Redo RBCA Tier 2 using:

AlaCo.

① Avg soil conc. from ≤ 8' bgs. If insufficient data consider summa canister / vapor study in area of highest residual soil contam, both on and off site.

② Avg GW conc from last 4 qtrs from wells 1, 4, 7, 8 for onsite scenario.
Avg GW conc from wells 3, 4, 7, 8 for SE residential scenario and wells 2, 3, 5 & 6 for SW residential scenario

Can start ORC in several wells after confirmation of O_2, CO_2, Fe^{++}, $SO_4^{=}$, NO_3, etc.

ASTM RBCA TIER TWO EVALUATION AND QUARTERLY GROUND WATER SAMPLING FOR STID 553 - FORMER GRIMIT AUTO AND REPAIR 1970 SEMINARY AVENUE OAKLAND, CALIFORNIA

December 18, 1997

Prepared by

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TRANSMITTAL

TO Environmental Protection / LOP
Alameda County Health
1131 Harbor Bay Parkway #250
Alameda CA 94502-9335
ATTENTION [redacted]

DATE 12/22/97
VIA US Mail
FAX NO. _____

PROJECT STID 553 - Grimit
Oakland CA

JOB NO. E-10-IB-1923

DESCRIPTION 12/18/97 Report
- RBCA Tier Two
- G.W. Sampling

Number of pages, including cover page, if FAX _____

COMMENTS _____
935 - 1045 = 1.2
Evo Chu

ACTION
X As requested
X For your use
_____ Please return when finished
X Please review and comment
_____ Other _____

COPY TO
D. Grimit

BY D. F. H.
David F. Hoexter

If enclosures are not as noted, kindly notify us at once

Rev. 9/4/97

Geology / Engineering Geology / Environmental Studies

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December 18, 1997

E-10-1B-192B
HCEnvtRpts:SeminaryRBCA2Oct97bcopy

Mr. Doyle Grimit
14366 Lark Street
San Leandro, California 94578

RE: **ASTM RBCA TIER TWO EVALUATION AND QUARTERLY GROUND WATER SAMPLING STID 553 - FORMER GRIMIT AUTO AND REPAIR 1970 SEMINARY AVENUE OAKLAND, CALIFORNIA**

Dear Mr. Grimit:

Enclosed is our ASTM RBCA Tier Two evaluation and quarterly ground water monitoring report of the property located at 1970 Seminary Avenue, Oakland, California. The report contains a description of our investigation and results of soil and ground water sample analyses. The general scope of investigation was presented in our confirming agreement/proposal dated April 21, 1997 (costs modified May 16, 1997), and our project status/investigation plan, dated May 23, 1997. The RBCA evaluation was further presented in our work plan dated October 24, 1997.

We have concluded from our evaluation that contaminant levels at the site significantly exceed the respective Tier Two risk based screening levels. Therefore, we recommend initiation of site remediation, as previously recommended.

We appreciate the opportunity to provide services to you on this project and trust this report meets your needs at this time. If you have any questions, or require additional information, please do not hesitate to call.

Very truly yours,

HOEXTER CONSULTING, INC.

David F. Hoexter, RG/CEG/REA
Principal Geologist

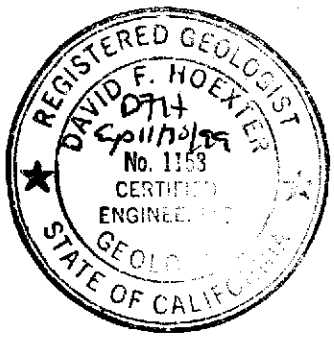
ASTM RBCA TIER TWO EVALUATION AND QUARTERLY GROUND WATER SAMPLING

For

STID 553 - Former Grimit Auto and Repair
1970 Seminary Avenue
Oakland, California

To

Mr. Doyle Grimit
14366 Lark Street
San Leandro, California 94578



Prepared by:

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December 18, 1997

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David F. Hoexter, RG CEG (1158) REA
Consulting Engineering Geologist

EXECUTIVE SUMMARY

Quarterly ground water sampling was conducted. The analytical results indicate that TRPH, TPH-G, and BTEX compounds are present at elevated levels which are generally on the same order of magnitude as the most recent, previous analyses. Halogenated volatile organic compounds (HVOC) were variously detected in eight of nine wells. Detected HVOC levels were variously greater than, similar to, or decreased from previous sampling events.

The ground water flow direction and gradient are essentially consistent with the previous data. The data indicate an apparent downward flow from the "shallow" zone to the "deeper" zone, and diametrically opposed flow directions. The gradients are steeper than would be anticipated for a site in this setting.

An ASTM Tier Two evaluation of the site, a former gasoline service station, was conducted. Onsite commercial risk and offsite residential risk were evaluated. Due to the nature of the risk assessment methodology, and the close proximity of the nearby residences, onsite values were used for portions of the residential assessment.

SSTLs (site specific target levels) are exceeded for various contaminants for adjacent residential and general ground water utilization, as well as for soil volatilization of benzene resulting in an inhalation risk. It is therefore recommended that additional source removal activity be accomplished to further reduce the risk from onsite contaminants to nearby residents.

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APPENDICES

A- Water Sample Logs, Chain of Custody, Analytical Test Results - October 6-7, 1997 Sampling Event
B- RBCA Tier Two Data and Summary Tables

ASTM RBCA TIER TWO EVALUATION AND QUARTERLY GROUND WATER SAMPLING FOR STID 553 - FORMER GRIMIT AUTO AND REPAIR 1970 SEMINARY AVENUE OAKLAND, CALIFORNIA

1.0 INTRODUCTION

This report presents the results of the October, 1997 ground water sampling and an ASTM RBCA Tier Two Evaluation of the site located at 1970 Seminary, Oakland, California. The project location is shown on the Location Map, Figure 1. The scope of services provided during this investigation consisted of collecting and analyzing ground water samples from nine on-site monitoring wells, and of conducting the Tier Two evaluation. Ground water samples were analyzed for petroleum hydrocarbons, halogenated volatile organic compounds, and additional parameters. Well locations are shown on the Site Plan, Figure 2, and Ground Water Contour and Gradient Direction Maps, Figures 3A (shallow wells) and 3B (deeper wells).

This evaluation was required by the Alameda County Health Department, as specified in a letter from Eva Chu dated March 11, 1997. The general scope of work is based on our subsequent proposal to the owner, Mr. Doyle Grimit, dated April 21, 1997. This work was approved by the California Underground Storage Tank Cleanup Fund on May 20, 1997. On May 23, 1997, we issued a "Project Status and Investigation Plan" for the work, which was verbally approved by Eva Chu on May 28, 1997. On October 24, 1997, we issued a work plan for the RBCA evaluation, which was approved by Eva Chu on November 14, 1997.

2.0 BACKGROUND

A detailed background description is included in our April 22, 1996 report. The project site is located at 1970 Seminary Avenue, at the southern corner of the Seminary Avenue - Harmon Avenue intersection, in Oakland, Alameda County, California. The immediate site vicinity is primarily residential. The site is currently utilized as an automotive repair facility. The property is owned by Mr. Doyle Grimit, and is leased to the repair facility.

The site is approximately 50 by 100 feet in plan dimension. Three former gasoline and one former waste oil tank were removed in 1989. Fuel has not been dispensed since that time. One inactive hydraulic lift remains at the the site within the service building.

Three exploratory borings and one monitoring well (MW-1) were installed by Kaldveer Associates in August, 1990 (report dated September 28, 1990). The well was sampled once by Kaldveer. Limited soil excavation was subsequently conducted at the location of the former waste oil tank. Hoexter Consulting subsequently sampled the well three times. In January and February, 1994, Hoexter Consulting conducted further subsurface investigation, including installation of two additional wells. Additional monitoring was followed by a supplemental investigation conducted in March, 1996, which included four soil borings and three additional monitoring wells. The following report (April 22, 1996) included a preliminary ASTM RBCA Tier One evaluation of the data. A May 15, 1996 Alameda County letter followed, commented upon the April, 1996 subsurface investigation report, and requested an evaluation of remedial action alternatives.

The preliminary evaluation of remedial action alternatives was then conducted, and a report issued July 28, 1996. The evaluation report recommended supplemental ground water contaminant plume definition and further soil source delineation, followed by preparation of a remedial action feasibility study, development of a corrective action plan, and initiation of soil / ground water remediation. Finally, two additional quarterly ground water sampling events occurred, reported on October 21, 1996 and January 28, 1997.

The subsurface investigations indicated complex soil and ground water conditions consisting of interbedded discontinuous relatively thin lenses of silty and clayey sediments, with relatively limited deposits of "clean" sand or gravel. Based on the investigations, there are two connected and overlapping ground water contamination zones, a "perched" or shallow zone ranging from 7 to 13 feet, and a deeper zone of from 20 to 30 feet. Based on well development and purging data, the strata yield relatively low volumes of water, and there is poor conductivity between strata.

On February 15, 1997, Hoexter Consulting issued its "Corrective/Interim Remedial Action Plan" for the site. Prior to initiating the recommended remediation, the Alameda County Health Department requested that Hoexter Consulting install the additional monitoring recommended in the report, and then conduct additional, Tier Two, RBCA analysis. A report documenting the additional field investigation was issued July 25, 1997. One additional "quarterly" ground water sampling round was conducted October 6 and 7, 1997, with the results presented in this report.

On October 24, 1997 we issued a work plan for the RBCA Tier Two evaluation. This plan was approved by Alameda County Environmental Health Services, Environmental Protection (LOP) on November 14, 1997.

3.0 SCOPE OF SERVICES

The work performed during this investigation consisted of the following tasks:

1. Review of previous investigations and information on the site.
2. Purge and sample nine monitoring wells.
3. Analysis of ground water samples by a contract analytical lab.
4. Discussions with the property owner and the Alameda County Health Department representative.
5. Preparation of a brief work plan for the RBCA evaluation.
6. Evaluation of the data and preparation of this report.

4.0 GROUND WATER SAMPLING

4.1 Field Investigation

The ground water monitoring wells were sampled by representatives of Hoexter Consulting, Inc. Due to past, very slow equilibration of ground water levels, the well caps were loosened on October 2, 1997, four days prior to the planned purging and sampling. The wells were then secured with the caps sufficiently loose to allow venting, and left over the following approximately 96 hours to equilibrate. Following water level measurements, the wells were purged on October 6, and sampled October 7, 1997.

As noted, the well caps were loosened prior to the final water level measurement, to allow the water level in the wells to equilibrate. Following ground water level measurement (Table 1), each well was checked for free-product with the bailer, and then three to four well-casing volumes of water were purged from the well. A dedicated polyethylene bailer was employed for each well. Ground water parameters, including temperature, pH and specific conductivity, were measured prior to and following each purge volume removal.

Following purging of three to four well volumes, it was noted that the wells were either effectively dewatered, or drawn down to less than 80 per cent of the static water level. Thus, the well caps were left loosely in place overnight to allow the wells to vent and the water levels to rise, and the sampling was conducted the following day. One well, MW-9, was not purged prior to sampling, because only approximately one foot of water was present in the well.

The samples were collected using the polyethylene bailer, placed in appropriate sample containers supplied by the analytical laboratory, labeled, and placed in refrigerated storage for transport to the laboratory under chain-of-custody control. All sampling equipment was thoroughly cleaned with "Alconox" detergent and rinsed with distilled water prior to sampling the well. Monitoring well sampling logs and the chain of custody are attached to this report as a part of Appendix A. The laboratory is California EPA/DTSC approved for the requested analyses.

Prior to purging, ground water levels were measured in each well using the top of 2-inch PVC casing (north side unless indicated on the well casing) as reference point. Water levels were measured at least twice in each well; the final set of measurements are thought to be essentially representative of stabilized ground water levels in the wells. The ground water elevation declined notably, in eight of the nine wells, from the prior (June, 1997) sampling event, an average of 0.74 feet in the "shallow" wells and 2.15 feet in the "deeper" wells. Ground water rose slightly in one shallow well, MW-8, which is completed in the former waste oil UST backfill. Water levels are at essentially the same level as October, 1996. Well-top elevations, depth to water, and calculated water-surface elevations are presented in Table 1. These data have been used to generate the Ground Water Contour and Gradient Direction Maps, Figures 3A and 3B.

The ground water flow direction and gradient are essentially consistent with the previous data. The data indicate an apparent downward flow from the "shallow" zone to the "deeper" zone, and diametrically opposed flow directions. The gradients are steeper than would be anticipated for a site in this setting. The wells were able to ventilate, and thus equilibrate, for four days. The measured levels were verified. The data for the four "shallow" wells indicate a gradient direction towards Seminary Avenue, towards the northwest, N 47 W. The apparent gradient averages 0.29 foot per foot. This gradient is slightly steeper than the 0.24 foot per foot gradient calculated for the June, 1997 data. The data for the five "deeper" wells indicate an apparent flow away from Seminary Avenue towards the southeast. The apparent gradient varies across the site, but averages 0.11 foot per foot. This gradient is marginally steeper than

the 0.07 foot per foot gradient calculated from the June, 1997 data. The approximate gradient direction is S 55 E, which compares to a gradient direction of S 68 E in June, 1997.

As previously observed the data appear to indicate a downward gradient from a relatively shallow (perched ?) zone represented by the four "shallow" wells, to the deeper zone represented by the four "deeper" wells. Based on the slow equilibration and recovery time following purging, we infer a relatively slow ground water flow rate, despite the unusually steep gradient. Ground water flow parameters are estimated in Section 5.3.4 of this report.

4.2 Analytical Results

4.2.1 Laboratory Procedures

The samples were variously analyzed for the following:

- Total petroleum hydrocarbons as gasoline (TPH-G) using EPA Method 5030/8015.
- Purgeable aromatic compounds (BTEX) and methyl tert-butyl ether (MTBE) using EPA Method 8020.
- Halogenated volatile organic compounds (HVOC) by EPA Method 8010.
- Oil and grease (total recoverable petroleum, TRPH) using SM 5520B/F, gravimetric with cleanup.
- Polynuclear aromatic hydrocarbons (PNA or PAH), by EPA Method 8270A.

Most of the soil and ground water samples were analyzed by McCampbell Analytical of Pacheco, California The PNA testing was subcontracted by McCampbell to American Environmental Network, of Pleasant Hill, California. Both laboratories are certified by the State of California Environmental Protection Agency for the requested analyses.

Note that some of the TRPH analyses from previous sampling rounds were analyzed by the infrared method of analysis, as opposed to the gravimetric method utilized currently. It is our understanding that the two analytical methods produce essentially the same results.

4.2.2 Analytical Results

Free product was not observed in the initial sounding of the wells, although as previously observed, a sheen (floating film) of oil was observed in well MW-1, and shortly after purging began in well as MW-4. The purge water from well MW-1 contained globules of "oil", which were observed in previous sampling rounds.

The results of the chemical analyses are presented on Tables 3A through 3D, and are attached to this report as a part of Appendix A. Analytical results of all previous testing are also included. The current analytical results indicate that TRPH, TPH-G, and BTEX compounds are present at elevated levels which are generally on the same order of magnitude as the most recent, previous analyses.

TPH-G was present in MW-1 at 45,000 ug/l (equivalent to parts per billion, ppb). This represents a relative increase in TPH-G concentration, but is within the range of previous sampling events. The BTEX compounds in MW-1 increased in a similar manner. MTBE was not detected, although the detection level was elevated to 680 ppb. TRPH decreased notably, although the level remains elevated.

TPH-G, MTBE and BTEX generally declined in the remaining wells. Detected levels in wells MW-2 through 8, as during previous sampling events, are generally one to two orders of magnitude less than in MW-1. TPH-G and MTBE are present in MW-9 at approximately the same concentration as in MW-1, although BTEX compounds were less than in MW-1.

For the second consecutive sampling round, there was no detection of petroleum hydrocarbons in well MW-3. This occurrence may relate to the relatively decreased ground water level, as opposed to the January, 1997 event, when ground water levels were elevated.

Halogenated volatile organic compounds (HVOC) were variously detected in eight of nine wells. There was no detection of HVOCs in MW-3. Elevated levels, in comparison to the balance of the site, were detected in wells MW-1, 4, 7 and 8. Each of these wells is located in the general source area.

One sample for analysis of polynuclear aromatic compounds (PNA) was obtained, from well MW-1. This was the second analysis for PNAs at the site. This well historically exhibits the most elevated contaminant levels. Napthalene was the only detected PNA compound. It was detected at a concentration of 810 ppb, a decrease from the previous detection of 2200 ppb. Phenanthrene, detected in the previous sampling round, was not detected, although the laboratory detection limits exceeded the previous detection. Other PNA compounds were not detected, although it should be noted that all detection limits were elevated due to the presence of oil and the laboratory's consequent need to dilute the sample.

5.0 RBCA TIER TWO EVALUATION

Based on our investigations, contamination at the site consists of gasoline (TPH-G), purgeable aromatic compounds (BTEX), and halogenated volatile compounds (HVOC), particularly PCE, TCE, and DCE. Napthalene and phenanthrene have also been detected in the site's ground water. The data are summarized in Tables 2 and 3.

5.1 Previous Tier One RBCA Evaluation

Concentrations of BTEX and individual HVOC compounds have been detected which exceed California Maximum Contaminant Levels (MCLs) for drinking water. To evaluate the human health risk exposure from these compounds, a Tier One Risk Based Corrective Action (RBCA) analysis was performed in accordance with the American Society for Testing and Materials (ASTM) standards for health risk based site evaluations for petroleum contaminated sites, as presented in ASTM E-1739-95. This analysis was performed using a commercially available, automated computer process known as "Tier Two RBCA Tool Kit", published by Groundwater Services, Inc. (GSI). The pathways delineated in our previous ASTM Tier One evaluation included:

* Dermal contact/ingestion of soil. - construction
* Soil leaching potential to ground water.
* Soil gas volatilization to indoor/outdoor air.
* Gas volatilization from water to indoor/outdoor air.
* Ground water ingestion.

Our Tier One analysis indicated that contaminant concentrations in the soil and ground water exceeded the risk based screening levels (RBSLs) for soil volatilization to the air, soil and ground water vapor intrusion to buildings, and ground water ingestion. The Tier One study indicated that soil and ground water concentrations exceeded the RBSLs by up to four orders of magnitude for the subject site. The critical contaminant was benzene.

5.2 Tier Two RBCA Evaluation Methodology

The Tier Two Risk Based Corrective Action (RBCA) analysis was performed in accordance with the American Society for Testing and Materials (ASTM) standards for health risk based site evaluations for petroleum contaminated sites, as presented in ASTM E-1739-95. This analysis was performed using a commercially available, automated computer process known as "Tier Two RBCA Tool Kit", published by Groundwater Services, Inc. (GSI). The RBCA methodology provides a decision making process for the assessment and response to subsurface (soil and ground water) contamination based on risk to human health and environmental resources. The RBCA process recognizes the variability in complexity, physical and chemical characteristics and risk to human health and environmental resources of sites and utilizes a tiered approach to match appropriate assessments and remedial activities in consideration of more cost-effective remedial action. The second tier employs site specific physical data, as opposed to default parameters utilized in the first tier. The evaluation results in site specific target levels (SSTLs) for each input compound.

The ASTM-RBCA methodology has been endorsed by an evaluation of fuel leak cases in California, conducted by the Lawrence Livermore National Laboratory (1995). The Lawrence Livermore study has, in turn, been endorsed by the State Water Resources Control Board and the California Regional Water Quality Control Board, San Francisco Bay Region (see references).

As required by the January 5, 1996 San Francisco Bay Region Water Quality Control Board memorandum, the ASTM SSTLs determined by the Tier Two evaluation for benzene were multiplied (reduced) by a factor of 0.29.

5.3 Important Factors To RBCA Evaluation

5.3.1 Site

The site (Figure 2) is zoned commercial, and is an operating automotive repair facility. There are no current development plans and it is unlikely that the site will be developed for residential use at any time in the near future. Therefore, commercial/industrial criteria have been used for RBCA evaluation of the site. There are no on-site basements or sub surface spaces. The property is almost completely covered with asphalt in the outdoor area and a concrete slab underlying the building. The former UST excavation ground surface consists of gravel, but this area is used for vehicular parking only. Much of the automotive repair work conducted at the site is out of doors.

Occupancy generally consists of one to two people approximately eight hours per day, five days per week. Customer exposure is occasional and short term (a few hours per year for any one individual). In our analysis, a five day work week (250 days per year) was used for exposure duration. However, the GSI model assumes 24 hour occupancy of the site. It was not possible to modify this 24 hour factor, and thus the results are considered to be conservative based on an eight hour occupancy. Direct contact with the underlying soil does not occur, although future construction work could occur. In agreement with Alameda County recommendation, a cancer risk of one in 100,000 (1×10^{-5}) is considered to be conservative, and was used in the evaluation.

should do it manually

5.3.2 Offsite

The adjacent surrounding area is occupied by apartments and single family residences. The two adjacent residences (Figure 2) are single story wood frame structures, which do not have basements. One is located approximately 10 feet southeast of the southeast property line. We believe this structure is supported on a perimeter foundation with raised wooden floors. The other structure is also raised on a perimeter footing, and is approximately 20 feet southwest of the southwest property line. A detached garage, used for storage only, is located between this residence and the site.

The southeast residence is down gradient of the site, based on "deeper" water bearing zone data. The southwest residence is cross gradient of the site based on both the "shallow" and "deeper" zone data. The southeast residence is nearly adjacent to the onsite source area and most elevated contaminant levels. A residential risk factor of 1×10^{-5} was also utilized in the analysis.

5.3.3 Ground Water Resources

To our knowledge, there is no ground water utilization for drinking water in the site vicinity (see well survey in the March 23, 1994 Hoexter Consulting report), although one well used for occasional garden irrigation is located approximately 250 feet west (and cross to up gradient) of the site. According to the property owner, this well is approximately 80 feet deep. We previously tested this well (Hoexter Consulting, 1994a) for gasoline and BTEX, and found it to be non-detect for these compounds. It is down gradient of the "shallow" site ground water, but up gradient of the "deeper" ground water.

5.3.4 Ground Water Conditions

As discussed in previous reports, ground water occurs at the site in multiple interbedded and semi-continuous zones and lenses. An apparent "perched" zone occurs between 5 and 10 feet below grade (the "shallow zone"). The relatively shallow wells (to 20 feet depth) completed within this "shallow" zone indicate a ground water gradient direction to the northwest. A "deeper" zone observed in wells completed to approximately 35 feet indicates gradient direction to the southeast. Ground water levels in all of the wells recover over a period of many hours to days when purged; therefore ground water flow is inferred to be very slow.

Hydrogeologic site characteristics have been determined for the site based on data generated throughout the Bay Area for similar low yield sites with effective well recharge rates from 0.003 to 0.1 gallons per minute. An effective well recharge rate of 0.01 gallons per minute was selected for this site. Estimates of the hydraulic properties for shallow, unconfined and semi-confined alluvial aquifer conditions provide a range of Transmisivity values from 0.5 to 37 gpd/ft (gallons per day per foot of saturated sediment) with Darcy flow velocities ranging from 0.1 to 5 ft/dy (feet per day). Based on the site well recharge rates, a Transmisivity of 3.0 gpd/ft and a Darcy Velocity of 0.4 ft/dy were used in the RBCA Tier Two analysis.

Depth to ground water varies seasonally and from one part of the site to another. Ground water data are summarized on Table 1. The "deeper" wells appear to be more representative of ground water conditions at the site. Recorded variations indicate a range of from 11 to 23 feet below grade. Therefore, this study has employed a conservative depth of 10 feet to ground water.

5.3.5 Physical Parameters

As a part of our most recent subsurface investigation, we tested two soil samples for organic carbon content; water content; bulk density; and porosity. The test results are summarized on Table 4. An average of the values for each parameter was employed in the Tier Two analysis.

5.3.6 Soil Contaminant Depth

Soil contaminant depths are inconsistent. In general, elevated contaminant levels are present at 8 to 11 feet. Therefore, we utilized a conservative depth of seven (7) feet for the top of soil contamination.

5.3.7 Contaminant Levels

Analytical data are summarized in Tables 2A, 2B (soil) and 3A, 3B, 3C, and 3D (ground water). Based on our investigations, contamination consists of oil and grease; gasoline (TPH-G); purgeable aromatic compounds (BTEX) and MTBE; halogenated volatile compounds (HVOC), particularly PCE, TCE, and DCE; and semi-volatile organic compounds, particularly napthalene and phenanthrene. These compounds have been detected in soil samples from various locations and in water samples from all nine monitoring wells. The most elevated soil and ground water contaminant levels have been observed in the general vicinity of the service building, particularly in the vicinity of well MW-1 and MW-4, located within the former gasoline UST backfill. These levels are considered representative of this area as a whole.

To evaluate the various onsite exposures, maximum soil and ground water concentrations were selected. To evaluate offsite exposures, maximum soil concentrations from the site were employed; however, site boundary ground water values (not the maximum site values) were selected. The actual constituent values are included in the various GSI tables included in Appendix B, and are also summarized on Table 5.

5.3.8 Exposure Pathways

The following human health risk pathways have been considered:

* Dermal contact/ingestion of soil (on-site only, includes construction worker).
* Soil leaching potential to ground water (on-site).
* Soil gas volatilization to indoor/outdoor air (on and off-site at site boundary).
* Gas volatilization from water to indoor/outdoor air (on and off-site at site boundary).
* Ground water ingestion (known off-site well).

5.4 Evaluation

The ASTM document stipulates that two separate soil scenarios be evaluated for exposure pathways, including (1) "surface" soil conditions (less than three feet deep) and (2) "subsurface" soil conditions (greater than three feet depth). Surface soil conditions are evaluated for the potential for contaminants to leach to the ground water and for dermal/ingestion pathways. Subsurface soil conditions are evaluated for the potential for contaminants to leach to the ground water and for soil volatilization to indoor and outdoor air pathways. One ground water scenario is stipulated to evaluate ground water migration and bacterial/dispersal conditions for ground water ingestion, and for gas volatilization to indoor and outdoor air pathways. The analytical methods allow selection of either residential or commercial onsite use and allows only for residential offsite use.

To accomplish the evaluation for the subject site and surrounding properties, three separate analyses were performed, to include:

(A) Onsite Commercial Use and Offsite Residential Use using the highest onsite soil data for soil gas generation evaluation and plume generation calculations and using the highest onsite ground water data for ground water off-gassing evaluation. This data set provided the onsite commercial exposure for soil contact, for soil-generated gas migration to indoor/outdoor air, and for ground water-generated gas migration to indoor/outdoor air. The data set also provided the offsite residential exposure for ground water ingestion and for ground water-generated gas migration to indoor/outdoor air. This data set is included in Appendix B Table Set A.

(B) On-Site Residential Use (for the immediately southeasterly adjacent residential property only) using the highest onsite soil and highest onsite ground water data as stated above. This data set provided the residential exposure for soil contact, for soil-generated gas migration to indoor/outdoor air, for ground water-generated gas migration to indoor/outdoor air, and for ground water ingestion. This data set is only pertinent for evaluation of the gas migration exposure pathways due to the proximity of the residential structure to the source area. This data set is included in Appendix B Table Set B.

(C) On-Site Commercial Use and Offsite Residential Use using highest onsite soil data for plume generation calculations and property boundary ground water data as representative of general ground water quality. This data set provided the generalized offsite residential exposure for ground water ingestion and for ground water-generated gas migration to indoor/outdoor air. This data set is pertinent for evaluation of the ground water generated-gas migration and ground water ingestion exposure pathways for surrounding residential properties and for the one known offsite well used for irrigation purposes. This data set is included in Appendix B Table Set C.

The numerical evaluation determines site specific target level concentrations (SSTLs) for each contaminant for each exposure pathway and exposure risk level evaluated, and then compares the actual soil and ground water concentrations (representative concentration) to the SSTLs. Should the actual concentration of a soil or ground water compound exceed one of the SSTLs, the pathway is determined to be the "critical" factor and this pathway is determined to be the "applicable" pathway. Individual contaminants may exceed one or more pathways, although only the lowest pathway is "flagged" as "applicable".

Contaminant concentrations and the exposure pathway SSTLs for onsite and offsite exposures are summarized on Table 5. The SSTL concentrations of benzene indicated on Table 5 have been modified to account for the California Regional water Quality Control Board adjustment of 0.29.

6.0 DISCUSSION

6.1 Onsite

The Tier Two evaluation results are summarized on Table 5. The evaluation indicates that the maximum concentration of benzene (2.4 ppm) exceeds the adjusted SSTL of 0.46 ppm for the soil volatilization to indoor air exposure pathway for onsite commercial use. It is noted that, with the exception of one sample, the concentrations of benzene range from below detection limits (ND) to 0.21 ppm, which are below the SSTL. Furthermore, the numerical evaluation calculation is based on a 24 hour occupancy rate, compared to the actual eight (8) hour occupancy rate, which indicates that the actual risk is less than the calculated risk.

The analysis also indicates that the concentration of vinyl chloride exceeds the commercial use SSTL for the leaching to the ground water pathway.

The analysis for the immediately adjacent residential property indicates that the maximum concentration of benzene (2.4 ppm) and several of the lower concentrations exceed the adjusted SSTL of 0.17 ppm for the residential soil volatilization to indoor air exposure pathway. Vinyl chloride also exceeds the residential use SSTL for leaching to the ground water pathway.

The ground water exposure pathways for the immediately adjacent residential property indicates that numerous compounds, including benzene and MTBE, exceed the SSTLs for volatilization to indoor air and for ground water ingestion.

6.2 Offsite

The ground water exposure pathways for the general offsite residential properties indicate that numerous compounds, such as benzene and MTBE, exceed the SSTLs for ground water ingestion, even at the reduced boundary ground water conditions. This would indicate that the down and cross gradient properties could be at risk should ground water use be occurring or be initiated in the future.

The analysis shows that benzene, MTBE, napthalene, PCE, TCE, and vinyl chloride values exceed the SSTLs for ground water ingestion at the offsite well distance of 250 feet. However, the well is actually located up gradient of the source area, and a previous test indicated non-detect for gasoline constituents.

The residential soil volatilization SSTL for benzene is 0.61 ppm. Using the California Regional Water Quality Control Board adjustment factor of 0.29, the adjusted SSTL would be 0.18 ppm. The representative detected, nearby source is 2.4 ppm benzene. Therefore, due to the proximity to the source, this adjacent property is at risk from soil volatilization.

7.0 CONCLUSIONS AND RECOMMENDATIONS

SSTLs are exceeded for various contaminants for adjacent residential and general ground water utilization, as well as for soil volatilization of benzene resulting in an inhalation risk. It is therefore recommended that additional source removal activity be accomplished to further reduce the risk from onsite contaminants to nearby residents.

The Tier Two evaluation indicates constituent reduction factors (CRF) for the various chemical compounds. CRF values range to a maximum on the order of 190; in other words, a cleanup factor of 190 (ratio of actual site contaminant concentration to the SSTL for the same compound) is required. In our experience, this is a relatively low value, which would indicate a passive as opposed to active remediation technology.

Remediation of the soil contamination could be achieved through vapor extraction or passive bioventing technologies. Ground water remediation could be accomplished by combined vapor extraction and oxygenation process [such as air sparging or introduction of oxygen releasing compounds ("ORCs")]. Therefore, we recommend that the previously completed feasibility evaluation, which concluded that passive bioventing and introduction of ORCs, be implemented for remediation.

8.0 LIMITATIONS

This report has been prepared according to generally accepted geologic and environmental practices. No other warranty, either expressed or implied as to the methods, results, conclusions or professional advice provided is made. It should be recognized that certain limitations are inherent in the evaluation of subsurface conditions, and that certain conditions may not be detected during an investigation of this type. If you wish to reduce the level of uncertainty associated with this study, we should be contacted for additional consultation.

The analysis, conclusions and recommendations contained in this report are based onsite conditions as they existed at the time of our investigation; review of previous reports relevant to the site conditions; and laboratory results from an outside analytical laboratory. Changes in the information or data gained from any of these sources could result in changes in our conclusions or recommendations. If such changes do occur, we should be advised so that we can review our report in light of those changes.

* * * * * * * * * * * * * * * * * * * *

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TABLE 1

GROUND WATER ELEVATION DATA

(All Measurements in Feet)

Well Number and Date of Measurement	Reference Elevation (2)	Depth to Water	Relative Ground Water Elevation (2)
MW-1 ("deep")			
8/6/90	37.0	21.5	15.5
1/28/92		21.0	16.0
4/27/92		20.95	16.05
8/10/92		22.20	14.8
2/11/94		15.93 (3)	21.07 (3)
2/28/94		13.85 (4)	23.15 (4)
9/9/94		20.19	16.81
12/28/94		14.91	22.09
4/13/95		14.18	22.82
11/1/95		20.90	16.10
3/8/96		11.82	25.18
3/25-26/96	36.97	13.54	23.43
10/7/96		21.41	15.59
1/15/97		13.34	23.63
6/23/97	36.99	19.91	17.08
10/6/97		21.55	15.44
MW-2 ("deep")			
2/11/94	36.40	14.16 (3)	22.24 (3)
2/28/94		16.01 (4)	20.39 (4)
9/9/94		18.96	17.44
12/28/94		21.42	14.98
4/13/95		19.69	16.71
11/1/95		21.91	14.49
3/8/96		14.56 (6)	21.84 (6)
3/25-26/96	36.39	10.84	25.55
10/7/96		18.41	17.98
1/15/97		10.07	26.32
6/23/97	36.40	13.73	22.67
10/6/97		17.03	19.37
MW-3 ("shallow")			
2/11/94	36.94	6.97 (3)	29.97 (3)
2/28/94		7.74 (4)	29.20 (4)
9/9/94		9.68	27.26
12/28/94		8.15	28.79
4/13/95		8.05	28.89
11/1/95		7.82	29.12
3/8/96		5.69	31.25
3/25-26/96	36.94	6.91	30.03
10/7/96		9.51	27.43
1/15/97		6.23	30.71

Table 1 continued following page

Table 1 continued

Well Number and Date of Measurement	Reference Elevation (2)	Depth to Water	Relative Ground Water Elevation (2)
MW-3 (cont')			
6/23/97	36.94	9.65	27.29
10/6/97		10.53	26.41
MW-4 ("deep")			
3/25-26/96	36.46	14.14	22.32
10/7/96		22.31	14.15
1/15/97		13.78	22.68
6/23/97	36.47	20.90	15.57
10/6/97		22.77	13.60
MW-5 ("deep")			
3/25-26/96	36.77	15.63	21.14
10/7/96		22.86	13.91
1/15/97		17.33	19.44
6/23/97	36.77	21.91	14.86
10/6/97		24.26	12.51
MW-6 ("shallow")			
3/25-26/96	36.42	8.52	27.90
10/7/96		12.82	23.60
1/15/97		7.72	28.70
6/23/97	36.42	11.42	25.00
10/6/97		12.67	23.75
MW-7 ("deep")			
6/23/97	36.83	19.93	16.90
10/6/97		21.43	15.40
MW-8 ("shallow")			
6/23/97	36.55	5.74	30.81
10/6/97		5.69	30.86
MW-9 ("shallow")			
6/23/97	36.70	17.04	19.66
10/6/97		19.17	20.53

Notes on following page

Notes to Table 1

(1) N/A = not applicable.
(2) Elevations from a survey conducted by Andreas Deak, California Licensed Land Surveyor, March 21, 1996, City of Oakland datum.
(3) Well under pressure when locking cap removed; water level may not have been stabilized.
(4) Depth to water was measured over a 120 minute period; indicated depths appear to be stabilized readings.
(5) Surveyed elevations of wells MW 1 and MW-2 varied to 0.02 foot on March 21, 1996 survey as compared to February 11, 1994 survey; previously calculated measurements of elevation have **not** been modified to reflect the new survey data. Similar slight survey differences on June 20, 1997 have not been corrected.
(6) Well not stabilized (water level rising).

TABLE 2A

SOIL

SUMMARY OF ANALYTICAL TEST RESULTS - PETROLEUM HYDROCARBONS

(Results reported in parts per million, mg/kg) (1) (2)

Sample	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylenes	Oil and Grease	HVOC
Initial UST Removal Confirmation Testing							
Gasoline USTs							
South tank	22	ND	ND	ND	ND	NA	NA
South tank	ND	ND	ND	ND	ND	NA	NA
Center tank	20	ND	0.031	ND	0.200	NA	NA
North tank	ND	0.068	ND	ND	ND	NA	NA
	21	2.4	2.9	0.320	1.7	NA	NA
Waste Oil UST							
1	NA	0.093	0.510	0.480	1.7	5500/760 (6)	ND
2	NA	0.160	0.400	0.810	2.4	7200/460 (6)	ND
Previous Kaldveer Investigation							
EB-1							
16.0	4	NA	NA	NA	NA	NA	NA
21.0	0.5	NA	NA	NA	NA	NA	NA
26.0	50	NA	NA	NA	NA	NA	NA
EB-2							
10.0	NA	NA	NA	NA	NA	4,200	NA
16.0	NA	NA	NA	NA	NA	ND	NA
EB-3							
10.0	NA	NA	NA	NA	NA	2,800	NA
16.0	NA	NA	NA	NA	NA	150	NA

Table continued following page

Table 2A continued

Sample	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylenes	Oil and Grease	HVOC
Waste Oil Tank Overexcavation Confirmation Testing							
1 (south side)	190	ND	ND	0.58	1.3	15,000/2700 9,800	NA
2 (west side)	ND	ND	ND	ND	ND	1,200/61 890	NA
3 (east side)	4.4	ND	ND	0.0083	0.021	11,000/4400 7,500	NA
4 (north side)	12	0.0042	ND	0.0091	0.021	410/250 230	NA
5 (west floor)	270	ND	3.5	1.3	ND	5,500/670 3,700	NA
6 (east floor)	260	ND	ND	1.2	2.5	3,500/680 2,200	NA
Stockpile	11	0.0031	ND	0.044	0.094 1,000	1,500/710	
Initial Hoexter Investigation							
MW-2							
10.5-11.0	910	ND	0.76	4.2	6.1	38	NA
16.0-16.5	ND	ND	0.022	ND	ND	ND	NA
20.5-21.0							
25.5-26.0 (3)	ND	ND	ND	ND	ND	ND	NA
MW-3							
10.5-11.0	ND	ND	0.020	ND	ND	ND	NA
20.5-21.0	1.2	0.17	0.047	ND	0.085	NA	NA
April, 1996 Hoexter Investigation							
EB-4							
7.5-8.0	300	ND	ND	3.3	8.3	820	**ND**
14.5-15.0	63	ND	ND	ND	0.82	3600	**Det** (5)
EB-5							
3.5-4.0	ND	ND	ND	ND	ND	NA	NA
7.5-8.0	130	ND	ND	0.55	1.3	NA	NA
12.5-13.0120	ND	ND	0.84	1.4	NA	NA	
18.0-18.5							
19.5-20.0 (3)	4.5	0.025	0.015	0.028	0.078	240	**Det** (5)
EB-7							
9.0-9.5	ND	ND	ND	ND	ND	ND	NA
14.0-14.5ND	ND	ND	ND	ND	NA	NA	
20.0-20.5							
23.0-23.5 (3)	130	ND	0.38	1.9	2.9	620	**ND**

Table continued following page

Table 2A continued

Sample	TPH-Gasoline	MTBE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Oil and Grease	HVOC
MW-4								
16.0-16.5	13	NA	0.038	0.015	ND	0.023	NA	NA
26.0-26.5								
31.0-31.5 (3)	68	NA	0.21	0.092	0.15	0.39	190	NA
36.0-36.5	5.4	NA	ND	0.008	0.015	0.011	NA	NA
MW-5								
11.0-11.5	9.7	NA	ND	0.019	ND	0.038	NA	NA
21.0-21.5	ND	NA	ND	ND	ND	ND	NA	NA
21.0-21.5								
35.5-36.0 (3)	NA	NA	NA	NA	NA	NA	ND	NA
MW-6								
11.0-11.5								
16.0-16.5 (3)	10	NA	0.037	0.033	0.18	0.46	ND	NA
June, 1997 Hoexter Investigation								
MW-7								
9.0-9.5	ND	ND	ND	ND	ND	ND	ND	**Det** (5)
MW-8								
9.0-9.5	71	ND	0.095	0.087	0.13	0.28	2400	**Det** (5)

Notes to Table 2A

(1) ND = non-detect
(2) NA = not applicable
(3) Composite
(4) Chromatogram patterns/comments
    G - gas
    WG - weathered gas
    NGM - non-gas mix, > C9
    NDM - non-diesel mix, generally C7 - C12/13
(5) Detected: see Table 2B
(6) TOG/Motor Oil

TABLE 2B

SOIL

SUMMARY OF ANALYTICAL TEST RESULTS - HALOGENATED VOLATILE ORGANIC COMPOUNDS

(Results reported in parts per million, mg/kg) (1) (2)

Sample	CA	1,2 DCB	1,2 DCA	cis 1,2 DCE	trns 1,2 DCE	1,2 DCP	PCE	TCE	VCL
EB-4									
7.5-8.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
14.5-15.0	ND	1.7	ND	ND	ND	ND	1.8	0.82	ND
EB-5									
18.0-18.5 19.5-20.0 (3)	ND	ND	ND	ND	ND	ND	0.52	ND	ND
EB-7									
20.0-20.5 23.0-23.5 (3)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-7									
9.0-9.5	ND	ND	ND	ND	ND	ND	ND	0.0081	ND
MW-8									
9.0-9.5	ND	0.055	ND	0.031	ND	ND	1.5	0.22	ND

Notes to Table 2B

(1) ND = non-detect
(2) NA = not applicable
(3) Composite
(4) Abbreviations as follows:

CA	Chloroethane
1,2 DCB	1,2 Dichlorobenzene
1,2 DCA	1,2 Dichloroethane
cis 1,2 DCE	cis 1,2 Dichloroethene
trans 1,2 DCE	trans 1,2 Dichloroethene
1,2 DCP	1,2 Dichloropropane
PCE	Tetrachloroethene (perchloroethene)
TCE	Trichloroethene
VCL	Vinyl chloride

TABLE 3A

GROUND WATER

SUMMARY OF ANALYTICAL TEST RESULTS - PETROLEUM HYDROCARBONS

(Results reported in parts per ***billion***, ug/l) (1)

Well and Date	TPH Gasoline	MTBE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Oil & Grease HVOC (7)
MW-1 ("deep")							
8/6/90 (2)	54,000	NA	3,500	3,200	1,900	9,400	7,600
1/28/92	2,000,000	NA	7,400	17,000	28,000	120,000	7,500 (5)
4/27/92 (3)	500,000	NA	3,400	6,400	10,000	45,000	440,000 (6)
4/27/92 (4)	175,000	NA	4,200	4,400	3,200	14,600	N/A
8/10/92	170,000	NA	4,200	4,200	3,300	15,900	120,000 (6)
2/11/94	1,800,000	NA	ND	5,100	5,200	23,900	16,000 (6)
9/9/94	23,000,000	NA	56,000	61,000	9,100	137,000	880,000 (6)
12/28/94	55,000	NA	3,700	5,300	1,400	5,800	83,000 (6)
4/13/95	45,000	NA	2,800	3,400	1,200	5,100	50,000 (5)
11/1/95	44,000	NA	2,600	3,400	1,400	5,900	52,000 (5)
3/25/96	45,000	NA	3,000	4,100	1,600	6,800	46,000 (5) (7)
10/8/96	55,000	490	3,300	4,500	1,700	7,100	11,000 (5) (7)
1/16/97	48,000	310	2,600	3,200	1,300	5,300	110,000 (5) (7)
6/23/97	40,000	ND<100	2,300	3,500	1,500	6,300	190,000 (5) (7)
10/7/97	45,000	ND<680	2,500	3,600	1,700	6,800	150,000 (5)(7)
MW-2 ("deep")							
2/11/94	130	NA	22	1.1	5.2	7.3	ND (6)
9/9/94	1,000	NA	89	ND	ND	6.9	ND (6)
12/28/94	330	NA	100	3.8	5.4	4.7	5100 (6)
4/13/95	1300	NA	280	6.9	33	23	ND (5)
11/1/95	100	NA	9.9	ND	ND	ND	ND (5)
3/25/96	4500	NA	470	57	220	280	ND (5) (7)
10/8/96	710	41	1.9	0.54	1.0	1.0	ND (5) (7)
1/16/97	330	12	41	2.4	1.3	9.9	ND (5) (7)
6/23/97	280	10	12	0.69	ND	13	NA (7)
10/7/97	320	ND<35	4.5	ND	ND	ND	NA (7)
MW-3 ("shallow")							
2/11/94	ND	NA	ND	ND	ND	ND	ND (6)
9/9/94	710	NA	10	ND	ND	3.5	ND (6)
12/28/94	2,300	NA	7.8	ND	130	73	ND (6)
4/13/95	1,700	NA	2.9	ND	61	24	ND (5)
11/1/95	1,100	NA	4.4	ND	27	22	ND (5)
3/25/96	2,300	NA	4.0	0.96	120	65	ND (5) (7)
10/8/96	160	ND	ND	0.5	1.2	0.77	ND (5) (7)
1/16/97	1,800	7.1	2.8	0.68	48	66	ND (5) (7)
6/23/97	ND	ND	ND	ND	ND	ND	NA (7)
10/7/97	ND	ND	ND	ND	ND	ND	NA (7)

Table continued following page

Table 3A continued

Well and Date	TPH Gasoline	MTBE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Oil & Grease HVOC (7)
MW-4 ("deep")							
3/26/96	9,900	NA	4,000	40	71	100	ND (5) (7)
10/8/96	7,800	140	3,900	33	31	40	ND (5) (7)
1/16/97	4,800	84	1,900	21	2.5	27	5,200 (5) (7)
6/23/97	6,200	160	2,800	20	20	23	ND (5) (7)
10/7/97	4,400	85	1800	14	18	14	ND (5) (7)
MW-5 ("deep")							
3/26/96	1,200	NA	43	8.2	83	95	ND (5) (7)
10/8/96	6,700	190	260	92	410	370	ND (5) (7)
1/16/97	3,000	90	150	68	190	180	ND (5) (7)
6/23/97	12,000	150	410	170	920	800	NA (7)
10/7/97	10,000	ND<480	310	62	530	500	NA (7)
MW-6 ("shallow")							
3/26/96	9,900	NA	1,000	150	470	720	ND (5) (7)
10/8/96	1,300	57	120	2.3	1.4	4.0	ND (5) (7)
1/15/97	6,500	220	570	65	170	630	ND (5) (7)
6/23/97	3,100	100	410	16	110	140	NA (7)
10/7/97	960	ND<74	78	3.4	1.8	5.8	NA (7)
MW-7 (deep")							
6/23/97	8,700	ND<20	950	260	520	380	ND (5) (7)
10/7/97	7,500	ND<310	1100	86	280	150	ND (5) (7)
MW-8 ("shallow")							
6/23/97	610	5.9	25	1.4	4.3	2.4	ND (5) (7)
10/7/97	120	ND	6.9	ND	ND	ND	ND (5) (7)
MW-9 ("shallow")							
6/23/97	32,000	250	340	280	1,500	4,300	ND (5) (7)
10/7/97	33,000	ND<690	880	350	1900	4700	ND (5) (7)
EB-4 ("grab" gw sample)							
3/8/96	15,000	NA	780	840	1,300	590	7,500 (5) (7)
MCL	NA	NA	1	150	700	1750	NA

Notes on following page

Notes to Table 3A

(1) ND - non-detect; N/A - not applicable
(2) Kaldveer Associates report, September, 1990
(3) Sequoia Analytical Laboratory
(4) Applied Remediation Laboratory
(5) Gravimetric Method
(6) Infrared Method
(7) **HVOC detected:** see Table 3B

TABLE 3B

GROUND WATER

SUMMARY OF ANALYTICAL TEST RESULTS - HALOGENATED VOLATILE ORGANIC COMPOUNDS (HVOC)

(Results reported in parts per **billion**, ug/l) (1) (2)

Well and Date	CA	1,2 DCB	1,2 DCA	cis 1,2 DCE	trns 1,2 DCE	1,2 DCP	PCE	TCE	VCL
MW-1 ("deep")									
3/25/96	ND<5	7.2	5.3	82	ND<5	ND<5	ND<5	7.8	25
10/8/96	ND<20	ND<20	ND<20	45	ND<20	ND<20	ND<20	ND<20	26
1/16/97	NA	NA	NA	NA	NA	NA	NA	NA	NA
6/23/97	ND<2	10	4.1	130	3.7	ND<2	5.0	23	54
10/7/97	3.5	7.4	2.2	82	3.8	ND<2	ND<3	9.5	68
MW-2 ("deep")									
3/25/96	ND<0.5	ND<0.5	8.7	11	ND<0.5	1.0	ND<0.5	3.2	0.92
10/8/96	ND<0.5	ND<0.5	15	9.6	ND<0.5	1.1	ND<0.5	6.6	ND<0.5
1/16/97	NA	NA	NA	NA	NA	NA	NA	NA	NA
6/23/97	ND<0.5	ND<0.5	9.7	8.0	ND<0.5	0.86	ND<0.5	9.6	ND<0.5
10/7/97	ND<0.5	ND<0.5	18	11	ND<0.5	1.2	ND<0.5	15	ND<0.5
MW-3 ("shallow")									
3/25/96	ND<0.5	ND<0.5	0.56	1.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
10/8/96	ND<0.5	ND<0.5	1.1	0.87	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1/16/97	NA	NA	NA	NA	NA	NA	NA	NA	NA
6/23/97	ND<0.5	ND<0.5	0.54	0.76	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
10/7/97	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-4 ("deep")									
3/26/96	ND<8	22	ND<8	300	9.2	ND<8	38	150	44
10/8/96	ND<15	22	4.9	320	ND<15	ND<15	52	130	60
1/16/97	NA	NA	NA	NA	NA	NA	NA	NA	NA
6/23/97 **(5)**	3.6	21	5.3	340	10	ND<3	11	110	83
10/7/97	ND<8	20	ND<8	380	9.9	ND<8	ND<12	56	56
MW-5 ("deep")									
3/26/96	1.4	ND<0.5	2.1	6.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	10
10/8/96	ND<2.5	ND<2.5	4.9	4.4	ND<2.5	ND<2.5	ND<2.5	ND<2.5	9.4
1/16/97	NA	NA	NA	NA	NA	NA	NA	NA	NA
6/23/97 **(5)**	2.0	2.1	2.0	7.2	0.71	ND<0.5	ND<0.5	ND<0.5	13
10/7/97	1.9	1.4	2.8	3.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	10

Continued following page

Table 3B continued

Well and Date	CA	1,2 DCB	1,2 DCA	cis 1,2 DCE	trns 1,2 DCE	1,2 DCP	PCE	TCE	VCL
MW-6 ("shallow")									
3/26/96	ND<0.5	ND<0.5	3.9	15	ND<0.5	1.9	0.77	2	ND<0.5
10/8/96	ND<0.5	ND<0.5	2.3	9.9	ND<0.5	ND<0.5	ND<0.5	0.57	ND<0.5
1/16/97	NA	NA	NA	NA	NA	NA	NA	NA	NA
6/23/97	ND<0.5	ND<0.5	1.6	10	ND<0.5	ND<0.5	ND<0.5	0.63	0.50
10/7/97	ND<0.5	ND<0.5	3.4	7.9	ND<0.5	ND<0.5	ND<0.5	0.82	ND<0.5
MW-7 ("deep")									
6/23/97	0.93	1.6	ND<0.5	2.4	1.2	ND<0.5	9.8	17	1.5
10/7/97	ND<2	ND<2	ND<2	8.5	2.4	ND<2	38	110	ND<2
MW-8 ("shallow")									
6/23/97	ND<1	5.4	ND<1	64	ND<1	ND<1	97	100	ND<1
10/7/97	ND<0.5	1.1	ND<0.5	16	ND<0.5	ND<0.5	30	27	ND<0.5
MW-9 (shallow")									
6/23/97 **(5)**	ND<1	2.1	ND<1	7.4	ND<1	ND<1	3.5	1.4	ND<1
10/7/97 **(6)**	ND<0.5	1.6	2.1	21	ND<0.5	0.7	ND<2	0.53	2.7
EB-4 (grab)									
3/8/96	ND	ND	ND	42	ND	ND	130	340	ND
MCL	NA	600	0.5	6	10	5	7	5	0.5

Notes to Table 3B

(1) ND = non-detect
(2) NA = not applicable
(3) Composite
(4) Abbreviations as follows:

CA	Chloroethane	1,2 DCP	1,2 Dichloropropane
1,2 DCB	1,2 Dichlorobenzene	PCE	Tetrachloroethene (perchloroethene)
1,2 DCA	1,2 Dichloroethane	TCE	trichloroethene
cis 1,2 DCE	cis 1,2 Dichloroethene	VCL	vinyl chloride
trans 1,2 DCE	trans 1,2 Dichloroethene		

(5) 6/23/97 additional detections:
MW-4, 4.8 ppb 1,4-Dichlorobenzene
MW-5, 0.53 ppb 1,4-Dichlorobenzene
MW-9 2.1 ppb chloroform (tetrachloromethane)
(6)10/7/97 additional detections:
MW-9, 0.65 chloroform (tetrachloromethane)

TABLE 3C

GROUND WATER

SUMMARY OF ANALYTICAL TEST RESULTS - POLYNUCLEAR AROMATIC HYDROCARBONS (PNA, PAH)

(Results reported in parts per **billion**, ug/l) (1) (2) (3)

Well and Date	Phenanthrene	Naphthalene
MW-1 ("deep")		
6/23/97	12	2200
10/7/97	ND<100	810
MCL	NA	NA

Notes to Table 3C

(1) ND = non-detect
(2) NA = not applicable
(3) Detected compounds only

TABLE 3D

GROUND WATER

SUMMARY OF ANALYTICAL TEST RESULTS - ADDITIONAL CHEMICAL PARAMETERS

(Results reported in parts per ***million***, mg/l) (1)

Well and Date	Dissolved Oxygen	Ferrous Iron	Nitrate	Sulfate
MW-1 ("deep")				
10/8/96	1.5	ND	ND	ND
1/16/97	1.4	3.6	ND	ND
6/23/97	NA	NA	NA	NA
10/7/97	NA	NA	NA	NA
MW-2 ("deep")				
10/8/96	3.7	ND	3	25
1/16/97	5.4	0.28	3	25
6/23/97	NA	NA	NA	NA
10/7/97	NA	NA	NA	NA
MW-3 ("shallow")				
10/8/96	3.8	ND	ND	5
1/16/97	5.2	ND	ND	5
6/23/97	NA	NA	NA	NA
10/7/97	NA	NA	NA	NA
MW-4 ("deep")				
10/8/96	3.0	ND	ND	ND
1/16/97	4.7	0.75	ND	5
6/23/97	NA	NA	NA	NA
10/7/97	NA	NA	NA	NA
MW-5 ("deep")				
10/8/96	2.8	ND	ND	8
1/16/97	3.4	0.38	ND	9
6/23/97	NA	NA	NA	NA
10/7/97	NA	NA	NA	NA
MW-6 ("shallow")				
10/8/96	2.7	ND	ND	6
1/16/97	2.7	0.28	ND	8
6/23/97	NA	NA	NA	NA
10/7/97	NA	NA	NA	NA
MW-7 ("deep")				
6/23/97	NA	NA	NA	NA
10/7/97	NA	NA	NA	NA

Continued following page

Table 3B continued

Well and Date	Dissolved Oxygen	Ferrous Iron	Nitrate	Sulfate
MW-8 ("shallow")				
6/23/97	NA	NA	NA	NA
10/7/97	NA	NA	NA	NA
MW-9 ("shallow")				
6/23/97	NA	NA	NA	NA
10/7/97	NA	NA	NA	NA

Notes to Table 3D

(1) ND = non-detect
(2) NA = not applicable

TABLE 4

SOIL

SUMMARY OF PHYSICAL TEST RESULTS

(Units as indicated)

Sample	Organic Carbon (%)	Water Content (%)	Bulk Density (pcf) (1)	Porosity (%)
MW-7				
8.0-8.5	2.9	18.3	113.3	33.8
MW-9				
8.0-8.5	2.1	15.6	118.5	30.0
Average				
Two samples	2.5	17.0	115.9	31.9

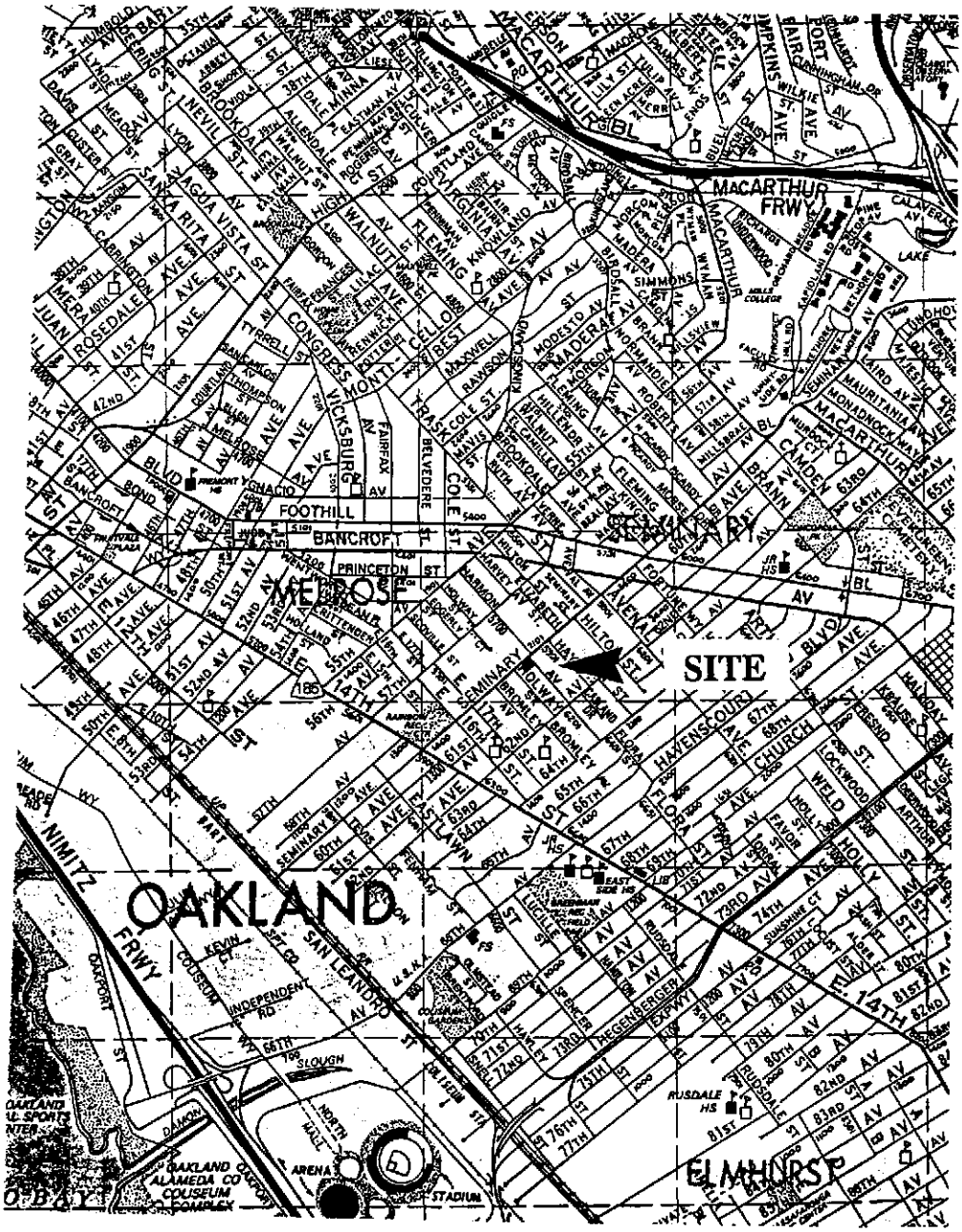
Notes

(1) pcf = pounds per cubic foot

TABLE 5
TIER II SITE SPECIFIC TARGET LEVELS

Constituent	ON-SITE										OFF-SITE				
	Representative Concentrations (PPM)		Soil Threshold Values for Ground Water Protection (Soil Data PPM)		Threshold Values for Ground Water Ingestion (GW Data PPM)		Threshold Values for Prevention of Soil Gas Migration (indoor) (Soil Data PPM)		Threshold Values for Prevention of Ground Water Gas Migration (indoor) (GW Data PPM)		Representative Concentrations (PPM)		Soil Threshold Values for Ground Water Protection (Soil Data PPM)	Threshold Values for Ground Water Ingestion (GW Data PPM)	Threshold Values for Prevention of Ground Water Gas Migration (indoor)(GW Data PPM)
	soil	gw	commercial (data set A)	residential (data set B)	commercial (data set A)	residential (data set B)	commercial (data set A)	residential (data set B)	commercial (data set A)	residential (data set B)	soil	gw	residential (data set C)	residential (data set C)	residential (data set C)
Benzene	2.4	4.0	7.25*	**2.12***	**0.029***	**0.008***	**0.46***	**0.18***	**0.55***	**0.18***	2.4	1.1	**2.12***	**0.008***	**0.18***
Chloroethane			5300	1900	41	15	4700	2200	4300	1700			1900	15	1700
1,2-DCB	1.7	0.022	>Res	>Res	9.2	3.3	6000	2300	>Sol	75	1.7	0.039	>Res	3.3	75
1,4-DCB			1500	450	0.12	0.035	220	70	6.4	2.1			450	0.035	2.1
1,1-DCA			3800	1400	10	3.7	230	110	180	71			1400	3.7	71
1,2-DCA	0.1	0.018	11	3.4	0.031	**0.00943**	1.5	0.47	1.5	0.47	0.1	0.0049	3.4	0.00943	0.47
Cis-1,2-DCE	0.031	0.38	190	68	1.0	**0.37**	16	7.6	8.3	3.2	0.031	0.064	68	0.37	3.2
Trans-1,2-DCE	0.1	0.01	400	140	2.0	0.73	33	15	44	17	0.1	0.0024	140	0.73	17
Ethylbenzene	4.2	1.7	>Res	>Res	10	3.7	>Res	220	>Sol	>Sol	4.2	0.92	>Res	3.7	>Sol
MTBE	0.1	0.49	47	17	0.51	**0.18**	2800	1100	7700	3000	0.1	0.22	17	**0.18**	3000
Napthalene	0.1	2.2	>Res	>Res	**0.41**	**0.15**	590	230	26	9.9	0.1	1.1	>Res	**0.15**	99
Phenanthrene	0.1	0.012	>Res	>Res	0.41	0.15	>Res	>Res	>Sol	>Sol	0.1	0.006	>Res	0.15	>Sol
Tetrachlorethene	1.8	0.097	43000	13000	0.055	0.016	8400	2700	14	4.5	1.8	0.097	13000	**0.016**	4.5
Toluene	3.5	5.3	>Res	>Res	20	7.3	290	110	230	90	3.5	0.26	>Res	7.3	90
1,1,1-TCA			>Res	5500	9.2	3.3	590	230	370	140			5500	3.3	140
1,1,2-TCA			1.4	0.42	0.05	0.015	0.8	0.31	4.3	1.4			0.42	0.015	1.4
Trichloroethene	0.82	0.15	36	11	0.26	**0.077**	7.6	3.0	3.0	0.96	0.82	0.11	11	**0.077**	0.96
Vinyl Chloride	0.1	0.083	0.14	**0.043**	**0.0015**	**0.00045**	0.15	**0.059**	**0.029**	**0.0092**	0.1	0.013	0.043	**0.00045**	0.0092
Xylenes	8.3	7.1	>Res	>Res	>Sol	73	>Res	>Res	>Sol	>Sol	8.3	0.8	>Res	73	>Sol

* Calculated Benzene values multiplied by 0.29 in accordance with RWQCB Guidelines.
SSTL's in **BOLD** are exceeded by soil or ground water concentrations.



ALAMEDA COUNTY

1991 *Thomas Guide.*

0 ¼ ½ ¾ 1 MILES
0 .1 .2 .5 1 KILOMETERS

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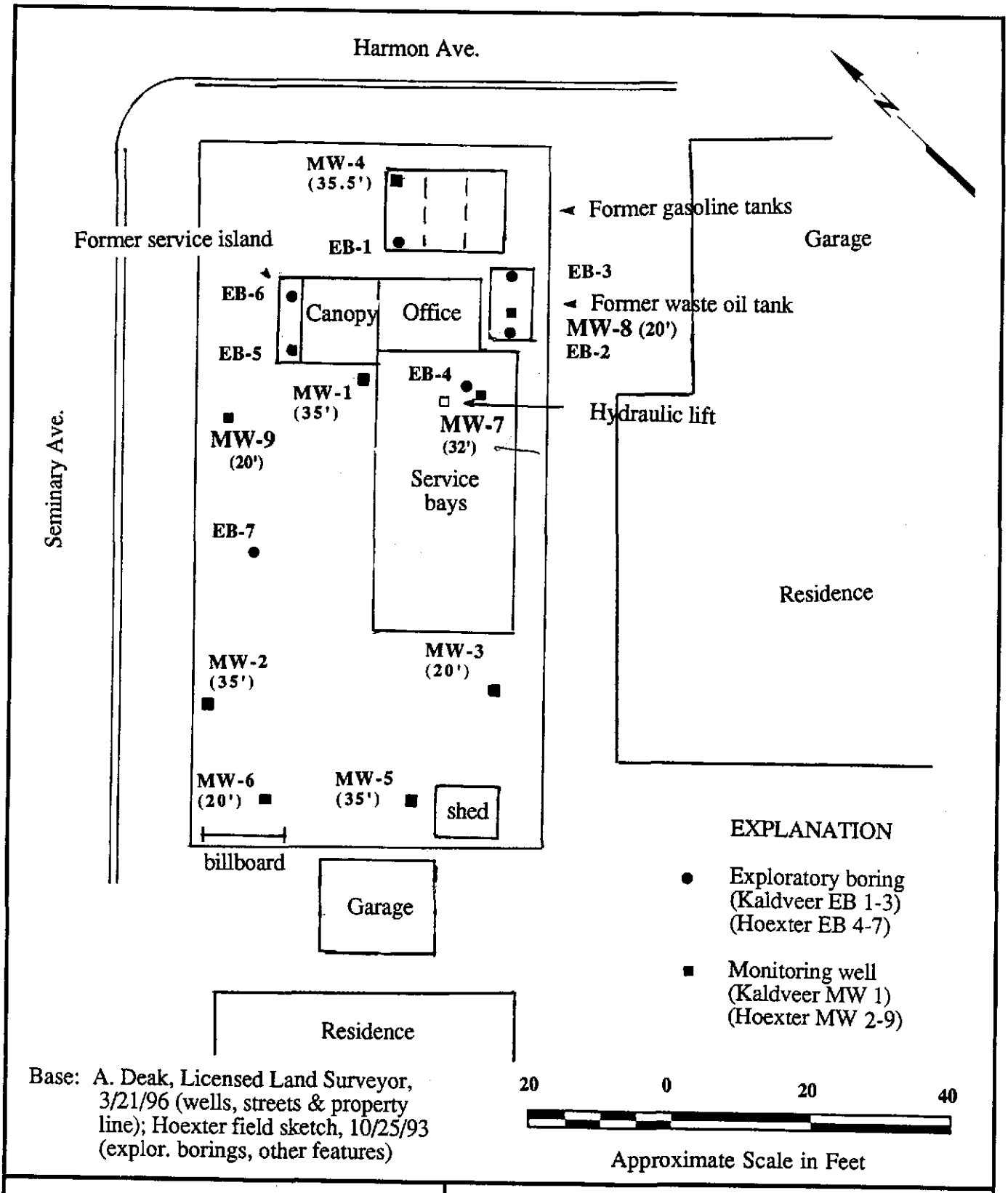
LOCATION MAP

1970 Seminary Ave.
Oakland, California

Project No.	Date	Figure 1
E-10-1B-192B	December, 1997	



Base: A. Deak, Licensed Land Surveyor, 3/21/96 (wells, streets & property line); Hoexter field sketch, 10/25/93 (explor. borings, other features)

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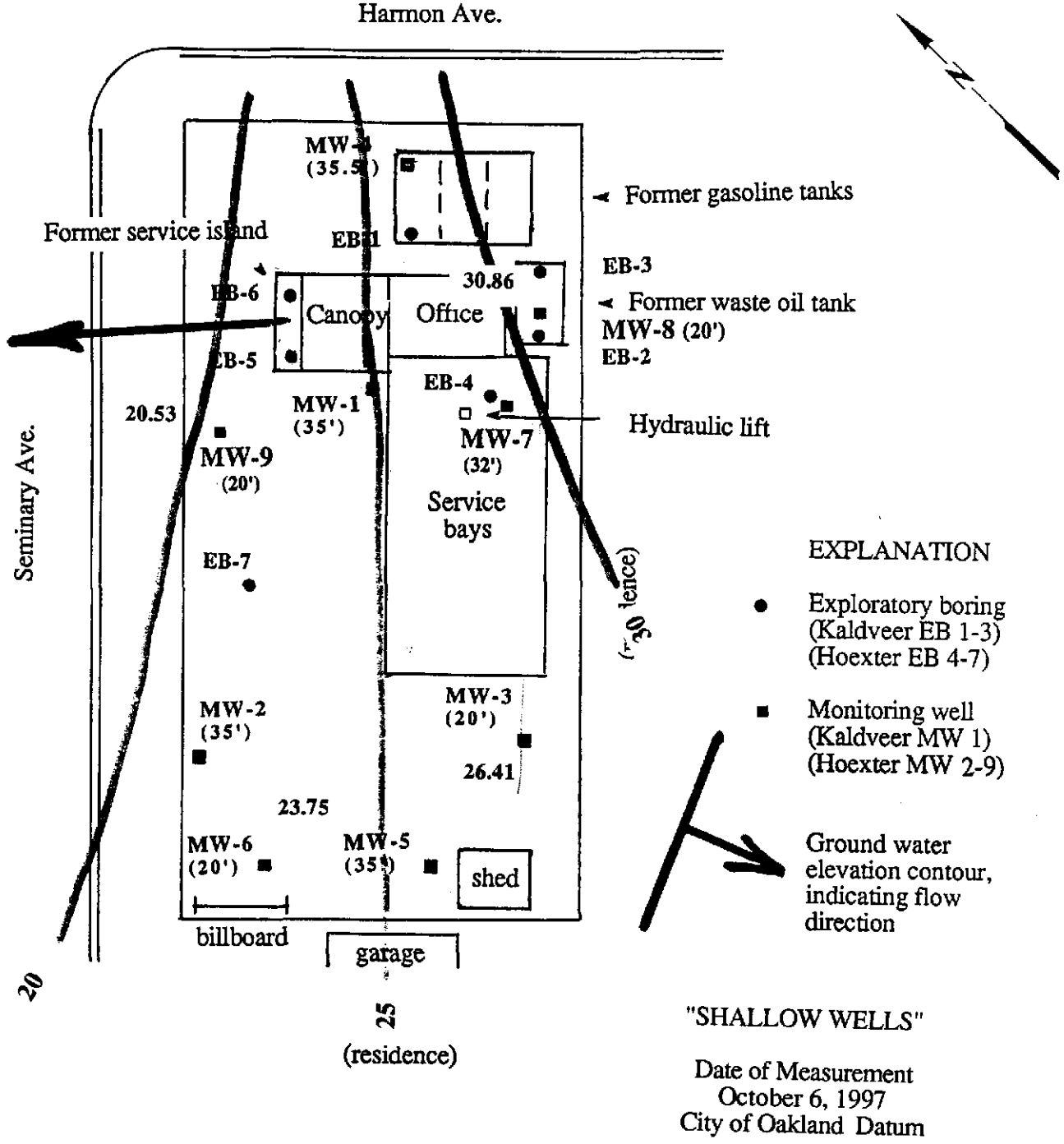
SITE PLAN

1970 Seminary Ave.
Oakland, California

Project No.	Date	Figure 2
E-10-1B-192B	December, 1997	



Base: A. Deak, Licensed Land Surveyor, 3/21/96 (wells, streets & property line); Hoexter field sketch, 10/25/93 (explor. borings, other features)

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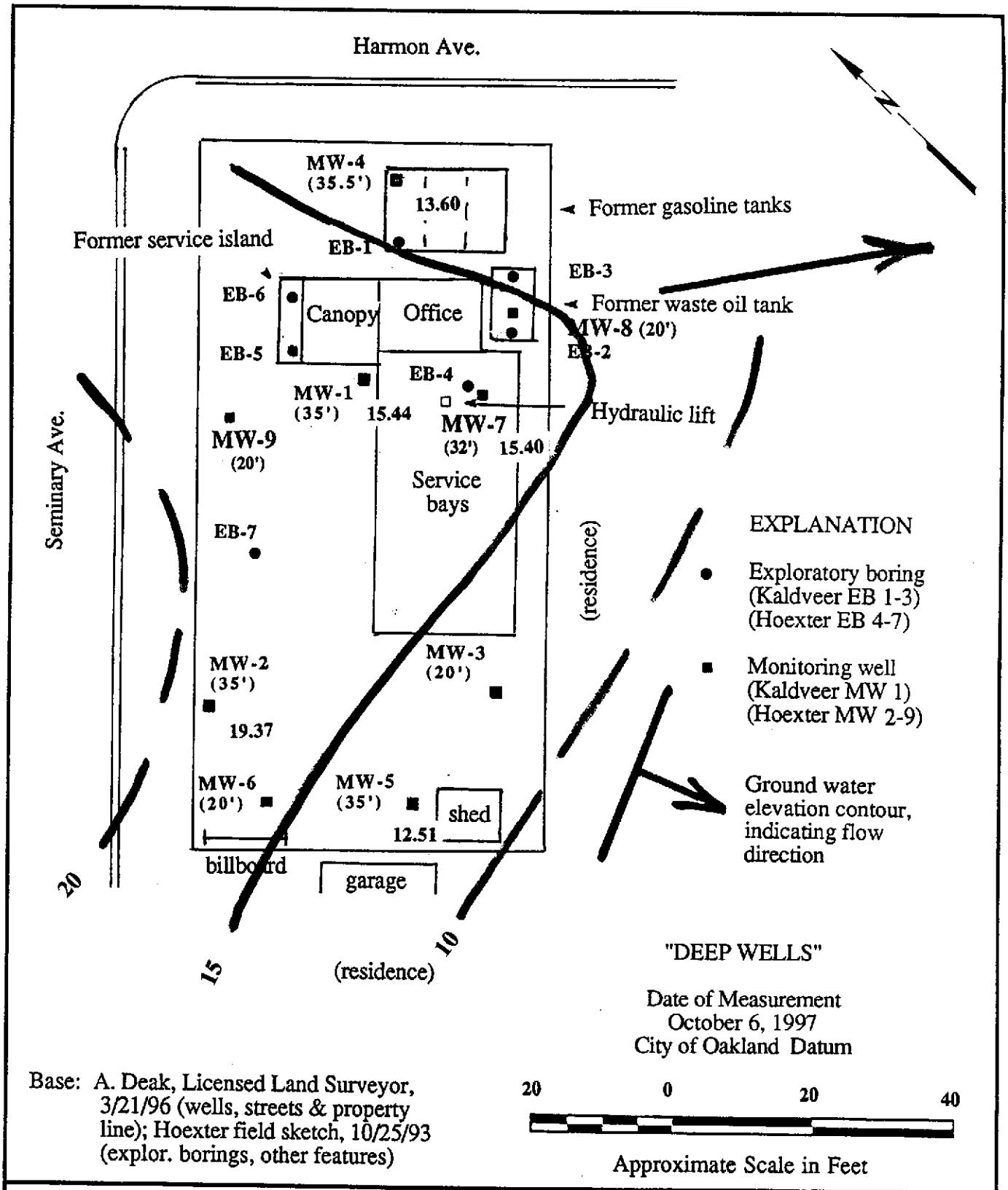
GROUND WATER CONTOUR AND GRADIENT DIRECTION MAP

1970 Seminary Ave.
Oakland, California

Project No.	Date	Figure 3A
E-10-1B-192B	December, 1997	



Base: A. Deak, Licensed Land Surveyor, 3/21/96 (wells, streets & property line); Hoexter field sketch, 10/25/93 (explor. borings, other features)

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GROUND WATER CONTOUR AND GRADIENT DIRECTION MAP

1970 Seminary Ave.
Oakland, California

Project No.	Date	Figure
E-10-1B-192B	December, 1997	3B

APPENDIX A

WATER SAMPLE LOG
CHAIN OF CUSTODY
ANALYTICAL TEST RESULTS

OCTOBER 6-7, 1997 SAMPLING EVENT

E-10-13-RCB

HOEXTER CONSULTING

Groundwater Sampling Field Log

Project Name/ No.: 1970 Seminary, Oakland CA
Client: D. Grimit
Project Manager: DF Hoexter
Sampler: DFH / JF
Casing Diameter: 2 inch X 3 inch ____ 4 inch ____ 6 inch ____ Other: ____

Lab I.D.: 81641
Date: 10/6-7/97
Sample Location/I.D.: MW-1
Start Time: ____

Depth of Well (feet): 35
Depth to Water (feet): 21.55
Sample Depth (feet): mid-

Calculated Purged Volume: 6.6
Actual Purged Volume 7.5

31 - 21.55 = 13.45 → 2.2 gal/vol.

Field Measurements

	Time	Cum	Volume (gal.)	pH (units)	E.C. (umhos/cm)	Temperature Degrees F	Color (visual)	Other
10/6/97	1316	0	0	6.71	887	65.6	clear	
	1324	2.5	2.5	6.71	885	64.5	cloudy	
	1334	5	2.5	6.70	875	64.0	↓	
	1343	7.5	2.5	6.69	844	63.7	↓	Dewatered

Purge Method

____ 2" Bladder Pump ✓ Bailer ____ Well Wizard ✓ Dedicated
____ Submersible Pump ____ Cenetrifugal Pump ____ Dipper ____ Other
____ Pneumatic Displacement Pump

Sample Method

____ 2" Bladder Pump ✓ Bailer ____ Well Wizard ✓ Dedicated
____ Surface Sampler ____ Dipper ____ Fultz Pump ____ Other

Well Integrity: OK
Remarks: Mod. sheen + odor, some oil "globules" on initial interface sample. Increased globules. Sampled following day, 10/7/97 10:25; GW level had recovered to 23.08' (89% initial SW)
Signature: DFH

Volumes Per Unit Length Selected Well Casing Diameters

Well Casing I.D. (inches)	Volume Per Unit Length Gal/ft	Cubic Ft/ft	L/M	L/Ft
1.5	0.0918	0.0123	1.140	0.3475
2.0	0.1632	0.0218	2.027	0.6178
3.0	0.3672	0.0491	4.560	1.3900
4.0	0.6528	0.0873	8.107	2.4710
6.0	1.4690	0.1963	18.240	5.5600

Conversion Factors

To Convert	Into	Mulitply
Ft. of Water	Lbs/sq.in.	0.4335
Lbs/Sq. inch	Ft. of Water	2.3070
Cubic feet	Gallons	7.4800
Gallons	Liters	3.7850
Feet	Meters	0.30048
Inches	Centimeters	2.5400

MW-1

E-10-13-192

HOEXTER CONSULTING

Groundwater Sampling Field Log

Project Name/ No: 1970 Seminary, Oakland CA
Client: D. Granit
Project Manager: DH Hoexter
Sampler: DH/JF
Casing Diameter: 2 inch X 3 inch ____ 4 inch ____ 6 inch ____ Other: ____

Lab I.D.: 81642
Date: 10/6-7/97
Sample Location/I.D.: MW-2
Start Time: ____

Depth of Well (feet): 35'
Depth to Water (feet): 17.03
Sample Depth (feet): ____

Calculated Purged Volume: 11.72
Actual Purged Volume 11

35 - 17.03 = 17.97'
→ 2.93 gal/vol

Field Measurements

	Time	Cum	Volume (gal.)	pH (units)	E.C. (umhos/cm)	Temperature Degrees F	Color (visual)	Other
10/6/97	1035	0	0	6.65	810	66.0	clear	
	1046	3	3	6.69	806	66.7	V. sl. cloudy	
	1055	6	3	6.73	773	66.1		
	1107	9	3	6.76	800	65.4		
	1117	11	2	6.80	810	65.4	< 3' wtr. w/ one gal remaining to purge	

Purge Method

____ 2" Bladder Pump ✓ Bailer ____ Well Wizard ✓ Dedicated
____ Submersible Pump ____ Cenetrifugal Pump ____ Dipper ____ Other
____ Pneumatic Displacement Pump

Sample Method

____ 2" Bladder Pump ✓ Bailer ____ Well Wizard ✓ Dedicated
____ Surface Sampler ____ Dipper ____ Fultz Pump ____ Other

Well Integrity: OK
Remarks: No product, sheen ~~on water~~ initial extraction. TPHdsel. Sampled following day 10/7/97 ~~09:40~~ 10:34; GW level had recovered to 24.57 (5%)
Signature: D. H. Hoexter

Volumes Per Unit Length Selected Well Casing Diameters

Well Casing I.D. (inches)	Volume Per Unit Length Gal/ft	Cubic Ft/ft	L/M	L/Ft
1.5	0.0918	0.0123	1.140	0.3475
2.0	0.1632	0.0218	2.027	0.6178
3.0	0.3672	0.0491	4.560	1.3900
4.0	0.6528	0.0873	8.107	2.4710
6.0	1.4690	0.1963	18.240	5.5600

Conversion Factors

To Convert	Into	Mulitply
Ft. of Water	Lbs/sq.in.	0.4335
Lbs/Sq. inch	Ft. of Water	2.3070
Cubic feet	Gallons	7.4800
Gallons	Liters	3.7850
Feet	Meters	0.30048
Inches	Centimeters	2.5400

MW-2

E-10-18-192B

HOEXTER CONSULTING

Groundwater Sampling Field Log

Project Name/ No.: 1970 Seminary, Oakland CA
Client: D. Grimit
Project Manager: D. Hoexter
Sampler: DH / JF
Casing Diameter: 2 inch ✓ 3 inch _____ 4 inch _____ 6 inch _____ Other: _____

Lab I.D.: 8/643
Date: 10/6-7/97
Sample Location/I.D.: MW-3
Start Time: _____

Depth of Well (feet): 20
Depth to Water (feet): 10.53
Sample Depth (feet): _____

Calculated Purged Volume: 6.16
Actual Purged Volume 6

20 - 10.53 = 9.47'
→ 1.54 gal/vol

Field Measurements

Time	Cum	Volume (gal.)	pH (units)	E.C. (umhos/cm)	Temperature Degrees F	Color (visual)	Other
10/6/97 1052	0	0	6.53	463	64.8	clear	
1039	1.5	1.5	6.66	575	66.3		
1044	3	1.5	6.62	563	66.0		
1049	4.5	1.5	6.66	571	66.0		
1056	6	1.5	6.69	569	65.8	✓ ± 1' water followin	

final purge volume.

Purge Method

_____ 2" Bladder Pump _____ Bailer _____ Well Wizard _____ Dedicated
_____ Submersible Pump _____ Cenetrifugal Pump _____ Dipper _____ Other
_____ Pneumatic Displacement Pump

Sample Method

_____ 2" Bladder Pump _____ Bailer _____ Well Wizard _____ Dedicated
_____ Surface Sampler _____ Dipper _____ Fultz Pump _____ Other

Well Integrity: OK
Remarks: Sl. H_2S (?) odor, no sheen or product initial interface extraction. Sampled following day 10/7/97 1047; SW level had recovered to 17.46' (27.9%)
Signature: D → T. H

Volumes Per Unit Length Selected Well Casing Diameters

Well Casing I.D. (inches)	Volume Per Unit Length Gal/ft	Cubic Ft/ft	L/M	L/Ft
1.5	0.0918	0.0123	1.140	0.3475
2.0	0.1632	0.0218	2.027	0.6178
3.0	0.3672	0.0491	4.560	1.3900
4.0	0.6528	0.0873	8.107	2.4710
6.0	1.4690	0.1963	18.240	5.5600

Conversion Factors

To Convert	Into	Mulitply
Ft. of Water	Lbs/sq.in.	0.4335
Lbs/Sq. inch	Ft. of Water	2.3070
Cubic feet	Gallons	7.4800
Gallons	Liters	3.7850
Feet	Meters	0.30048
Inches	Centimeters	2.5400

MW-3

E-10-113-97B

HOEXTER CONSULTING

Groundwater Sampling Field Log

Project Name/ No: 1970 Seminary, Oakland CA
Client: D. Grimit
Project Manager: D. Hoexter
Sampler: DH | JF
Casing Diameter: 2 inch x 3 inch ____ 4 inch ____ 6 inch ____ Other: ____

Lab I.D.: 81644
Date: 10/6-7/97
Sample Location/I.D.: MW-4
Start Time: ____

Depth of Well (feet): 35.5
Depth to Water (feet): 22.87
Sample Depth (feet): ____

Calculated Purged Volume: 8.24
Actual Purged Volume 8

35.5 - 22.87 = 12.63 → 2.06 gal/vol

Field Measurements

Time	Cum	Volume (gal.)	pH (units)	E.C. (umhos/cm)	Temperature Degrees F	Color (visual)	Other
1117	0	0	6.80	963	65.9	clear	
1133	2	2	6.76	1044	65.2	cloudy greenish grey	
1141	4	2	6.77	1043	65.3		
1148	6	2	6.76	1046	65.2		
1154	8	2	6.82	992	65.2	↓	↓

↓ 1' water ff.
final purge volume

Purge Method

✓ Dedicated

____ 2" Bladder Pump ____ Bailer ____ Well Wizard ____ Dedicated
____ Submersible Pump ____ Cenetrifugal Pump ____ Dipper ____ Other
____ Pneumatic Displacement Pump

Sample Method

✓ Bailer ✓ Dedicated

____ 2" Bladder Pump ____ Bailer ____ Well Wizard ____ Dedicated
____ Surface Sampler ____ Dipper ____ Fultz Pump ____ Other

Well Integrity: OK
Remarks: No sheen or prod; sl. odor on initial interface extraction. Sampled following day 10/7/97 @ 1104; gw level had recovered to 889.0-
Signature: D. Hoexter

Volumes Per Unit Length Selected Well Casing Diameters

Well Casing I.D. (inches)	Volume Per Unit Length Gal/ft	Cubic Ft/ft	L/M	L/Ft
1.5	0.0918	0.0123	1.140	0.3475
2.0	0.1632	0.0218	2.027	0.6178
3.0	0.3672	0.0491	4.560	1.3900
4.0	0.6528	0.0873	8.107	2.4710
6.0	1.4690	0.1963	18.240	5.5600

Conversion Factors

To Convert	Into	Mulitply
Ft. of Water	Lbs/sq.in.	0.4335
Lbs/Sq. inch	Ft. of Water	2.3070
Cubic feet	Gallons	7.4800
Gallons	Liters	3.7850
Feet	Meters	0.30048
Inches	Centimeters	2.5400

MW-4

E-10-1B-1928

HOEXTER CONSULTING

Groundwater Sampling Field Log

Project Name/ No.: 1970 Seminary, Oakland CA
Client: D. Grimm
Project Manager: D F. Hoexter
Sampler: DFH/JF
Casing Diameter: 2 inch x 3 inch _____ 4 inch _____ 6 inch _____ Other: _____

Lab I.D.: 81645
Date: 10/6-7/97
Sample Location/I.D.: MW-5
Start Time: _____

Depth of Well (feet): 35
Depth to Water (feet): 24.26
Sample Depth (feet): _____

Calculated Purged Volume: 5.25
Actual Purged Volume 5.5
35 - 24.26 = 10.74'

Field Measurements

→ 1.75 gal/vol

	Time	Cum	Volume (gal.)	pH (units)	E.C. (umhos/cm)	Temperature Degrees F	Color (visual)	Other
10/6/97	1128	0	0	6.76	890	63.5		
	1129	2	2	6.79	919	64.3	cloudy - grey/brown	
	1136	4	2	6.76	934	64.3		
	1150	5.5	1.5	6.92	920	64.2	Dewatered	

Purge Method

_____ 2" Bladder Pump ✓ Bailer _____ Well Wizard ✓ Dedicated
_____ Submersible Pump _____ Cenetrifugal Pump _____ Dipper _____ Other
_____ Pneumatic Displacement Pump

Sample Method

_____ 2" Bladder Pump ✓ Bailer _____ Well Wizard ✓ Dedicated
_____ Surface Sampler _____ Dipper _____ Fultz Pump _____ Other

Well Integrity: OK
Remarks: No odor, sheen or prod. initial extraction. Subsequent H_2S (?) odor. Sampled following day 10/7/97 @ 11:20 ; gw level had recovered to 92%
Signature: D F. Hoexter

Volumes Per Unit Length Selected Well Casing Diameters

Well Casing I.D. (inches)	Volume Per Unit Length Gal/ft	Cubic Ft/ft	L/M	L/Ft
1.5	0.0918	0.0123	1.140	0.3475
2.0	0.1632	0.0218	2.027	0.6178
3.0	0.3672	0.0491	4.560	1.3900
4.0	0.6528	0.0873	8.107	2.4710
6.0	1.4690	0.1963	18.240	5.5600

Conversion Factors

To Convert	Into	Mulitply
Ft. of Water	Lbs/sq.in. 0.4335	
Lbs/Sq. inch	Ft. of Water	2.3070
Cubic feet	Gallons	7.4800
Gallons	Liters	3.7850
Feet	Meters	0.30048
Inches	Centimeters	2.5400

MW-5

E-10-13-192B

HOEXTER CONSULTING

Groundwater Sampling Field Log

Project Name/ No.: 1970 Seminary, Oakland CA
Client: D. Granit
Project Manager: D.F. Hoexter
Sampler: DFH
Casing Diameter: 2 inch X 3 inch ____ 4 inch ____ 6 inch ____ Other: ____

Lab I.D.: 81646
Date: 10/6-7/97
Sample Location/I.D.: MW-6
Start Time: ____

Depth of Well (feet): 20
Depth to Water (feet): 12-67
Sample Depth (feet): ____

Calculated Purged Volume: 2.4
Actual Purged Volume 3.5

20 - 12-67 = 7.33'
→ 1.2 gal/vol.

Field Measurements

	Time	Cum	Volume (gal.)	pH (units)	E.C. (umhos/cm)	Temperature Degrees F	Color (visual)	Other
10/6/97	1205	0	0	6.68	921	67.0		
	1210	1.5	1.5	6.70	855	68.4	cloudy - brown	
	1214	3	1.5	6.74	853	67.5		
		3.5	0.5	/	/	/	Dewatered	

Purge Method

____ 2" Bladder Pump ✓ Bailer ____ Well Wizard ✓ Dedicated
____ Submersible Pump ____ Cenetrifugal Pump ____ Dipper ____ Other
____ Pneumatic Displacement Pump

Sample Method

____ 2" Bladder Pump ✓ Bailer ____ Well Wizard ✓ Dedicated
____ Surface Sampler ____ Dipper ____ Fultz Pump ____ Other

Well Integrity: OK
Remarks: NO product or sheen, faint odor, initial extraction. Sampled following day 10/7/97 @ 11:35; SW level had recovered to 96%
Signature: DFH

Volumes Per Unit Length Selected Well Casing Diameters

Well Casing I.D. (inches)	Volume Per Unit Length Gal/ft	Cubic Ft/ft	L/M	L/Ft
1.5	0.0918	0.0123	1.140	0.3475
2.0	0.1632	0.0218	2.027	0.6178
3.0	0.3672	0.0491	4.560	1.3900
4.0	0.6528	0.0873	8.107	2.4710
6.0	1.4690	0.1963	18.240	5.5600

Conversion Factors

To Convert	Into	Mulitply
Ft. of Water	Lbs/sq.in.	0.4335
Lbs/Sq. inch	Ft. of Water	2.3070
Cubic feet	Gallons	7.4800
Gallons	Liters	3.7850
Feet	Meters	0.30048
Inches	Centimeters	2.5400

MW-6

E-10-13-192B

HOEXTER CONSULTING

Groundwater Sampling Field Log

Project Name/ No.: 1970 Seminary, Oakland
Client: D. Gesmit
Project Manager: J.F. Hoexter
Sampler: DFH / JF
Casing Diameter: 2 inch X 3 inch _____ 4 inch _____ 6 inch _____ Other: _____

Lab I.D.: 81647
Date: 10/6-7/97
Sample Location/I.D.: MW-7
Start Time: _____

Depth of Well (feet): 32
Depth to Water (feet): 21.43
Sample Depth (feet): _____

Calculated Purged Volume: 6.9
Actual Purged Volume 7.5

32 - 21.43 = 10.57'
→ 1.73 gal/vol

Field Measurements

	Time	Cum	Volume (gal.)	pH (units)	E.C. (umhos/cm)	Temperature Degrees F	Color (visual)	Other
10/6/97	1216	0	0	6.92	847	66.3		
	1228	2	2	6.99	864	64.7	sl. cloudy	
	1236	4	2	6.98	875	64.7	↓	
	1243	6	2	7.00	786	64.4	↓	
	1249	8	1.5	6.95	766	64.6	± 1' wtr. after purge	

Purge Method

_____ 2" Bladder Pump ✓ Bailer _____ Well Wizard ✓ Dedicated
_____ Submersible Pump _____ Cenetrifugal Pump _____ Dipper _____ Other
_____ Pneumatic Displacement Pump

Sample Method

_____ 2" Bladder Pump ✓ Bailer _____ Well Wizard ✓ Dedicated
_____ Surface Sampler _____ Dipper _____ Fultz Pump _____ Other

Well Integrity: OK
Remarks: No apparent sheen odor, product on initial extraction; slight sheen and odor after one well volume. Sampled following day 10/7/97 @ 1150; GW level recovered to 94.44
Signature: D. J. F.

Volumes Per Unit Length Selected Well Casing Diameters

Well Casing I.D. (inches)	Volume Per Unit Length Gal/ft	Cubic Ft/ft	L/M	L/Ft
1.5	0.0918	0.0123	1.140	0.3475
2.0	0.1632	0.0218	2.027	0.6178
3.0	0.3672	0.0491	4.560	1.3900
4.0	0.6528	0.0873	8.107	2.4710
6.0	1.4690	0.1963	18.240	5.5600

Conversion Factors

To Convert	Into	Mulitply
Ft. of Water	Lbs/sq.in.	0.4335
Lbs/Sq. inch	Ft. of Water	2.3070
Cubic feet	Gallons	7.4800
Gallons	Liters	3.7850
Feet	Meters	0.30048
Inches	Centimeters	2.5400

MW-7

E-10-13-1928

HOEXTER CONSULTING

Groundwater Sampling Field Log

Project Name/ No: 1970 Seminary, Oakland CA
Client: D. Grimit
Project Manager: D.F. Hoexter
Sampler: DTH | JF
Casing Diameter: 2 inch ✓ 3 inch _____ 4 inch _____ 6 inch _____ Other: _____

Lab I.D.: 81648
Date: 10/6-7/97
Sample Location/I.D.: MW-8
Start Time: _____

Depth of Well (feet): 20
Depth to Water (feet): 5.69
Sample Depth (feet): _____

Calculated Purged Volume: 9.34
Actual Purged Volume 10

20 - 5.69 = 14.31 → 2.3 gal/ft

Field Measurements

	Time	Cum	Volume (gal.)	pH (units)	E.C. (umhos/cm)	Temperature Degrees F	Color (visual)	Other
10/6/97	1240	0	0	7.04	456	66.8		
	1250	2.5	2.5	6.95	417	67.3	cloudy - brown	
	1258	5	2.5	6.90	409	68.3		
	1310	7.5	2.5	6.87	411	68.0		
	1318	10	2.5	6.90	412	67.6		

Purge Method

_____ 2" Bladder Pump ✓ Bailer _____ Well Wizard ✓ Dedicated
_____ Submersible Pump _____ Cenetrifugal Pump _____ Dipper _____ Other
_____ Pneumatic Displacement Pump

Sample Method

_____ 2" Bladder Pump ✓ Bailer _____ Well Wizard ✓ Dedicated
_____ Surface Sampler _____ Dipper _____ Fultz Pump _____ Other

Well Integrity: OK
Remarks: No odor, sheen or product on initial extraction, slight sheen subsequent well volume, Sampled following day 10/7/97 @ 12:10; G.W. level recovered To 99.5%
Signature: D.F. H

Volumes Per Unit Length Selected Well Casing Diameters

Well Casing I.D. (inches)	Volume Per Unit Length Gal/ft	Cubic Ft/ft	L/M	L/Ft
1.5	0.0918	0.0123	1.140	0.3475
2.0	0.1632	0.0218	2.027	0.6178
3.0	0.3672	0.0491	4.560	1.3900
4.0	0.6528	0.0873	8.107	2.4710
6.0	1.4690	0.1963	18.240	5.5600

Conversion Factors

To Convert	Into	Mulitply
Ft. of Water	Lbs/sq.in.	0.4335
Lbs/Sq. inch	Ft. of Water	2.3070
Cubic feet	Gallons	7.4800
Gallons	Liters	3.7850
Feet	Meters	0.30048
Inches	Centimeters	2.5400

MW-8

E-10-1B-192R

HOEXTER CONSULTING

Groundwater Sampling Field Log

Project Name/ No: 1970 Seminary, Oakland
Client: D. Gremit
Project Manager: JF Hoexter
Sampler: DTH / JF
Casing Diameter: 2 inch X 3 inch ____ 4 inch ____ 6 inch ____ Other: ____

Lab I.D.: 81649
Date: 10/6-7/97
Sample Location/I.D.: MW-9
Start Time: ____

Depth of Well (feet): 20 - sounded well ; 20' top PVC, 20.3' ground surface
Depth to Water (feet): 19.17
Sample Depth (feet): ____

Calculated Purged Volume: ____
Actual Purged Volume ____

20 - 19.17 = 0.83' → 0.14 gal/vol -

Field Measurements

	Time	Cum	Volume (gal.)	pH (units)	E.C. (umhos/cm)	Temperature Degrees F	Color (visual)	Other
10/6/97	✓	✓	✓					

Purge Method

____ 2" Bladder Pump ✓ Bailer ____ Well Wizard ✓ Dedicated
____ Submersible Pump ____ Cenetrifugal Pump ____ Dipper ____ Other
____ Pneumatic Displacement Pump

Sample Method

____ 2" Bladder Pump ✓ Bailer ____ Well Wizard ✓ Dedicated
____ Surface Sampler ____ Dipper ____ Fultz Pump ____ Other

Well Integrity: OK
Remarks: < 3' water → not purged 10/6/97, Sampled 10/7/97 12:30

Signature: [signature]

Volumes Per Unit Length Selected Well Casing Diameters

Well Casing I.D. (inches)	Volume Per Unit Length Gal/ft	Cubic Ft/ft	L/M	L/Ft
1.5	0.0918	0.0123	1.140	0.3475
2.0	0.1632	0.0218	2.027	0.6178
3.0	0.3672	0.0491	4.560	1.3900
4.0	0.6528	0.0873	8.107	2.4710
6.0	1.4690	0.1963	18.240	5.5600

Conversion Factors

To Convert	Into	Mulitply
Ft. of Water	Lbs/sq.in.	0.4335
Lbs/Sq. inch	Ft. of Water	2.3070
Cubic feet	Gallons	7.4800
Gallons	Liters	3.7850
Feet	Meters	0.30048
Inches	Centimeters	2.5400

MW-9

McCAMPBELL ANALYTICAL INC.
110 Second Avenue South, #D7, Pacheco, CA 94553
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Hoexter Consulting Engineering Geology 734 Torreya Court Palo Alto, CA 94303	Client Project ID: #E-10-1B-192B; 1970 Seminary, Oakland	Date Sampled: 10/07/97 Date Received: 10/08/97
	Client Contact: David Hoexter	Date Extracted: 10/08/97
	Client P.O:	Date Analyzed: 10/08/97

10/15/97

Dear David:

Enclosed are:

1). the results of **10** samples from your **#E-10-1B-192B; 1970 Seminary, Oakland** project,

2). a QC report for the above samples

3). a copy of the chain of custody, and

4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director

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http://www.mccampbell.com E-mail: main@mccampbell.com

Hoexter Consulting	Client Project ID: #E-10-1B-192B; 1970 Seminary, Oakland	Date Sampled: 10/07/97
Engineering Geology		Date Received: 10/08/97
734 Torreya Court	Client Contact: David Hoexter	Date Extracted: 10/08-10/09/97
Palo Alto, CA 94303	Client P.O:	Date Analyzed: 10/08-10/09/97

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with Methyl tert-Butyl Ether* & BTEX*

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g)+	MTBE	Benzene	Toluene	Ethylben-zene	Xylenes	% Recovery Surrogate
81641	MW-1	W	45,000,a,h	ND<680	2500	3600	1700	6800	105
81642	MW-2	W	320,c	ND<35	4.5	ND	ND	ND	98
81643	MW-3	W	ND	ND	ND	ND	ND	ND	103
81644	MW-4	W	4400,c,a	85	1800	14	18	14	104
81645	MW-5	W	10,000,a	ND<480	310	62	530	500	99
81646	MW-6	W	960,c,a	ND<74	78	3.4	1.8	5.8	105
81647	MW-7	W	7500,a	ND<310	1100	86	280	150	97
81648	MW-8	W	120,c	ND	6.9	ND	ND	ND	94
81649	MW-9	W	33,000,a	ND<690	880	350	1900	4700	104
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	5.0	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.05	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, wipe samples in ug/wipe, soil and sludge samples in mg/kg, and all TCLP and SPLP extracts in ug/L

cluttered chromatogram; sample peak coelutes with surrogate peak

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~5 vol. % sediment; j) no recognizable pattern.

DHS Certification No. 1644

Edward Hamilton, Lab Director

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Hoexter Consulting Engineering Geology 734 Torreya Court Palo Alto, CA 94303	Client Project ID: #E-10-1B-192B; 1970 Seminary, Oakland	Date Sampled: 10/07/97
		Date Received: 10/08/97
	Client Contact: David Hoexter	Date Extracted: 10/10/97
	Client P.O:	Date Analyzed: 10/10/97

Petroleum Oil & Grease (with Silica Gel Clean-up) *

EPA methods 413.1, 9070 or 9071; Standard Methods 5520 D/E&F or 503 D&E for solids and 5520 B&F or 503 A&E for liquids

Lab ID	Client ID	Matrix	Oil & Grease*
81641	MW-1	W	150,h
81644	MW-4	W	ND
81647	MW-7	W	ND
81648	MW-8	W	ND
81649	MW-9	W	ND
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	5 mg/L
		S	50 mg/kg

* water samples are reported in mg/L, wipe samples in mg/wipe, soil and sludge samples in mg/kg, and all TCLP / STLC / SPLP extracts in mg/L

h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~5vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

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Hoexter Consulting	Client Project ID: #E-10-1B-192B; 1970 Seminary, Oakland	Date Sampled: 10/07/97
Engineering Geology		Date Received: 10/08/97
734 Torreya Court	Client Contact: David Hoexter	Date Extracted: 10/08/97
Palo Alto, CA 94303	Client P.O:	Date Analyzed: 10/08/97

Volatile Halocarbons

EPA method 601 or 8010

Lab ID	81641	81642	81643	81644
Client ID	MW-1	MW-2	MW-3	MW-4
Matrix	W	W	W	W
Compound	Concentration*			
Bromodichloromethane	ND<2	ND	ND	ND<8
Bromoform[b]	ND<2	ND	ND	ND<8
Bromomethane	ND<2	ND	ND	ND<8
Carbon Tetrachloride[c]	ND<2	ND	ND	ND<8
Chlorobenzene	ND<2	ND	ND	ND<8
Chloroethane	3.5	ND	ND	ND<8
2-Chloroethyl Vinyl Ether[d]	ND<2	ND	ND	ND<8
Chloroform [e]	ND<2	ND	ND	ND<8
Chloromethane	ND<2	ND	ND	ND<8
Dibromochloromethane	ND<2	ND	ND	ND<8
1,2-Dichlorobenzene	7.4	ND	ND	20
1,3-Dichlorobenzene	ND<2	ND	ND	ND<8
1,4-Dichlorobenzene	ND<2	ND	ND	ND<8
Dichlorodifluoromethane	ND<2	ND	ND	ND<8
1,1-Dichloroethane	ND<2	ND	ND	ND<8
1,2-Dichloroethane	2.2	18	ND	ND<8
1,1-Dichloroethene	ND<2	ND	ND	ND<8
cis 1,2-Dichloroethene	82	11	ND	380
trans 1,2-Dichloroethene	3.8	ND	ND	9.9
1,2-Dichloropropane	ND<2	1.2	ND	ND<8
cis 1,3-Dichloropropene	ND<2	ND	ND	ND<8
trans 1,3-Dichloropropene	ND<2	ND	ND	ND<8
Methylene Chloride[f]	ND<3	ND	ND	ND<8
1,1,2,2-Tetrachloroethane	ND<2	ND	ND	ND<8
Tetrachloroethene	ND<3	ND	ND	ND<12
1,1,1-Trichloroethane	ND<2	ND	ND	ND<8
1,1,2-Trichloroethane	ND<2	ND	ND	ND<8
Trichloroethene	9.5	15	ND	56
Trichlorofluoromethane	ND<2	ND	ND	ND<8
Vinyl Chloride[g]	68	ND	ND	56
% Recovery Surrogate	105	103	101	102
Comments	h			

* water and vapor samples and all TCLP & SPLP extracts are reported in ug/L, soil and sludge samples in ug/kg, wipe samples in ug/wipe

Reporting limit unless otherwise stated: water/TCLP/SPLP extracts, ND<0.5ug/L; soils and sludges, ND<5ug/kg; wipes, ND<0.2ug/wipe

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis

(b) tribromomethane; (c) tetrachloromethane; (d) (2-chloroethoxy) ethene: (e) trichloromethane; (f) dichloromethane; (g) chloroethene; (h) a lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~5 vol. % sediment; (j) sample diluted due to high organic content.

DHS Certification No. 1644

Edward Hamilton, Lab Director

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Hoexter Consulting Engineering Geology 734 Torreya Court Palo Alto, CA 94303	Client Project ID: #E-10-1B-192B; 1970 Seminary, Oakland	Date Sampled: 10/07/97 Date Received: 10/08/97
	Client Contact: David Hoexter	Date Extracted: 10/08/97
	Client P.O:	Date Analyzed: 10/08/97

Volatile Halocarbons

EPA method 601 or 8010

Lab ID	81645	81646	81647	81648
Client ID	MW-5	MW-6	MW-7	MW-8
Matrix	W	W	W	W
Compound	Concentration*			
Bromodichloromethane	ND	ND	ND<2	ND
Bromoform[b]	ND	ND	ND<2	ND
Bromomethane	ND	ND	ND<2	ND
Carbon Tetrachloride[c]	ND	ND	ND<2	ND
Chlorobenzene	ND	ND	ND<2	ND
Chloroethane	1.9	ND	ND<2	ND
2-Chloroethyl Vinyl Ether[d]	ND	ND	ND<2	ND
Chloroform[e]	ND	ND	ND<2	ND
Chloromethane	ND	ND	ND<2	ND
Dibromochloromethane	ND	ND	ND<2	ND
1,2-Dichlorobenzene	1.4	ND	ND<2	1.1
1,3-Dichlorobenzene	ND	ND	ND<2	ND
1,4-Dichlorobenzene	ND	ND	ND<2	ND
Dichlorodifluoromethane	ND	ND	ND<2	ND
1,1-Dichloroethane	ND	ND	ND<2	ND
1,2-Dichloroethane	2.8	3.4	ND<2	ND
1,1-Dichloroethene	ND	ND	ND<2	ND
cis 1,2-Dichloroethene	3.4	7.9	8.5	16
trans 1,2-Dichloroethene	ND	ND	2.4	ND
1,2-Dichloropropane	ND	ND	ND<2	ND
cis 1,3-Dichloropropene	ND	ND	ND<2	ND
trans 1,3-Dichloropropene	ND	ND	ND<2	ND
Methylene Chloride[f]	ND	ND	ND<2	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND<2	ND
Tetrachloroethene	ND	ND	38	30
1,1,1-Trichloroethane	ND	ND	ND<2	ND
1,1,2-Trichloroethane	ND	ND	ND<2	ND
Trichloroethene	ND	0.82	110	27
Trichlorofluoromethane	ND	ND	ND<2	ND
Vinyl Chloride[g]	10	ND	ND<2	ND
% Recovery Surrogate	104	102	102	102
Comments				

* water and vapor samples and all TCLP & SPLP extracts are reported in ug/L, soil and sludge samples in ug/kg, wipe samples in ug/wipe

Reporting limit unless otherwise stated: water/TCLP/SPLP extracts, ND<0.5ug/L; soils and sludges, ND<5ug/kg; wipes, ND<0.2ug/wipe

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis

(b) tribromomethane; (c) tetrachloromethane; (d) (2-chloroethoxy) ethene; (e) trichloromethane; (f) dichloromethane; (g) chloroethene; (h) a lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~5 vol. % sediment; (j) sample diluted due to high organic content.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 Second Avenue South, #D7, Pacheco, CA 94553
Telephone : 510-798-1620 Fax : 510-798-1622
http://www.mccampbell.com E-mail: main@mccampbell.com

Hoexter Consulting	Client Project ID: #E-10-1B-192B: 1970 Seminary, Oakland	Date Sampled: 10/07/97
Engineering Geology		Date Received: 10/08/97
734 Torreya Court	Client Contact: David Hoexter	Date Extracted: 10/08/97
Palo Alto, CA 94303	Client P.O:	Date Analyzed: 10/08/97

Volatile Halocarbons

EPA method 601 or 8010

Lab ID	81649			
Client ID	MW-9			
Matrix	W			
Compound	Concentration			
Bromodichloromethane	ND			
Bromoform[b]	ND			
Bromomethane	ND			
Carbon Tetrachloride[c]	ND			
Chlorobenzene	ND			
Chloroethane	ND			
2-Chloroethyl Vinyl Ether[d]	ND			
Chloroform [e]	0.65			
Chloromethane	ND			
Dibromochloromethane	ND			
1,2-Dichlorobenzene	1.6			
1,3-Dichlorobenzene	ND			
1,4-Dichlorobenzene	ND			
Dichlorodifluoromethane	ND			
1,1-Dichloroethane	ND			
1,2-Dichloroethane	2.1			
1,1-Dichloroethene	ND			
cis 1,2-Dichloroethene	21			
trans 1,2-Dichloroethene	ND			
1,2-Dichloropropane	0.70			
cis 1,3-Dichloropropene	ND			
trans 1,3-Dichloropropene	ND			
Methylene Chloride[f]	ND<1			
1,1,2,2-Tetrachloroethane	ND			
Tetrachloroethene	ND<2			
1,1,1-Trichloroethane	ND			
1,1,2-Trichloroethane	ND			
Trichloroethene	0.53			
Trichlorofluoromethane	ND			
Vinyl Chloride[g]	2.7			
% Recovery Surrogate	116			
Comments				

* water and vapor samples and all TCLP & SPLP extracts are reported in ug/L, soil and sludge samples in ug/kg, wipe samples in ug/wipe

Reporting limit unless otherwise stated: water/TCLP/SPLP extracts, ND<0.5ug/L; soils and sludges, ND<5ug/kg; wipes, ND<0.2ug/wipe

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis

(b) tribromomethane; (c) tetrachloromethane; (d) (2-chloroethoxy) ethene; (e) trichloromethane; (f) dichloromethane; (g) chloroethene; (h) a lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~5 vol. % sediment; (j) sample diluted due to high organic content.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 10/08/97 Matrix: WATER

Analyte	Concentration (mg/L) Sample #(81560)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.0	103.0	104.2	100.0	103.0	104.2	1.2
Benzene	0.0	10.3	10.4	10.0	103.0	104.0	1.0
Toluene	0.0	10.4	10.5	10.0	104.0	105.0	1.0
Ethyl Benzene	0.0	10.2	10.7	10.0	102.0	107.0	4.8
Xylenes	0.0	30.7	31.9	30.0	102.3	106.3	3.8
TPH(diesel)	0	162	163	150	108	109	1.0
TRPH (oil & grease)	0	29300	26900	27300	107	99	8.5

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
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QC REPORT FOR HYDROCARBON ANALYSES

Date: 10/09/97 Matrix: WATER

Analyte	Concentration (mg/L) Sample #(81643)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.0	104.0	104.8	100.0	104.0	104.8	0.8
Benzene	0.0	10.5	10.4	10.0	105.0	104.0	1.0
Toluene	0.0	10.6	10.5	10.0	106.0	105.0	0.9
Ethyl Benzene	0.0	10.8	10.6	10.0	108.0	106.0	1.9
Xylenes	0.0	32.2	32.0	30.0	107.3	106.7	0.6
TPH(diesel)	0	162	163	150	108	109	1.0
TRPH (oil & grease)	0	29300	26900	27300	107	99	8.5

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 10/10/97 Matrix: WATER

Analyte	Concentration (mg/L) Sample #(81643)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.0	104.2	103.0	100.0	104.2	103.0	1.2
Benzene	0.0	10.5	10.6	10.0	105.0	106.0	0.9
Toluene	0.0	10.5	10.6	10.0	105.0	106.0	0.9
Ethyl Benzene	0.0	10.7	10.8	10.0	107.0	108.0	0.9
Xylenes	0.0	32.2	32.4	30.0	107.3	108.0	0.6
TPH(diesel)	0	162	163	150	108	109	1.0
TRPH (oil & grease)	0	23200	22900	23700	98	97	1.3

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR EPA 8010/8020/EDB

Date: 10/08/97 Matrix: Water

Analyte	Concentration (ug/L) Sample #(81643)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
1,1-DCE	0.0	10.7	11.2	10.0	107	112	4.6
Trichloroethene	0.0	9.5	9.9	10.0	95	99	4.2
EDB	0.0	8.4	8.7	10.0	84	87	3.8
Chlorobenzene	0.0	9.7	10.1	10.0	97	101	3.7
Benzene	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Toluene	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chlorobz (PID)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

American Environmental Network

Certificate of Analysis

DOHS Certification: 1172 AIHA Accreditation: 11134

McCAMPBELL ANALYTICAL
110 2ND AVE. SOUTH, #D7
PACHECO, CA 94553

ATTN: EDWARD HAMILTON
CLIENT PROJ. ID: 9596
CLIENT PROJ. NAME: HC-E-101B-192B

REPORT DATE: 10/16/97

DATE(S) SAMPLED: 10/07/97

DATE RECEIVED: 10/08/97

AEN WORK ORDER: 9710097

PROJECT SUMMARY:

On October 8, 1997, this laboratory received 1 water sample(s).

Client requested sample(s) be analyzed for chemical parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.

Larry Klein
Laboratory Director

McCAMPBELL ANALYTICAL

SAMPLE ID: MW-1
AEN LAB NO: 9710097-01
AEN WORK ORDER: 9710097
CLIENT PROJ. ID: 9596

DATE SAMPLED: 10/07/97
DATE RECEIVED: 10/08/97
REPORT DATE: 10/16/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Extraction for PNAs	EPA 3520	-		Extrn Date	10/08/97
PNAs by EPA 8270	EPA 8270				
Acenaphthene	83-32-9	ND	100	ug/L	10/13/97
Acenaphthylene	208-96-8	ND	100	ug/L	10/13/97
Anthracene	120-12-7	ND	100	ug/L	10/13/97
Benzo(a)anthracene	56-55-3	ND	100	ug/L	10/13/97
Benzo(b)fluoranthene	205-99-2	ND	100	ug/L	10/13/97
Benzo(k)fluoranthene	207-08-9	ND	100	ug/L	10/13/97
Benzo(g,h,i)perylene	191-24-2	ND	100	ug/L	10/13/97
Benzo(a)pyrene	50-32-8	ND	100	ug/L	10/13/97
Chrysene	218-01-9	ND	100	ug/L	10/13/97
Dibenzo(a,h)anthracene	53-70-3	ND	100	ug/L	10/13/97
Fluoranthene	206-44-0	ND	100	ug/L	10/13/97
Fluorene	86-73-7	ND	100	ug/L	10/13/97
Indeno(1,2,3-cd)pyrene	193-39-5	ND	100	ug/L	10/13/97
Naphthalene	91-20-3	810 *	100	ug/L	10/13/97
Phenanthrene	85-01-8	ND	100	ug/L	10/13/97
Pyrene	129-00-0	ND	100	ug/L	10/13/97

Reporting limits elevated due to matrix interference.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

AEN (CALIFORNIA)
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9710097
CLIENT PROJECT ID: 9596

Quality Control and Project Summary

Surrogate (Nitrobenzene-d5) recovery for 9710097-01 (MW-1) was outside laboratory control limits. USEPA Guidelines for Organic Data Review (Feb. 1994) considers 8270 data valid with up to one surrogate per fraction outside of laboratory control limits. Results are reported without further qualification.

All other laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spikes(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analyses.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behaviour, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrument performance.

D: Surrogates diluted out.

I: Interference.

!: Indicates result outside of established laboratory QC limits.

ANALYSIS: Semi-Volatile Organics

MATRIX: Water

METHOD BLANK SAMPLES

SAMPLE TYPE: Blank-Method/Media blank | LAB ID: BLNK 1008 | INSTR RUN: GCMS10\971008080000/5/
INSTRUMENT: HP-5890 for Semi-volatiles | PREPARED: 10/08/97 | BATCH ID: BNAW100897
UNITS: ug/L | ANALYZED: 10/13/97 | DILUTION: 1.0000
METHOD:

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Nitrobenzene-d5	(surr)	91.4			100	91.4	46	109		
2-Fluorobiphenyl	(surr)	98.6			100	98.6	41	140		
Terphenyl-d14	(surr)	112			100	112	35	165		
Acenaphthene		ND		10						
Pyrene		ND		10						

LABORATORY CONTROL SAMPLES

SAMPLE TYPE: Laboratory Control Spike | LAB ID: LCD 1008 | INSTR RUN: GCMS10\971008080000/7/5
INSTRUMENT: HP-5890 for Semi-volatiles | PREPARED: 10/08/97 | BATCH ID: BNAW100897
UNITS: ug/L | ANALYZED: 10/10/97 | DILUTION: 1.0000
METHOD:

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Nitrobenzene-d5	(surr)	96.8	91.4		100	96.8	46	109		
2-Fluorobiphenyl	(surr)	123	98.6		100	123	41	140		
Terphenyl-d14	(surr)	141	112		100	141	35	165		
Acenaphthene		106	ND	10	100	106	60	114		
Pyrene		76.4	ND	10	100	76.4	32	121		

SAMPLE TYPE: Laboratory Control Spike | LAB ID: LCS 1008 | INSTR RUN: GCMS10\971008080000/6/5
INSTRUMENT: HP-5890 for Semi-volatiles | PREPARED: 10/08/97 | BATCH ID: BNAW100897
UNITS: ug/L | ANALYZED: 10/10/97 | DILUTION: 1.0000
METHOD:

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Nitrobenzene-d5	(surr)	92.2	91.4		100	92.2	46	109		
2-Fluorobiphenyl	(surr)	99.6	98.6		100	99.6	41	140		
Terphenyl-d14	(surr)	112	112		100	112	35	165		
Acenaphthene		95.4	ND	10	100	95.4	60	114		
Pyrene		96.0	ND	10	100	96.0	32	121		

LABORATORY CONTROL DUPLICATES

SAMPLE TYPE: Laboratory Control Sample Duplicate | LAB ID: LCR 1008 | INSTR RUN: GCMS10\971008080000/8/6
INSTRUMENT: HP-5890 for Semi-volatiles | PREPARED: 10/08/97 | BATCH ID: BNAW100897
UNITS: ug/L | ANALYZED: 10/10/97 | DILUTION: 1.0000
METHOD:

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Nitrobenzene-d5	(surr)	96.8	92.2		100	96.8	46	109		
2-Fluorobiphenyl	(surr)	123	99.6		100	123	41	140		
Terphenyl-d14	(surr)	141	112		100	141	35	165		
Acenaphthene		106	95.4	10	100				10.5	30
Pyrene		76.4	96.0	10	100				22.7	30

ANALYSIS: Semi-Volatile Organics

MATRIX: Water

SAMPLE SURROGATES

SAMPLE TYPE: Sample-Client
INSTRUMENT: HP-5890 for Semi-volatiles
UNITS: ug/L
METHOD:

LAB ID: 9710097-01A
PREPARED: 10/08/97
ANALYZED: 10/13/97

INSTR RUN: GCMS10\971008080000/9/
BATCH ID: BNAW100897
DILUTION: 1.0000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Nitrobenzene-d5	(surr)	129			100	129 !	46	109		
2-Fluorobiphenyl	(surr)	96.3			100	96.3	41	140		
Terphenyl-d14	(surr)	99.4			100	99.4	35	165		

---------- End of Quality Control Report ----------

9596XHC45

Pg 1 of 2

CHAIN-OF-CUSTODY RECORD

Project Number	Project Name
E-10-13-1923	1970 Seminary, Oakland

Sampler's Name (printed): D.F. Hoexter, J. Forsythe

Boring Number	Date	Time	Soil	Water	Sample Location or Depth	Type of Container / Sample Number	Number/Type of Containers	Analytical Tests: TPH-G/BTEX/MTBE	5 MS 8260 B/E	HVOC 8010	PNA by 8270 *				Preservation
(X) MW-1	10/7/97					VOA	3	X		X					Pres HCl
						1-L	1		X						
						1-L amb	1				X				
✓ MW-2						VOA	3	X		X					Pres HCl
✓ MW-3						VOA	3	X		X					Pres HCl
✓ MW-4						VOA	3	X		X					Pres HCl
						1-L	1		X						
(X) MW-5						VOA	3	X		X					Pres HCl
✓ MW-6						VOA	3	X		X					Pres HCl
X MW-7						VOA	3	X		X					Pres HCl
						1-L	1		X						
X MW-8						VOA	3	X		X					Pres HCl
						1-L	1		X						
XB MW-9						VOA	3	X		X					Pres HCl
						1-L	1	X	X	X					

81641
81642
81643
81644
81645
81646
81647
81648
81649

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Dan Hoexter	10/7/97 1545	#511
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
		James Fields 601
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)
James Fields 601	10/8/97 9:35	Jamilenic MAI

Ship To: McCampbell Analytical
110 - 2nd Ave S # D-7
Pacheco CA

Attention:
Phone No: 510-798-1620

Requested Turnaround Time: Normal

Contact: David Hoexter

Phone 650-494-2505

Remarks: Analyze per RWQCB LUFT Guidelines
* Please achieve as low detection limits as possible.

Hoexter Consulting
Engineering Geology
734 Torreya Court
Palo Alto, CA 94303

AEN

110097

McCAMPBELL ANALYTICAL

110 2nd AVENUE, # D7
PACHECO, CA 94553

(510) 798-1620 FAX (510) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME: ☐ RUSH ☐ 24 HOUR ☐ 48 HOUR ☒ 5 DAY ☐ ROUTINE

REPORT TO: ED HAMILTON BILL TO: MAI

PROJECT NUMBER: 9596 PROJECT NAME: HC-E-1018-1928

PROJECT LOCATION:

SAMPLE ID	LOCATION	SAMPLING DATE	SAMPLING TIME	# CONTAINERS	TYPE CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	METHOD PRESERVED: HCL	HNO3	ICE	OTHER	ANALYSIS REQUEST: EPA 601/8010	EPA 602/8020	EPA 608/8080	EPA 608/8080 – PCBs Only	EPA 624/8240/8260	EPA 625/8270	CAM – 17 Metals	EPA – Priority Pollutant Metals	LUFT Metals	LEAD (7240/7421/239.2/6010)	ORGANIC LEAD	RCI	OTHER: PNA by 8270	COMMENTS
01A MW-1	—	10/7	—	1	LTR	X							X														X	81641

RELINQUISHED BY: Milenic MAI DATE 10/8 TIME 1210

RELINQUISHED BY: Michael E. Hamilton DATE 10/8 TIME 1230

RELINQUISHED BY: DATE TIME

RECEIVED BY: Michael E. Hamilton

RECEIVED BY:

RECEIVED BY LABORATORY: Anna Gillespie 10/8/97 1230

REMARKS: LOWEST DETECTION LIMITS AS POSSIBLE!!
PLEASE FAX RESULTS AS SOON AS AVAILABLE!

APPENDIX B

RBCA TIER TWO
DATA AND SUMMARY TABLES

Data Set A

Onsite Commercial and Offsite Residential Use

Using Maximum Soil and Ground Water Values

Worst Case Property And Surrounding Properties Conditions

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: 1970 Seminary
Site Location: Oakland, CA

Job Identification: E-10-1B-192B
Date Completed: 12/3/97
Completed By: David Hoexter

Software: GSI RBCA Spreadsheet
Version: v 1.0

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

DEFAULT PARAMETERS

Exposure Parameter	Definition (Units)	Adult	Residential (1-6yrs)	(1-16 yrs)	Commercial/Industrial Chronic	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
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	***TRUE***			***TRUE***	
AAFd	Age adjustment on skin surface area	***TRUE***			***TRUE***	
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	Constrctn
Groundwater Pathways:				
GW.i	Groundwater Ingestion	TRUE	TRUE	
GW.v	Volatilization to Outdoor Air	FALSE	TRUE	
GW.b	Vapor Intrusion to Buildings	FALSE	TRUE	
Soil Pathways				
S.v	Volatiles from Subsurface Soils	TRUE	TRUE	
SS.v	Volatiles and Particulate Inhalation	TRUE	TRUE	TRUE
SS.d	Direct Ingestion and Dermal Contact	FALSE	TRUE	TRUE
S.l	Leaching to Groundwater from all Soils	TRUE	TRUE	
S.b	Intrusion to Buildings - Subsurface Soils	FALSE	TRUE	

Matrix of Receptor Distance and Location on- or off-site		Residential Distance	On-Site	Commercial/Industrial Distance	On-Site
GW	Groundwater receptor (cm)	7.6E+03	FALSE		TRUE
S	Inhalation receptor (cm)	3.0E+02	FALSE		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)	2	
Tier	RBCA Tier	2	

Surface Parameters	Definition (Units)	Residential	Commercial/Industrial Chronic	Construction
t	Exposure duration (yr)	30	25	1
A	Contaminated soil area (cm^2)	***8.1E+05***		***8.1E+05***
W	Length of affected soil parallel to wind (cm)	***1.1E+03***		1.0E+03
W.gw	Length of affected soil parallel to groundwater (c	***7.6E+02***		
Uair	Ambient air velocity in mixing zone (cm/s)	2.3E+02		
delta	Air mixing zone height (cm)	2.0E+02		
Lss	Definition of surficial soils (cm)	***1.4E+02***		
Pe	Particulate areal emission rate (g/cm^2/s)	2.2E-10		

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	***6.1E+02***
I	Groundwater infiltration rate (cm/yr)	***1.5E+01***
Ugw	Groundwater Darcy velocity (cm/yr)	***4.5E+03***
Ugw.tr	Groundwater Transport velocity (cm/yr)	***1.4E+04***
Ks	Saturated Hydraulic Conductivity(cm/s)	
grad	Groundwater Gradient (cm/cm)	
Sw	Width of groundwater source zone (cm)	9.1E+02
Sd	Depth of groundwater source zone (cm)	1.2E+03
BC	Biodegradation Capacity (mg/L)	4.2E+00
BIO?	Is Bioattenuation Considered	TRUE
phi.eff	Effective Porosity in Water-Bearing Unit	3.8E-01
foc sat	Fraction organic carbon in water-bearing unit	***2.5E-02***

Soil	Definition (Units)	Value		
hc	Capillary zone thickness (cm)	***7.6E+00***		
hv	Vadose zone thickness (cm)	***3.0E+02***		
rho	Soil density (g/cm^3)	***1.956***		
foc	Fraction of organic carbon in vadose zone	***0.025***		
phi	Soil porosity in vadose zone	***0.32***		
Lgw	Depth to groundwater (cm)	***3.0E+02***		
Ls	Depth to top of affected soil (cm)	***2.4E+02***		
Lsubs	Thickness of affected subsurface soils (cm)	***9.1E+01***		
pH	Soil/groundwater pH	***6.8***		
		capillary	vadose	foundation
phi.w	Volumetric water content	***0.3***	***0.17***	***0.1***
phi.a	Volumetric air content	***0.02***	***0.15***	***0.22***

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)	***1.0E+01***	
eta	Foundation crack fraction	***0.005***	

Dispersive Transport Parameters	Definition (Units)	Residential	Commercial
Groundwater			
ax	Longitudinal dispersion coefficient (cm)		
ay	Transverse dispersion coefficient (cm)		
az	Vertical dispersion coefficient (cm)		
Vapor			
dcy	Transverse dispersion coefficient (cm)	3.9E+01	
dcz	Vertical dispersion coefficient (cm)	2.7E+01	

REPRESENTATIVE COC CONCENTRATIONS IN SOURCE MEDIA

(Complete the following table)

CONSTITUENT	Representative COC Concentration					
	in Groundwater		in Surface Soil		in Subsurface Soil	
	value (mg/L)	note	value (mg/kg	note	alue (mg/kg	note
Acenaphthene						
Anthracene						
Benzene	4.0E+0				2.4E+0	
Chloroethane						
Dichlorobenzene (1,2) (-o)	2.2E-2				1.7E+0	
Dichlorobenzene, (1,4) (-p)						
Dichloroethane, 1,1-						
Dichloroethane, 1,2-	1.8E-2				1.0E-1	
Dichloroethene, cis-1,2-	3.8E-1				3.1E-2	
Dichloroethene,1,2-trans-	1.0E-2				1.0E-1	
Ethylbenzene	1.7E+0				4.2E+0	
Fluoranthene						
Methyl t-Butyl Ether	4.9E-1				1.0E-1	
Naphthalene	2.2E+0				1.0E-1	
Phenanthrene	1.2E-2				1.0E-1	
Pyrene						
Tetrachloroethene	9.7E-2				1.8E+0	
Toluene	5.3E+0				3.5E+0	
Trichloroethane, 1,1,1-						
Trichloroethane, 1,1,2-						
Trichloroethene	1.5E-1				8.2E-1	
Vinyl chloride	8.3E-2				1.0E-1	
Xylene (mixed isomers)	7.1E+0				8.3E+0	

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

CONSTITUENT MOLE FRACTIONS

(Complete the following table)

CONSTITUENT	Mole Fraction of Constituent in Source Material
Acenaphthene	
Anthracene	
Benzene	
Chloroethane	
Dichlorobenzene (1,2) (-o)	
Dichlorobenzene, (1,4) (-p)	
Dichloroethane, 1,1-	
Dichloroethane, 1,2-	
Dichloroethene, cis-1,2-	
Dichloroethene,1,2-trans-	
Ethylbenzene	
Fluoranthene	
Methyl t-Butyl Ether	
Naphthalene	
Phenanthrene	
Pyrene	
Tetrachloroethene	
Toluene	
Trichloroethane, 1,1,1-	
Trichloroethane, 1,1,2-	
Trichloroethene	
Vinyl chloride	
Xylene (mixed isomers)	

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

GROUNDWATER DAF VALUES

(Enter DAF values in the grey area of the following table)

CONSTITUENT	Dilution Attenuation Factor (DAF) in Groundwater	
	Residential Receptor	Comm./Ind. Receptor
Acenaphthene	#DIV/0!	#DIV/0!
Anthracene	#DIV/0!	#DIV/0!
Benzene	1.0E+0	1.0E+0
Chloroethane	#DIV/0!	#DIV/0!
Dichlorobenzene (1,2) (-o)	1.0E+0	1.0E+0
Dichlorobenzene, (1,4) (-p)	#DIV/0!	#DIV/0!
Dichloroethane, 1,1-	#DIV/0!	#DIV/0!
Dichloroethane, 1,2-	1.0E+0	1.0E+0
Dichloroethene, cis-1,2-	1.0E+0	1.0E+0
Dichloroethene,1,2-trans-	1.0E+0	1.0E+0
Ethylbenzene	1.0E+0	1.0E+0
Fluoranthene	#DIV/0!	#DIV/0!
Methyl t-Butyl Ether	1.0E+0	1.0E+0
Naphthalene	1.0E+0	1.0E+0
Phenanthrene	1.0E+0	1.0E+0
Pyrene	#DIV/0!	#DIV/0!
Tetrachloroethene	1.0E+0	1.0E+0
Toluene	1.0E+0	1.0E+0
Trichloroethane, 1,1,1-	#DIV/0!	#DIV/0!
Trichloroethane, 1,1,2-	#DIV/0!	#DIV/0!
Trichloroethene	1.0E+0	1.0E+0
Vinyl chloride	1.0E+0	1.0E+0
Xylene (mixed isomers)	1.0E+0	1.0E+0

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

RBCA SITE ASSESSMENT **Input Screen 9.1**

CONSTITUENT HALF-LIFE VALUES

(Complete the following table)

CONSTITUENT	Half-Life of Constituent (day)
Acenaphthene	
Anthracene	
Benzene	
Chloroethane	
Dichlorobenzene (1,2) (-o)	
Dichlorobenzene, (1,4) (-p)	
Dichloroethane, 1,1-	
Dichloroethane, 1,2-	
Dichloroethene, cis-1,2-	
Dichloroethene,1,2-trans-	
Ethylbenzene	
Fluoranthene	
Methyl t-Butyl Ether	
Naphthalene	
Phenanthrene	
Pyrene	
Tetrachloroethene	
Toluene	
Trichloroethane, 1,1,1-	
Trichloroethane, 1,1,2-	
Trichloroethene	
Vinyl chloride	
Xylene (mixed isomers)	

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

Tier 2 Worksheet 9.1

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

SURFACE SOIL SSTL VALUES (< 3 FT BGS)

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

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2

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

CONSTITUENTS OF CONCERN		Representative Concentration	X 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: 250 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: 10 feet	Commercial: (on-site)	Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
83-32-9	Acenaphthene	0.0E+0	#VALUE!	#VALUE!	NA	>Res	>Res	>Res	#VALUE!	☠	#VALUE!
120-12-7	Anthracene	0.0E+0	#VALUE!	#VALUE!	NA	>Res	>Res	>Res	#VALUE!	☠	#VALUE!
71-43-2	Benzene	0.0E+0	7.3E+0	2.5E+1	NA	4.6E+2	3.6E+1	8.3E+2	7.3E+0	☐	<1
75-00-3	Chloroethane	0.0E+0	1.9E+3	5.3E+3	NA	>Res	>Res	>Res	1.9E+3	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	0.0E+0	>Res	>Res	NA	>Res	3.4E+3	4.0E+3	3.4E+3	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0	4.5E+2	1.5E+3	NA	2.4E+3	4.5E+1	1.3E+3	4.5E+1	☐	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0	1.4E+3	3.8E+3	NA	>Res	3.8E+3	3.6E+3	1.4E+3	☐	<1
107-06-2	Dichloroethane, 1,2-	0.0E+0	3.4E+0	1.1E+1	NA	1.5E+2	1.1E+1	3.1E+2	3.4E+0	☐	<1
156-59-2	Dichloroethene, cis-1,2-	0.0E+0	6.8E+1	1.9E+2	NA	>Res	3.7E+2	3.0E+2	6.8E+1	☐	<1
156-60-5	Dichloroethene,1,2-trans-	0.0E+0	1.4E+2	4.0E+2	NA	>Res	>Res	>Res	1.4E+2	☐	<1
100-41-4	Ethylbenzene	0.0E+0	>Res	>Res	NA	>Res	>Res	>Res	>Res	☐	<1
206-44-0	Fluoranthene	0.0E+0	#VALUE!	#VALUE!	NA	>Res	>Res	>Res	#VALUE!	☠	#VALUE!
1634-04-4	Methyl t-Butyl Ether	0.0E+0	1.7E+1	4.7E+1	NA	>Res	2.0E+2	2.4E+2	1.7E+1	☐	<1
91-20-3	Naphthalene	0.0E+0	>Res	>Res	NA	>Res	7.7E+2	>Res	7.7E+2	☐	<1
85-01-8	Phenanthrene	0.0E+0	>Res	>Res	NA	>Res	>Res	>Res	>Res	☐	<1
129-00-0	Pyrene	0.0E+0	#VALUE!	#VALUE!	NA	>Res	>Res	>Res	#VALUE!	☠	#VALUE!
127-18-4	Tetrachloroethene	0.0E+0	1.3E+4	4.3E+4	NA	5.2E+4	2.1E+1	6.4E+2	2.1E+1	☐	<1
108-88-3	Toluene	0.0E+0	>Res	>Res	NA	>Res	>Res	>Res	>Res	☐	<1
71-55-6	Trichloroethane, 1,1,1-	0.0E+0	5.5E+3	>Res	NA	>Res	3.5E+3	4.0E+3	3.5E+3	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0	4.2E-1	1.4E+0	NA	2.3E+2	1.8E+1	4.2E+2	4.2E-1	☐	<1
79-01-6	Trichloroethene	0.0E+0	1.1E+1	3.6E+1	NA	>Res	9.7E+1	>Res	1.1E+1	☐	<1
75-01-4	Vinyl chloride	0.0E+0	4.3E-2	1.4E-1	NA	4.4E+1	5.7E-1	1.6E+1	4.3E-2	☐	<1
1330-20-7	Xylene (mixed isomers)	0.0E+0	>Res	>Res	NA	>Res	>Res	>Res	>Res	☐	<1

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

SUBSURFACE SOIL SSTL VALUES (> 3 FT BGS)

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

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2

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

CONSTITUENTS OF CONCERN		Representative Concentration	X 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: 250 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential: 10 feet	Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
83-32-9	Acenaphthene	0.0E+0	#VALUE!	#VALUE!	NA	NA	>Res	>Res	>Res	#VALUE!	✂ ✂	#VALUE!
120-12-7	Anthracene	0.0E+0	#VALUE!	#VALUE!	NA	NA	>Res	>Res	>Res	#VALUE!	✂ ✂	#VALUE!
71-43-2	Benzene	2.4E+0	7.3E+0	2.5E+1	NA	NA	1.6E+0	6.9E+2	9.7E+2	1.6E+0	■	2.0E+00
75-00-3	Chloroethane	0.0E+0	1.9E+3	5.3E+3	NA	NA	4.7E+3	>Res	>Res	1.9E+3	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	1.7E+0	>Res	>Res	NA	NA	6.0E+3	>Res	>Res	6.0E+3	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0	4.5E+2	1.5E+3	NA	NA	2.2E+2	>Res	>Res	2.2E+2	☐	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0	1.4E+3	3.8E+3	NA	NA	2.3E+2	>Res	>Res	2.3E+2	☐	<1
107-06-2	Dichloroethane, 1,2-	1.0E-1	3.4E+0	1.1E+1	NA	NA	1.5E+0	2.2E+2	3.1E+2	1.5E+0	☐	<1
156-59-2	Dichloroethene, cis-1,2-	3.1E-2	6.8E+1	1.9E+2	NA	NA	1.6E+1	>Res	>Res	1.6E+1	☐	<1
156-60-5	Dichloroethene,1,2-trans-	1.0E-1	1.4E+2	4.0E+2	NA	NA	3.3E+1	>Res	>Res	3.3E+1	☐	<1
100-41-4	Ethylbenzene	4.2E+0	>Res	>Res	NA	NA	>Res	>Res	>Res	>Res	☐	<1
206-44-0	Fluoranthene	0.0E+0	#VALUE!	#VALUE!	NA	NA	>Res	>Res	>Res	#VALUE!	✂ ✂	#VALUE!
########	Methyl t-Butyl Ether	1.0E-1	1.7E+1	4.7E+1	NA	NA	2.8E+3	>Res	>Res	1.7E+1	☐	<1
91-20-3	Naphthalene	1.0E-1	>Res	>Res	NA	NA	5.9E+2	>Res	>Res	5.9E+2	☐	<1
85-01-8	Phenanthrene	1.0E-1	>Res	>Res	NA	NA	>Res	>Res	>Res	>Res	☐	<1
129-00-0	Pyrene	0.0E+0	#VALUE!	#VALUE!	NA	NA	>Res	>Res	>Res	#VALUE!	✂ ✂	#VALUE!
127-18-4	Tetrachloroethene	1.8E+0	1.3E+4	4.3E+4	NA	NA	8.4E+3	>Res	>Res	8.4E+3	☐	<1
108-88-3	Toluene	3.5E+0	>Res	>Res	NA	NA	2.9E+2	>Res	>Res	2.9E+2	☐	<1
71-55-6	Trichloroethane, 1,1,1-	0.0E+0	5.5E+3	>Res	NA	NA	5.9E+2	>Res	>Res	5.9E+2	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0	4.2E-1	1.4E+0	NA	NA	8.0E-1	3.5E+2	4.9E+2	4.2E-1	☐	<1
79-01-6	Trichloroethene	8.2E-1	1.1E+1	3.6E+1	NA	NA	7.6E+0	>Res	>Res	7.6E+0	☐	<1
75-01-4	Vinyl chloride	1.0E-1	4.3E-2	1.4E-1	NA	NA	1.5E-1	6.7E+1	9.3E+1	4.3E-2	■	2.0E+00
########	Xylene (mixed isomers)	8.3E+0	>Res	>Res	NA	NA	>Res	>Res	>Res	>Res	☐	<1

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

GROUNDWATER SSTL VALUES

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

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2

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

CONSTITUENTS OF CONCERN		Representative Concentration	X 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: 250 feet	Commercial (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential (on-site)	Commercial: (on-site)	(mg/L	"■" If yes	Only if "yes" left
83-32-9	Acenaphthene	0.0E+0	#VALUE!	#VALUE!	NA	NA	>Sol	NA	>Sol	#VALUE!	☒	#VALUE!
120-12-7	Anthracene	0.0E+0	#VALUE!	#VALUE!	NA	NA	>Sol	NA	>Sol	#VALUE!	☒	#VALUE!
71-43-2	Benzene	4.0E+0	2.9E-2	9.9E-2	NA	NA	1.9E+0	NA	8.4E+2	2.9E-2	■	1.4E+02
75-00-3	Chloroethane	0.0E+0	1.5E+1	4.1E+1	NA	NA	4.3E+3	NA	>Sol	1.5E+1	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	2.2E-2	3.3E+0	9.2E+0	NA	NA	>Sol	NA	>Sol	3.3E+0	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0	3.5E-2	1.2E-1	NA	NA	6.4E+0	NA	>Sol	3.5E-2	☐	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0	3.7E+0	1.0E+1	NA	NA	1.8E+2	NA	>Sol	3.7E+0	☐	<1
107-06-2	Dichloroethane, 1,2-	1.8E-2	9.4E-3	3.1E-2	NA	NA	1.5E+0	NA	4.9E+2	9.4E-3	■	2.0E+00
156-59-2	Dichloroethene, cis-1,2-	3.8E-1	3.7E-1	1.0E+0	NA	NA	8.3E+0	NA	>Sol	3.7E-1	■	1.0E+00
156-60-5	Dichloroethene,1,2-trans-	1.0E-2	7.3E-1	2.0E+0	NA	NA	4.4E+1	NA	>Sol	7.3E-1	☐	<1
100-41-4	Ethylbenzene	1.7E+0	3.7E+0	1.0E+1	NA	NA	>Sol	NA	>Sol	3.7E+0	☐	<1
206-44-0	Fluoranthene	0.0E+0	#VALUE!	#VALUE!	NA	NA	>Sol	NA	>Sol	#VALUE!	☒	#VALUE!
1634-04-4	Methyl t-Butyl Ether	4.9E-1	1.8E-1	5.1E-1	NA	NA	7.7E+3	NA	>Sol	1.8E-1	■	3.0E+00
91-20-3	Naphthalene	2.2E+0	1.5E-1	4.1E-1	NA	NA	2.6E+1	NA	>Sol	1.5E-1	■	1.5E+01
85-01-8	Phenanthrene	1.2E-2	1.5E-1	4.1E-1	NA	NA	>Sol	NA	>Sol	1.5E-1	☐	<1
129-00-0	Pyrene	0.0E+0	#VALUE!	#VALUE!	NA	NA	>Sol	NA	>Sol	#VALUE!	☒	#VALUE!
127-18-4	Tetrachloroethene	9.7E-2	1.6E-2	5.5E-2	NA	NA	1.4E+1	NA	>Sol	1.6E-2	■	6.0E+00
108-88-3	Toluene	5.3E+0	7.3E+0	2.0E+1	NA	NA	2.3E+2	NA	>Sol	7.3E+0	☐	<1
71-55-6	Trichloroethane, 1,1,1-	0.0E+0	3.3E+0	9.2E+0	NA	NA	3.7E+2	NA	>Sol	3.3E+0	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0	1.5E-2	5.0E-2	NA	NA	4.3E+0	NA	1.2E+3	1.5E-2	☐	<1
79-01-6	Trichloroethene	1.5E-1	7.7E-2	2.6E-1	NA	NA	3.0E+0	NA	8.9E+2	7.7E-2	■	2.0E+00
75-01-4	Vinyl chloride	8.3E-2	4.5E-4	1.5E-3	NA	NA	2.9E-2	NA	1.6E+1	4.5E-4	■	1.9E+02
1330-20-7	Xylene (mixed isomers)	7.1E+0	7.3E+1	>Sol	NA	NA	>Sol	NA	>Sol	7.3E+1	☐	<1

Data Set B

"Onsite" Residential (Immediately Adjacent Southeast Property)

Using Maximum Soil and Ground Water Values

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: 1970 Seminary
Site Location: Oakland, CA

Job Identification: E-10-1B-192B
Date Completed: 12/3/97
Completed By: David Hoexter

Software: GSI RBCA Spreadsheet
Version v 1.0

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

DEFAULT PARAMETERS

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
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	***TRUE***			***TRUE***	
AAFd	Age adjustment on skin surface area	***TRUE***			***TRUE***	
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
Groundwater Pathways:				
GW.i	Groundwater Ingestion	TRUE	FALSE	
GW.v	Volatilization to Outdoor Air	TRUE	FALSE	
GW.b	Vapor Intrusion to Buildings	TRUE	FALSE	
Soil Pathways				
S.v	Volatiles from Subsurface Soils	TRUE	FALSE	
SS.v	Volatiles and Particulate Inhalation	TRUE	FALSE	TRUE
SS.d	Direct Ingestion and Dermal Contact	TRUE	FALSE	TRUE
S.l	Leaching to Groundwater from all Soils	TRUE	FALSE	
S.b	Intrusion to Buildings - Subsurface Soils	TRUE	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	7.6E+03	FALSE
S	Inhalation receptor (cm)		TRUE	3.0E+02	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	Commercial/Industrial Chronic	Commercial/Industrial Construction
t	Exposure duration (yr)	30	25	1
A	Contaminated soil area (cm^2)	***8.1E+05***		***8.1E+05***
W	Length of affected soil parallel to wind (cm)	***1.1E+03***		1.0E+03
W.gw	Length of affected soil parallel to groundwater (c	***7.6E+02***		
Uair	Ambient air velocity in mixing zone (cm/s)	2.3E+02		
delta	Air mixing zone height (cm)	2.0E+02		
Lss	Definition of surficial soils (cm)	***1.4E+02***		
Pe	Particulate areal emission rate (g/cm^2/s)	2.2E-10		

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	***6.1E+02***
I	Groundwater infiltration rate (cm/yr)	***1.5E+01***
Ugw	Groundwater Darcy velocity (cm/yr)	***4.5E+03***
Ugw.tr	Groundwater Transport velocity (cm/yr)	***1.4E+04***
Ks	Saturated Hydraulic Conductivity(cm/s)	
grad	Groundwater Gradient (cm/cm)	
Sw	Width of groundwater source zone (cm)	9.1E+02
Sd	Depth of groundwater source zone (cm)	6.1E+02
BC	Biodegradation Capacity (mg/L)	4.2E+00
BIO?	Is Bioattenuation Considered	TRUE
phi eff	Effective Porosity in Water-Bearing Unit	3.8E-01
foc sat	Fraction organic carbon in water-bearing unit	***2.5E-02***

Soil	Definition (Units)	Value
hc	Capillary zone thickness (cm)	***7.6E+00***
hv	Vadose zone thickness (cm)	***3.0E+02***
rho	Soil density (g/cm^3)	***1.856***
foc	Fraction of organic carbon in vadose zone	***0.025***
phi	Soil porosity in vadose zone	***0.32***
Lgw	Depth to groundwater (cm)	***3.0E+02***
Ls	Depth to top of affected soil (cm)	***2.4E+02***
Lsubs	Thickness of affected subsurface soils (cm)	***9.1E+01***
pH	Soil/groundwater pH	***6.8***

		capillary	vadose	foundation
phi.w	Volumetric water content	***0.3***	***0.17***	***0.1***
phi.a	Volumetric air content	***0.02***	***0.15***	***0.22***

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)	***1.0E+01***	
eta	Foundation crack fraction	***0.005***	

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

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 alue (mg/kg	note
Acenaphthene						
Anthracene						
Benzene	4.0E+0				2.4E+0	
Chloroethane						
Dichlorobenzene (1,2) (-o)	2.2E-2				1.7E+0	
Dichlorobenzene, (1,4) (-p)						
Dichloroethane, 1,1-						
Dichloroethane, 1,2-	1.8E-2				1.0E-1	
Dichloroethene, cis-1,2-	3.8E-1				3.1E-2	
Dichloroethene,1,2-trans-	1.0E-2				1.0E-1	
Ethylbenzene	1.7E+0				4.2E+0	
Fluoranthene						
Methyl t-Butyl Ether	4.9E-1				1.0E-1	
Naphthalene	2.2E+0				1.0E-1	
Phenanthrene	1.2E-2				1.0E-1	
Pyrene						
Tetrachloroethene	9.7E-2				1.8E+0	
Toluene	5.3E+0				3.5E+0	
Trichloroethane, 1,1,1-						
Trichloroethane, 1,1,2-						
Trichloroethene	1.5E-1				8.2E-1	
Vinyl chloride	8.3E-2				1.0E-1	
Xylene (mixed isomers)	7.1E+0				8.3E+0	

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

CONSTITUENT MOLE FRACTIONS

(Complete the following table)

CONSTITUENT	Mole Fraction of Constituent in Source Material
Acenaphthene	
Anthracene	
Benzene	
Chloroethane	
Dichlorobenzene (1,2) (-o)	
Dichlorobenzene, (1,4) (-p)	
Dichloroethane, 1,1-	
Dichloroethane, 1,2-	
Dichloroethene, cis-1,2-	
Dichloroethene,1,2-trans-	
Ethylbenzene	
Fluoranthene	
Methyl t-Butyl Ether	
Naphthalene	
Phenanthrene	
Pyrene	
Tetrachloroethene	
Toluene	
Trichloroethane, 1,1,1-	
Trichloroethane, 1,1,2-	
Trichloroethene	
Vinyl chloride	
Xylene (mixed isomers)	

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

GROUNDWATER DAF VALUES

(Enter DAF values in the grey area of the following table)

CONSTITUENT	*Dilution* Attenuation Factor (DAF) in Groundwater: Residential Receptor	Comm./Ind. Receptor
Acenaphthene	#DIV/0!	#DIV/0!
Anthracene	#DIV/0!	#DIV/0!
Benzene	1.0E+0	1.0E+0
Chloroethane	#DIV/0!	#DIV/0!
Dichlorobenzene (1,2) (-o)	1.0E+0	1.0E+0
Dichlorobenzene, (1,4) (-p)	#DIV/0!	#DIV/0!
Dichloroethane, 1,1-	#DIV/0!	#DIV/0!
Dichloroethane, 1,2-	1.0E+0	1.0E+0
Dichloroethene, cis-1,2-	1.0E+0	1.0E+0
Dichloroethene,1,2-trans-	1.0E+0	1.0E+0
Ethylbenzene	1.0E+0	1.0E+0
Fluoranthene	#DIV/0!	#DIV/0!
Methyl t-Butyl Ether	1.0E+0	1.0E+0
Naphthalene	1.0E+0	1.0E+0
Phenanthrene	1.0E+0	1.0E+0
Pyrene	#DIV/0!	#DIV/0!
Tetrachloroethene	1.0E+0	1.0E+0
Toluene	1.0E+0	1.0E+0
Trichloroethane, 1,1,1-	#DIV/0!	#DIV/0!
Trichloroethane, 1,1,2-	#DIV/0!	#DIV/0!
Trichloroethene	1.0E+0	1.0E+0
Vinyl chloride	1.0E+0	1.0E+0
Xylene (mixed isomers)	1.0E+0	1.0E+0

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

RBCA SITE ASSESSMENT **Input Screen 9.1**

CONSTITUENT HALF-LIFE VALUES

(Complete the following table)

CONSTITUENT	Half-Life of Constituent (day)
Acenaphthene	
Anthracene	
Benzene	
Chloroethane	
Dichlorobenzene (1,2) (-o)	
Dichlorobenzene, (1,4) (-p)	
Dichloroethane, 1,1-	
Dichloroethane, 1,2-	
Dichloroethene, cis-1,2-	
Dichloroethene,1,2-trans-	
Ethylbenzene	
Fluoranthene	
Methyl t-Butyl Ether	
Naphthalene	
Phenanthrene	
Pyrene	
Tetrachloroethene	
Toluene	
Trichloroethane, 1,1,1-	
Trichloroethane, 1,1,2-	
Trichloroethene	
Vinyl chloride	
Xylene (mixed isomers)	

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

EXPOSURE LIMITS IN GROUNDWATER AND AIR

CONSTITUENT	Exposure Limits Applied to Receptors	
	Groundwater (MCL) (mg/L)	Air (Comm. only) (PEL/TLV) (mg/m^3)
Acenaphthene		
Anthracene		
Benzene		
Chloroethane		
Dichlorobenzene (1,2) (-o)		
Dichlorobenzene, (1,4) (-p)		
Dichloroethane, 1,1-		
Dichloroethane, 1,2-		
Dichloroethene, cis-1,2-		
Dichloroethene,1,2-trans-		
Ethylbenzene		
Fluoranthene		
Methyl t-Butyl Ether		
Naphthalene		
Phenanthrene		
Pyrene		
Tetrachloroethene		
Toluene		
Trichloroethane, 1,1,1-		
Trichloroethane, 1,1,2-		
Trichloroethene		
Vinyl chloride		
Xylene (mixed isomers)		

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

[redacted]

Tier 2 Worksheet 9.1

Site Name: 1970 Seminary
Completed By: David Hoexter
Site Location: Oakland, CA
Date Completed: 12/3/1997

SURFACE SOIL SSTL VALUES (< 3 FT BGS)

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

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2

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

CONSTITUENTS OF CONCERN		Representative Concentration	X	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: 0 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)		Residential: (on-site)	Commercial: (on-site)		Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
83-32-9	Acenaphthene	0.0E+0		#VALUE!	NA	NA		>Res	NA		>Res	#VALUE!	■	#VALUE!
120-12-7	Anthracene	0.0E+0		#VALUE!	NA	NA		>Res	NA		>Res	#VALUE!	■	#VALUE!
71-43-2	Benzene	0.0E+0		7.3E+0	NA	NA		2.1E+1	NA		8.3E+2	7.3E+0	☐	<1
75-00-3	Chloroethane	0.0E+0		1.9E+3	NA	NA		1.1E+4	NA		>Res	1.9E+3	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	0.0E+0		>Res	NA	NA		2.4E+3	NA		4.0E+3	2.4E+3	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0		4.5E+2	NA	NA		2.6E+1	NA		1.3E+3	2.6E+1	☐	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0		1.4E+3	NA	NA		2.6E+3	NA		3.6E+3	1.4E+3	☐	<1
107-06-2	Dichloroethane, 1,2-	0.0E+0		3.4E+0	NA	NA		6.6E+0	NA		3.1E+2	3.4E+0	☐	<1
156-59-2	Dichloroethene, cis-1,2-	0.0E+0		6.8E+1	NA	NA		2.6E+2	NA		3.0E+2	6.8E+1	☐	<1
156-60-5	Dichloroethene,1,2-trans-	0.0E+0		1.4E+2	NA	NA		>Res	NA		>Res	1.4E+2	☐	<1
100-41-4	Ethylbenzene	0.0E+0		>Res	NA	NA		>Res	NA		>Res	>Res	☐	<1
206-44-0	Fluoranthene	0.0E+0		#VALUE!	NA	NA		>Res	NA		>Res	#VALUE!	■	#VALUE!
1634-04-4	Methyl t-Butyl Ether	0.0E+0		1.7E+1	NA	NA		1.4E+2	NA		2.4E+2	1.7E+1	☐	<1
91-20-3	Naphthalene	0.0E+0		>Res	NA	NA		5.4E+2	NA		>Res	5.4E+2	☐	<1
85-01-8	Phenanthrene	0.0E+0		>Res	NA	NA		5.6E+2	NA		>Res	5.6E+2	☐	<1
129-00-0	Pyrene	0.0E+0		#VALUE!	NA	NA		>Res	NA		>Res	#VALUE!	■	#VALUE!
127-18-4	Tetrachloroethene	0.0E+0		1.3E+4	NA	NA		1.2E+1	NA		6.4E+2	1.2E+1	☐	<1
108-88-3	Toluene	0.0E+0		>Res	NA	NA		>Res	NA		>Res	>Res	☐	<1
71-55-6	Trichloroethane, 1,1,1-	0.0E+0		5.5E+3	NA	NA		2.4E+3	NA		4.0E+3	2.4E+3	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0		4.2E-1	NA	NA		1.1E+1	NA		4.2E+2	4.2E-1	☐	<1
79-01-6	Trichloroethene	0.0E+0		1.1E+1	NA	NA		5.6E+1	NA		>Res	1.1E+1	☐	<1
75-01-4	Vinyl chloride	0.0E+0		4.3E-2	NA	NA		3.3E-1	NA		1.6E+1	4.3E-2	☐	<1
1330-20-7	Xylene (mixed isomers)	0.0E+0		>Res	NA	NA		>Res	NA		>Res	>Res	☐	<1

Software: GSI RBCA Spreadsheet
Version: v 1.0

Serial: g-265-vhx-686

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

SUBSURFACE SOIL SSTL VALUES (> 3 FT BGS)

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

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2

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

CONSTITUENTS OF CONCERN		Representative Concentration	X 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 0 feet	Commercial (on-site)	Regulatory(MCL) (on-site)	Residential (on-site)	Commercial (on-site)	Residential (on-site)	Commercial (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
83-32-9	Acenaphthene	0.0E+0	#VALUE!	NA	NA	>Res	NA	>Res	NA	#VALUE!	✂	#VALUE!
120-12-7	Anthracene	0.0E+0	#VALUE!	NA	NA	>Res	NA	>Res	NA	#VALUE!	✂	#VALUE!
71-43-2	Benzene	2.4E+0	7.3E+0	NA	NA	6.1E-1	NA	6.9E+2	NA	6.1E-1	■	4.0E+00
75-00-3	Chloroethane	0.0E+0	1.9E+3	NA	NA	2.2E+3	NA	>Res	NA	1.9E+3	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	1.7E+0	>Res	NA	NA	2.3E+3	NA	>Res	NA	2.3E+3	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0	4.5E+2	NA	NA	7.0E+1	NA	>Res	NA	7.0E+1	☐	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0	1.4E+3	NA	NA	1.1E+2	NA	>Res	NA	1.1E+2	☐	<1
107-06-2	Dichloroethane, 1,2-	1.0E-1	3.4E+0	NA	NA	4.7E-1	NA	2.2E+2	NA	4.7E-1	☐	<1
156-59-2	Dichloroethene, cis-1,2-	3.1E-2	6.8E+1	NA	NA	7.6E+0	NA	>Res	NA	7.6E+0	☐	<1
156-60-5	Dichloroethene,1,2-trans-	1.0E-1	1.4E+2	NA	NA	1.5E+1	NA	>Res	NA	1.5E+1	☐	<1
100-41-4	Ethylbenzene	4.2E+0	>Res	NA	NA	2.2E+2	NA	>Res	NA	2.2E+2	☐	<1
206-44-0	Fluoranthene	0.0E+0	#VALUE!	NA	NA	>Res	NA	>Res	NA	#VALUE!	✂	#VALUE!
########	Methyl t-Butyl Ether	1.0E-1	1.7E+1	NA	NA	1.1E+3	NA	>Res	NA	1.7E+1	☐	<1
91-20-3	Naphthalene	1.0E-1	>Res	NA	NA	2.3E+2	NA	>Res	NA	2.3E+2	☐	<1
85-01-8	Phenanthrene	1.0E-1	>Res	NA	NA	>Res	NA	>Res	NA	>Res	☐	<1
129-00-0	Pyrene	0.0E+0	#VALUE!	NA	NA	>Res	NA	>Res	NA	#VALUE!	✂	#VALUE!
127-18-4	Tetrachloroethene	1.8E+0	1.3E+4	NA	NA	2.7E+3	NA	>Res	NA	2.7E+3	☐	<1
108-88-3	Toluene	3.5E+0	>Res	NA	NA	1.1E+2	NA	>Res	NA	1.1E+2	☐	<1
71-55-6	Trichloroethane, 1,1,1-	0.0E+0	5.5E+3	NA	NA	2.3E+2	NA	>Res	NA	2.3E+2	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0	4.2E-1	NA	NA	3.1E-1	NA	3.5E+2	NA	3.1E-1	☐	<1
79-01-6	Trichloroethene	8.2E-1	1.1E+1	NA	NA	3.0E+0	NA	>Res	NA	3.0E+0	☐	<1
75-01-4	Vinyl chloride	1.0E-1	4.3E-2	NA	NA	5.9E-2	NA	6.7E+1	NA	4.3E-2	■	2.0E+00
########	Xylene (mixed isomers)	8.3E+0	>Res	NA	NA	>Res	NA	>Res	NA	>Res	☐	<1

Tier 2 Worksheet 9.3

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

GROUNDWATER SSTL VALUES

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

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2

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

CONSTITUENTS OF CONCERN		Representative Concentration	X 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: 0 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial (on-site)	Residential (on-site)	Commercial: (on-site)	(mg/L	"■" If yes	Only if "yes" left
83-32-9	Acenaphthene	0.0E+0	#VALUE!	NA	NA	>Sol	NA	>Sol	NA	#VALUE!	☆☆	#VALUE!
120-12-7	Anthracene	0.0E+0	#VALUE!	NA	NA	>Sol	NA	>Sol	NA	#VALUE!	☆☆	#VALUE!
71-43-2	Benzene	4.0E+0	2.9E-2	NA	NA	6.1E-1	NA	5.0E+2	NA	2.9E-2	■	1.4E+02
75-00-3	Chloroethane	0.0E+0	1.5E+1	NA	NA	1.7E+3	NA	>Sol	NA	1.5E+1	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	2.2E-2	3.3E+0	NA	NA	7.5E+1	NA	>Sol	NA	3.3E+0	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0	3.5E-2	NA	NA	2.1E+0	NA	>Sol	NA	3.5E-2	☐	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0	3.7E+0	NA	NA	7.1E+1	NA	>Sol	NA	3.7E+0	☐	<1
107-06-2	Dichloroethane, 1,2-	1.8E-2	9.4E-3	NA	NA	4.7E-1	NA	2.9E+2	NA	9.4E-3	■	2.0E+00
156-59-2	Dichloroethene, cis-1,2-	3.8E-1	3.7E-1	NA	NA	3.2E+0	NA	>Sol	NA	3.7E-1	■	1.0E+00
156-60-5	Dichloroethene,1,2-trans-	1.0E-2	7.3E-1	NA	NA	1.7E+1	NA	>Sol	NA	7.3E-1	☐	<1
100-41-4	Ethylbenzene	1.7E+0	3.7E+0	NA	NA	>Sol	NA	>Sol	NA	3.7E+0	☐	<1
206-44-0	Fluoranthene	0.0E+0	#VALUE!	NA	NA	>Sol	NA	>Sol	NA	#VALUE!	☆☆	#VALUE!
1634-04-4	Methyl t-Butyl Ether	4.9E-1	1.8E-1	NA	NA	3.0E+3	NA	>Sol	NA	1.8E-1	■	3.0E+00
91-20-3	Naphthalene	2.2E+0	1.5E-1	NA	NA	9.9E+0	NA	>Sol	NA	1.5E-1	■	1.5E+01
85-01-8	Phenanthrene	1.2E-2	1.5E-1	NA	NA	>Sol	NA	>Sol	NA	1.5E-1	☐	<1
129-00-0	Pyrene	0.0E+0	#VALUE!	NA	NA	>Sol	NA	>Sol	NA	#VALUE!	☆☆	#VALUE!
127-18-4	Tetrachloroethene	9.7E-2	1.6E-2	NA	NA	4.5E+0	NA	>Sol	NA	1.6E-2	■	6.0E+00
108-88-3	Toluene	5.3E+0	7.3E+0	NA	NA	9.0E+1	NA	>Sol	NA	7.3E+0	☐	<1
71-55-6	Trichloroethane, 1,1,1-	0.0E+0	3.3E+0	NA	NA	1.4E+2	NA	>Sol	NA	3.3E+0	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0	1.5E-2	NA	NA	1.4E+0	NA	7.4E+2	NA	1.5E-2	☐	<1
79-01-6	Trichloroethene	1.5E-1	7.7E-2	NA	NA	9.6E-1	NA	5.3E+2	NA	7.7E-2	■	2.0E+00
75-01-4	Vinyl chloride	8.3E-2	4.5E-4	NA	NA	9.2E-3	NA	9.4E+0	NA	4.5E-4	■	1.9E+02
1330-20-7	Xylene (mixed isomers)	7.1E+0	7.3E+1	NA	NA	>Sol	NA	>Sol	NA	7.3E+1	☐	<1

Data Set C

Onsite Commercial and Offsite Residential Ground Water Quality Evaluation

Using Maximum Soil and Site Perimeter Ground Water Values

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: 1970 Seminary
Site Location: Oakland, CA

Job Identification: E-10-1B-192B
Date Completed: 12/3/97
Completed By: David Hoexter

Software: GSI RBCA Spreadsheet
Version: v 1.0

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

DEFAULT PARAMETERS

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
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	***TRUE***			***TRUE***	
AAFd	Age adjustment on skin surface area	***TRUE***			***TRUE***	
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
Groundwater Pathways:				
GW.i	Groundwater Ingestion	TRUE	TRUE	
GW.v	Volatilization to Outdoor Air	TRUE	FALSE	
GW.b	Vapor Intrusion to Buildings	TRUE	FALSE	
Soil Pathways				
S.v	Volatiles from Subsurface Soils	TRUE	FALSE	
SS.v	Volatiles and Particulate Inhalation	TRUE	FALSE	TRUE
SS.d	Direct Ingestion and Dermal Contact	FALSE	TRUE	TRUE
S.l	Leaching to Groundwater from all Soils	TRUE	TRUE	
S.b	Intrusion to Buildings - Subsurface Soils	TRUE	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)	7.6E+03	FALSE		TRUE
S	Inhalation receptor (cm)		TRUE	3.0E+02	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	Commercial/Industrial Chronic	Commercial/Industrial Construction
t	Exposure duration (yr)	30	25	1
A	Contaminated soil area (cm^2)	***8.1E+05***		***8.1E+05***
W	Length of affected soil parallel to wind (cm)	***1.1E+03***		1.0E+03
W.gw	Length of affected soil parallel to groundwater (c	***7.6E+02***		
Uair	Ambient air velocity in mixing zone (cm/s)	2.3E+02		
delta	Air mixing zone height (cm)	2.0E+02		
Lss	Definition of surficial soils (cm)	***1.4E+02***		
Pe	Particulate areal emission rate (g/cm^2/s)	2.2E-10		

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	***6.1E+02***
I	Groundwater infiltration rate (cm/yr)	***1.5E+01***
Ugw	Groundwater Darcy velocity (cm/yr)	***4.5E+03***
Ugw.tr	Groundwater Transport velocity (cm/yr)	***1.4E+04***
Ks	Saturated Hydraulic Conductivity(cm/s)	
grad	Groundwater Gradient (cm/cm)	
Sw	Width of groundwater source zone (cm)	9.1E+02
Sd	Depth of groundwater source zone (cm)	6.1E+02
BC	Biodegradation Capacity (mg/L)	4.2E+00
BIO?	Is Bioattenuation Considered	TRUE
phi.eff	Effective Porosity in Water-Bearing Unit	3.8E-01
foc.sat	Fraction organic carbon in water-bearing unit	***2.5E-02***

Soil	Definition (Units)	Value
hc	Capillary zone thickness (cm)	***7.6E+00***
hv	Vadose zone thickness (cm)	***3.0E+02***
rho	Soil density (g/cm^3)	***1.856***
foc	Fraction of organic carbon in vadose zone	***0.025***
phi	Soil porosity in vadose zone	***0.32***
Lgw	Depth to groundwater (cm)	***3.0E+02***
Ls	Depth to top of affected soil (cm)	***2.4E+02***
Lsubs	Thickness of affected subsurface soils (cm)	***9.1E+01***
pH	Soil/groundwater pH	***6.8***

		capillary	vadose	foundation
phi.w	Volumetric water content	***0.3***	***0.17***	***0.1***
phi.a	Volumetric air content	***0.02***	***0.15***	***0.22***

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)	***1.0E+01***	
eta	Foundation crack fraction	***0.005***	

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

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 alue (mg/kg	note
Acenaphthene						
Anthracene						
Benzene	1.1E+0				2.4E+0	
Chloroethane						
Dichlorobenzene (1,2) (-o)	3.9E-3				1.7E+0	
Dichlorobenzene, (1,4) (-p)						
Dichloroethane, 1,1-						
Dichloroethane, 1,2-	4.9E-3				1.0E-1	
Dichloroethene, cis-1,2-	6.4E-2				3.1E-2	
Dichloroethene,1,2-trans-	2.4E-3				1.0E-1	
Ethylbenzene	9.2E-1				4.2E+0	
Fluoranthene						
Methyl t-Butyl Ether	2.2E-1				1.0E-1	
Naphthalene	1.1E+0				1.0E-1	
Phenanthrene	6.0E-3				1.0E-1	
Pyrene						
Tetrachloroethene	9.7E-2				1.8E+0	
Toluene	2.6E-1				3.5E+0	
Trichloroethane, 1,1,1-						
Trichloroethane, 1,1,2-						
Trichloroethene	1.1E-1				8.2E-1	
Vinyl chloride	1.3E-2				1.0E-1	
Xylene (mixed isomers)	8.0E-1				8.3E+0	

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

CONSTITUENT MOLE FRACTIONS

(Complete the following table)

CONSTITUENT	Mole Fraction of Constituent in Source Material
Acenaphthene	
Anthracene	
Benzene	
Chloroethane	
Dichlorobenzene (1,2) (-o)	
Dichlorobenzene, (1,4) (-p)	
Dichloroethane, 1,1-	
Dichloroethane, 1,2-	
Dichloroethene, cis-1,2-	
Dichloroethene,1,2-trans-	
Ethylbenzene	
Fluoranthene	
Methyl t-Butyl Ether	
Naphthalene	
Phenanthrene	
Pyrene	
Tetrachloroethene	
Toluene	
Trichloroethane, 1,1,1-	
Trichloroethane, 1,1,2-	
Trichloroethene	
Vinyl chloride	
Xylene (mixed isomers)	

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

GROUNDWATER DAF VALUES

(Enter DAF values in the grey area of the following table)

CONSTITUENT	Dilution Attenuation Factor (DAF) in Groundwater: Residential Receptor	Comm./Ind. Receptor
Acenaphthene	#DIV/0!	#DIV/0!
Anthracene	#DIV/0!	#DIV/0!
Benzene	1.0E+0	1.0E+0
Chloroethane	#DIV/0!	#DIV/0!
Dichlorobenzene (1,2) (-o)	1.0E+0	1.0E+0
Dichlorobenzene, (1,4) (-p)	#DIV/0!	#DIV/0!
Dichloroethane, 1,1-	#DIV/0!	#DIV/0!
Dichloroethane, 1,2-	1.0E+0	1.0E+0
Dichloroethene, cis-1,2-	1.0E+0	1.0E+0
Dichloroethene,1,2-trans-	1.0E+0	1.0E+0
Ethylbenzene	1.0E+0	1.0E+0
Fluoranthene	#DIV/0!	#DIV/0!
Methyl t-Butyl Ether	1.0E+0	1.0E+0
Naphthalene	1.0E+0	1.0E+0
Phenanthrene	1.0E+0	1.0E+0
Pyrene	#DIV/0!	#DIV/0!
Tetrachloroethene	1.0E+0	1.0E+0
Toluene	1.0E+0	1.0E+0
Trichloroethane, 1,1,1-	#DIV/0!	#DIV/0!
Trichloroethane, 1,1,2-	#DIV/0!	#DIV/0!
Trichloroethene	1.0E+0	1.0E+0
Vinyl chloride	1.0E+0	1.0E+0
Xylene (mixed isomers)	1.0E+0	1.0E+0

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

RBCA SITE ASSESSMENT **Input Screen 9.1**

CONSTITUENT HALF-LIFE VALUES

(Complete the following table)

CONSTITUENT	Half-Life of Constituent (day)
Acenaphthene	
Anthracene	
Benzene	
Chloroethane	
Dichlorobenzene (1,2) (-o)	
Dichlorobenzene, (1,4) (-p)	
Dichloroethane, 1,1-	
Dichloroethane, 1,2-	
Dichloroethene, cis-1,2-	
Dichloroethene,1,2-trans-	
Ethylbenzene	
Fluoranthene	
Methyl t-Butyl Ether	
Naphthalene	
Phenanthrene	
Pyrene	
Tetrachloroethene	
Toluene	
Trichloroethane, 1,1,1-	
Trichloroethane, 1,1,2-	
Trichloroethene	
Vinyl chloride	
Xylene (mixed isomers)	

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

EXPOSURE LIMITS IN GROUNDWATER AND AIR

CONSTITUENT	Exposure Limits Applied to Receptors	
	Groundwater (MCL) (mg/L)	Air (Comm. only) (PEL/TLV) (mg/m^3)
Acenaphthene		
Anthracene		
Benzene		
Chloroethane		
Dichlorobenzene (1,2) (-o)		
Dichlorobenzene, (1,4) (-p)		
Dichloroethane, 1,1-		
Dichloroethane, 1,2-		
Dichloroethene, cis-1,2-		
Dichloroethene,1,2-trans-		
Ethylbenzene		
Fluoranthene		
Methyl t-Butyl Ether		
Naphthalene		
Phenanthrene		
Pyrene		
Tetrachloroethene		
Toluene		
Trichloroethane, 1,1,1-		
Trichloroethane, 1,1,2-		
Trichloroethene		
Vinyl chloride		
Xylene (mixed isomers)		

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

[redacted]

Tier 2 Worksheet 9.1

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

SURFACE SOIL SSTL VALUES (< 3 FT BGS)

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

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2

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

CONSTITUENTS OF CONCERN		Representative Concentration	X	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: 250 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)		Residential: (on-site)	Commercial: (on-site)		Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
83-32-9	Acenaphthene	0.0E+0		#VALUE!	#VALUE!	NA		>Res	>Res		>Res	#VALUE!	■	#VALUE!
120-12-7	Anthracene	0.0E+0		#VALUE!	#VALUE!	NA		>Res	>Res		>Res	#VALUE!	■	#VALUE!
71-43-2	Benzene	0.0E+0		7.3E+0	2.5E+1	NA		4.6E+2	3.8E+1		8.3E+2	7.3E+0	☐	<1
75-00-3	Chloroethane	0.0E+0		1.9E+3	5.3E+3	NA		>Res	>Res		>Res	1.9E+3	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	0.0E+0		>Res	>Res	NA		>Res	3.5E+3		4.0E+3	3.5E+3	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0		4.5E+2	1.5E+3	NA		2.4E+3	4.6E+1		1.3E+3	4.6E+1	☐	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0		1.4E+3	3.8E+3	NA		>Res	3.9E+3		3.6E+3	1.4E+3	☐	<1
107-06-2	Dichloroethane, 1,2-	0.0E+0		3.4E+0	1.1E+1	NA		1.5E+2	1.2E+1		3.1E+2	3.4E+0	☐	<1
156-59-2	Dichloroethene, cis-1,2-	0.0E+0		6.8E+1	1.9E+2	NA		>Res	3.9E+2		3.0E+2	6.8E+1	☐	<1
156-60-5	Dichloroethene,1,2-trans-	0.0E+0		1.4E+2	4.0E+2	NA		>Res	>Res		>Res	1.4E+2	☐	<1
100-41-4	Ethylbenzene	0.0E+0		>Res	>Res	NA		>Res	>Res		>Res	>Res	☐	<1
206-44-0	Fluoranthene	0.0E+0		#VALUE!	#VALUE!	NA		>Res	>Res		>Res	#VALUE!	■	#VALUE!
1634-04-4	Methyl t-Butyl Ether	0.0E+0		1.7E+1	4.7E+1	NA		>Res	2.0E+2		2.4E+2	1.7E+1	☐	<1
91-20-3	Naphthalene	0.0E+0		>Res	>Res	NA		>Res	8.2E+2		>Res	8.2E+2	☐	<1
85-01-8	Phenanthrene	0.0E+0		>Res	>Res	NA		>Res	>Res		>Res	>Res	☐	<1
129-00-0	Pyrene	0.0E+0		#VALUE!	#VALUE!	NA		>Res	>Res		>Res	#VALUE!	■	#VALUE!
127-18-4	Tetrachloroethene	0.0E+0		1.3E+4	4.3E+4	NA		5.2E+4	2.1E+1		6.4E+2	2.1E+1	☐	<1
108-88-3	Toluene	0.0E+0		>Res	>Res	NA		>Res	>Res		>Res	>Res	☐	<1
71-55-6	Trichloroethane, 1,1,1-	0.0E+0		5.5E+3	>Res	NA		>Res	3.5E+3		4.0E+3	3.5E+3	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0		4.2E-1	1.4E+0	NA		2.3E+2	1.9E+1		4.2E+2	4.2E-1	☐	<1
79-01-6	Trichloroethene	0.0E+0		1.1E+1	3.6E+1	NA		>Res	1.0E+2		>Res	1.1E+1	☐	<1
75-01-4	Vinyl chloride	0.0E+0		4.3E-2	1.4E-1	NA		4.4E+1	5.8E-1		1.6E+1	4.3E-2	☐	<1
1330-20-7	Xylene (mixed isomers)	0.0E+0		>Res	>Res	NA		>Res	>Res		>Res	>Res	☐	<1

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

SUBSURFACE SOIL SSTL VALUES (> 3 FT BGS)

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

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2

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

CONSTITUENTS OF CONCERN		Representative Concentration	X 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: 250 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)	*Residential:* (on-site)	*Commercial:* (on-site)	Residential: (on-site)	Commercial: (on-site)	(mg/kg)	"■" If yes	*Only if "yes" left*
83-32-9	Acenaphthene	0.0E+0	#VALUE!	#VALUE!	NA	>Res	NA	>Res	NA	#VALUE!	✂ ✂	#VALUE!
120-12-7	Anthracene	0.0E+0	#VALUE!	#VALUE!	NA	>Res	NA	>Res	NA	#VALUE!	✂ ✂	#VALUE!
71-43-2	Benzene	2.4E+0	7.3E+0	2.5E+1	NA	6.1E-1	NA	6.9E+2	NA	6.1E-1	■	4.0E+00
75-00-3	Chloroethane	0.0E+0	1.9E+3	5.3E+3	NA	2.2E+3	NA	>Res	NA	1.9E+3	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	1.7E+0	>Res	>Res	NA	2.3E+3	NA	>Res	NA	2.3E+3	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0	4.5E+2	1.5E+3	NA	7.0E+1	NA	>Res	NA	7.0E+1	☐	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0	1.4E+3	3.8E+3	NA	1.1E+2	NA	>Res	NA	1.1E+2	☐	<1
107-06-2	Dichloroethane, 1,2-	1.0E-1	3.4E+0	1.1E+1	NA	4.7E-1	NA	2.2E+2	NA	4.7E-1	☐	<1
156-59-2	Dichloroethene, cis-1,2-	3.1E-2	6.8E+1	1.9E+2	NA	7.6E+0	NA	>Res	NA	7.6E+0	☐	<1
156-60-5	Dichloroethene,1,2-trans-	1.0E-1	1.4E+2	4.0E+2	NA	1.5E+1	NA	>Res	NA	1.5E+1	☐	<1
100-41-4	Ethylbenzene	4.2E+0	>Res	>Res	NA	2.2E+2	NA	>Res	NA	2.2E+2	☐	<1
206-44-0	Fluoranthene	0.0E+0	#VALUE!	#VALUE!	NA	>Res	NA	>Res	NA	#VALUE!	✂ ✂	#VALUE!
########	Methyl t-Butyl Ether	1.0E-1	1.7E+1	4.7E+1	NA	1.1E+3	NA	>Res	NA	1.7E+1	☐	<1
91-20-3	Naphthalene	1.0E-1	>Res	>Res	NA	2.3E+2	NA	>Res	NA	2.3E+2	☐	<1
85-01-8	Phenanthrene	1.0E-1	>Res	>Res	NA	>Res	NA	>Res	NA	>Res	☐	<1
129-00-0	Pyrene	0.0E+0	#VALUE!	#VALUE!	NA	>Res	NA	>Res	NA	#VALUE!	✂ ✂	#VALUE!
127-18-4	Tetrachloroethene	1.8E+0	1.3E+4	4.3E+4	NA	2.7E+3	NA	>Res	NA	2.7E+3	☐	<1
108-88-3	Toluene	3.5E+0	>Res	>Res	NA	1.1E+2	NA	>Res	NA	1.1E+2	☐	<1
71-55-6	Trichloroethane, 1,1,1-	0.0E+0	5.5E+3	>Res	NA	2.3E+2	NA	>Res	NA	2.3E+2	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0	4.2E-1	1.4E+0	NA	3.1E-1	NA	3.5E+2	NA	3.1E-1	☐	<1
79-01-6	Trichloroethene	8.2E-1	1.1E+1	3.6E+1	NA	3.0E+0	NA	>Res	NA	3.0E+0	☐	<1
75-01-4	Vinyl chloride	1.0E-1	4.3E-2	1.4E-1	NA	5.9E-2	NA	6.7E+1	NA	4.3E-2	■	2.0E+00
########	Xylene (mixed isomers)	8.3E+0	>Res	>Res	NA	>Res	NA	>Res	NA	>Res	☐	<1

RBCA SITE ASSESSMENT — **Tier 2 Worksheet 9.3**

Site Name: 1970 Seminary
Site Location: Oakland, CA

Completed By: David Hoexter
Date Completed: 12/3/1997

GROUNDWATER SSTL VALUES

Target Risk (Class A & B) 1.0E-5 ☐ MCL exposure limit?
Target Risk (Class C) 1.0E-5 ☐ PEL exposure limit?
Target Hazard Quotient 1.0E+0

Calculation Option: 2

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

CONSTITUENTS OF CONCERN		Representative Concentration	X 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: 250 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential (on-site)	Commercial: (on-site)	Residential (on-site)	Commercial: (on-site)	(mg/L	"■" If yes	Only if "yes" left
83-32-9	Acenaphthene	0.0E+0	#VALUE!	#VALUE!	NA	>Sol	NA	>Sol	NA	#VALUE!	■	#VALUE!
120-12-7	Anthracene	0.0E+0	#VALUE!	#VALUE!	NA	>Sol	NA	>Sol	NA	#VALUE!	■	#VALUE!
71-43-2	Benzene	1.1E+0	2.9E-2	9.9E-2	NA	6.1E-1	NA	5.0E+2	NA	2.9E-2	■	3.7E+01
75-00-3	Chloroethane	0.0E+0	1.5E+1	4.1E+1	NA	1.7E+3	NA	>Sol	NA	1.5E+1	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	3.9E-3	3.3E+0	9.2E+0	NA	7.5E+1	NA	>Sol	NA	3.3E+0	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0	3.5E-2	1.2E-1	NA	2.1E+0	NA	>Sol	NA	3.5E-2	☐	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0	3.7E+0	1.0E+1	NA	7.1E+1	NA	>Sol	NA	3.7E+0	☐	<1
107-06-2	Dichloroethane, 1,2-	4.9E-3	9.4E-3	3.1E-2	NA	4.7E-1	NA	2.9E+2	NA	9.4E-3	☐	<1
156-59-2	Dichloroethene, cis-1,2-	6.4E-2	3.7E-1	1.0E+0	NA	3.2E+0	NA	>Sol	NA	3.7E-1	☐	<1
156-60-5	Dichloroethene,1,2-trans-	2.4E-3	7.3E-1	2.0E+0	NA	1.7E+1	NA	>Sol	NA	7.3E-1	☐	<1
100-41-4	Ethylbenzene	9.2E-1	3.7E+0	1.0E+1	NA	>Sol	NA	>Sol	NA	3.7E+0	☐	<1
206-44-0	Fluoranthene	0.0E+0	#VALUE!	#VALUE!	NA	>Sol	NA	>Sol	NA	#VALUE!	■	#VALUE!
1634-04-4	Methyl t-Butyl Ether	2.2E-1	1.8E-1	5.1E-1	NA	3.0E+3	NA	>Sol	NA	1.8E-1	■	1.0E+00
91-20-3	Naphthalene	1.1E+0	1.5E-1	4.1E-1	NA	9.9E+0	NA	>Sol	NA	1.5E-1	■	8.0E+00
85-01-8	Phenanthrene	6.0E-3	1.5E-1	4.1E-1	NA	>Sol	NA	>Sol	NA	1.5E-1	☐	<1
129-00-0	Pyrene	0.0E+0	#VALUE!	#VALUE!	NA	>Sol	NA	>Sol	NA	#VALUE!	■	#VALUE!
127-18-4	Tetrachloroethene	9.7E-2	1.6E-2	5.5E-2	NA	4.5E+0	NA	>Sol	NA	1.6E-2	■	6.0E+00
108-88-3	Toluene	2.6E-1	7.3E+0	2.0E+1	NA	9.0E+1	NA	>Sol	NA	7.3E+0	☐	<1
71-55-6	Trichloroethane, 1,1,1-	0.0E+0	3.3E+0	9.2E+0	NA	1.4E+2	NA	>Sol	NA	3.3E+0	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0	1.5E-2	5.0E-2	NA	1.4E+0	NA	7.4E+2	NA	1.5E-2	☐	<1
79-01-6	Trichloroethene	1.1E-1	7.7E-2	2.6E-1	NA	9.6E-1	NA	5.3E+2	NA	7.7E-2	■	1.0E+00
75-01-4	Vinyl chloride	1.3E-2	4.5E-4	1.5E-3	NA	9.2E-3	NA	9.4E+0	NA	4.5E-4	■	2.9E+01
1330-20-7	Xylene (mixed isomers)	8.0E-1	7.3E+1	>Sol	NA	>Sol	NA	>Sol	NA	7.3E+1	☐	<1

Software: GSI RBCA Spreadsheet
Version: v 1.0

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