2

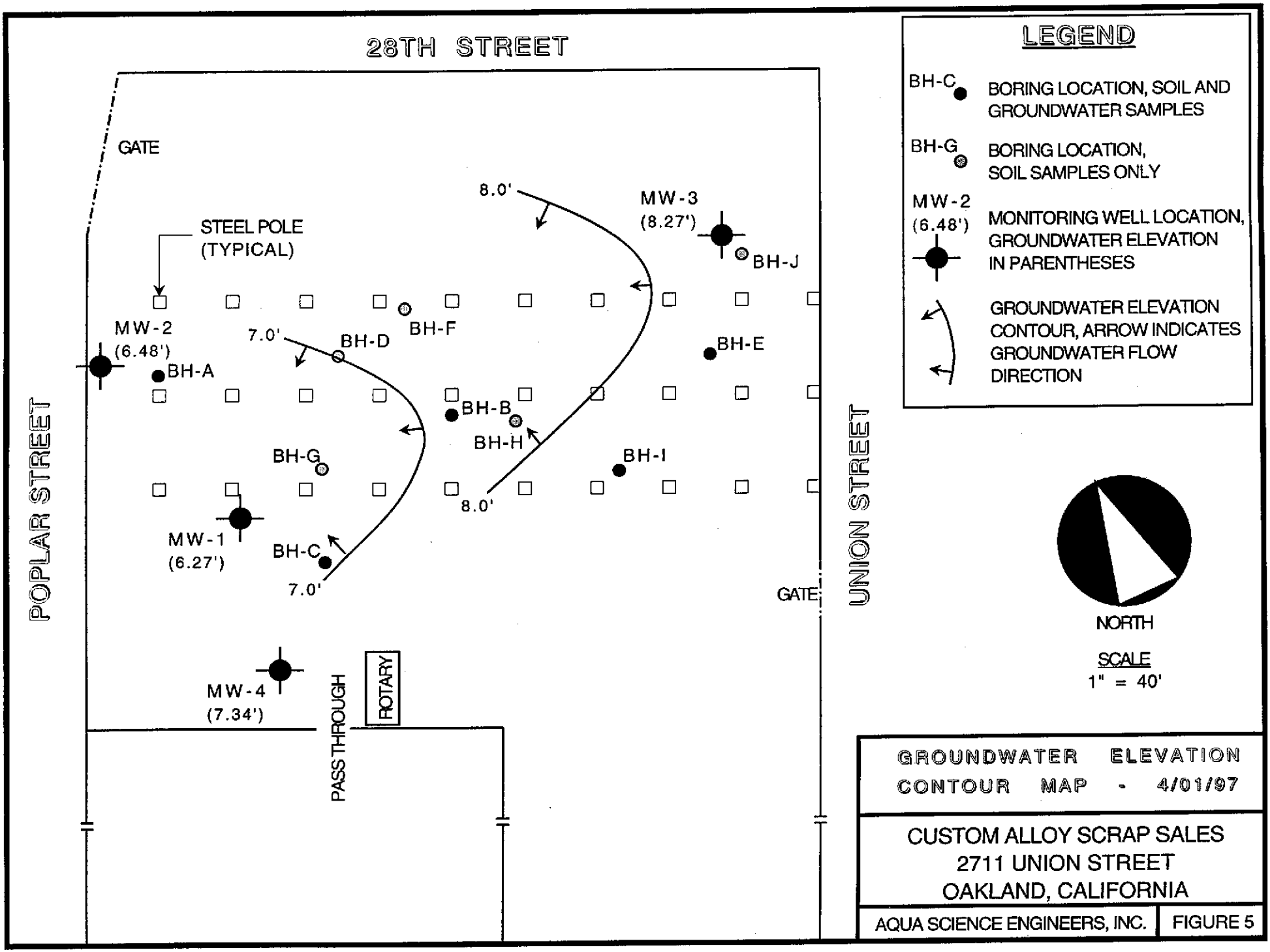


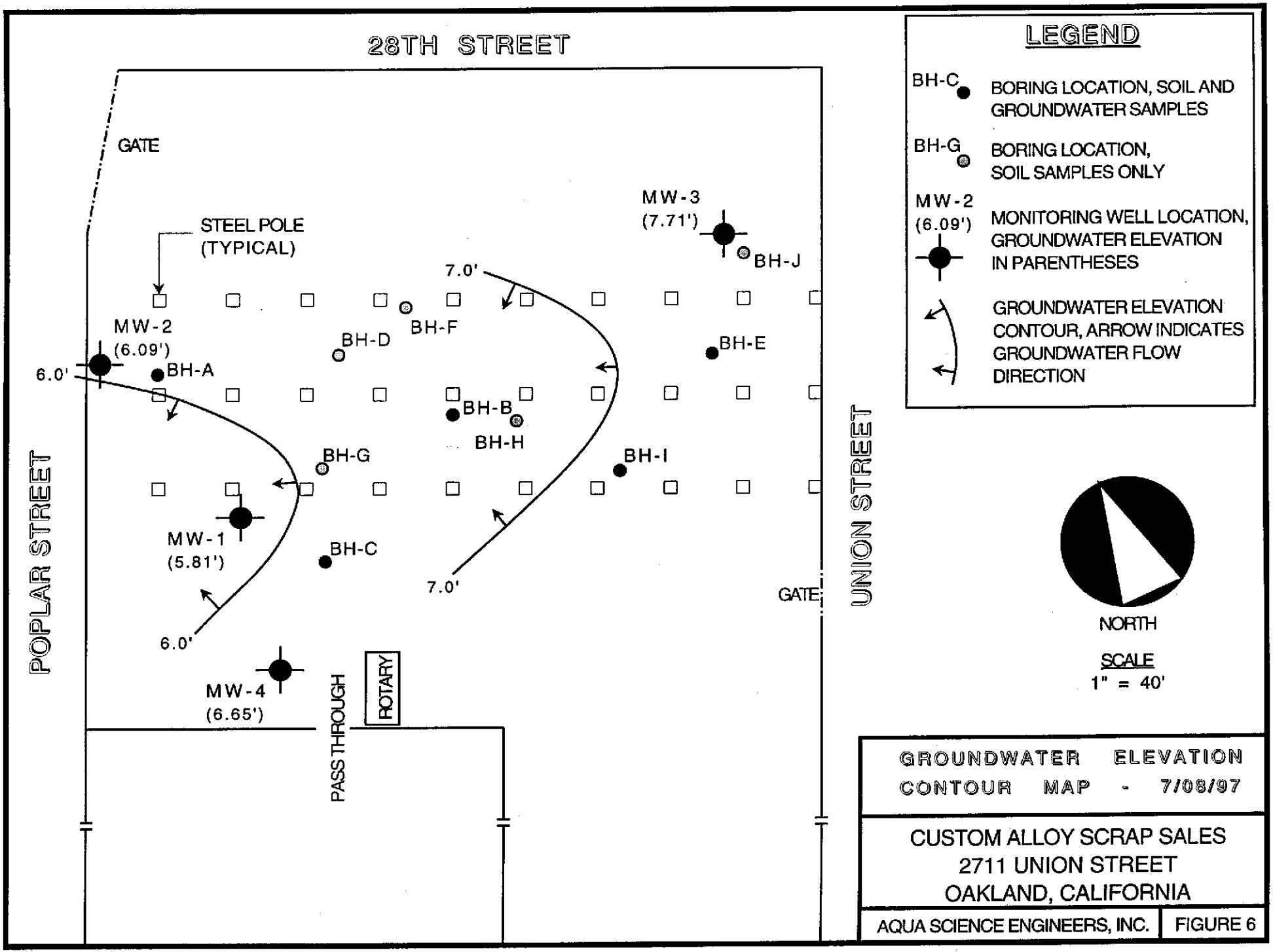
GROUNDWATER ELEVATION CONTOUR MAP - 10/03/96

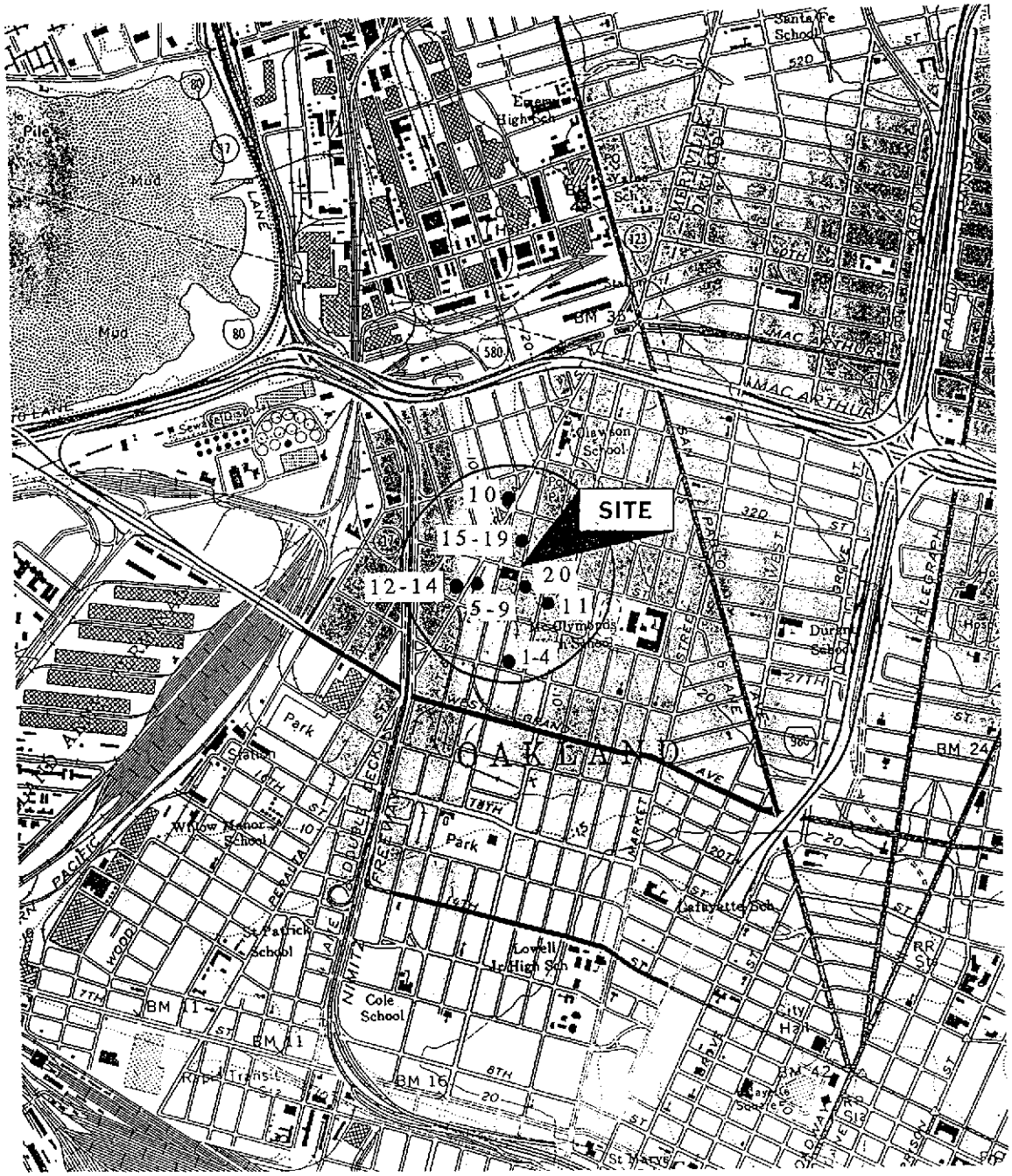
CUSTOM ALLOY SCRAP SALES
2711 UNION STREET
OAKLAND, CALIFORNIA

AQUA SCIENCE ENGINEERS, INC. | FIGURE 3


28TH STREET
POPLAR STREET
UNION STREET
GATE
STEEL POLE
(TYPICAL)
MW-2
(8.54')
BH-A
BH-D
9.0'
BH-F
10.0'
MW-3
(10.65')
BH-J
BH-E
BH-B
BH-H
BH-G
BH-I
MW-1
(8.26')
9.0'
BH-C
10.0'
GATE
MW-4
(9.70')
PASS THROUGH
ROTARY
LEGEND
BH-C
BORING LOCATION, SOIL AND GROUNDWATER SAMPLES
BH-G
BORING LOCATION, SOIL SAMPLES ONLY
MW-2
(8.54')
MONITORING WELL LOCATION, GROUNDWATER ELEVATION IN PARENTHESES
GROUNDWATER ELEVATION CONTOUR, ARROW INDICATES GROUNDWATER FLOW DIRECTION
NORTH
SCALE
1" = 40'
GROUNDWATER ELEVATION CONTOUR MAP - 1/07/97
CUSTOM ALLOY SCRAP SALES
2711 UNION STREET
OAKLAND, CALIFORNIA
AQUA SCIENCE ENGINEERS, INC.
FIGURE 4


28TH STREET
POPLAR STREET
UNION STREET
GATE
STEEL POLE
(TYPICAL)
MW-2
(6.48')
BH-A
BH-D
BH-F
BH-E
BH-B
BH-H
BH-G
BH-I
MW-1
(6.27')
BH-C
MW-3
(8.27')
BH-J
MW-4
(7.34')
PASS THROUGH
ROTARY
8.0'
7.0'
8.0'
7.0'
GATE
LEGEND
BH-C
BORING LOCATION, SOIL AND GROUNDWATER SAMPLES
BH-G
BORING LOCATION, SOIL SAMPLES ONLY
MW-2
(6.48')
MONITORING WELL LOCATION, GROUNDWATER ELEVATION IN PARENTHESES
GROUNDWATER ELEVATION CONTOUR, ARROW INDICATES GROUNDWATER FLOW DIRECTION
NORTH
SCALE
1" = 40'
GROUNDWATER ELEVATION CONTOUR MAP - 4/01/97
CUSTOM ALLOY SCRAP SALES
2711 UNION STREET
OAKLAND, CALIFORNIA
AQUA SCIENCE ENGINEERS, INC.
FIGURE 5


28TH STREET
GATE
STEEL POLE
(TYPICAL)
MW-3
(7.71')
BH-J
7.0'
MW-2
(6.09')
BH-D
BH-F
BH-E
6.0'
BH-A
BH-B
BH-H
BH-G
BH-I
MW-1
(5.81')
BH-C
7.0'
6.0'
GATE
POPLAR STREET
UNION STREET
MW-4
(6.65')
PASS THROUGH
ROTARY
LEGEND
BH-C
BORING LOCATION, SOIL AND GROUNDWATER SAMPLES
BH-G
BORING LOCATION, SOIL SAMPLES ONLY
MW-2
(6.09')
MONITORING WELL LOCATION, GROUNDWATER ELEVATION IN PARENTHESES
GROUNDWATER ELEVATION CONTOUR, ARROW INDICATES GROUNDWATER FLOW DIRECTION
NORTH
SCALE
1" = 40'
GROUNDWATER ELEVATION CONTOUR MAP - 7/08/97
CUSTOM ALLOY SCRAP SALES
2711 UNION STREET
OAKLAND, CALIFORNIA
AQUA SCIENCE ENGINEERS, INC.
FIGURE 6



Location of well shown in Table Seven

BASE: USGS Oakland West 7.5 minute quadrangle topographic map, dated 1980, scale 1:24,000.

LOCATION OF WELLS WITHIN 1/4-MILE OF THE SITE

Custom Alloy Scrap Sales
2711 Union Street Street
Oakland, California

Aqua Science Engineers, Inc. | Figure 7

TABLE ONE

Summary of Chemical Analysis of **SOIL** Samples
All results are in **parts per million**

COMPOUND	BH-A 3.5'	BH-B 3.5'	BH-C 5.0'	BH-D 3.5'	BH-E 3.5'	BH-F 3.5'	BH-G 3.5'	BH-H 3.5'	BH-I 3.5'	BH-J 3.5'	PRG (Industrial)
TPH-G	**7.6***	<1	<1	<1	**1.6***	<1	<1	**1.8**	<1	<1	NE
TPH-D	**1,700***	<1	<1	<1	**2,100***	**150***	**69***	**4,300***	**42***	<1	NE
Oil & Grease	<50	<50	<50	<50	**3,900**	**4,500**	<50	**2,300**	<50	<50	NE
Toluene	<0.005	<0.005	<0.005	<0.005	<0.005	**0.01**	<0.005	<0.005	<0.005	<0.005	2,800
Ethylbenzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	**0.0092**	<0.005	<0.005	690
Total xylenes	**0.016**	<0.01	<0.01	<0.01	**0.01**	**0.006**	<0.01	**0.011**	<0.01	<0.01	990
cis-1,2-DCE	<0.005	<0.005	<0.005	<0.005	<0.005	**0.055**	<0.005	<0.005	<0.005	<0.005	200
trans-1,2-DCE	<0.005	<0.005	<0.005	<0.005	<0.005	**0.018**	<0.005	<0.005	<0.005	<0.005	600
TCE	<0.005	<0.005	<0.005	**0.0093**	<0.005	**0.052**	<0.005	<0.005	<0.005	<0.005	17
Other VOCs	<0.005-<0.02	<0.005-<0.02	<0.005-<0.02	<0.005-<0.02	<0.005-<0.02	<0.005-<0.02	<0.005-<0.02	<0.005-<0.02	<0.005-<0.02	<0.005-<0.02	V
Cadmium	**0.34**	**0.30**	**0.34**	**0.25**	**1.1**	**0.29**	**0.27**	**0.65**	**0.34**	**0.31**	850
Chromium	**24**	**24**	**46**	**36**	**26**	**34**	**35**	**37**	**27**	**43**	450
Lead	**4.4**	**13**	**4.6**	**4.2**	**66**	**4.5**	**6.4**	**150**	**8.6**	**5.4**	1,000
Nickel	**20**	**21**	**24**	**19**	**23**	**21**	**15**	**24**	**21**	**22**	150
Zinc	**15**	**23**	**23**	**18**	**62**	**19**	**24**	**120**	**22**	**24**	100,000

Abbreviations:

TPH-G = Total petroleum hydrocarbons as gasoline
TPH-D = Total petroleum hydrocarbons as diesel
DCE = Dichloroethene
TCE = Trichloroethene
VOCs = Volatile organic compounds by EPA Method 8010
PRG = US EPA Region IX Preliminary Remediation Goal
NE = Not established
V = Varies; PRG depends on the compound

Notes:

* = Chromatogram pattern does not resemble standard.

Detectable concentrations in **bold**.
Non-detectable concentrations noted by the less than symbol (<) followed by the detection limit.

TABLE TWO
Summary of Chemical Analysis of **SOIL** Samples
All results are in **parts per million**

COMPOUND	MW-1 6.0'	MW-2 6.0'	MW-3 6.0'	MW-4 6.0'
Total petroleum hydrocarbons as Gasoline (TPH-G)	< 1.0	< 1.0	< 1.0	< 1.0
Total petroleum hydrocarbons as Diesel (TPH-D)	< 1.0	**350****	< 1.0	**280***
Benzene	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Toluene	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Ethylbenzene	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Total xylenes	< 0.0050	< 0.0050	< 0.0050	< 0.0050
MTBE	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Fluorene	< 0.0050	< 0.025	< 0.0050	**0.048**
Other SVOCs	< 0.005- < 0.015	< 0.025- < 0.075	< 0.005- < 0.015	< 0.025- < 0.075
Vinyl Chloride	< 0.0050	< 0.0050	< 0.0050	< 0.0050
cis-1,2-Dichloroethene	< 0.0050	< 0.0050	< 0.0050	< 0.0050
trans-1,2- Dichloroethene	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Trichloroethene (TCE)	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Tetrachloroethene (PCE)	< 0.010	< 0.010	< 0.010	< 0.010
Chlorobenzene	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Other VOCs	< 0.0050- < 0.010	< 0.0050- < 0.010	< 0.0050- < 0.010	< 0.0050- < 0.010

Notes:

* = Chromatogram pattern does not resemble diesel standard.

** = Chromatogram pattern does not resemble diesel standard: hydrocarbons in motor oil range detected.

Detectable concentrations in **bold**.

Non-detectable concentrations indicated by the less than sign (<) followed by the detection limit.

TABLE THREE
Summary of Chemical Analysis of **GROUNDWATER** Samples
All results are in **parts per billion**

COMPOUND	BH-A	BH-B	BH-C	BH-E	BH-I	MCL
TPH-G	**95***	<50	**51***	<50	<50	NE
TPH-D	**3,800***	**7,100***	**2,600***	---	**2,000***	NE
Oil & Grease	<5,000	<8,000	<5,000	---	<5,000	NE
Ethylbenzene	<0.5	<0.5	<0.5	**0.9**	<0.5	680
Total xylenes	1.3	<1	<1	**1.3**	<1	1,750
Vinyl Chloride	**8.3**	**2.4**	**10**	**43**	<1	0.5
1,1-DCE	**2.1**	<1	<1	<1	<1	6
1,1-DCA	<1	**22**	**1.5**	<1	<1	5
cis-1,2-DCE	**55**	**3.4**	**78**	**75**	**1.3**	6
trans-1,2-DCE	**15**	<1	**3.3**	**6.7**	<1	10
TCE	**34**	<1	**100**	**9.1**	<1	5
PCE	1	<1	1	<1	<1	5
Chlorobenzene	**21**	<1	<1	<1	<1	NE
1,2-Dichlorobenzene	39	<5	<5	<5	<5	130**
Other VOCs	<1-<20	<1-<20	<1-<20	<1-<20	<1-<20	V
Cadmium	<2	---	<2	---	**2.3**	10
Chromium	<10	---	<10	---	<10	50
Lead	<3	---	<3	---	<3	50
Nickel	**240**	---	**130**	---	**1,000**	NE
Zinc	<20	---	<20	---	<20	NE

Abbreviations:

TPH-G = Total petroleum hydrocarbons as gasoline
TPH-D = Total petroleum hydrocarbons as diesel
1,1-DCE = Dichloroethene
1,1-DCA = Dichloroethane
TCE = Trichloroethene
PCE = Tetrachloroethene
VOCs = Volatile organic compounds by EPA Method 8010
MCL = California Department of Toxic Substances Control Maximum Contaminant Level for Drinking Water
--- = Not analyzed
NE = Not established
V = Varies; MCL depends on the compound

Notes:

* = Chromatogram pattern does not resemble standard
** = Recommended action level

Detectable concentrations in **bold**.
Non-detectable concentrations noted by the less than symbol (<) followed by the detection limit.

TABLE FOUR
Summary of Chemical Analysis of **WATER** Samples
TPH-G, TPH-D, BTEX and MTBE
(All Results are in **parts per billion**)

Sample I.D.	TPH-G	TPH-D	Benzene	Toluene	Ethyl Benzene	Total Xylenes	MTBE
MW-1							
10/03/96	**83**	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5
01/07/97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5
04/01/97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5
07/08/97	< 500	< 50	< 5	< 5	< 5	< 5	< 50
MW-2							
10/03/96	**210**	**2,000***	**1.1**	< 0.5	< 0.5	< 0.5	**130**
01/07/97	**320**	**3,200***	**2.0**	**0.86**	< 0.5	< 0.5	< 50
04/01/97	< 50	**850***	**1.1**	< 0.5	< 0.5	**0.52**	< 5
07/08/97	< 2,500	**740***	< 25	< 25	< 25	< 25	< 25
MW-3							
10/03/96	**200**	**53**	< 0.5	**1.4**	< 0.5	< 0.5	< 5
01/07/97	< 50	< 50	< 0.5	**0.68**	< 0.5	< 0.5	< 5
04/01/97	< 50	< 50	< 0.5	**0.61**	< 0.5	< 0.5	< 5
07/08/97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5
MW-4							
10/03/96	**120**	**1,400***	< 0.5	**3.8**	< 0.5	< 0.5	< 5
01/07/97	< 50	**2,100***	< 0.5	**0.91**	< 0.5	< 0.5	< 5
04/01/97	< 50	**750***	< 0.5	< 0.5	< 0.5	< 0.5	< 5
07/08/97	< 1,000	**590***	< 10	< 10	< 10	< 10	< 100
EPA METHOD	5030/ 8015M	3510/ 8015M	8020	8020	8020	8020	8020

Notes:
* = Chromatogram pattern does not resemble diesel fuel; hydrocarbons in motor oil range detected.

Detectable concentrations are in bold.

Non-detectable concentrations noted by the less than sign (<) followed by the detection limit.

TABLE FIVE

Summary of Chemical Analysis of **WATER** Samples
Volatile Organic Compounds (VOC's)
EPA Method 8240 or 8010
(All Results are in **parts per billion**)

Sample I.D.	VC	1,1-DCE	trans-1,2-DCE	cis-1,2-DCE	1,1-DCA	1,1,1-TCA	TCE	PCE	CB	1,3-DCB	1,4-DCB	1,2-DCB
MW-1												
10/03/96	< 20	< 20	< 20	**61**	< 20	< 20	**2,200**	< 20	< 20	< 20	< 20	< 20
01/07/97	**2.0**	**0.70**	**2.7**	**73**	< 0.5	**1.8**	**1,500**	**18**	< 0.5	< 0.5	< 0.5	< 0.5
04/01/97	< 10	< 10	< 10	**71**	< 10	< 10	**1,500**	**18**	< 10	< 10	< 10	< 10
07/08/97	< 40	< 40	< 40	**43**	< 40	< 40	**2,600**	< 40	< 40	< 40	< 40	< 40
MW-2												
10/03/96	**160**	< 20	**47**	**200**	< 20	< 20	**220**	< 20	**32**	< 20	< 20	< 20
01/07/97	**95**	**4.5**	**42**	**290**	**4.7**	< 0.5	**270**	**18**	**74**	**0.90**	**4.8**	**35**
04/01/97	**120**	**5.3**	**53**	**240**	**4.7**	< 0.5	**200**	**16**	**97**	**1.4**	**7.4**	**64**
07/08/97	**170**	< 5.0	**53**	**440**	**5.8**	< 5.0	**440**	**26**	**75**	< 5.0	< 5.0	**33**
MW-3												
10/03/96	< 20	< 20	< 20	< 20	< 20	< 20	**120**	**520**	< 20	< 20	< 20	< 20
01/07/97	< 20	< 20	< 20	< 20	< 20	< 20	**300**	**1,700**	< 20	< 20	< 20	< 20
04/01/97	< 20	< 20	< 20	< 20	< 20	< 20	**190**	**910**	< 20	< 20	< 20	< 20
07/08/97	< 20	< 20	< 20	< 20	< 20	< 20	**330**	**1,800**	< 20	< 20	< 20	< 20
MW-4												
10/03/96	< 20	< 20	< 20	**28**	< 20	< 20	**270**	< 20	< 20	< 20	< 20	< 20
01/07/97	**1.7**	< 0.5	< 0.5	**58**	< 0.5	< 0.5	**18**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
04/01/97	**25**	**1.5**	**6.2**	**100**	**1.1**	< 0.5	**18**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
07/08/97	**34**	< 2.0	**7.2**	**160**	< 2.0	< 2.0	**24**	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0

Notes:
VC = vinyl chloride
1,1-DCE = 1,1-dichloroethene
trans 1,2-DCE = trans-1,2-dichloroethene
cis 1,2-DCE = cis-1,2-dichloroethene
1,1-DCA = 1,1-dichloroethane
1,1,1-TCA = 1,1,1-trichlororethane
TCE = trichloroethene
PCE = tetrachloroethene
CB = chlorobenzene
1,3-DCB = 1,3-dichlorobenzene
1,4-DCB = 1,4-dichlorobenzene
1,2-DCB = 1,2-dichlorobenzene

Detectable concentrations are in **bold**.

Non-detectable concentrations noted by the less than sign (<) followed by the detection limit.

TABLE SIX

Summary of Groundwater Well Survey Data

Well I.D.	Date of Measurement	Top of Casing Elevation (relative to project datum)	Depth to Water (feet)	Groundwater Elevation (project data)
MW-1	10-03-96	15.00	9.52	5.48
	01-07-97		6.74	8.26
	04-01-97		8.73	6.27
	07-08-97		9.19	5.81
MW-2	10-03-96	15.44	9.75	5.69
	01-07-97		6.90	8.54
	04-01-97		8.96	6.48
	07-08-97		9.35	6.09
MW-3	10-03-96	14.92	7.75	7.17
	01-07-97		4.27	10.65
	04-01-97		6.65	8.27
	07-08-97		7.21	7.71
MW-4	10-03-96	14.98	8.73	6.25
	01-07-97		5.28	9.70
	04-01-97		7.64	7.34
	07-08-97		8.33	6.65

TABLE SEVEN

Wells Within One-Quarter Mile Radius of
2711 Union Street, Oakland, California

Well #	Well Owner	Well Location	Type of Well	Date Drilled
1-3	Northwestern Venetian Blind	1218 24th Street, Oakland	Monitoring	3/89 - 10/89
4	Tim Williams	1218 24th Street, Oakland	Monitoring	3/89
5-9	Custom Alloy Scrap Sales	2730 Peralta Street, Oakland	Monitoring	5/90 - 10/90
10	PG&E	30th & Peralta Street, Oakland	Cath. Protection	12/90
11	Bonta Collins	2452 Magnolia, Oakland	Monitoring	3/89
12-14	C. E. Toland & Sons	2717 Peralta Street, Oakland	Monitoring	3/90
15-19	The Linford Company	2850 Poplar Street, Oakland	Monitoring	4/93 - 6/94
20	Albert Plute	1229 28th Street, Oakland	Monitoring	5/96

TABLE EIGHT

Dissolved Oxygen Measurements
January 9, 1998
All results are in **mg/L**

Well	Dissolved Oxygen
MW-1	1.7
MW-2	2.7

APPENDIX A

Alameda County Health Care Services Agency Letter

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

StID 269

December 8, 1997

Mr. Robert Kitay
Aqua Science Engineers, Inc
2411 Old Crow Canyon Rd, Suite 4
San Ramon, CA 94583

RE: Risk Assessment for 2711 Union Street, Oakland, CA

Dear Mr. Kitay:

This letter is to summarize the points brought up in today's meeting with this Agency, Katy Meador and you. It was determined that a risk assessment for the determination of cleanup levels for the above referenced site would be appropriate at this time. The risk assessment should include the following:

1. soil concentrations to be used should be the average of all soil samples collected from above the mean depth to water;
2. groundwater data to be used should be the average concentration from all monitoring wells;
3. exposure pathways should include soil and groundwater volatilization to both indoor and outdoor air for an onsite commercial scenario. An 8 hour exposure rate may be used;
4. risk to construction workers must also be evaluated;
5. site cleanup levels should be for a 10^{-5} risk; and,
6. groundwater data from wells MW-1 and MW-2 should be averaged to determine risk for an offsite commercial scenario.

And, in order to determine if the site has been adequately characterized, please provide the rationale for the location of each soil and groundwater sample collected to date.

If you have any questions, I can be reached at (510) 567-6762.

eva chu
Hazardous Materials Specialist

c: Eugene Teasley, c/o Mr. Claude Ames, 3667 Shafter Ave Oakland, CA 94610
Ms. Christine Noma, Wendel Rosen Black & Dean, 1111 Broadway, 21st Fl, Oakland, CA 94607
Ms. Katy Meador, 740A 14th Street, #250, San Francisco, CA 94114
Mr. James Cherry, 2030 Franklin, 5th Fl, Oakland, CA 94612

gardiner.3

APPENDIX B

Boring Logs

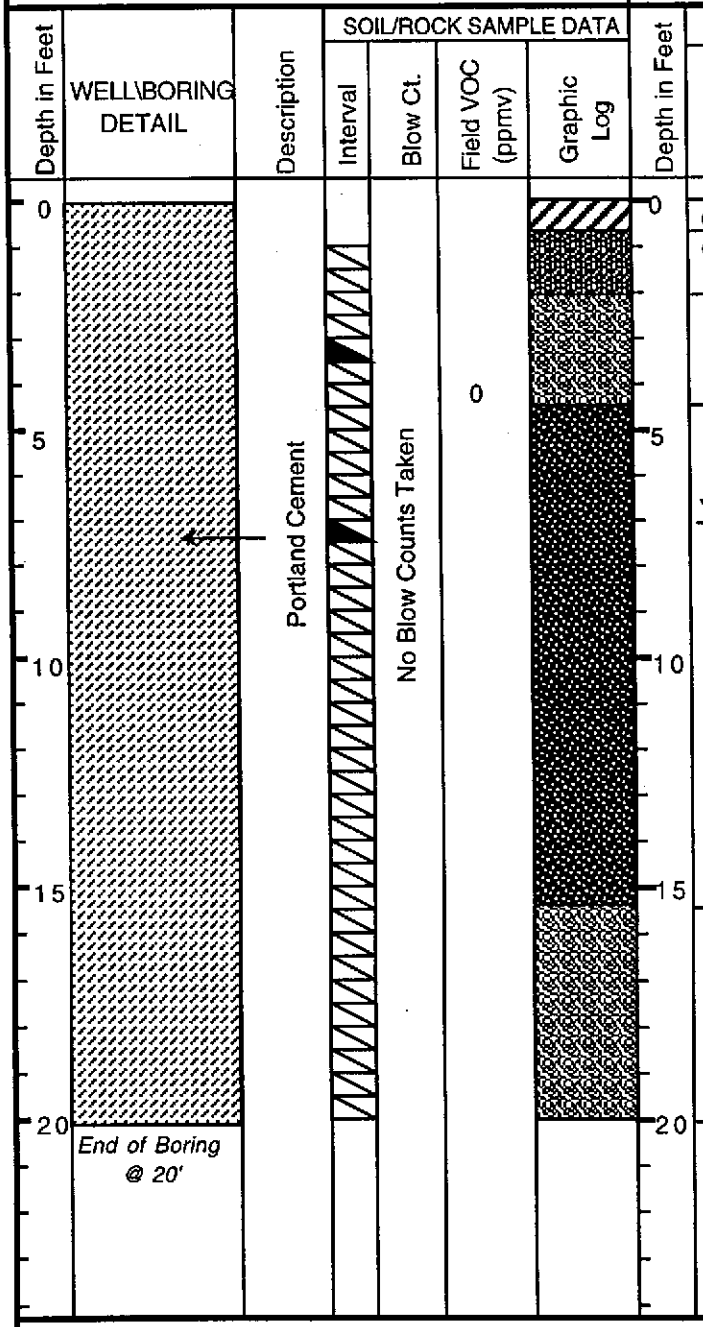
SOIL BORING LOG AND COMPLETION DETAILS

BORING NO.: BH-A

Project Name: Custom Alloy Scrap Sales	Project Location: Oakland, CA	Page 1 of 1
Driller: Gregg Drilling	Type of Rig: Geoprobe	Type and Size of Auger: Direct push
Logged By: Robert Kitay	Date Drilled: 3/28/96	Checked By: Michael Marello, R.G.

WATER AND WELL DATA

Depth of Water First Encountered: 7.0'	Total Depth of Well Completed: NA
Static Depth of Water in Well: NA	Well Screen Type and Diameter: NA
Total Depth of Boring: 20'	Well Screen Slot Size: NA
	Type and Size of Soil Sampler: 1.5" Diameter Sampler



DESCRIPTION OF LITHOLOGY

standard classification, texture, relative moisture, density, stiffness, odor-staining, USCS designation.

Concrete

Clayey SILT (MH); black; medium stiff; damp; 65% silt; 35% clay; high plasticity; very low estimated K; strong oil-like odor

Sandy SILT (ML); black; soft; damp; 70% silt; 30% fine sand; non-plastic; medium estimated k; strong oil-like odor

Silty CLAY (CH); olive brown; stiff; damp; 85% clay; 15% silt; high plasticity; very low estimated K; no odor

▼ *Groundwater First Encountered*

Sandy SILT (ML); olive brown; medium stiff; wet; 60% silt; 35% fine to coarse sand; 5% subangular pebbles to 0.5" diameter; non-plastic; low estimated K; no odor

End of Boring @ 20.0'

AQUA SCIENCE ENGINEERS, INC.

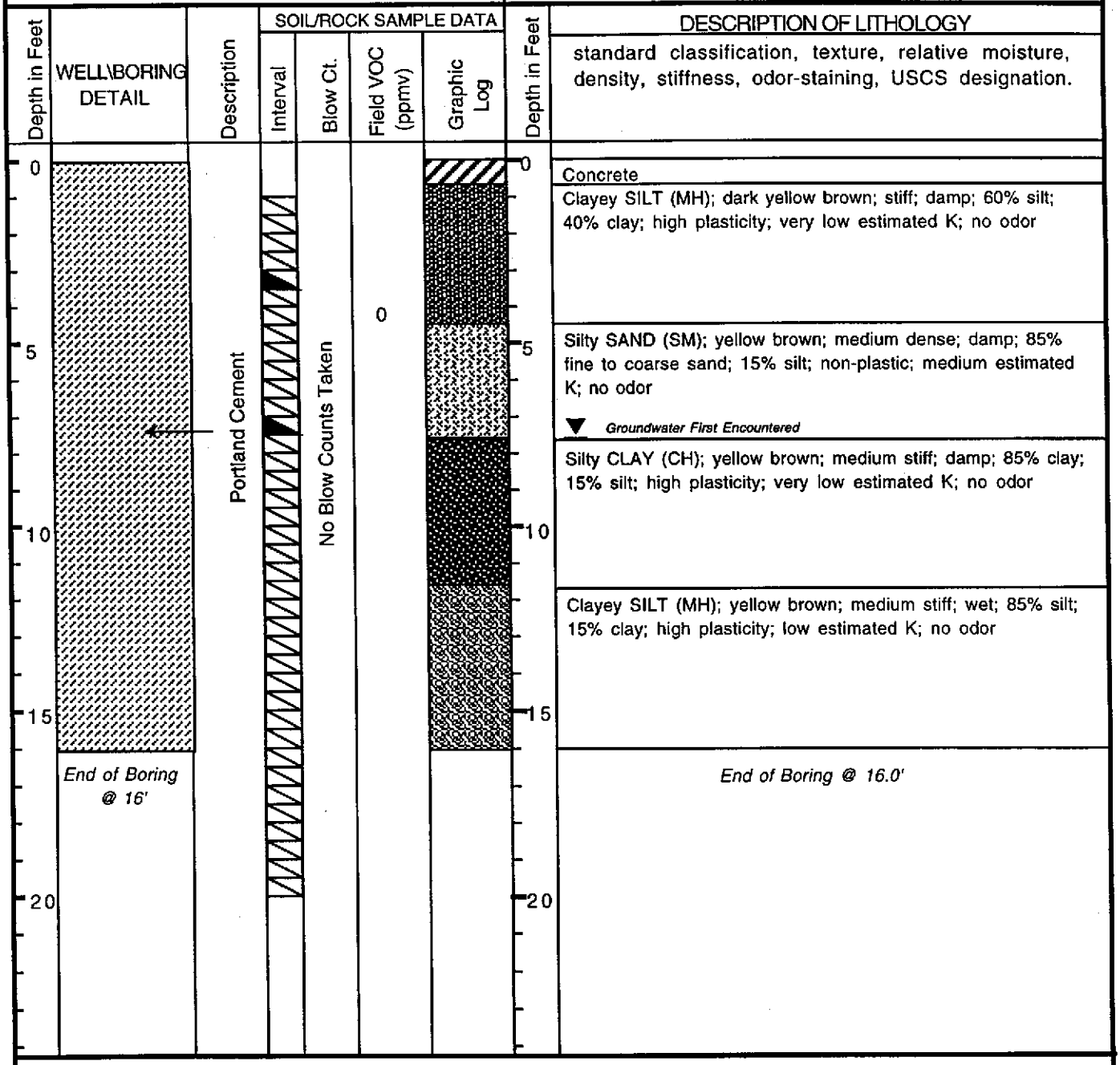
SOIL BORING LOG AND COMPLETION DETAILS

BORING NO.: BH-B

Project Name: Custom Alloy Scrap Sales	Project Location: Oakland, CA	Page 1 of 1
Driller: Gregg Drilling	Type of Rig: Geoprobe	Type and Size of Auger: Direct push
Logged By: Robert Kitay	Date Drilled: 3/28/96	Checked By: Michael Marello, R.G.

WATER AND WELL DATA

Depth of Water First Encountered: 7. 5'	Total Depth of Well Completed: NA
Static Depth of Water in Well: NA	Well Screen Type and Diameter: NA
Total Depth of Boring: 16'	Well Screen Slot Size: NA
	Type and Size of Soil Sampler: 1.5" Diameter Sampler



DESCRIPTION OF LITHOLOGY

standard classification, texture, relative moisture, density, stiffness, odor-staining, USCS designation.

Concrete

Clayey SILT (MH); dark yellow brown; stiff; damp; 60% silt; 40% clay; high plasticity; very low estimated K; no odor

Silty SAND (SM); yellow brown; medium dense; damp; 85% fine to coarse sand; 15% silt; non-plastic; medium estimated K; no odor

▼ *Groundwater First Encountered*

Silty CLAY (CH); yellow brown; medium stiff; damp; 85% clay; 15% silt; high plasticity; very low estimated K; no odor

Clayey SILT (MH); yellow brown; medium stiff; wet; 85% silt; 15% clay; high plasticity; low estimated K; no odor

End of Boring @ 16.0'

AQUA SCIENCE ENGINEERS, INC.

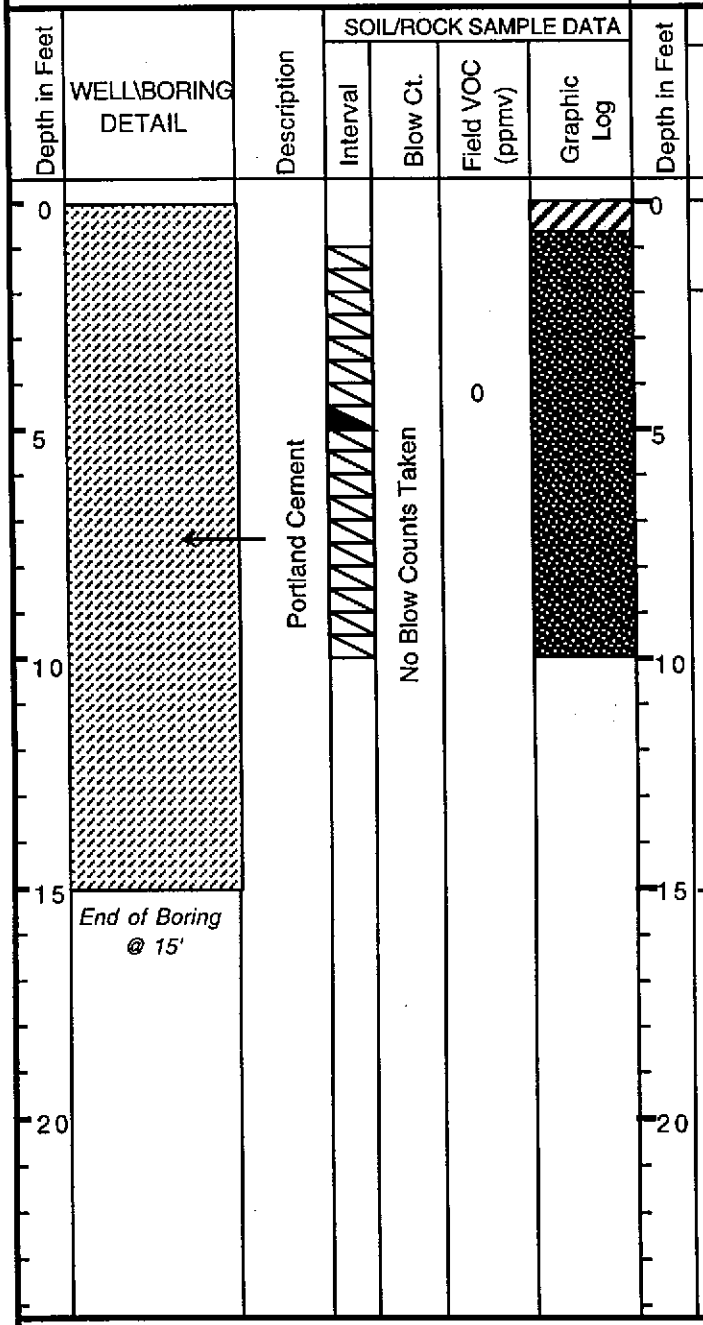
SOIL BORING LOG AND COMPLETION DETAILS

BORING NO.: BH-C

Project Name: Custom Alloy Scrap Sales	Project Location: Oakland, CA	Page 1 of 1
Driller: Gregg Drilling	Type of Rig: Geoprobe	Type and Size of Auger: Direct push
Logged By: Robert Kitay	Date Drilled: 3/28/96	Checked By: Michael Marello, R.G.

WATER AND WELL DATA

Depth of Water First Encountered: 5.0'	Total Depth of Well Completed: NA
Static Depth of Water in Well: NA	Well Screen Type and Diameter: NA
Total Depth of Boring: 15'	Well Screen Slot Size: NA
	Type and Size of Soil Sampler: 1.5" Diameter Sampler



DESCRIPTION OF LITHOLOGY

standard classification, texture, relative moisture, density, stiffness, odor-staining, USCS designation.

0 — Concrete

Silty CLAY (CL); black; medium stiff; moist; 60% clay; 40% silt; medium plasticity; very low estimated K; strong oil-like odor from 2-3'; slight odor below 3'

▼ *Groundwater First Encountered*

10 — No recovery below 10'

15 — *End of Boring @ 15.0'*

ASE Form 20A

AQUA SCIENCE ENGINEERS, INC.

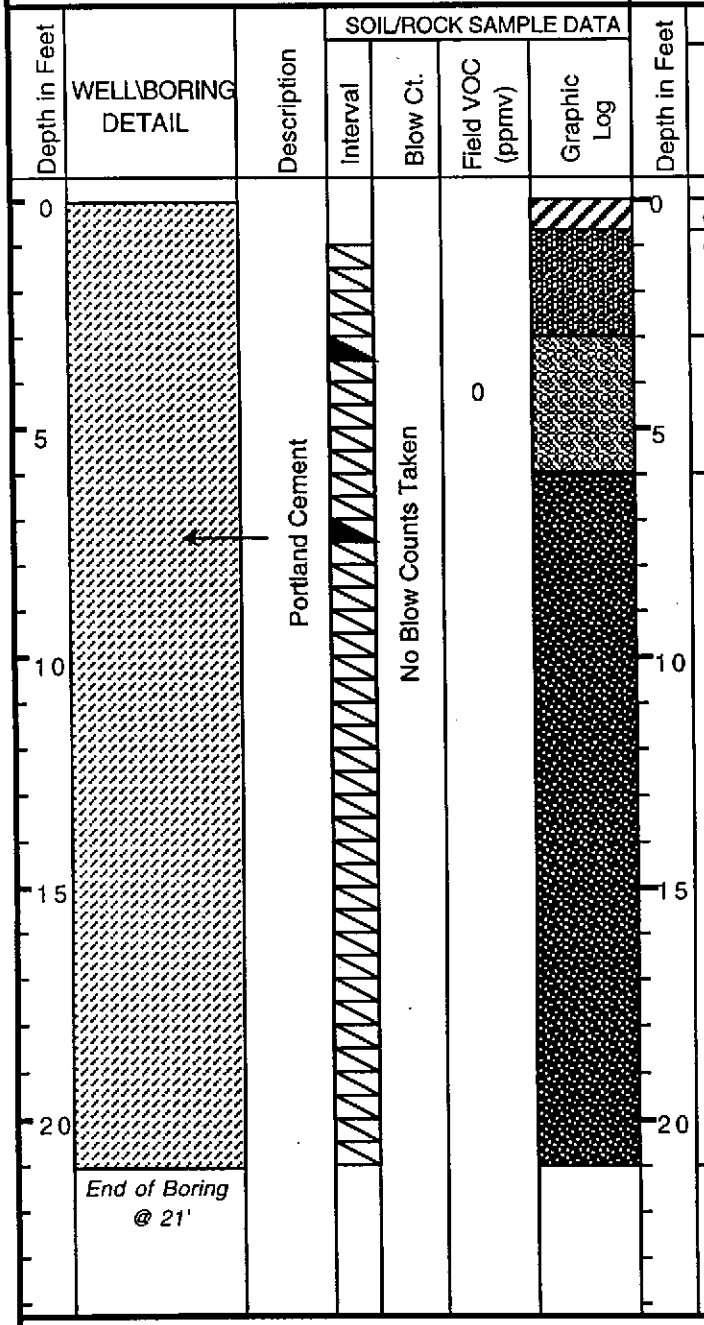
SOIL BORING LOG AND COMPLETION DETAILS

BORING NO.: BH-D

Project Name: Custom Alloy Scrap Sales	Project Location: Oakland, CA	Page 1 of 1
Driller: Gregg Drilling	Type of Rig: Geoprobe	Type and Size of Auger: Direct push
Logged By: Robert Kitay	Date Drilled: 3/28/96	Checked By: Michael Marello, R.G.

WATER AND WELL DATA

Depth of Water First Encountered: Not encountered	Total Depth of Well Completed: NA
Static Depth of Water in Well: NA	Well Screen Type and Diameter: NA
Total Depth of Boring: 21'	Well Screen Slot Size: NA
	Type and Size of Soil Sampler: 1.5" Diameter Sampler



DESCRIPTION OF LITHOLOGY

standard classification, texture, relative moisture, density, stiffness, odor-staining, USCS designation.

Concrete

Clayey SILT (MH); olive brown; medium stiff; damp; 90% silt; 10% clay; moderate plasticity; very low estimated K; no odor

Sandy SILT (ML); olive brown; medium stiff; damp; 70% silt; 25% medium to coarse sand; 5% clay; slight plasticity; low estimated k; no odor

Silty CLAY (CH); yellow brown; stiff; damp; 90% clay; 10% silt; high plasticity; very low estimated K; no odor

End of Boring @ 21.0'

AQUA SCIENCE ENGINEERS, INC.

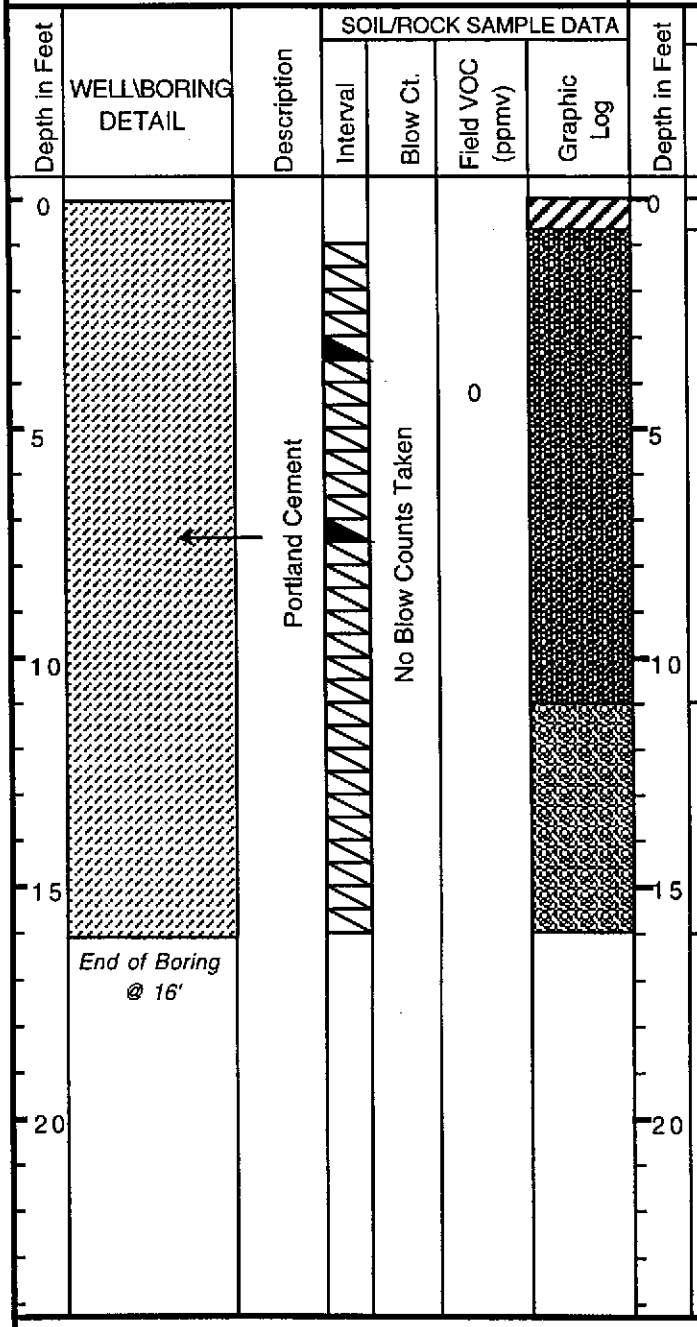
SOIL BORING LOG AND COMPLETION DETAILS

BORING NO.: BH-I

Project Name: Custom Alloy Scrap Sales	Project Location: Oakland, CA	Page 1 of 1
Driller: Gregg Drilling	Type of Rig: Geoprobe	Type and Size of Auger: Direct push
Logged By: Robert Kitay	Date Drilled: 3/28/96	Checked By: Michael Marello, R.G.

WATER AND WELL DATA

Depth of Water First Encountered: 7.5'	Total Depth of Well Completed: NA
Static Depth of Water in Well: NA	Well Screen Type and Diameter: NA
Total Depth of Boring: 16'	Well Screen Slot Size: NA
	Type and Size of Soil Sampler: 1.5" Diameter Sampler



DESCRIPTION OF LITHOLOGY

standard classification, texture, relative moisture, density, stiffness, odor-staining, USCS designation.

Concrete

Clayey SILT (MH); brown; medium stiff; damp; 65% silt; 35% clay; high plasticity; very low estimated K; moderate oil-like odor

slight odor at 4'

▼ *Groundwater First Encountered*

Sandy SILT (ML); yellow brown; soft; wet; 60% silt; 40% fine sand; non-plastic; medium estimated k; no odor

End of Boring @ 16.0'

ASE Form 20A

AQUA SCIENCE ENGINEERS, INC.

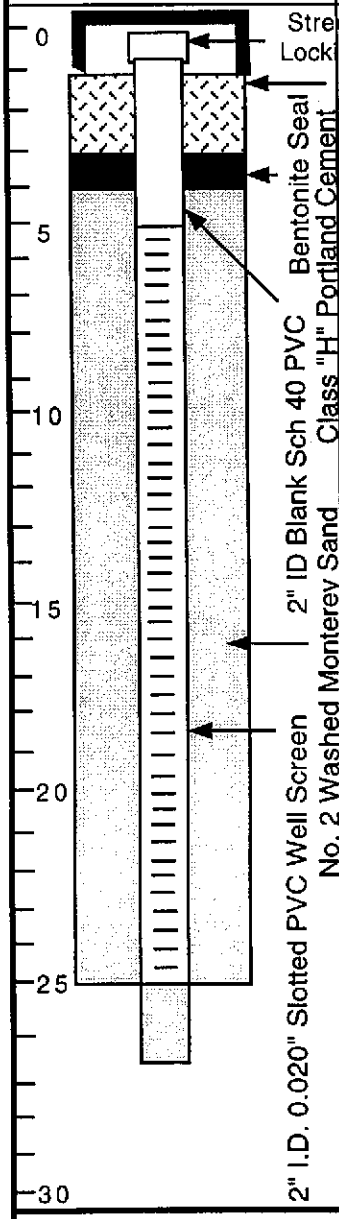
SOIL BORING LOG AND WELL COMPLETION DETAILS

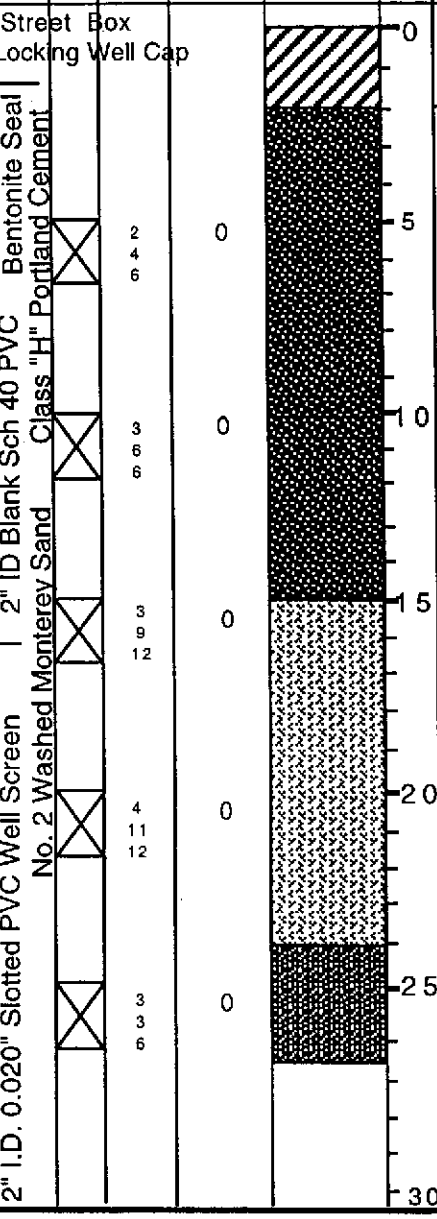
Monitoring Well: MW-1

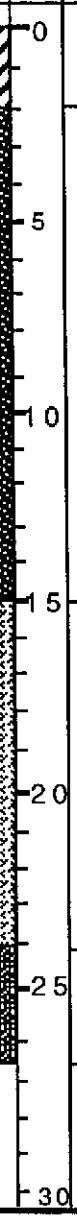
Project Name: Custom Alloy Scrap Sales	Project Location: 2711 Union Street, Oakland, CA	Page 1 of 1
Driller: Soils Exploration Services	Type of Rig: CME 55	Size of Drill: 8" O.D. Hollow-Stem Augers
Logged By: Robert E. Kitay	Date Drilled: September 26, 1996	Checked By: David M. Schultz, P.E.

WATER AND WELL DATA

Depth of Water First Encountered: 15'	Total Depth of Well Completed: 25.0'
Static Depth of Water in Well: 10'	Well Screen Type and Diameter: 2" Diameter PVC
Total Depth of Boring: 26.5'	Well Screen Slot Size: 0.020"
	Type and Size of Soil Sampler: 2.0" I.D. California Sampler







DESCRIPTION OF LITHOLOGY

standard classification, texture, relative moisture, density, stiffness, odor-staining, USCS designation.

Concrete

Silty CLAY/Clayey SILT (CH/MH); yellow brown; medium stiff; damp; 40-60% clay; 40-60% silt; high plasticity; very low estimated K; no odor

▽ *Static Groundwater Level*

▼ *Groundwater First Encountered*

Silty SAND (SM); yellow brown; medium dense; wet; 85% fine to coarse sand (subrounded to rounded quartz and chert); 15% silt; non-plastic; medium estimated K; no odor

80% fine sand; 20% silt; no odor below 20.5'

Clayey SILT (ML); yellow brown; medium stiff; damp; 70% silt; 20% clay; 10% fine sand; moderate plasticity; low estimated K; no odor

End of boring at 26.5'

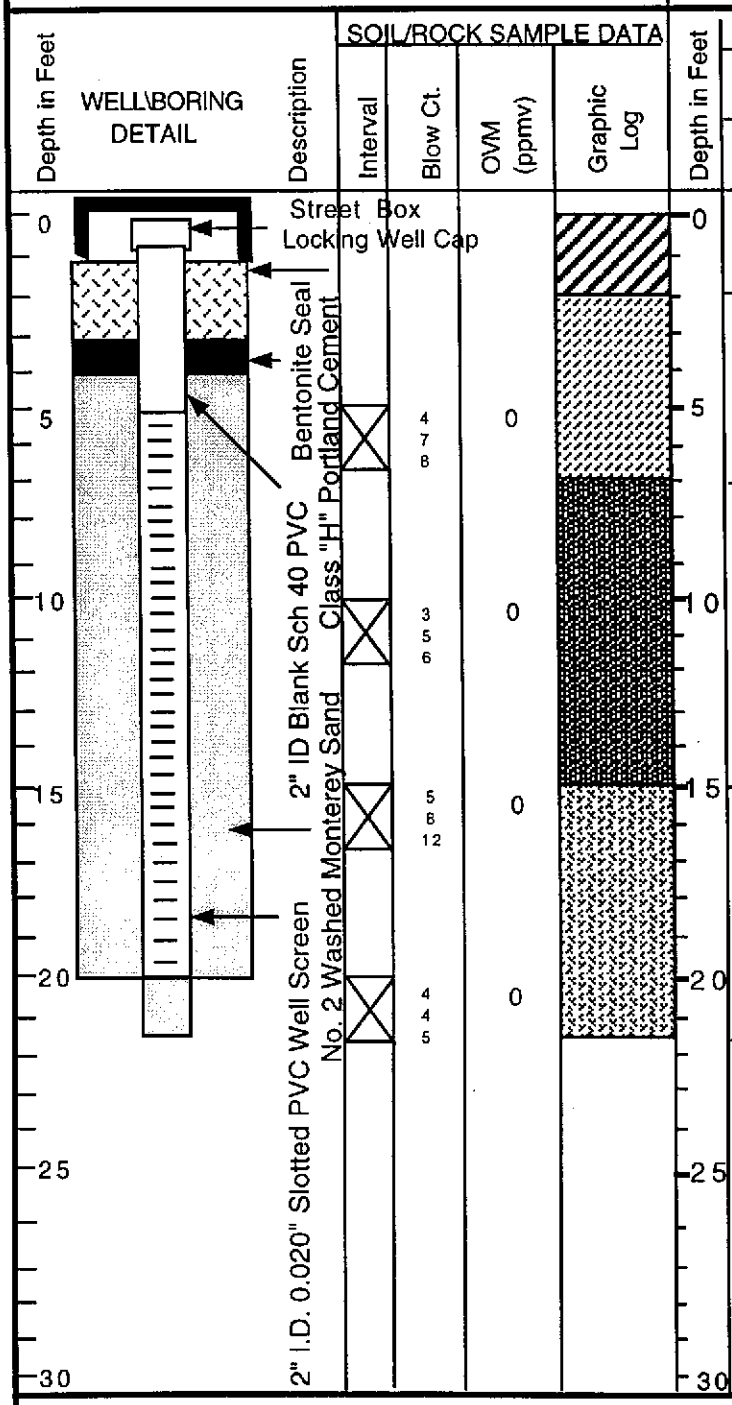
SOIL BORING LOG AND WELL COMPLETION DETAILS

Monitoring Well: MW-2

Project Name: Custom Alloy Scrap Sales	Project Location: 2711 Union Street, Oakland, CA	Page 1 of 1
Driller: Soils Exploration Services	Type of Rig: CME 55	Size of Drill: 8" O.D. Hollow-Stem Augers
Logged By: Robert E. Kitay	Date Drilled: September 26, 1996	Checked By: David M. Schultz, P.E.

WATER AND WELL DATA

Depth of Water First Encountered: 15'	Total Depth of Well Completed: 20.0'
Static Depth of Water in Well: 10'	Well Screen Type and Diameter: 2" Diameter PVC
Total Depth of Boring: 21.5'	Well Screen Slot Size: 0.020"
	Type and Size of Soil Sampler: 2.0" I.D. California Sampler



DESCRIPTION OF LITHOLOGY

standard classification, texture, relative moisture, density, stiffness, odor-staining, USCS designation.

Concrete

Gravelly SILT (ML); brown; medium stiff; damp; 55% silt; 30% subrounded pebbles to 0.7" diameter; 10% clay; 5% fine to coarse sand; low plasticity; medium estimated K; no odor

Clayey SILT (MH); yellow brown; medium stiff; damp; 80% silt; 20% clay; moderate plasticity; low estimated K; no odor

▽ *Static Groundwater Level*

▼ *Groundwater First Encountered*

Silty SAND (SM); yellow brown; medium dense; wet; 75-80% fine to coarse sand (subrounded to rounded quartz and chert); 20-25% silt; non-plastic; medium estimated K; no odor

End of boring at 21.5'

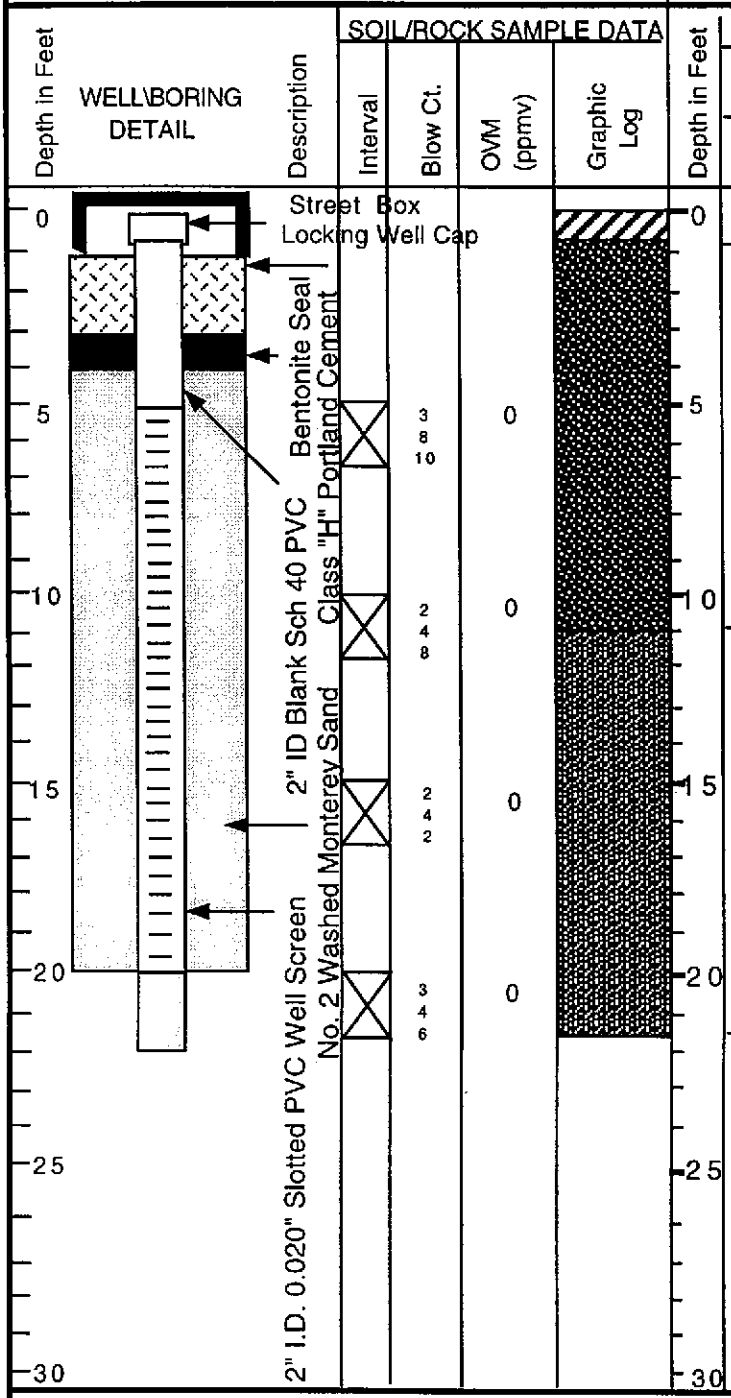
SOIL BORING LOG AND WELL COMPLETION DETAILS

Monitoring Well: MW-3

Project Name: Custom Alloy Scrap Sales	Project Location: 2711 Union Street, Oakland, CA	Page 1 of 1
Driller: Soils Exploration Services	Type of Rig: CME 55	Size of Drill: 8" O.D. Hollow-Stem Augers
Logged By: Robert E. Kitay	Date Drilled: September 26, 1996	Checked By: David M. Schultz, P.E.

WATER AND WELL DATA

- Depth of Water First Encountered: 15'
- Static Depth of Water in Well: 10'
- Total Depth of Boring: 21.5'
- Total Depth of Well Completed: 20.0'
- Well Screen Type and Diameter: 2" Diameter PVC
- Well Screen Slot Size: 0.020"
- Type and Size of Soil Sampler: 2.0" I.D. California Sampler



DESCRIPTION OF LITHOLOGY

standard classification, texture, relative moisture, density, stiffness, odor-staining, USCS designation.

Concrete

Silty CLAY/Clayey SILT (CH/MH); yellow brown; medium stiff; damp; 40-60% clay; 40-60% silt; high plasticity; very low estimated K; no odor

▽ *Static Groundwater Level*

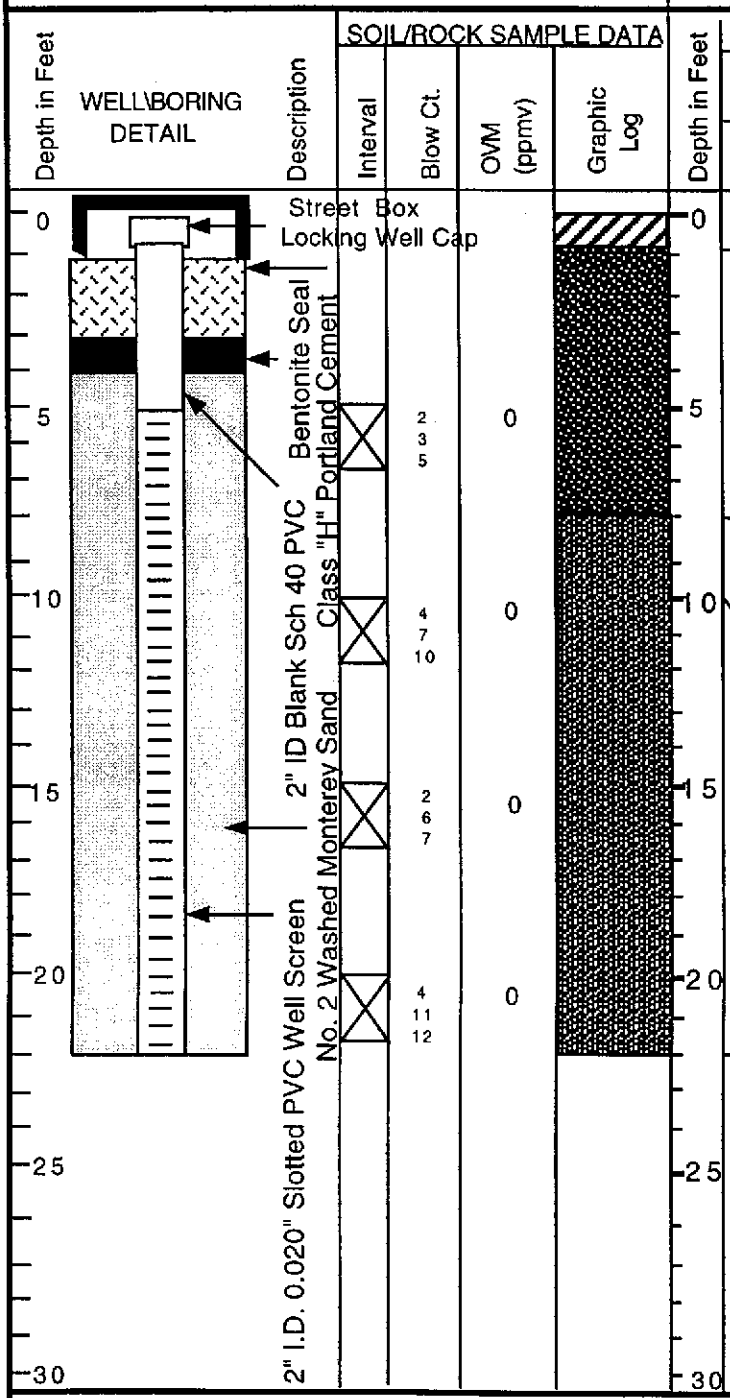
Clayey SILT (ML); olive mottled brown; soft; moist; 85% silt; 10% clay; 5% fine sand; moderate plasticity; low estimated K; no odor

▼ *Groundwater First Encountered*

End of boring at 21.5'

SOIL BORING LOG AND WELL COMPLETION DETAILS		Monitoring Well: MW-4
Project Name: Custom Alloy Scrap Sales	Project Location: 2711 Union Street, Oakland, CA	Page 1 of 1
Driller: Soils Exploration Services	Type of Rig: CME 55	Size of Drill: 8" O.D. Hollow-Stem Augers
Logged By: Robert E. Kitay	Date Drilled: September 27, 1996	Checked By: David M. Schultz, P.E.

WATER AND WELL DATA	
Depth of Water First Encountered: 15'	Total Depth of Well Completed: 22.0'
Static Depth of Water in Well: 10'	Well Screen Type and Diameter: 2" Diameter PVC
Total Depth of Boring: 22'	Well Screen Slot Size: 0.020"
	Type and Size of Soil Sampler: 2.0" I.D. California Sampler



DESCRIPTION OF LITHOLOGY

standard classification, texture, relative moisture, density, stiffness, odor-staining, USCS designation.

Concrete

Clayey SILT (MH); olive; medium stiff; damp; 60% silt; 40% clay; high plasticity; very low estimated K; moderate (hydrocarbon?) odor

Silty CLAY (CH); yellow brown; medium stiff; damp; 85% clay; 15% silt; high plasticity; very low estimated K; no odor; moist at 10'

Static Groundwater Level

Groundwater First Encountered

End of boring at 22.0'

AQUA SCIENCE ENGINEERS, INC.

APPENDIX C

Area Well Survey

COUNTY OF ALAMEDA
PUBLIC WORKS AGENCY
951 Turner Court, Hayward, CA 94545
(510) 670-5543

DATE: 1-7-98

No of Pages (including cover): 3

FAX TRANSMITTAL

TO	Robert Kitay
	FAX:

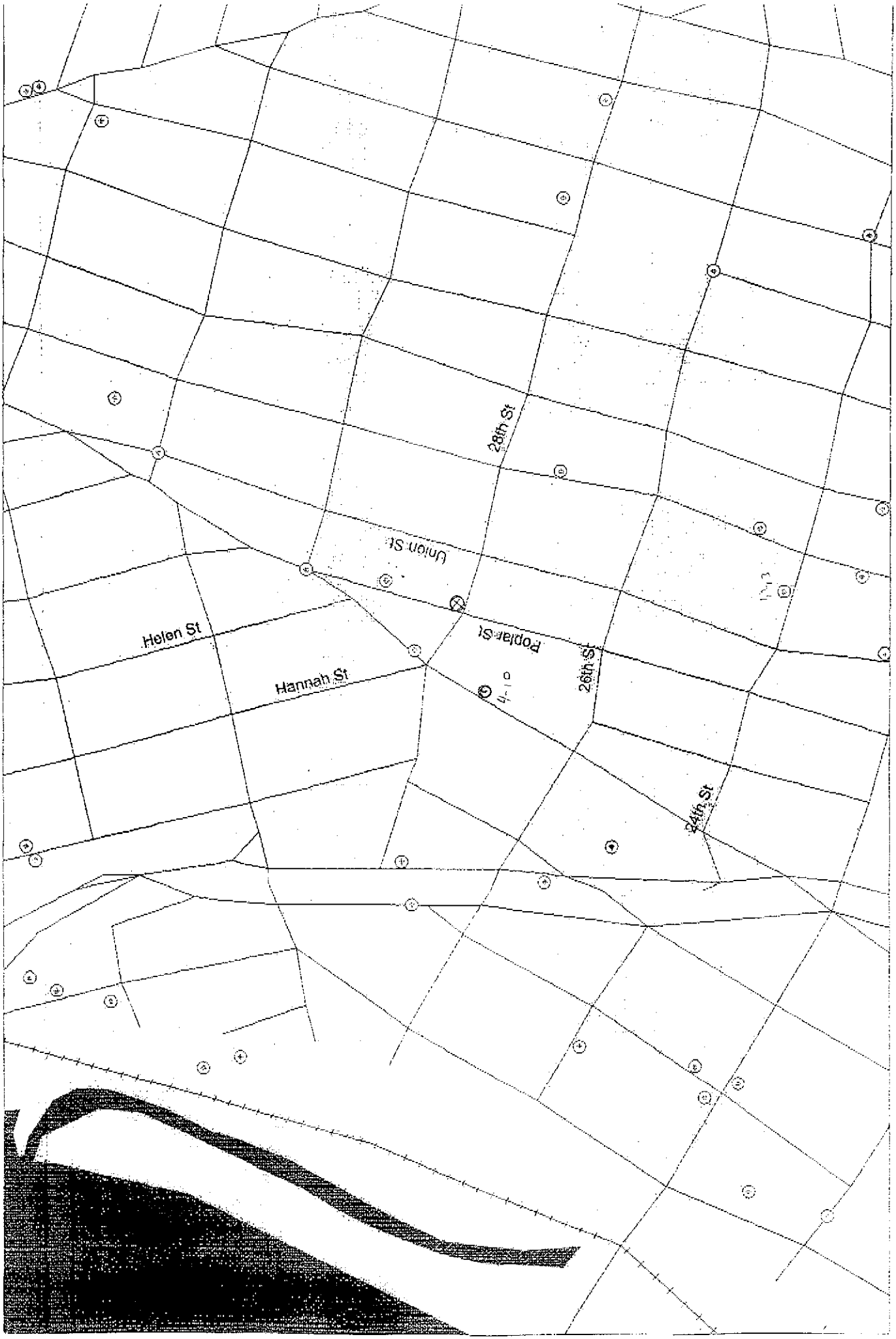
FROM	Andreas Godfrey
	FAX:

Should you have problems receiving this FAX transmittal, please call: _____

SUBJECT: Wells

TRANSMITTING THE FOLLOWING:

Tr	Section	Address	Owner	City	Drilldate	Elevation	Totaldepth	Waterdepth	Diameter	Use	Yield
1S/4W	27A 4	1218 24th Street	Nrthwstrn Venetian Blind.	OAK	3/89	0	25	11	2	MON	0
1S/4W	27A 5	1218 24th Street	Nrthwstrn Venetian Blind	OAK	10/89	0	26	14	2	MON	0
1S/4W	27A 6	1218 24th Street	Nrthwstrn Venetian Blind	OAK	10/89	0	26	14	2	MON	0
1S/4W	27B 1	2730 Peralta Street	CASS	OAK	05/90	0	20	10	0	MON	0
1S/4W	27B 2	2730 Peralta Street	CASS	OAK	05/90	0	20	12	0	MON	0
1S/4W	27B 3	2730 Peralta Street	CASS	OAK	05/90	0	20	12	0	MON	0
1S/4W	22R	2730 Peralta Street	Custom Alloy Scrap Sales	OAK	2/91	0	65	20	0	DES	0
1S/4W	22R 1	2730 Peralta St	Custom Alloy Scrap Sales	OAK	10/90	0	12	11	8	BOR*	0
1S/4W	22R 2	2730 PERALTA ST	CUSTOM ALLOY SCRAP SALES	OAK	10/90	0	19	10	4	MON	0
1S/4W	22R 3	2730 PERALTA ST	CUSTOM ALLOY SCRAP SALES	OAK	10/90	0	18	12	4	MON	0
1S/4W	22Q 5	30th & Peralta Street	PG&E	OAK	12/90	0	120	0	2	CAT	0
1S/4W	27A 1	2736 MAGNOLIA	HOLLY MEAT	OAK	/26	0	135	23	0	ABN	0
1S/4W	27A 2	2452 MAGNOLIA	BONTA COLLINS	OAK	09/89	0	21	6	2	MON	0
1S/4W	27A 3	1218 24TH ST	TIM WILLIAMS	OAK	03/89	0	30	11	2	MON	0
1S/4W	22Q 8	2717 Peralta St	C. E. Toland & Son MW-1	OAK	3/90	0	25	0	4	MON	0
1S/4W	22Q 9	2717 Peralta St	C. E. Toland & Son MW-2	OAK	3/90	0	25	0	4	MON	0
1S/4W	22Q10	2717 Peralta St	C. E. Toland & Son MW-3	OAK	3/90	0	25	0	4	MON	0
1S/4W	22Q11	2850 Poplar St	Linford Construction MW1	OAK	4/93	0	22	5	2	MON	0
1S/4W	22Q12	2850 Poplar St	Linford Construction MW2	OAK	4/93	0	20	6	2	MON	0
1S/4W	22Q13	2850 Poplar St	Linford Construction MW3	OAK	4/93	0	20	6	2	MON	0


28th St
Union St
Helen St
Hannah St
Poplar St
26th St
24th St

APPENDIX D

RBCA Worksheets
for On-Site Scenarios

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: Custom Alloy Scrap Sales Job Identification: 2971
Site Location: 2711 Union Street, Oakland, CA Date Completed: 1/7/98
Completed By: ASE NORTH

Software: GSI RBCA Spreadsheet
Version: 1.0.1

NOTE: values which differ from Tier 1 default values are shown in bold italics and underlined.

Exposure Parameter	Definition (Units)	Residential Adult	Residential (1-6yrs)	Residential (1-16 yrs)	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
ATc	Averaging time for carcinogens (yr)	70				
ATn	Averaging time for non-carcinogens (yr)	30	6	16	25	1
BW	Body Weight (kg)	70	15	35	70	
ED	Exposure Duration (yr)	30	6	16	25	1
t	Averaging time for vapor flux (yr)	30			25	1
EF	Exposure Frequency (days/yr)	350			250	180
EF.Derm	Exposure Frequency for dermal exposure	350			250	
IRgw	Ingestion Rate of Water (L/day)	2			1	
IRs	Ingestion Rate of Soil (mg/day)	100	200		50	100
IRadj	Adjusted soil ing. rate (mg-yr/kg-d)	1.1E+02			9.4E+01	
IRa.in	Inhalation rate indoor (m^3/day)	15			20	
IRa.out	Inhalation rate outdoor (m^3/day)	20			20	10
SA	Skin surface area (dermal) (cm^2)	5.8E+03		2.0E+03	5.8E+03	5.8E+03
SAadj	Adjusted dermal area (cm^2-yr/kg)	2.1E+03			1.7E+03	
M	Soil to Skin adherence factor	1				
AAFs	Age adjustment on soil ingestion	FALSE			FALSE	
AAFd	Age adjustment on skin surface area	FALSE			FALSE	
tox	Use EPA tox data for air (or PEL based)?	TRUE				
gwMCL?	Use MCL as exposure limit in groundwater?	FALSE				

Matrix of Exposed Persons to Complete Exposure Pathways		Residential	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
Outdoor Air Pathways:				
SS.v	Volatiles and Particulates from Surface Soils	FALSE	TRUE	TRUE
S.v	Volatilization from Subsurface Soils	FALSE	TRUE	
GW.v	Volatilization from Groundwater	FALSE	TRUE	
Indoor Air Pathways:				
S.b	Vapors from Subsurface Soils	FALSE	TRUE	
GW.b	Vapors from Groundwater	FALSE	TRUE	
Soil Pathways:				
SS.d	Direct Ingestion and Dermal Contact	FALSE	TRUE	TRUE
Groundwater Pathways:				
GW.i	Groundwater Ingestion	FALSE	FALSE	
S.l	Leaching to Groundwater from all Soils	FALSE	FALSE	

Matrix of Receptor Distance and Location On- or Off-Site		Residential Distance	Residential On-Site	Commercial/Industrial Distance	Commercial/Industrial On-Site
GW	Groundwater receptor (cm)		TRUE		TRUE
S	Inhalation receptor (cm)		TRUE		TRUE

Matrix of Target Risks		Individual	Cumulative
TRab	Target Risk (class A&B carcinogens)	***1.0E-05***	
TRc	Target Risk (class C carcinogens)	1.0E-05	
THQ	Target Hazard Quotient	1.0E+00	
Opt	Calculation Option (1, 2, or 3)	1	
Tier	RBCA Tier	2	

Surface Parameters	Definition (Units)	Residential	Constrctn
A	Contaminated soil area (cm^2)	***3.6E+07***	1.0E+06
W	Length of affect. soil parallel to wind (cm)	***5.8E+03***	1.0E+03
W.gw	Length of affect. soil parallel to groundwater (cm)	1.5E+03	
Uair	Ambient air velocity in mixing zone (cm/s)	2.3E+02	
delta	Air mixing zone height (cm)	2.0E+02	
Lss	Thickness of affected surface soils (cm)		
Pe	Particulate areal emission rate (g/cm^2/s)	6.9E-14	

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	2.0E+02
I	Groundwater infiltration rate (cm/yr)	3.0E+01
Ugw	Groundwater Darcy velocity (cm/yr)	2.5E+03
Ugw.tr	Groundwater seepage velocity (cm/yr)	6.6E+03
Ks	Saturated hydraulic conductivity(cm/s)	
grad	Groundwater gradient (cm/cm)	
Sw	Width of groundwater source zone (cm)	
Sd	Depth of groundwater source zone (cm)	
phi.eff	Effective porosity in water-bearing unit	3.8E-01
foc.sat	Fraction organic carbon in water-bearing unit	1.0E-03
BIO?	Is bioattenuation considered?	FALSE
BC	Biodegradation Capacity (mg/L)	

Soil	Definition (Units)	Value		
hc	Capillary zone thickness (cm)	5.0E+00		
hv	Vadose zone thickness (cm)	***2.3E+02***		
rho	Soil density (g/cm^3)	1.7		
foc	Fraction of organic carbon in vadose zone	0.01		
phi	Soil porosity in vadose zone	0.38		
Lgw	Depth to groundwater (cm)	***2.4E+02***		
Ls	Depth to top of affected subsurface soil (cm)	***6.1E+01***		
Lsubs	Thickness of affected subsurface soils (cm)	***1.8E+02***		
pH	Soil/groundwater pH	6.5		
		capillary	vadose	foundation
phi.w	Volumetric water content	0.342	0.12	0.12
phi.a	Volumetric air content	0.038	0.26	0.26

Building	Definition (Units)	Residential	Commercial
Lb	Building volume/area ratio (cm)	2.0E+02	3.0E+02
ER	Building air exchange rate (s^-1)	1.4E-04	2.3E-04
Lcrk	Foundation crack thickness (cm)	1.5E+01	
eta	Foundation crack fraction	0.01	

Transport Parameters	Definition (Units)	Residential	Commercial
Groundwater			
ax	Longitudinal dispersivity (cm)		
ay	Transverse dispersivity (cm)		
az	Vertical dispersivity (cm)		
Vapor			
dcy	Transverse dispersion coefficient (cm)		
dcz	Vertical dispersion coefficient (cm)		

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.1

Site Name: Custom Alloy Scrap Sales
Site Location: 2711 Union Street, Oakland, CA

Completed By: ASE NORTH
Date Completed: 1/7/1998

SURFACE SOIL SSTL VALUES (< 0 FT BGS)

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

o MCL exposure limit?
o PEL exposure limit?

Calculation Option: 1

CONSTITUENTS OF CONCERN		Representative Concentration	SSTL Results For Complete Exposure Pathways ("x" If Complete)								
			Soil Leaching to Groundwater			X Ingestion, Inhalation and Dermal Contact		X Construction Worker	Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Commercial: (on-site)	(mg/kg)	"Π" If yes	Only if "yes" left
71-43-2	Benzene	0.0E+0	NA	NA	NA	NA	3.3E+1	>Res	3.3E+1	o	<1
108-90-7	Chlorobenzene	0.0E+0	NA	NA	NA	NA	6.9E+2	9.5E+2	6.9E+2	o	<1
95-50-1	Dichlorobenzene (1,2) (-o)	0.0E+0	NA	NA	NA	NA	3.1E+3	>Res	3.1E+3	o	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0	NA	NA	NA	NA	>Res	>Res	>Res	o	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0	NA	NA	NA	NA	3.5E+3	>Res	3.5E+3	o	<1
75-35-4	dichloroethene, 1,1-	0.0E+0	NA	NA	NA	NA	NA	NA	>Res	o	<1
156-59-2	Dichloroethene, cis-1,2-	5.5E-2	NA	NA	NA	NA	>Res	>Res	>Res	o	<1
156-60-5	Dichloroethene,1,2-trans-	1.8E-2	NA	NA	NA	NA	>Res	>Res	>Res	o	<1
100-41-4	Ethylbenzene	9.2E-3	NA	NA	NA	NA	>Res	>Res	>Res	o	<1
86-73-7	Fluorene	4.8E-2	NA	NA	NA	NA	>Res	>Res	>Res	o	<1
1634-04-4	Methyl t-Butyl Ether	0.0E+0	NA	NA	NA	NA	1.7E+2	2.4E+2	1.7E+2	o	<1
127-18-4	Tetrachloroethene	0.0E+0	NA	NA	NA	NA	1.9E+1	>Res	1.9E+1	o	<1
108-88-3	Toluene	1.0E-2	NA	NA	NA	NA	>Res	>Res	>Res	o	<1
71-55-6	Trichloroethane, 1,1,1-	0.0E+0	NA	NA	NA	NA	3.1E+3	>Res	3.1E+3	o	<1
79-01-6	Trichloroethene	5.2E-2	NA	NA	NA	NA	8.8E+1	>Res	8.8E+1	o	<1
75-01-4	Vinyl chloride	0.0E+0	NA	NA	NA	NA	5.1E-1	1.7E+1	5.1E-1	o	<1
1330-20-7	Xylene (mixed isomers)	1.6E-2	NA	NA	NA	NA	>Res	>Res	>Res	o	<1

>Res indicates risk-based target concentration greater than constituent residual saturation value

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-477-BLX-264

RBCA SITE ASSESSMENT — Tier 2 Worksheet 9.2

Site Name: Custom Alloy Scrap Sales
Site Location: 2711 Union Street, Oakland, CA

Completed By: ASE NORTH
Date Completed: 1/7/1998

SUBSURFACE SOIL SSTL VALUES (> 0 FT BGS)

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

o MCL exposure limit?
o PEL exposure limit?

Calculation Option: 1

SSTL Results For Complete Exposure Pathways ("x" If Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	Soil Leaching to Groundwater			X Soil Volatilization to Indoor Air		X Soil Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential: (on-site)	Commercial: (on-site)	(mg/kg)	"n" If yes	Only If "yes" left
71-43-2	Benzene	0.0E+0	NA	NA	NA	NA	8.9E-1	NA	1.0E+2	8.9E-1	o	<1
108-90-7	Chlorobenzene	0.0E+0	NA	NA	NA	NA	1.0E+1	NA	6.0E+2	1.0E+1	o	<1
95-50-1	Dichlorobenzene (1,2) (-o)	0.0E+0	NA	NA	NA	NA	1.1E+3	NA	>Res	1.1E+3	o	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0	NA	NA	NA	NA	>Res	NA	>Res	>Res	o	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0	NA	NA	NA	NA	1.3E+2	NA	>Res	1.3E+2	o	<1
75-35-4	dichloroethene, 1,1-	3.9E-3	NA	NA	NA	NA	NA	NA	NA	>Res	o	<1
156-59-2	Dichloroethene, cis-1,2-	1.2E-3	NA	NA	NA	NA	NA	NA	NA	>Res	o	<1
156-60-5	Dichloroethene,1,2-trans-	6.5E-4	NA	NA	NA	NA	>Res	NA	>Res	>Res	o	<1
100-41-4	Ethylbenzene	1.2E-2	NA	NA	NA	NA	NA	NA	NA	>Res	o	<1
86-73-7	Fluorene	0.0E+0	NA	NA	NA	NA	7.9E+2	NA	>Res	7.9E+2	o	<1
1634-04-4	Methyl t-Butyl Ether	0.0E+0	NA	NA	NA	NA	1.3E+1	NA	>Res	1.3E+1	o	<1
127-18-4	Tetrachloroethene	7.0E-4	NA	NA	NA	NA	1.1E+2	NA	>Res	1.1E+2	o	<1
108-88-3	Toluene	0.0E+0	NA	NA	NA	NA	2.6E+2	NA	>Res	2.6E+2	o	<1
71-55-6	Trichloroethane, 1,1,1-	4.3E-3	NA	NA	NA	NA	4.3E+0	NA	>Res	4.3E+0	o	<1
79-01-6	Trichloroethene	0.0E+0	NA	NA	NA	NA	8.6E-2	NA	9.7E+0	8.6E-2	o	<1
75-01-4	Vinyl chloride	3.0E-3	NA	NA	NA	NA	>Res	NA	>Res	>Res	o	<1
1330-20-7	Xylene (mixed isomers)											

>Res indicates risk-based target concentration greater than constituent residual saturation value

Software: GSI RBCA Spreadsheet Serial: G-477-BLX-264
Version: 1.0.1

Site Name: Custom Alloy Scrap Sales
Site Location: 2711 Union Street, Oakland, CA

Completed By: ASE NORTH
Date Completed: 1/7/1998

GROUNDWATER SSTL VALUES

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

o MCL exposure limit?
o PEL exposure limit?

Calculation Option: 1

SSTL Results For Complete Exposure Pathways ("x" If Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	Groundwater Ingestion			X Groundwater Volatilization to Indoor Air		X Groundwater Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/L)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential (on-site)	Commercial: (on-site)	(mg/L	"Π" If yes	Only if "yes" left
71-43-2	Benzene	2.6E-4	NA	NA	NA	NA	7.3E-1	NA	4.6E+1	7.3E-1	o	<1
108-90-7	Chlorobenzene	1.7E-2	NA	NA	NA	NA	6.9E+0	NA	4.1E+2	6.9E+0	o	<1
95-50-1	Dichlorobenzene (1,2) (-o)	8.3E-3	NA	NA	NA	NA	8.8E+1	NA	>Sol	8.8E+1	o	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	7.6E-4	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	o	<1
75-34-3	Dichloroethane, 1,1-	1.0E-3	NA	NA	NA	NA	5.4E+1	NA	3.8E+3	5.4E+1	o	<1
75-35-4	dichloroethene, 1,1-	7.5E-4	NA	NA	NA	NA	NA	NA	NA	>Sol	o	<1
156-59-2	Dichloroethene, cis-1,2-	1.1E-1	NA	NA	NA	NA	NA	NA	NA	>Sol	o	<1
156-60-5	Dichloroethene,1,2-trans-	1.3E-2	NA	NA	NA	NA	NA	NA	NA	>Sol	o	<1
100-41-4	Ethylbenzene	0.0E+0	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	o	<1
86-73-7	Fluorene	0.0E+0	NA	NA	NA	NA	NA	NA	NA	>Sol	o	<1
1634-04-4	Methyl t-Butyl Ether	8.1E-3	NA	NA	NA	NA	3.6E+3	NA	>Sol	3.6E+3	o	<1
127-18-4	Tetrachloroethene	3.1E-1	NA	NA	NA	NA	3.1E+0	NA	>Sol	3.1E+0	o	<1
108-88-3	Toluene	5.2E-4	NA	NA	NA	NA	8.4E+1	NA	>Sol	8.4E+1	o	<1
71-55-6	Trichloroethane, 1,1,1-	1.0E-4	NA	NA	NA	NA	9.7E+1	NA	>Sol	9.7E+1	o	<1
79-01-6	Trichloroethene	6.4E-1	NA	NA	NA	NA	1.4E+0	NA	5.4E+1	1.4E+0	o	<1
75-01-4	Vinyl chloride	3.8E-2	NA	NA	NA	NA	5.1E-3	NA	3.9E-1	5.1E-3	Π	7.0E+00
1330-20-7	Xylene (mixed isomers)	8.5E-5	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	o	<1

>Sol indicates risk-based target concentration greater than constituent solubility

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-477-BLX-264

REPRESENTATIVE COC CONCENTRATIONS IN SOURCE MEDIA

(Complete the following table)

CONSTITUENT	Representative COC Concentration in Groundwater value (mg/L)	note	in Surface Soil value (mg/kg)	note	in Subsurface Soil value (mg/kg)	note
Benzene	2.6E-4					
Chlorobenzene	1.7E-2					
Dichlorobenzene (1,2) (-o)	8.3E-3					
Dichlorobenzene, (1,4) (-p)	7.6E-4					
Dichloroethane, 1,1-	1.0E-3					
dichloroethene, 1,1-	7.5E-4					
Dichloroethene, cis-1,2-	1.1E-1		5.5E-2		3.9E-3	
Dichloroethene,1,2-trans-	1.3E-2		1.8E-2		1.2E-3	
Ethylbenzene			9.2E-3		6.5E-4	
Fluorene			4.8E-2		1.2E-2	
Methyl t-Butyl Ether	8.1E-3					
Tetrachloroethene	3.1E-1					
Toluene	5.2E-4		1.0E-2		7.0E-4	
Trichloroethane, 1,1,1-	1.0E-4					
Trichloroethene	6.4E-1		5.2E-2		4.3E-3	
Vinyl chloride	3.8E-2					
Xylene (mixed isomers)	6.5E-5		1.6E-2		3.0E-3	

Site Name: Custom Alloy Scrap Sales
Site Location: 2711 Union Street, Oakland, CA

Completed By: ASE NORTH
Date Completed: 1/7/1998

RBCA CHEMICAL DATABASE

Physical Property Data

CAS Number	Constituent	type	Molecular Weight (g/mole) MW	ref	Diffusion Coefficients in air (cm2/s) Dair	ref	in water (cm2/s) Dwat	ref	log (Koc) or log(Kd) (@ 20 - 25 C) log(l/kg)	ref	Henry's Law Constant (@ 20 - 25 C) (atm-m3/mol)	(unitless)	ref	Vapor Pressure (@ 20 - 25 C) (mm Hg)	ref	Solubility (@ 20 - 25 C) (mg/L)	ref	acid pKa	base pKb	ref
71-43-2	Benzene	A	78.1	5	9.30E-02	A	1.10E-05	A	1.58	A	5.29E-03	2.20E-01	A	9.52E+01	4	1.75E+03	A			
108-90-7	Chlorobenzene	AC	112.6	4	7.30E-02	4	8.70E-06	4	2.46	4	3.93E-03	1.63E-01	4	1.18E+01	4	4.45E+02	4			
95-50-1	Dichlorobenzene (1,2) (-o)	AC	147	4	6.90E-02	4	7.90E-06	4	3.32	4	1.94E-03	8.07E-02	4	1.50E+00	4	1.50E+02	4			
106-46-7	Dichlorobenzene, (1,4) (-p)	AC	147	4	6.90E-02	4	7.90E-06	4	3.33	4	1.60E-03	6.65E-02	4	1.20E+00	4	1.45E+02	4			
75-34-3	Dichloroethane, 1,1-	C	98.96	4	7.42E-02	4	1.05E-05	4	1.76	4	1.54E-02	6.41E-01	4	5.91E+02	4	5.50E+03	5			
75-35-4	dichloroethene, 1,1-																			
156-59-2	Dichloroethene, cis-1,2-	C	96.936	4	7.36E-02	4	1.13E-05	4	1.38	8	3.19E-02	1.33E+00	4	2.00E+02	5	8.00E+02	5			
156-60-5	Dichloroethene,1,2-trans-	C	96.936	4	7.07E-02	4	1.19E-05	4	1.46	4	5.32E-03	2.21E-01	4	3.31E+02	4	6.00E+02	5			
100-41-4	Ethylbenzene	A	106.2	5	7.60E-02	A	8.50E-06	A	1.98	A	7.69E-03	3.20E-01	A	1.00E+01	4	1.52E+02	5			
86-73-7	Fluorene	PAH	166	4	3.63E-02	4	7.88E-06	4	3.86	4	1.17E-04	4.87E-03	4	1.70E-02	4	1.69E+00	5			
1634-04-4	Methyl t-Butyl Ether	O	88.146	5	7.92E-02	6	9.41E-05	7	1.08	A	5.77E-04	2.40E-02		2.49E+02		4.80E+04	A			
127-18-4	Tetrachloroethene	C	165.83	4	7.20E-02	4	8.20E-06	4	2.42	29	2.90E-02	1.21E+00	4	1.90E+01	4	1.43E+02	4			
108-88-3	Toluene	A	92.4	5	8.50E-02	A	9.40E-06	A	2.13	A	6.25E-03	2.60E-01	A	3.00E+01	4	5.15E+02	29			
71-55-6	Trichloroethane, 1,1,1-	C	133.4	4	7.80E-02	4	8.80E-06	4	2.45	4	1.72E-02	7.15E-01	4	1.23E+02	4	1.26E+03	4			
79-01-6	Trichloroethene	C	131.4	23	8.18E-02	6	1.05E-04	7	1.26	11	1.00E-02	4.17E-01	10	5.80E+01	23	1.00E+03	23			
75-01-4	Vinyl chloride	C	62.5	4	1.06E-01	4	1.23E-05	4	0.06	4	8.60E-02	3.58E+00	4	2.66E+03	4	2.54E+03	4			
1330-20-7	Xylene (mixed isomers)	A	106.2	5	7.20E-02	A	8.50E-06	A	2.38	A	6.97E-03	2.90E-01	A	7.00E+00	4	1.98E+02	5			

Site Name: Custom Alloy Scrap Sales Site Location: 2711 Union Street, Oakland, CA Completed By: ASE NORTH Date Completed: 1/7/1998

Software version: 1.0.1

CAS Number	Constituent	Reference Dose (mg/kg/day) Oral RfD_oral	ref	Inhalation RfD_inhal	ref	Slope Factors 1/(mg/kg/day) Oral SF_oral	ref	Inhalation SF_inhal	ref	EPA Weight of Evidence	Is Constituent Carcinogenic ?
71-43-2	Benzene	-		1.70E-03	R	2.90E-02	A	2.90E-02	A	A	TRUE
108-90-7	Chlorobenzene	2.00E-02	R	5.71E-03	R	-		-		D	FALSE
95-50-1	Dichlorobenzene (1,2) (-o)	9.00E-02	R	4.00E-02	R	-		-		D	FALSE
106-46-7	Dichlorobenzene, (1,4) (-p)	-		2.29E-01	R	2.40E-02	R	-		C	TRUE
75-34-3	Dichloroethane, 1,1-	1.00E-01	R	1.43E-01	R	-		-		C	FALSE
75-35-4	dichloroethene, 1,1-										FALSE
156-59-2	Dichloroethene, cis-1,2-	1.00E-02	R	-		-		-		D	FALSE
156-60-5	Dichloroethene,1,2-trans-	2.00E-02	R	-		-		-			FALSE
100-41-4	Ethylbenzene	1.00E-01	A	2.86E-01	A	-		-		D	FALSE
86-73-7	Fluorene	4.00E-02	A	-		-		-		D	FALSE
1634-04-4	Methyl t-Butyl Ether	5.00E-03	R	8.57E-01	R	-		-			FALSE
127-18-4	Tetrachloroethene	1.00E-02	R	-		5.20E-02	R	2.03E-03	R	C-B2	TRUE
108-88-3	Toluene	2.00E-01	A,R	1.14E-01	A,R	-		-		D	FALSE
71-55-6	Trichloroethane, 1,1,1-	9.00E-02	R	2.86E-01	R	-		-		D	FALSE
79-01-6	Trichloroethene	6.00E-03	R	-		1.10E-02	R	6.00E-03	R		TRUE
75-01-4	Vinyl chloride	-		-		1.90E+00	R	3.00E-01	R	A	TRUE
1330-20-7	Xylene (mixed isomers)	2.00E+00	A,R	2.00E+00	A	-		-		D	FALSE

Site Name: Custom Alloy Scrap Sales Site Location: 2711 Union Street, Oakland Completed By: ASE NORTH Date Completed: 1/7/1998

Software version: 1.0.1

RBCA CHEMICAL DATABASE

Miscellaneous Chemical Data

CAS Number	Constituent	Maximum Contaminant Level MCL (mg/L)	Maximum Contaminant Level reference	Permissible Exposure Limit PEL/TLV (mg/m3)	PEL/TLV ref	Relative Absorption Factors Oral	Relative Absorption Factors Dermal	Detection Limits Groundwater (mg/L)	Groundwater ref	Detection Limits Soil (mg/kg)	Soil ref	Half Life (First-Order Decay) (days) Saturated	Half Life (First-Order Decay) (days) Unsaturated	ref
71-43-2	Benzene	5.00E-03	52 FR 25690	3.20E+00	OSHA	1	0.5	0.002	C	0.005	S	720	720	H
108-90-7	Chlorobenzene	1.00E-01	56 FR 3526 (30 Jan 91)	4.60E+01	ACGIH	1	0.5	0.002	C	0.005	S	300	300	H
95-50-1	Dichlorobenzene (1,2) (-o)	6.00E-01	56 FR 3526 (30 Jan 91)	1.50E+02	ACGIH	1	0.5	0.002	C	0.66	S	360	360	H
106-46-7	Dichlorobenzene, (1,4) (-p)	7.50E-02	52 FR 25690 (08 Jul 87)	4.50E+02	OSHA	1	0.5	0.002	C	0.66	S	360	360	H
75-34-3	Dichloroethane, 1,1-			4.00E+02	OSHA	1	0.5	0.001	C	0.005	S	360	360	H
75-35-4	dichloroethene, 1,1-													
156-59-2	Dichloroethene, cis-1,2-	7.00E-02	56 FR 3526 (30 Jan 91)			1	0.5	0.001	C	0.005	S			
156-60-5	Dichloroethene,1,2-trans-	1.00E-01	56 FR 3526 (30 Jan 91)			1	0.5	0.001	C	0.005	S			
100-41-4	Ethylbenzene	7.00E-01	56 FR 3526 (30 Jan 91)	4.34E+02	ACGIH	1	0.5	0.002	C	0.005	S	228	228	H
86-73-7	Fluorene					1	0.05	0.01	C	0.66	S	120	120	H
1634-04-4	Methyl t-Butyl Ether			1.44E+02	ACGIH	1	0.5					360	180	H
127-18-4	Tetrachloroethene	5.00E-03	56 FR 3526 (30 Jan 91)	1.70E+02	ACGIH	1	0.5	0.0005	C			720	720	H
108-88-3	Toluene	1.00E+00	56 FR 3526 (30 Jan 91)	1.47E+02	ACGIH	1	0.5	0.002	C	0.005	S	28	28	H
71-55-6	Trichloroethane, 1,1,1-	2.00E-01	56 FR 30266 (01 Jul 91)	1.90E+03	OSHA	1	0.5	0.005	C	0.005	S	546	546	H
79-01-6	Trichloroethene	5.00E-03	52 FR 25690 (08 Jul 87)	2.69E+02	ACGIH	1	0.5	0.001	C	0.005	S	1653	1653	H
75-01-4	Vinyl chloride	2.00E-03	52 FR 25690 (08 Jul 87)	1.30E+01	ACGIH	1	0.5	0.002	C	0.01	S	2875	2875	H
1330-20-7	Xylene (mixed isomers)	1.00E+01	56 FR 3526 (30 Jan 91)	4.34E+02	ACGIH	1	0.5	0.005	C	0.005	S	360	360	H

Site Name: Custom Alloy Scrap Sales Site Location: 2711 Union Street, Oakland, CA Completed By: ASE NORTH Date Completed: 1/7/1998

Software version: 1.0.1

Site Name: Custom Alloy Scrap Sales | Site Location: 2711 Union Street, Oakland, CA | Completed By: ASE NORTH | Date Completed: 1/7/1998 | 1 OF 4

TIER 2 PATHWAY RISK CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS — (CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK: (2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Commercial		(3) Inhalation Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site Commercial		TOXIC EFFECTS: (5) Total Toxicant Intake Rate (mg/kg/day) On-Site Commercial		(6) Inhalation Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site Commercial	
Benzene	A	2.0E-9		2.9E-2	5.7E-11		5.5E-9		1.7E-3	3.2E-6	
Chlorobenzene	D						2.4E-7		5.7E-3	4.3E-5	
Dichlorobenzene (1,2) (-o)	D						7.5E-8		4.0E-2	1.9E-6	
Dichlorobenzene, (1,4) (-p)	C						6.4E-9		2.3E-1	2.8E-8	
Dichloroethane, 1,1-	C						3.7E-8		1.4E-1	2.6E-7	
dichloroethene, 1,1-											
Dichloroethene, cis-1,2-	D										
Dichloroethene,1,2-trans-											
Ethylbenzene	D						6.2E-9		2.9E-1	2.2E-8	
Fluorene	D										
Methyl t-Butyl Ether							1.1E-7		8.6E-1	1.3E-7	
Tetrachloroethene	C-B2	6.7E-6		2.0E-3	1.4E-8						
Toluene	D						1.8E-8		1.1E-1	1.5E-7	
Trichloroethane, 1,1,1-	D						4.1E-9		2.9E-1	1.4E-8	
Trichloroethene		2.0E-5		6.0E-3	1.2E-7						
Vinyl chloride	A	3.2E-6		3.0E-1	9.7E-7						
Xylene (mixed isomers)	D						3.0E-8		2.0E+0	1.5E-8	

Total Pathway Carcinogenic Risk = **1.1E-6** | **0.0E+0**

Total Pathway Hazard Index = **4.8E-5** | **0.0E+0**

Site Name: Custom Alloy Scrap Sales | Site Location: 2711 Union Street, Oakland, CA | Completed By: ASE NORTH | Date Completed: 1/7/1998 | 2 OF 4

TIER 2 PATHWAY RISK CALCULATION

INDOOR AIR EXPOSURE PATHWAYS (1) (CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK: (2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site	On-Site Commercial	(3) Inhalation Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site	On-Site Commercial	TOXIC EFFECTS: (5) Total Toxicant Intake Rate (mg/kg/day) On-Site	On-Site Commercial	(6) Inhalation Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site	On-Site Commercial
Benzene	A		1.2E-7	2.9E-2		3.6E-9		3.5E-7	1.7E-3		2.0E-4
Chlorobenzene	D							1.4E-5	5.7E-3		2.5E-3
Dichlorobenzene (1,2) (-o)	D							3.8E-6	4.0E-2		9.4E-5
Dichlorobenzene, (1,4) (-p)	C							3.0E-7	2.3E-1		1.3E-6
Dichloroethane, 1,1-	C							2.6E-6	1.4E-1		1.8E-5
dichloroethene, 1,1-											
Dichloroethene, cis-1,2-	D										
Dichloroethene,1,2-trans-											
Ethylbenzene	D							7.0E-7	2.9E-1		2.5E-6
Fluorene	D										
Methyl t-Butyl Ether								1.9E-6	8.6E-1		2.3E-6
Tetrachloroethene	C-B2		4.9E-4	2.0E-3		1.0E-6					
Toluene	D							1.5E-6	1.1E-1		1.3E-5
Trichloroethane, 1,1,1-	D							3.0E-7	2.9E-1		1.0E-6
Trichloroethene			7.6E-4	6.0E-3		4.6E-6					
Vinyl chloride	A		2.5E-4	3.0E-1		7.4E-5					
Xylene (mixed isomers)	D							3.3E-6	2.0E+0		1.7E-6

Total Pathway Carcinogenic Risk = **0.0E+0** **7.9E-5**

Total Pathway Hazard Index = **0.0E+0** **2.9E-3**

Site Name: Custom Alloy Scrap Sales | Site Location: 2711 Union Street, Oakland, CA | Completed By: ASE NORTH | Date Completed: 1/7/1998 | 3 OF 4

TIER 2 PATHWAY RISK CALCULATION

SOIL EXPOSURE PATHWAYS — Y (CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK: (2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Residential	(2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Commercial	(3) Oral Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site Residential	(4) Individual COC Risk (2) x (3) On-Site Commercial	TOXIC EFFECTS: (5) Total Toxicant Intake Rate (mg/kg/day) On-Site Residential	(5) Total Toxicant Intake Rate (mg/kg/day) On-Site Commercial	(6) Oral Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site Residential	(7) Individual COC Hazard Quotient (5) / (6) On-Site Commercial
Benzene	A		0.0E+0	2.9E-2		0.0E+0					
Chlorobenzene	D							0.0E+0	2.0E-2		0.0E+0
Dichlorobenzene (1,2) (-o)	D							0.0E+0	9.0E-2		0.0E+0
Dichlorobenzene, (1,4) (-p)	C		0.0E+0	2.4E-2		0.0E+0					
Dichloroethane, 1,1-	C							0.0E+0	1.0E-1		0.0E+0
dichloroethene, 1,1-											
Dichloroethene, cis-1,2-	D							1.6E-6	1.0E-2		1.6E-4
Dichloroethene,1,2-trans-								5.2E-7	2.0E-2		2.6E-5
Ethylbenzene	D							2.7E-7	1.0E-1		2.7E-6
Fluorene	D							1.6E-7	4.0E-2		4.0E-6
Methyl t-Butyl Ether								0.0E+0	5.0E-3		0.0E+0
Tetrachloroethene	C-B2		0.0E+0	5.2E-2		0.0E+0		0.0E+0	1.0E-2		0.0E+0
Toluene	D							2.9E-7	2.0E-1		1.4E-6
Trichloroethane, 1,1,1-	D							0.0E+0	9.0E-2		0.0E+0
Trichloroethene			5.4E-7	1.1E-2		5.9E-9		1.5E-6	6.0E-3		2.5E-4
Vinyl chloride	A		0.0E+0	1.9E+0		0.0E+0					
Xylene (mixed isomers)	D							4.6E-7	2.0E+0		2.3E-7
Total Pathway Carcinogenic Risk =					**0.0E+0**	**5.9E-9**	***Total Pathway Hazard Index =***			**0.0E+0**	**4.4E-4**

Site Name: Custom Alloy Scrap Sales | Site Location: 2711 Union Street, Oakland, CA | Completed By: ASE NORTH | Date Completed: 1/7/1998 | 4 OF 4

TIER 2 PATHWAY RISK CALCULATION

GROUNDWATER EXPOSURE PATHWAYS — 0 (CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK: (2) Total Carcinogenic Intake Rate (mg/kg/day)		(3) Oral Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3)		TOXIC EFFECTS: (5) Total Toxicant Intake Rate (mg/kg/day)		(6) Oral Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6)	
Benzene	A			2.9E-2							
Chlorobenzene	D								2.0E-2		
Dichlorobenzene (1,2) (-o)	D								9.0E-2		
Dichlorobenzene, (1,4) (-p)	C			2.4E-2							
Dichloroethane, 1,1-	C								1.0E-1		
dichloroethene, 1,1-											
Dichloroethene, cis-1,2-	D								1.0E-2		
Dichloroethene,1,2-trans-									2.0E-2		
Ethylbenzene	D								1.0E-1		
Fluorene	D								4.0E-2		
Methyl t-Butyl Ether									5.0E-3		
Tetrachloroethene	C-B2			5.2E-2					1.0E-2		
Toluene	D								2.0E-1		
Trichloroethane, 1,1,1-	D								9.0E-2		
Trichloroethene				1.1E-2					6.0E-3		
Vinyl chloride	A			1.9E+0							
Xylene (mixed isomers)	D								2.0E+0		

Total Pathway Carcinogenic Risk = 0.0E+0 | 0.0E+0

Total Pathway Hazard Index = 0.0E+0 | 0.0E+0

Site Name: Custom Alloy Scrap Sales | Site Location: 2711 Union Street, Oakland, CA | Completed By: ASE NORTH | Date Completed: 1/7/1998 | 1 OF 9

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS — Π (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS: VAPOR AND DUST INHALATION

Constituents of Concern	Exposure Concentration 1) Source Medium: Surface Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor: On-Site Commercial		3) Exposure Medium: Outdoor Air: POE Conc. (mg/m^3) (1) / (2) On-Site Commercial		4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m^3/kg-day) On-Site Commercial		5) Average Daily Intake Rate (mg/kg-day) (3) X (4) On-Site Commercial	
Benzene	0.0E+0	1.1E+11		0.0E+0		7.0E-2		0.0E+0	
Chlorobenzene	0.0E+0	1.1E+11		0.0E+0		2.0E-1		0.0E+0	
Dichlorobenzene (1,2) (-o)	0.0E+0	1.1E+11		0.0E+0		2.0E-1		0.0E+0	
Dichlorobenzene, (1,4) (-p)	0.0E+0	1.1E+11		0.0E+0		2.0E-1		0.0E+0	
Dichloroethane, 1,1-	0.0E+0	1.1E+11		0.0E+0		2.0E-1		0.0E+0	
dichloroethene, 1,1-	0.0E+0	1.1E+11		0.0E+0		2.0E-1		0.0E+0	
Dichloroethene, cis-1,2-	5.5E-2	1.1E+11		4.9E-13		2.0E-1		9.6E-14	
Dichloroethene,1,2-trans-	1.8E-2	1.1E+11		1.6E-13		2.0E-1		3.1E-14	
Ethylbenzene	9.2E-3	1.1E+11		8.2E-14		2.0E-1		1.6E-14	
Fluorene	4.8E-2	1.1E+11		4.3E-13		2.0E-1		8.3E-14	
Methyl t-Butyl Ether	0.0E+0	1.1E+11		0.0E+0		2.0E-1		0.0E+0	
Tetrachloroethene	0.0E+0	1.1E+11		0.0E+0		7.0E-2		0.0E+0	
Toluene	1.0E-2	1.1E+11		8.9E-14		2.0E-1		1.7E-14	
Trichloroethane, 1,1,1-	0.0E+0	1.1E+11		0.0E+0		2.0E-1		0.0E+0	
Trichloroethene	5.2E-2	1.1E+11		4.6E-13		7.0E-2		3.2E-14	
Vinyl chloride	0.0E+0	1.1E+11		0.0E+0		7.0E-2		0.0E+0	
Xylene (mixed isomers)	1.6E-2	1.1E+11		1.4E-13		2.0E-1		2.8E-14	

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: Custom Alloy Scrap Sales | Site Location: 2711 Union Street, Oakland, CA | Completed By: ASE NORTH | Date Completed: 1/7/1998 | 2 OF 9

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS — D (CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium: Subsurface Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor: On-Site Commercial		3) Exposure Medium: Outdoor Air: POE Conc. (mg/m^3) (1) / (2): On-Site Commercial		4) Exposure Multiplier: (IRxEFxED)/(BWxAT) (m^3/kg-day): On-Site Commercial		5) Average Daily Intake Rate: (mg/kg-day) (3) X (4): On-Site Commercial	
Benzene	0.0E+0	2.0E+4		0.0E+0		7.0E-2		0.0E+0	
Chlorobenzene	0.0E+0	2.0E+4		0.0E+0		2.0E-1		0.0E+0	
Dichlorobenzene (1,2) (-o)	0.0E+0	2.3E+4		0.0E+0		2.0E-1		0.0E+0	
Dichlorobenzene, (1,4) (-p)	0.0E+0	2.8E+4		0.0E+0		2.0E-1		0.0E+0	
Dichloroethane, 1,1-	0.0E+0	2.0E+4		0.0E+0		2.0E-1		0.0E+0	
dichloroethene, 1,1-	0.0E+0	NA		NA		2.0E-1		NA	
Dichloroethene, cis-1,2-	3.9E-3	2.0E+4		1.9E-7		2.0E-1		3.7E-8	
Dichloroethene,1,2-trans-	1.2E-3	2.0E+4		5.9E-8		2.0E-1		1.2E-8	
Ethylbenzene	6.5E-4	2.0E+4		3.2E-8		2.0E-1		6.2E-9	
Fluorene	1.2E-2	2.5E+6		4.8E-9		2.0E-1		9.5E-10	
Methyl t-Butyl Ether	0.0E+0	2.0E+4		0.0E+0		2.0E-1		0.0E+0	
Tetrachloroethene	0.0E+0	2.0E+4		0.0E+0		7.0E-2		0.0E+0	
Toluene	7.0E-4	2.0E+4		3.4E-8		2.0E-1		6.7E-9	
Trichloroethane, 1,1,1-	0.0E+0	2.0E+4		0.0E+0		2.0E-1		0.0E+0	
Trichloroethene	4.3E-3	2.0E+4		2.1E-7		7.0E-2		1.5E-8	
Vinyl chloride	0.0E+0	2.0E+4		0.0E+0		7.0E-2		0.0E+0	
Xylene (mixed isomers)	3.0E-3	2.0E+4		1.5E-7		2.0E-1		2.9E-8	

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequencey (days/yr); ET = Exposure time (hrs/day); IR = Inhalation rate (m^3/day); POE = Point of exposure; SA = Skin exposue area (cm^2/day)

Site Name: Custom Alloy Scrap Sales | Site Location: 2711 Union Street, Oakland, CA | Completed By: ASE NORTH | Date Completed: 1/7/1998 | 3 OF 9

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS — n (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium: Groundwater Conc. (mg/L)	2) NAF Value (m^3/L) Receptor: On-Site Commercial		3) Exposure Medium: Outdoor Air: POE Conc. (mg/m^3) (1) / (2): On-Site Commercial		4) Exposure Multiplier: (IRxEFxED)/(BWxAT) (m^3/kg-day): On-Site Commercial		5) Average Daily Intake Rate: (mg/kg-day) (3) X (4): On-Site Commercial		TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from surface, subsurface & groundwater routes.): On-Site Commercial	
Benzene	2.6E-4	9.3E+3		2.8E-8		7.0E-2		2.0E-9		2.0E-9	
Chlorobenzene	1.7E-2	1.4E+4		1.2E-6		2.0E-1		2.4E-7		2.4E-7	
Dichlorobenzene (1,2) (-o)	8.3E-3	2.1E+4		3.9E-7		2.0E-1		7.5E-8		7.5E-8	
Dichlorobenzene, (1,4) (-p)	7.6E-4	2.3E+4		3.3E-8		2.0E-1		6.4E-9		6.4E-9	
Dichloroethane, 1,1-	1.0E-3	5.2E+3		1.9E-7		2.0E-1		3.7E-8		3.7E-8	
dichloroethene, 1,1-	7.5E-4	NA		NA		2.0E-1		NA		0.0E+0	
Dichloroethene, cis-1,2-	1.1E-1	2.9E+3		3.9E-5		2.0E-1		7.5E-6		7.6E-6	
Dichloroethene,1,2-trans-	1.3E-2	1.0E+4		1.3E-6		2.0E-1		2.5E-7		2.6E-7	
Ethylbenzene	0.0E+0	9.1E+3		0.0E+0		2.0E-1		0.0E+0		6.2E-9	
Fluorene	0.0E+0	1.6E+5		0.0E+0		2.0E-1		0.0E+0		9.5E-10	
Methyl t-Butyl Ether	8.1E-3	1.4E+4		5.7E-7		2.0E-1		1.1E-7		1.1E-7	
Tetrachloroethene	3.1E-1	3.3E+3		9.5E-5		7.0E-2		6.7E-6		6.7E-6	
Toluene	5.2E-4	9.3E+3		5.6E-8		2.0E-1		1.1E-8		1.8E-8	
Trichloroethane, 1,1,1-	1.0E-4	4.8E+3		2.1E-8		2.0E-1		4.1E-9		4.1E-9	
Trichloroethene	6.4E-1	2.3E+3		2.8E-4		7.0E-2		2.0E-5		2.0E-5	
Vinyl chloride	3.8E-2	8.2E+2		4.6E-5		7.0E-2		3.2E-6		3.2E-6	
Xylene (mixed isomers)	6.5E-5	1.0E+4		6.5E-9		2.0E-1		1.3E-9		3.0E-8	

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: Custom Alloy Scrap Sales | Site Location: 2711 Union Street, Oakland, CA | Completed By: ASE NORTH | Date Completed: 1/7/1998 | 4 OF 9

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS — Π (CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS:
VAPOR INTRUSION TO BUILDINGS

Constituents of Concern	Exposure Concentration: 1) Source Medium — Subsurface Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor		3) Exposure Medium — Indoor Air: POE Conc. (mg/m^3) (1) / (2)		4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m^3/kg-day)		5) Average Daily Intake Rate (mg/kg-day) (3) X (4)	
			On-Site Commercial		On-Site Commercial		On-Site Commercial		On-Site Commercial
Benzene	0.0E+0		1.8E+2		0.0E+0		7.0E-2		0.0E+0
Chlorobenzene	0.0E+0		3.4E+2		0.0E+0		2.0E-1		0.0E+0
Dichlorobenzene (1,2) (-o)	0.0E+0		5.2E+3		0.0E+0		2.0E-1		0.0E+0
Dichlorobenzene, (1,4) (-p)	0.0E+0		6.5E+3		0.0E+0		2.0E-1		0.0E+0
Dichloroethane, 1,1-	0.0E+0		1.8E+2		0.0E+0		2.0E-1		0.0E+0
dichloroethene, 1,1-	0.0E+0		NA		NA		2.0E-1		NA
Dichloroethene, cis-1,2-	3.9E-3		1.8E+2		2.2E-5		2.0E-1		4.2E-6
Dichloroethene,1,2-trans-	1.2E-3		1.8E+2		6.6E-6		2.0E-1		1.3E-6
Ethylbenzene	6.5E-4		1.8E+2		3.6E-6		2.0E-1		7.0E-7
Fluorene	1.2E-2		5.6E+5		2.1E-8		2.0E-1		4.2E-9
Methyl t-Butyl Ether	0.0E+0		1.8E+2		0.0E+0		2.0E-1		0.0E+0
Tetrachloroethene	0.0E+0		1.8E+2		0.0E+0		7.0E-2		0.0E+0
Toluene	7.0E-4		1.8E+2		3.9E-6		2.0E-1		7.6E-7
Trichloroethane, 1,1,1-	0.0E+0		1.8E+2		0.0E+0		2.0E-1		0.0E+0
Trichloroethene	4.3E-3		1.8E+2		2.4E-5		7.0E-2		1.7E-6
Vinyl chloride	0.0E+0		1.8E+2		0.0E+0		7.0E-2		0.0E+0
Xylene (mixed isomers)	3.0E-3		1.8E+2		1.7E-5		2.0E-1		3.2E-6

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS — (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER:
VAPOR INTRUSION TO BUILDINGS

Constituents of Concern	Exposure Concentration: 1) Source Medium — Groundwater Conc. (mg/L)	2) NAF Value (m^3/L) Receptor — On-Site Commercial	3) Exposure Medium — Indoor Air: POE Conc. (mg/m^3) (1) / (2) — On-Site Commercial	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m^3/kg-day) — On-Site Commercial	5) Average Daily Intake Rate (mg/kg-day) (3) X (4) — On-Site Commercial	TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from subsurface & groundwater routes.) — On-Site Commercial
Benzene	2.6E-4	1.5E+2	1.8E-6	7.0E-2	1.2E-7	1.2E-7
Chlorobenzene	1.7E-2	2.4E+2	7.4E-5	2.0E-1	1.4E-5	1.4E-5
Dichlorobenzene (1,2) (-o)	8.3E-3	4.3E+2	1.9E-5	2.0E-1	3.8E-6	3.8E-6
Dichlorobenzene, (1,4) (-p)	7.6E-4	5.0E+2	1.5E-6	2.0E-1	3.0E-7	3.0E-7
Dichloroethane, 1,1-	1.0E-3	7.4E+1	1.3E-5	2.0E-1	2.6E-6	2.6E-6
dichloroethene, 1,1-	7.5E-4	NA	NA	2.0E-1	NA	0.0E+0
Dichloroethene, cis-1,2-	1.1E-1	3.9E+1	2.8E-3	2.0E-1	5.5E-4	5.6E-4
Dichloroethene,1,2-trans-	1.3E-2	1.8E+2	7.4E-5	2.0E-1	1.5E-5	1.6E-5
Ethylbenzene	0.0E+0	1.3E+2	0.0E+0	2.0E-1	0.0E+0	7.0E-7
Fluorene	0.0E+0	8.9E+3	0.0E+0	2.0E-1	0.0E+0	4.2E-9
Methyl t-Butyl Ether	8.1E-3	8.2E+2	9.9E-6	2.0E-1	1.9E-6	1.9E-6
Tetrachloroethene	3.1E-1	4.5E+1	7.0E-3	7.0E-2	4.9E-4	4.9E-4
Toluene	5.2E-4	1.4E+2	3.6E-6	2.0E-1	7.1E-7	1.5E-6
Trichloroethane, 1,1,1-	1.0E-4	6.6E+1	1.5E-6	2.0E-1	3.0E-7	3.0E-7
Trichloroethene	6.4E-1	5.9E+1	1.1E-2	7.0E-2	7.6E-4	7.6E-4
Vinyl chloride	3.8E-2	1.1E+1	3.5E-3	7.0E-2	2.5E-4	2.5E-4
Xylene (mixed isomers)	6.5E-5	1.5E+2	4.3E-7	2.0E-1	8.3E-8	3.3E-6

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: Custom Alloy Scrap S Site Location: 2711 Union Street, Oakland, CA Completed By: ASE NORT Date Completed: 1/7/1998

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAYS n (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS:
DERMAL CONTACT

	Exposure Concentration	2) Exposure Multiplier (SAxAFxABSxCFxEFxED)/(BWxAT) (kg/kg-day)		3) Average Daily Intake Rate (mg/kg-day) (1) x (2)	
Constituents of Concern	1) Source Medium: Surface Soil Conc. (mg/kg)	On-Site Residential	On-Site Commercial	On-Site Residential	On-Site Commercial
Benzene	0.0E+0		1.0E-5		0.0E+0
Chlorobenzene	0.0E+0		2.8E-5		0.0E+0
Dichlorobenzene (1,2) (-o)	0.0E+0		2.8E-5		0.0E+0
Dichlorobenzene, (1,4) (-p)	0.0E+0		1.0E-5		0.0E+0
Dichloroethane, 1,1-	0.0E+0		2.8E-5		0.0E+0
dichloroethene, 1,1-	0.0E+0		0.0E+0		0.0E+0
Dichloroethene, cis-1,2-	5.5E-2		2.8E-5		1.6E-6
Dichloroethene,1,2-trans-	1.8E-2		2.8E-5		5.1E-7
Ethylbenzene	9.2E-3		2.8E-5		2.6E-7
Fluorene	4.8E-2		2.8E-6		1.4E-7
Methyl t-Butyl Ether	0.0E+0		2.8E-5		0.0E+0
Tetrachloroethene	0.0E+0		1.0E-5		0.0E+0
Toluene	1.0E-2		2.8E-5		2.8E-7
Trichloroethane, 1,1,1-	0.0E+0		2.8E-5		0.0E+0
Trichloroethene	5.2E-2		1.0E-5		5.3E-7
Vinyl chloride	0.0E+0		1.0E-5		0.0E+0
Xylene (mixed isomers)	1.6E-2		2.8E-5		4.5E-7

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequencey (days/y; ET = Exposure time (hrs/day); IR = Intake rate (mg/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

Site Name: Custom Alloy Scrap Sale Site Location: 2711 Union Street, Oakland, CA Completed By: ASE NORTH Date Completed: 1/7/1998

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAYS — Π (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS:

INGESTION

Constituents of Concern	Exposure Concentration: 1) Source Medium — Surface Soil Conc. (mg/kg)	2) Exposure Multiplier (IRxCFxEFxED)/(BWxAT) (kg/kg-day) — On-Site Residential	2) Exposure Multiplier — On-Site Commercial	3) Average Daily Intake Rate (mg/kg-day) (1) x (2) — On-Site Residential	3) Average Daily Intake Rate — On-Site Commercial	TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from dermal & ingestion routes.) — On-Site Residential	TOTAL PATHWAY INTAKE — On-Site Commercial
Benzene	0.0E+0		1.7E-7		0.0E+0		0.0E+0
Chlorobenzene	0.0E+0		4.9E-7		0.0E+0		0.0E+0
Dichlorobenzene (1,2) (-o)	0.0E+0		4.9E-7		0.0E+0		0.0E+0
Dichlorobenzene, (1,4) (-p)	0.0E+0		1.7E-7		0.0E+0		0.0E+0
Dichloroethane, 1,1-	0.0E+0		4.9E-7		0.0E+0		0.0E+0
dichloroethene, 1,1-	0.0E+0		0.0E+0		0.0E+0		0.0E+0
Dichloroethene, cis-1,2-	5.5E-2		4.9E-7		2.7E-8		1.6E-6
Dichloroethene,1,2-trans-	1.8E-2		4.9E-7		8.8E-9		5.2E-7
Ethylbenzene	9.2E-3		4.9E-7		4.5E-9		2.7E-7
Fluorene	4.8E-2		4.9E-7		2.3E-8		1.6E-7
Methyl t-Butyl Ether	0.0E+0		4.9E-7		0.0E+0		0.0E+0
Tetrachloroethene	0.0E+0		1.7E-7		0.0E+0		0.0E+0
Toluene	1.0E-2		4.9E-7		4.9E-9		2.9E-7
Trichloroethane, 1,1,1-	0.0E+0		4.9E-7		0.0E+0		0.0E+0
Trichloroethene	5.2E-2		1.7E-7		9.1E-9		5.4E-7
Vinyl chloride	0.0E+0		1.7E-7		0.0E+0		0.0E+0
Xylene (mixed isomers)	1.6E-2		4.9E-7		7.8E-9		4.6E-7

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequency (days/yr)
ET = Exposure time (hrs/day)
IR = Intake rate (mg/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: Custom Alloy Scrap Sale Site Location: 2711 Union Street, Oakland, CA Completed By: ASE NORTH Date Completed: 1/7/1998

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS — 0 (CHECKED IF PATHWAY IS ACTIVE)

SOIL: LEACHING TO GROUNDWATER/ GROUNDWATER INGESTION

Constituents of Concern	Exposure Concentration 1) Source Medium: Soil Concentration (mg/kg)	2) NAF Value (L/kg) Receptor		3) Exposure Medium: Groundwater: POE Conc. (mg/L) (1)/(2)		4) Exposure Multiplier: (IRxEFxED)/(BWxAT) (L/kg-day)		5) Average Daily Intake Rate: (mg/kg-day) (3) x (4)	
Benzene	0.0E+0								
Chlorobenzene	0.0E+0								
Dichlorobenzene (1,2) (-o)	0.0E+0								
Dichlorobenzene, (1,4) (-p)	0.0E+0								
Dichloroethane, 1,1-	0.0E+0								
dichloroethene, 1,1-	0.0E+0								
Dichloroethene, cis-1,2-	5.5E-2								
Dichloroethene,1,2-trans-	1.8E-2								
Ethylbenzene	9.2E-3								
Fluorene	4.8E-2								
Methyl t-Butyl Ether	0.0E+0								
Tetrachloroethene	0.0E+0								
Toluene	1.0E-2								
Trichloroethane, 1,1,1-	0.0E+0								
Trichloroethene	5.2E-2								
Vinyl chloride	0.0E+0								
Xylene (mixed isomers)	1.6E-2								

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body Weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequencey (days/yr); ET = Exposure time (hrs/day); IR = Intake rate (L/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

Site Name: Custom Alloy Scrap Sale Site Location: 2711 Union Street, Oakland, CA Completed By: ASE NORTH Date Completed: 1/7/1998

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS — **O (CHECKED IF PATHWAY IS ACTIVE)**

GROUNDWATER: INGESTION

Constituents of Concern	Exposure Concentration: 1) Source Medium — Groundwater Conc. (mg/L)	2) NAF Value (dim) — Receptor		3) Exposure Medium — Groundwater: POE Conc. (mg/L) (1)/(2)		4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day)		5) Average Daily Intake Rate (mg/kg-day) (3) x (4)		MAX. PATHWAY INTAKE (mg/kg-day) *(Maximum intake of active pathways soil leaching & groundwater routes.)*	
Benzene	2.6E-4										
Chlorobenzene	1.7E-2										
Dichlorobenzene (1,2) (-o)	8.3E-3										
Dichlorobenzene, (1,4) (-p)	7.6E-4										
Dichloroethane, 1,1-	1.0E-3										
dichloroethene, 1,1-	7.5E-4										
Dichloroethene, cis-1,2-	1.1E-1										
Dichloroethene,1,2-trans-	1.3E-2										
Ethylbenzene	0.0E+0										
Fluorene	0.0E+0										
Methyl t-Butyl Ether	8.1E-3										
Tetrachloroethene	3.1E-1										
Toluene	5.2E-4										
Trichloroethane, 1,1,1-	1.0E-4										
Trichloroethene	6.4E-1										
Vinyl chloride	3.8E-2										
Xylene (mixed isomers)	6.5E-5										

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequencey (days/yr); ET = Exposure time (hrs/day); IR = Intake rate (L/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

RBCA SITE ASSESSMENT | **Tier 2 Worksheet 8.3**

Site Name: Custom Alloy Scrap Sales
Site Location: 2711 Union Street, Oakland, CA

Completed By: ASE NORTH
Date Completed: 1/7/1998

TIER 2 BASELINE RISK SUMMARY TABLE

EXPOSURE PATHWAY	BASELINE CARCINOGENIC RISK: Individual COC Risk Maximum Value	Individual COC Risk Target Risk	Cumulative COC Risk Total Value	Cumulative COC Risk Target Risk	Risk Limit(s) Exceeded?	BASELINE TOXIC EFFECTS: Hazard Quotient Maximum Value	Hazard Quotient Applicable Limit	Hazard Index Total Value	Hazard Index Applicable Limit	Toxicity Limit(s) Exceeded?
OUTDOOR AIR EXPOSURE PATHWAYS										
Complete:	9.7E-7	1.0E-5	1.1E-6	N/A	o	4.3E-5	1.0E+0	4.8E-5	N/A	o
INDOOR AIR EXPOSURE PATHWAYS										
Complete:	7.4E-5	1.0E-5	7.9E-5	N/A	n	2.5E-3	1.0E+0	2.9E-3	N/A	o
SOIL EXPOSURE PATHWAYS										
Complete:	5.9E-9	1.0E-5	5.9E-9	N/A	o	2.5E-4	1.0E+0	4.4E-4	N/A	o
GROUNDWATER EXPOSURE PATHWAYS										
Complete:	NC	1.0E-5	NC	N/A	n	NC	1.0E+0	NC	N/A	n
CRITICAL EXPOSURE PATHWAY (Select Maximum Values From Complete Pathways)										
	7.4E-5	1.0E-5	7.9E-5	N/A	n	2.5E-3	1.0E+0	2.9E-3	N/A	o

Software: GSI RBCA Spreadsheet
Version: 1.0.1
Serial: G-477-BLX-264

APPENDIX E

RBCA Worksheets
for Off-Site Scenario

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: Custom Alloy Scrap Sales Job Identification: 2971
Site Location: 2711 Union Street, Oakland, CA Date Completed: 1/7/98
Completed By: ASE NORTH

Software: GSI RBCA Spreadsheet
Version: 1.0.1

NOTE: values which differ from Tier 1 default values are shown in bold italics and underlined.

Exposure Parameter	Definition (Units)	Residential Adult	Residential (1-6yrs)	Residential (1-16 yrs)	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
ATc	Averaging time for carcinogens (yr)	70				
ATn	Averaging time for non-carcinogens (yr)	30	6	16	25	1
BW	Body Weight (kg)	70	15	35	70	
ED	Exposure Duration (yr)	30	6	16	25	1
t	Averaging time for vapor flux (yr)	30			25	1
EF	Exposure Frequency (days/yr)	350			250	180
EF.Derm	Exposure Frequency for dermal exposure	350			250	
IRgw	Ingestion Rate of Water (L/day)	2			1	
IRs	Ingestion Rate of Soil (mg/day)	100	200		50	100
IRadj	Adjusted soil ing. rate (mg-yr/kg-d)	1.1E+02			9.4E+01	
IRa.in	Inhalation rate indoor (m^3/day)	15			20	
IRa.out	Inhalation rate outdoor (m^3/day)	20			20	10
SA	Skin surface area (dermal) (cm^2)	5.8E+03		2.0E+03	5.8E+03	5.8E+03
SAadj	Adjusted dermal area (cm^2-yr/kg)	2.1E+03			1.7E+03	
M	Soil to Skin adherence factor	1				
AAFs	Age adjustment on soil ingestion	FALSE			FALSE	
AAFd	Age adjustment on skin surface area	FALSE			FALSE	
tox	Use EPA tox data for air (or PEL based)?	TRUE				
gwMCL?	Use MCL as exposure limit in groundwater?	FALSE				

Matrix of Exposed Persons to Complete Exposure Pathways		Residential	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
Outdoor Air Pathways:				
SS.v	Volatiles and Particulates from Surface Soils	FALSE	FALSE	FALSE
S.v	Volatilization from Subsurface Soils	FALSE	FALSE	
GW.v	Volatilization from Groundwater	FALSE	TRUE	
Indoor Air Pathways:				
S.b	Vapors from Subsurface Soils	FALSE	FALSE	
GW.b	Vapors from Groundwater	FALSE	TRUE	
Soil Pathways:				
SS.d	Direct Ingestion and Dermal Contact	FALSE	FALSE	TRUE
Groundwater Pathways:				
GW.i	Groundwater Ingestion	FALSE	FALSE	
S.l	Leaching to Groundwater from all Soils	FALSE	FALSE	

Matrix of Receptor Distance and Location On- or Off-Site		Residential Distance	Residential On-Site	Commercial/Industrial Distance	Commercial/Industrial On-Site
GW	Groundwater receptor (cm)		FALSE		FALSE
S	Inhalation receptor (cm)		FALSE		FALSE

Matrix of Target Risks		Individual	Cumulative
TRab	Target Risk (class A&B carcinogens)	***1.0E-05***	
TRc	Target Risk (class C carcinogens)	1.0E-05	
THQ	Target Hazard Quotient	1.0E+00	
Opt	Calculation Option (1, 2, or 3)	2	
Tier	RBCA Tier	2	

Surface Parameters	Definition (Units)	Residential	Constrctn
A	Contaminated soil area (cm^2)	***3.6E+07***	1.0E+06
W	Length of affect. soil parallel to wind (cm)	***5.9E+03***	1.0E+03
W.gw	Length of affect. soil parallel to groundwater (cm)	1.5E+03	
Uair	Ambient air velocity in mixing zone (cm/s)	2.3E+02	
delta	Air mixing zone height (cm)	2.0E+02	
Lss	Thickness of affected surface soils (cm)		
Pe	Particulate areal emission rate (g/cm^2/s)	6.9E-14	

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	2.0E+02
I	Groundwater infiltration rate (cm/yr)	3.0E+01
Ugw	Groundwater Darcy velocity (cm/yr)	***5.4E+02***
Ugw.tr	Groundwater seepage velocity (cm/yr)	***1.4E+03***
Ks	Saturated hydraulic conductivity(cm/s)	1.0E-03
grad	Groundwater gradient (cm/cm)	1.7E-02
Sw	Width of groundwater source zone (cm)	3.7E+03
Sd	Depth of groundwater source zone (cm)	6.1E+02
phi.eff	Effective porosity in water-bearing unit	3.8E-01
foc.sat	Fraction organic carbon in water-bearing unit	1.0E-03
BIO?	Is bioattenuation considered?	FALSE
BC	Biodegradation Capacity (mg/L)	

Soil	Definition (Units)	Value		
hc	Capillary zone thickness (cm)	5.0E+00		
hv	Vadose zone thickness (cm)	***2.3E+02***		
rho	Soil density (g/cm^3)	1.7		
foc	Fraction of organic carbon in vadose zone	0.01		
phi	Soil porosity in vadose zone	0.38		
Lgw	Depth to groundwater (cm)	***2.4E+02***		
Ls	Depth to top of affected subsurface soil (cm)	***6.1E+01***		
Lsubs	Thickness of affected subsurface soils (cm)	***1.8E+02***		
pH	Soil/groundwater pH	6.5		
		capillary	vadose	foundation
phi.w	Volumetric water content	0.342	0.12	0.12
phi.a	Volumetric air content	0.038	0.26	0.26

Building	Definition (Units)	Residential	Commercial
Lb	Building volume/area ratio (cm)	2.0E+02	3.0E+02
ER	Building air exchange rate (s^-1)	1.4E-04	2.3E-04
Lcrk	Foundation crack thickness (cm)	1.5E+01	
eta	Foundation crack fraction	0.01	

Transport Parameters	Definition (Units)	Residential	Commercial
Groundwater			
ax	Longitudinal dispersivity (cm)		
ay	Transverse dispersivity (cm)		
az	Vertical dispersivity (cm)		
Vapor			
dcy	Transverse dispersion coefficient (cm)		
dcz	Vertical dispersion coefficient (cm)		

Site Name: Custom Alloy Scrap Sale Site Location: 2711 Union Street, Oakland, CA Completed By: ASE NORTH Date Completed: 1/7/1998

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS — (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: INGESTION

Constituents of Concern	Exposure Concentration: 1) Source Medium — Groundwater Conc. (mg/L)	2) NAF Value (dim) — Receptor: Off-Site Commercial	3) Exposure Medium — Groundwater: POE Conc. (mg/L) (1)/(2): Off-Site Commercial	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day): Off-Site Commercial	5) Average Daily Intake Rate (mg/kg-day) (3) x (4): Off-Site Commercial	MAX. PATHWAY INTAKE (mg/kg-day) (Maximum intake of active pathways soil leaching & groundwater routes.): Off-Site Commercial
Benzene	5.3E-4	1.3E+0	4.1E-4	3.5E-3	1.4E-6	1.4E-6
Chlorobenzene	3.5E-2	1.3E+0	2.7E-2	9.8E-3	2.6E-4	2.6E-4
Dichlorobenzene (1,2) (-o)	1.7E-2	1.3E+0	1.3E-2	9.8E-3	1.2E-4	1.2E-4
Dichlorobenzene, (1,4) (-p)	1.5E-3	1.3E+0	1.2E-3	3.5E-3	4.1E-6	4.1E-6
Dichloroethane, 1,1-	1.9E-3	1.3E+0	1.5E-3	9.8E-3	1.4E-5	1.4E-5
dichloroethene, 1,1-	1.3E-3	1.3E+0	1.0E-3	9.8E-3	9.9E-6	9.9E-6
Dichloroethene, cis-1,2-	1.8E-1	1.3E+0	1.4E-1	9.8E-3	1.3E-3	1.3E-3
Dichloroethene,1,2-trans-	2.5E-2	1.3E+0	1.9E-2	9.8E-3	1.9E-4	1.9E-4
Ethylbenzene	0.0E+0	#DIV/0!	#DIV/0!	9.8E-3	#DIV/0!	0.0E+0
Fluorene	0.0E+0	#DIV/0!	#DIV/0!	9.8E-3	#DIV/0!	0.0E+0
Methyl t-Butyl Ether	1.6E-2	1.3E+0	1.3E-2	9.8E-3	1.2E-4	1.2E-4
Tetrachloroethene	1.2E-2	1.3E+0	9.3E-3	3.5E-3	3.2E-5	3.2E-5
Toluene	1.0E-4	1.3E+0	7.7E-5	9.8E-3	7.6E-7	7.6E-7
Trichloroethane, 1,1,1-	2.3E-4	1.3E+0	1.7E-4	9.8E-3	1.7E-6	1.7E-6
Trichloroethene	1.1E+0	1.3E+0	8.6E-1	3.5E-3	3.0E-3	3.0E-3
Vinyl chloride	6.8E-2	1.3E+0	5.3E-2	3.5E-3	1.8E-4	1.8E-4
Xylene (mixed isomers)	6.5E-5	1.3E+0	5.0E-5	9.8E-3	4.9E-7	4.9E-7

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Intake rate (L/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: Custom Alloy Scrap Sales | Site Location: 2711 Union Street, Oakland, CA | Completed By: ASE NORTH | Date Completed: 1/7/1998 | 4 OF 4

TIER 2 PATHWAY RISK CALCULATION

GROUNDWATER EXPOSURE PATHWAYS — Π (CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK: (2) Total Carcinogenic Intake Rate (mg/kg/day) Off-Site	Commercial	(3) Oral Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) Off-Site	Commercial	TOXIC EFFECTS: (5) Total Toxicant Intake Rate (mg/kg/day) Off-Site	Commercial	(6) Oral Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) Off-Site	Commercial
Benzene	A		1.4E-6	2.9E-2		4.1E-8					
Chlorobenzene	D							2.6E-4	2.0E-2		1.3E-2
Dichlorobenzene (1,2) (-o)	D							1.2E-4	9.0E-2		1.4E-3
Dichlorobenzene, (1,4) (-p)	C		4.1E-6	2.4E-2		9.9E-8					
Dichloroethane, 1,1-	C							1.4E-5	1.0E-1		1.4E-4
dichloroethene, 1,1-											
Dichloroethene, cis-1,2-	D							1.3E-3	1.0E-2		1.3E-1
Dichloroethene,1,2-trans-								1.9E-4	2.0E-2		9.3E-3
Ethylbenzene	D							0.0E+0	1.0E-1		0.0E+0
Fluorene	D							0.0E+0	4.0E-2		0.0E+0
Methyl t-Butyl Ether								1.2E-4	5.0E-3		2.5E-2
Tetrachloroethene	C-B2		3.2E-5	5.2E-2		1.7E-6		9.1E-5	1.0E-2		9.1E-3
Toluene	D							7.6E-7	2.0E-1		3.8E-6
Trichloroethane, 1,1,1-	D							1.7E-6	9.0E-2		1.9E-5
Trichloroethene			3.0E-3	1.1E-2		3.3E-5		8.4E-3	6.0E-3		1.4E+0
Vinyl chloride	A		1.8E-4	1.9E+0		3.5E-4					
Xylene (mixed isomers)	D							4.9E-7	2.0E+0		2.5E-7

Total Pathway Carcinogenic Risk = 0.0E+0 | 3.9E-4

Total Pathway Hazard Index = 0.0E+0 | 1.6E+0

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: Custom Alloy Scrap Sales Job Identification: 2971
Site Location: 2711 Union Street, Oakland, CA Date Completed: 1/7/98
Completed By: ASE NORTH

Software: GSI RBCA Spreadsheet
Version: 1.0.1

NOTE: values which differ from Tier 1 default values are shown in bold italics and underlined.

Exposure Parameter	Definition (Units)	Residential Adult	Residential (1-6yrs)	Residential (1-16 yrs)	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
ATc	Averaging time for carcinogens (yr)	70				
ATn	Averaging time for non-carcinogens (yr)	30	6	16	25	1
BW	Body Weight (kg)	70	15	35	70	
ED	Exposure Duration (yr)	30	6	16	25	1
t	Averaging time for vapor flux (yr)	30			25	1
EF	Exposure Frequency (days/yr)	350			250	180
EF.Derm	Exposure Frequency for dermal exposure	350			250	
IRgw	Ingestion Rate of Water (L/day)	2			1	
IRs	Ingestion Rate of Soil (mg/day)	100	200		50	100
IRadj	Adjusted soil ing. rate (mg-yr/kg-d)	1.1E+02			9.4E+01	
IRa.in	Inhalation rate indoor (m^3/day)	15			20	
IRa.out	Inhalation rate outdoor (m^3/day)	20			20	10
SA	Skin surface area (dermal) (cm^2)	5.8E+03		2.0E+03	5.8E+03	5.8E+03
SAadj	Adjusted dermal area (cm^2-yr/kg)	2.1E+03			1.7E+03	
M	Soil to Skin adherence factor	1				
AAFs	Age adjustment on soil ingestion	FALSE			FALSE	
AAFd	Age adjustment on skin surface area	FALSE			FALSE	
tox	Use EPA tox data for air (or PEL based)?	TRUE				
gwMCL?	Use MCL as exposure limit in groundwater?	FALSE				

Matrix of Exposed Persons to Complete Exposure Pathways		Residential	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
Outdoor Air Pathways:				
SS.v	Volatiles and Particulates from Surface Soils	FALSE	FALSE	FALSE
S.v	Volatilization from Subsurface Soils	FALSE	FALSE	
GW.v	Volatilization from Groundwater	FALSE	TRUE	
Indoor Air Pathways:				
S.b	Vapors from Subsurface Soils	FALSE	FALSE	
GW.b	Vapors from Groundwater	FALSE	TRUE	
Soil Pathways:				
SS.d	Direct Ingestion and Dermal Contact	FALSE	FALSE	TRUE
Groundwater Pathways:				
GW.i	Groundwater Ingestion	FALSE	TRUE	
S.l	Leaching to Groundwater from all Soils	FALSE	TRUE	

Matrix of Receptor Distance and Location On- or Off-Site		Residential Distance	Residential On-Site	Commercial/Industrial Distance	Commercial/Industrial On-Site
GW	Groundwater receptor (cm)	2.1E+03	FALSE	2.1E+03	FALSE
S	Inhalation receptor (cm)		FALSE		FALSE

Matrix of Target Risks		Individual	Cumulative
TRab	Target Risk (class A&B carcinogens)	***1.0E-05***	
TRc	Target Risk (class C carcinogens)	1.0E-05	
THQ	Target Hazard Quotient	1.0E+00	
Opt	Calculation Option (1, 2, or 3)	2	
Tier	RBCA Tier	2	

Surface Parameters	Definition (Units)	Residential	Constrctn
A	Contaminated soil area (cm^2)	***3.6E+07***	1.0E+06
W	Length of affect. soil parallel to wind (cm)	***5.8E+03***	1.0E+03
W.gw	Length of affect. soil parallel to groundwater (cm)	1.5E+03	
Uair	Ambient air velocity in mixing zone (cm/s)	2.3E+02	
delta	Air mixing zone height (cm)	2.0E+02	
Lss	Thickness of affected surface soils (cm)		
Pe	Particulate areal emission rate (g/cm^2/s)	6.9E-14	

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	2.0E+02
I	Groundwater infiltration rate (cm/yr)	3.0E+01
Ugw	Groundwater Darcy velocity (cm/yr)	***5.4E+02***
Ugw.tr	Groundwater seepage velocity (cm/yr)	***1.4E+03***
Ks	Saturated hydraulic conductivity(cm/s)	1.0E-03
grad	Groundwater gradient (cm/cm)	1.7E-02
Sw	Width of groundwater source zone (cm)	3.7E+03
Sd	Depth of groundwater source zone (cm)	6.1E+02
phi.eff	Effective porosity in water-bearing unit	3.8E-01
foc.sat	Fraction organic carbon in water-bearing unit	1.0E-03
BIO?	Is bioattenuation considered?	TRUE
BC	Biodegradation Capacity (mg/L)	7.0E-01

Soil	Definition (Units)	Value		
hc	Capillary zone thickness (cm)	5.0E+00		
hv	Vadose zone thickness (cm)	***2.3E+02***		
rho	Soil density (g/cm^3)	1.7		
foc	Fraction of organic carbon in vadose zone	0.01		
phi	Soil porosity in vadose zone	0.38		
Lgw	Depth to groundwater (cm)	***2.4E+02***		
Ls	Depth to top of affected subsurface soil (cm)	***6.1E+01***		
Lsubs	Thickness of affected subsurface soils (cm)	***1.8E+02***		
pH	Soil/groundwater pH	6.5		
		capillary	vadose	foundation
phi.w	Volumetric water content	0.342	0.12	0.12
phi.a	Volumetric air content	0.038	0.26	0.26

Building	Definition (Units)	Residential	Commercial
Lb	Building volume/area ratio (cm)	2.0E+02	3.0E+02
ER	Building air exchange rate (s^-1)	1.4E-04	2.3E-04
Lcrk	Foundation crack thickness (cm)	1.5E+01	
eta	Foundation crack fraction	0.01	

Transport Parameters	Definition (Units)	Residential	Commercial
Groundwater			
ax	Longitudinal dispersivity (cm)		2.1E+02
ay	Transverse dispersivity (cm)		7.0E+01
az	Vertical dispersivity (cm)		1.1E+01
Vapor			
dcy	Transverse dispersion coefficient (cm)		
dcz	Vertical dispersion coefficient (cm)		

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.3

Site Name: Custom Alloy Scrap Sales
Site Location: 2711 Union Street, Oakland, CA

Completed By: ASE NORTH
Date Completed: 1/7/1998

GROUNDWATER SSTL VALUES

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

O MCL exposure limit?
O PEL exposure limit?

Calculation Option: 2
(Two-directional vert. dispersion)

SSTL Results For Complete Exposure Pathways ("x" If Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	Groundwater Ingestion			X Groundwater Volatilization to Indoor Air		X Groundwater Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/L)	Residential (on-site)	Commercial (on-site)	Regulatory(MCL): (on-site)	Residential (on-site)	Commercial (on-site)	Residential (on-site)	Commercial (on-site)	(mg/L	"n" If yes	Only if "yes" left
71-43-2	Benzene	4.1E-4	NA	NA	NA	NA	7.3E-1	NA	4.6E+1	7.3E-1	o	<1
108-90-7	Chlorobenzene	2.7E-2	NA	NA	NA	NA	6.9E+0	NA	4.1E+2	6.9E+0	o	<1
95-50-1	Dichlorobenzene (1,2) (-o)	1.3E-2	NA	NA	NA	NA	8.8E+1	NA	>Sol	8.8E+1	o	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	1.2E-3	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	o	<1
75-34-3	Dichloroethane, 1,1-	1.5E-3	NA	NA	NA	NA	5.4E+1	NA	3.8E+3	5.4E+1	o	<1
75-35-4	dichloroethene, 1,1-	1.0E-3	NA	NA	NA	NA	NA	NA	NA	>Sol	o	<1
156-59-2	Dichloroethene, cis-1,2-	1.4E-1	NA	NA	NA	NA	NA	NA	NA	>Sol	o	<1
156-60-5	Dichloroethene,1,2-trans-	1.9E-2	NA	NA	NA	NA	NA	NA	NA	>Sol	o	<1
100-41-4	Ethylbenzene	0.0E+0	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	o	<1
86-73-7	Fluorene	0.0E+0	NA	NA	NA	NA	NA	NA	NA	>Sol	o	<1
1634-04-4	Methyl t-Butyl Ether	1.3E-2	NA	NA	NA	NA	3.6E+3	NA	>Sol	3.6E+3	o	<1
127-18-4	Tetrachloroethene	9.3E-3	NA	NA	NA	NA	3.1E+0	NA	>Sol	3.1E+0	o	<1
108-88-3	Toluene	7.7E-5	NA	NA	NA	NA	8.4E+1	NA	>Sol	8.4E+1	o	<1
71-55-6	Trichloroethane, 1,1,1-	1.7E-4	NA	NA	NA	NA	9.7E+1	NA	>Sol	9.7E+1	o	<1
79-01-6	Trichloroethene	8.6E-1	NA	NA	NA	NA	1.4E+0	NA	5.4E+1	1.4E+0	o	<1
75-01-4	Vinyl chloride	5.3E-2	NA	NA	NA	NA	5.1E-3	NA	3.9E-1	5.1E-3	n	1.0E+01
1330-20-7	Xylene (mixed isomers)	5.0E-5	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	o	<1

>Sol indicates risk-based target concentration greater than constituent solubility

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-477-BLX-264